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**Single Blade Fire/Smoke
 Damper C/W Plate**



The FD-C Series

The FD-C Manual Operation Single Blade Fire Damper with volume control facility has been designed specifically for installations where space is at a premium. The testing and resetting of the damper and thermal fuse external of the duct allows for ease of commissioning and maintenance.

NB: Access panels may be required to comply with DW145 G.3.1.5.

The installation plate, with its engineered installation perforations, acts as a template to allow the marking of the fixing positions on the surface of the structure to which the plate will be affixed, allowing for a quick and efficient install.

- Conforms to fire damper product standard EN15650
- ES classified fire dampers with reduced smoke leakage characteristics EN 13501-3
- Aerodynamically Air Control tested to BS EN 1751
- Tested installation methods in differing supporting constructions (BS EN 1366-2)
- Integrated volume control capability
- Replaceable fusible link from outside of the ductwork
- Commissioning friendly
- External blade position indicator
- Damper casing sizes and tolerances conform to BS EN 1506



Single Blade Series

Single Blade Circular Fire Dampers - Introduction

The Single Blade Series

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Introduction

What is a fire damper and why might they be needed?

The FD-C Series Single Blade Circular Fire Damper is designed to stop the spread of fire through ducts, walls and floors.

The product range has many features and options to meet the requirements of specifiers, contractors, local and national authorities. Dampers are available to suit both low and medium velocity applications.

What are the 'E' and 'ES' classifications?

To achieve the classifications to EN13501-3, fire dampers and fire and smoke dampers shall meet product standard 15650 be tested to EN1366-2 where a 300Pa pressure difference is applied across the damper. During the fire test period, the integrity of the seal between the damper and the structure shall not have any gaps larger than 6mm x 150mm. There shall not be any sustained flaming. The largest size of damper to be manufactured for sale as a single section shall be fire tested.

E = Integrity

The maximum leakage permissible at 300Pa corrected to 20°C is 360m³/hr/m² (100 l/s/m²) throughout the fire test period.

ES = Integrity with Smoke Leakage Performance

The maximum leakage permissible at 300Pa corrected to 20°C is 200m³/hr/m² (55.5 l/s/m²) at ambient prior to the fire test and throughout the fire test period. In addition, for the ES classification to be attained, the smallest damper must also meet the 200m³/hr/m² maximum ambient leakage with a 300Pa pressure across the damper. (This is equivalent to just 0.55 l/s on a 100 dia. damper).

Fire dampers should be installed as tested.

FD-C Features and Benefits

- Tested and certified installation variants of the FD-C are available for dry walls, masonry walls and concrete floors.
- All tested installation methods give at least a E90 classification.

Testing and Conformities

CE marked to EN1366-2

See installation details for full details.

Tested and achieved classification to:

ES Classification (BS EN 1366-2/BS EN 13501-3)

- FD-C fitted with Installation Plate
 - ES120 (ve i ↔ O) - Blockwork/Masonry wall
 - ES90 (ve i ↔ O) - Dry Partition wall
 - ES120 (ho i → O) - Concrete floor
 - ES120 (ve i → O) - Batt Wall

FD-C Blade leakage (BS EN 1751)

- Class 2

FD-C Case leakage

- Eurovent 2.2 Class C

Corrosion testing (BRE)

- Tested and satisfies LPS1162
- Complying with test method BS EN 60068-2-11

Leakage Classification

Blade leakage classification is given numerically 1 - 4 and case leakage classification is given using capital letters A - C of EN1751 (sections C.2 and C.3).

The FD-C series damper meets Class 3 blade leakage section C.2 refers and Class C case leakage section C.3 of the EN1751 standard, section C.2 refers.

Normal operating conditions - not exceeding 1100Pa, Classes A, B & C of DW 144 2016 Specification will apply.

The FD-C Series Range

The FD-C series is available in the following case diameters:

100 - 100mm diameter	200 - 200mm diameter
125 - 125mm diameter	250 - 250mm diameter
150 - 150mm diameter	300 - 300mm diameter
160 - 160mm diameter	315 - 315mm diameter

Single Blade Circular Fire Dampers - Other Information

Typical Tender/Specification Text

The FD-C combination Fire and Volume Control Damper shall pass the test requirements stated in EN 1366-2 and conforms to the product standard for fire dampers EN15650.

For maintenance of the integrity of compartmentation the fire damper shall have an E classification to EN 13501-3.

The damper shall have an ES classification complying with EN1366-2 and EN 13501-3 and have a minimum ES90 rating.

Damper casings shall conform to BS EN 1506.

For the protection of escape routes and areas with sleeping risk, the FSD-C fire/smoke damper should be used. Please refer Approved Document B (ADB).

The single blade layered design shall be held open against a torsion spring that is released via a fusible link having an alloy component that melts at 72°C allowing the spring mechanism to close the damper.

The damper assembly and fusible link shall be safely tested and released closed externally to the damper without the need for specialist tools or access panels. NB: Access panels may be required to comply with DW145 G.3.1.5.

The fire damper body shall be stitch welded to meet the air tightness test requirements of HVCA specification. Normal operating conditions - not exceeding 1000Pa, Classes A & B of DW 144 2016 Specification will apply.

The closed blade shall meet the air tightness test requirement of BS EN 1751 Class 2.

The FD-C combination fire and volume control damper shall have a tested or assessed installation method that matches the requirement of the supporting construction. DW145 Method 4 Blockwork Walls, Dry Walls and Concrete Floors refers.

Weight Chart (kg approx.)

Nom. Dia. (mm)	320mm with inst. plate
100	1.2
125	1.6
150	2.0
160	2.1
200	2.8
250	4.0
300	5.0
315	5.1

Damper Free Area (fully open)

Model	Free Area	Model	Free Area
100	64%	200	85%
125	73%	250	88%
150	79%	300	91%
160	81%	315	91%

Micro Switch

The micro switch (SOLD SEPARATELY) to provide remote indication of the damper blade status. The micro switch is fitted on the opposite side to the operating handle where a purpose designed cam fitted to the protruding blade operating spindle allows the release of the micro switch actuating lever, allowing the snap action contacts 1NO + 1NC to change state.

Wiring connections are made via M3, 5 terminal screw fixings.

Mechanical life: 1 million cycles

Complies with EN60204 and EN292 standards

Electrical data:

Thermal current (Ith): 16A

Rated insulation voltage: 250VAC 300VDC

Protection against short circuits: fuse 10A 500V type gG

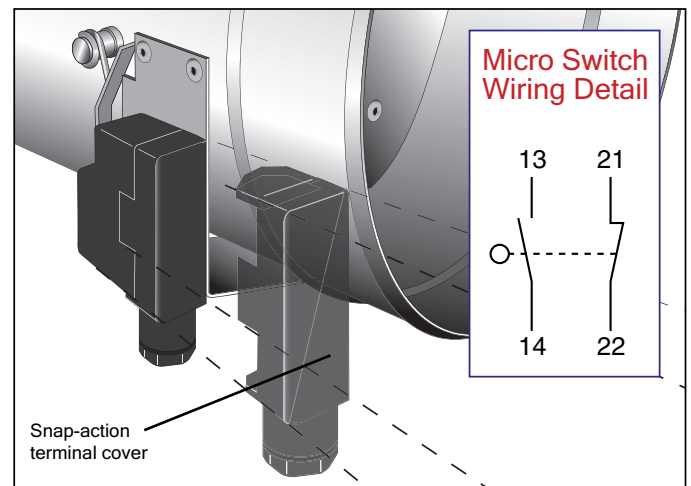
Utilisation categories:

Alternate current: AC15 (50 ... 60Hz)

Ue (V) 250
Ie (A) 5

Direct current: DC13

Ue (V) 24 125 250
Ie (A) 4 1,1 0,4



FD-C Series Dampers - Testing and Maintenance

FD-C Series dampers are designed for normal dry filtered air systems. A programme of planned inspections should be carried out to include full operational checks, correct interface with, and function of, any control systems, cleaning and light lubrication.

As a guide, this should take place on a maximum of six months intervals.

Reference should be made to BS 9999 for more information.

Records of damper installation and position shall be kept. Records of the condition of the dampers and their functionality/repair etc should be kept as these products come under the requirements of the Regulatory Reform (Fire Safety) Order (RRFSO).

These inspection and maintenance programmes may need to be repeated more regularly if the dampers are exposed to inclement/dusty conditions or fresh air intakes and the frequency of such checks should be reviewed based on site experience.

Storage

Dampers received on site should be stored in a purpose made storage area, where they can be protected from moisture, dust and impact damage until required.

FD-C Series

Single Blade Circular Fire Dampers - Product Specification

Case

Galvanised mild steel to BS EN 10346 DX 51D Z275 0.8 ± 0.1 mm
Damper casing conforms to BS EN 1506.

Fusible Link

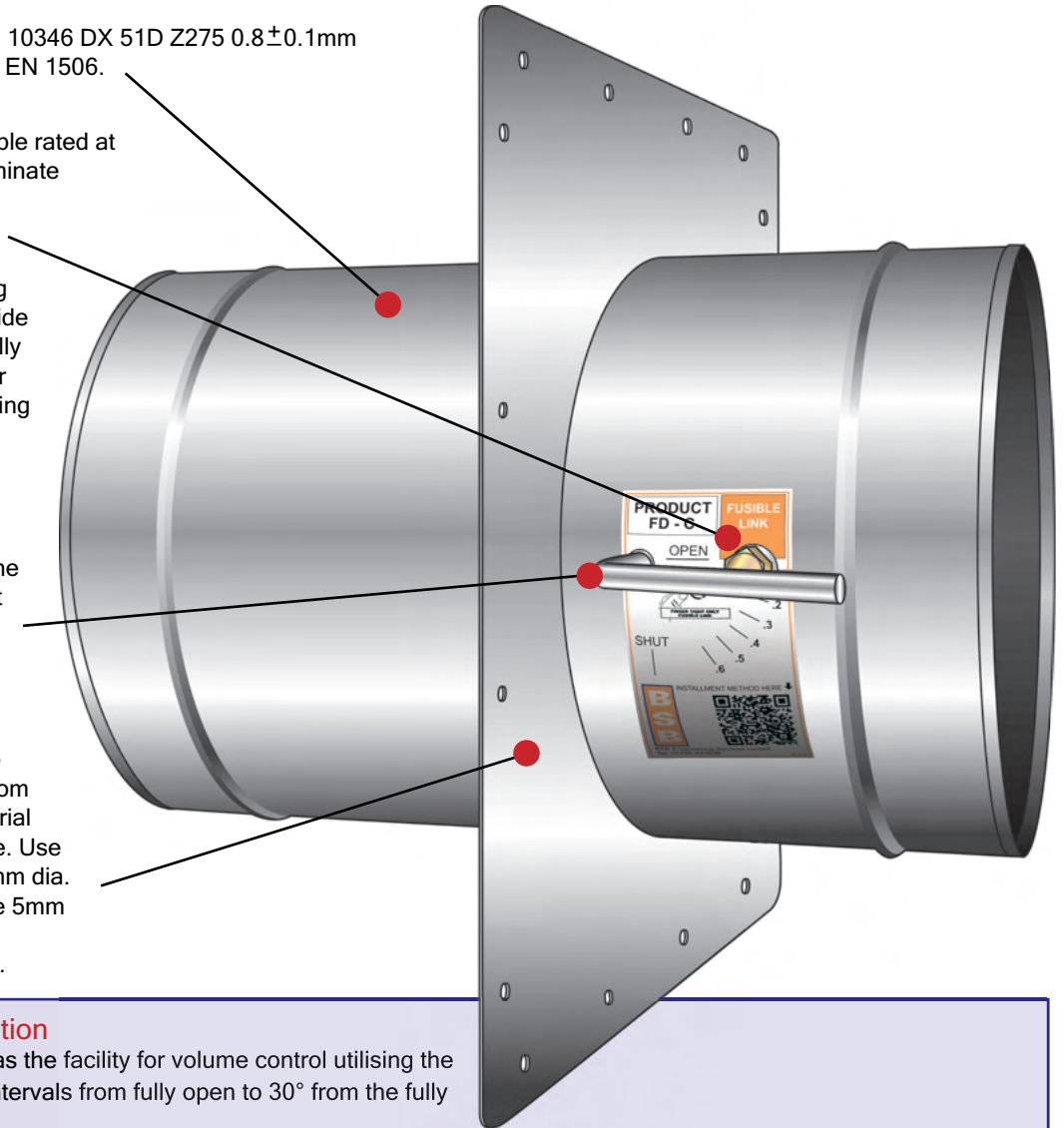
Fusible link externally replaceable rated at 72°C has been designed to eliminate linear creep of the solder joint. The thermal link is screwed into position via the 12.5mm diameter brass holder activating the locking assembly from outside the case in any position from fully open to fully closed, allowing air balance during the commissioning of the ducted system.

Handle

The handle is an 8mm dia. preformed 400 series ferritic stainless steel rod that allows the setting of the damper to any set point or fully open position. The blade angle is shown via the graduated affixed label.

Installation Plate

The installation plate allows the damper to be fixed into place from one side only with no infill material required on the non-handle side. Use either of the two appropriate 5mm dia. corner fixing holes and all of the 5mm dia. mid span fixing holes to secure the plate into position.



Volume Control Application

The FD-C manual damper has the facility for volume control utilising the seven presets at 10° steps/intervals from fully open to 30° from the fully closed position.

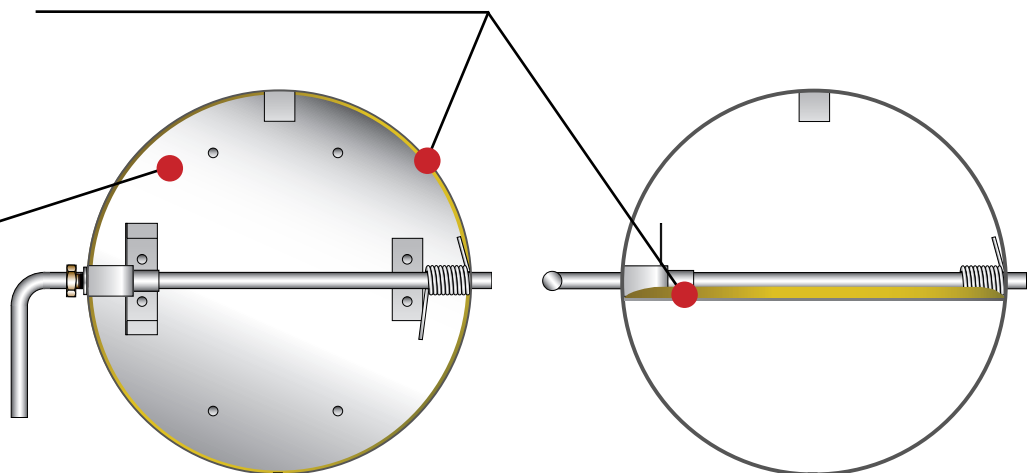
The operating handle has been designed to be in line with the blade orientation thus providing an accurate guide to the blade set or released position.

Blade Seal (patented)

Layered glass woven sheets and central intumescent disc to a patented design that allows the blade assembly to be of minimal thickness, thus minimising pressure loss with fully open damper, and an effective seal when fully closed to comply with EN 1366-2 achieving ES classification.

Blade

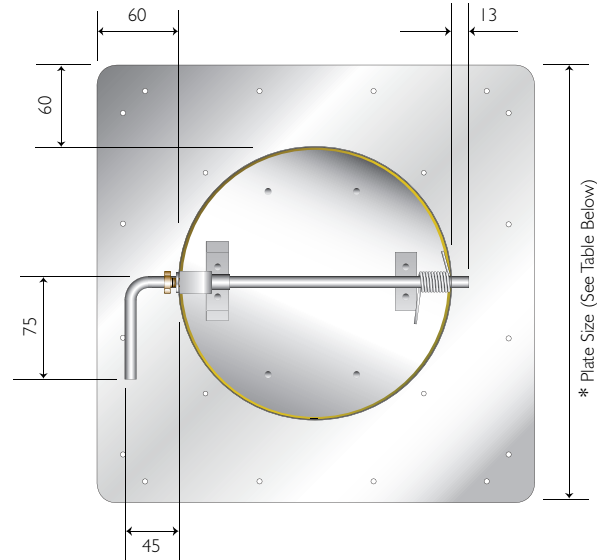
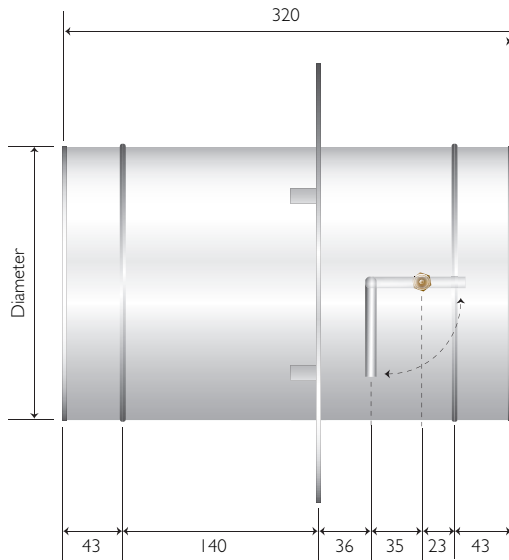
Galvanised 1.2mm one piece circular steel discs either side of the patented seal design providing a 5mm thick assembly affixed by blade brackets to the reset handle.



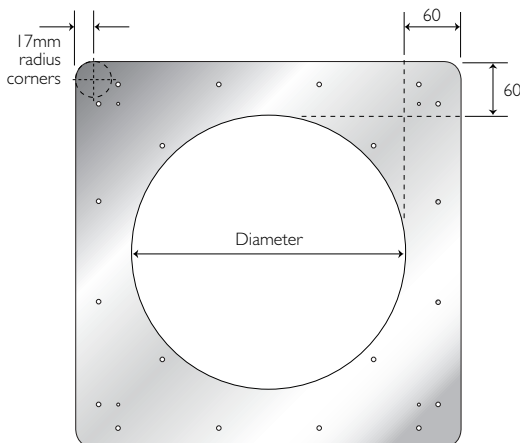
Blade Closed

Blade Open

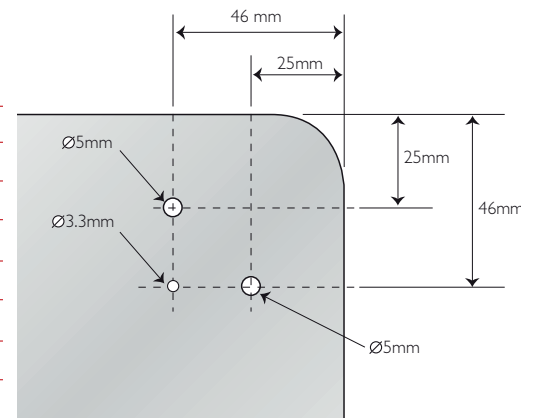
The FD-C Series - MANUAL Operation with Installation Plate



Installation Plates



Dia. (mm)	Square Plate Size (mm)
100	220
125	245
150	270
160	280
200	320
250	370
300	420
315	435



NB: Use either of the two appropriate 5mm dia. corner fixing holes and all of the 5mm dia. mid span fixing holes to secure the plate to the steelwork within the dry wall/into masonry wall/floor.

Cleats

Rotatable cleats are available as an optional accessory where requested and will be provided factory fitted as shown right.

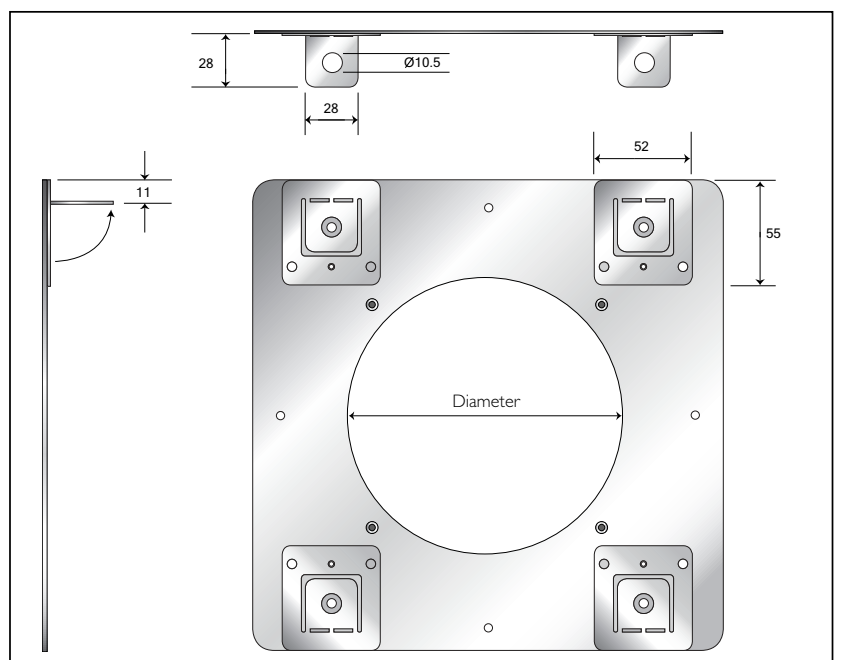
The FD-C series damper must be installed as per installation, operating and maintenance document to comply with CE marking.

The use of cleats as the sole installation/support method will not comply with CE marking rules.

Where cleats are requested to be fitted and local authority approval has been given, the drop rod system will be the responsibility of others.

Fixing Kit

Fixing cleat (4) kits are available for retro fixing, please refer to the sales office.



FD-C Series

Single Blade Circular Fire Dampers - Rotatable Cleats

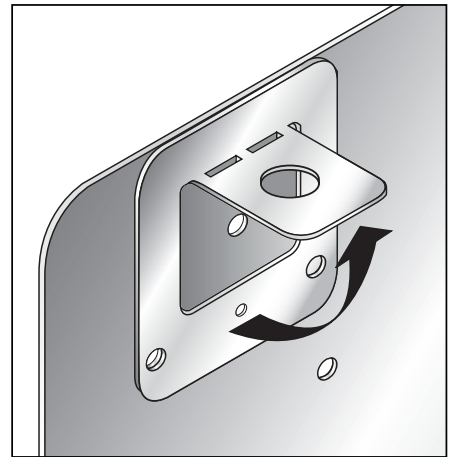
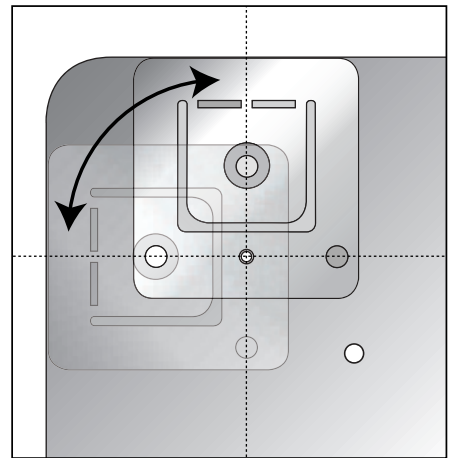
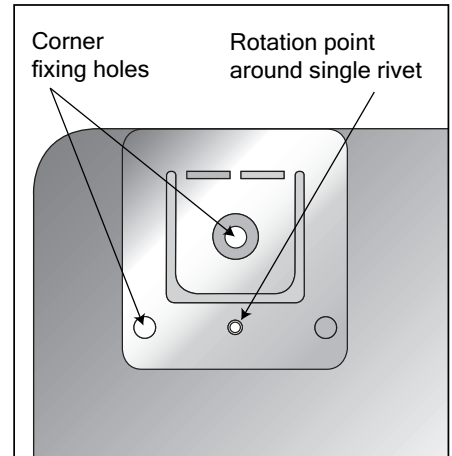
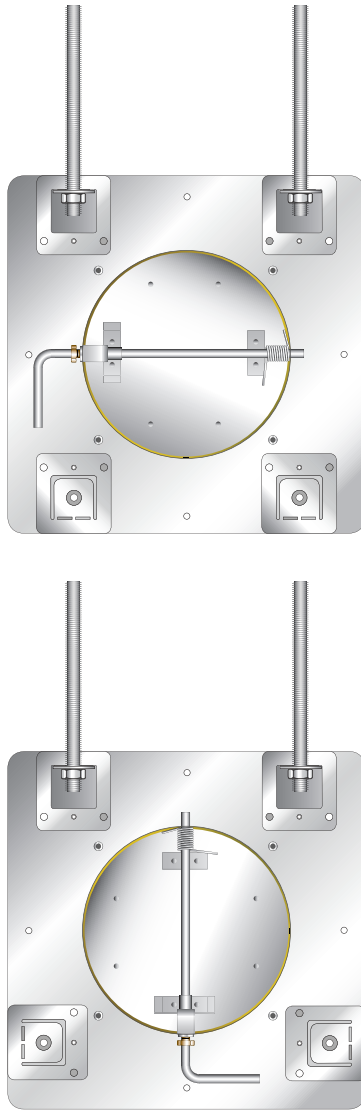
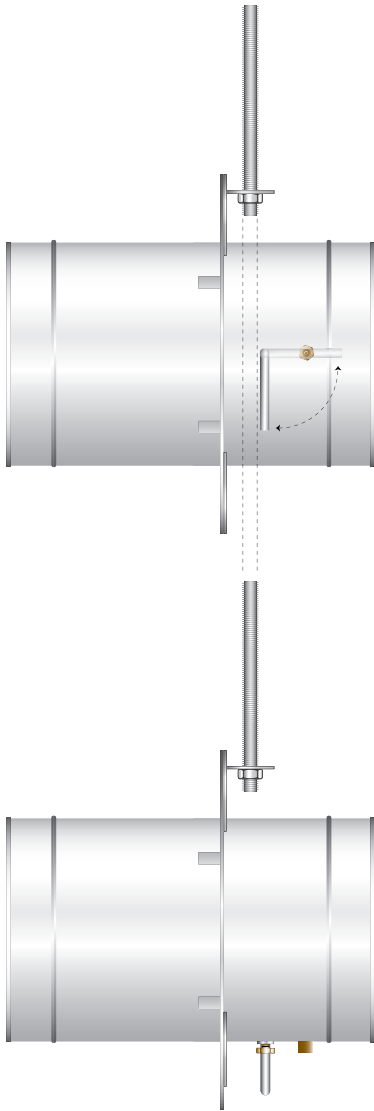
Rotatable Easy Bend Cleats

The optional Rotatable Cleat Easy Fix System will be supplied factory fitted to the FD-C Series dampers.

The installation plate should be fitted to the fire separation barrier to ensure test conformity is maintained. The Easy Bend Cleat is available factory fitted four per plate. The cleats should only be used where the fire separation element is not yet in place, offering a temporary installation support. The cleats must not be the sole independent method of supporting the fire damper.

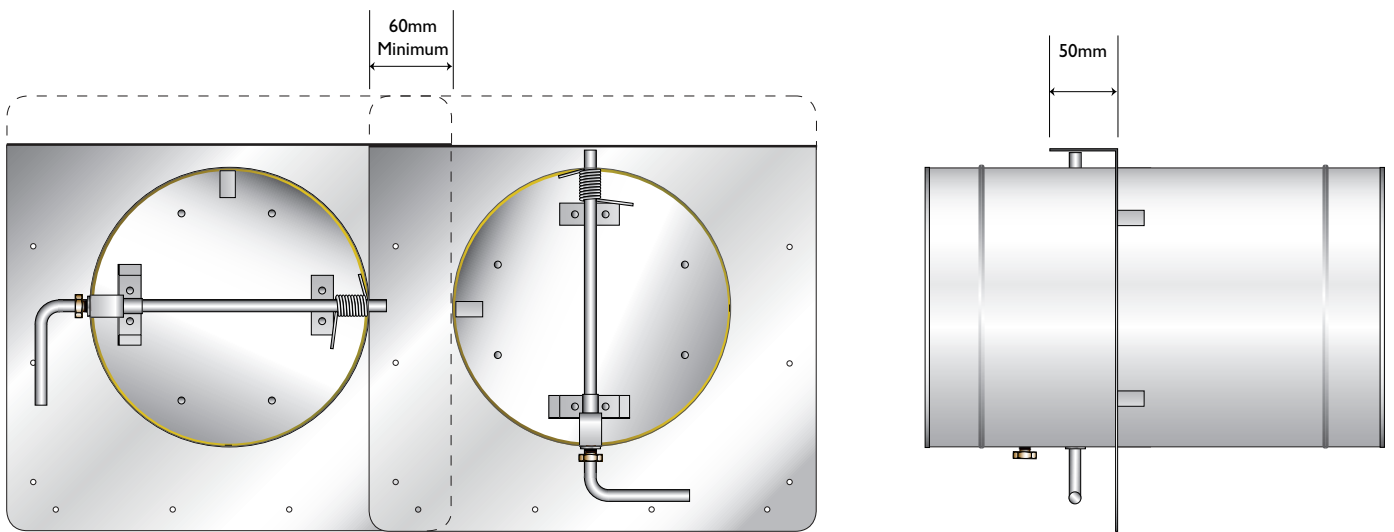
The cleats can easily be bent out using a flat head screwdriver. Supporting drop rods are used in the normal way.

The cleats can be rotated through 90 degrees to suit handle position where the damper requires to be installed with the handle of either left, right, top or bottom giving full flexibility during installation.



Single Blade Circular Fire Dampers - Ablative Batt Installation Method

Folded Installation Plate

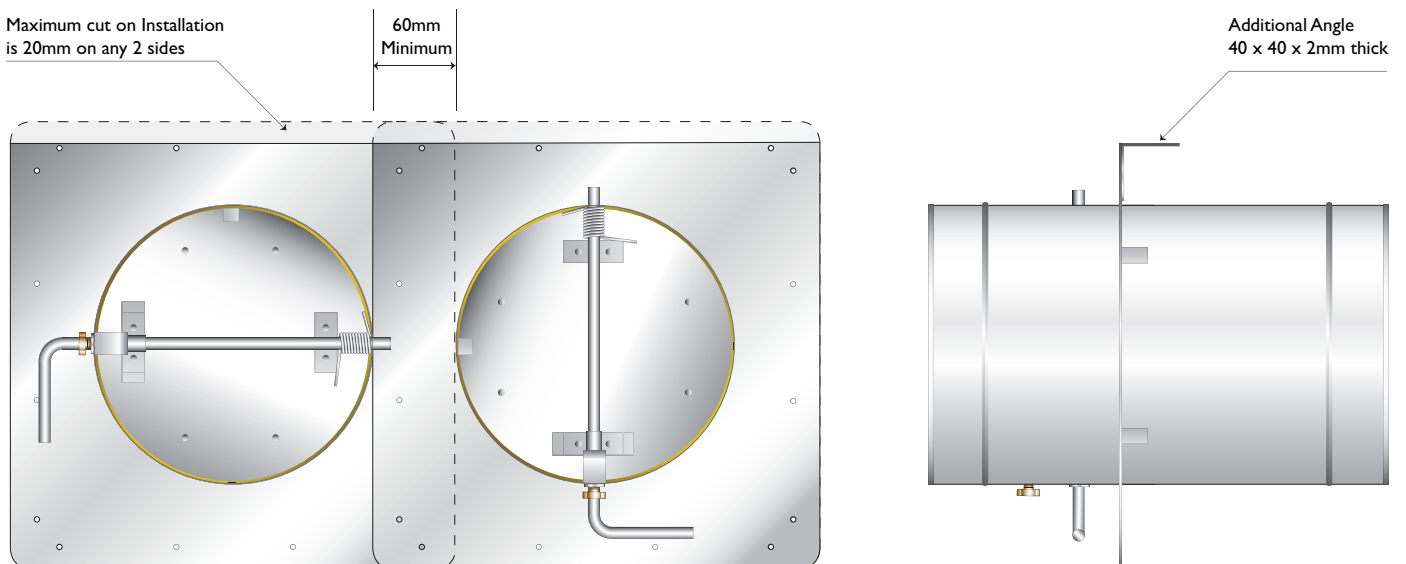


The top installation plate can be folded forward and the side adjacent installation plates, overlapping to allow dampers to be installed close together.

Benefits

- Suitable for ducting close to a ceiling or underside of a floor.
- Minimal separation gap between adjacent dampers(s) and walls.
- Vertical or horizontal blade orientation
- No additional construction/support design required.

Cut Installation Plate



The top of the installation plate and one side can be trimmed down by 20mm. The top of the installation plate will be fixed to a mild steel angle, with the three sides affixed as detailed in the installation drawings.

Benefits

- Suitable for ducting close to a ceiling, wall or underside of a floor.
- Minimal separation gap between adjacent dampers(s) and walls.
- Vertical or horizontal blade orientation
- No additional construction/support design required.

FD-C Series

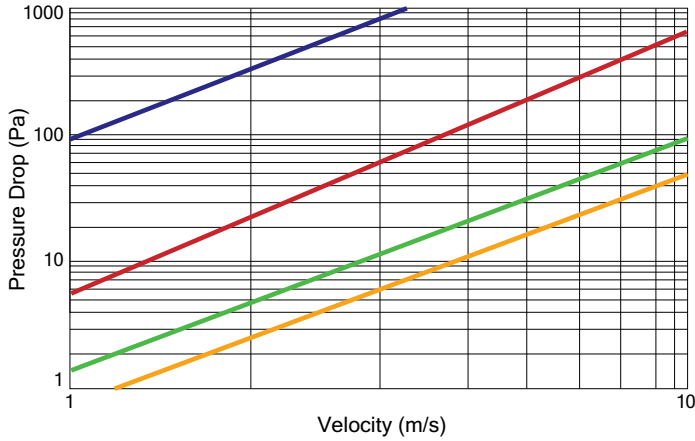
Single Blade Circular Fire Dampers - Performance Data

Performance Data

Pressure Drop Graph

100mm diameter. Free area = 64%
Velocity range 0 to 10 m/s

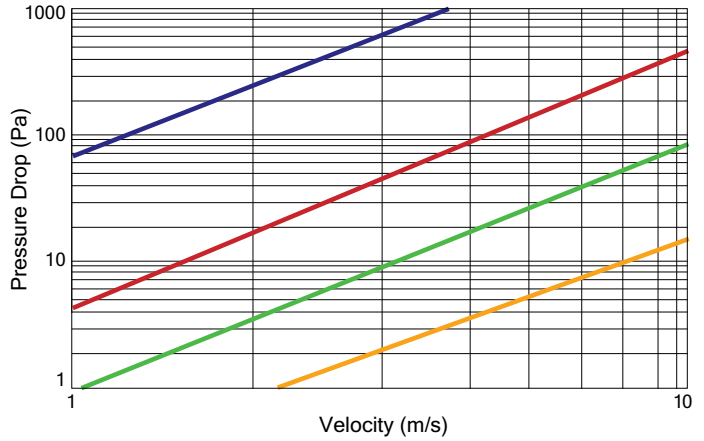
- 67.5° from open
- 45° from open
- 22.5° from open
- Fully open



Pressure Drop Graph

200mm diameter. Free area = 85%
Velocity range 0 to 10 m/s

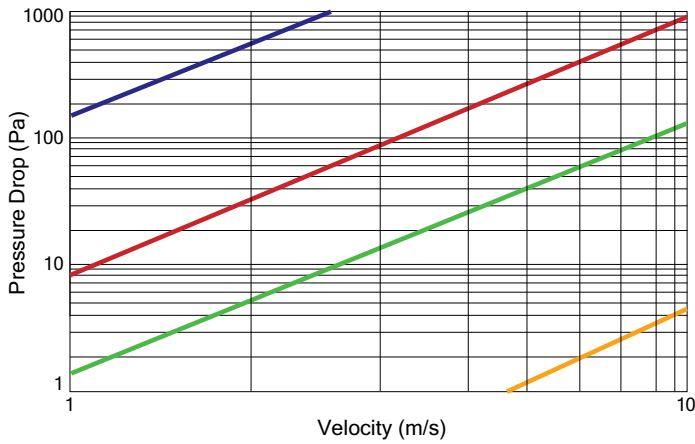
- 67.5° from open
- 45° from open
- 22.5° from open
- Fully open



Pressure Drop Graph

300mm diameter. Free area = 91%
Velocity range 0 to 10 m/s

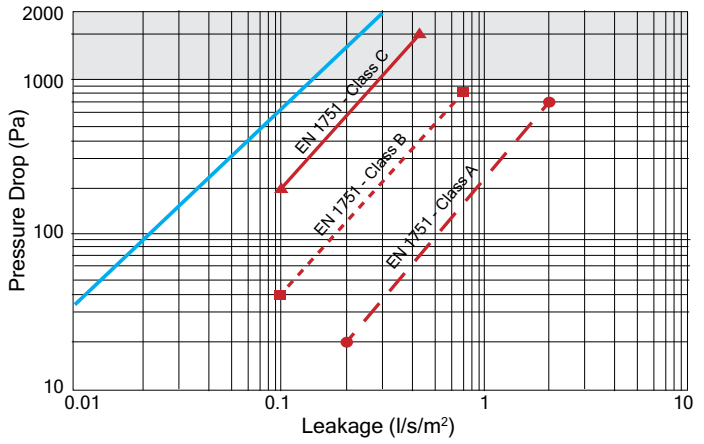
- 67.5° from open
- 45° from open
- 22.5° from open
- Fully open



Case Leakage Curve

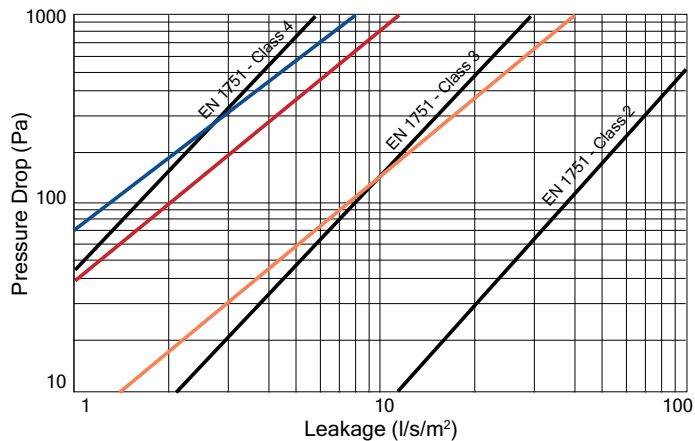
Model 100 to BS EN 1751

Shaded area - above 1000Pa for system pressure test only.
Normal operation maximum 1000Pa

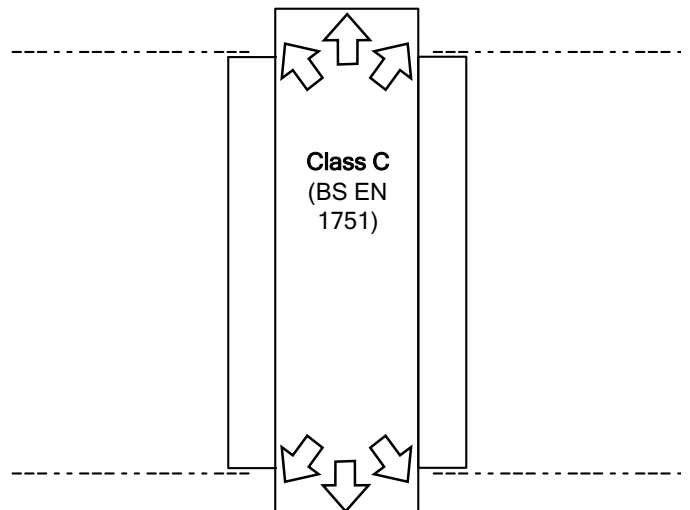


Blade Leakage Graph

- 300mm dia.
- 200mm dia.
- 100mm dia.



Ambient Case Leakage



FD-C in Blockwork Wall

Tested to BS EN 1366-2

The FD-C series damper has been tested both ways, with access side inside the furnace and non-furnace side.

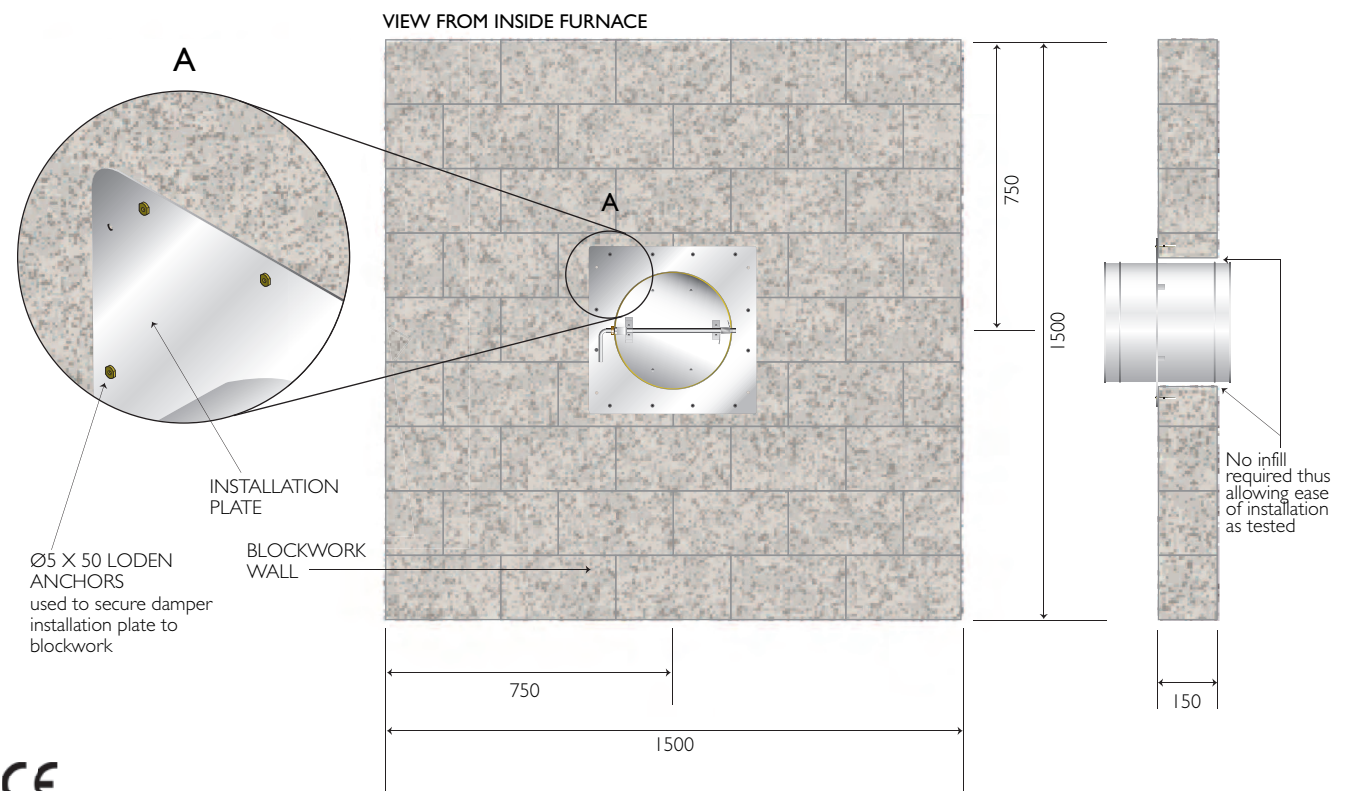
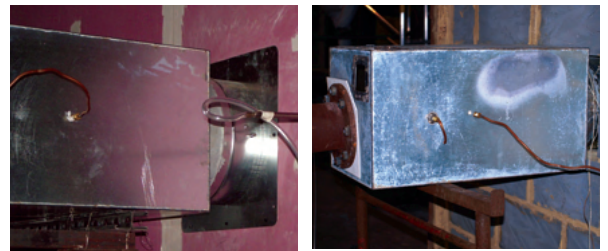
Test Conclusions:

The FD-C damper satisfied the requirements of BS EN 1366-2 and BS EN 13501-3.

Dampers were tested affixed to the non furnace side of the furnace wall with the damper closed blade being fully exposed to the furnace rapid rising temperature.

The achieved ES classification ensures that in a fire condition the non fire side is fully protected (from radiated heat) for the achieved period, providing vital time for the emergency services to respond, ensuring safe passage of escape and protection of contents.

- Tested to BS EN 1366-2 and classified to BS EN 13501-3
- DW145 Method 4 refers
- ES120 integrity and leakage classification
- Complies with classes A, B & C of DW144 and BS EN 1751
- Fire and Volume Control dual function



FD-C Series

Single Blade Circular Fire Dampers - Product Testing

FD-C in Dry Wall

Tested to BS EN 1366-2

The FD-C series damper has been tested both ways, with access side inside the furnace and non-furnace side

Test Conclusions:

The FD-C damper satisfied the requirements of BS EN 1366-2 and BS EN 13501-3.

Dampers were tested from both sides of the furnace wall.

The FD-C single blade combination fire and volume control damper with its unique feature of requiring only a single installation plate when being installed within tested applications, and without the need for any infill between the damper body and the structure that it sits within.

- Tested to BS EN 1366-2 and classified to BS EN 13501-3
- ES90 integrity and leakage classification.
- Complies with classes A, B & C of DW144.
- Fire and Volume Control dual function

VIEW FROM NON-FURNACE SIDE

