



Test Procedure for Continuity to a Known Earth

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What is the difference between a known Earth test and an Earth continuity test?

An Earth continuity test only proves that the appliance has satisfactory Earth continuity resistance between the appliance and the point of connection to the electrical supply, however, a test for continuity to a known Earth proves that there is Earth continuity from the point of connection to the isolator or socket to the Earth system of the building electrical installation.

What is a known Earth?

The Earth system of the building electrical installation provides a safe path for electricity to flow away from the building in case there are any problems with the electrical installations or equipment. As well as being connected to most electrical equipment in the building, the Earth system is also connected to any fixed metal parts of the building such as metallic water or gas pipes. This is to ensure that in the event of an electrical fault the pipework cannot become live and provides a path for the electricity to safely conduct to Earth.

A Known Earth is therefore any exposed metal part of an appliance that is known to be connected to the Earth system such as the metal casing of another electrical appliance, the cover screw of a 13 amp socket or a metallic water or gas pipe.

Why carry out an Earth continuity test to a known Earth?

After working on an appliance that is connected to the building electrical supply the technician has an obligation to ensure to the best of his ability that the appliance has been left in a safe condition. Carrying out an Earth continuity test only proves that there is a satisfactory Earth connection from the appliance to the isolator or socket, however, it does not prove that the socket or the isolator have a satisfactory connection to the building Earth system. Carrying out a continuity test from the appliance to a known Earth proves that the appliance is connected to the building earth system.

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How to carry out a continuity test to a Known Earth

1. Use a Multimeter with Fused Leads and measure the lead to lead continuity resistance and record this. Alternatively if the meter has a zeroing facility, zero the reading with lead to lead contact. If using any other type of Earth continuity tester, follow the manufacturer's instructions.
2. Perform an Earth continuity resistance check from the metal cabinet of the appliance you are checking to a known Earth in the vicinity (the metal casing of another electrical appliance, the cover screw of a 13 amp socket or a metallic gas or water pipe).
3. Make a note of the resistance value shown in the meter display.
4. Take the first reading (as in 1 above) away from the second reading, this is the resistance value to Earth.
5. The recommended reading to Earth should be less than or equal to 0.1 ohm
6. If you do get a fail or high reading, do not immediately fail the appliance. Make sure you have a good connection at the tips of the test leads with a clean metal surface. A dirty or greasy metal cabinet on the appliance can give poor readings. Remember not all metal parts are connected to earth so check readings from various metal parts on the appliance.
7. The Known Earth Continuity Test reading should be recorded on your work sheet or test certificate. In the event of a high reading or a fail, disconnect the appliance and report this to the client and advise him to have the electrical installation checked and rectified by a qualified electrician.