

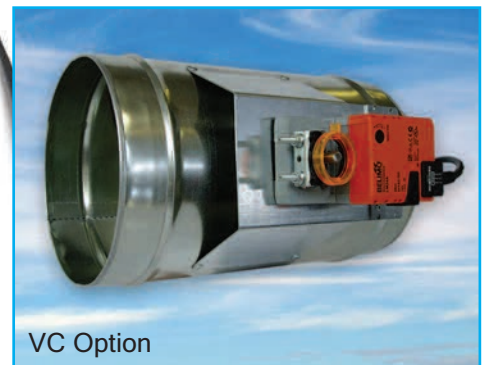
FSD-C Series



Circular Single Blade Externally Resettable Combination Fire and Smoke and Volume Control Damper

PATENT APPLIED FOR

- ES classified fire dampers with reduced smoke leakage characteristics to BS EN 1366-2 (test standard) and BS EN 13501-3 (extended field of application)
- Aerodynamically Air Control tested to BS EN 1751
- Tested and assessed installation methods in differing support constructions BS EN 1366-2
- Integrated volume control capability
- Can be installed from one side of the fire separation without the need to fit a secondary installation plate or provide fire-rated infill material
- Replaceable thermal fuse element from outside of the duct.
- Commissioning friendly
- Blade Position Indicator
- IP54 degree of protection
- Momentary toggle test switch for periodic damper testing
- LED green indication when lit indicates that a supply voltage is present and that the temperature fuses are operational
- Damper casings conform to BS EN 1506
- CE marked complying with the requirements of EN 15650



MANUFACTURERS OF AIR, FIRE AND SMOKE CONTROL PRODUCTS



The FSD-C Series

The FSD-C Motorised Failsafe Single Blade Fire/Smoke Damper with adjustable blade position has been designed specifically for installations where space is at a premium and installation within the fire separation is not feasible.

The FSD-C Single Blade Fire/Smoke Damper provides greater free area than comparable sized conventional multi blade fire/smoke dampers.

This Fire and Smoke damper has the flexibility of being a volume control damper with the facility that allows air balance and the setting of the damper blade position during system commissioning via the fitted actuator.

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

Introduction

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

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

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/medium and high velocity applications.

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

To achieve the classifications to EN13501-3, fire dampers and fire and smoke dampers shall be tested to EN1366-2 and 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 150mm x 6mm. 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 leakage with a 300Pa pressure across the damper. (This is equivalent to just 0.55 l/s on a 100x100 damper)

Fire dampers should be installed as tested.

Some applications (fan off) allow the use of tests undertaken to BS 476-20/22 and this is also allowed worldwide in areas outside of the EU. Test reports showing testing to EN 1366-2 should be acceptable to meet the requirements of BS 476-20/22, but the reverse is definitely not the case and no classifications are available.

However, as a word of caution, in whichever case, the correct model must be selected, to match fire resistance time with installation method and with the supporting construction (wall or floor).

To ensure that all testing and assessments are traceable back to initial fire test reports, the BSB FSD-C series is product certificated by the Loss Prevention Certification Board (LPCB). This means that in addition to normal BS EN ISO 9001 compliance, the product is also checked to ensure that same product is being manufactured that has been tested or assessed.

BSB have a policy of continued testing and product certification to try and provide as broad a number of installation methods as possible. BSB also follow regulation and standards development very carefully to provide input on changes and to be able to pass on relevant information to designers, specifiers, building control authorities (BCA's) and installers.

FSD-C Features and Benefits

- Tested and certified installation variants of the FSD-C are available for both blockwork and stud partitions.
- All BSB tested installation methods give at least a E90 classification.
- Unique blade construction.
- Halogen free LSF cable
- Exceeds the requirements of EN1366-2
- Integrated volume control capability
- Reduced commissioning time
- Thermal fuse replaceable external to the duct.
- Test switch integral to the thermal fuse allowing the damper to be tested locally and individually.
- LED indication that power is available to the actuator and the thermal fuse is intact.
- Installation plate with template location holes to allow easy installation.

Testing and Conformities

Tested to EN1366-2. See installation details for full details. Damper casings conform to BS EN 1506
Tested/assessed and achieved equivalent classification to:

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

- BSB FSD-C fitted with Installation Plate
- E180 - Blockwork/Masonry wall
- ES120 - Blockwork/Masonry wall
- ES90 - Concrete floor
- ES120 - Horizontal application (please refer to BSB sales office)
- ES90 - Horizontal application (please refer to BSB sales office)
- E120 - Dry Partition wall
- ES120 - Dry Partition wall

Integrity only (BS 476-20/22 - ADB)

Meets the requirements of BS 476-20/22 -

Refer to BS 476-10.6.6.3

FSD-C Blade leakage (BS EN 1751)

- Class 2

Corrosion Testing

BBA test report 50447 issue 2 refers

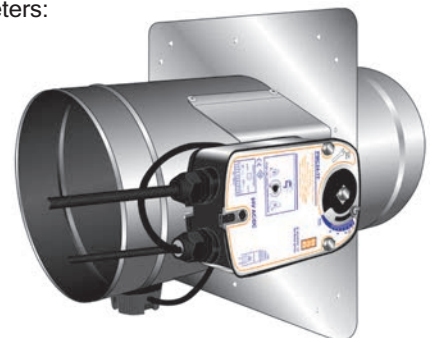
- Tested to BS EN 60068-2-11:1999



The FSD-C Series Range

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

- FSD-C100 - 100mm dia.
- FSD-C125 - 125mm dia.
- FSD-C150 - 150mm dia.
- FSD-C160 - 160mm dia.
- FSD-C200 - 200mm dia.
- FSD-C250 - 250mm dia.
- FSD-C300 - 300mm dia.
- FSD-C315 - 315mm dia.



Typical Tender/Specification Text

The BSB FSD-C combination Fire and Volume Control Damper shall pass the test requirements stated in EN 1366-2.

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 E120 and ES120 rating.

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 the constant force of the fitted actuator that is released to spring closed via the activation of the fitted thermal fuse rated at 72°C.

The damper actuator assembly shall be safely tested and released closed externally to the damper without the need for specialist tools.

The fire damper body shall be fully welded to meet the air tightness test requirements of HVCA specification DW144 to class A B & C to a maximum of 1000Pa and comply with EN1751.

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

The BSB 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 and Partition Walls refers.

Leakage Classification

Blade leakage classification is given numerically and case leakage classification is given using capital letters.

- Class 4, 3, 2 or 1 refers to blade leakage - EN1751 section C.2 refers
- Class 4 achieving the lowest leakage.
- Class A, B or C refers to casing leakage - EN1751 section C.3 refers
- DW144 part 8 table 17 and figure 178 refers.
- Class C achieving the lowest leakage at elevated pressures.

The above references are illustrated in the graphs on Pages 10, 11 and 13 of this brochure.



Thermal Fuse

The BSB PMC24-TF and PMC230-TF actuators incorporate a thermal fuse (TF) via a 500mm long cable factory fitted to the damper actuator which operates at 72°C. This is in accordance with BS 9999 and BS 5588 Part 9.

The TF is fitted with a green LED indication light which provides a quick visual check that the actuator is receiving power and that the TF is intact. Also included is a manual sprung test switch for periodic testing of the damper. For safety reasons the TF is designed to operate only once upon reaching the activation temperature. Cutting the cable to the TF with the power on will trip an electrical fuse within the actuator, rendering it inoperable.

FSD-C Variants

FSD-C SC

The FSD-C SC Series damper provides control of elevated air temperatures where smoke may be present.

The woven blade core material forms an effective seal in the closed position where the damper is exposed to temperatures up to 280°C continuous or 400°C for one hour.

Where the damper is operated to the open position to allow the free flow of air, the damper can withstand higher temperatures. Should the damper require to be reclosed following exposure to temperatures greater than 400°C, the effectiveness of the seal may be reduced.

The damper's single blade construction maximises the free area available ensuring the lowest possible pressure drop.



FSD-C VC

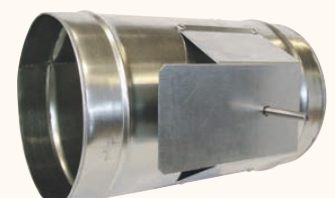
The FSD-C VC option with its purpose design blade core provides low closed blade leakage and volume control of normal dry filtered air systems.

Through the use of factory fitted on/off, modulating or spring return actuators, the VC option provides flexibility and an economical solution where space is at a premium allowing the installer to choose the optimum position for the controls.



FSD-C ESC

The FSD-C ESC option provides an extended spindle for control by others, offering the same performance as the VC option.



FSD-C Series

Single Blade Fire and Smoke Dampers - Product Specification



Installation Plate

The installation plate allows the damper to be fixed into place from one side only with no infill material being required.

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.

(Note: Option without installation plate is not CE marked)

Case

Galvanised mild steel to BS EN 10346 DX 51D Z275

0.6mm thick for 100mm dia. to 250mm dia.

0.7mm thick for 300mm dia. to 315mm dia.

Thermal Fuse

Thermal Fuse rated at 72°C is factory fitted and is replaceable external to the damper case. The thermal fuse is fitted with a green LED indication light which provides a quick visual check that the actuator is receiving power and that the thermal fuse is operational. A manual sprung test switch for periodic testing of the damper is also included.

Blade Seal (patent pending)

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, providing an effective seal 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 drive spindle. Grade 430 stainless steel blade option available.

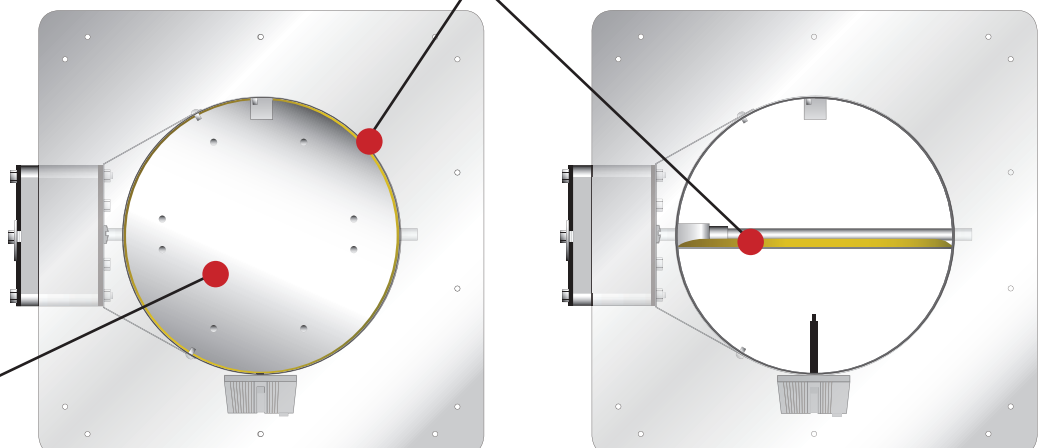
PMC-TF Actuator

The PMC-TF actuator is a spring return actuator that additionally allows the setting of the blades during commissioning of the system from fully open 90° to 30° from closed. The PMC-TF actuator is available as 24 volt or 230 volt.

Volume Control Application

The FSD-C Fire/Smoke damper has the facility to additionally allow air balancing and the setting of the blade position during commissioning via the fitted actuator using the "damper open set position adjustment".

Dampers can be set so that the open blade position is restricted between 30° and 90° (60° range) whilst still retaining fail safe spring closure in an alarm condition or power failure.



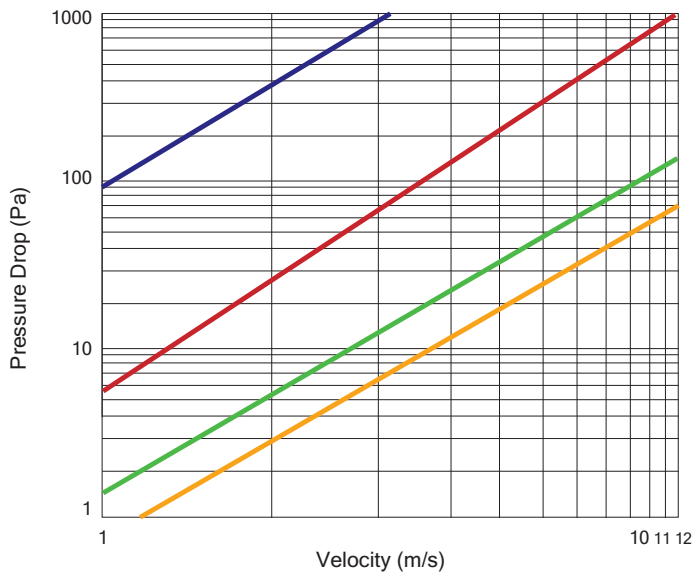
Performance Data

Pressure Drop Graph - Model FSD-C100

100mm diameter.

Free area = 64%

Velocity range 0 to 10 m/s

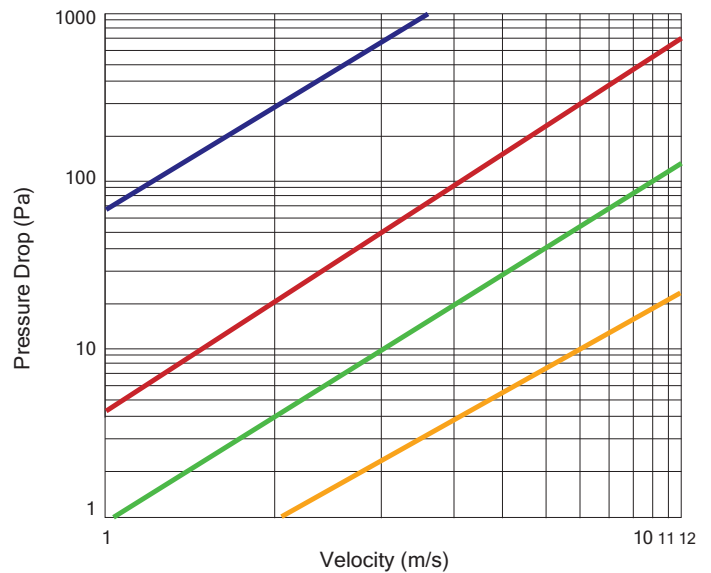


Pressure Drop Graph - Model FSD-C200

200mm diameter.

Free area = 85%

Velocity range 0 to 10 m/s

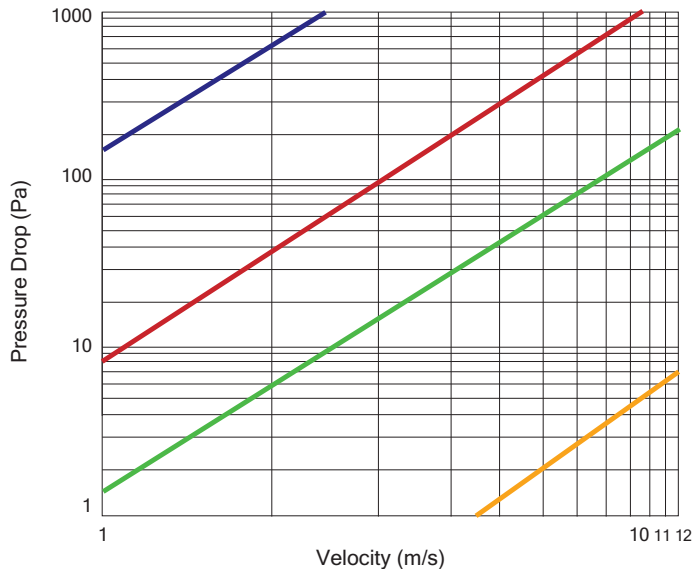


Pressure Drop Graph - Model FSD-C300

300mm diameter.

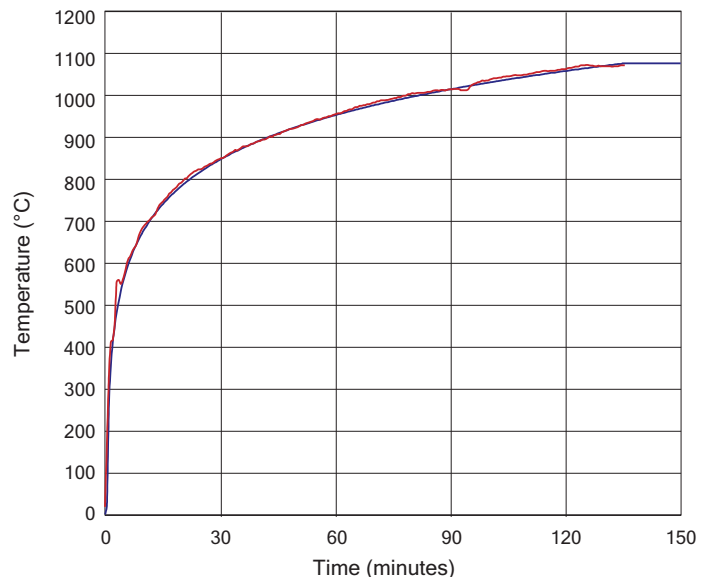
Free area = 91%

Velocity range 0 to 10 m/s



Time / Temperature Curve - EN13501-4:2007

Standard Curve (blue line) and BRE Test 279799 (red line).



Damper Weight Chart

(kg approx.)

Nom. Dia. (mm)	320mm no inst.plate	320mm with inst. plate	420mm no inst.plate	420mm with inst. plate
100	0.7	2.7	2.5	2.8
125	1.0	3.0	2.7	3.2
150	1.2	3.3	3.1	3.5
160	1.2	3.3	3.2	3.5

Motor Weights:

PMC24-TF / PMC230-TF: 1.7kg PMC24-NTF / PMC230-NTF: 1.8kg

Nom. Dia. (mm)	320mm no inst.plate	320mm with inst. plate	420mm no inst.plate	420mm with inst. plate
200	1.8	4.0	3.7	4.3
250	2.6	4.9	4.6	5.3
300	3.7	6.2	5.7	6.6
315	4.0	6.6	6.1	7.0

FSD-C Series

Single Blade Combination Fire and Smoke Dampers - Product Dimensions

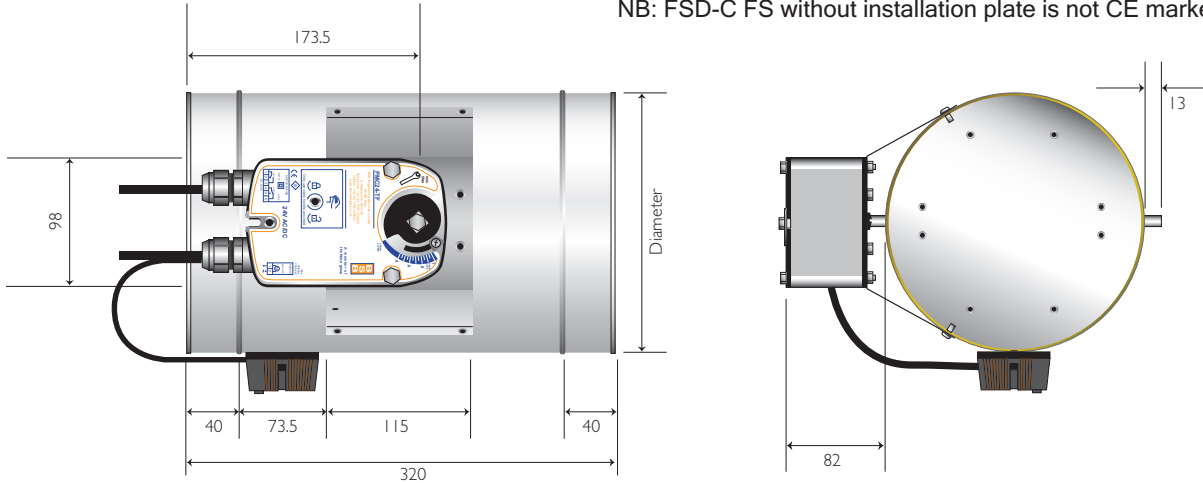


The FSD-C FS Series - Fire/Smoke Damper

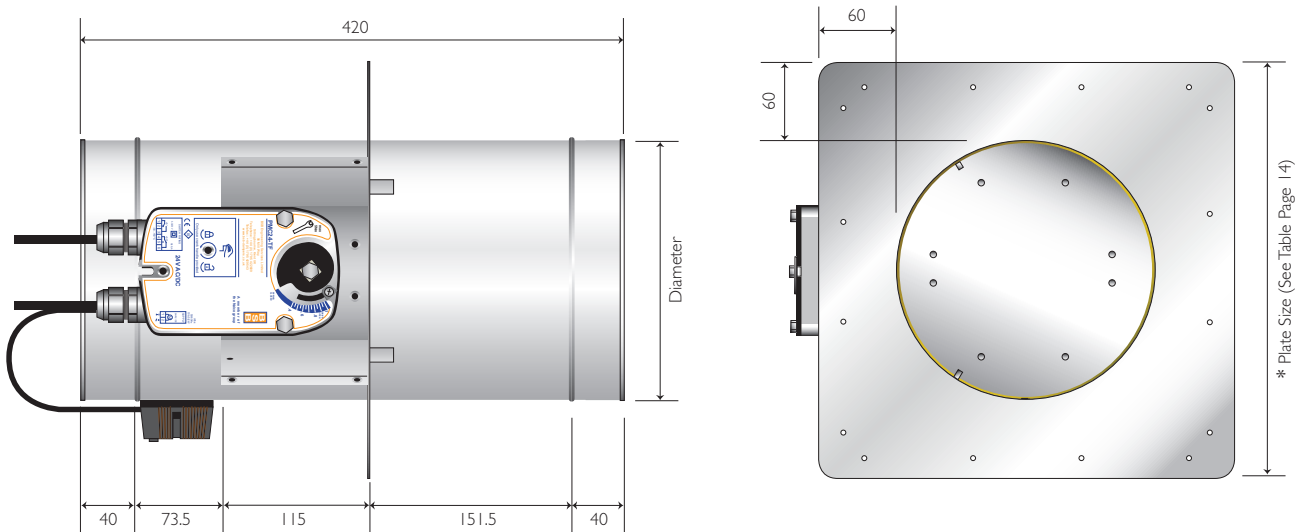
FSD-C FS Without Installation Plate

Note: All dimensions are nominal and may change due to varying coil widths

NB: FSD-C FS without installation plate is not CE marked



FSD-C FS With Installation Plate



The FSD-C FS Fire/Smoke Damper is supplied fitted with either a PMC24-TF or PMC230-TF spring return actuator where the damper fail safe operation is via a thermal fuse or purpose supplied damper control panel

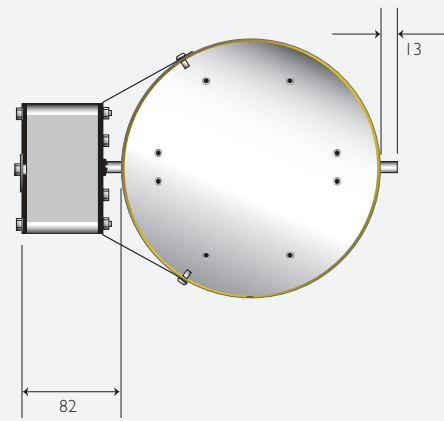
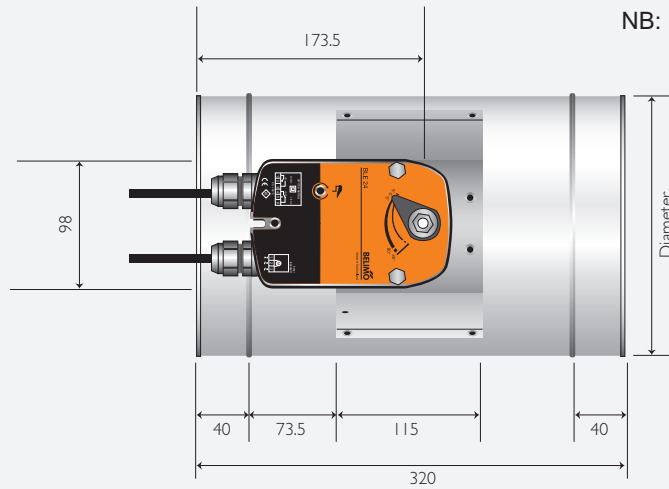
	PMC24-TF (as illustrated)	PMC230-TF
Voltage	24volt AC/DC	230volt AC
Power Consumption	Operating: 5W (watts); At rest: 2.5W (watts)	Operating: 6W (watts); At rest: 3W (watts)
Cable Fitted Power:	1m, 2 x 0.75mm ²	1m, 2 x 0.75mm ²
Cable Fitted Aux. Switch: (Cables are halogen free)	1m, 6 x 0.75mm ²	1m, 6 x 0.75mm ²
Control	Spring return closed	Spring return closed
Torque	Motor: 6Nm Spring Return: 4Nm	6Nm 4Nm
Running Time:	Motor: 40 seconds Spring Return: 15 seconds	40 seconds 15 seconds
Sound Power Level	Max. 45dB Spring Return: ~62dB (A)	Max. 45dB ~62dB (A)
Operating Temp. Range	-30°C to +50°C	-30°C to +50°C
Degree of Protection	IP54	IP54
Mounting	Actuator coupling is located onto a 12mm square on the 8mm dia shaft and secured by two bolts through the actuator into rivet nuts affixed to the three position mounting bracket. A centre bolt and pointer are also used.	

The FSD-C SC Series - Control Damper

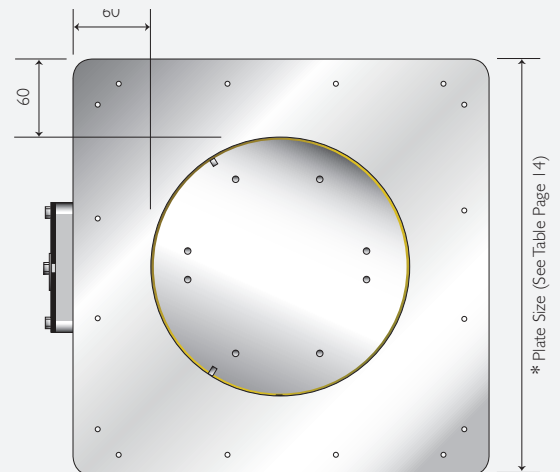
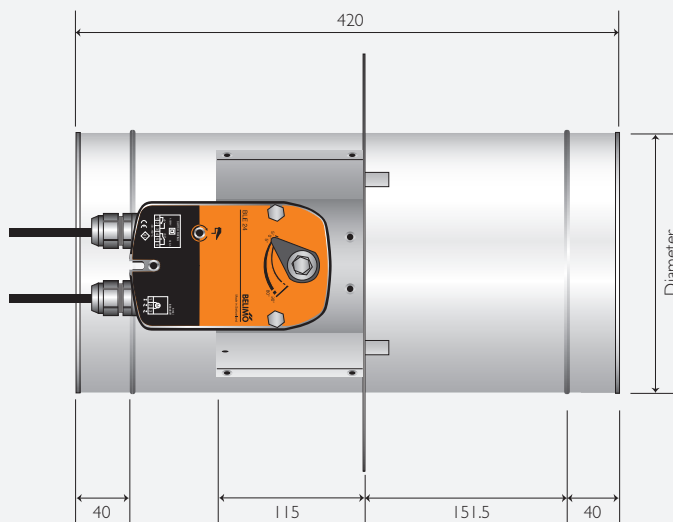
FSD-C SC Without Installation Plate

Note: All dimensions are nominal and may change due to varying coil widths

NB: FSD-C SC without installation plate is not CE marked



FSD-C SC With Installation Plate



The FSD-C SC Control Damper with its low cold smoke leakage performance when in the closed position is suitable for use in fire rated ventilation ducts. The FSD-C SC Control Damper is supplied fitted with a BLE24 or BLE230 spring return actuator.

	BLE24	BLE230
Voltage	24volt AC/DC	230volt AC
Power Consumption	Operating: 7.5W (watts) At rest: <0.5W (watts)	Operating: 5W (watts) At rest: <1W (watts)
Cable Fitted (halogen free)	1m, 3 x 0.75mm ²	1m, 3 x 0.75mm ²
Control	Open/close operation	Open/close operation
Torque Motor:	Min. 15Nm nominal voltage	Min. 15Nm nominal voltage
Running Time: Motor:	<30 seconds for 90° ↻	<30 seconds for 90° ↻
Sound Power Level	Max. 62dB (A)	Max. 62dB (A)
Operating Temp. Range	-30°C to +50°C	-30°C to +50°C
Degree of Protection	IP54	IP54

Actuator coupling is located onto a 12mm square on the 8mm dia shaft with two bolts through the actuator into rivet nuts to secure the actuator. A push fit pointer is included.

FSD-C Series

Single Blade Fire and Smoke Dampers - Product Dimensions

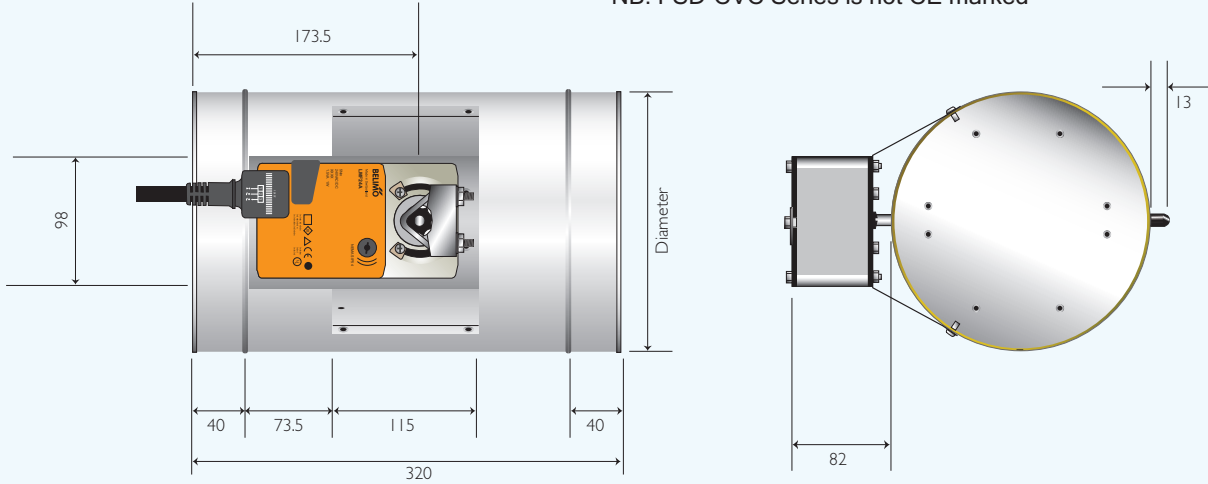


The FSD-C VC Series - Volume Control Damper

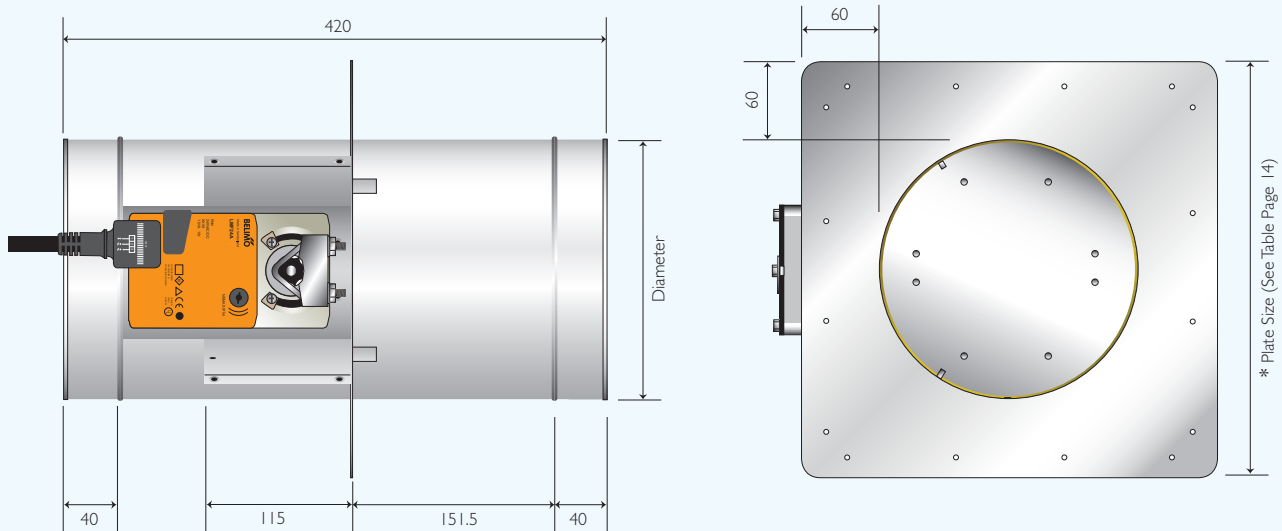
FSD-C VC Without Installation Plate

Note: All dimensions are nominal and may change due to varying coil widths

NB: FSD-CVC Series is not CE marked



FSD-C VC With Installation Plate



The FSD-VC Volume Control Damper option will be supplied with a choice of three standard actuator options. The damper allows for the balancing/regulating of ducted airflows where space is at a premium and where aesthetic appearance in open plan installations is an important factor. The smooth lines allow for external insulation where required by others.

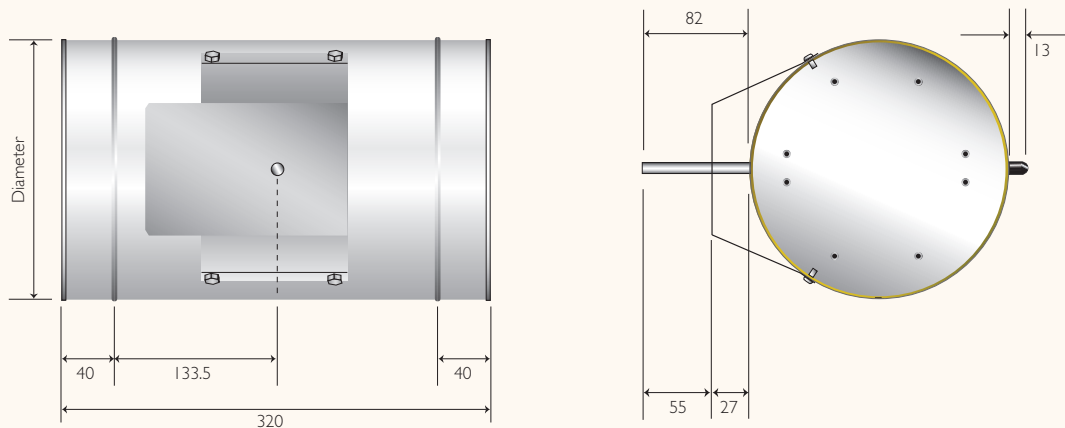
	LM24A (as illustrated)	LM24A-SR	LF24A
Voltage	24volt AC/DC (230V option available)	24volt AC/DC (230V option available)	24volt AC/DC (230V option available)
Power Consumption	Operating: 1.0W (watts); At rest: 0.2W (watts)	Operating: 1.0W (watts); At rest: 0.4W (watts)	Operating: 5.0W (watts); At rest: 2.5W (watts)
Cable Fitted	1m, 3 x 0.75mm ²	1m, 4 x 0.75mm ²	1m, 2 x 0.75mm ²
Control	Open/close operation	Modulating DC 0 to 10V	Spring return closed
Torque	5Nm	5Nm	4Nm
Running Time	150 seconds	150 seconds	Driving open: 40 - 75 seconds Spring closed: 20 seconds
Sound Power Level	35dB	35dB	Driving open: 50dB Spring closed: 62dB
Operating Temp. Range	-30°C to +50°C	-30°C to +50°C	-30°C to +50°C
Degree of Protection	IP54	IP54	IP54
Mounting	Mounting to damper spindle via a universal spindle clamp and the use of the supplied anti-rotation bar ensures secure fixing.		

The FSD-ESC Series - Extended Spindle Control

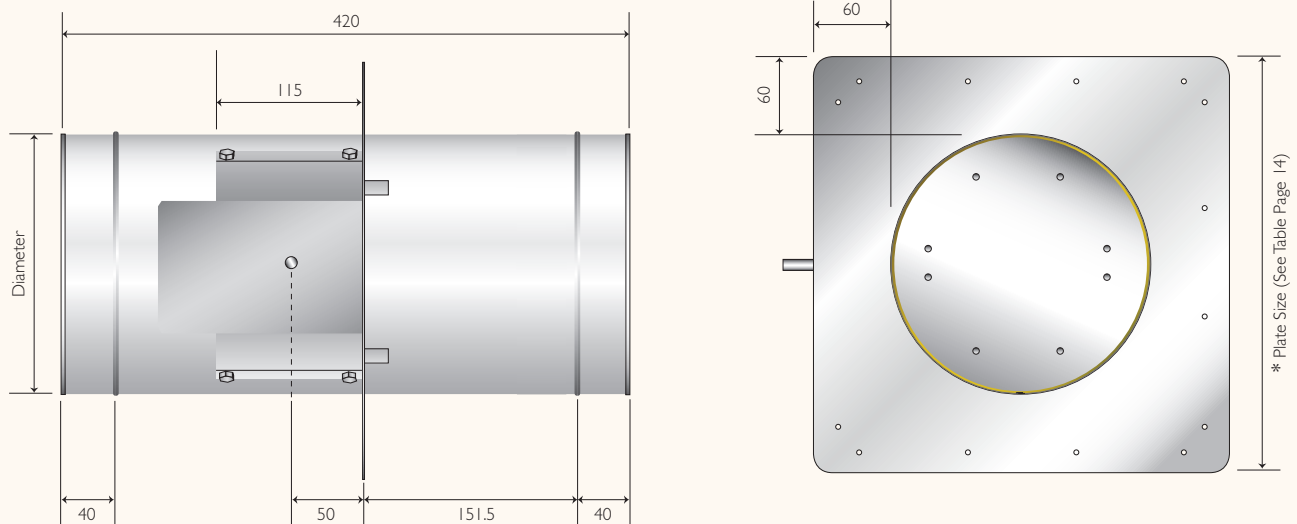
FSD-ESC Without Installation Plate

Note: All dimensions are nominal and may change due to varying coil widths

NB: FSD-ESC Series is not CE marked



FSD-ESC With Installation Plate



The FSD-ESC Damper with extended spindle will be supplied with a 55mm long 8mm dia. extended spindle to accept actuators supplied by others.

Actuators should have a clamping facility suitable for the 8mm dia. spindle and an anti-rotation mechanism support system to ensure stability of the fitted actuator. The anti-rotation mechanism should be affixed to the mounting plate only and not directly to the damper body.

Please refer to BSB sales office for further information.

FSD-C Series

Single Blade Combination Fire and Smoke Dampers



FSD-C in Blockwork Wall - Installation method based on test report number 270065 (FD-C Series)

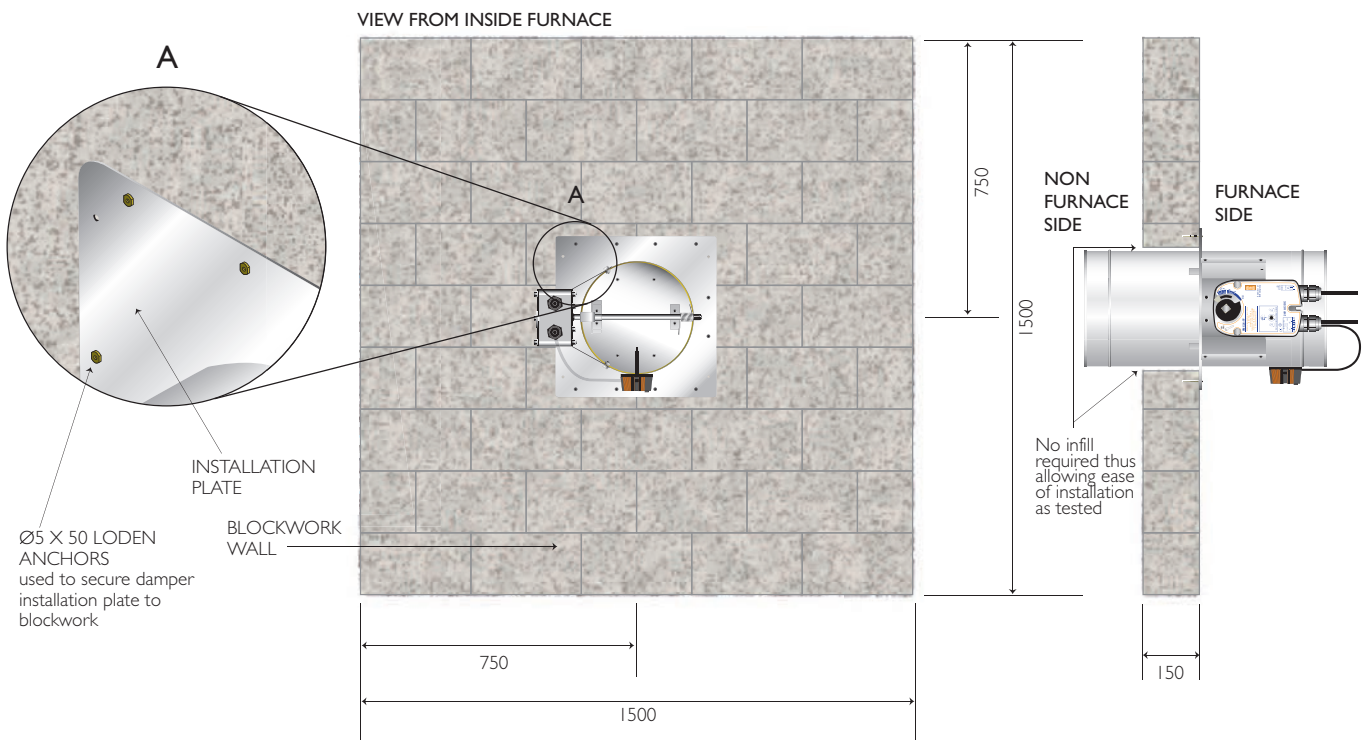
Tested to BS EN 1366-2

- Fire and Volume Control dual function
- Tested to BS EN 1366-2 and BS EN 13501-3
- E180 integrity classification.
- ES120 integrity classification.
- ES90 horizontal concrete floor.
- Complies with classes A, B & C of DW144.
- Surpasses minimum requirements on case leakage
- Surpasses minimum requirements on blade leakage

Test Conclusions:

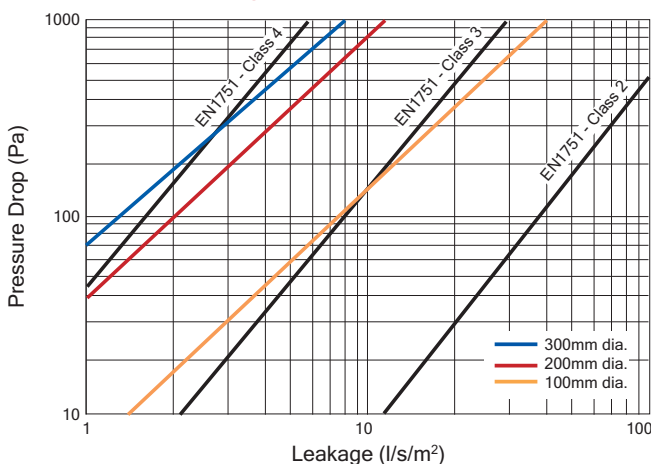
The FSD-C fire/smoke damper satisfied the requirements of BS EN 1366-2 and BS EN 13501-3 achieving the lowest closed blade leakage of any damper within its class. Dampers were tested affixed to the inside of the furnace wall and also to the external wall of the furnace with the damper closed blade being 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

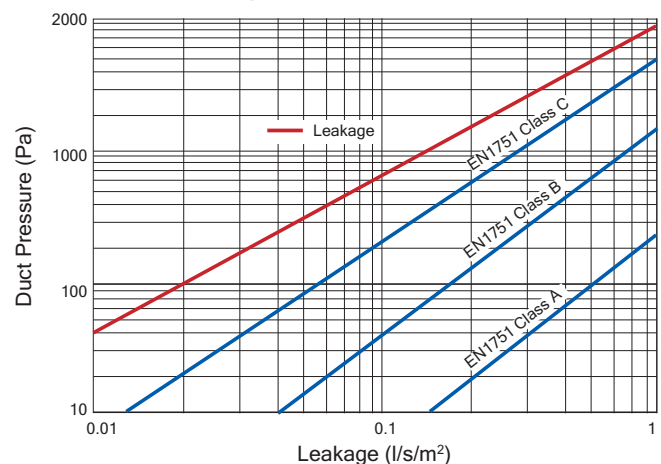


The addition of the PMC actuator allows this tested product to become fully automatic in its operation via the fire detection system or one of the BSB control panels. To comply with the forthcoming revision of the fire damper test standard.

Blade Leakage Graph



Case Leakage Graph - Model FD-C100



See Page 5 for Pressure Drop Graphs

FSD-C in Blockwork Wall - Installation method based on test report number 270066 (FD-C Series)

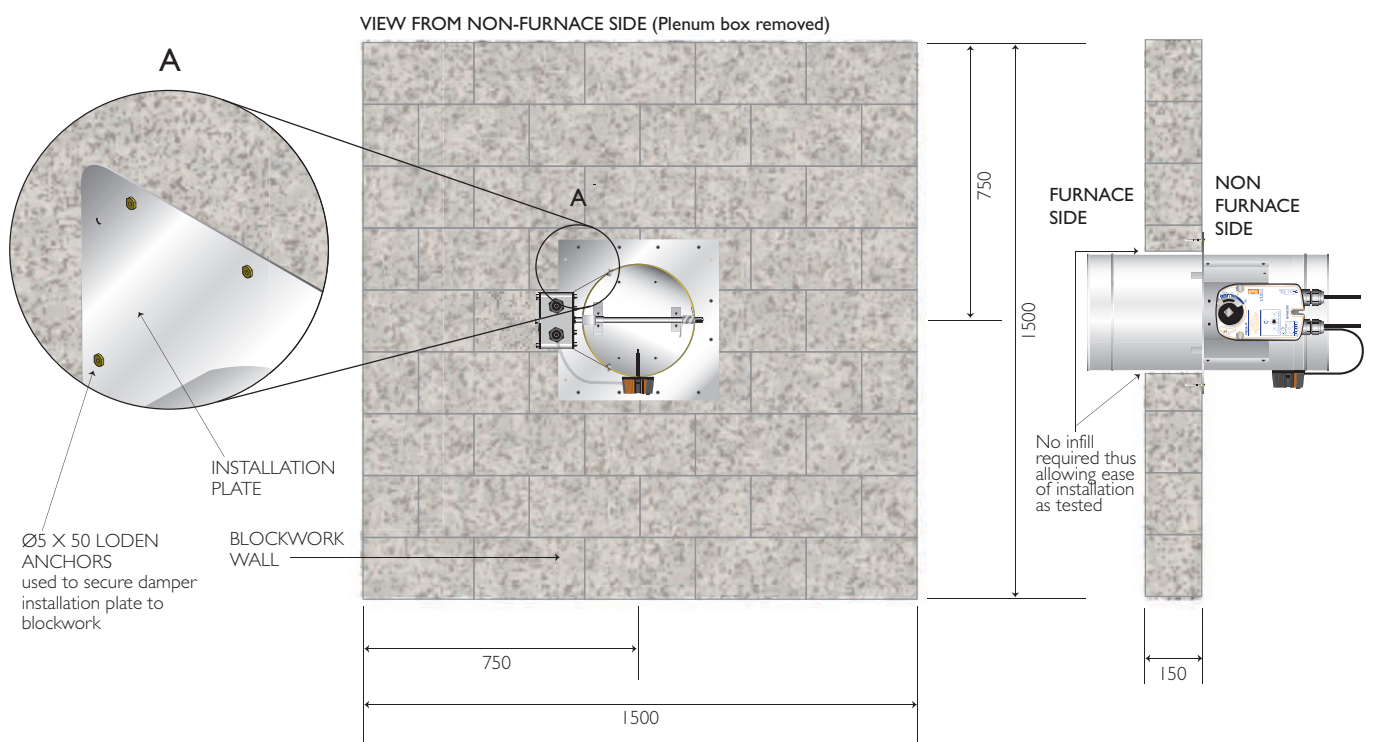
Tested to BS EN 1366-2

- Fire and Volume Control dual function
- Tested to BS EN 1366-2 and BS EN 13501-3
- DW145 Method 4 refers
- E240 integrity classification.
- ES240 integrity classification.
- ES90 horizontal concrete floor.
- Complies with classes A, B & C of DW144.
- Surpasses minimum requirements on case leakage
- Surpasses minimum requirements on blade leakage

Test Conclusions:

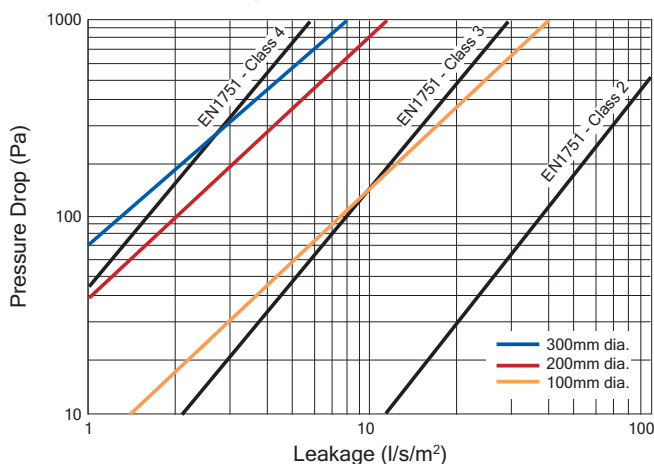
The FSD-C fire/smoke damper satisfied the requirements of BS EN 1366-2 and BS EN 13501-3 achieving the lowest closed blade leakage of any damper within its class. Dampers were tested affixed to the inside of the furnace wall and also to the external wall of the furnace with the damper closed blade being 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

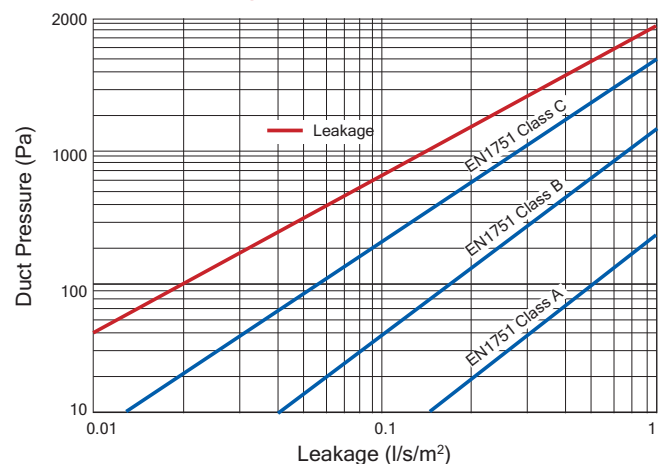


The addition of the PMC actuator allows this tested product to become fully automatic in its operation via the fire detection system or one of the BSB control panels. To comply with the forthcoming revision of the fire damper test standard.

Blade Leakage Graph



Case Leakage Graph - Model FD-C100



See Page 5 for Pressure Drop Graphs

FSD-C in Dry Wall - Actuator inside and outside of furnace

Tested to BS EN 1366-2 -

Test Report No. 279799 refers

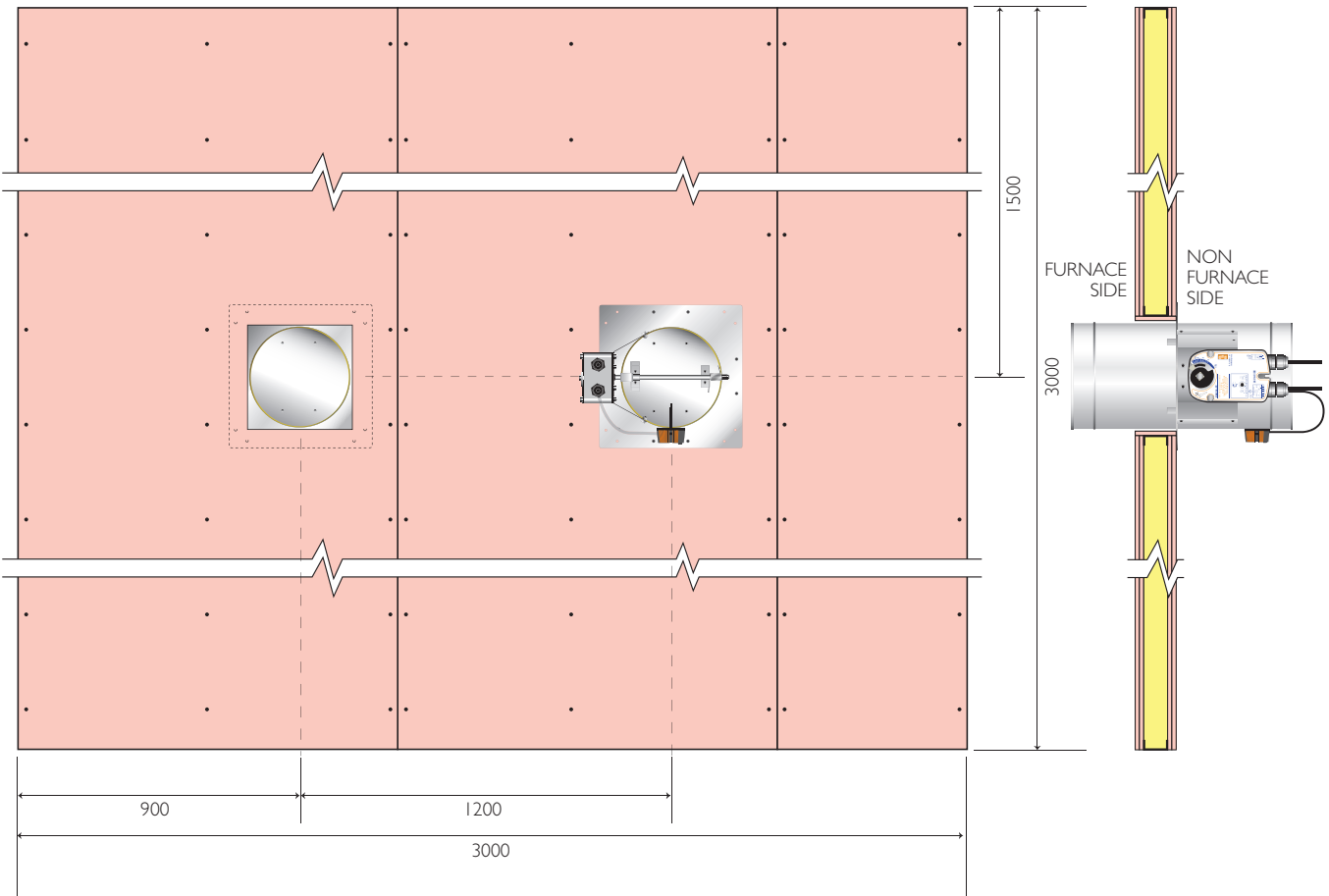
- Fire and Volume Control dual function
- Tested to BS EN 1366-2 and BS EN 13501-3
- E120 integrity classification.
- ES120 integrity classification.

- Complies with classes A, B & C of DW144.
- Surpasses minimum requirements on case leakage
- Surpasses minimum requirements on blade leakage
- Damper casing conforms to BS EN 1506

Test Conclusions:

The FSD-C fire/smoke damper satisfied the requirements of BS EN 1366-2 and BS EN 13501-3 achieving the lowest closed blade leakage of any damper within its class. Dampers were tested affixed to the inside of the furnace wall and also to the external wall of the furnace 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

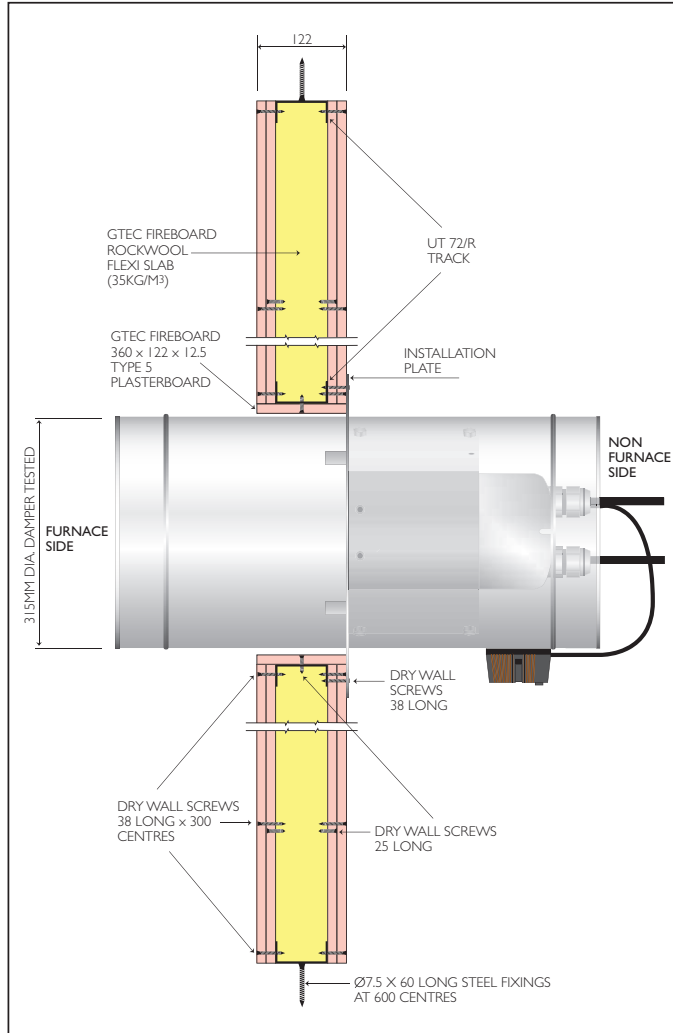
VIEW FROM NON-FURNACE SIDE



The FSD-C single blade combination fire, smoke 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. Is the first damper of its type to achieve and exceed the requirements of classification EN1366-2.

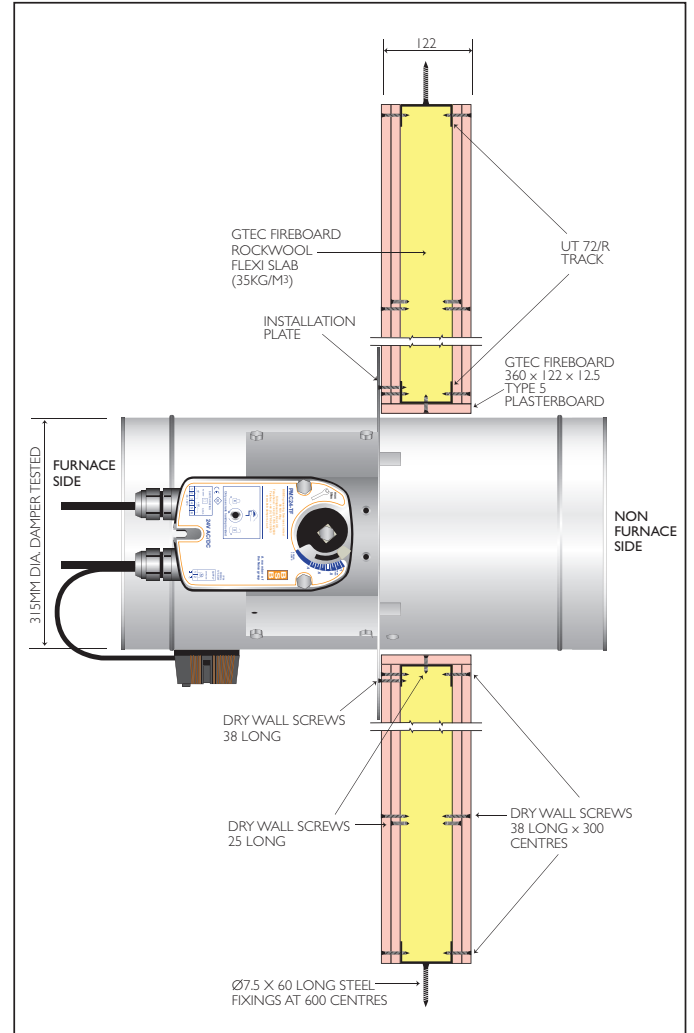
FSD-C in Dry Wall

Test Report No. 279799 refers
Actuator outside of furnace

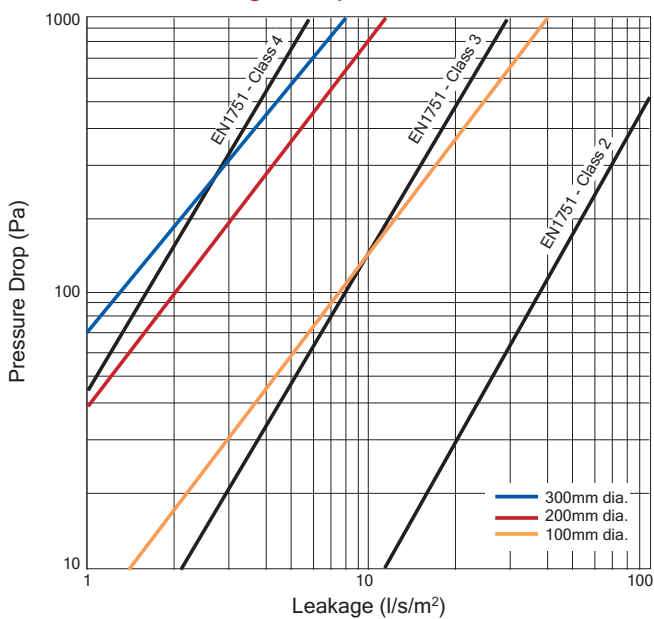


FSD-C in Dry Wall

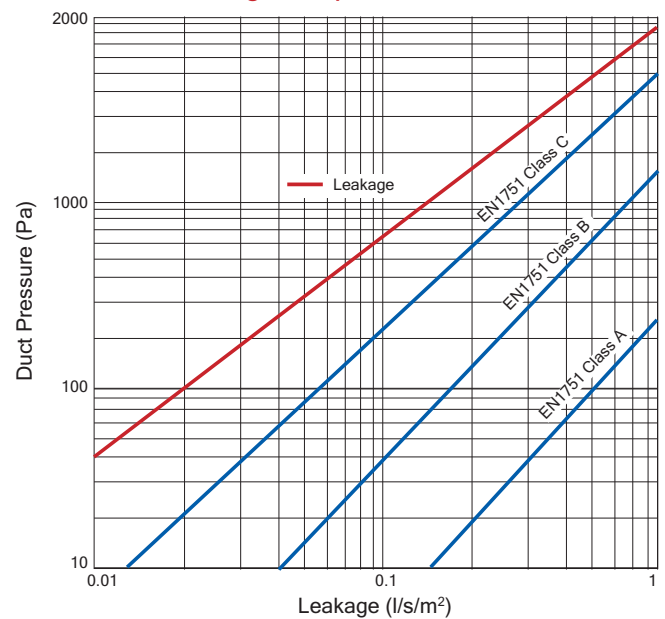
Test Report No. 279799 refers
Actuator inside of furnace



Blade Leakage Graph



Case Leakage Graph - Model FSD-C100



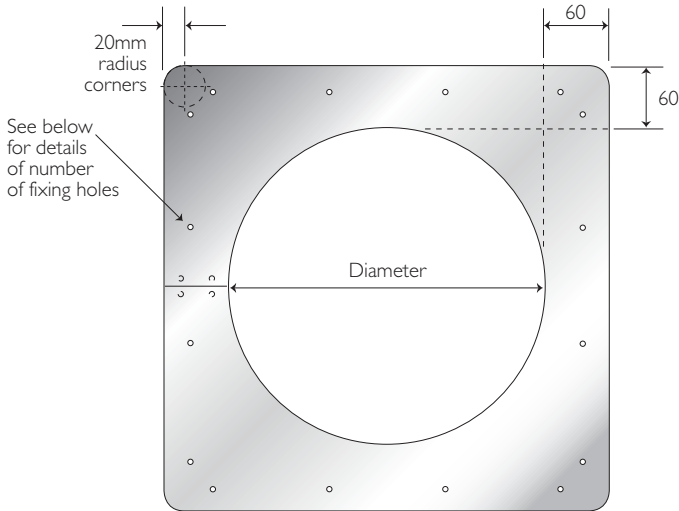
See Page 5 for Pressure Drop Graphs

FSD-C Series

Single Blade Fire and Smoke Dampers - Installation and Maintenance



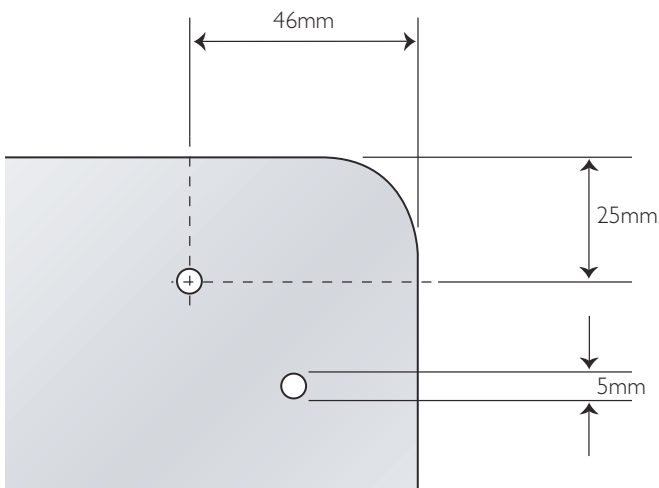
Installation Plates



Model	Dia. (mm)	Plate Size (mm ²)	Flange Size (mm)	Spigot Length (mm)
FSD-C100	100	220	60	40
FSD-C125	125	245	60	40
FSD-C150	150	270	60	40
FSD-C160	160	280	60	40
FSD-C200	200	320	60	40
FSD-C250	250	370	60	60
FSD-C300	300	420	60	60
FSD-C315	315	435	60	60

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 into position.

(Option without installation plate is not CE marked)
Installation Plate Fixing Hole Detail

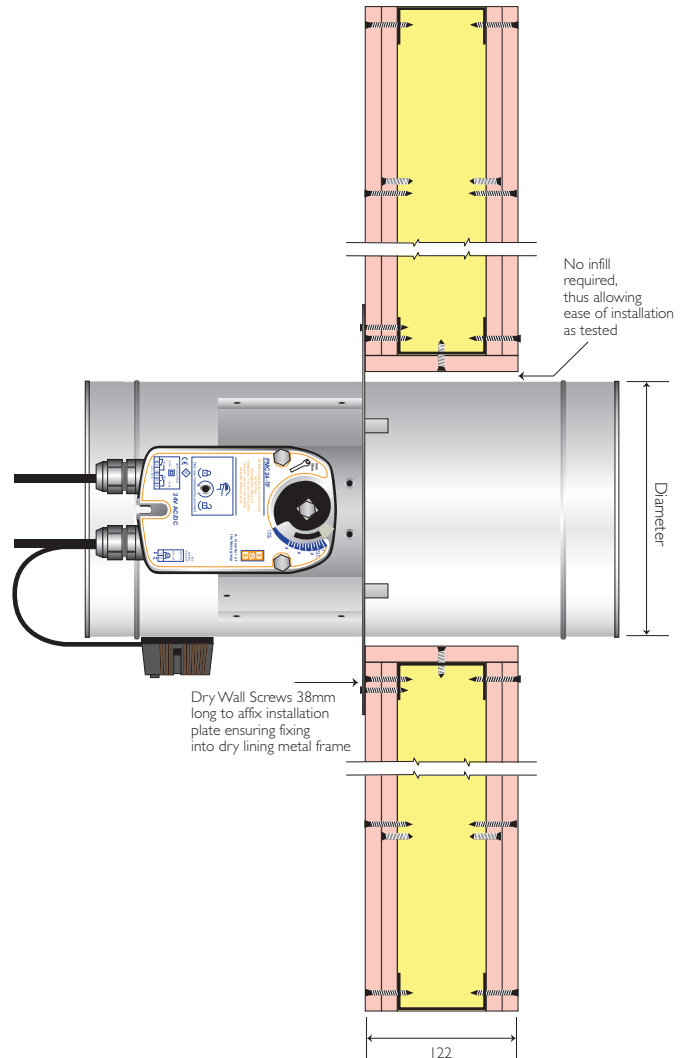


Damper Free Area

Model	Free Area	Model	Free Area
FSD-C100	74%	FSD-C200	88%
FSD-C125	80%	FSD-C250	90%
FSD-C150	84%	FSD-C300	92%
FSD-C160	85%	FSD-C315	92%

Installation Method

DW145 Method 4 - Blockwork walls
 DW145 Method 4 - Partition walls



Maintenance Notes

FSD-C Series fire/smoke 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 annually. Please refer to BSB Operating and Maintenance instructions.

Reference should be made to BS 5588-12 and BS 9999 for more information.

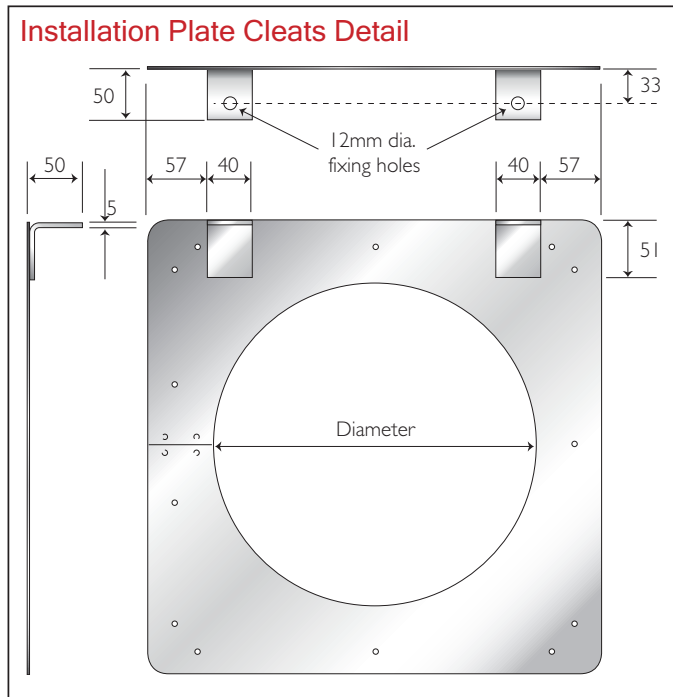
Records of damper installation and position shall be kept. Records of the condition of the dampers and their functionality/repair etc should be kept as these products come under the requirements of the Regulatory Reform (Fire safety) Order (RRFSO).

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 developed based on site experience.

Cleats (Optional)

Cleats are optionally factory fitted as pairs to the damper installation plate on the same face as the control side, allowing the damper to be supported via drop roads. It is recommended that the installation plate is additionally utilised in the installation of the damper to ensure that the damper does not move in a fire condition.

See Below for Drop Rod details.



Drop Rod Studding Minimum Recommended Dia.

Minimum loads are taken from the ASFP Blue Book and refers to unprotected steel studding, generally up to 1.5m long. Figures shown must be read in conjunction with the ASFP Blue Book.

60 mins - 15n/mm ² Min. load					
	OD	Pitch	Core D	CSA (mm ²)	Max. load per pair of studs (kg)
M6	6	1.00	4.772	17.9	54.7
M8	8	1.25	6.465	32.8	100.4

120 mins - 10n/mm ² Min. load					
	OD	Pitch	Core D	CSA (mm ²)	Max. load per pair of studs (kg)
M6	6	1.00	4.772	17.9	36.5
M8	8	1.25	6.465	32.8	66.9

Access Doors

Access Doors for safe access for future damper maintenance, operation and inspection should be a consideration when designing any H&V system. BSB offer access doors to suit both rectangular and circular ducting and these brochures are available to be viewed and/or downloaded from our web site www.bsb-dampers.co.uk

Damper Control Panels

BSB offer two alternative damper control panels when monitoring and controlling dampers. The Electro Mechanical System and the Fully Addressable System. Please contact our sales office or consult relevant product brochures for further information.

BSB FSD-C-TF Electric Actuator Specifications

BSB PMC24-TF

DAMPER ENERGISED OPEN / SPRING CLOSED

Supply 24V AC/DC 50/60 Hz

- Wiring diagram shows switch positions based on no power to actuator
- Power On - Damper blades drive open
- Power Off - Damper to spring closed
- Electric thermal release rated at 72°C
- External position indicator
- Adjustable blade position stop

Connect via safety isolation transformer

Release Time: 15 secs ; Reset Time: 40 secs

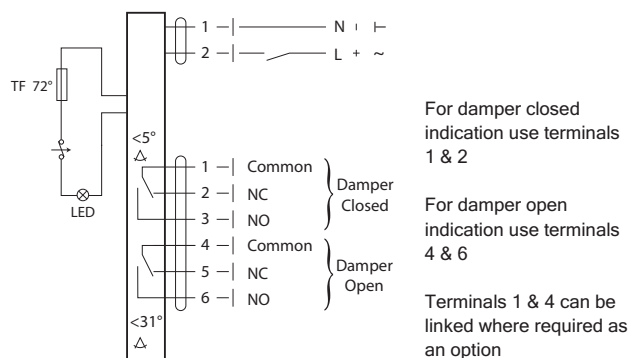
7VA Typically 5W motoring, 2.5W holding

For wiring size - I_{max} 5.8A @ 5ms

Operating temperature range -30° to +50° continuous.

Connecting cables need to be protected from sharp edges

Unused cores should be isolated



BSB PMC230-TF

DAMPER ENERGISED OPEN / SPRING CLOSED

Supply 230V AC 50/60 Hz

- Wiring diagram shows switch positions based on no power to actuator
- Power On - Damper blades drive open
- Power Off - Damper to spring closed
- Electric thermal release rated at 72°C
- External position indicator
- Adjustable blade position stop

For disconnection from the supply, a separate device must be incorporated in the fixed wiring (at least 3mm contact gap in all poles)

Release Time: 15 secs ; Reset Time: 40 secs

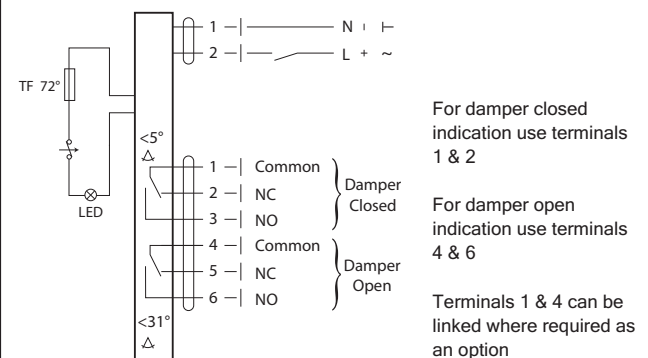
7VA Typically 5W motoring, 4W holding

For wiring size - I_{max} 5.8A @ 5ms

Operating temperature range -30° to +50° continuous.

Connecting cables need to be protected from sharp edges

Unused cores should be isolated



FSD-C Series

Single Blade Circular Fire Dampers - Ordering Codes



FSD-C G IP CL 200 PMC24-TF

Model: _____
FSD-C
 Externally Resettable Circular
 Single Blade Combination
 Fire/Smoke and Volume Control
 Damper

Blade Material: _____
G Galvanised Mild Steel
S 430 Grade Stainless Steel

Installation Plate: _____
IP Installation Plate

Accessories: _____
CL Cleats

Diameter: _____
100 100mm Diameter
125 125mm Diameter
150 150mm Diameter
160 160mm Diameter
200 200mm Diameter
250 250mm Diameter
300 300mm Diameter
315 315mm Diameter

Application / Motor Type:

FSD-C-FS Fire/Smoke Damper
PMC24-TF 24 volt Spring Return Actuator with Thermal Fuse
PMC230-TF 230 volt Spring Return Actuator with Thermal Fuse
PMC24-NTF 24 volt Spring Return Actuator no Thermal Fuse
PMC230-NTF 230 volt Spring Return Actuator no Thermal Fuse

FSD-C-SC Control Damper
BLE24 Drive Open/Drive Closed Operation
BLE230 Drive Open/Drive Closed Operation

FSD-C-VC Volume Control Damper
LM24A Open/Close Operation
LM24A-SR Modulating via 0 to 10V Operation
LF24A Spring Return Operation

FSD-C-ESC Extended Spindle
Spindle Actuator by others will require a clamp suitable for a 8mm dia, 55mm long drive spindle operation

Air, Fire and Smoke Control Products in the BSB Range:



For full details of the complete BSB Product Range, please refer to our individual product brochures, sales office or website.



BSB Engineering Services Limited

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 For purchase orders and order related enquiries, please email: orders@bsb-dampers.co.uk
 For pricing, technical and general enquiries, please email: enquiries@bsb-dampers.co.uk
 Website: www.bsb-dampers.co.uk • A member of the Maico group

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