Testing Hager AFDD

01 Insulation resistance test in accordance with BS 7671

Internal components contain sensitive electronics which are connected to load side of device. Device outgoing terminals should NOT be subject to 500V test. A test at 250Vdc will not harm the components but will produce a false reading. The procedure for carrying out the insulation resistance test is:-

Test 1 – Between Live conductors

Cannot be carried out with both live conductors connected to device

- Remove one of the conductors
- Perform test at 500Vdc
- Test can therefore only be carried out on individual circuits

Test 2 – Between Live conductors & Earth

- Can be tested from busbar with AFDD's ON
- Testing all circuits together is possible
- Perform test at 500Vdc
- Test between L-E & N-E OR L/N joined together -E

02 Earth fault loop impedance measurement

If a loop impedance measurement is carried out on a circuit containing an AFDD, it is recommended the low current, non-trip setting is selected on the test equipment. Carrying out this test using the high current method will trip the device

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AAGAFDD418

Arc Fault Detection Devices

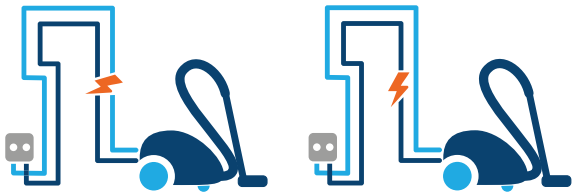
At a Glance

Increasing protection Arc Fault Detection Devices

Arc fault protection devices (AFDD) use microprocessors to identify characteristic current flow and voltage curves that indicate an arc fault and automatically trip the affected circuit.

This significantly reduces the risk of fire due to faulty conductors and connections. The protective function of the AFDD has already proven its worth internationally, and has been used in Germany since February 2016.

The 18th edition of BS 7671, when published in July, recommends the use of these to provide additional protection against fire.

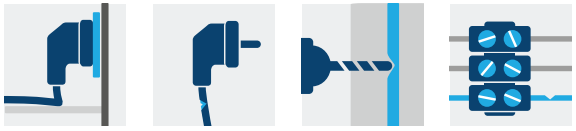


Parallel Arc Fault

Series Arc Fault

Monitoring via Microprocessor

An AFDD is activated by both series and parallel arc faults. Unlike circuit breakers or RCDs, an AFDD does not have an electromechanical trigger, but utilises electronic technology to analyse the signature (waveform) of an arc. It reliably differentiates between an arc fault and the signature (waveform) in normal switching and control events, preventing false tripping.



Kink/break in the cable

Cable wear due to frequent use

Line damage resulting from drilling or construction work

Incorrect wire stripping

Incorrect bending radii

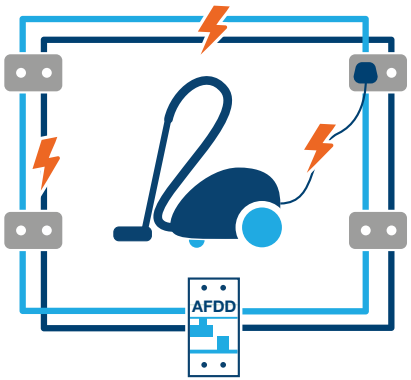
Loose screwed connections

Defective wall plugs

Rodent bites

Potential Causes

Arc faults can be caused by all types of line faults and worn contacts. An AFDD will trip the circuit when a potentially hazardous arc occurs, eliminating the resulting fire hazard.



Ring Final Circuits

Contrary to common belief, AFDD's do offer protection against arc faults in ring final circuits and to the equipment being fed from this circuit. A series arc fault in one leg however, is unlikely to be at a dangerous level so will not be detected. This is due to current in this instance flowing around the other leg of the ring. A series arc fault will be detected in equipment and in flexible cables connected to the ring final circuit. Parallel arc faults are detected and disconnected in all parts of the ring circuit and on all connected equipment.

Effective areas of protective devices depending on fault position & type

Fault Between	Short Circuit	Overload	Residual current	Serial Arc	Parallel Arc
L-L	MCB/ RCBO				
L-N				AFDD	
L-PE			RCD/ RCBO		RCD/ RCBO/ AFDD