



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 (BSB damper control panels)
- Tested and assessed installation methods in differing supporting constructions (BS 476-20/22)



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 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 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.

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 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.

Conformities

See installations section for full details.

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

- FSD-TD fitted with HEVAC frame
ES240 (E240S) - Blockwork/masonry wall
ES240 (E240S) - Concrete floor
- FSD-TD fitted with sleeve & angle frame
ES120 (E120S) - Dry partition wall
ES120 (E120S) - Blockwork/masonry wall
- FSD-TD fitted with cleats and angle frame
ES120 (E120S) - Firetherm Intubatt
- FSD-TD fitted with cleats
ES120 (E120S) - Dry partition wall

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)

- FSD-TD fitted with HEVAC frame
240 mins - Blockwork/masonry wall
240 mins - Concrete floor
- FSD-TD fitted with Sleeve & angle frame
120 mins - Dry partition wall
120 mins - Blockwork/masonry wall
- 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
- FSD-TD fitted with Z2000 frame
240 mins - Concrete floor
240 mins - Blockwork/masonry wall

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

Model FSD-TD Rectangular Spigot

Square/Rectangular Spigot Connection.

Model FSD-TD Circular Spigot

Circular Spigot Connection.

Model FSD-TD 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 EI20 (EI20S) classification, usually only limited by the wall construction used. This is extended to E240 (E240S) when installed using a HEVAC frame in a masonry/blockwork floor or wall.
- Sleeve and angle methods, HEVAC 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.
- 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 BCA 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 are manufactured from 430 stainless steel as standard. Blade seals are not required on the FSD-TD dampers to meet the requirements of EN1366-2 to meet the ES classification.
- Blades have folded safe-edges to aid site safety
- Other combinations of galvanised mild steel, 430 and 316 stainless steels for the blades and case are available to 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 adjustability 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 adjustability 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, building management systems (BMS) and other bespoke 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 HTM181 and should be read in conjunction with HTM2025: Ventilation in healthcare premises, as it gives guidance on maintenance and testing.

Building Bulletin 100

BB100 is the Department for Children, Schools and Families document on Fire safety in schools.

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 also states: "For property protection, fire dampers should also satisfy LPS 1162".

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 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 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 etc.

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 made in 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 430 or 316 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 made in 1.2mm galvanised mild steel. The bearing channel incorporates punch formed low friction bearing surfaces that allow the blades to rotate freely.

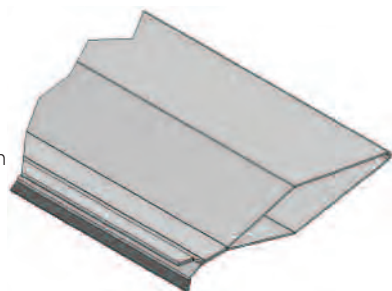
Where necessary, sealant is applied to seams and joints.

Blades

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

The blades are made in 0.7mm 430 grade stainless steel.

As an option blades are available in 316 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 cross over gear system, link arms and drive strips 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.

316 stainless options are available.

Other components

All other components are made 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 failsafe actuators, controlled to close automatically on loss of power or when the thermal fuse exceeds 72°C.

Stainless steel versions are not available.

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

Thermal Fuse

The 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 - this prevents the TF from being

Typical Tender/Specification Text

The FSD-TD 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.

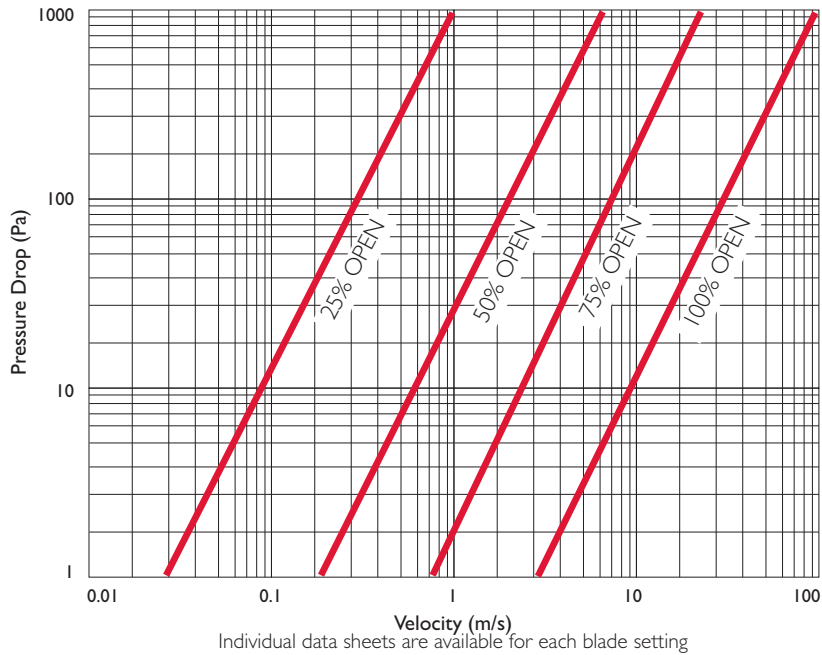
Stainless steel gaskets shall be provided at the top and bottom of the fire and smoke damper as well as down the sides to reduce ambient leakage to below the levels stated in EN 1366-2.

The fire and smoke damper case shall be fully welded to meet the air tightness test requirements of HVCA specification DW 144 to classes A, B and C up to 1500Pa.

The FSD-TD 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.

(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)

Performance Data

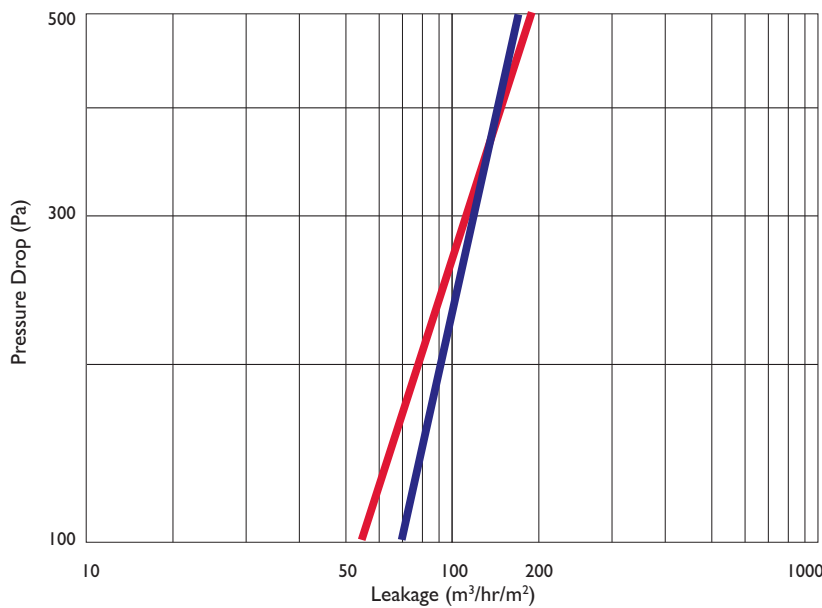


Pressure Drop

BSRIA Report I5633/I

Calculated performance at various damper settings

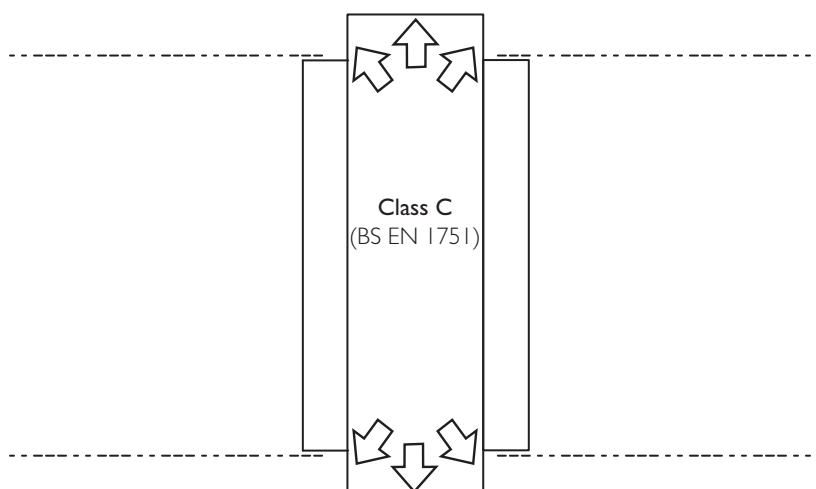
Size tested: 500mm x 600mm



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 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

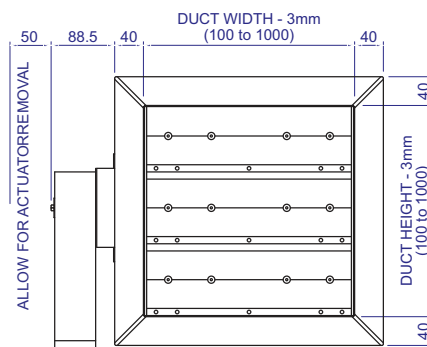
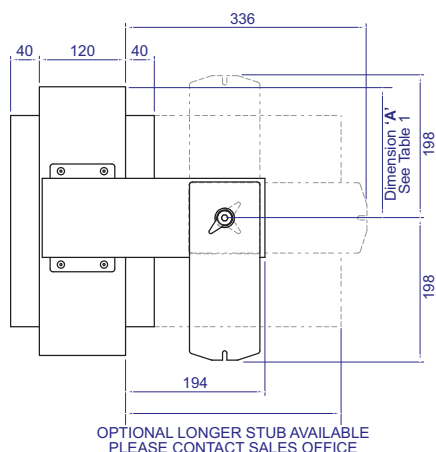
FSD-TD Series

Fire and Smoke Dampers – Base Dimensions



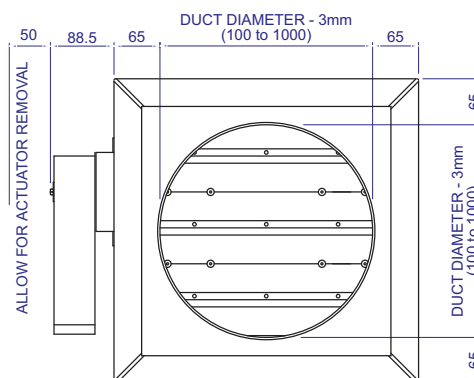
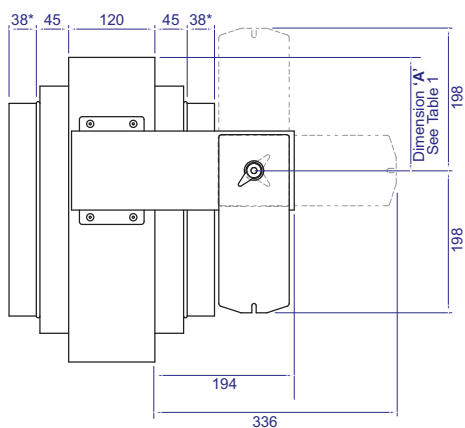
Model FSD-TD - S

Square/Rectangular
Spigot Connection



Model FSD-TD - C

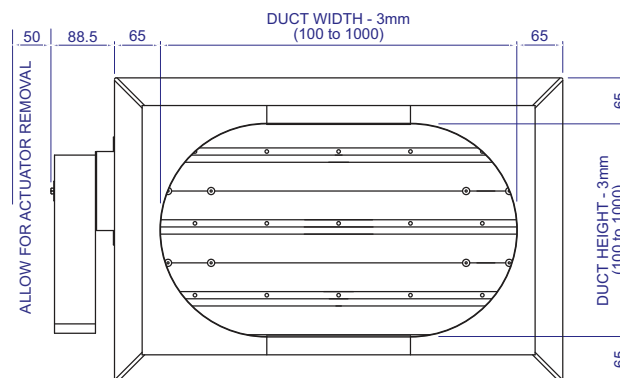
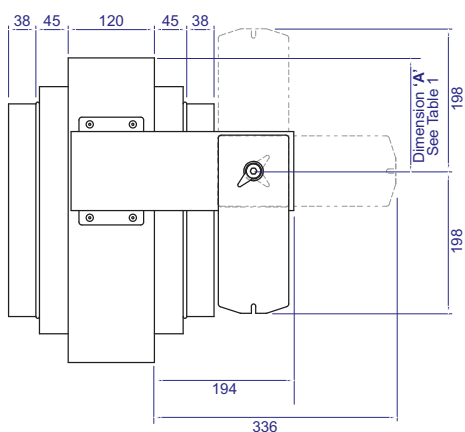
Circular Spigot
Connection



PLEASE NOTE: 951mm to 1000mm DIA. WILL BE THE SAME OVERALL SIZE AS A 901mm to 950mm DIA. RESPECTIVELY

Model FSD-TD - O

Flat Oval
Spigot Connection



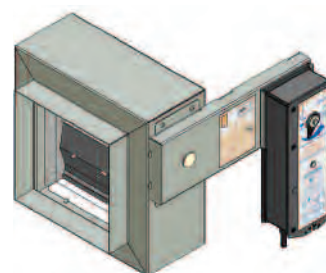
Dimension 'A' - Table I

Duct Height	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

Circular and Oval

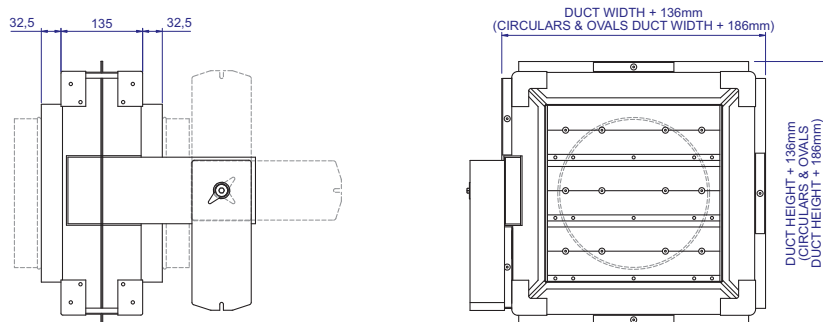
Duct Height	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Dimension 'A'	109	84	159	184	159	184	259	284	259	284	359	384	359	384	459	484	459	484	484

Damper Handling



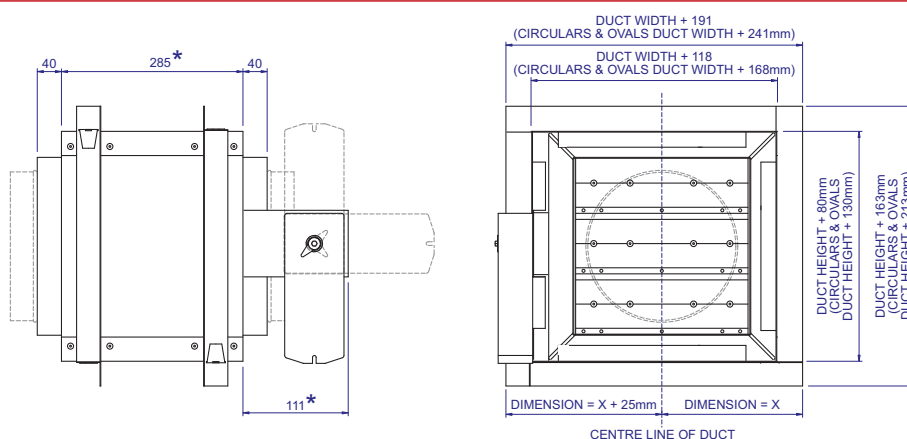
Right hand damper as shown will be supplied as standard

HEVAC Frame

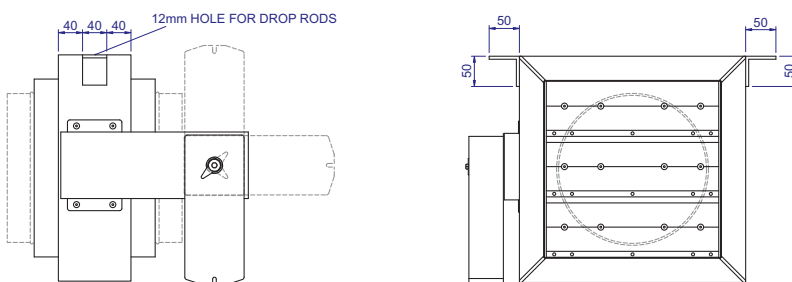


Sleeve and Angle

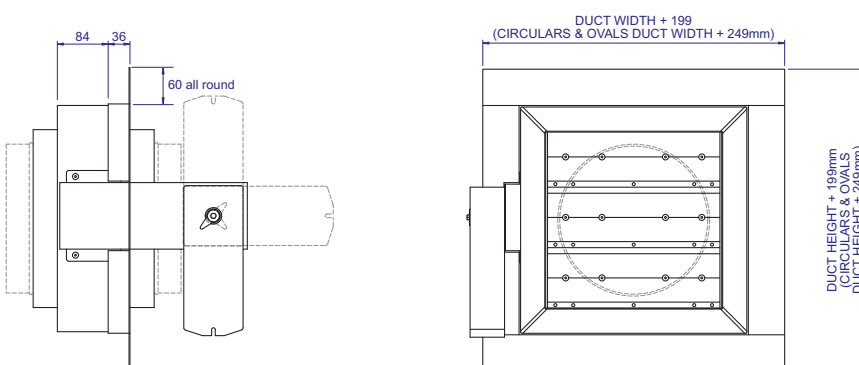
* Suitable for walls up to 200mm. Above this width refer to our technical sales office.



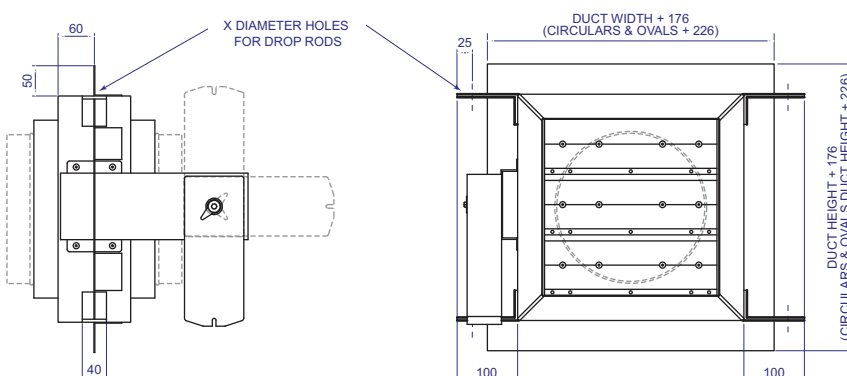
Cleats for Drop Rods



Angle Frame



Batt Frame



FSD-TD Series

Fire and Smoke Dampers – Installation



Installations tested to I366-2 and classified to BS EN 13501-3 *

Concrete/Masonry Floor - HEVAC frame FSD-TD M1

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

Min. 150mm

SOLID FLOOR

MORTAR OR CONCRETE BACK FILL

BS EN 1366-2
Test/assessment reference: 216413/CC254958
Classification: ES240 (E240S) / BS EN 13501-3

Block/Masonry Wall - HEVAC frame FSD-TD M2

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

Min. 100mm

WALL

MORTAR OR CONCRETE BACK FILL

FRAME POSITIONED CENTRALLY OR THE CENTRE TO BE AT LEAST 50mm AWAY FROM NEAREST WALL FACE

BS EN 1366-2
Test reference: 256538
Classification: ES240 (E240S) / BS EN 13501-3

Block/Masonry Wall - Sleeve & Angle FSD-TD M3

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

Min. 100mm

BLOCK WALL

BS EN 1366-2
Test reference: 253482 using direct field of application rules
Classification: ES120 (E120S) / BS EN 13501-3

Block/Masonry Wall - Batt Infill FSD-TD M4

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

150

150

MAXIMUM 600mm

MAXIMUM 600mm

M10 STUD ANCHORS

M10 DROP RODS

BS EN 1366-2
Test reference: 254506 using direct field of application rules
Classification: ES120 (E120S) / BS EN 13501-3

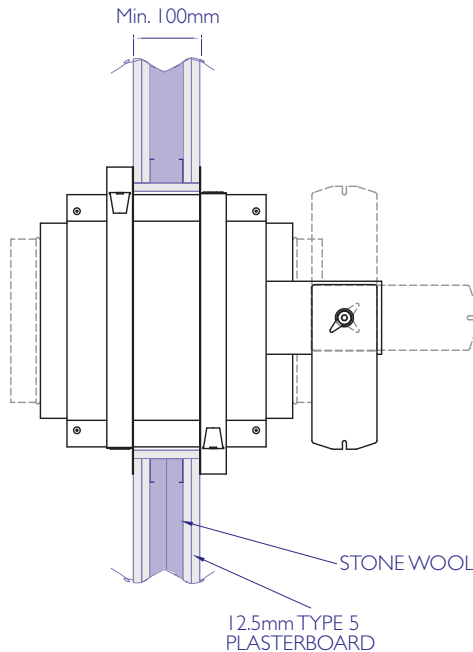
* If your proposed installation method has minor variations to that shown, please confirm acceptance with the local Building Control Authority (BCA) before proceeding. Manufacturers are not able to "approve" specific installation methods. It is generally accepted that EN 1366-2 tested installations will fulfil any requirements to BS 476-20/22 as the test method is much more severe.

Installations tested to I366-2 and classified to BS EN 13501-3 *

Dry Wall - Sleeve and Angle

FSD-TD M5

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

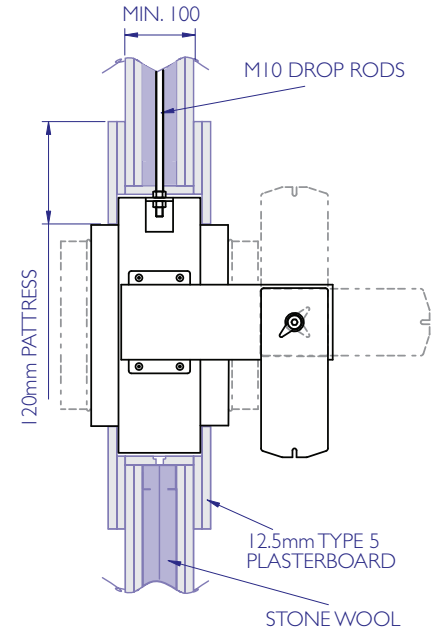


BS EN 1366-2
Test reference: 253482
Classification: ES120 (EI20S) / BS EN 13501-3

Dry Wall - Cleats (build round)

FSD-TD M6

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

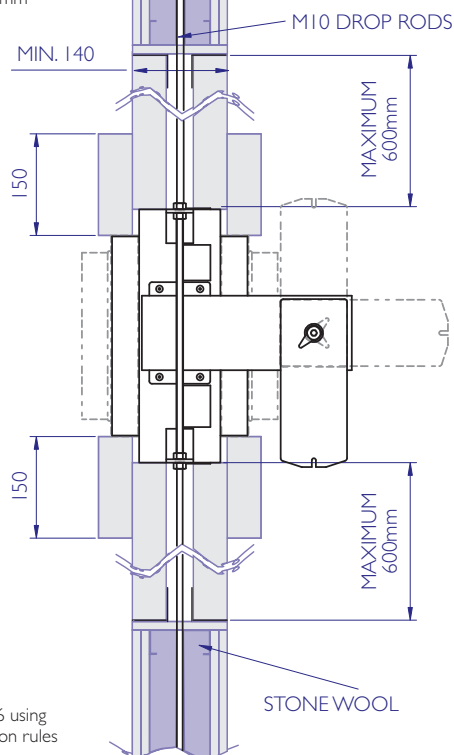


BS EN 1366-2
Test reference: 256075
Classification: ES120 (EI20S) / BS EN 13501-3

Dry Wall - Batt Infill

FSD-TD M7

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

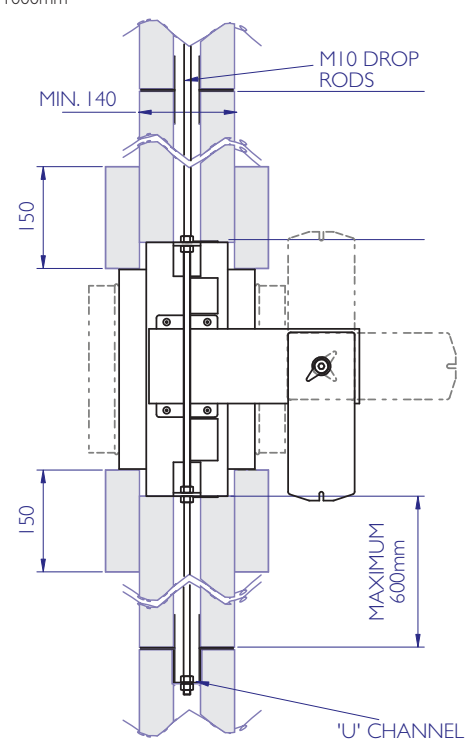


BS EN 1366-2
Test reference: 254506 using
direct field of application rules
Classification:
ES120 (EI20S) / BS EN 13501-3

Batt Wall - Batt Infill

FSD-TD M8

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm



BS EN 1366-2
Test reference: 254506
Classification: ES120 (EI20S) / BS EN 13501-3

* 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. It is generally accepted that EN 1366-2 tested installations will fulfil any requirements to BS 476-20/22 as the test method is much more severe.

FSD-TD Series

Fire and Smoke Dampers – Installation



Tested or assessed to BS 476-20/22 for 2 hours

Block/Masonry Wall - HEVAC frame **FSD-TD AM1**

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

FOR FIXINGS TO STRUCTURE CHOOSE FROM STRUCTURAL FIXING SOLUTIONS

DUCTWORK HANGER POSITIONS CLOSE ENOUGH TO WALL OPENING TO PREVENT TWISTING DURING INSTALLATION AND OPERATION

FRAME FIXING LUG SECURELY TIED BACK WITH WIRE TO FIRE RATED FIXING IN CONCRETE

MORTAR OR CONCRETE BACKFILL

FOR HANGER AND SUPPORT DETAILS CHOOSE FROM DUCT HANGER SOLUTIONS

FRAME POSITIONED CENTRALLY (OR AT LEAST 50mm AWAY FROM NEAREST WALL FACE)

FRAME FIXING LUG BUILT INTO MORTAR JOINTS/WALL APPROXIMATELY 50mm DEEP

Cross section

Assessment reference: CC256680
BS 476-20/22: 2 hours

Block/Masonry Wall - Z Angle frame **FSD-TD AM2**

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

FOR FIXINGS TO STRUCTURE CHOOSE FROM STRUCTURAL FIXING SOLUTIONS

DUCTWORK HANGER POSITIONS CLOSE ENOUGH TO WALL OPENING TO PREVENT TWISTING DURING INSTALLATION AND OPERATION

FIRE RATED FIXINGS

NON-COMBUSTIBLE FIRE STOPPING MATERIAL BETWEEN DAMPER WALL AND 'Z' SECTION eg MINERAL WOOL WITH A DENSITY GREATER THAN 80KG/M3

FINISHED CLEARANCE 3mm PER 300mm WIDTH AND HEIGHT OF DUCT TO CATER FOR EXPANSION

50mm MIN.

1.5mm 'Z' SECTION MILD STEEL BRACKET SUPPLIED BY MANUFACTURER ON ALL FOUR SIDES WITH CUT OUT TO FACILITATE SERVICING OF CONTROL DEVICE (WHERE FITTED)

FOR HANGER AND SUPPORT DETAILS CHOOSE FROM DUCT HANGER SOLUTIONS

FINISH WITH INTUMESCENT BEAD FOR GAPS UP TO 15mm OR ANGLE FRAME FOR GAPS GREATER THAN 15mm

Cross section

Assessment reference: CC256680
BS 476-20/22: 2 hours

Block/Masonry Wall - Under Slab with HEVAC frame **FSD-TD AM3**

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

FOR FIXINGS TO STRUCTURE CHOOSE FROM STRUCTURAL FIXING SOLUTIONS

DUCTWORK HANGER POSITIONS CLOSE ENOUGH TO WALL OPENING TO PREVENT TWISTING DURING INSTALLATION AND OPERATION

MIN. 3mm MILD STEEL ACROSS FULL WIDTH OF DAMPER SECURED WITH FIRE RATED FIXINGS

REMOVE BUILDING TIES AND FIX-THROUGH HOLES IN DAMPER FRAME

MORTAR OR CONCRETE BACKFILL

FOR HANGER AND SUPPORT DETAILS CHOOSE FROM DUCT HANGER SOLUTIONS

FRAME POSITIONED CENTRALLY (OR THE CENTRE TO BE AT LEAST 50mm AWAY FROM THE NEAREST WALL FACE)

GOAL POST RSA BRACING ON TWO SIDES OF DUCT

Cross section

Assessment reference: CC256680
BS 476-20/22: 2 hours

Concrete Slab - 'Z' Angle frame **FSD-TD AM4**

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

NON-COMBUSTIBLE FIRE STOPPING MATERIAL BETWEEN DAMPER SLAB AND 'Z' SECTION eg MINERAL WOOL WITH DENSITY GREATER THAN 80kg/cu m

1.5mm 'Z' SECTION MILD STEEL BRACKET SUPPLIED BY MANUFACTURER ON ALL FOUR SIDES CUT OUT TO FACILITATE SERVICING OF CONTROL DEVICE (WHERE FITTED)

50mm MIN.

FOR FIXINGS TO STRUCTURE CHOOSE FROM STRUCTURAL FIXING SOLUTIONS

FINISH WITH INTUMESCENT BEAD FOR GAPS UP TO 15mm OR ANGLE FRAME FOR GAPS GREATER THAN 15mm

PLAN VIEW

'Z' SECTION

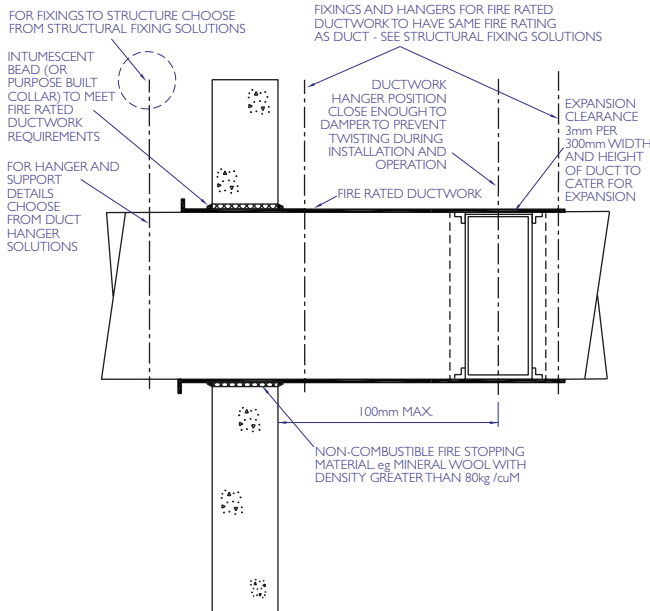
Assessment reference: CC256680
BS 476-20/22: 2 hours

Tested or assessed to BS 476-20/22 for 2 hours

Remote from Block/Masonry Wall - in fire rated ductwork

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

FSD-TD AM5

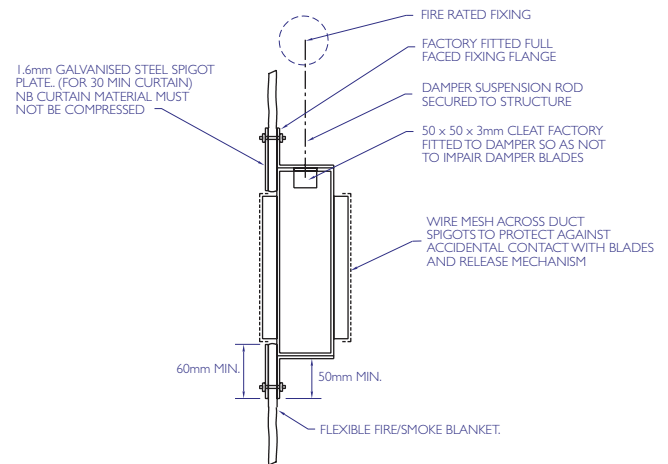


Assessment reference: CC256680
BS 476-20/22: 2 hours

Fire Curtain - Angle frame and Cleats

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

FSD-TD AM6

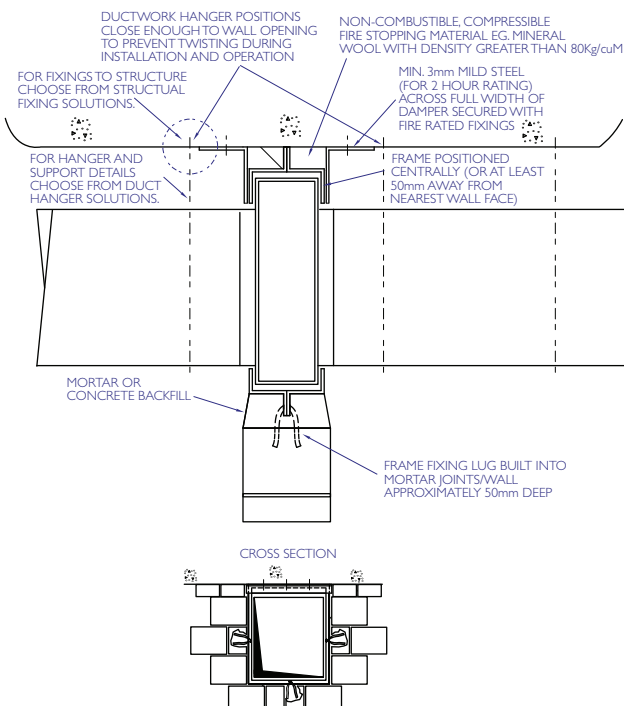


Assessment reference: CC256680
BS 476-20/22: 30 minutes

Block/Masonry Wall - Under Slab with top HEVAC frame

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

FSD-TD AM7

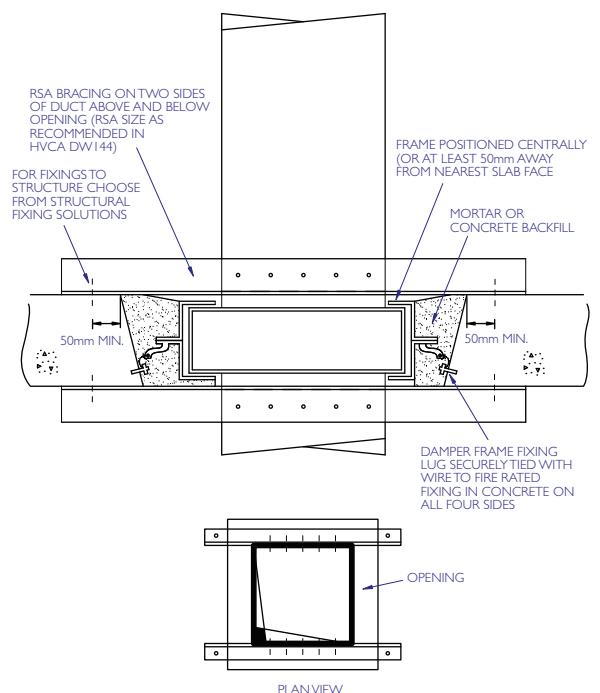


Assessment reference: CC256680
BS 476-20/22: 2 hours

Concrete Slab - HEVAC frame with angle supporting ducts

Damper size:
Min. 100mm x 100mm.
Max. 1000mm x 1000mm

FSD-TD AM8



Assessment reference: CC256680
BS 476-20/22: 2 hours

FSD-TD Series

Fire and Smoke Dampers – Electrical Actuator Specifications



PM24 -TF

PM230 -TF

PM24 -NTF

PM230 -NTF

Electrical data

Nominal voltage	AC 24V, 50/60 Hz / DC 24V	AC 230V, 50/60 Hz	AC 24V, 50/60 Hz / DC 24V	AC 230V, 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 / I _{max} 8.3 A @ 5 ms	14 VA	12.5 VA / I _{max} 8.3 A @ 5 ms	14 VA
Auxiliary switch	2 x I SPDT	2 x I SPDT	2 x I SPST	2 x I SPST
Contact rating	1 mA ... 6 A (3 A)	1 mA ... 6 A (3 A)	1 mA ... 6 A (3 A)	1 mA ... 6 A (3 A)
(contacts gold plate on silver)	DC 5 V ... AC 250 V	DC 5 V ... AC 250 V	DC 5 V ... AC 250 V	DC 5 V ... AC 250 V
Switching points	5° / 85°	5° / 85°	5° / 85°	5° / 85°
Thermal fuse (TF1)	duct outside temperature 72°C	duct outside temperature 72°C	-	-
Thermal fuse (TF2 & TF3)	duct inside temperature 72°C	duct inside temperature 72°C	-	-
Supply cable	1.0 m, 2 x 0.75 mm ² (halogen-free)	1.0 m, 2 x 0.75 mm ² (halogen-free)	1.2 m, 2 x 0.75 mm ² (halogen-free)	1.2 m, 2 x 0.75 mm ² (halogen-free)
Signal cable	1.0 m, 6 x 0.75 mm ² (halogen-free)	1.0 m, 6 x 0.75 mm ² (halogen-free)	1.2 m, 4 x 0.75 mm ² (halogen-free)	1.2 m, 4 x 0.75 mm ² (halogen-free)

Functional data

Running time motor	< 60 s	< 60 s	< 60 s	< 60 s
Spring-return	< 30 s (tamb = 20°C)	< 30 s (tamb = 20°C)	< 30 s (tamb = 20°C)	< 30 s (tamb = 20°C)
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	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
Mode of operation	Type I.A.A.B (according to EN60730-1)	Type I.A.A.B (according to EN60730-1)	Type I.A.A.B (according to EN60730-1)	Type I.A.A.B (according to EN60730-1)
Rated impulse voltage	0.8 kV (according to EN60730-1)	4 kV (according to EN60730-1)	0.8 kV (according to EN60730-1)	4 kV (according to EN60730-1)
Control pollution degree	3 (according to EN60730-1)	3 (according to EN60730-1)	3 (according to EN60730-1)	3 (according to EN60730-1)
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

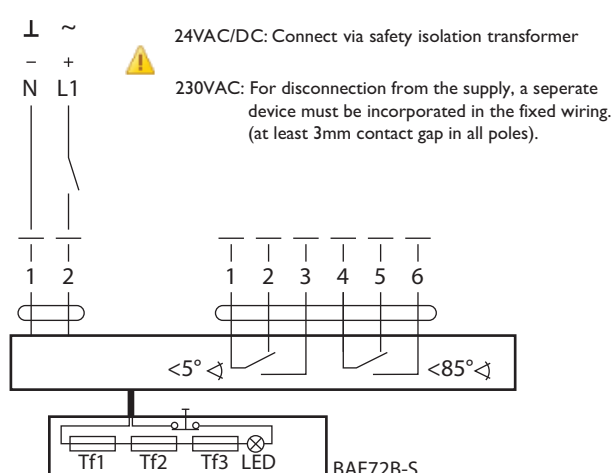
Approx. 3.1kg

Approx. 3.5kg

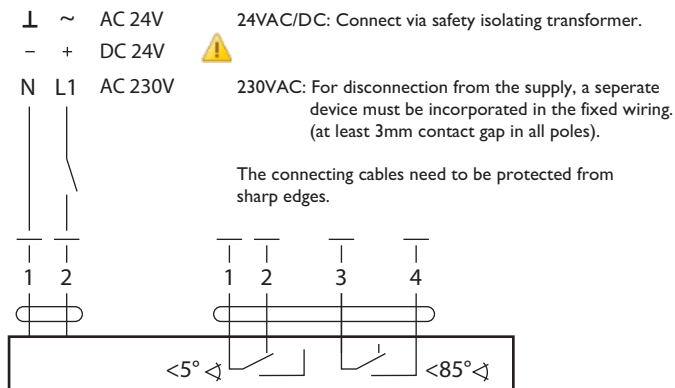
Approx. 3.1kg

Approx. 3.5kg

PM24-TF & PM230-TF Electrical connections



PM24-NTF & PM230-NTF Electrical connections



Contacts shown with actuator in failsafe position

PM-P-TF

Pneumatic actuator with thermal fuse.

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

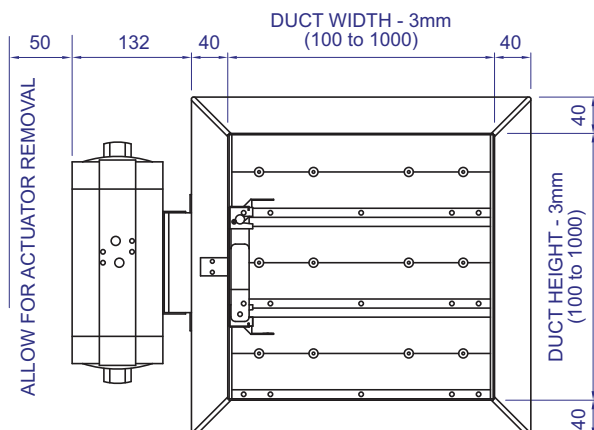
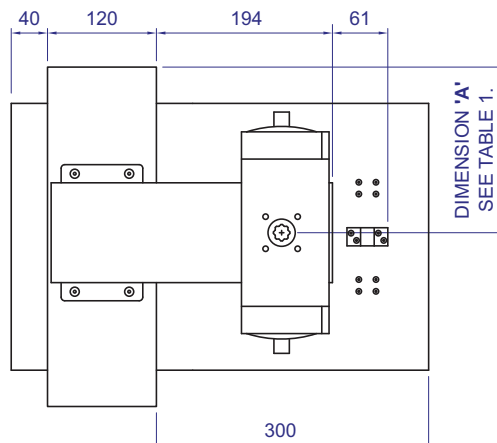
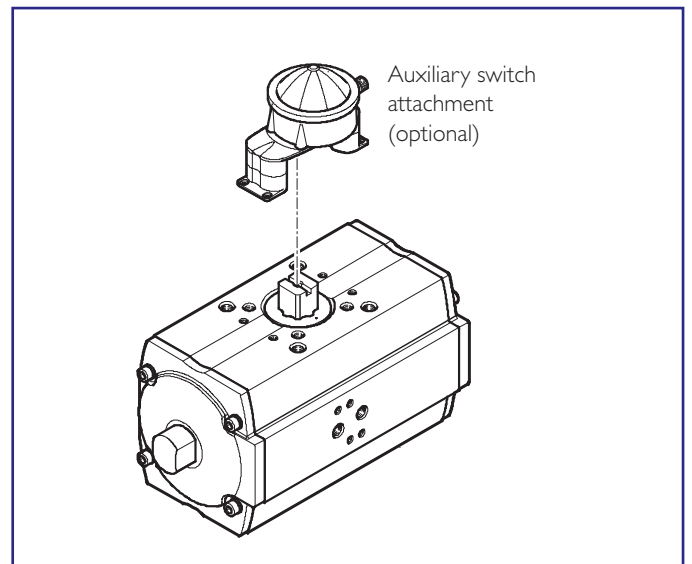
The quarter-turn actuator is a rack and pinion combination that converts the linear movement of the shaft. Quarter turn actuators based on this principle exhibit an identical torque characteristic across the entire rotation angle range of 90°.

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

- Failsafe instant 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

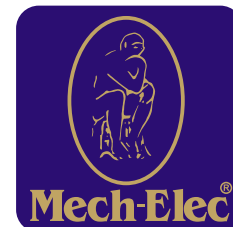
PM-P-NTF

Pneumatic actuator with no thermal link.



FSD-TD Series

Fire and Smoke Dampers – Smoke Evacuation and Hot 300



Failsafe 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 failsafe closed, but would be expected to stay open in the event of a fire. They do not have thermal fuses, as when shut, they may protect the fuse and not open as would normally be expected. BCA approval must be sought before applying these products.



FSD-TD-HOT 300

For units requiring a performance at 300°C for one hour or 600°C for 30 minutes a thermal motor housing consisting of an advanced phenolic composite resin is available.

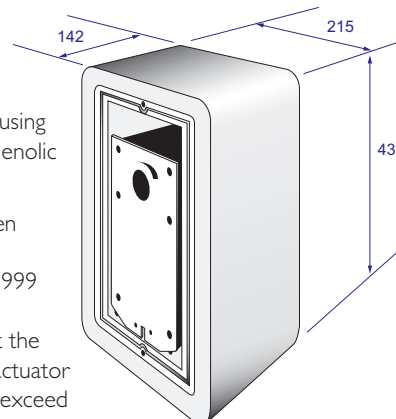
The thermal housing has been independently fire tested in accordance with EN12101/1999 Part 3 under dynamic load conditions. Results show that the surface temperature of the actuator inside the enclosure did not exceed 78°C during the test.

They do not have thermal fuses integrated, because they may have to function up to the 300°C, which is above the 72° TF failsafe temperature.

Consequently, they are not strictly speaking fire dampers, but will shut on loss of power, and thus by extension will act as fire damper from that point. BCA approval must be sought before applying these products. data sheets are available from BSB's sales office.

Protection rating: IP42

Operating temp: 250°C for 90 minutes
300°C for 60 minutes
600°C for 30 minutes



Typical tender/specification text:

FSD-TD-SEVAC 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 FSD-TD-SEVAC 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.

(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)

Typical tender/specification text:

FSD-TD-HOT 300 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.

(Tests or assessments of installation methods to BS476-20/22 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)

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.

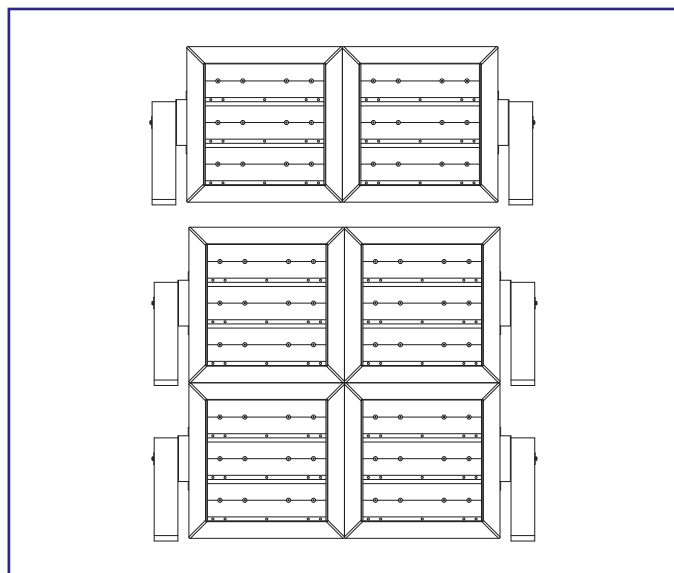
As a guide, this should take place on a maximum of six months intervals.

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.

Illustrated above are several variants of multiple module arrangements.

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

BSB can manufacture to individual specifications and applications. Illustrated above are standard variants with other variants available to order.

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

Height (mm)	Width (mm)									
	100	200	300	400	500	600	700	800	900	1000
100	10	10	11	12	13	14	15	16	17	18
200	10	11	12	13	14	15	16	17	19	20
300	12	13	14	15	16	17	19	20	21	22
400	13	14	15	17	18	19	21	22	23	25
500	15	16	17	18	20	21	23	24	26	27
600	16	17	19	20	22	23	25	27	28	30
700	18	18	20	22	24	25	27	29	31	32
800	19	20	22	23	26	27	29	31	33	35
900	20	21	23	25	28	29	31	34	35	37
1000	22	23	25	27	30	31	33	36	38	40

1. The reference values above are for Model FSD-TD - R
2. For Models FSD-TD-C and FSD-TD-O, apply the following multiplier: 1.1
3. To include a HEVAC/HVCA Installation Frame, apply the following multiplier: 1.2

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 damper logic being hardwired and the fascia 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.

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						
C3 316 Stainless Steel						
Blade Material						
B1 Galvanised Steel						
B2 430 Stainless Steel						
B3 316 Stainless Steel						
Installation Method						
HF HEVAC Frame (M1, M2, AM1, AM3, AM7, AM8)						
SA Sleeve and Angles (M3, M5)						
BF Batt Frame (M4, M7, M8)						
CL Cleats (M6)						
ZF Z-Frame (AM2, AM4)						
AF Angle Frame						
AC Angle Frame and Cleat (AM6)						
NA None						
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, FSD-TD-HOT300)						
PM230-NTF 230 volt spring return actuator - no thermal fuse (FSD-TD-SEVAC, FSD-TD-HOT300)						
PMPF Pneumatic actuator with thermal fuse						
PMPF-NTF Pneumatic actuator - no thermal fuse						

Air, Fire and Smoke Control Products

