

# FSD-TD Series



## Fire and Smoke Dampers

- CE marked complying with the requirements of BS EN 15650
- Tested installation methods in differing supporting constructions (BS EN 1366-2)
- ES classified fire dampers with reduced smoke leakage characteristics (BS EN 13501-3)
- 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
- Case leakage - Class C
- Blade leakage - Class 2



MANUFACTURERS OF AIR, FIRE AND SMOKE CONTROL PRODUCTS



### 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 reduced smoke leakage characteristics.

They can respond to a smoke alarm input as well as having a 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.

#### 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<sup>3</sup>/hr/m<sup>2</sup> (100 l/s/m<sup>2</sup>) throughout the fire test period.

#### ES = Integrity with Smoke Leakage Performance

The maximum leakage permissible at 300Pa corrected to 20°C is 200m<sup>3</sup>/hr/m<sup>2</sup> (55.5 l/s/m<sup>2</sup>) 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<sup>3</sup>/hr/m<sup>2</sup> maximum leakage with a 300Pa pressure across the damper. (This is equivalent to just 0.55 l/s on a 100x100 damper).

Fire damper testing is 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.

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:

#### Fire Tested to EN 1366-2

#### Classified to EN 13501-3

#### CE Marked to EN 15650

- BSB FSD-TD-HF fitted with HEVAC Frame  
E120 (ho i → O) S - Concrete Floor  
E120 (ve i → O) S - Blockwork/Masonry Wall
- BSB FSD-TD-CL fitted with Cleats  
E120 (ve i → O) S - Dry Partition Wall
- BSB FSD-TD-AF fitted with Angle Frame  
E120 (ve i ↔ O) S - Blockwork/Masonry Wall  
E120 (ve i ↔ O) S - Dry Partition Wall  
E120 (ho i → O) S - Concrete Floor

#### ES Classification (BS ISO 10294-1/2)

- As BS EN 1366-2/BS EN 13501-3 above

#### 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 in single section.

#### 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

- 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 4 hours 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 up to 1000 x 1000 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 DX 51D Z275, 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.
- All damper/actuator assemblies are mechanically 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 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/Publications

#### 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 HTM03-01: 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, BS EN 13501-3 and BS EN 15882-2.

#### 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 15882-2 extended application of results from fire resistance test for service installations Part 2 Fire dampers.

#### BS EN 15882-2

Extended application of results from fire resistance tests for service installations part 2 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.

#### 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



### Elements of Construction

#### Galvanising

Where detailed, galvanised mild steel is to the following specification: hot dipped zinc coated steel to BS EN 10346 DX51D + Z 275.

#### Zinc plating

Zinc electroplated to BS EN ISO 2081.

#### Casings/inner frames

The FSD-TD casings are manufactured from 1.2mm galvanised mild steel and are fully welded.

Fully seam welded corners provide a rigid and air tight construction. Exposed welds are treated with protective corrosion resistant, environmentally friendly water based paint for galvanised cases with the option of being passivated for stainless steel cases.

Material options are Ferritic (430) 1.4016 and Austenitic (316) 1.4401 grade stainless steel. As standard these welds will be simply cleaned and untreated.

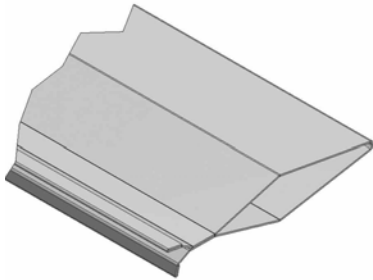
The inner bearing channels are manufactured from 1.2mm galvanised mild steel. The bearing channel incorporates punch formed low friction bearing surfaces that allow the blades to rotate freely.

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.

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 reaches 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

#### 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.

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 CE marked conforming to EN15650

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 and EN13501-3.

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 under normal operating conditions not exceeding 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](http://www.bsb-dampers.co.uk) - 01795 422609

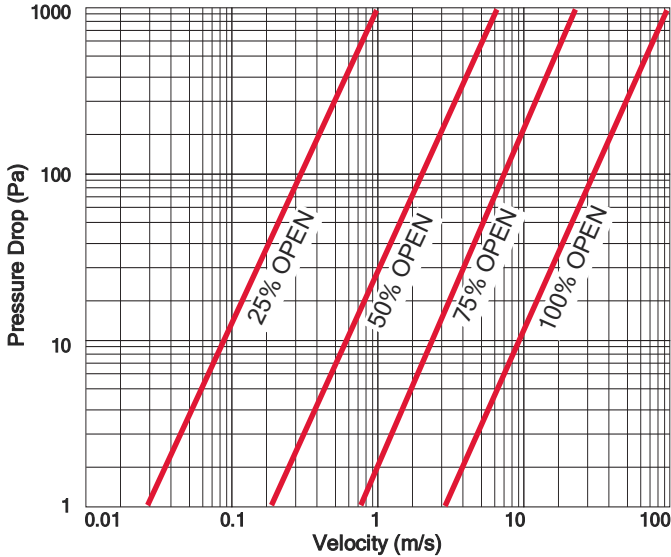
\* For HOT300 Typical Tender Specifications see Page 17

### Performance Data

#### Pressure Drop BSRIA Report 15633/1

Calculated performance at various damper settings

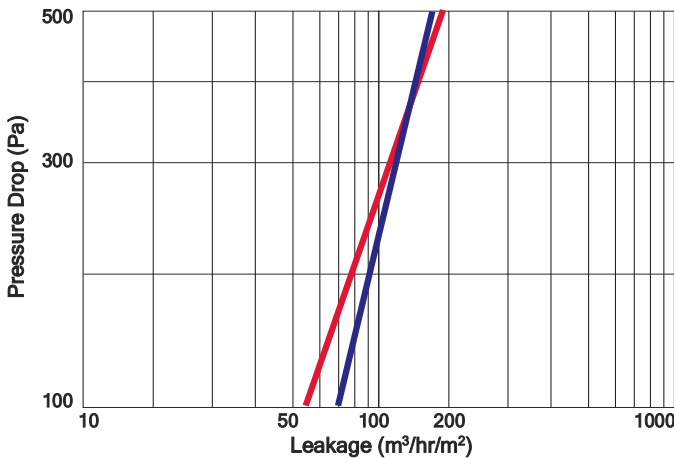
Size tested: 500mm x 600mm



#### Ambient Blade Leakage

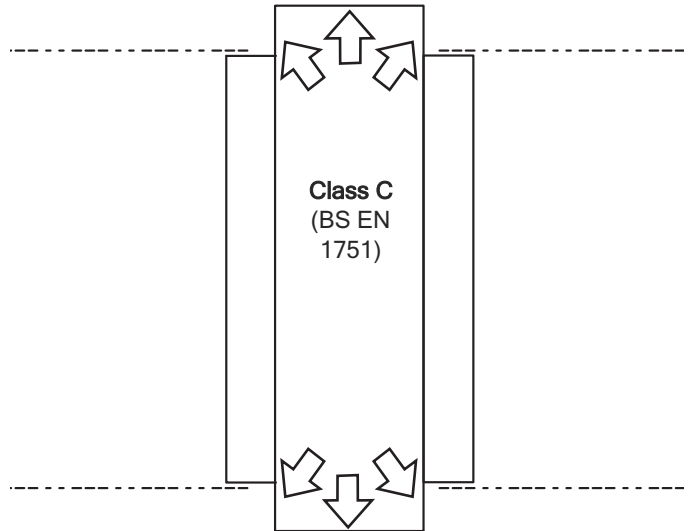
— 100mm x 100mm (smallest) unit as tested to BS EN 1366-2

— 1000mm x 1000mm (largest) unit as tested to BS EN 1366-2



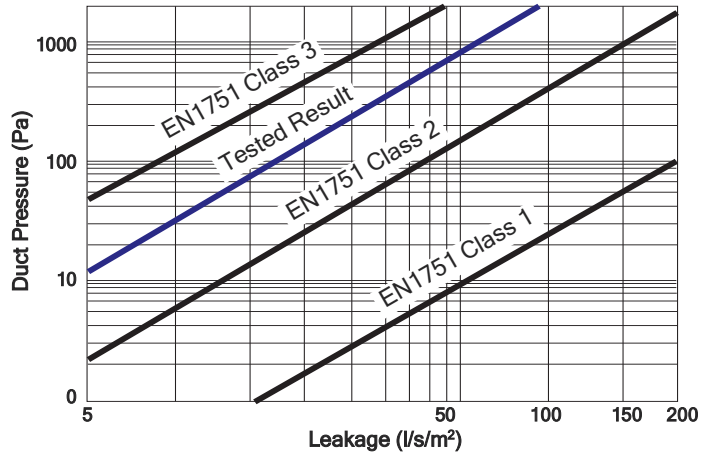
#### Ambient Case Leakage

An FSD-TD damper was tested and was found to meet Class 'C' Classification BS EN 1751. With leakage being recorded at less than 0.1l/s/m² at 2000 Pa



#### 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-AF (angle frame fixing) with Actuator

Height (mm)	Width (mm)											
	100	200	300	400	500	600	700	800	900	1000	1100	1200
100	11	13	14	15	16	17	19	20	21	22	23	24
200	13	14	15	17	18	19	21	22	23	25	26	27
300	14	16	17	19	20	22	24	25	26	27	29	30
400	16	18	19	21	22	24	25	27	29	30	32	33
500	18	19	21	23	24	26	28	29	31	33	35	36
600	19	21	23	25	26	28	30	32	34	36	37	39
700	21	23	25	26	27	29	32	34	36	38	40	42
800	22	24	26	28	31	33	35	37	39	41	43	45
900	24	26	28	30	33	35	37	39	41	44	46	48
1000	25	28	30	32	35	37	39	42	44	46	49	51
1100	27	29	32	34	37	43	46	50	53	57	60	64
1200	28	31	34	36	39	45	49	53	57	60	64	68

#### Weight Chart (kg approx.)

Model FSD-TD-C-AF with Actuator

Dia. (mm)	Weight (kg)	Dia. (mm)	Weight (kg)
100	12	600	34
150	14	650	37
200	16	700	39
250	18	750	42
300	20	800	45
350	22	850	48
400	24	900	51
450	27	950	54
500	29	1000	58
550	32		

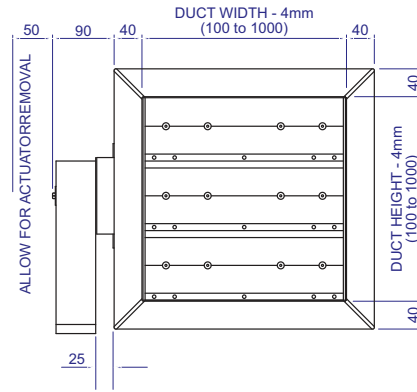
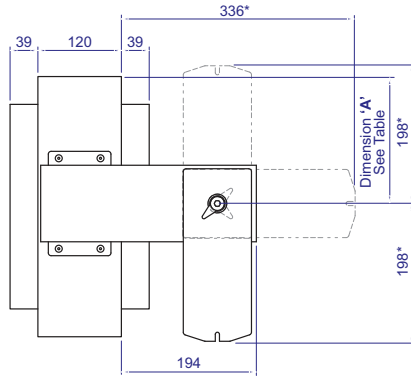
# FSD-TD Series

## Fire and Smoke Dampers - Base Dimensions



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

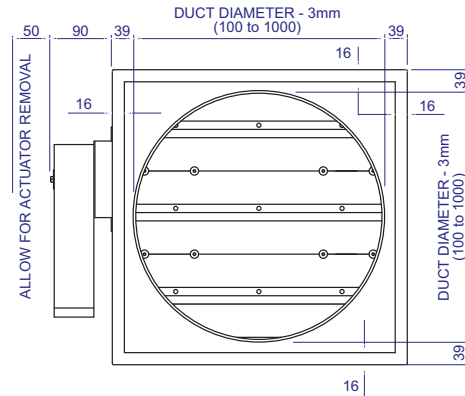
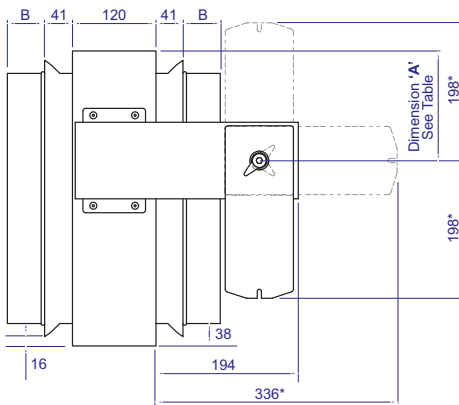
\* Allow extra 50mm for cables



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

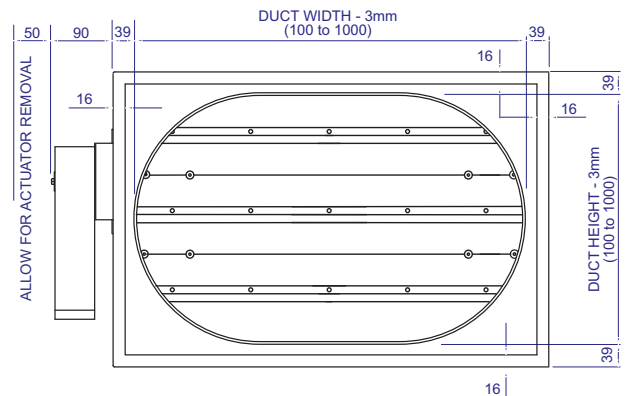
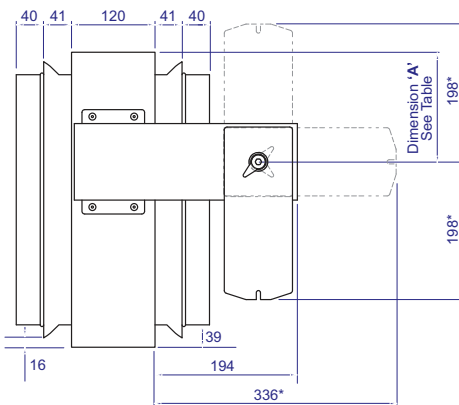
\* Allow extra 50mm for cables

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



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

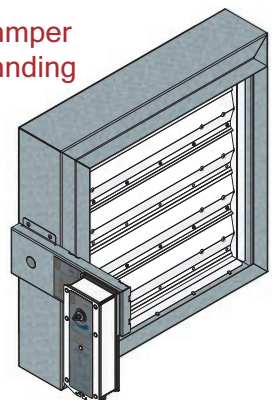
\* Allow extra 50mm for cables



### Dimension 'A'

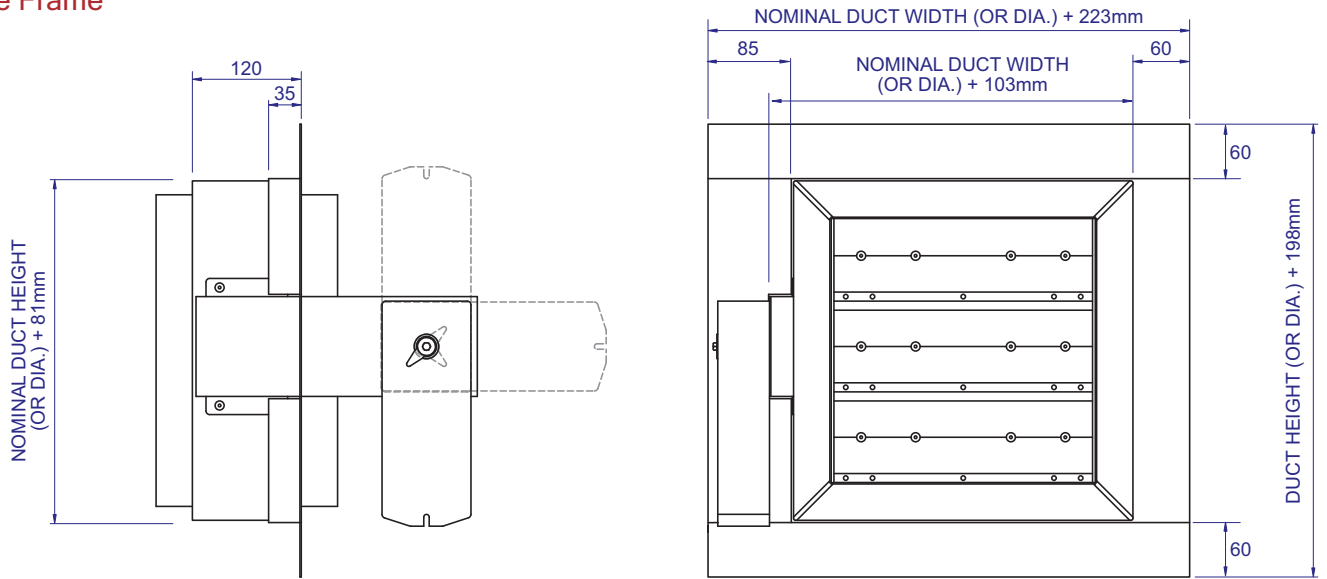
Duct Height/Dia.	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Dimension 'A'	84	109	84	159	184	159	184	259	284	259	284	359	384	359	384	459	484	459	484

### Damper Handing

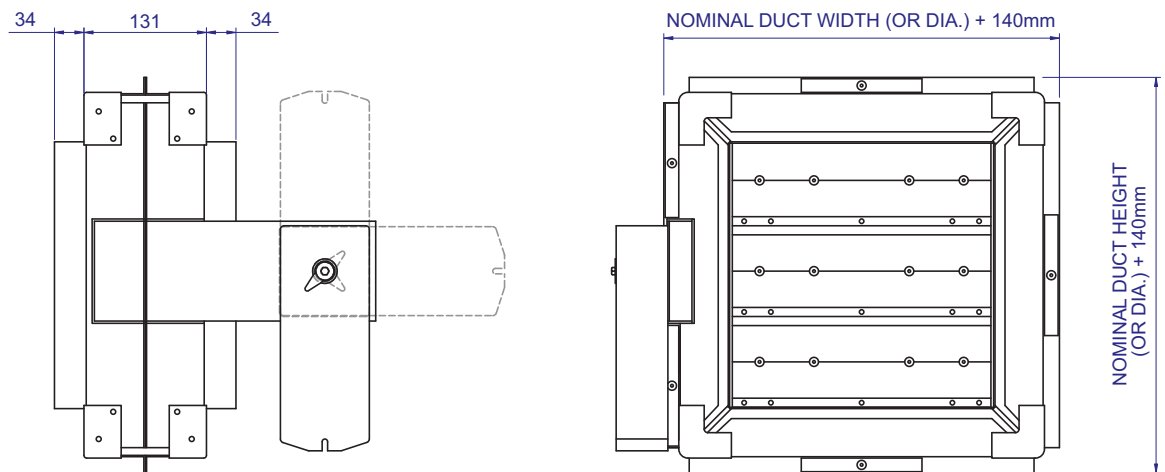


Right hand damper as shown will be supplied as standard

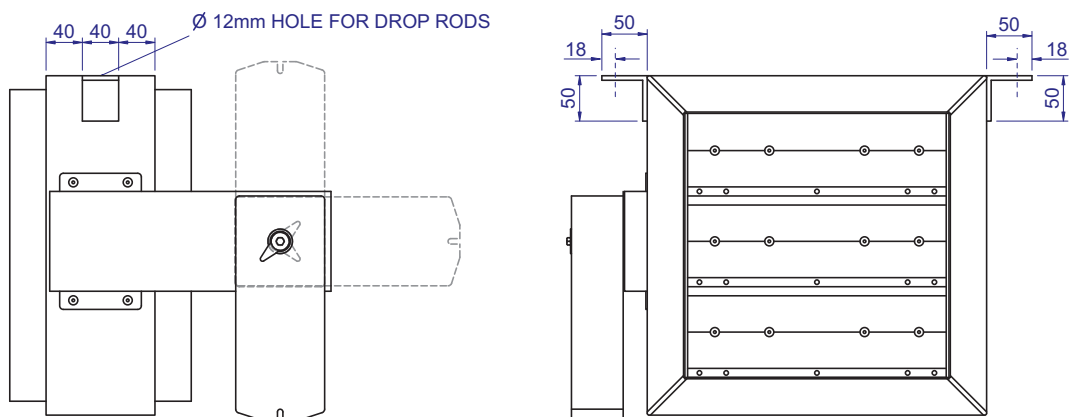
### Angle Frame



### HEVAC Frame



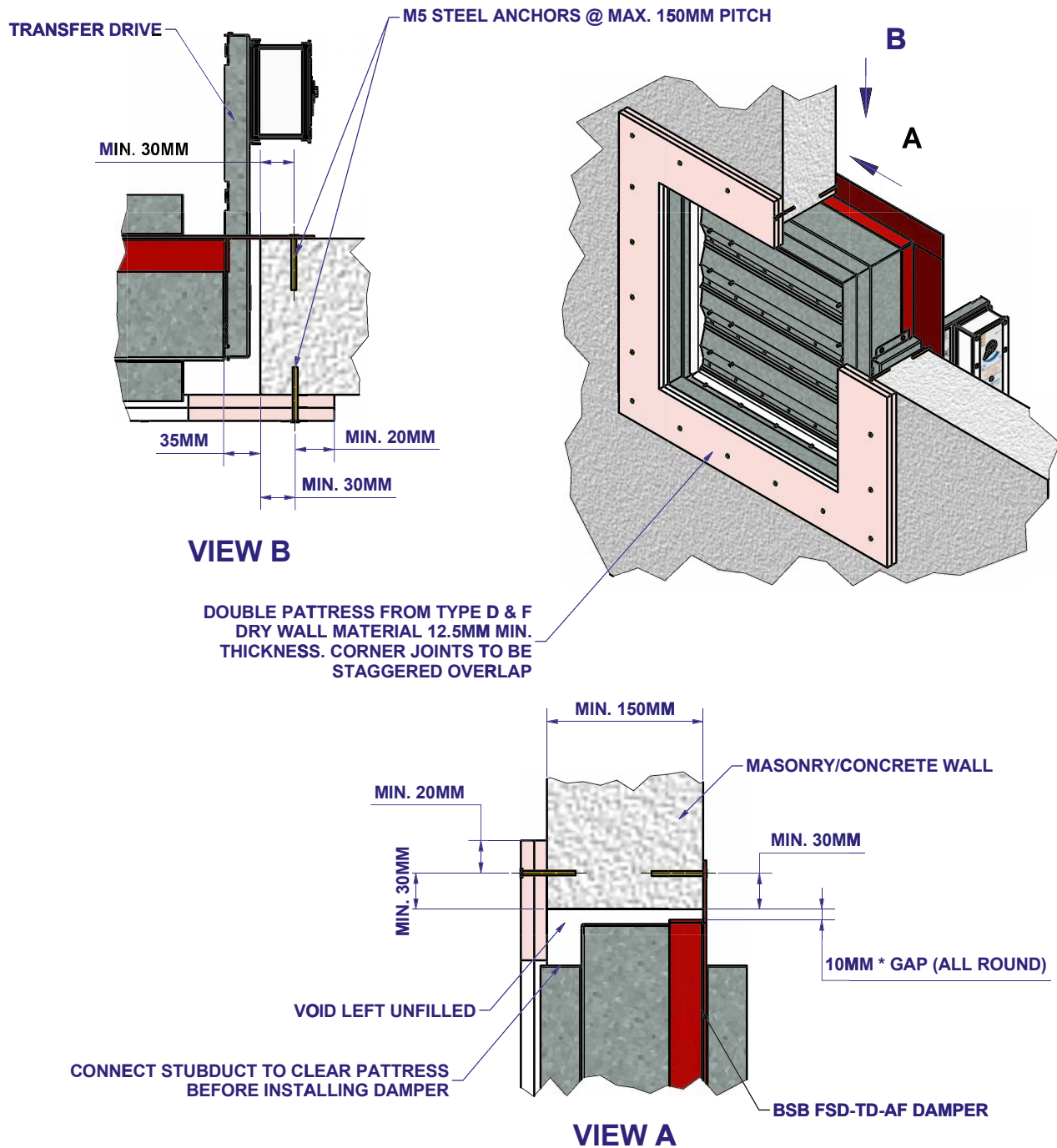
### Cleats for Drop Rods





CONNECTING DUCTWORK HAS BEEN OMITTED FOR CLARITY. USE BREAK-AWAY JOINTS (ALUMINIUM RIVETS). PLEASE REFER TO INSTALLATION, OPERATING AND MAINTENANCE DOCUMENT FOR DETAILED INFORMATION

\* TOLERANCE FOR GAP BETWEEN DAMPER AND EDGE OF OPENING -0 + 50% (RULE X.45 OF EN 15882-2)



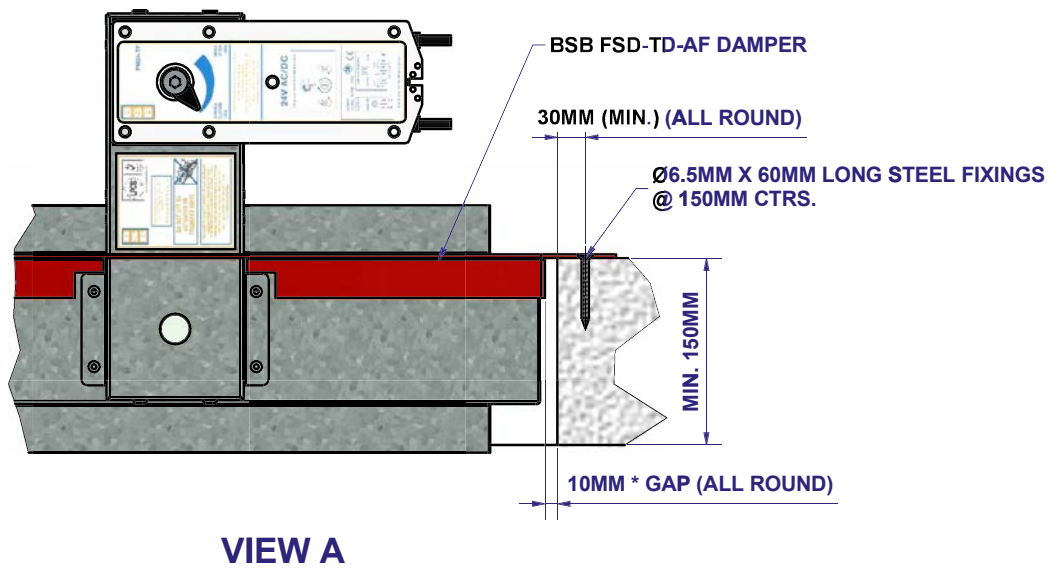
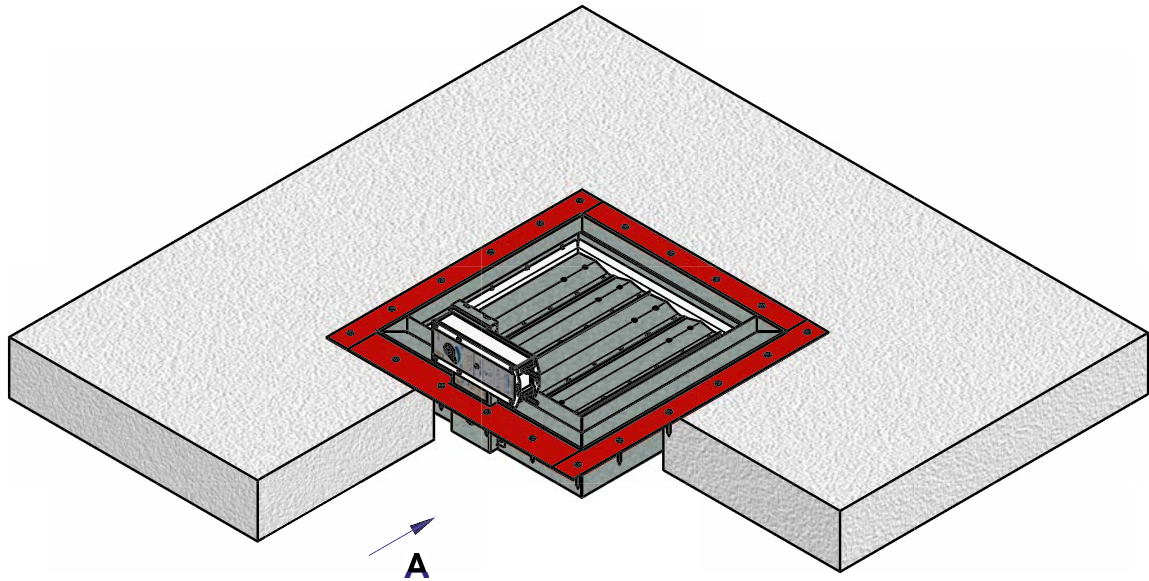
TESTED INSTALLATION METHOD SHOWN. DIFFERING INSTALLATION METHODS TO THIS, MUST BE APPROVED BY THE BUILDING CONTROL AUTHORITY (BCA) BEFORE PROCEEDING. THEY WILL NEED TO REFER TO THIS DOCUMENT AND ASSOCIATED FIRE TESTS / DOCUMENTS CONTAINED HEREIN IN ORDER TO CONSIDER APPROVAL.

MASONRY WALL	<b>120 MINUTES FIRE RESISTANCE</b> <b>E120 (ve i ↔ o) S</b>
BSB FSD-TD-AF ANGLE FRAME Fitted	
Single section sizes(mm) 100 x 100 to 1200 x 1200	BS EN1366-2 TEST REFERENCE: 260152 AND 260153 BRE CERTIFICATE OF CONSTANCY 0832-CPR-P0007





CONNECTING DUCTWORK HAS BEEN OMITTED FOR CLARITY. USE BREAK-AWAY JOINTS (ALUMINIUM RIVETS).  
 PLEASE REFER TO INSTALLATION, OPERATING AND MAINTENANCE DOCUMENT FOR DETAILED INFORMATION  
 \* TOLERANCE FOR GAP BETWEEN DAMPER AND EDGE OF OPENING -0 + 50% (RULE X.45 OF EN 15882-2)



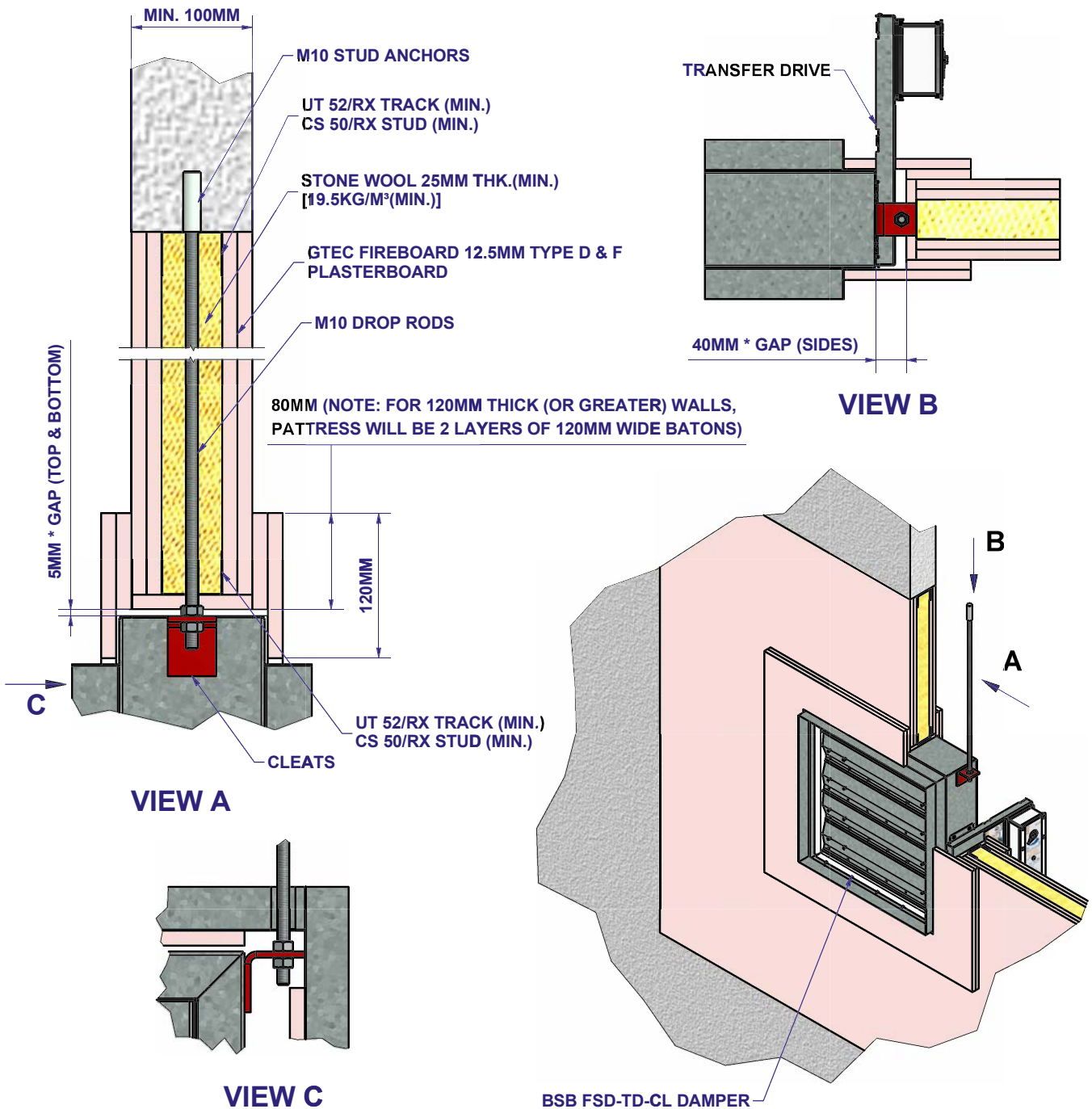
**4 HOUR TESTED:**  
 EN13501-3 LIMITS ES RATING TO A MAXIMUM OF 120 MINUTES. HOWEVER, THE DAMPER ACHIEVED AN ES LEAKAGE PERFORMANCE THROUGHOUT THE TEST.

TESTED INSTALLATION METHOD SHOWN. DIFFERING INSTALLATION METHODS TO THIS, MUST BE APPROVED BY THE BUILDING CONTROL AUTHORITY (BCA) BEFORE PROCEEDING. THEY WILL NEED TO REFER TO THIS DOCUMENT AND ASSOCIATED FIRE TESTS / ASSESSMENTS CONTAINED HEREIN IN ORDER TO CONSIDER APPROVAL.

CONCRETE FLOOR	<b>120 MINUTES FIRE RESISTANCE</b> <b>E120 (ho i→o) S</b>
BSB FSD-TD-AF ANGLE FRAME Fitted	
Single section sizes(mm) 100 x 100 to 1000 x 1000	BS EN1366-2 TEST REFERENCE: 291966 BRE CERTIFICATE OF CONSTANCY 0832-CPR-P0007



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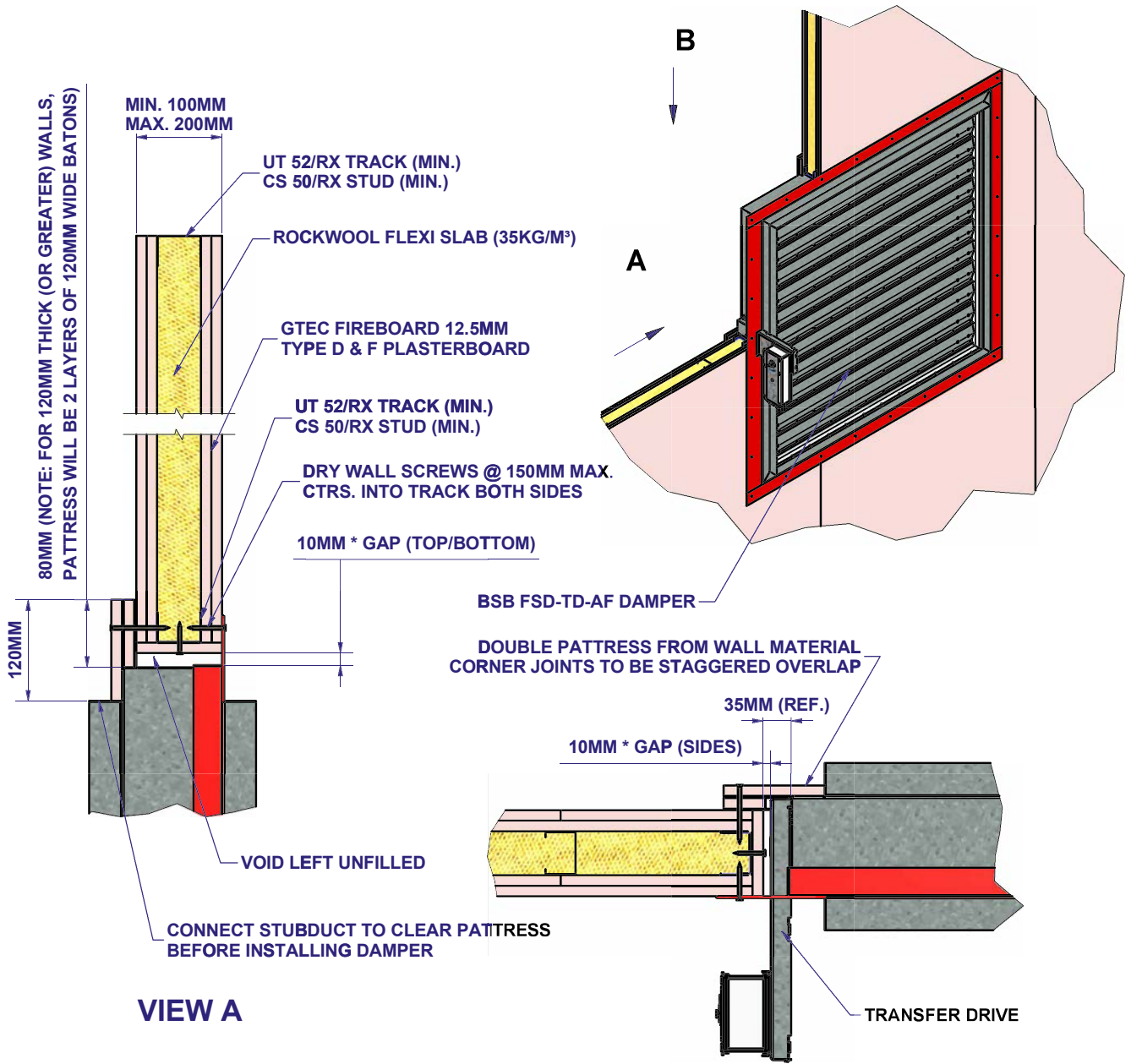
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<p>DRY WALL</p>	<p><b>CE</b> 120 MINUTES FIRE RESISTANCE E120 (ve i→o) S</p>
<p>BSB FSD-TD-CL CLEATS Fitted</p>	
<p>Single section sizes(mm) 100 x 100 to 1000 x 1000</p>	<p>BS EN1366-2 TEST REFERENCE: 256075 BRE CERTIFICATE OF CONSTANCY 0832-CPR-P0007</p>



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\* TOLERANCE FOR GAP BETWEEN DAMPER AND EDGE OF OPENING -0 + 50% (RULE X.45 OF EN 15882-2)



VIEW A

VIEW B

TESTED FROM BOTH SIDES

FOR LARGE HEAVY DAMPERS, ADDITIONAL DAMPER SUPPORT MAY BE NEEDED. CONSULT WITH DRY WALL MANUFACTURE FOR ADVICE. OPTIONAL SUPPORT CLEATS WELDED TO FLANGE ARE AVAILABLE.

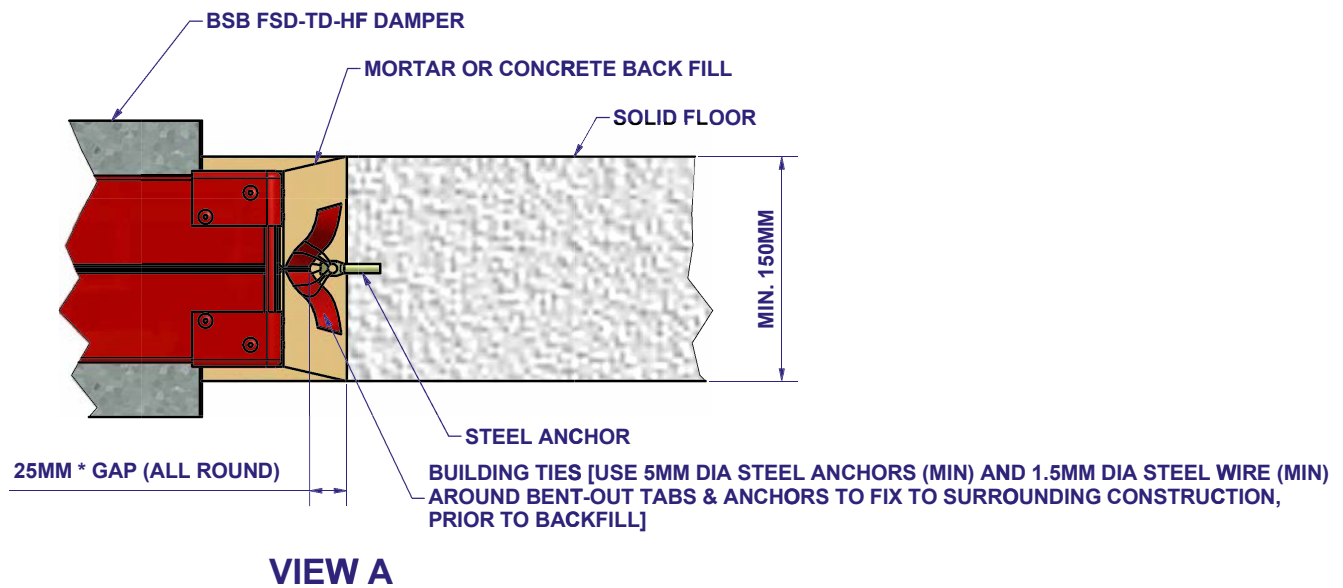
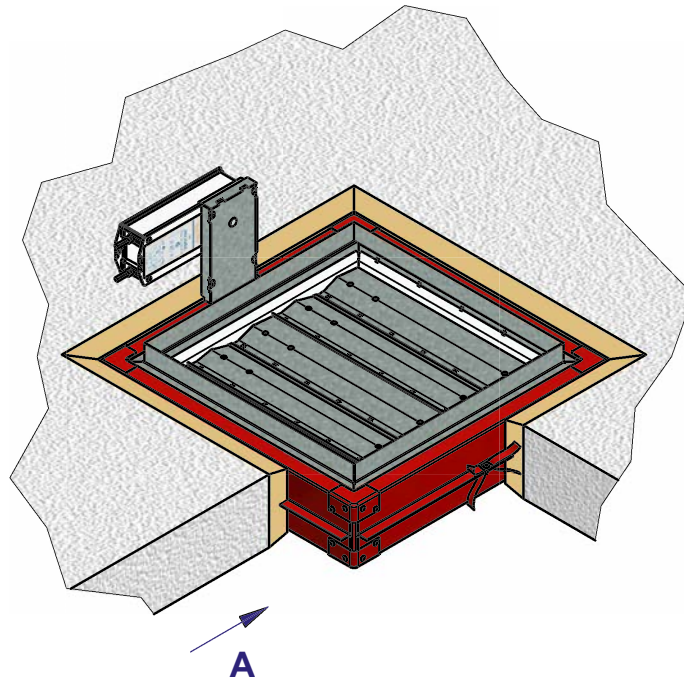
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<p>BSB FSD-TD-AF ANGLE FRAME Fitted</p>	<p>BS EN1366-2 TEST REFERENCE: 260152 AND 260153BRE CERTIFICATE OF CONSTANCY 0832-CPR-P0007</p>
<p>Single section sizes(mm) 100 x 100 to 1200 x 1200</p>	



CONNECTING DUCTWORK HAS BEEN OMITTED FOR CLARITY. USE BREAK-AWAY JOINTS (ALUMINIUM RIVETS). PLEASE REFER TO INSTALLATION, OPERATING AND MAINTENANCE DOCUMENT FOR DETAILED INFORMATION

\* TOLERANCE FOR GAP BETWEEN DAMPER AND EDGE OF OPENING -0 + 50% (RULE X.45 OF EN 15882-2)



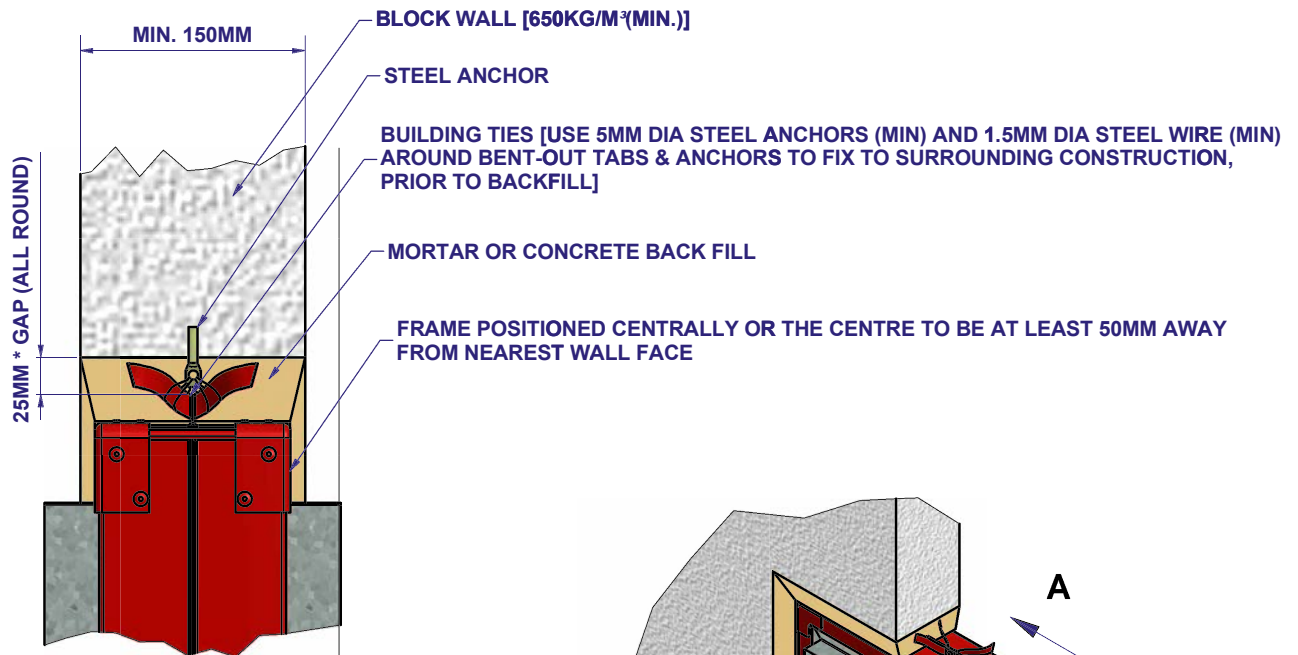
**4 HOUR TESTED:**  
 EN13501-3 LIMITS ES RATING TO A MAXIMUM OF 120 MINUTES. HOWEVER, THE DAMPER ACHIEVED AN ES LEAKAGE PERFORMANCE THROUGHOUT THE TEST.

TESTED INSTALLATION METHOD SHOWN. DIFFERING INSTALLATION METHODS TO THIS, MUST BE APPROVED BY THE BUILDING CONTROL AUTHORITY (BCA) BEFORE PROCEEDING. THEY WILL NEED TO REFER TO THIS DOCUMENT AND ASSOCIATED FIRE TESTS / DOCUMENTS CONTAINED HEREIN IN ORDER TO CONSIDER APPROVAL.

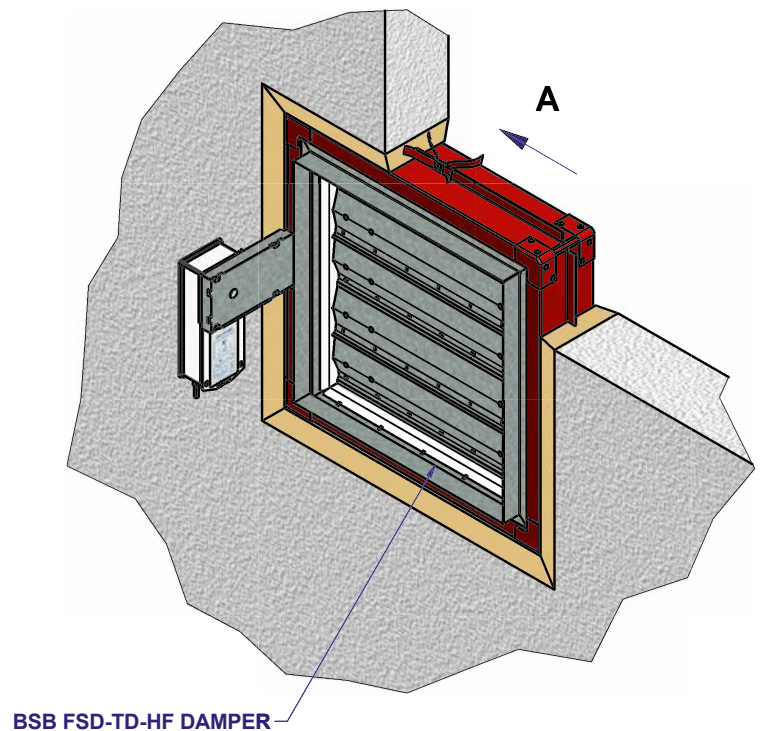
CONCRETE/MASONRY FLOOR	<b>120 MINUTES FIRE RESISTANCE</b> <b>E120 (ho i→o) S</b>
BSB FSD-TD-HF HEVAC FRAME Fitted	
Single section sizes(mm) 100 x 100 to 1000 x 1000	BS EN1366-2 TEST REFERENCE: 303869 BRE CERTIFICATE OF CONSTANCY 0832-CPR-P0007



CONNECTING DUCTWORK HAS BEEN OMITTED FOR CLARITY. USE BREAK-AWAY JOINTS (ALUMINIUM RIVETS). PLEASE REFER TO INSTALLATION, OPERATING AND MAINTENANCE DOCUMENT FOR DETAILED INFORMATION  
 \* TOLERANCE FOR GAP BETWEEN DAMPER AND EDGE OF OPENING -0 + 50% (RULE X.45 OF EN 15882-2)



VIEW A



**4 HOUR TESTED:**  
 EN13501-3 LIMITS ES RATING TO A MAXIMUM OF 120 MINUTES. HOWEVER, THE DAMPER ACHIEVED AN ES LEAKAGE PERFORMANCE THROUGHOUT THE TEST.

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BLOCKWORK/MASONRY WALL	<b>120 MINUTES FIRE RESISTANCE</b> <b>E120 (ve i→o) S</b>
BSB FSD-TD-HF HEVAC FRAME Fitted	
Single section sizes(mm) 100 x 100 to 1000 x 1000	BS EN1366-2 TEST REFERENCE: 285322 CERTIFICATE OF CONSTANCY 0832-CPR-P0007

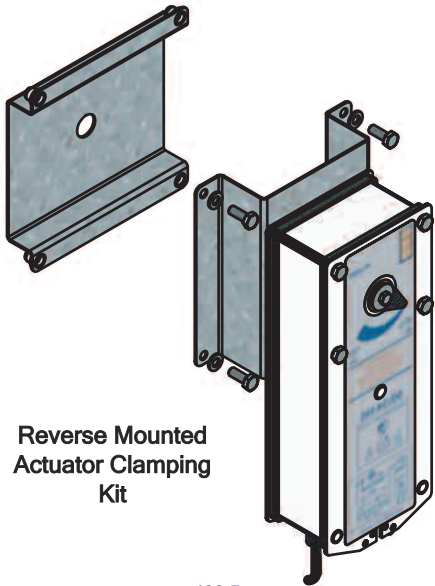
# FSD-TD Series

## Fire and Smoke Dampers - Reverse Mounting Installation

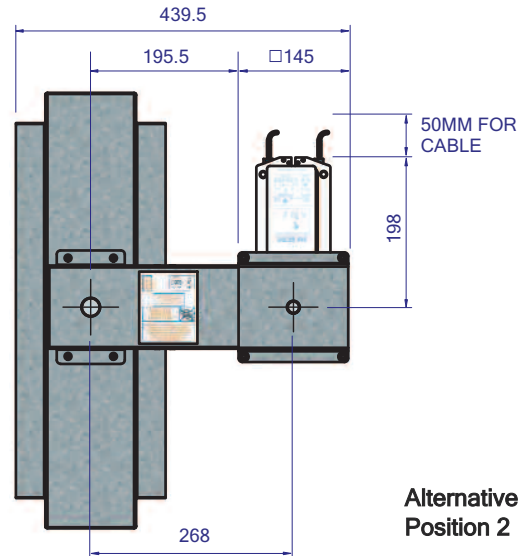
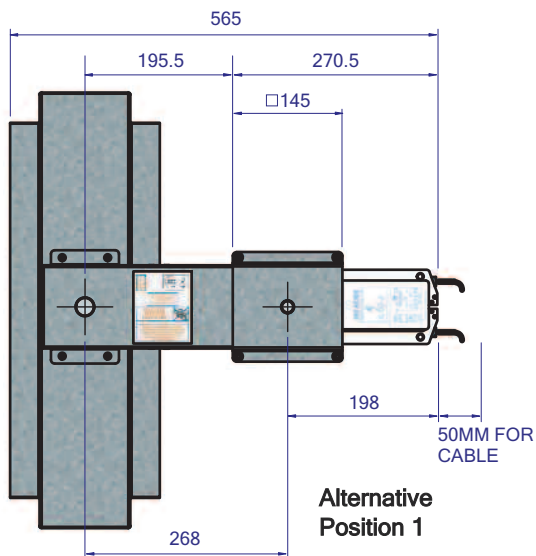
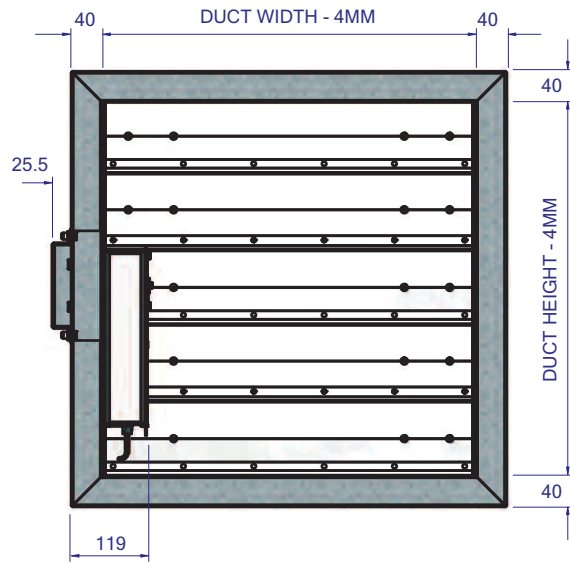
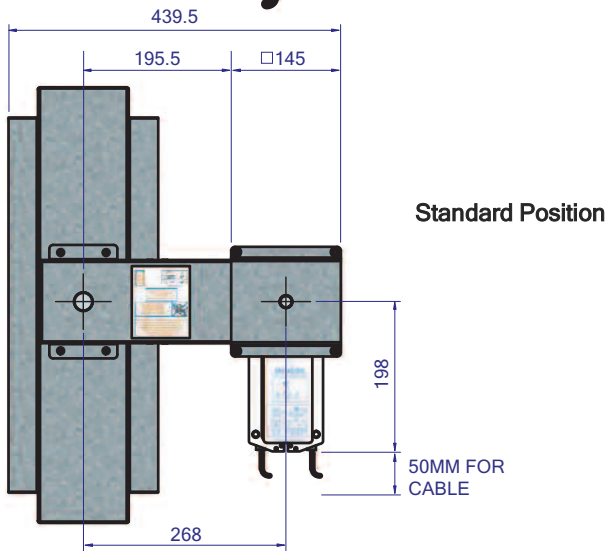
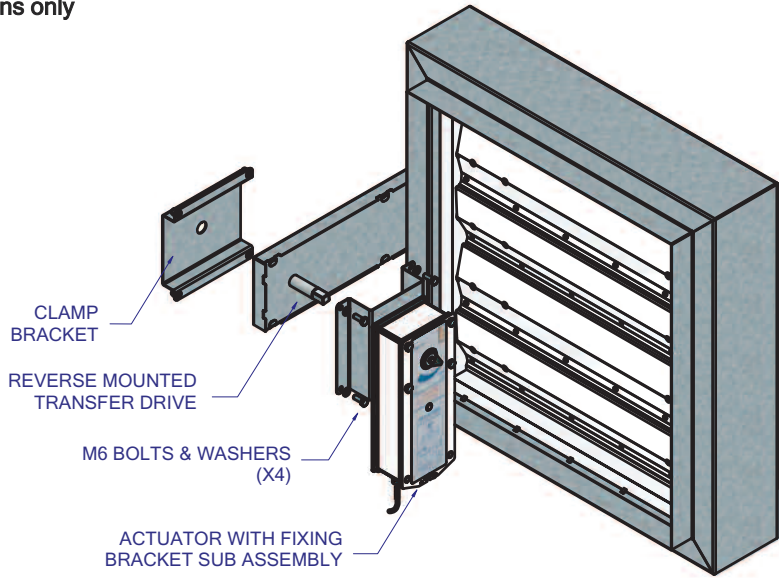


### BSB FSD-TD

Reverse Mounted - Suitable for ductless installations only



Reverse Mounted Actuator Clamping Kit



	BSB PM24 -TF	BSB PM230 -TF	BSB PM24 -NTF	BSB PM230 -NTF
<b>Electrical data</b>				
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 / I <sub>max</sub> . 8.3 A @ 5 ms	14 VA	12.5 VA / I <sub>max</sub> . 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 <sup>2</sup>	1.0 m, 2 x 0.75 mm <sup>2</sup>	1.2 m, 2 x 0.75 mm <sup>2</sup> (300°C for 1 hour)	1.2 m, 2 x 0.75 mm <sup>2</sup> (300°C for 1 hour)
Signal cable (halogen free)	1.0 m, 6 x 0.75 mm <sup>2</sup>	1.0 m, 6 x 0.75 mm <sup>2</sup>	1.2 m, 4 x 0.75 mm <sup>2</sup> (300°C for 1 hour)	1.2 m, 4 x 0.75 mm <sup>2</sup> (300°C for 1 hour)
<b>Functional data</b>				
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
<b>Safety</b>				
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 2014/30/EU	CE according to 2014/30/EU	CE according to 2014/30/EU	CE according to 2014/30/EU
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
<b>Weight</b>				
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)

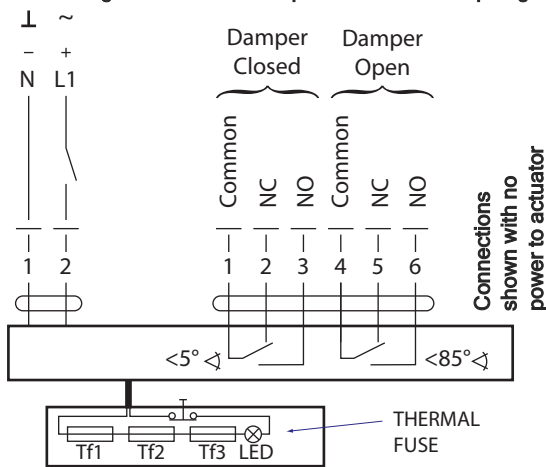
**For damper closed indication use terminals 1 & 2**

**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

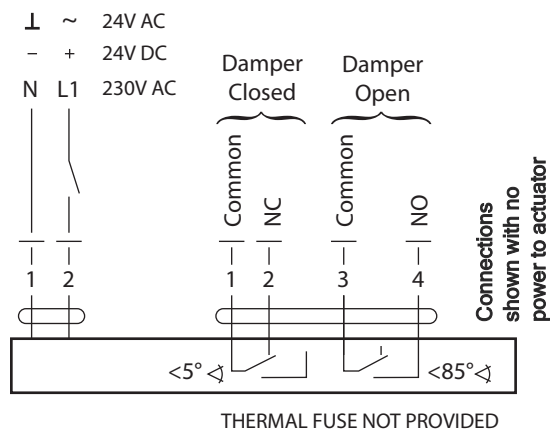
**230V AC:** For disconnection from the supply, a separate device must be incorporated in the fixed wiring (at least 3mm contact gap in all poles)

**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**



### 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

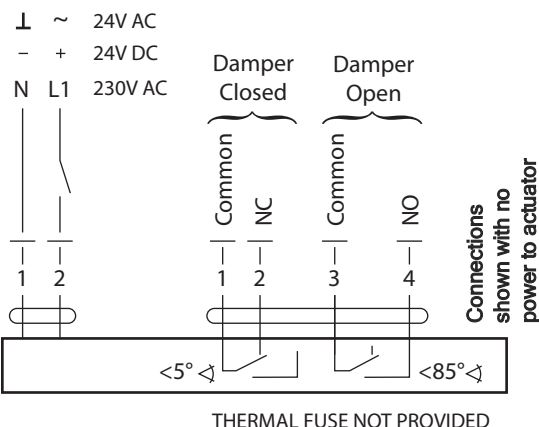
**230V AC:** For disconnection from the supply, a separate device must be incorporated in the fixed wiring (at least 3mm contact gap in all poles)

**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**



### PM Actuators

All PM Actuators fitted with a thermal fuse are supplied with one metre of halogen-free low smoke and fume cable, for the two core power cable, six core status cable and thermal fuse cable.

All cables being external to the duct eliminates the need to make multiple entry holes to the ductwork, which can create the potential for system air leakage and cable chaffing, which can be a cause of electrical fires.

The thermal fuse probe only requires fixing to the ductwork where one  $\varnothing 9.5\text{mm}$  hole and two  $\varnothing 2.5\text{mm}$  securing holes are required.

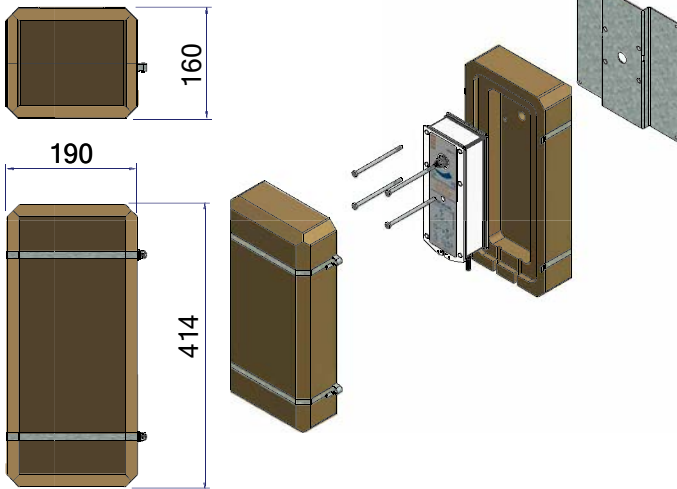
All PM Actuators are double insulated and do not require to be earthed.

#### Cable runs:

Where the PM Actuator is 230volt, the power and indication cables must be run separately to be compliant with BS 7671.



### 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 two hours.

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. The thermal housing is unique in that no gaskets or additional seals are required thus eliminating the possibility of damage or misfitting during commissioning and/or the maintenance programme where the actuator would normally be checked.

Weight without actuator 3.3 Kgs.

### HOT300 Typical tender/specification text:

The 300°C fire and smoke dampers shall operate at 300°C for 120 minutes and shall be based on fire and smoke dampers that have passed the test requirements stated in EN1366-2. They shall have no thermal fuse and be suitable only for smoke clearance functions after the fire event.

They shall include a thermally protected actuator that is motor open/motor closed or spring return.

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.

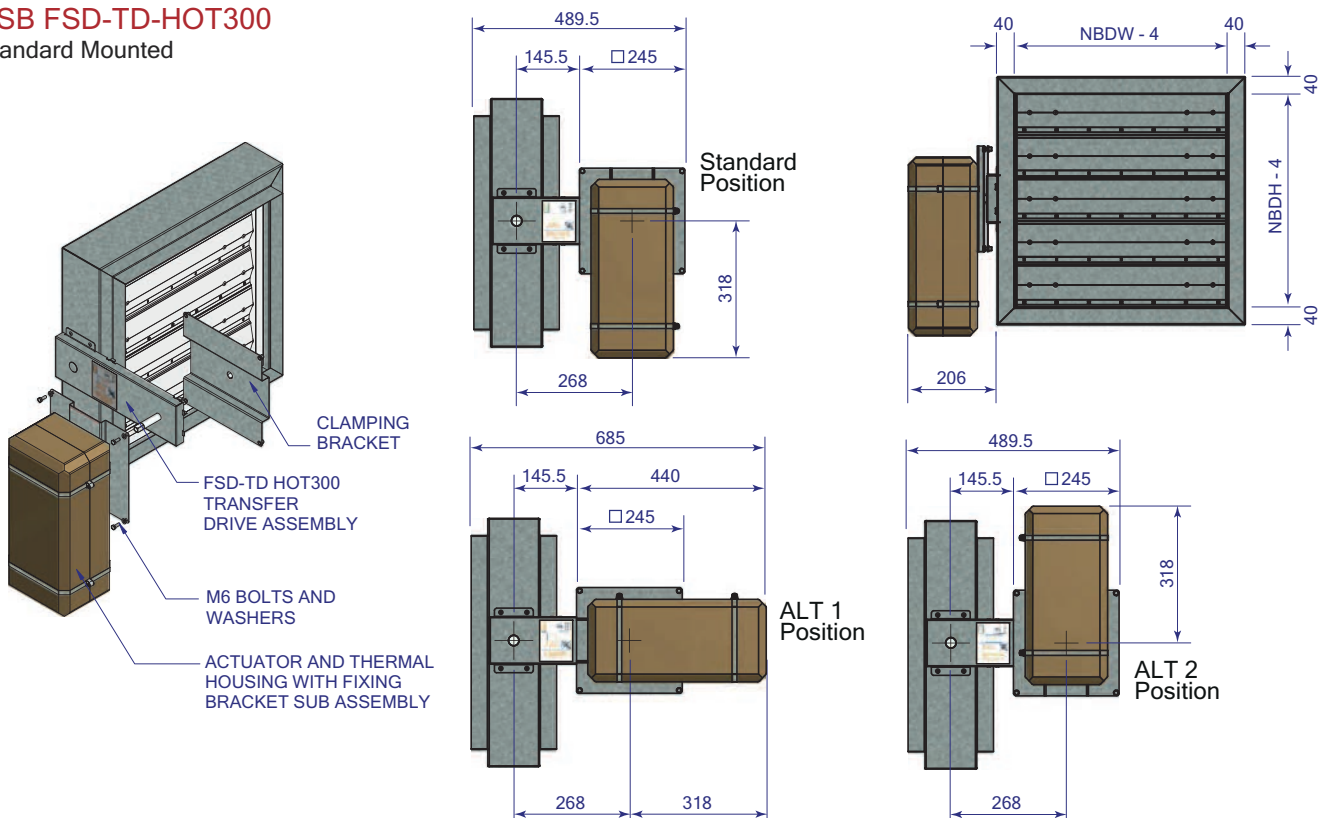
The 300°C fire and smoke damper case shall be fully welded to meet the air tightness test requirements of HVCA specification DW144 to classes A, B and C under normal operating conditions not exceeding 1500Pa.

The 300°C fire and smoke dampers shall be the FSD-TD-HOT300 Series as supplied by BSB.

[www.bsb-dampers.co.uk](http://www.bsb-dampers.co.uk) - 01795 422609.

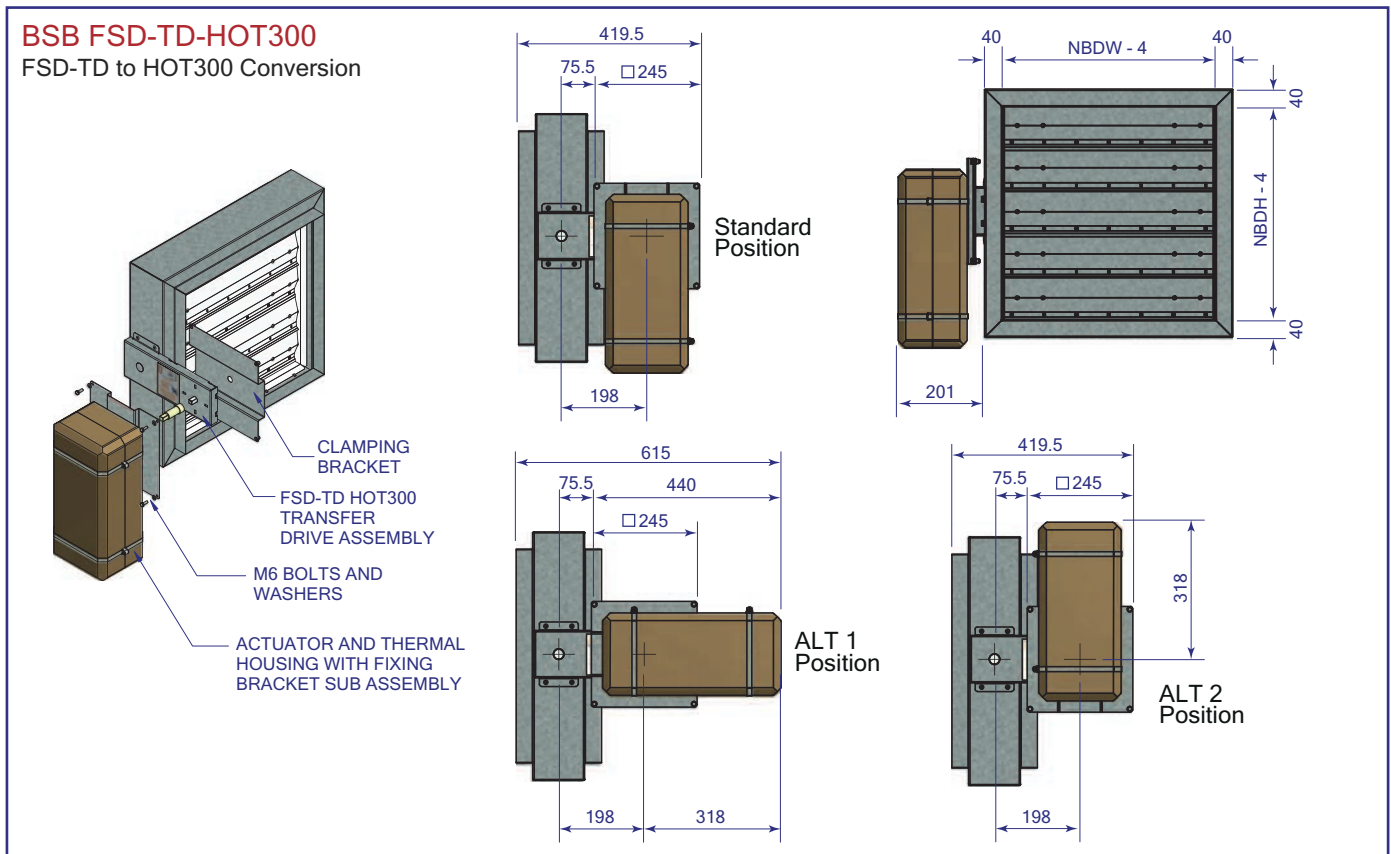
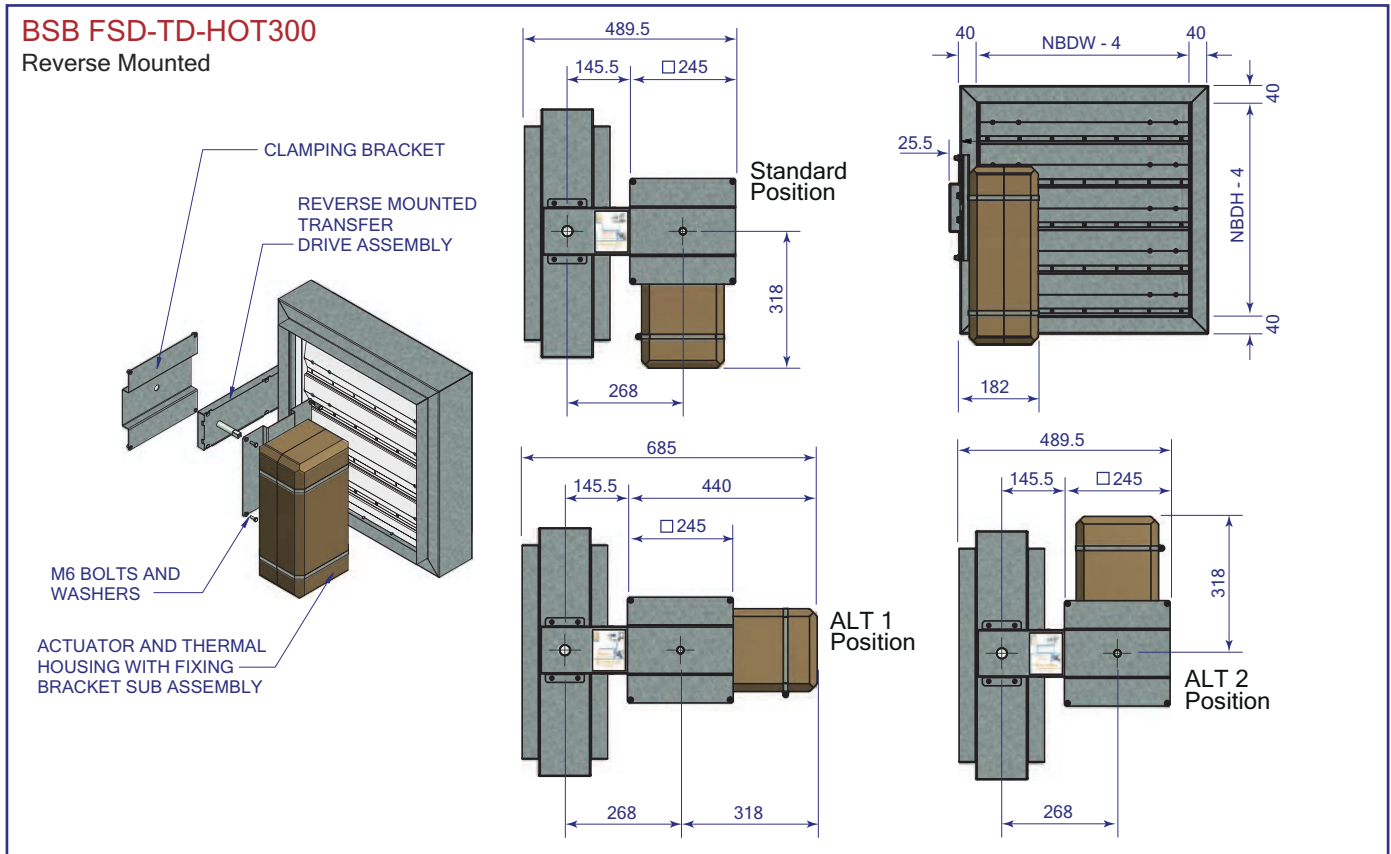
### BSB FSD-TD-HOT300

Standard Mounted



# FSD-TD Series

## Fire and Smoke Dampers - HOT300 Installation



BSB TD Transfer Drive boxes are designed for all variants of the FSD-TD series dampers. The TD boxes allow the actuator to be fitted in three different positions.

The actuator thermal housing and securing system will be supplied separately to the dampers for onsite fitting by others.

The fitting and repositioning of the actuator should only be undertaken after reading the installation data sheet supplied and available from the BSB web site.

### 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.

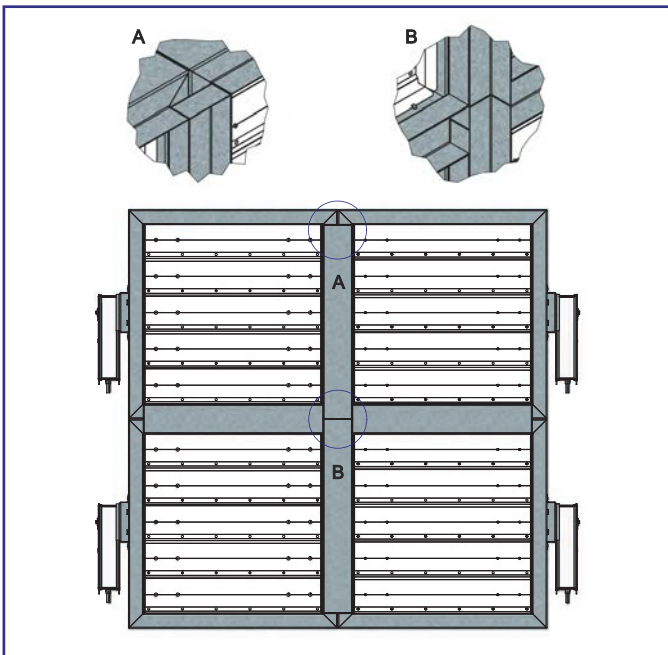
Reference should be made to BS 9999 for more information.

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.

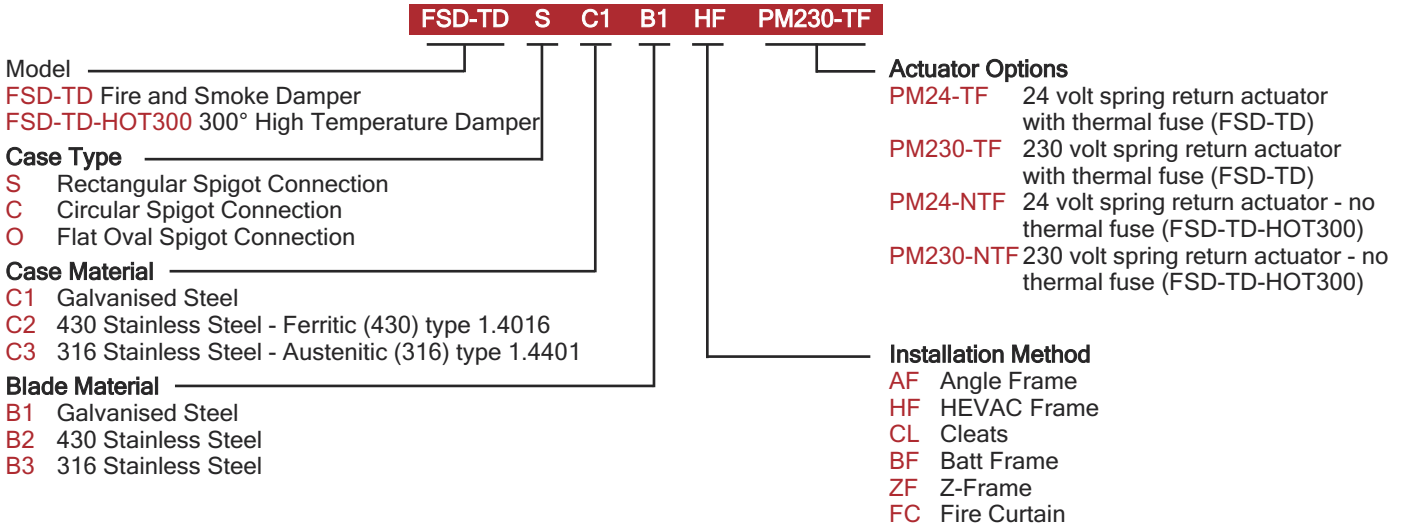
Can be configured to suit all types of system. Fully integrated and secure network provides an intelligent interface for building control.

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



### Other 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

Unit 56, Trinity Trade Centre, Mill Way, Sittingbourne, Kent ME10 2PD, UK • Tel: +44 (0)1795 422609

For purchase orders and order related enquiries, please email: [orders@bsb-dampers.co.uk](mailto:orders@bsb-dampers.co.uk)

For pricing, technical and general enquiries, please email: [enquiries@bsb-dampers.co.uk](mailto:enquiries@bsb-dampers.co.uk)

Website: [www.bsb-dampers.co.uk](http://www.bsb-dampers.co.uk) • A member of the Maico group

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