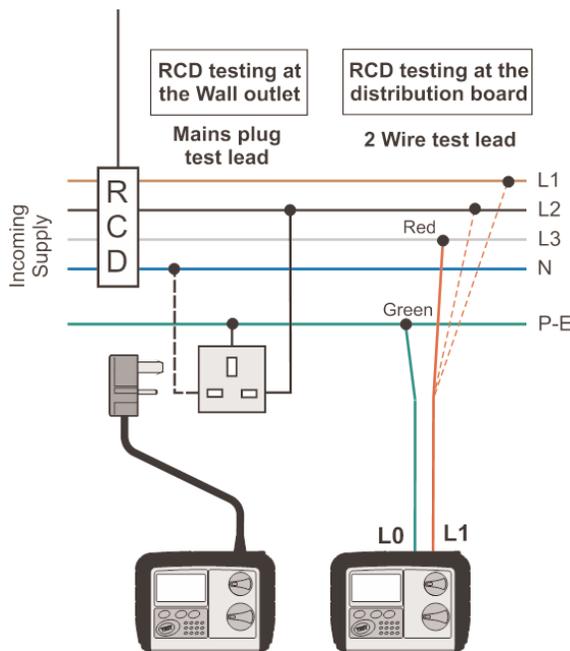


### Test connections for RCD testing

#### Phase to earth connections

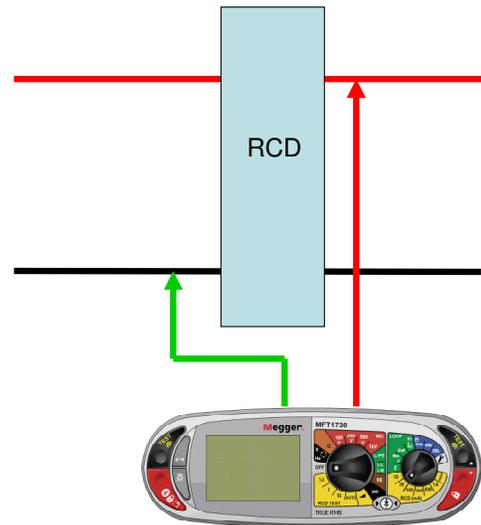
The standard method of testing RCDs is to create a test current from the phase to earth so that the RCD operates according to its specifications. Connections are required to the phase and earth conductors; some older instruments may require a neutral connection for power but this is not necessary on modern battery powered models.

Similar connections can be made for 3 phase systems. Tests are carried out single phase, and connections can be rotated to fully test a 3 phase RCD.



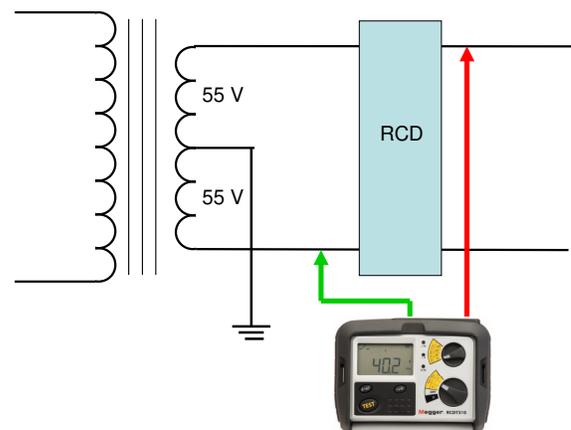
#### Connecting across the RCD

A 2 wire RCD test can also be carried out across the RCD. This can increase the test voltage in the case of centre-tapped systems and does not rely on the earth path which sometimes can be too high for safe operation.



#### RCD Testing of centre-tapped systems

110 V systems usually have a centre-tapped earth connection so that the maximum voltage to earth is 55 V. Many older RCD testers require a higher voltage to operate so testing across the RCD doubles the voltage so allowing a test to be performed. Newer models may have a wider operating range enabling a standard connection to be used.

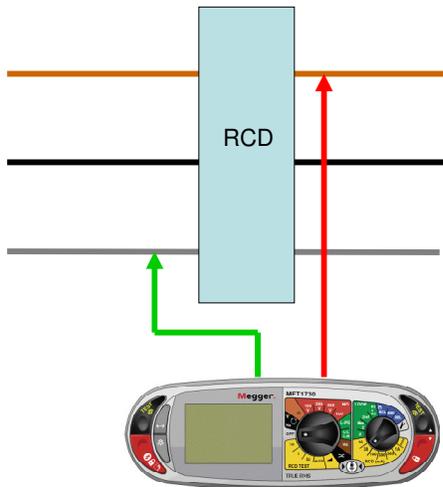


#### Testing inhibited due to Touch Voltage

During an RCD test the touch voltage is monitored. If the touch voltage could rise above 50 V the test is not allowed to continue. This can stop testing at higher currents, usually with a message of >50 V on the display. Connecting across the RCD does not produce any touch voltage so enables RCD testing to continue. The cause for the high earth loop impedance should also be investigated to ensure safe operation of the installation.

## Testing RCDs without neutral or earth connections

Testing 3 phase RCDs without neutral or earth connections is possible by testing across the RCD if the rating of the tester is sufficient. Many 3 phase RCDs do not have a neutral connection. Standard RCD testers are usually only designed for single-phase operation. More advanced models enable other connections to be utilized due to a higher operating voltage.



## RCD testing voltage limits

### Voltage limits

To have sufficient voltage for accuracy and not too much power for the instrument to dissipate there are limits to the minimum and maximum voltages when RCD testing. The limit varies with test current as well as the type of instrument.

Different connections may be able to overcome some of the limitations if testing cannot be performed according to the standard instructions.

Table of voltage limits for MFT1720

Test current	Minimum voltage	Maximum voltage
15 mA	48 V	480 V
30 mA	48 V	480 V
150 mA	48 V	280 V
300 mA	90 V	280 V
500 mA	195 V	254 V

Table of RCD test voltage ranges

	Minimum voltage	Maximum voltage
RCDT310	100 V	280 V
RCDT320/330	50 V	280 V
MFT1500 series	100 V	270 V
MFT1710	48 V	280 V
MFT1720/30	48 V	480 V