Queensland Government

Workplace Health and Safety
Electrical Safety Office
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Verification – the inspection and testing of electrical work

Electrical contractors and workers have an obligation to carry out an inspection and test of all electrical installations and to provide the customer with a Certificate of test. Failure to comply with legislative requirements can attract fines or court action.

Verification is the term used in the Australian Standards to describe the mandatory inspection and testing of an electrical installation. All electrical work performed on electrical equipment must comply with the Australian Standard wiring rules (section 8 of AS/NZS 3000:2007).

Consider the following when you carry out the verification process:

1. the isolation of circuits under test, when necessary;
2. perform a visual inspection as far as practicable;
3. earth continuity (or an internal fault loop impedance test, without supply);
4. insulation resistance of live conductors to earth;
5. polarity test (10 and 5 ohm resistors may be used as indicated);
6. correct circuit connections;
   a. no short circuits between conductors
   b. no transposition of conductors
   c. no interconnection of conductors between different circuits
7. earth fault loop impedance where required (see clause 8.3.9.1 of the Wiring Rules);
8. operation of RCDs – supply will be required for this test;
9. insulation resistance between all live conductors – necessary for consumer mains and sub-mains; and
10. phase sequence of multiphase outlets must be consistent (see clause 4.4.5).

Each time electrical work is performed on electrical equipment, a licensed electrical contractor must provide the customer with a copy of a 'Certificate of testing and safety' that complies with section 15 and 159 of the Electrical Safety Regulation 2002. A copy of the certificate can be found under templates on the forms and publications page.

Every licensed electrical worker and contractor must be competent at verification to ensure the safety of other electrical workers and the community. Employers should consider a process to monitor this competency as evidence may be required when an audit is performed by an Electrical Safety Office inspector.

The failure to adhere to legislative requirements may attract on-the-spot fines from the Electrical Safety Office or court action in more serious circumstances.

More information

AS/NZS 3017:2007 *Electrical installations - verification guidelines*

This standard provides clear diagrams and processes to help licensed electrical contactors carry out accurate tests. These examples help you to verify electrical equipment quickly and safely.

For example, the traditional use of a trailing lead throughout a building during testing can increase the risk of people tripping and may result in damage to furniture or property. The 'Electrical installations – verification guidelines' specify that the use of an ohmmeter to run an 'internal fault loop impedance test' can achieve the earth continuity testing required.

A temporary short between active and earth at the origin of the isolated circuit (when under the earth continuity test) will still allow a reading to be obtained with the ohmmeter at the point in the circuit to be tested, such as a socket outlet or lighting point. This reading is known as Rphe. Refer to table 3.2 in the Standard for the maximum value for various circuit arrangements.

The use of a trailing lead to perform polarity testing can also be avoided by instead using a set of two resistors connected at the switchboard. A 10ohm resistor is placed in the active of the isolated circuit under test and a 5ohm resistor is placed in the neutral of the circuit. Once any isolating or functional switches are turned on an approximate 10ohm value of resistance would be measured between active and earth at the point in the circuit to be tested. Between neutral and earth approximately 5ohms would be detected proving the socket outlet or lighting point has been wired correctly and the switch operates in the active conductor.

AS/NZS 3000:2007 *Wiring Rules*

All mandatory tests required by this standard can be performed without supply, other than the RCD test. If the supply is connected by an electrical worker, the decision to perform the other tests may not be justified unless the electricity is necessary for the proper performance of the electrical work. 'Electrical installations – verification guidelines' provides a reasonable alternative to performing the tests without supply and this should be considered in the interests of safety, as per the requirements of the .

A copy of the Australian Standards is available from Standards Australia's distributor, SAI Global or telephone 131 242.

Last updated 29 June 2015

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