FSD-TD Series

Fire and Smoke Dampers

- LPCB certificated fire dampers (LPS 1162)
- ES classified fire dampers with reduced smoke leakage characteristics (BS EN 13501-3)
- Tested installation methods in differing supporting constructions (BS EN 1366-2)
- Able to respond to smoke alarms for the protection of escape routes and areas with sleeping risk (ADB)
- Able to be controlled by smoke and fire control systems including BSB damper control panels
- Tested and assessed installation methods in differing supporting constructions (BS 476-20/22)
- Casing leakage - Class C
- Blade leakage - Class 2
- CE marked complying with the requirements of BS EN 15650

MADE IN BRITAIN

BSB

FSD-TD Series

Fire and Smoke Dampers – Introduction

Introduction

What is a fire damper and why might they be needed?
A fire damper is a device for use in heating, ventilation and air-conditioning (HVAC) systems at fire boundaries to maintain compartmentation and protect means of escape in case of fire.

The BSB FSD-TD series of fire and smoke dampers are carefully engineered to fulfil the above and to have the advantage of having reduced smoke leakage characteristics. They can respond to a smoke alarm input as well as having a failsafe thermal fuse.

Integration with systems such as BSB's smoke control panels will give this functionality.

This means that specifiers can safely select the BSB FSD-TD series for use in HVAC ductwork systems to safely fulfil the regulations in the form of Approved Document B (ADB) to protect both escape routes and areas with sleeping risk, as well as standard compartmentation.

Fire damper testing is generally undertaken to BS EN 1366-2 and for a fire damper to fulfil the requirement to protect escape routes and areas with sleeping risk they must be classified ES to BS EN 13501-3.

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 360m^3/hr/m^2 (100 l/s/m^2) throughout the fire test period.

ES = Integrity with Smoke Leakage Performance
The maximum leakage permissible at 300Pa corrected to 20°C is 200m^3/hr/m^2 (55.5 l/s/m^2) 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 200m^3/hr/m^2 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-TD 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.

Testing and Conformities

Tested to EN1366-2. See installations section for full details. Tested/assessed and achieved equivalent classification to:

ES Classification (BS EN 1366-2/BS EN 13501-3)
- BSB FSD-TD-HF fitted with HEVAC Frame
  ES240 (E240S) - Blockwork/Masonry wall
  ES240 (E240S) - Concrete floor
- BSB FSD-TD-SA fitted with Sleeve & Angle Frame
  ES120 (E120S) - Dry Partition wall
  ES120 (E120S) - Blockwork/Masonry wall
- BSB FSD-TD-BF fitted with Batt Frame
  ES120 (E1120S) - fitted with Firetherm Intubatt
- BSB FSD-TD-CL fitted with Cleats
  ES120 (E20S) - Dry Partition wall
- BSB FSD-TD-AF fitted with Angle Frame
  ES120 (E120S) - Dry Partition wall
  ES240 (E240S) - Concrete Floor

ES Classification (BS ISO 10294-1/2)
- As BS EN 1366-2/BS EN 13501-3 above

Integrity only (BS 476-20/22 - ADB - fan off)
- BSB FSD-TD fitted with HEVAC Frame
  240 mins - Blockwork/Masonry wall
  240 mins - Concrete floor
- BSB FSD-TD fitted with Sleeve & Angle Frame
  120 mins - Dry Partition wall
  120 mins - Blockwork/Masonry wall
- BSB FSD-TD fitted with Cleats
  120 mins - Dry Partition wall
  120 mins - Blockwork/Masonry wall
  120 mins - away from wall associated with fire resisting ductwork
- BSB FSD-TD fitted with Z2000 Frame
  240 mins - Concrete floor
  240 mins - Blockwork/Masonry wall

Product Standard EN 15650 compliant

Corrosion testing (ASTM B117)
- Tested and satisfies LPS 1162

FSD-TD Blade leakage (BS EN 1751)
- Class 2

Casing leakage (BS EN 1751)
- Class C

Aerodynamic testing (BS EN 1751)
- Tested

FSD-TD Range

The BSB FSD-TD is available in a variety of vertical or horizontal mounting configurations from 100mm to 1000mm.

Model FSD-TD-S Rectangular Spigot
Square/Rectangular Spigot Connection.

Model FSD-TD-C Circular Spigot
Circular Spigot Connection.

Model FSD-TD-O Flat Oval Spigot
Flat Oval Spigot Connection.

FSD-TD Features and Benefits

- The majority of the FSD-TD product variants are covered by third party Loss Prevention Certification Board (LPCB) product certification. This represents both full BS EN ISO 9001 quality compliance and a guarantee that the products are fully representative of those actually tested.
- Tested and certified installation variants of the FSD-TD are available to cover masonry walls, dry walls, batt walls and floors. These cover the majority of applications/supporting constructions that are required to maintain compartmentation and protect escape routes and areas with sleeping risk.
- All BSB tested installation methods give at least a ES120 (E120S) classification, usually only limited by the wall construction used. This is extended to ES240 (E240S) when installed using a HEVAC frame in a masonry/blockwork floor or wall.
- Sleeve and angle methods, HEVAC frame methods, angle frame methods, cleat and drop rod methods and batt infill methods are available.
- Some rarer installation applications are covered by assessment/test information to BS 476-20/22.
- Minimum size 100 x 100 (not adapted from a larger size by reducers) available for space saving.
- Circular connection - base damper does not increase, thus saving space and transport volume.
- Single section size 1000 x 1000, available from the smallest size up to this in millimetre increments.
- Multi-section configurations are available to specific customer requirements, but will be subject to Building Control Authority approval.
- No duct sleeve, again giving space savings over other models and savings on transport volume.
- Standard construction is a fully welded galvanised steel case, which gives a casing leakage that complies with Class C ductwork leakage specifications.
- Blades have folded safe-edges to aid site safety.
- Galvanised mild steel, Ferritic (430) type 1.4016 or Austenitic (316) 1.4401 grade stainless steels for the blades and case are available for specific customer requirements.
- All blade and motor connecting drives are removed from the airstream and are fully enclosed. This gives both increased free area through the damper and protection to the mechanisms.
- Electrical Actuators (24VAC/DC, 230VAC,) have a less than 60 second motoring time. They have multi-position fitting and, being remote from the duct, allow space savings.
- Pneumatic Actuator (5.6 bar) have a less than 3 second opening and closing time. They have multi-position fitting and, being remote from the duct, allow space savings.
- All factory fitted actuators are tested prior to despatch (NOTE: The thermal fuse needs to be fitted/installed through the duct wall by the customer when the damper is installed).
- Actuators may be supplied separately to the dampers for site fitting by others to suit customer specific requirements.
- The FSD-TD range is fully compatible with the BSB range of smoke control panels, fire alarm systems, building management systems (BMS) and otherbespoke control systems.
- The BSB FSD-TD has a strong and robust design to both meet the exacting fire testing requirements and be resilient to site handling. This is supported by sound production techniques which result in a quality product.
- All the above, supported with BSB's enviable delivery performance, provide an unbeatable combination.

Regulations and Standards

Approved Document B: Fire safety (ADB)
ADB is the UK government's guide to fulfilling the Building Regulations in terms of fire safety. It is available as a free download from the planning portal website.

It gives clear guidance on where fire dampers are to be used and what their performance or classification shall be. The BSB FSD-TD fulfils the ES classification and reference should be made to the model section to confirm exact time periods. These will generally be 120 minutes, but may be up to 240 minutes.

Health Technical Memo 05/02 (HTM05/02)
HTM05/02 is the Department of Health Firecode - fire safety in the NHS: Guidance in support of functional provisions for healthcare premises.

It basically underlines the requirements stated in ADB, requiring fire damper testing to BS EN 1366-2 and classification to BS EN 13501-3 - ES for escape routes etc).

It supersedes HTM81 and should be read in conjunction with HTM2025: Ventilation in healthcare premises, as it gives guidance on maintenance and testing.

Regulatory Reform (Fire safety) Order (RRFSO)
This is the regulatory requirement that allows people to self fire certificate their buildings. There are requirements for keeping testing and maintenance records for all passive fire protection equipment, which includes fire dampers.

BS EN 15650
This is the product standard that includes the FSD-TD damper series. For dampers to be compliant to the Construction Products Regulation and CE marking, dampers must comply to this product standard, encompassing BS EN 1366-2 and BS EN 13501-3.

BS EN 1366-2
The fire resistance test standard for fire dampers.

BS EN13501-3
The fire resistance classification standard that includes fire dampers.

BS EN 1751
The standard for aerodynamically testing dampers. This includes both casing leakage (as DW 144 requirements), blade leakage, torque and heat transfer.

Other publications

DW 144 (HVCA)
This states the general requirements for HVAC ductwork, including the use of fire dampers. It also states ductwork leakage limits. The BSB FSD-TF fulfils the requirements of classes A, B & C.

DW 145 (HVCA)
This document will give guidance on the whole process of the selection and installation of fire dampers, with responsibilities and project planning and guidance.

The Grey Book (ASFP)
This gives further guidance on the application and installation of fire dampers.

Scotland
These are technical standards (AMD's). They give similar guidance to ADB. They already include direct references to the application of European standards. They are obtainable as a free download from the Scottish Executive website.

FSD-TD Series

Fire and Smoke Dampers – Construction and Typical Tender Specification

Elements of Construction

Galvanising
Where detailed, galvanised mild steel is to the following specification: hot dipped zinc coated steel to BS EN 10142 DX51D + Z 275-N-A-C.

Zinc plating
Zinc electroplated to BS EN ISO 2081: 2008

Casings/inner frames
The FSD-TD casings are manufactured from 1.2mm galvanised mild steel and are fully welded. All welds, seams and joints are coated with heat resistant alkyd aluminium finish paint.

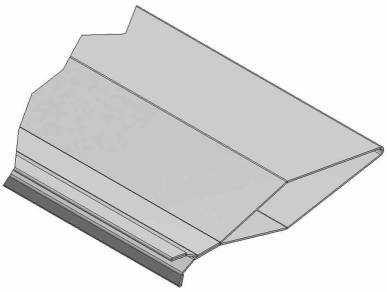
As an option, outer casings are available in Ferritic (430) type 1.4016 or Austenitic (316) 1.4401 grade stainless steel, also fully welded. As standard these welds are simply cleaned, but may be painted or passivated on request.

The inner bearing channels are manufactured from 1.2mm galvanised mild steel. The bearing channel incorporates punch formed low friction bearing surfaces that allow the blades to rotate freely.

Where necessary, sealant is applied to seams and joints.

Blades
FSD-TD Series dampers are supplied with opposed blade operation only.

Blade material 0.7mm available as galvanised steel, Ferritic (430) type 1.4016 or Austenitic (316) 1.4401 grade stainless steel.



The blades are a specially formed double skin airfoil shape, specific to BSB, on a 100mm pitch that interlock when closed.

Jamb seals and gaskets
To complete the damper seal there are 0.4mm 301 grade stainless steel gaskets. They are fitted down the sides and across the top and bottom of the damper.

Blade shafts, bearings and linkage
The blades are each mounted on two 19mm diameter spindles (1.2mm wall thickness) made from zinc plated mild steel to BS EN ISO 2081: 2008.

The spindles are linked using a gear system, link arms and drive bars to give the opposed blade action. The gears are made from zinc plated 2.5mm thick mild steel. The link arms and drive strips are made from 2.5mm thick galvanised mild steel.

This linkage is fully enclosed and outside the airstream.

Other components
All other components are manufactured from zinc plated mild steel, with 316 stainless options available.

Actuators
The FSD-TD series of fire and smoke dampers are supplied with a range of spring return actuators, controlled to close automatically on loss of power or when the thermal fuse exceeds 72°C.
Stainless steel versions are not available.

1. BSB PM24-TF - 24VAC/DC spring return actuator
2. BSB PM230-TF - 230VAC spring return actuator
3. BSB PM-P-TF - spring return pneumatic actuator

Thermal Fuse
The BSB PM24-TF and PM230-TF actuators incorporate a thermal fuse (TF), which operates at 72°C. This is in accordance with BS 9999 and BS 5588 Part 9.

This must be fitted through a hole into the ductwork and be screwed into position.

The TF is fitted with a green LED indication light which provides a quick visual check that the control option 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.

Standard Typical Tender/Specification Text

The fire and smoke dampers shall be LPCB certificated and pass the test requirements stated in EN 1366-2.

For maintenance of compartmentation and the protection of escape routes and areas with sleeping risk fire and smoke dampers shall have an ES classification to EN 13501-3 and shall include an actuator that can respond to a smoke alarm signal to ensure closure at the first trace of smoke. Refer to Approved Document B (ADB).

The actuator shall have a thermal fuse as a failsafe backup to ensure closure, should the temperature exceed 72°C. It shall close in less than 30 seconds and motor open in less than 60 seconds.

The fire and smoke damper shall have an opposed blade action with the interlocking double skinned blades each having robust 19mm spindles for both resistance to fire and daily airflow exposure.

The fire and smoke damper blade drive linkage shall be fully enclosed and outside of the air stream for protection against damage and air contamination.

Stainless steel gaskets shall be provided at the top and bottom of the fire and smoke damper as well as down the sides to reduce ambient leakage to below the levels stated in EN 1366-2.

The fire and smoke damper case shall be fully welded to meet the air tightness test requirements of HVCA specification DW144 to classes A, B and C up to 1500Pa.

The fire and smoke damper shall have a tested or assessed installation method that matches the requirement of the supporting construction into which it is built.

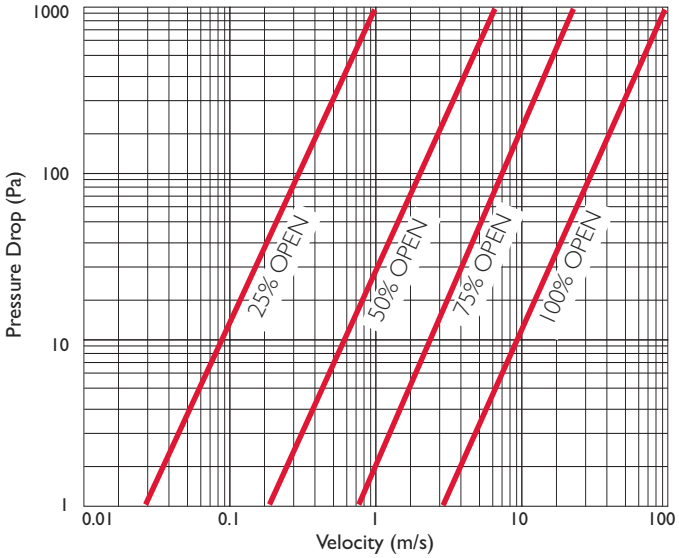
Fire and smoke dampers shall be the FSD-TD Series as supplied by BSB - www.bsb-dampers.co.uk - 01795 422609

(Tests or assessments of installation methods to BS 476-20/22 may be acceptable if the ventilation design causes the fans to be turned off in the event of a smoke or fire alarm and escape routes and areas of sleeping risk are not being protected)

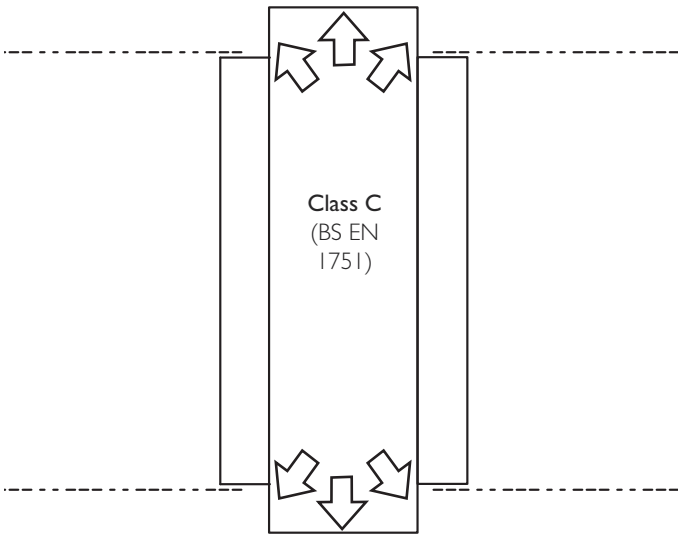
* For SEVAC and HOT300 Typical Tender Specifications see Page 17)

Performance Data

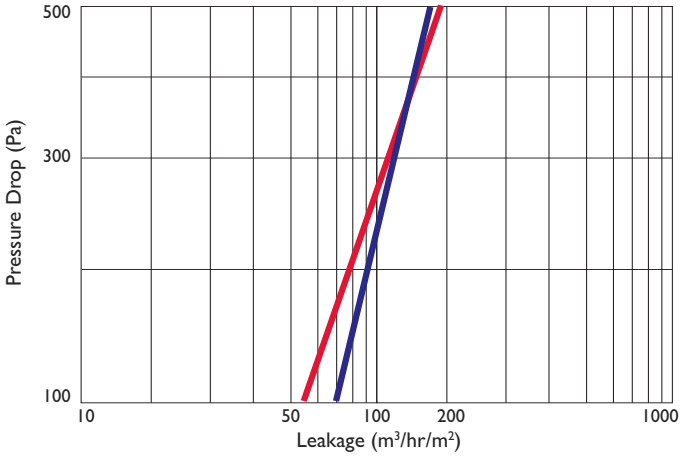
Pressure Drop BSRIA Report 15633/1
Calculated performance at various damper settings
Size tested: 500mm x 600mm



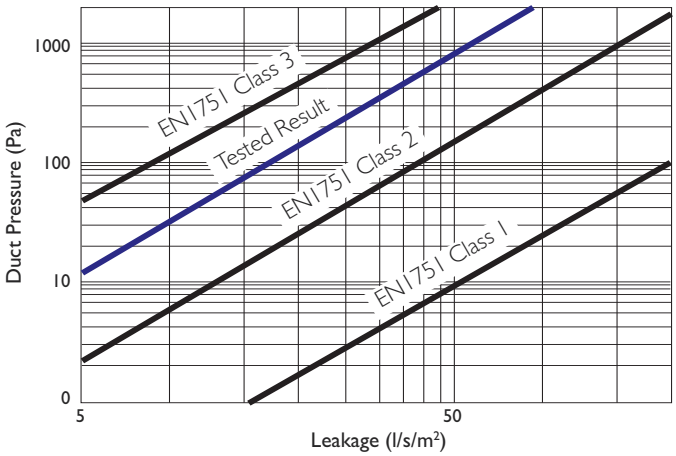
Ambient Case Leakage
An FSD-TD damper was tested and was found to meet Class 'C' Classification BS EN 1751:1999. With leakage being recorded at less than 0.11/s/m² at 2000 Pa



Ambient Blade Leakage
100mm x 100mm (smallest) unit as tested to BS EN 1366-2
1000mm x 1000mm (largest) unit as tested to BS EN 1366-2



Ambient Blade Leakage for a 500mm square FSD-TD Damper
500mm x 500mm unit as tested to BS EN 1366-2



Weight Chart (kg approx.)
Model FSD-TD-S with Actuator

1. For Model FSD-TD-O, apply the following multiplier: 1.1
2. To include a HEVAC/ HVCA Installation Frame, apply the following multiplier: 1.4

Height (mm)	Width (mm) 100	200	300	400	500	600	700	800	900	1000
100	7.8	9.0	9.8	10.8	11.9	13.2	14.3	15.4	16.5	17.7
200	9.0	10.5	11.3	12.4	13.6	15.4	16.7	18.1	19.4	20.7
300	10.3	11.9	12.8	14.1	15.4	17.7	19.3	20.8	22.4	23.9
400	11.6	13.4	14.4	15.8	17.3	20.0	21.8	23.6	25.4	27.2
500	12.9	14.9	16.0	17.6	19.1	22.3	24.3	26.4	28.4	30.4
600	14.2	16.3	17.6	19.3	21.0	24.6	26.9	29.1	31.4	33.6
700	15.5	17.8	19.1	21.0	22.8	26.9	29.4	31.9	34.3	36.8
800	16.8	19.3	20.7	22.7	24.6	29.3	31.9	34.6	37.3	40.0
900	18.1	20.8	22.3	24.4	26.5	31.6	34.5	37.4	40.3	43.2
1000	19.4	22.3	23.9	26.1	28.3	33.9	37.0	40.2	43.3	46.4

Weight Chart (kg approx.)
Model FSD-TD-C with Actuator

Dia. (mm	Weight (kg)	Dia. (mm	Weight (kg)
100	8.4	600	30.0
150	9.8	650	33.2
200	11.8	700	36.0
250	13.4	750	39.5
300	15.1	800	42.5
350	17.2	850	46.3
400	19.1	900	49.6
450	21.3	950	53.6
500	23.4	1000	57.1
550	25.8		

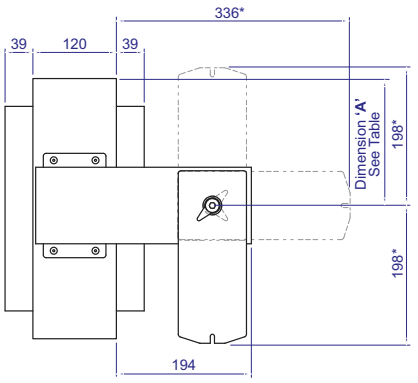
FSD-TD Series

Fire and Smoke Dampers – Base Dimensions

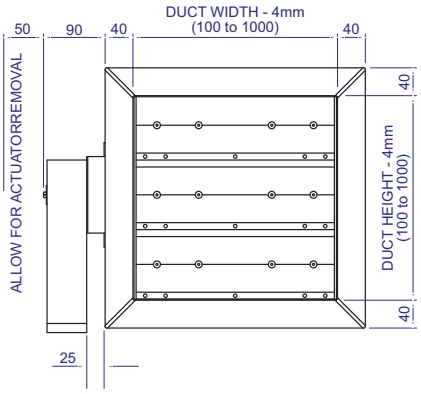
Model FSD-TD - S

Square/Rectangular Spigot Connection

* Allow extra 50mm for cables



VARYING LENGTHS OF OPTIONAL STUB DUCT AVAILABLE 210MM TO 450MM. PLEASE REFER TO SALES OFFICE

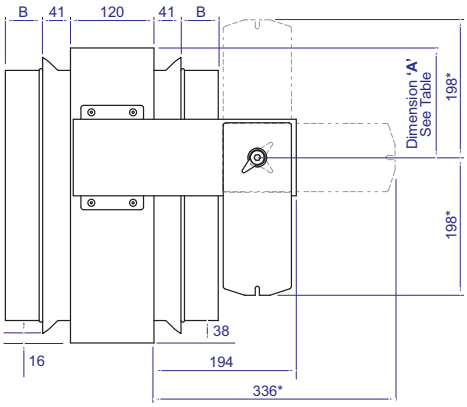


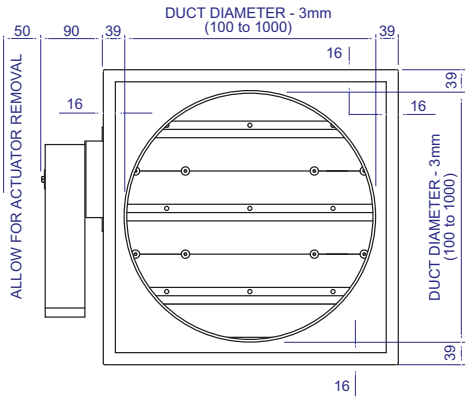
Model FSD-TD - C

Circular Spigot Connection

* Allow extra 50mm for cables

B Dimension:
Up to 350mm dia = 41mm
Over 350mm dia = 55mm

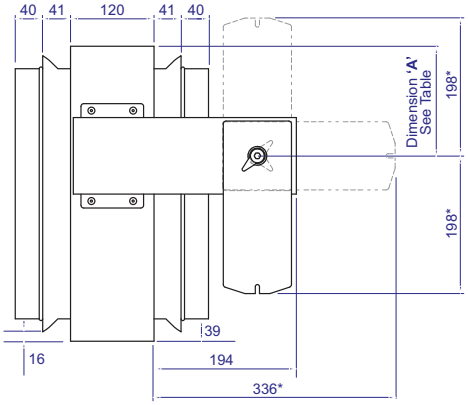


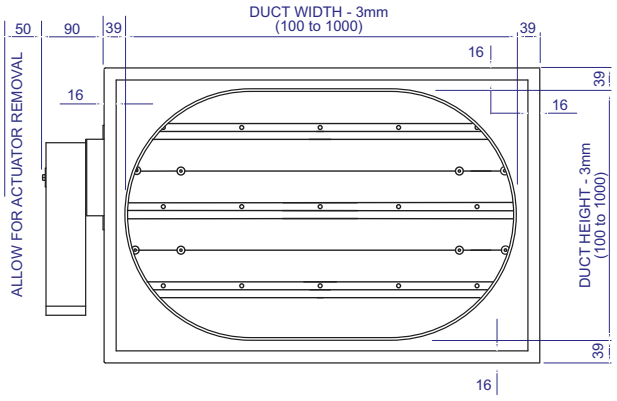


Model FSD-TD - O

Flat Oval Spigot Connection

* Allow extra 50mm for cables



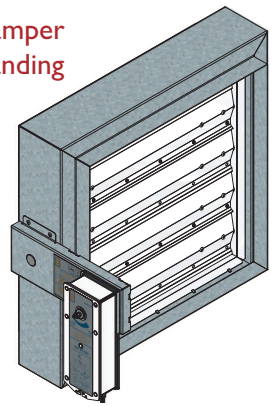


All dimensions rounded to nearest whole mm

Dimension 'A'

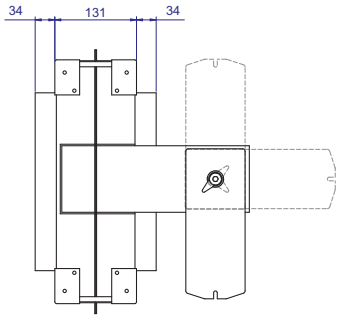
Duct Height/Dia.	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Dimension 'A'	84	109	84	159	184	159	184	259	284	259	284	359	384	359	384	459	484	459	484

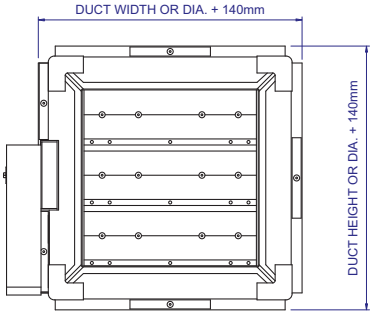
Damper Handing



Right hand damper as shown will be supplied as standard

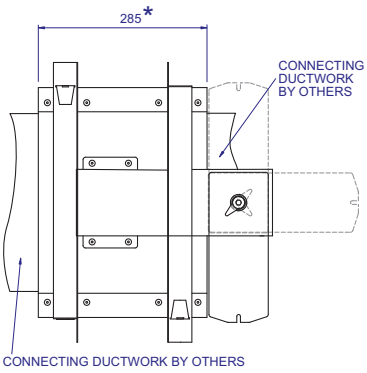
HEVAC Frame

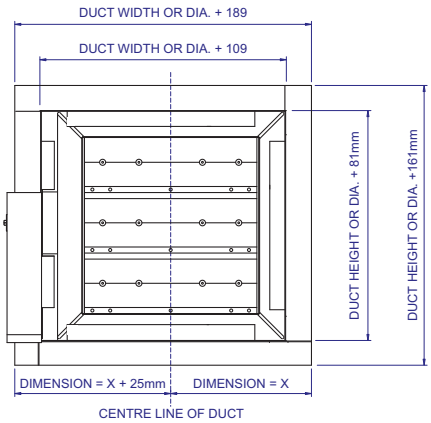




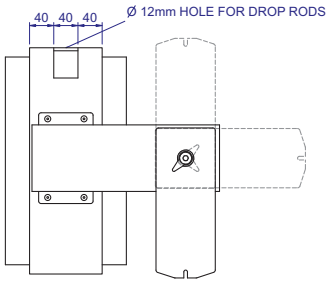
Sleeve and Angle

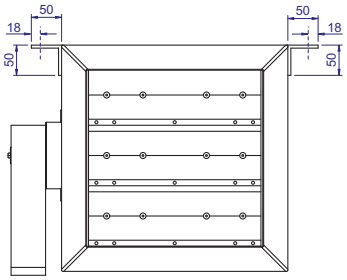
* Suitable for walls up to 200mm. Above this width refer to our technical sales office.



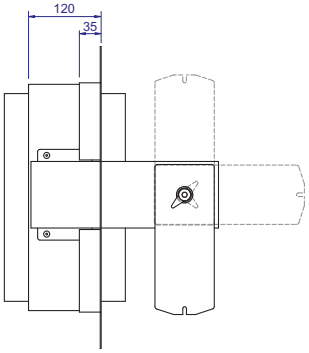


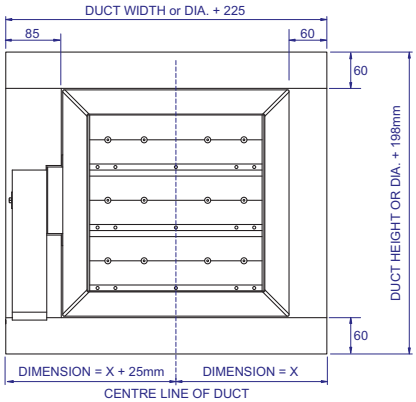
Cleats for Drop Rods



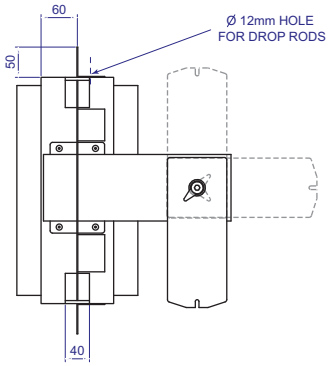


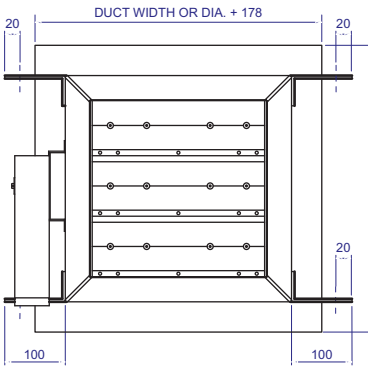
Angle Frame





Batt Frame



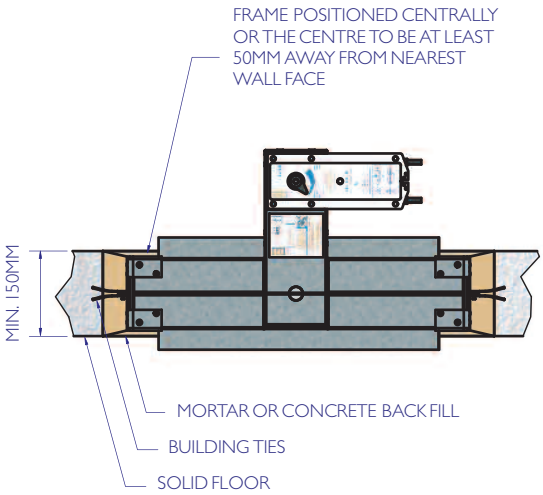


Installations tested to EN1366-2 and classified to BS EN 13501-3 *

CONCRETE/MASONRY FLOOR - HEVAC FRAME Fitted | FSD-TD HF | DW/145 M3

Horizontal Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

NB: FSD-TD HF with Hevac Frame fitted for horizontal installation into concrete/masonry floor is not CE marked

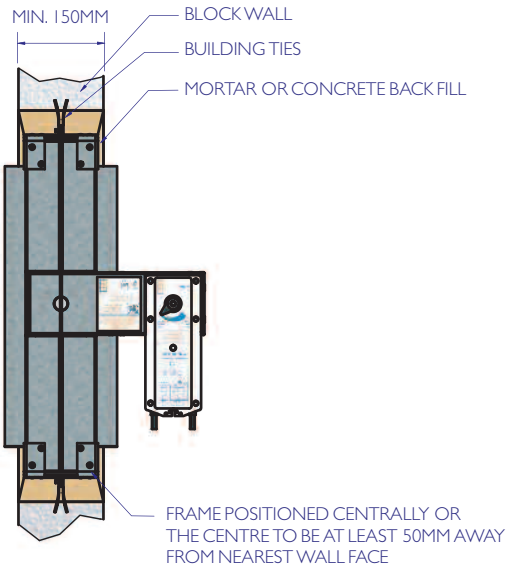


TESTED TO BS EN 1366-2 FOR 4 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES240 (E240S)
BS EN 1366-2 TEST/ASSESSMENT REFERENCES: 216413/CC 254958/CC 261450

BLOCK/MASONRY WALL - HEVAC FRAME Fitted | FSD-TD HF | DW/145 M3

Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

CE

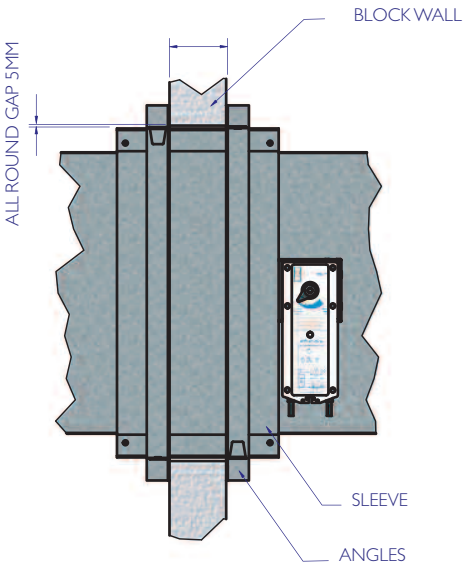


TESTED FROM BOTH SIDES
TESTED TO BS EN 1366-2 FOR 4 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES240 (E240S)
BS EN 1366-2 TEST REFERENCE: 256538 (ES240)
BS EN 1366-2 TEST REFERENCE: 285322 (ES60, E240)

BLOCK/MASONRY WALL - SLEEVE AND ANGLE Fitted | FSD-TD SA | DW/145 M1

Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

NB: FSD-TD SA with Sleeve and Angles fitted for installation into block/masonry wall floor is not CE marked

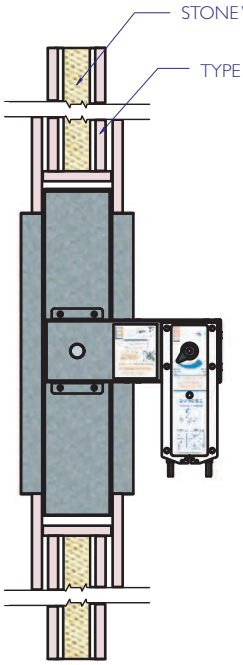


TESTED TO BS EN 1366-2 FOR 2 HOURS (IN DRY WALL)
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES120 (E120S)
BS EN 1366-2 TEST/ASSESSMENT REFERENCES: 253482/CC 261450

DRY WALL - NO FRAME Fitted | FSD-TD NF

Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

CE



TESTED TO BS EN 1366-2 FOR 2 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES120 (E240S)
BS EN 1366-2 TEST REFERENCE: 283411

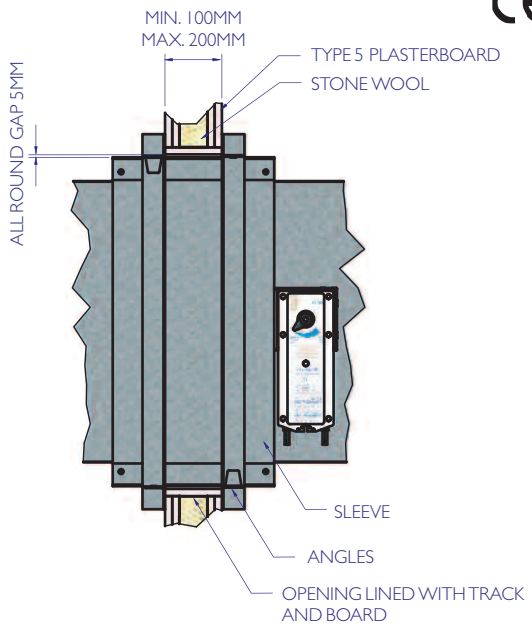
* If your proposed installation method has minor variations to that shown, please confirm acceptance with the local Building Control Authority (BCA) before proceeding. Manufacturers are not able to "approve" specific installation methods.

Installations tested to EN1366-2 and classified to BS EN 13501-3 *

DRY WALL - SLEEVE & ANGLE
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

FSD-TD SA
DW/145 M1

CE

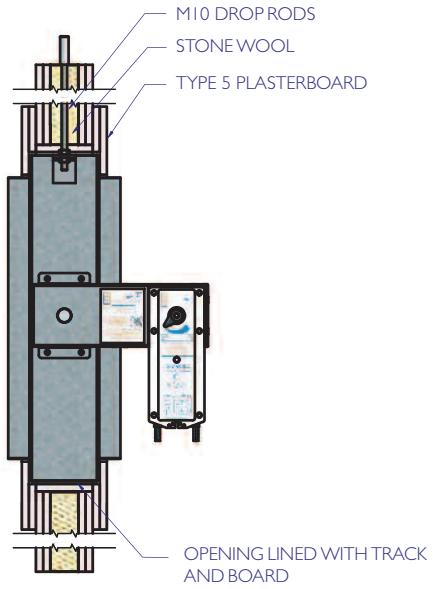


TESTED TO BS EN 1366-2 FOR 2 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES120 (E120S)
BS EN 1366-2 TEST/ASSESSMENT REFERENCES: 253482/CC 261450

DRY WALL - CLEATS Fitted
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

FSD-TD CL
DW/145 M5

CE

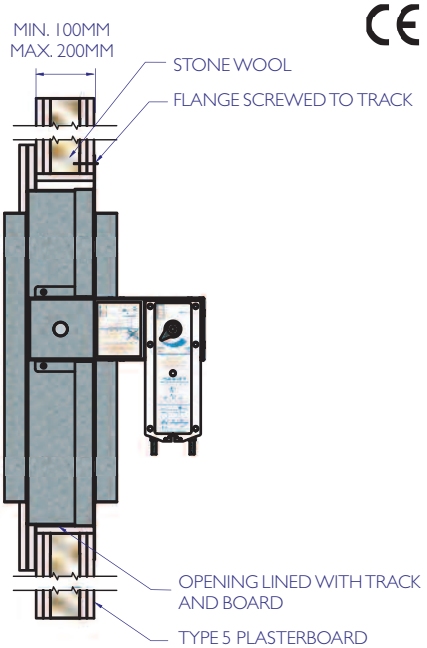


TESTED TO BS EN 1366-2 FOR 2 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES120 (E120S)
BS EN 1366-2 TEST/ASSESSMENT REFERENCES: 256075/CC 261450

DRY WALL - ANGLE FRAME Fitted
Vertical Installation
Single section sizes (mm):
100 x 100 to 1200 x 1200

FSD-TD AF
DW/145 M4

CE

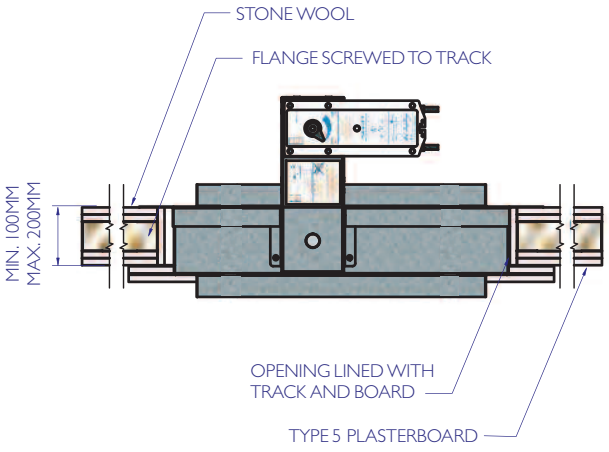


TESTED FROM BOTH SIDES
TESTED TO BS EN 1366-2 FOR 2 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES120 (E120S)
BS EN 1366-2 TEST/ASSESSMENT REFERENCES: 260152 AND 260153/CC 261450

DRY WALL - ANGLE FRAME Fitted
Horizontal Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

FSD-TD AF

CE



TESTED TO BS EN 1366-2 FOR 2 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES120 (E120S)

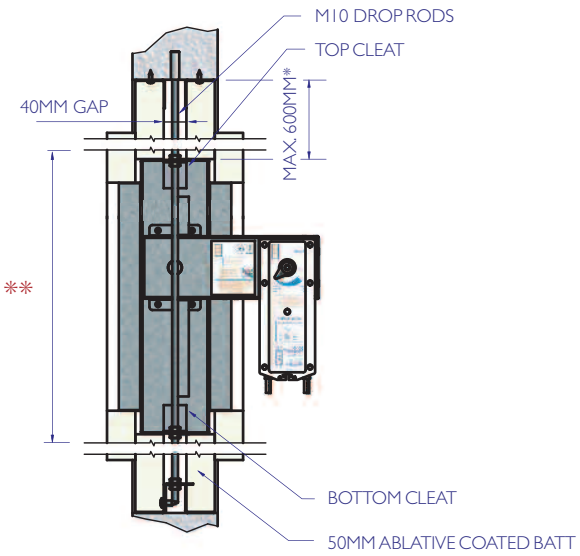
* If your proposed installation method has minor variations to that shown, please confirm acceptance with the local Building Control Authority (BCA) before proceeding. Manufacturers are not able to "approve" specific installation methods.

Installations tested to EN1366-2 and classified to BS EN 13501-3 *

BLOCK/MASONRY WALL - BATT FRAME Fitted
INFILL UP TO 600MM
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

FSD-TD BF

CE

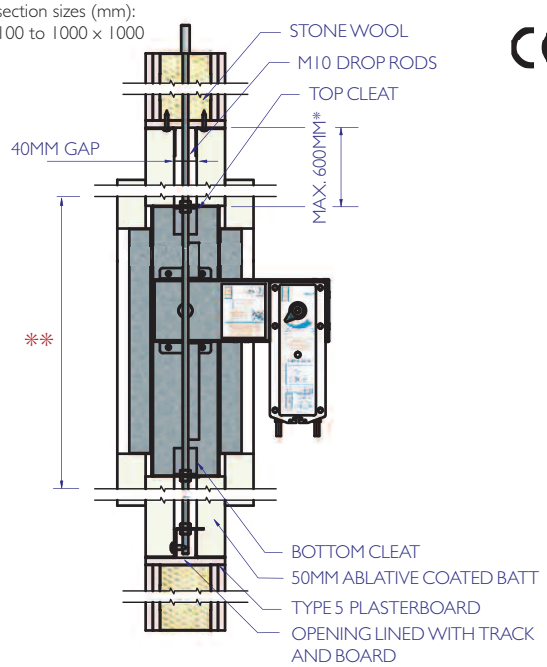


* FOR INFILL ABOVE 600MM, PLEASE CONTACT OUR SALES OFFICE
TESTED TO BS EN 1366-2 FOR 2 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES120 (E120S)
BS EN 1366-2 TEST/ASSESSMENT REFERENCES: 254506/CC 261450

DRY WALL - BATT FRAME Fitted
INFILL UP TO 600MM
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

FSD-TD BF

CE



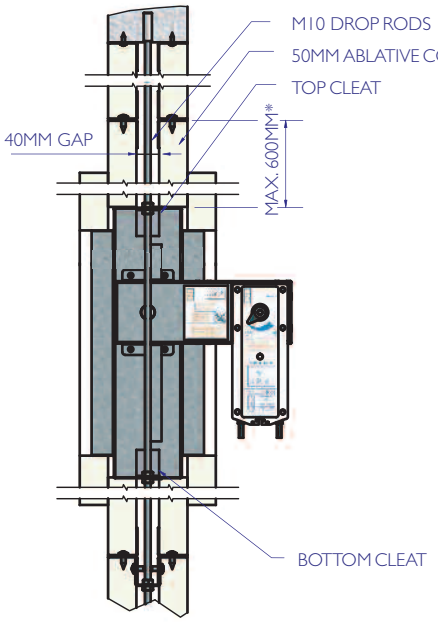
* FOR INFILL ABOVE 600MM, PLEASE CONTACT OUR SALES OFFICE
TESTED TO BS EN 1366-2 FOR 2 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES120 (E120S)
BS EN 1366-2 TEST/ASSESSMENT REFERENCES: 254506/CC 261450

** This refers to the tested area within test report 254506 where CE rules apply and are relevant.

BATT WALL - BATT FRAME Fitted
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

FSD-TD BF

CE



This tested method refers to the FSD-TD BF series damper within a Batt wall and with Batt material.

The Block/Masonry wall and Dry Wall installation methods given above are provided as separate suggested installation methods where the batt material on all four sides of the damper can be less, based on the Batt Wall as tested installation method.

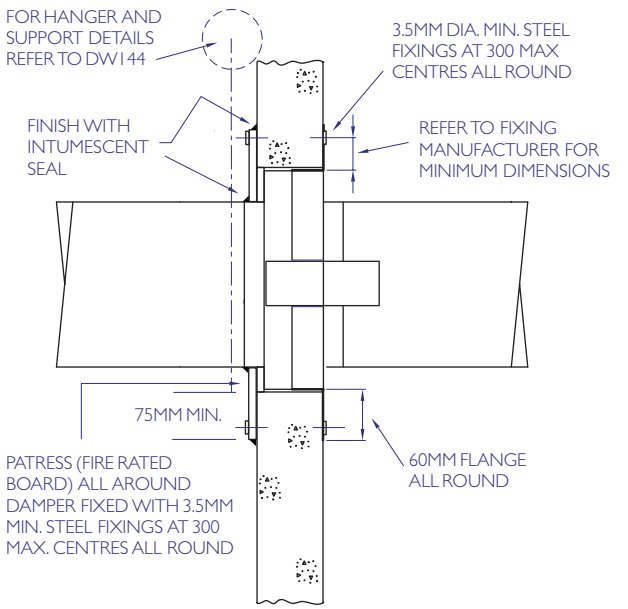
TESTED TO BS EN 1366-2 FOR 2 HOURS
EQUIVALENT TO BS EN 13501-3 CLASSIFICATION: ES120 (E120S)
BS EN 1366-2 TEST/ASSESSMENT REFERENCES: 254506/CC 261450

* If your proposed installation method has minor variations to that shown, please confirm acceptance with the local Building Control Authority (BCA) before proceeding. Manufacturers are not able to "approve" specific installation methods.

Installations assessed to BS 476-20/22 for up to 2 hours

IN BRICK/BLOCK WALL — FSD-TD AM1

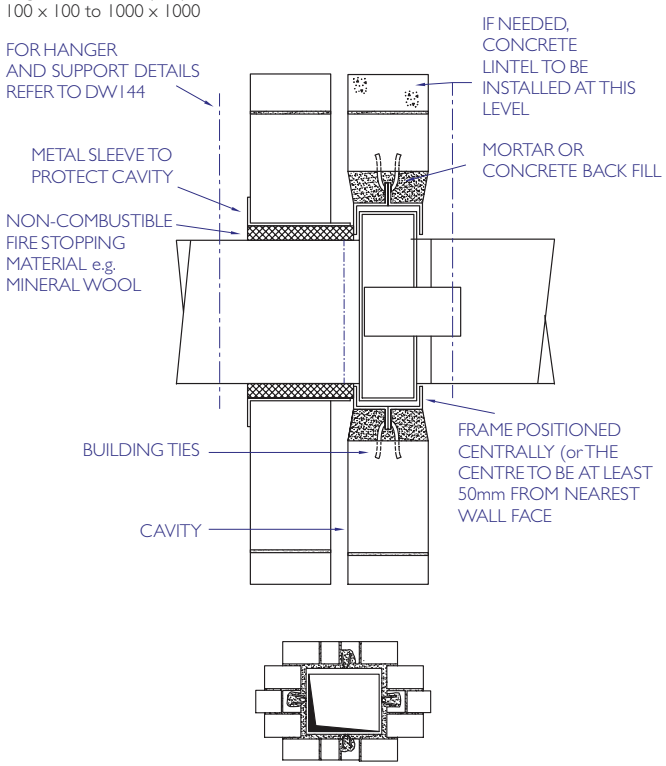
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000



ASSESSED TO BS 476-20 FOR 2 HOURS
ASSESSMENT REFERENCES: CC256681

IN DOUBLE SKIN BRICK/BLOCK WALL — FSD-TD AM2

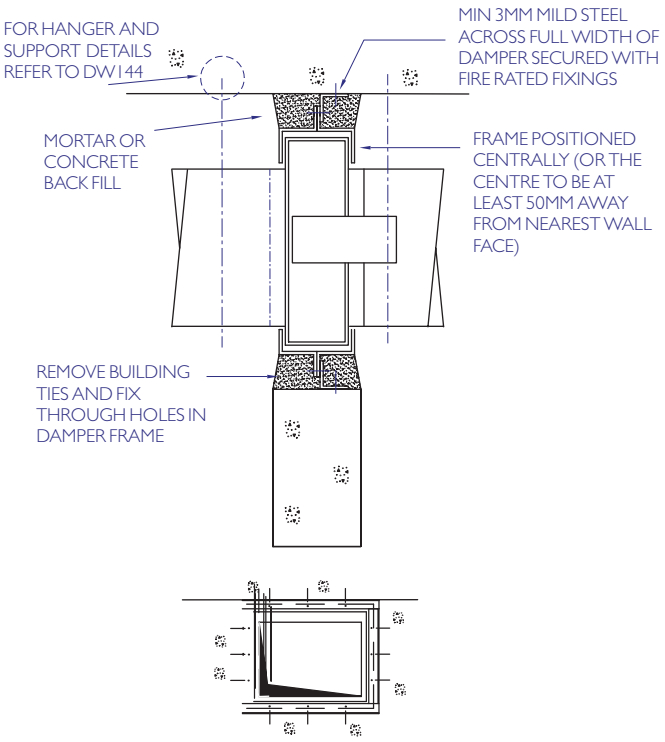
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000



ASSESSED TO BS 476-20 FOR 2 HOURS
ASSESSMENT REFERENCES: CC256680

IN CONCRETE WALL - UNDER SLAB — FSD-TD AM3

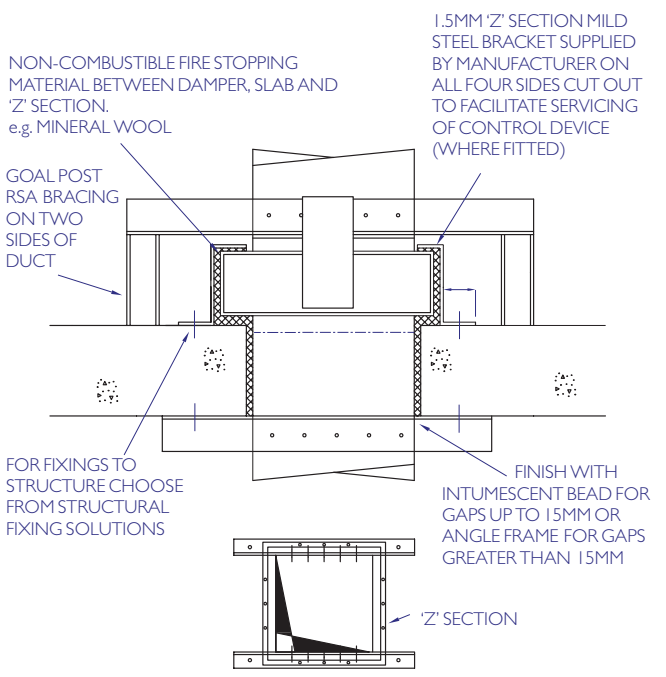
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000



ASSESSED TO BS 476-20 FOR 2 HOURS
ASSESSMENT REFERENCES: CC256680

IN CONCRETE SLAB — FSD-TD AM4

Horizontal Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000

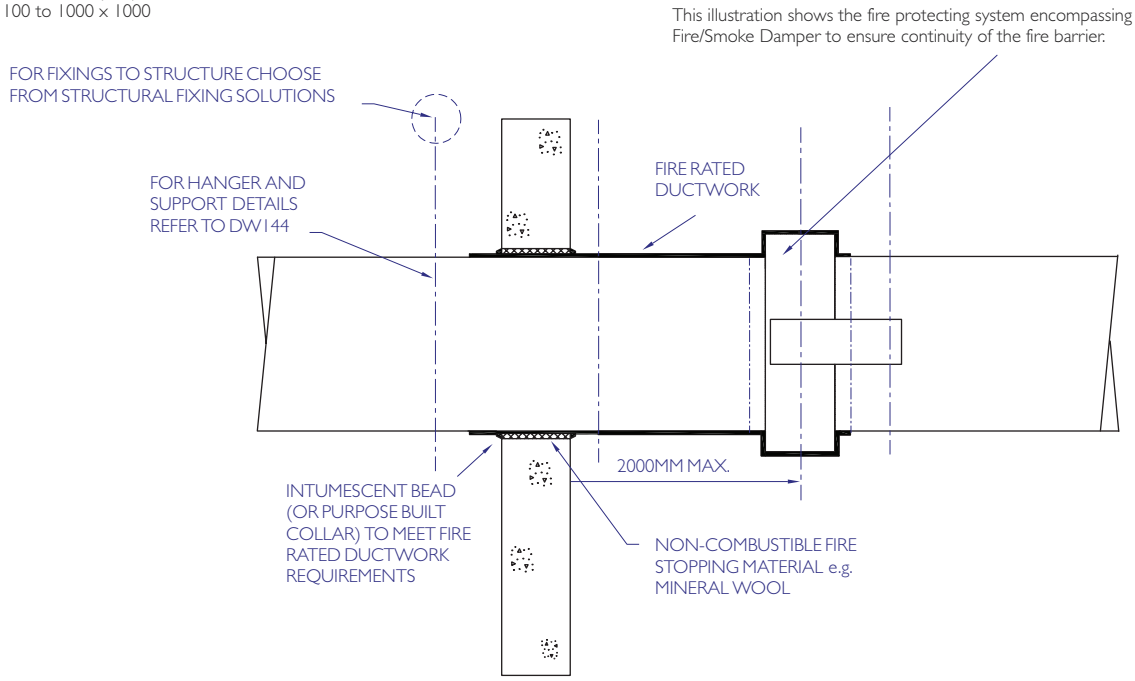


ASSESSED TO BS 476-20 FOR 2 HOURS
ASSESSMENT REFERENCES: CC256680

Installations assessed to BS 476-20/22 for up to 2 hours

REMOTE FROM WALL FSD-TD AM5

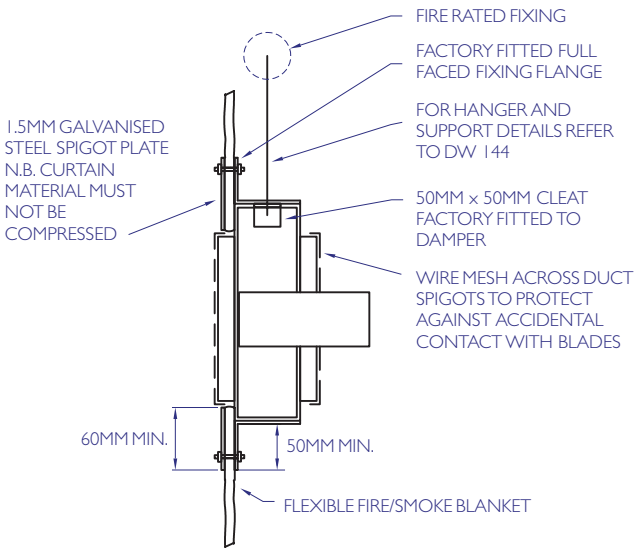
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000



ASSESSED TO BS 476-20 FOR 2 HOURS
ASSESSMENT REFERENCES: CC256680

IN FIRE CURTAIN FSD-TD AM6

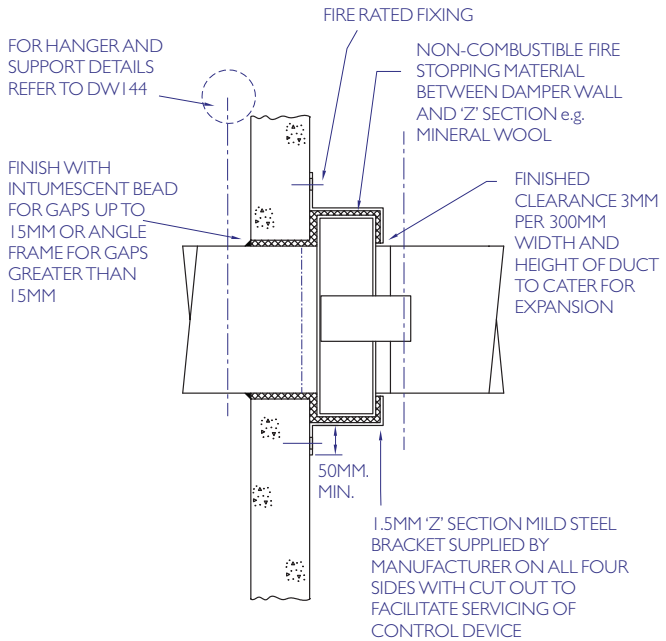
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000



UP TO 60 MINUTE FIRE RATING (LIMITED BY FIRE BLANKET PERFORMANCE)
ASSESSMENT REFERENCES: CC256680

IN CONCRETE /DRY WALL FSD-TD AM7

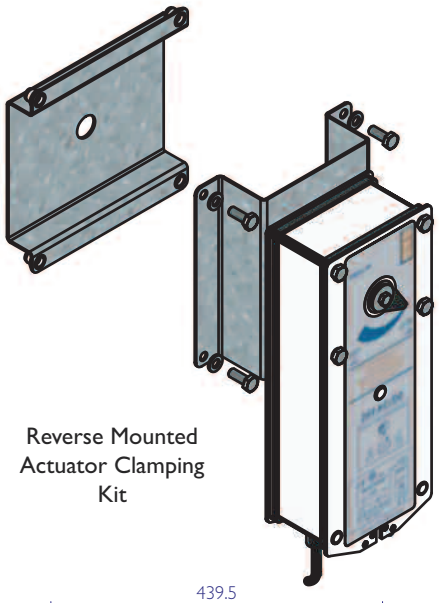
Vertical Installation
Single section sizes (mm):
100 x 100 to 1000 x 1000



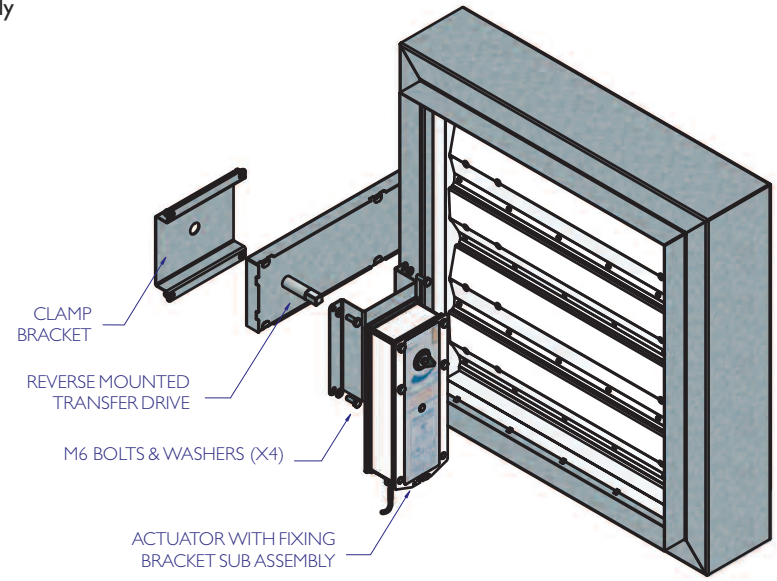
ASSESSED TO BS 476-20 FOR 2 HOURS
ASSESSMENT REFERENCES: CC256680

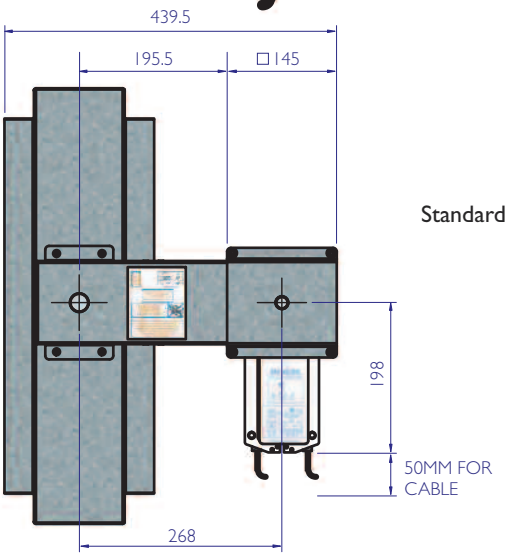
BSB FSD-TD

Reverse Mounted - Suitable for ductless installations only

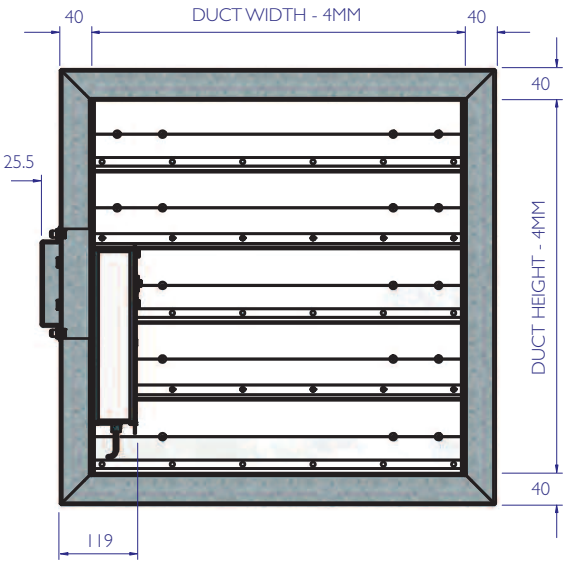


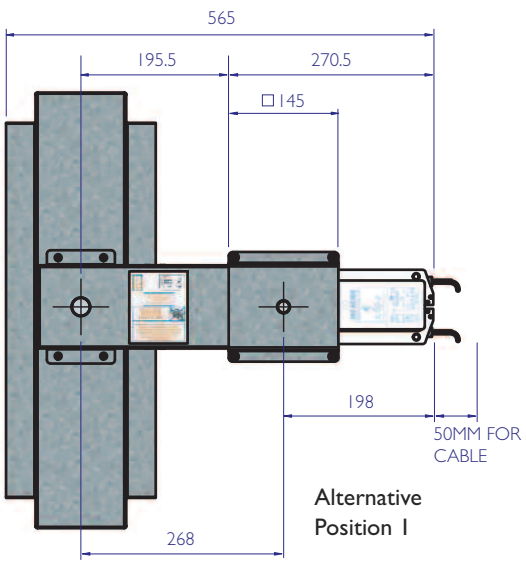
Reverse Mounted Actuator Clamping Kit



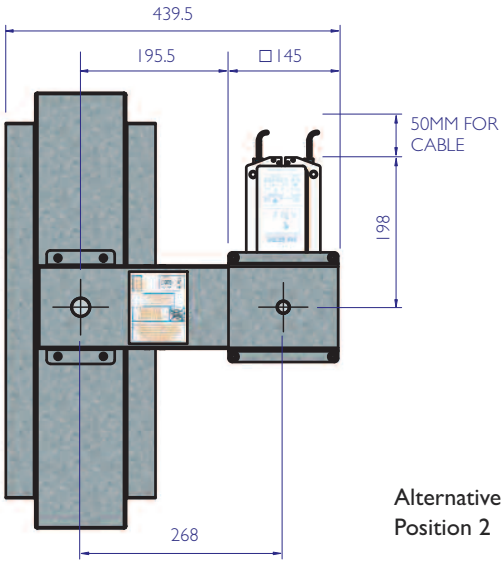


Standard Position





Alternative Position 1



Alternative Position 2

FSD-TD Series

Fire and Smoke Dampers – Electrical Actuator Specifications

Electrical data	BSB PM24 -TF	BSB PM230 -TF	BSB PM24 -NTF	BSB PM230 -NTF
Nominal voltage	24 V AC, 50/60 Hz / 24V DC	230 V AC, 50/60 Hz	24 V AC, 50/60 Hz / 24V DC	230 V AC, 50/60 Hz
Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V	AC 196...264V	AC 19.2...28.8V / DC 21.6...28.8V	AC 196...264V
Power consumption motoring	10 W @ nominal torque	12 W @ nominal torque	10 W @ nominal torque	12 W @ nominal torque
Holding	2 W	4 W	2 W	4 W
For wire sizing	12.5 VA / Imax. 8.3 A @ 5 ms	14 VA	12.5 VA / Imax. 8.3 A @ 5 ms	14 VA
Auxiliary switch	2 x 1 SPDT	2 x 1 SPDT	2 x 1 SPST	2 x 1 SPST
Contact rating *(contacts gold plate on silver)*	1 mA ... 6 A (3 A) DC 5 V ... AC 250 V	1 mA ... 6 A (3 A) DC 5 V ... AC 250 V	1 mA ... 6 A (3 A) DC 5 V ... AC 250 V	1 mA ... 6 A (3 A) DC 5 V ... AC 250 V
Switching points	5° / 85°	5° / 85°	5° / 85°	5° / 85°
Thermal fuse	72°C	72°C	-	-
Supply cable *(halogen free)*	1.0 m, 2 x 0.75 mm^2	1.0 m, 2 x 0.75 mm^2	1.2 m, 2 x 0.75 mm^2 *(300°C for 1 hour)*	1.2 m, 2 x 0.75 mm^2 *(300°C for 1 hour)*
Signal cable *(halogen free)*	1.0 m, 6 x 0.75 mm^2	1.0 m, 6 x 0.75 mm^2	1.2 m, 4 x 0.75 mm^2 *(300°C for 1 hour)*	1.2 m, 4 x 0.75 mm^2 *(300°C for 1 hour)*
Functional data				
Running time motor	< 60 s	< 60 s	< 60 s	< 60 s
Spring-return (at 20°C)	< 30 s	< 30 s	< 30 s	< 30 s
Sound power level motor	Max. 45 dB (A)	Max. 45 dB (A)	Max. 45 dB (A)	Max. 45 dB (A)
Spring-return	~62 dB (A)	~62 dB (A)	~62 dB (A)	~62 dB (A)
Position indication	Mechanical with pointer	Mechanical with pointer	Mechanical with pointer	Mechanical with pointer
Service life	Min. 10,000 full cycles @ 15Nm followed by 50 full cycles @ 20Nm	Min. 10,000 full cycles @ 15Nm followed by 50 full cycles @ 20Nm	Min. 10,000 full cycles @ 15Nm followed by 50 full cycles @ 20Nm	Min. 10,000 full cycles @ 15Nm followed by 50 full cycles @ 20Nm
Safety				
Protection class	III Safety extra low voltage	II totally insulated	III Safety extra low voltage	II totally insulated
Degree of protection (including Thermal Fuse)	IP54 in all mounting positions	IP54 in all mounting positions	IP54 in all mounting positions	IP54 in all mounting positions
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC
Ambient temperature range	normal duty –30°C to +50°C	normal duty –30°C to +50°C	normal duty –30°C to +50°C	normal duty –30°C to +50°C
Non-operating temperature	–40°C ... +50°C	–40°C ... +50°C	–40°C ... +50°C	–40°C ... +50°C
Ambient humidity range	95% r.H., non-condensing (EN60730-1)	95% r.H., non-condensing (EN60730-1)	95% r.H., non-condensing (EN60730-1)	95% r.H., non-condensing (EN60730-1)
Maintenance	Maintenance-free	Maintenance-free	Maintenance-free	Maintenance-free
Weight				
Weight	Approx. 3.1kg	Approx. 3.5kg	Approx. 3.1kg	Approx. 3.5kg

BSB FSD-TD-TF

BSB PM24-TF & BSB PM230-TF ELECTRICAL CONNECTIONS
DAMPER ENERGISED OPEN / SPRING CLOSED OPTION

- Wiring diagram shows switch positions based on no power to actuator
- Damper required normally open
- Spring close on removal of power or thermal fuse activation

24V AC/DC: Connect via safety isolation transformer

230V AC: For disconnection from the supply, a separate device must be incorporated in the fixed wiring (at least 3mm contact gap in all poles)

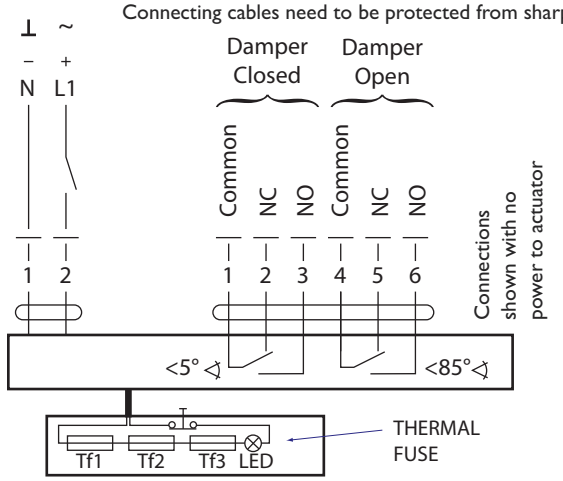
For damper closed indication use terminals 1 & 2

For damper open indication use terminals 4 & 6

Terminals 1 & 4 can be linked where required as an option

Unused cores should be isolated

Connecting cables need to be protected from sharp edges



BSB FSD-TD-NTF

BSB PM24-NTF & BSB PM230-NTF ELECTRICAL CONNECTIONS
DAMPER ENERGISED OPEN / SPRING CLOSED OPTION

- Wiring diagram shows switch positions based on no power to actuator
- Damper required normally open
- Spring close on removal of power supply

24V AC/DC: Connect via safety isolation transformer

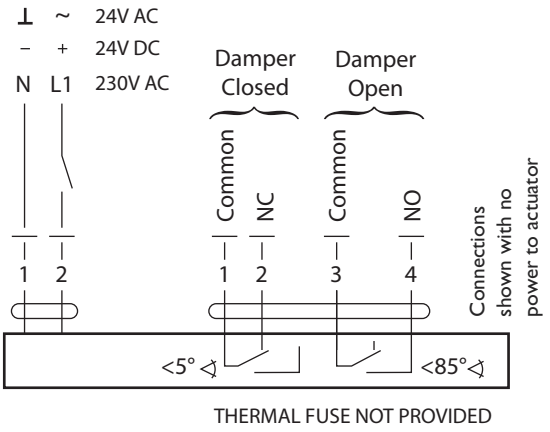
230V AC: For disconnection from the supply, a separate device must be incorporated in the fixed wiring (at least 3mm contact gap in all poles)

For damper closed indication use terminals 1 & 2

For damper open indication use terminals 3 & 4

Terminals 1 & 3 can be linked where required as an option

Connecting cables need to be protected from sharp edges



THERMAL FUSE NOT PROVIDED

BSB FSD-TD HOT300

BSB PM24-NTF & BSB PM230-NTF ELECTRICAL CONNECTIONS
DAMPER ENERGISED OPEN / SPRING CLOSED OPTION

- Wiring diagram shows switch positions based on no power to actuator
- Damper required normally open
- Spring close on removal of power supply

24V AC/DC: Connect via safety isolation transformer

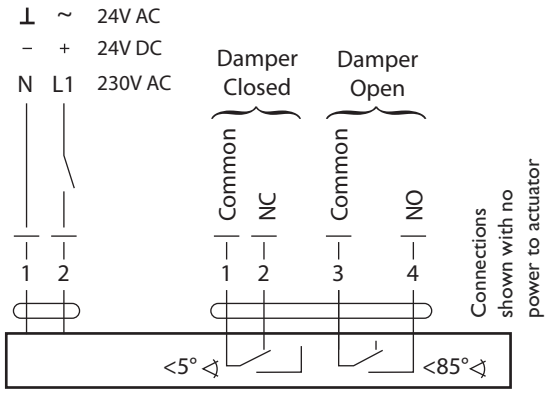
230V AC: For disconnection from the supply, a separate device must be incorporated in the fixed wiring (at least 3mm contact gap in all poles)

For damper closed indication use terminals 1 & 2

For damper open indication use terminals 3 & 4

Terminals 1 & 3 can be linked where required as an option

Connecting cables need to be protected from sharp edges



THERMAL FUSE NOT PROVIDED

BSB FSD-TD SEVAC + HOT300 SEVAC

BSB PM24-NTF & BSB PM230-NTF ELECTRICAL CONNECTIONS
DAMPER ENERGISED CLOSED / SPRING OPEN OPTION

- Wiring diagram shows switch positions based on no power to actuator
- Damper required normally closed
- Spring open on removal of power supply

24V AC/DC: Connect via safety isolation transformer

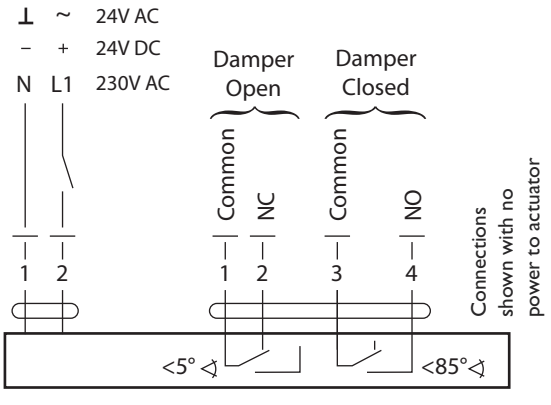
230V AC: For disconnection from the supply, a separate device must be incorporated in the fixed wiring (at least 3mm contact gap in all poles)

For damper open indication use terminals 1 & 2

For damper closed indication use terminals 3 & 4

Terminals 1 & 3 can be linked where required as an option

Connecting cables need to be protected from sharp edges



THERMAL FUSE NOT PROVIDED

FSD-TD Series

Fire and Smoke Dampers – Pneumatic Actuator

BSB PM-P-TF

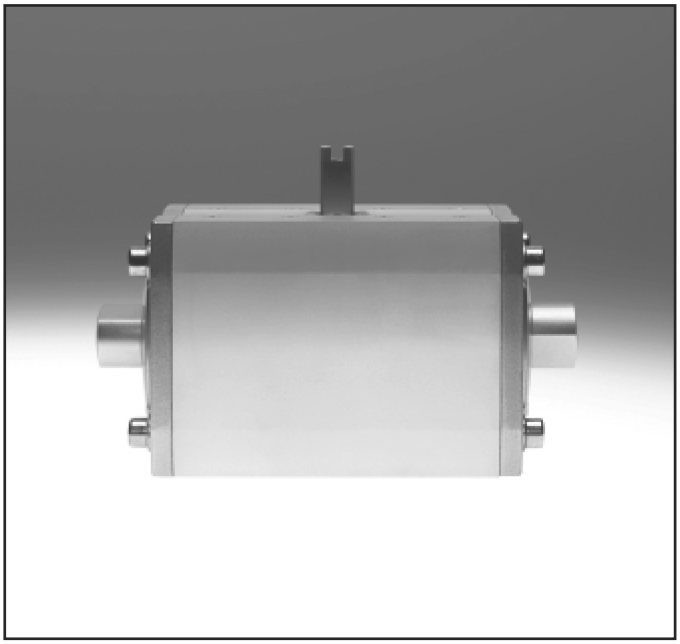
Pneumatic actuator with thermal fuse.

The BSB PM-P-TF model provides instant failsafe operation from a 72°C fusible link release and an external manual reset mechanism.

The BSB quarter-turn actuator is a rack and pinion combination that converts the linear movement of the shaft. Quarter turn actuators based on this principle exhibit an identical torque characteristic across the entire rotation angle range of 90°.

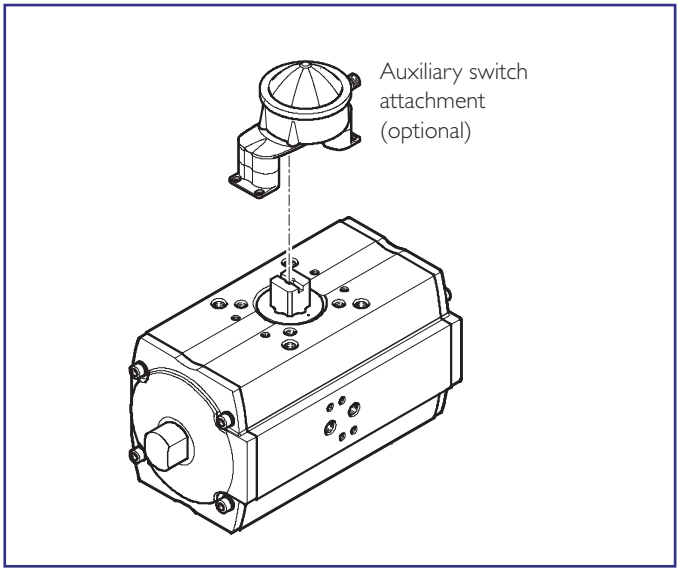
A 300mm stub duct is provided to accommodate the duct mounted thermal fuse assembly.

- Failsafe closure of the damper upon a rise in temperature within the duct exceeding 72°C (+/- 4°C) or removal of the air supply
- Operating pressure 4.9 bar min. Nominal 5.6 bar
- Actuator spring opening and spring closing time less than 3 seconds
- External indication of blade position
- In duct test facility
- Auxiliary switch option available
- Maintenance free
- Weight = 1.3 kg
- Operating medium: dried, filtered compressed air
- Actuator torque at normal operating pressure: 29 Nm



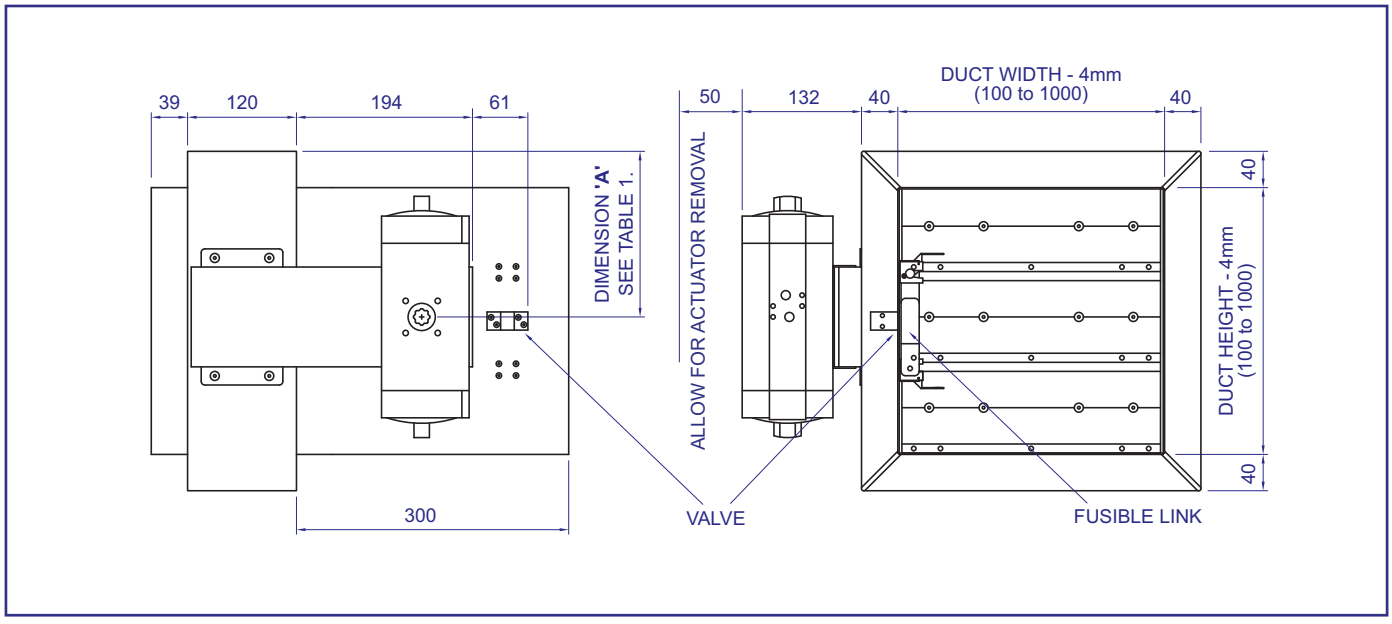
Actuator Construction

- Housing: Anodised aluminium
- End Caps: Die-cast aluminium, coated
- Drive Shaft: Anodised aluminium
- Internal Seals: Polyurethane, nitrile rubber



BSB PM-P-NTF

Pneumatic actuator with no thermal link.



BSB-FSD-TD-SEVAC
Spring open versions for smoke evacuation

Some applications may arise where dampers may be required to be driven normally closed and spring return open under the instruction of a smoke and/or fire alarm. It must be stressed that this will also happen if power to the unit is lost. These units are not fire dampers as they do not spring closed, but would be expected to stay open in the event of a fire. They do not have thermal fuses, Building Control Authority approval must be sought before applying these products.

SEVAC Typical tender/specification text:

The failsafe open smoke evacuation dampers shall be based on fire and smoke dampers that are LPCB certificated and which have passed the test requirements stated in EN1366-2. They shall have no thermal fuse.

They shall have an equivalent to an ES classification to EN13501-3 when shut and shall include an actuator that is set to spring return the ventilation damper open in response to a smoke alarm signal.

The failsafe open smoke evacuation damper shall have an opposed blade action with the interlocking double skinned blades each having robust 19mm spindles for both resistance to fire and daily airflow exposure. They shall motor close in less than 60 seconds and spring return open in less than 30 seconds.

The failsafe open smoke evacuation damper blade drive linkage shall be fully enclosed and outside of the air stream for protection against damage and air contamination.

Stainless steel gaskets shall be provided at the top and bottom of the ventilation damper as well as down the sides to reduce ambient leakage to below the levels stated in EN1366-2.

The failsafe open smoke evacuation damper case shall be fully welded to meet the air tightness test requirements of HVCA specification DW144 to classes A, B and C up to 1500Pa.

The failsafe open smoke evacuation damper shall have a tested or assessed installation method that matches the requirement of the supporting construction into which it is built.

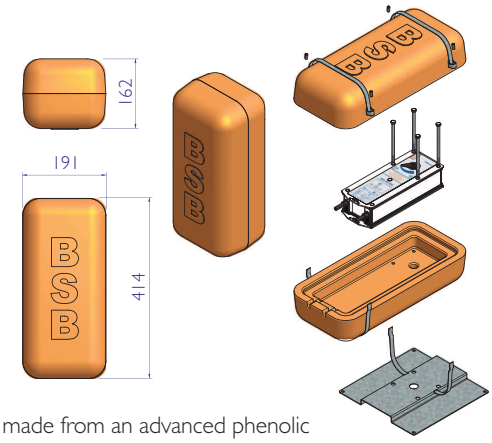
The failsafe open smoke evacuation dampers shall be the FSD-TD-SEVAC Series as supplied by BSB - www.bsb-dampers.co.uk - 01795 422609

(Tests or assessments of installation methods to BS476-20/22 may be acceptable if the smoke evacuation design causes the fans to be turned off in the event of a smoke or fire alarm and escape routes and areas of sleeping risk are not being protected)

* For Standard Typical Tender Specifications see Page 4

BSB FSD-TD-HOT300

The BSB Thermal Housing has been designed to slow down the influence of elevated temperatures generated during a fire condition on damper actuators, extending its operational life allowing the damper to function in temperatures up to 300°C for one hour.



The thermal housing is made from an advanced phenolic composite resin with endothermic properties and is provided in two parts, the base and the cover and can accommodate the PM – spring return actuators or BE drive open/ drive closed actuators. The internal strain relief bush ensures that the cables are not pulled from the terminal block. The thermal housing is unique in that no gaskets or additional seals are required thus eliminating the possibility of damage or miss fitting during commissioning and/or the maintenance programme where the actuator would normally be checked.

The thermal housing is IP42 rated and has a weight 3.3 Kgs without actuator.

Test Report Number 289439A – 300 deg C 2 hours

HOT300 Typical tender/specification text:

The 300°C fire and smoke dampers able to operate at 300°C for 60 minutes shall be based on fire and smoke dampers that are LPCB certificated and which have passed the test requirements stated in EN1366-2. They shall have no thermal fuse.

They shall have an equivalent to an ES classification to EN13501-3 when shut and shall include a thermally protected actuator that is set to spring return the fire and smoke damper closed on failure of power or in response to control system. They shall motor open in less than 60 seconds and spring return closed in less than 30 seconds.

The 300°C fire and smoke damper shall have an opposed blade action with the interlocking double skinned blades each having robust 19mm spindles for both resistance to fire and daily airflow exposure.

The 300°C fire and smoke damper blade drive linkage shall be fully enclosed and outside of the air stream for protection against damage and air contamination.

Stainless steel gaskets shall be provided at the top and bottom of the 300°C fire and smoke damper as well as down the sides to reduce ambient leakage to below the levels stated in EN1366-2.

The 300°C fire and smoke damper case shall be fully welded to meet the air tightness test requirements of HVCA specification DW144 to classes A, B and C up to 1500Pa.

The 300°C fire and smoke damper shall have a tested or assessed installation method that matches the requirement of the supporting construction into which it is built.

The 300°C fire and smoke dampers shall be the FSD-TD-HOT300 Series as supplied by BSB - www.bsb-dampers.co.uk - 01795 422609

(Tests or assessments of installation methods to BS476-20/22 may be acceptable if the smoke evacuation design causes the fans to be turned off in the event of a smoke or fire alarm and escape routes and areas of sleeping risk are not being protected)

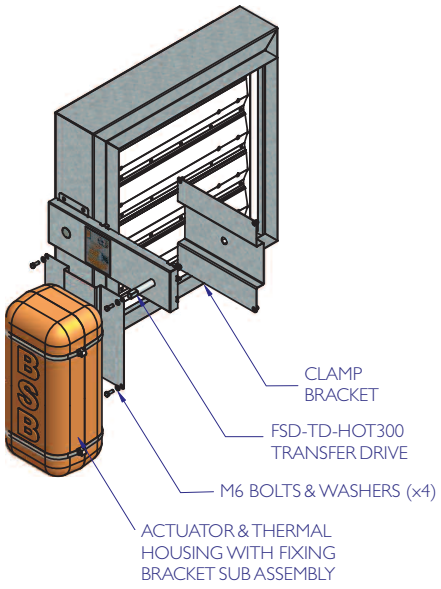
* For Standard Typical Tender Specifications see Page 4

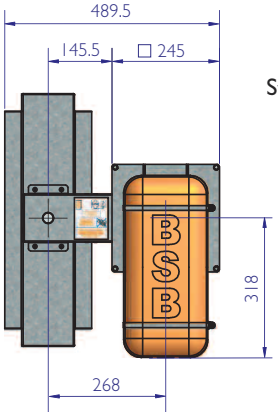
FSD-TD Series

Fire and Smoke Dampers – HOT300 Installation

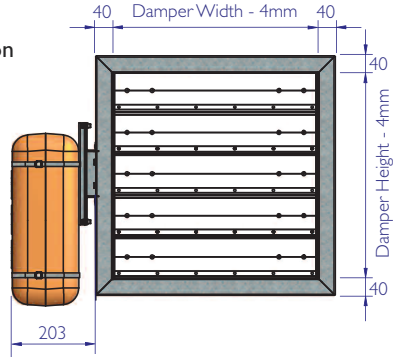
BSB FSD-TD-HOT300

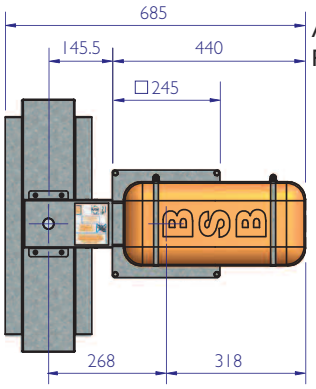
Standard Mounted



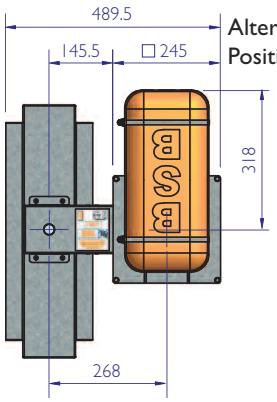


Standard Position





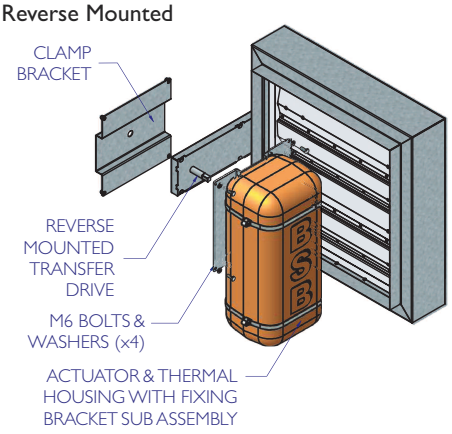
Alternative Position 1

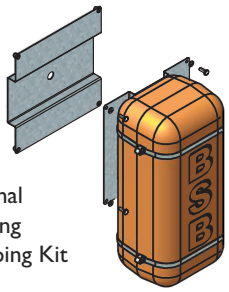


Alternative Position 2

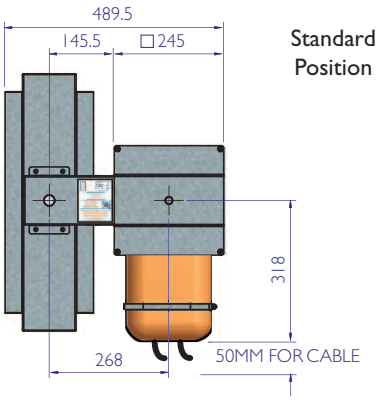
BSB FSD-TD-HOT300

Reverse Mounted

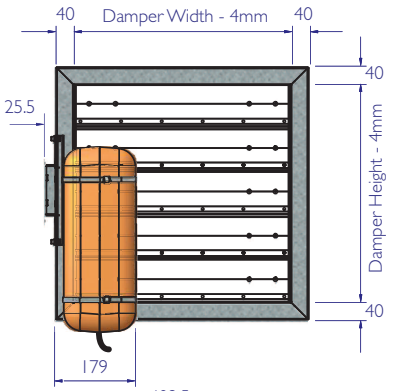




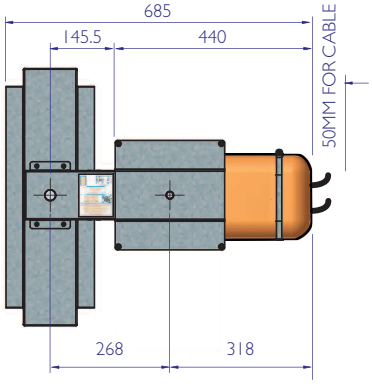
Thermal Housing Clamping Kit

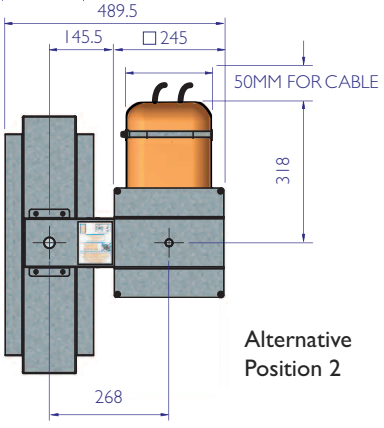


Standard Position



Alternative Position 1





Alternative Position 2

BSB transfer drive boxes are designed for all variants including FSD-TD-HOT300 and reverse mounted control options. They can be used up to 250mm wall thickness and fitted in three different positions.

The actuator thermal housing securing system will be supplied separately to the dampers for site fitting by others unless customer specifies as factory fitted.

They are easily fitted on site using M6 bolts and washers to clamp the brackets. To change actuator positions, remove M6 bolts and washers, lift off and rotate the thermal housing/actuator with fixing bracket sub assembly in desired position, fasten the brackets with M6 bolts and washers.

Maintenance

FSD-TD 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.

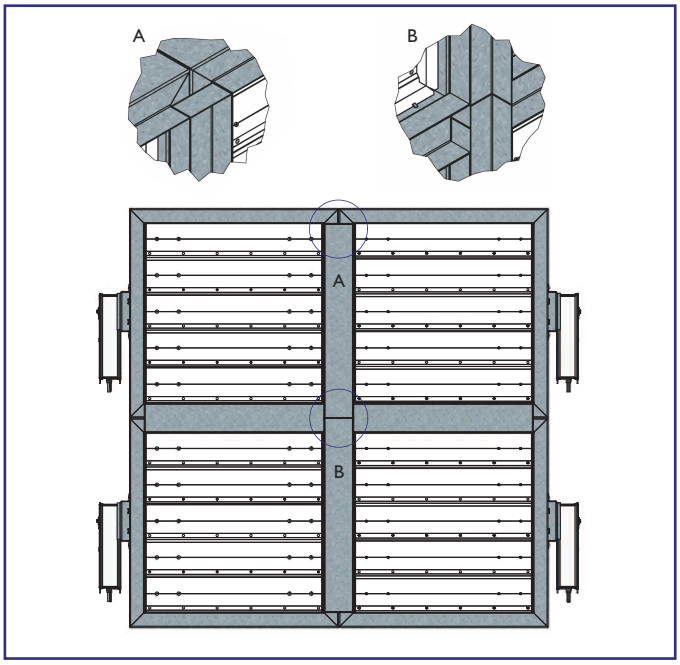
As a guide, this should take place on a maximum of six months intervals.

Reference should be made to BS 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.

Multiple Assemblies



FSD-TD Series dampers can be supplied in multiple module sections to achieve requested sizes larger than the maximum manufactured single module units. These will be supplied as right hand and left hand pairs.

Such units and their installation method must be approved by the BCA before installation. For this, consideration must be given to additional structural steelwork that might be needed to support the weight of the damper. BSB cannot offer or approve supporting structures for multiple assemblies.

Joining channels have capped ends to provide the benefit of a continuous perimeter spigot.

When there are transportation restrictions, large multiple units will be shipped in individual sections for site assembly by others. Joining channels are supplied un-drilled unless requested. Large multiple units required to be shipped fully assembled will incur additional packing/shipping costs. Please contact our sales office for further information.

Damper Control Panels

BSB offer two alternative panels when monitoring and controlling dampers. the Electro Mechanical System and the Fully Addressable System.

Electro mechanical panels are generally used for up to 30 dampers and where hard wiring costs are not an issue. The control system being hardwired and the facia being engraved, means that any changes will require physical alterations and additional costs.

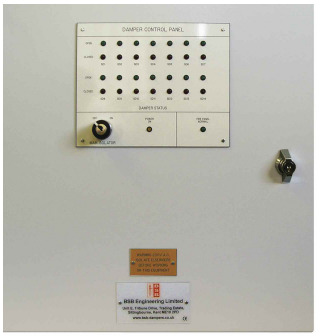
The fully addressable panel is fully software programmable allowing for additional dampers or changes to the "cause and effect" being reprogrammed by an engineer on site.

For additional functions and options to meet all site and system requirements, please contact our sales office.

Standard Electro Mechanical Control and Monitoring System

Provides a straight forward control panel offering the most common features called for as standard.

Due to differing site control and monitoring properties, damper actuators will be connected to site wiring when installed by the contractor to provide the relevant functions.



Premier Electro Mechanical Control and Monitoring System

Controls and monitors a number of smoke/fire dampers hard wired individually or in groups, in a single or multiple zone arrangement.

Dampers can be individually or collectively controlled and are continuously monitored.

Due to differing site control and monitoring properties, damper actuators will be connected to site wiring when installed by the contractor to provide the relevant functions.

Fully Addressable Control and Monitoring System

Software driven panel simplified installation and commissioning. Utilises data wiring in a loop configuration.

Can be configured to suit all types of system. Fully integrated and secure network provides an intelligent interface for building control.

Touch screen options are available allowing system interrogation, Touch screen with Graphic CAD based floor plans, mimic style displays and optional BACnet interface complete the range. Please contact the BSB sales office for further information.

FSD-TD Series

Fire and Smoke Dampers – Ordering Codes

FSD-TD S CI BI HF PM230-TF

Model
- FSD-TD Fire and Smoke Damper
- FSD-TD-SEVAC Smoke Vent Damper
- FSD-TD-HOT300 300° High Temperature Damper

Case Type
- S Rectangular Spigot Connection
- C Circular Spigot Connection
- O Flat Oval Spigot Connection

Case Material
- C1 Galvanised Steel
- C2 430 Stainless Steel - Ferritic (430) type 1.4016
- C3 316 Stainless Steel - Austenitic (316) type 1.4401

Blade Material
- B1 Galvanised Steel
- B2 430 Stainless Steel
- B3 316 Stainless Steel

Actuator Options
- PM24-TF 24 volt spring return actuator with thermal fuse (FSD-TD)
- PM230-TF 230 volt spring return actuator with thermal fuse (FSD-TD)
- PM24-NTF 24 volt spring return actuator - no thermal fuse (FSD-TD-SEVAC)
- PM230-NTF 230 volt spring return actuator - no thermal fuse (FSD-TD-SEVAC)
- PM24-NTF 24 volt spring return actuator - no thermal fuse (FSD-TD-HOT300)
- PM230-NTF 230 volt spring return actuator - no thermal fuse (FSD-TD-HOT300)
- PMPF Pneumatic actuator with thermal fuse
- PMPF-NTF Pneumatic actuator - no thermal fuse

Installation Method
- HF HEVAC Frame
- SA Sleeve and Angles
- BF Batt Frame
- NF No Frame
- CL Cleats
- ZF Z-Frame
- AF Angle Frame
- FC Fire Curtain

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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