

# AFDDs Myth Buster – Setting the record straight

Since the introduction of AFDDs in to BS 7671, there have been numerous misconceptions regarding the technology. This fact sheet aims to clarify some of these myths and misconceptions.

## MYTH

An AFDD is not required for a parallel arc fault, Line to Neutral (L-N), as this can be detected by an MCB.

It is dependent upon the magnitude of arc fault current.

The fault current that is required to operate an MCB is much higher than the arc fault current which can cause ignition of combustible materials.

AFDDs operate where high impedance faults occur e.g., damaged insulation. MCBs require low impedance fault conditions to operate.



## MYTH

AFDD size, algorithms, indicators, and configurations are required to be standardised.

BS EN 62606 is the product standard to which AFDDs are designed, manufactured & tested. The product standard does not require these elements to be standardised.

To suit the wide variety of systems in use worldwide, AFDDs are required to be available as stand-alone units, add on units, or combined units that include either an MCB or an RCD. Therefore, some product variation is unavoidable since the devices will be providing a differing variety of protective functions depending upon the applications.

With regards to algorithms, the product standard prescribes tests for verification of correct operation and avoidance of unwanted tripping that all AFDDs shall conform to. However, the algorithms applied by manufacturers will differ, depending on AFDD design.



## MYTH

Ad-hoc tests show AFDDs are not tripping correctly and consistently.

Many DIY tests have been conducted using uncontrolled and arbitrary methods. But it is essential that valid tests are performed in an accurate and repeatable way as prescribed by the product standard (BS EN 62606) and by qualified competent persons within a suitably equipped test facility. Failure to do so will produce inconsistent and erroneous results, which will be misleading.



## MYTH

AFDDs could be beneficial only in some scenarios e.g., aged cabling.

Whilst AFDDs provide protection for aged cabling they also provide additional protection against damage, misuse and abuse of the installation:

Some examples: Rodent damage, pierced insulation (nail or screw), trapped or crushed cables, deteriorating insulation and loose terminations. Installers should also consider the types of cables and flammable insulation materials used within the installation. In all cases, BS 7671 requires prevention of ignition and propagation of fires.



Contact a BEAMA member for more information.

Download the BEAMA AFDD guide from [www.beama.org.uk](http://www.beama.org.uk) or scan the QR code



**MYTH**

There is a misleading view being communicated within the industry that use of such terms as 'recommended', 'additional', and 'specified' in BS 7671 demote the importance of the requirements for AFDDs within the associated regulations.

This is not the case; such terms are used extensively throughout BS 7671 and there is no suggestion that the use of any of these terms within BS 7671 demotes any of the requirements of any regulations applying these terms.

Requirements and recommendations within regulations using such terms must be applied appropriately. Care must be taken to ensure that the regulations are applied as written and not based on misleading interpretations of the regulations.

BS 7671:2018+A2:2022 provides the following definition of recommendation:

**Recommendation = Should**

**Recommendation.** Expression in the content of a document conveying that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others. The following table describes verbal forms which may be used to express normative and informative elements:

Verbal forms used in BS 7671		
Implication	Verbal form	Typical context
Requirement	Shall	Normative element
Recommendation	Should	Informative element
Permission	May	Informative element
Possibility and capability	Can	Informative element
Possibility	Might	Informative element
Description	Is	Informative element

The content of this table is based on *Rules for the structure and drafting of UK standards*, second edition published April 2017, published by BSI Standards Ltd.



**MYTH**

**AFDDs will prevent all fires caused by electrical faults.**

AFDDs detect and disconnect dangerous arc faults i.e., faults that cannot be detected by other types of circuit protection devices. They are an important additional protection for the prevention of fires caused by electrical arcing faults.

AFDDs are not promoted as a 'cure all' and not a 'Silver Bullet' to prevent all fires caused by electrical faults.



**MYTH**

**AFDDs are expensive and cost prohibitive.**

New and innovative technologies tend to be initially more expensive but over time frequently these prices tend to reduce, as has been seen since the implementation of RCBOs.

Also, the value of safety must not be based on cost; loss of life or damage to installations / properties cannot be compared to the cost of installing AFDDs.

The value of safety is supported by ECA:  
<https://www.ecatoday.co.uk/feature/146/To-AFDD,-or-not-to-AFDD>



## MYTH

AFDDs may cause nuisance tripping on “conventional arcing” from brushed motors or switching devices.

AFDDs are designed to avoid this: The product standard (BS EN 62606) includes tests to ensure unwanted tripping with typical loads does not occur.

These include tests using different loads such as motors, Switch Mode Power Supply's (SMPS) and lighting (including dimmers).



## MYTH

AFDDs are available for single-phase circuits only.

The product standard (BS EN 62606) also covers 3-phase AFDDs. Availability will depend on the manufacturer.

BS 7671 2018+A2:2022 Regulation 532.6 only requires AFDDs to be installed in single-phase circuits.



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## MYTH

AFDDs require a minimum load to function correctly.

Irrespective of the type of arc (series or parallel) an arcing current  $\geq 2.5$  A for sufficient time will cause operation of the AFDD". For series arc faults below 2.5 A an AFDD according to BS EN 62606 is not required to trip. However, this does not negate the need for an AFDD as the risk of a parallel arc fault greater than 2.5 A is very probable, irrespective of the low current load.



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