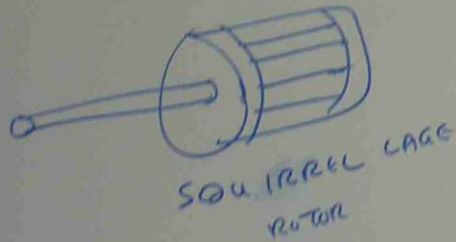
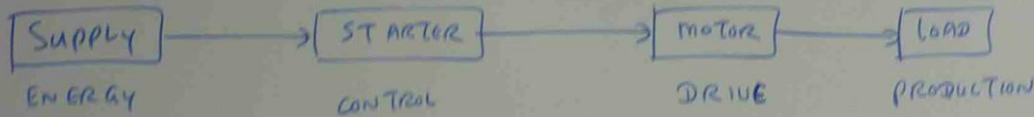


Q004 (1) CONTROL CIRCUIT

MOTOR STARTERS ARE THE DEVICES WHICH ARE CONNECTED BETWEEN THE SUPPLY LINES AND THE MOTOR IN A FUNCTIONAL SYSTEM



STARTING CURRENT = UP TO $8 \times$ FULL LOAD CURRENT

STARTING TORQUE = UP TO $3 \times$ FULL LOAD TORQUE

REDUCED VOLTAGE STARTER — TO REDUCE THE SUPPLY CURRENT

- REDUCE DISRUPTION
- CONTROL STARTING TORQUE
- CONTROL ACCELERATION RATE
- REDUCE MECHANICAL STRESS
- REDUCE HEATING
- LESS TRANSIENT

METHOD

STAR-DELTA STARTER

PRIMARY RESIST STARTER

AUTO TRANSFORMER STARTER

SECONDARY RESIST STARTER

INVERTER

CONNECTED BETWEEN THE SUPPLY

LOAD

REDUCTION

$I = \text{UP TO } 8 \times \text{FULL LOAD CURRENT}$

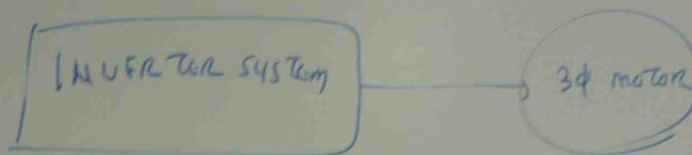
$T = \text{UP TO } 3 \times \text{FULL LOAD TORQUE}$

REDUCE THE SUPPLY CURRENT

due

RATE

loss



PARTIAL DISCHARGES

APPROPRIATE FILTERING

METHOD

STAR-DELTA
STARTER

PRIMARY RESISTANCE
STARTER

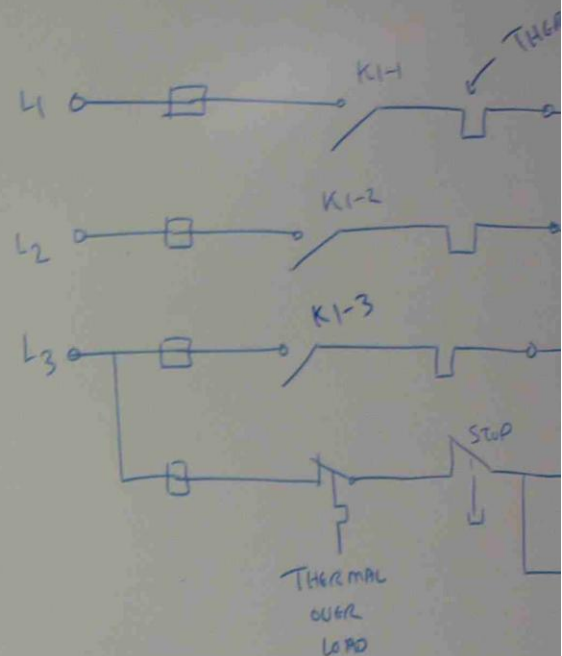
AUTO TRANSFORMER
STARTER

SECONDARY RESISTANCE
STARTER

FULL VOLTAGE

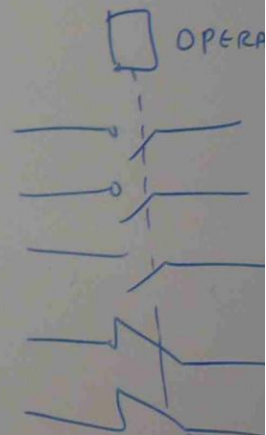
DIRECT ON LINE
DOL
STARTER

ELECTRONIC SOFT
START
STARTER.



THERMAL
OVER
LOAD

CONTACTORS



PARTIAL DISCHARGING

APPROPRIATE FILTERING

FULL VOLTAGE

DIRECT ON LINE

DOL

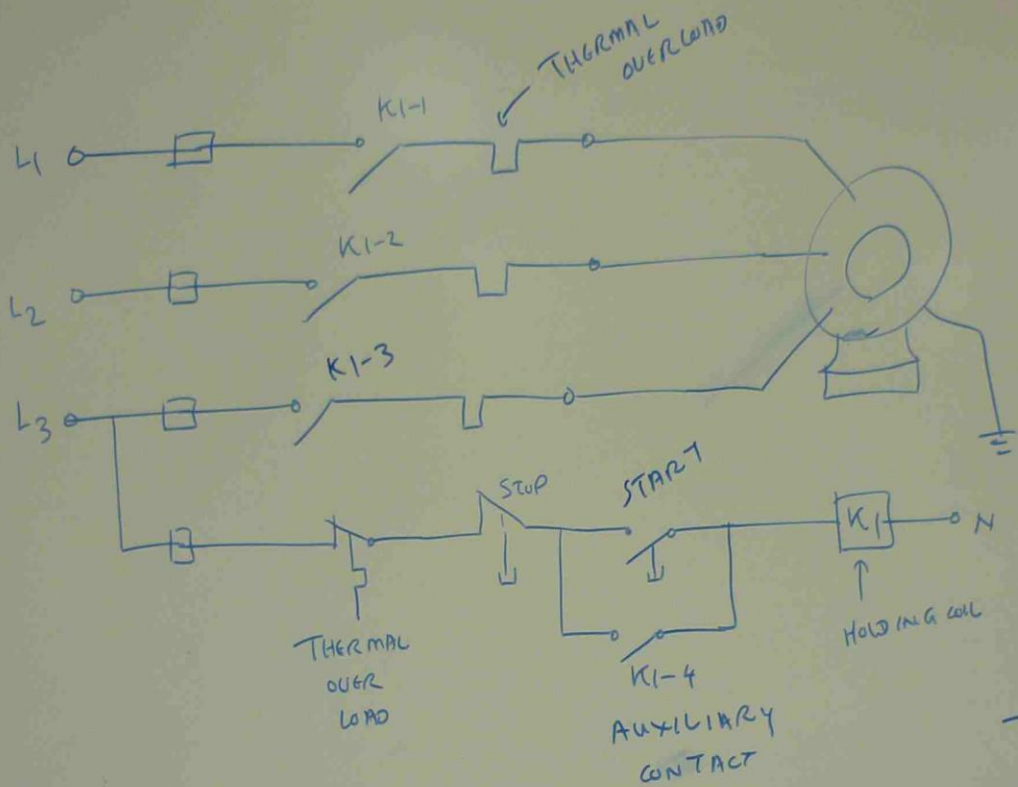
STARTER

ELECTRONIC SOFT

START

STARTER.

3φ motor



CURRENT & VOLTAGE

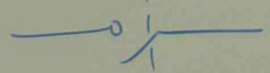
Torque & (VOLTAGE)²

CONTACTORS

OPERATING SOLENOID



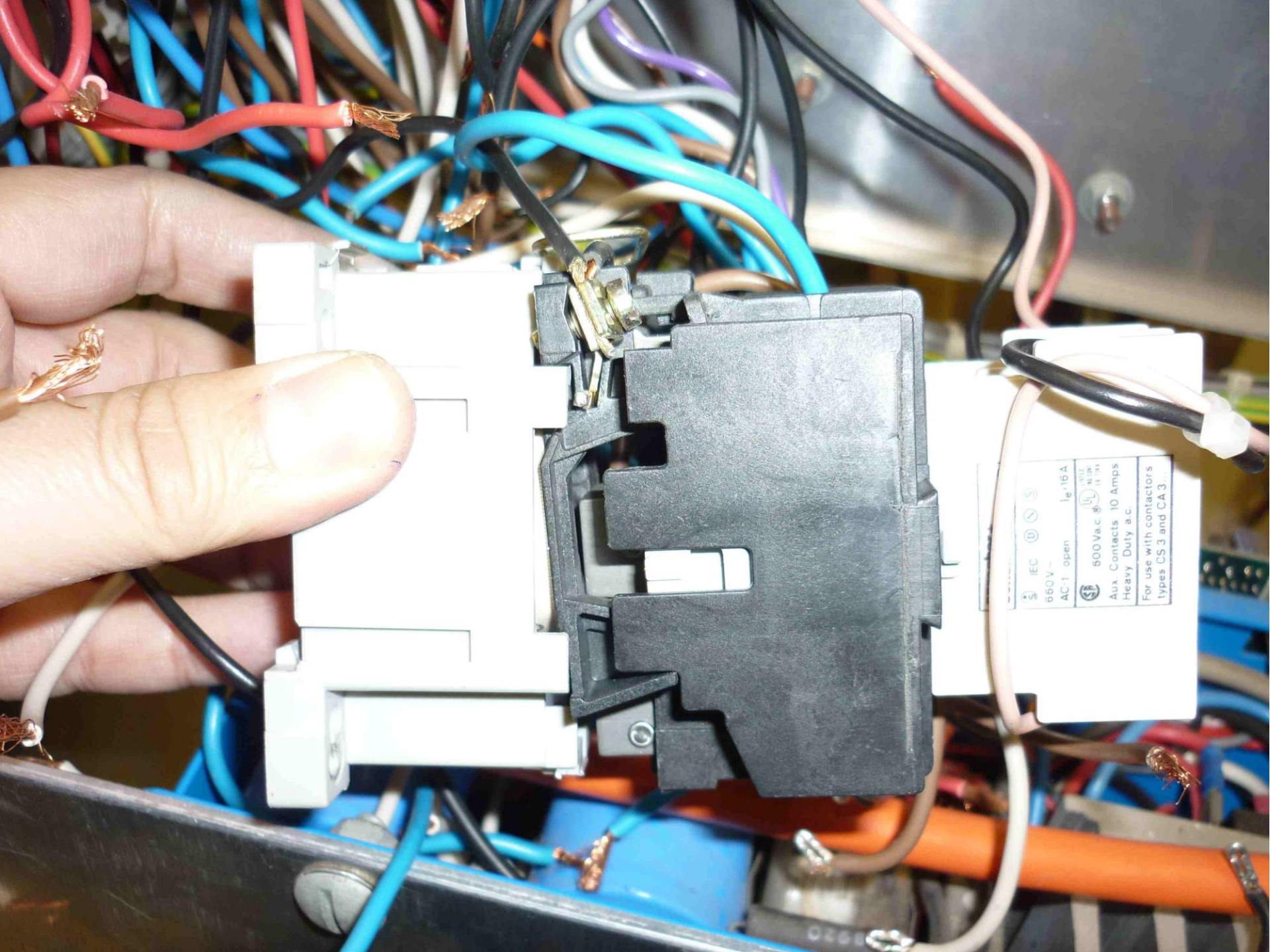
N/O



N/C

$$\text{LOCKED ROTOR CURRENT} = \frac{1}{0.5} \times \text{MEASURED CURRENT}$$

$$\text{LOCKED ROTOR TORQUE} = \frac{1}{(0.5)^2} \times \text{MEASURED TORQUE}$$



IEC 60947-5-1
660V ~
AC-1 open 1e-16 A
500 Vac 50/60 Hz
Aux. Contacts 10 Amps
Heavy Duty a.c.
For use with contactors
types CS 3 and CA 3

