



COMBINATION FIRE & SMOKE DAMPERS

CFSD SERIES

CFSD for Use in Dynamic Systems

Fire Resistance: 1 1/2 HR and 3 HRS
 Leakage Resistance: Class I - 350 °F and Class II - 250 °F
 Dynamic Closure Ratings: 2000 FPM and 4000 FPM Air Velocity
 Closed Damper Pressure Rating: 4 inch W.G.
 UL File No.: R22165



Product Description

Combination fire and smoke dampers provide an automatic means of localizing areas of smoke and or fire in ventilation systems that is greatly contribute to the safety of life and property in the early stage of fire. It prevents the spread of fire and or smoke through ventilation ductworks or wall openings. These type of dampers offer an effective fire or smoke barrier maintaining the integrity in a fire situation and it is combined with low leakage characteristic for smoke management. It is suitable for installation in sheet metal ductworks, openings in walls or floor slabs made from concrete, bricks and in lightweight partition walls.

SAFID introduces "ERL" Thermoelectric Tripping Device (heat sensor) to replace the existing high torque spring/fusible link fire closure mechanism in all Combination Fire & Smoke dampers and blade type Fire dampers. The "ERL" is thermally responsive bimetal disc/sensor that open and close the electrical contacts at a specific factory calibrated temperature setting. The "ERL" is available in fixed temperature setting at 165°F (74 °C) only. The "ERL" requires factory installation and wiring together with the qualified actuator to meet "UL" requirements.

Dampers which allow remote resetting of the damper from a remote location are dangerous. All damper moving parts must be inspected and cycled at every six months and in accordance to the latest NFPA90A/92A and local codes.

Types

Galvanized Steel Construction as Standard.

1. Sleeve Type, Model: CFSD - 40 - 100
2. Circular Type, Model: CFSD - 50 - 100
3. Oval Type, Model: CFSD - 60 - 100
4. With factory installed Sleeve, Model: CFSD - 80 - 100

Optional Construction:

Same as the standard construction but blades, stub shaft (latch) with 4 pieces Ø6mm bolts & nuts, axles and linkage brackets with axle in stainless steel Grade 304.

Optional: Blades from stainless steel Grade 316 or 316L.

1. Sleeve Type, Model: CFSD - 40 - 110
2. Circular Type, Model: CFSD - 50 - 110
3. Oval Type, Model: CFSD - 60 - 110
4. With factory installed Sleeve, Model: CFSD - 80 - 110

Same as the standard construction but frame, blades, installation sleeve and all accessories in stainless steel Grade 304.

Optional: Frame, blades and installation sleeve from stainless steel Grade 316 or 316L.

1. Sleeve Type, Model: CFSD - 40 - 120
2. Circular Type, Model: CFSD - 50 - 120
3. Oval Type, Model: CFSD - 60 - 120
4. With factory installed Sleeve, Model: CFSD - 80 - 120

Standard Construction

Finish:
Mill Galvanized

Sleeve:
1.5mm thick (Ga.16) galvanized steel sheet.

Frame:
130 x 24.5 x 1.5mm thick (Ga.16) galvanized steel hat channel.

Blades:
1.5mm thick (Ga.16) galvanized steel "Triple Vee" (3V) groove type (standard).

Blade Stop:
1.5mm thick (Ga.16) galvanized steel sheet bend at 45° angle.

Linkage:
Side linkage concealed in frame (Standard).

Linkage Bar:

Stainless steel type 304, 15mm x 3mm thick.

Linkage Bracket:

GI 50mm x 60mm x 3mm thick, fixed with 1 square axle 9.5 mm and Ø6.3mm Pin.

Crank:

3mm thick galvanized steel sheet 32mm x 107mm with 6.6mm wide slot.

Axle:

Zinc plated steel square bar 9.5 x 9.5 mm.

Stub Shaft (Latch):

Die pressed galvanized steel sheet, 58mm x 68mm x 1.5mm thick (Ga.16).

Bearings:

Sintered bronze oilite type.

Side Seal (Jamb Seal):

Compression type SS grade 304, 0.3mm thick.

Blade Tip Seal:

Blade tip seals are high temperature Durometer Dense Silicone.

Jack Shaft:

GI rod Ø12mm across the blade length with 10mm square end x 25mmL to suit actuator.

Jack Shaft Holder:

Die pressed GI steel 152.9mm x 82.2mm x 1.5mm thick with Ø12.7mm ball bearing.

Minimum Size:

200W x 150H mm with single blade construction up to 250mm height.

Maximum Size:

914W x 914H mm - Single section and 1828W x 1828H - Multiple Section

Mounting:

Vertical

UL Test Ratings

Fire Resistance: 1 1/2 Hour and 3 Hours

Air Leakage Test: Class I and Class II

Elevated Temp. Test: 350°F and 250°F

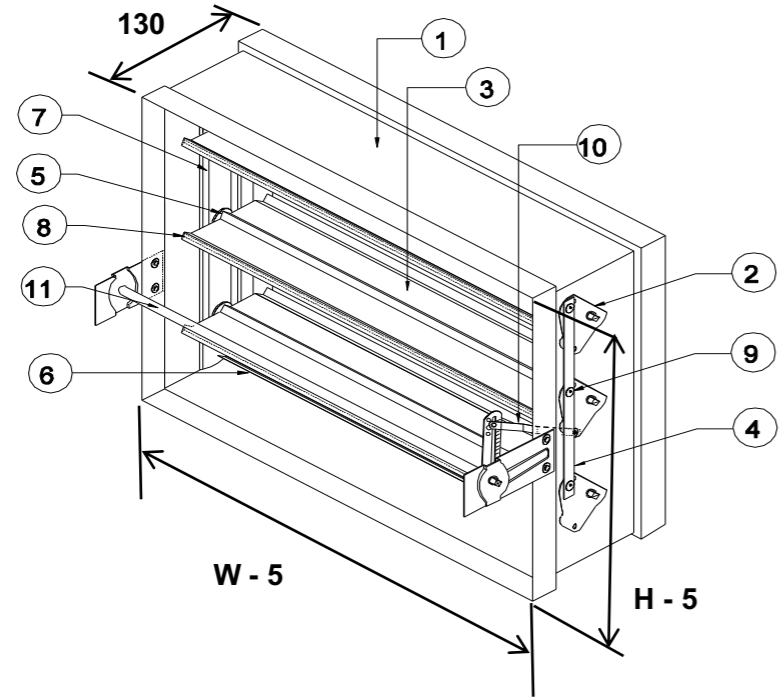
Dynamic Closure Test: Rated at 2000 FPM and 4000 FPM Air Velocity

Rated Pressure: Rated at 4 inch W. G.



Types

Sleeve Type
Model: CFSD-40

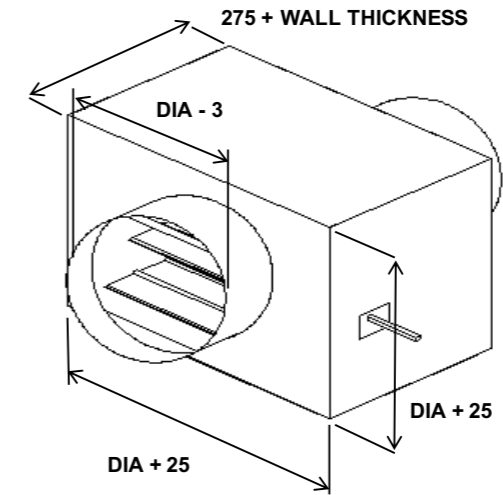


- 1. Casing (Frame)
- 2. Linkage Bracket
- 3. Blade
- 4. Linkage Bar
- 5. Bearings
- 6. Blade Stop
- 7. Side Seal
- 8. Blade Tip Seal
- 9. Lock Washer and GI Round Washer
- 10. Kneelock
- 11. Jackshaft

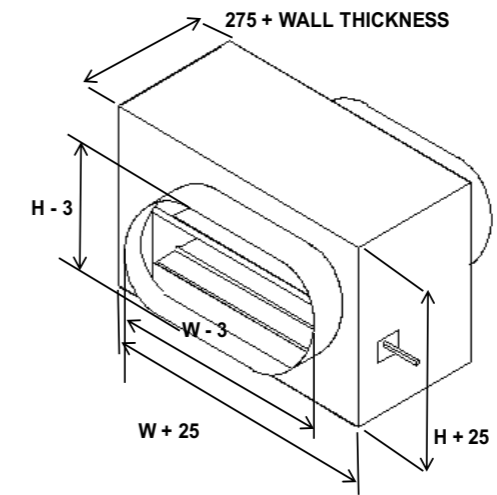


Types

Circular Type
Model: CFSD - 50

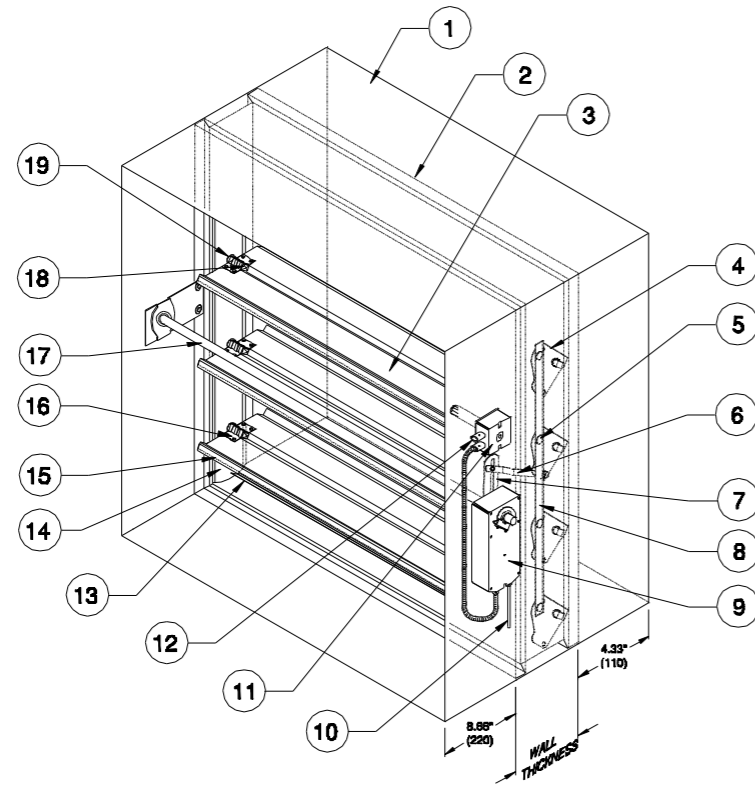


Flat Oval Type
Model: CFSD - 60



Types

CFSD with Factory Installed Sleeve, ERL and Actuator
Model: CFSD-80

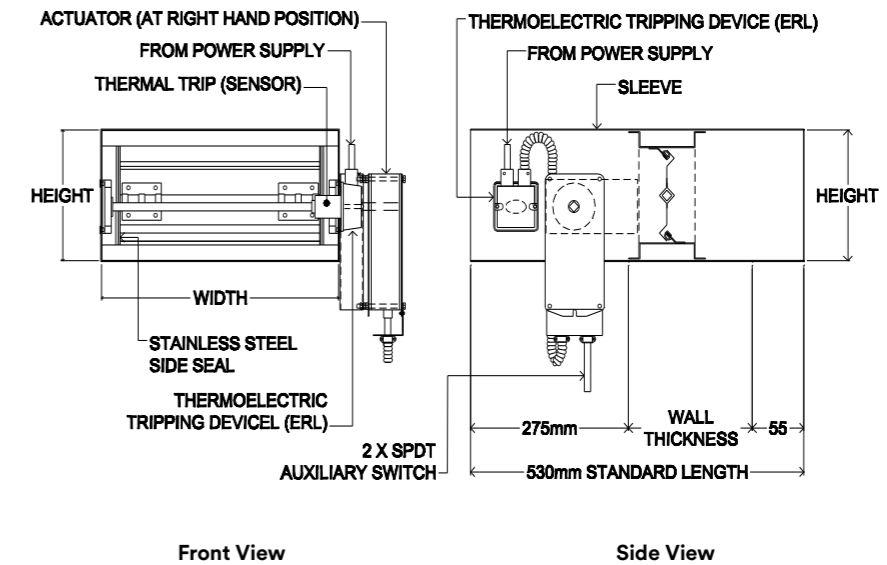


- | | |
|--|--|
| 1. Sleeve | 11. Thermoelectric Tripping Device (ERL) |
| 2. Damper Frame | 12. Power Supply |
| 3. Blade | 13. Blade Stop |
| 4. Linkage Bracket | 14. Stainless Steel Side Seal |
| 5. Lock Washer and Galvanized Round Washer | 15. Blade Tip Seal |
| 6. Kneelock | 16. Stub Shaft (Latch) |
| 7. Crank | 17. Jackshaft |
| 8. Linkage Bar | 18. Axle |
| 9. Actuator | 19. Bearing |
| 10. Auxillary Swieth Cable for Indicating Damper Blades Position | |



Dimensions - Single Section

CFSD With Factory Installed Sleeve, ERL and Actuator
Model: CFSD - 80
Height: Up to 220 mm



Thermoelectric Tripping Device (ERL)

Model:
BAE165 US or SF74 (165°F Klixon)
Bimetallic Manual Reset Type
165°F (74°C) rated
UL Classified components

Schedule of Damper Sizes and Actuator Types

A. Single section damper with two position (open/close) spring retrun type actuators:

- BELIMO Model: FSLF-S-US (24 / 230VAC) with built-in auxiliary switch.
Torque: 3.5Nm for W = 610 mm maximum.
- Model: MS8104F1210 / MS4604F1210 (24 / 230VAC) with built-in auxiliary switch.
Torque: 3.5Nm for W = 610 mm maximum.
- BELIMO Model: BF-S-ME (24 / 230VAC) with built-in auxiliary swith.
Torque: 15 Nm for W = 914 mm maximum.

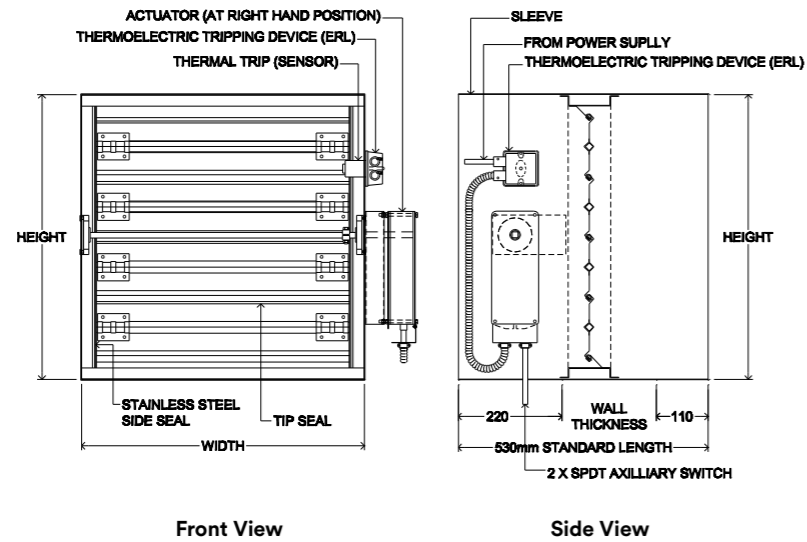
Refer to technical data sheet of actuator or contact SAFID for the actuator specifications.



Dimensions - Single Section

CFSD with Factory Installed Sleeve, ERL and Actuator

Model: CFSD-80
Height: Up to 914 mm



Thermoelectric Tripping Device (ERL)

Model:
BAE165 US or SF74 (165°F Klixon)
Bimetallic Manual Reset Type
165°F (74°C) rated
UL Classified components

Schedule of Damper Sizes and Actuator Types

A. Single section damper with two position (open/close) spring retrun type actuators:

- BELIMO Model: FSLF-S-US (24 / 230VAC) with built-in auxiliary switch.
Torque: 3.5 Nm
Damper size: W=610mm maximum, H=406mm maximum
- Model: MS8104F1210/MS4604F1210 (24 / 230VAC) with built-in auxiliary switch.
Torque: 3.5 Nm
Damper size: W=610mm maximum, H=406mm maximum
- BELIMO Model: FSNF-S-US (24 / 230VAC) with built-in auxiliary switch.
Torque: 8 Nm
Damper size: W=610mm maximum, H=610mm maximum
- BELIMO Model: BF-S-ME (24 / 230VAC) with built-in auxiliary swith.
Torque: 15 Nm
Damper size: W= 914mm maximum, H= 914mm maximum

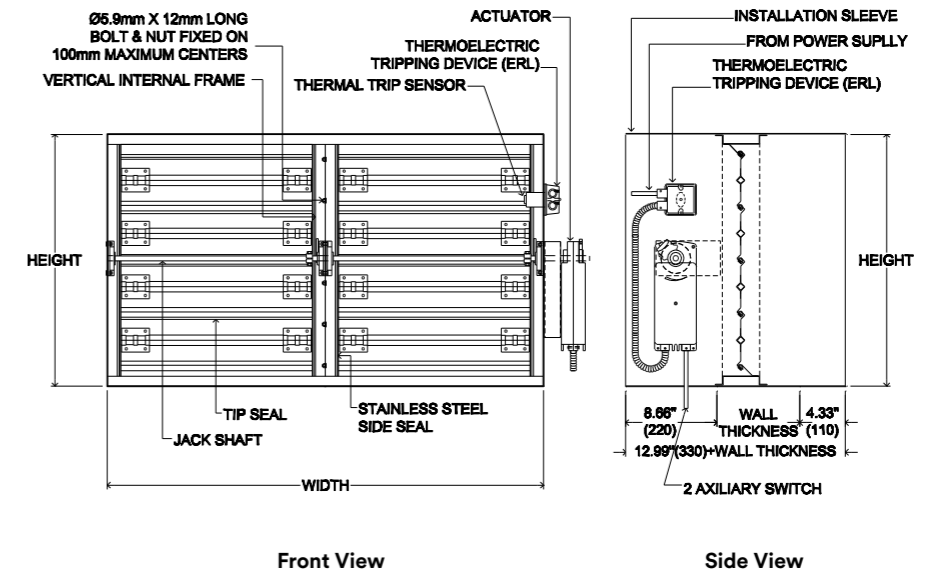
Refer to technical data sheet of actuator or contact SAFID for the actuator specifications.



Dimensions - Multiple Section

CFSD With Factory Installed Sleeve, ERL and Actuator

Model: CFSD - 80
Width: Up to 1200 mm
Height: Up to 914 mm



Thermoelectric Tripping Device (ERL)

Model:
BAE165 US or SF74 (165°F Klixon)
Bimetallic Manual Reset Type
165°F (74°C) rated
UL Classified components

Schedule of Damper Sizes and Actuator Types

A. Multiple section damper with two position (open/close) spring retrun type actuators:

- Model: MS4620F1203 (230VAC) with built-in auxiliary switch.
MS8120F1200 (24VAC) with built-in auxiliary switch.
Torque: 20 Nm

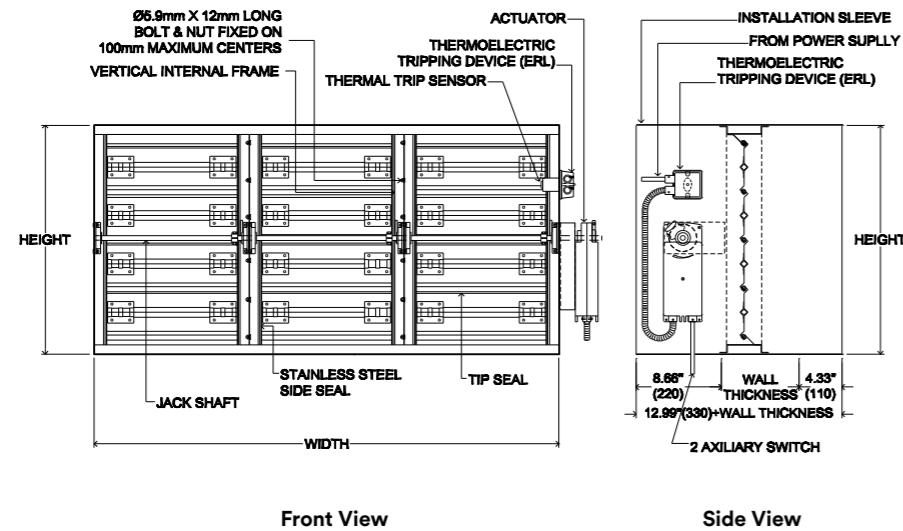
Note: Location of the actuator can be INSIDE or OUTSIDE the airstream.
Refer to technical data sheet of actuator or contact SAFID for the actuator specifications.



Dimensions - Multiple Section

CFSD with Factory Installed Sleeve, ERL and Actuator

Model: CFSD - 80
 Width: Up to 1828 mm
 Height: Up to 914 mm



Thermoelectric Tripping Device (ERL)

Model:
 BAE165 US or SF74 (165°F Klixon)
 Bimetallic Manual Reset Type
 165°F (74°C) rated
 UL Classified components

Schedule of Damper Sizes and Actuator Types

A. Multiple section damper with two position (open/close) spring retron type actuators:

1. Model: MS4620F1203 (230VAC) with built-in auxiliary switch.
 MS8120F1200 (24VAC) with built-in auxiliary switch.
 Torque: 20 Nm

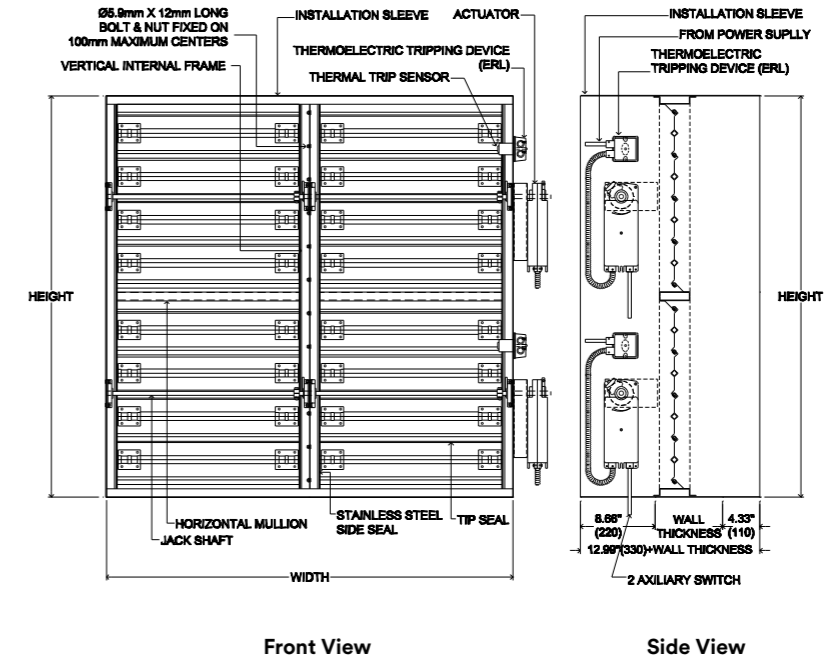
Note: Location of the actuator can be INSIDE or OUTSIDE the airstream.
 Refer to technical data sheet of actuator or contact SAFID for the actuator specifications.



Dimensions - Multiple Section

CFSD With Factory Installed Sleeve, ERL and Actuator

Model: CFSD - 80
 Width: Up to 1200 mm
 Height: Up to 1828 mm



Thermoelectric Tripping Device (ERL)

Model:
 BAE165 US or SF74 (165°F Klixon)
 Bimetallic Manual Reset Type
 165°F (74°C) rated
 UL Classified components

Schedule of Damper Sizes and Actuator Types

A. Multiple section damper with two position (open/close) spring retron type actuators:

1. Model: MS4620F1203 (230VAC) with built-in auxiliary switch.
 MS8120F1200 (24VAC) with built-in auxiliary switch.
 Torque: 20 Nm

Note: Location of the actuator can be INSIDE or OUTSIDE the airstream.
 Refer to technical data sheet of actuator or contact SAFID for the actuator specifications.



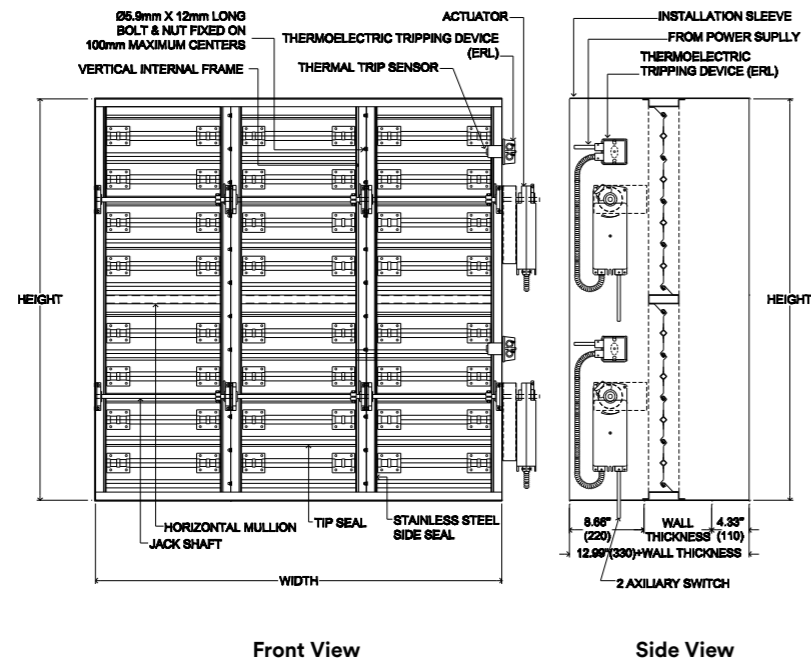
Dimensions - Multiple Section

CFSD with Factory Installed Sleeve, ERL and Actuator

Model: CFSD - 80

Width: Up to 1828 mm

Height: Up to 1828 mm



Thermoelectric Tripping Device (ERL)

Model:
BAE165 US or SF74 (165°F Klixon)
Bimetallic Manual Reset Type
165°F (74°C) rated
UL Classified components

Schedule of Damper Sizes and Actuator Types

A. Multiple section damper with two position (open/close) spring retron type actuators:

1. Model: MS4620F1203 (230VAC) with built-in auxiliary switch.
MS8120F1200 (24VAC) with built-in auxiliary switch.
Torque: 20 Nm

Note: Location of the actuator can be INSIDE or OUTSIDE the airstream.
Refer to technical data sheet of actuator or contact SAFID for the actuator specifications.

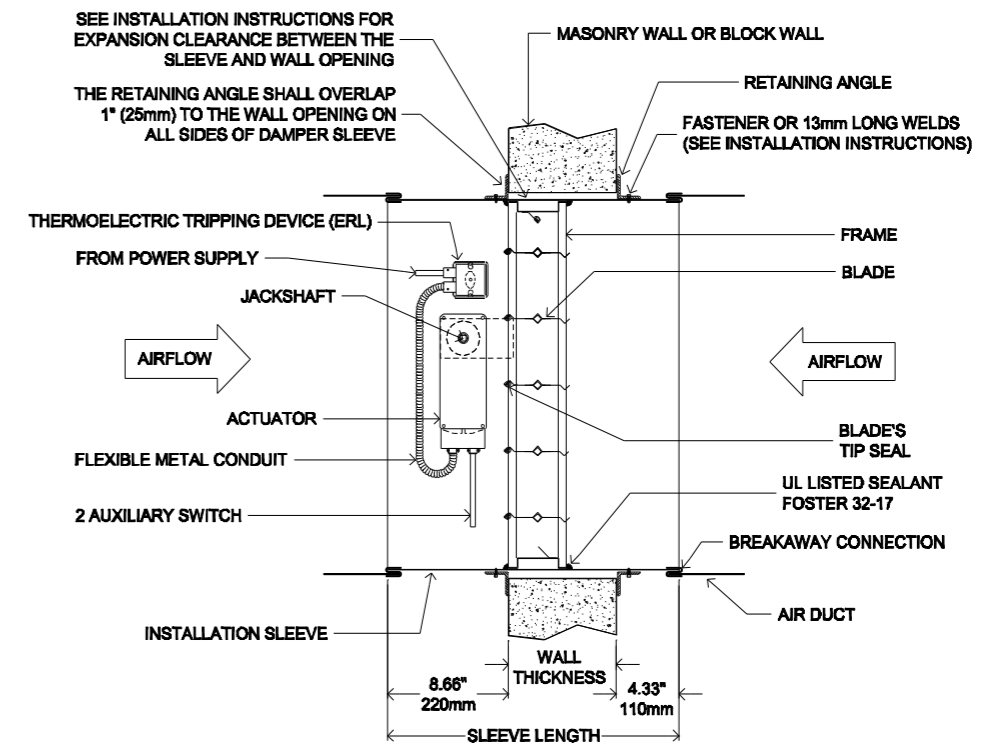


Dimensions

CFSD With Factory Installed Sleeve, ERL and Actuator

Model: CFSD - 80

Typical Installation



Notes:

1. Airflow can be at opposite direction.
2. The actuator and ERL can be located in either side of the wall.
3. Refer to installation manual for further installation detail.

Actuators



Belimo Actuator
Model: FSLF

Belimo Actuator
Model: FSNF

Belimo Actuator
Model: BF

Honeywell Actuator
Model: MS4620F1203

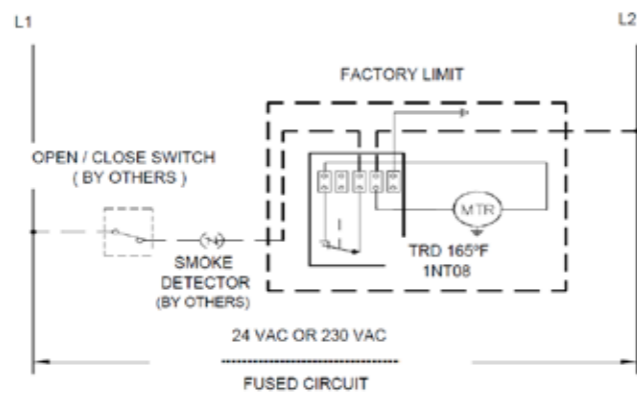
Thermolectric Tripping Device (ERL)
Model: BAE165 US or SF74
(165 °F) Klixon

Sequence of Operation

Fire Mode: The ERL (Thermolectric Tripping Device) resettable link has a thermal sensor switch that interrupts the power supply to the fire & smoke control actuator as soon as the duct temperature exceeds 165°F caused by a fire. When the power supply is interrupted, the energy stored in the spring of the fire and smoke damper actuator moves the damper back to its safe position. The damper can be open again by pressing the reset button on ERL after the temperature cooled down below 165°F.

Smoke Mode: When a signal detected through normally closed smoke detector (by others) connection, the power supply to the fire and smoke damper actuator will be interrupted. The energy stored in the damper actuator moves the damper back to its safe position and remain closed until the smoke signal close down. The system will reset after power is reapplied to the actuator and damper will open. By placing an optional control switch (by others), the damper blades at open position can be closed at any time if required.

Typical Wiring Diagram

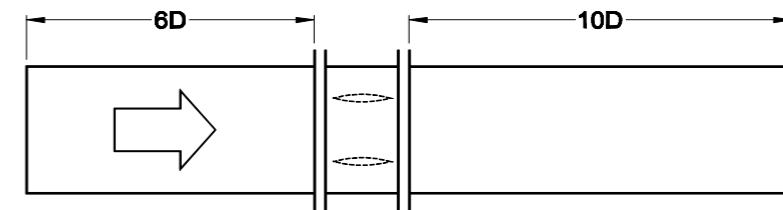


Air Performance

Pressure Drop

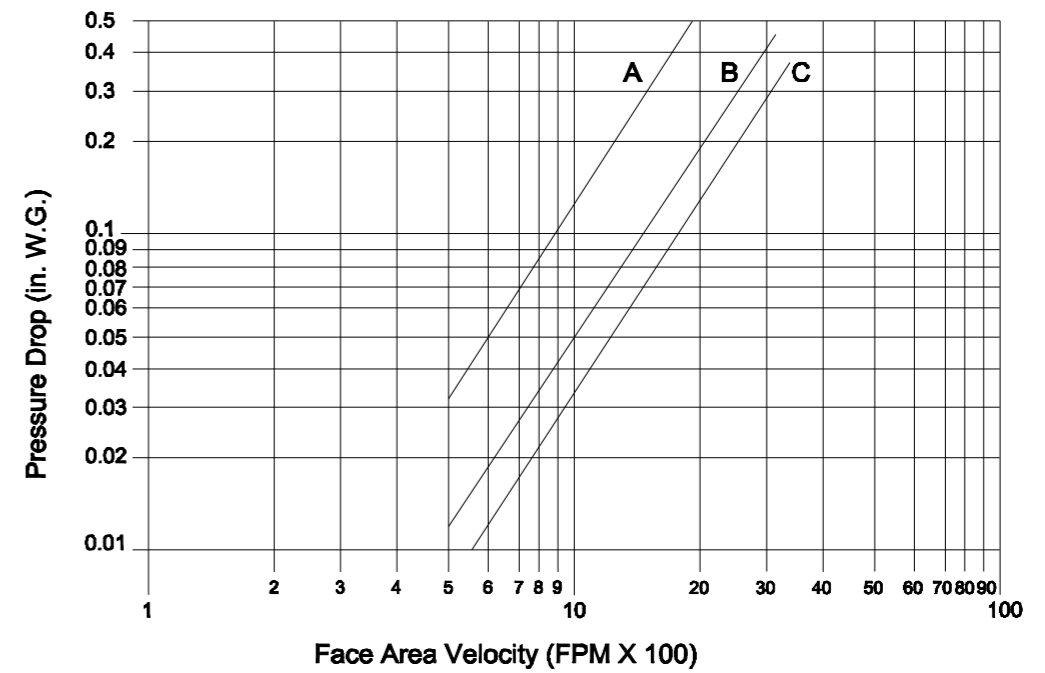
The test method for pressure drop of Combination Fire/Smoke Damper was conducted as per ANSI/AMCA Standard 500-D, Figure 5.3 which simulate the actual site condition when installed in ventilation, supply and return air conditioning ductworks.

AMCA Test Figure 5.3



Pressure Drop at Face Area Velocity

- A- Damper Size: 12in. x 12in. - Fully open blades
- B- Damper Size: 24in. x 24in. - Fully open blades
- C- Damper Size: 36in. x 36in. - Fully open blades



Order Details

Order Code CFSD-80 - 100 - 3V - PB - R - A1S - V1 - ER / 500 x 500

Variants

- CFSD-40 = Sleeve Type
- CFSD-50 = Circular Spigot
- CFSD-60 = Oval Spigot
- CFSD-80 = Factory Installed Sleeve

Types

- 100 = Galvanized Steel Construction
- 110 = Blades of Stainless Steel Grade 304
Optional: Grade 316 or 316L
- 120 = Stainless Steel Construction S/S Grade 304
Optional: Grade 316 or 316L

Types of Blades

- 3V = V Groove Type

Linkage

- PB = Slide Linkage Parallel Blades Operation

External Controls

- R = Right Hand (Standard Supply)
- L = Left Hand

Actuators

- BELIMO, BF-S-ME
- BELIMO, FSNF-S-US
- BELIMO, FSLF-S-US
- Honeywell, MS4620F1203

Duct Size

Width x Height or Diameter. All damper's spigot sizes (slip-in type) will be manufactured less than duct size to fit inside the ductwork connections.

Type of Sensor

ERL = Thermoelectric Tripping Device
Model: BAE165 US, SF74 (165 °F Klixon)

Power Supply

- V1 = 24 VAC
- V2 = 230 VAC

Specifications

Combination fire and smoke dampers with the following specifications shall be used in Heating, Ventilating and Air Conditioning (HVAC) duct systems passing through openings in masonry walls, concrete floor slabs, and in gypsum walls or partitions which required to have a fire resistance rating to restrict the spread of fire. It shall be also used in Smoke Control Systems and in Smoke Proof Stair Enclosure if the wall penetrations required to be fire rated in accordance with NFPA 90A Standard for Installation of Air Conditioning and Ventilating Systems, and with NFPA 101 Life Safety Code.

Combination fire and smoke dampers shall be tested and classified by Underwriters Laboratories Inc. (UL) in accordance with the standards; UL 555 Standard for Safety, Fire Dampers and UL 555S Standard for Safety, Smoke Dampers.

Combination fire and smoke dampers with Fire Resistance Rating of 1½ hour shall be used in fire barrier with Fire Resistance Rating of less than 3 hours, and dampers with 3 hours Fire Resistance Rating shall be used in fire barrier with Fire Resistance Rating of 3 hours or more. Leakage Resistance Rating shall be Class I at 350°F or Class II at 250°F elevated temperature. It shall be UL Certified for dynamic closure test with airflow velocity of minimum 2000 FPM and maximum 4000 FPM with rated Pressure Class of 4 inch of Water Gauge (W.G.).

Combination fire and smoke dampers shall be fitted with UL Listed spring return actuator and Thermoelectric Tripping Device (ERL) with temperature rating of 165°F (74°C). ERL shall cut-off power supply to the actuator in case of fire that will activate the built-in spring return to close the damper blades.

Damper blades shall be with external linkage and parallel action, Ga.16 galvanized steel with 3V groove type for longitudinal reinforcement. Blade's tip seal shall be Type 60 Durometer Dense Silicone, meets gasket requirements in accordance with UL 555S. Blade's axel shall be 9.5 X 9.5 mm square forced-fit to one stub shaft, secured to blade with 4 pieces of bolt & nut, and with sintered bronze oilite axle bearing. Jamb seal/side seal shall be stainless steel to fill gap between blade's end and vertical frame. Jackshaft shall be Ø12 mm galvanized steel with a crank and kneelock secured to the linkage bracket. Damper frame shall be Ga.16 galvanized steel formed into hat channel shape.

Order Example

SAFIDS's combination fire and smoke dampers, galvanized steel construction, 3V groove blade for parallel blades operation, 500mm width X 500mm height duct size and right hand side external controls. Damper shall be with factory installed sleeve and 230 VAC BELIMO actuator with built-in auxiliary switch and with thermoelectric tripping device (ERL) with temperature rating of 165°F (74°C).

Make: SAFID

Type: CFSD-80-100-3V-PB-R-A1S-V2-ERL

Size: 500 W x 500 H

Qty: 1



Description

Combination fire and smoke dampers type, FSD 30 provide an automatic means of localizing areas of smoke and/or fire in ventilation systems. It prevent the distribution of fire and/or smoke through ventilation ductworks. FSD offer an effective barrier maintaining integrity in a fire situation and this is combined with low leakage characteristic for smoke management. It is suitable for installation in sheet metal ductworks or in walls or ceiling slabs made from concrete, brick and lightweight partition walls.

Standard Construction

Frame:
180mm x 30 mm x 1.5mm (16 ga) galvanized steel, formed for flange connections.

Blades:
250mm max. width, 1.5mm (16 ga.) galvanized steel.

Finish:
Mill galvanized.

Linkage:
Face linkage, parallel blade operation is standard. Linkage consist of 6mm dia. S/S steel pivot pins.

Case Bearings:
Made sintered bronze (oilite), operational temp. resistance up to 200 °C.

Fusible Link:
Standard release 74 °C. (165 °F) is std. (UL listed) Other temperatures available on request.

Axles & Control Shaft:
12mm diameter zinc plated mild steel.

Seals:

Side seal are compression type stainless steel grade 304 to close gap between case & blades.

Minimum Size:

150 x 150mm, dampers up to 250mm high is single blade construction.

Maximum Size:

1000 x 1000mm, as single section.
Multiple section assembly with unlimited size, where each section operates independently.

For details of multiple sections consult SAFID.

FSD 30 - 110

General construction as type FSD 30 - 100 damper but blades, shafts and blade to spindle fixing in stainless steel (Grade 304).

FSD 30 - 120

General construction as type FSD 30 - 100 damper but with case, blades shafts and blade to shaft fixing and linkage all from stainless steel (Grade 304).

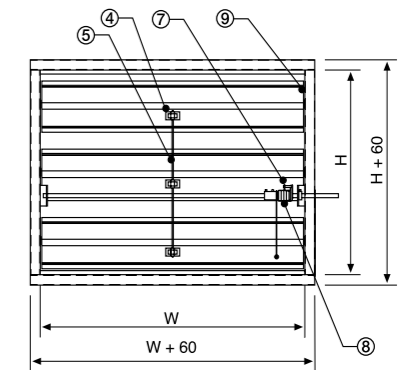
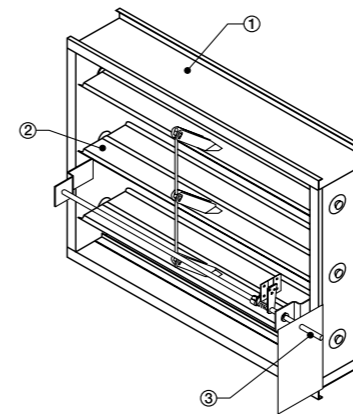
FSD SERIES [FSD 30 - 100, FSD 30 - 110, FSD 30 - 120]

Dimensions

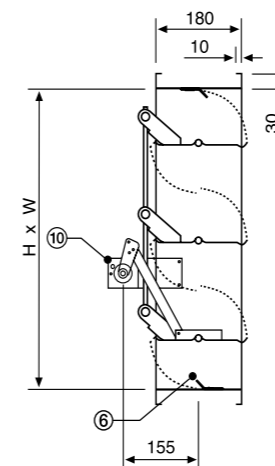
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|------------------------------------|--------------------|--------------------|
| 1 - Casing | 2 - Blade | 3 - Drive Shaft |
| 4 - Face Linkage | 5 - Linkage Bar | 6 - Landing Angles |
| 7 - Fusible Link 74 °C (UL listed) | 8 - Closing Spring | 9 - Side Seal |
| 10 - Jack Shaft Device | | |

Flange Type, Parallel Blades

FSD 30 - 100, 110, 120



Flange Type



Standard Sizes

Width (mm)	Height (mm)	No. of Blades
200	200	1
250	250	1
300	300	2
350	350	2
400	400	2
450	450	3
500	500	3
550	600	4
600	700	4
650	800	5
700	900	6
750	1000	6
800		
850		
900		
950		
1000		



Description

Combination fire and smoke dampers type, FSD 40 provide an automatic means of localizing areas of smoke and/or fire in ventilation systems. It prevent the distribution of fire and/or smoke through ventilation ductworks. FSD offer an effective barrier maintaining integrity in a fire situation and this is combined with low leakage characteristic for smoke management. It is suitable for installation in sheet metal ductworks or in walls or ceiling slabs made from concrete, brick and lightweight partition walls.

Standard Construction

- Frame:**
100mm x 40mm x 1.5mm (16 ga.) galvanized steel, structurally designed hat section.
- Blades:**
300mm max. width, 1.5mm (16 ga.) galvanized steel.
- Finish:**
Mill galvanized.
- Linkage:**
Face linkage, parallel blade operation is standard. Linkage consist of 6mm dia. S/S steel pivot pins.
- Case Bearings:**
Made sintered bronze (oilite), operational temp. resistance up to 200 °C.
- Fusible Link:**
Standard release 74 °C. (165 °F) is std. (UL listed) Other temperatures available on request.
- Axles & Control Shaft:**
12mm diameter zinc plated mild steel.

Seals:

Side seal are compression type stainless steel grade 304 to close gap between case and blades.

Minimum Size:

200 x 200mm, damper up to 300mm high is single blade construction.

Maximum Size:

1000 x 1000mm, as single section.
Multiple section assembly with unlimited size, where each section operates independently.

For details of multiple sections consult SAFID.

FSD 40 - 110

General construction as type FSD 40 - 100 damper but blades, shafts and blade to spindle fixing in stainless steel (Grade 304).

FSD 40 - 120

General construction as type FSD 40 - 100 damper but with case, blades shafts and blade to shaft fixing and linkage all from stainless steel (Grade 304).

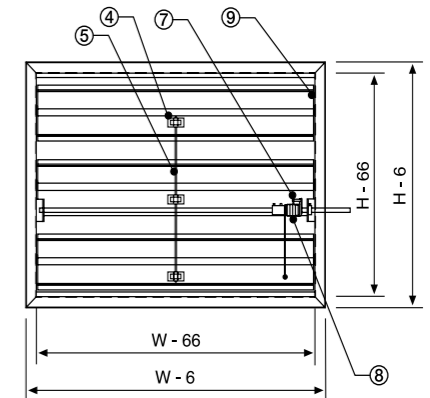
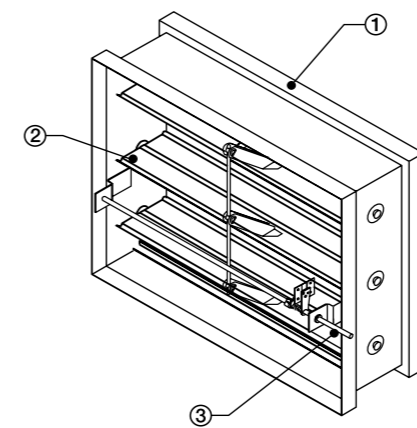
FSD SERIES [FSD 40 - 100, FSD 40 - 110, FSD 40 - 120]

Dimensions

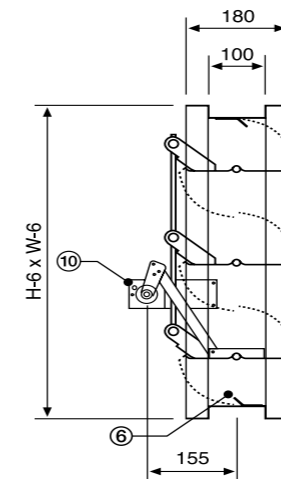
- 1 - Casing
- 2 - Blade
- 3 - Drive Shaft / Removable Spindle when Required
- 4 - Face Linkage
- 5 - Linkage Bar
- 6 - Landing Angles
- 7 - Fusible Link 74 °C (UL listed)
- 8 - Closing Spring
- 9 - Side Seal
- 10 - Jack Shaft Device

Sleeve Type, Parallel Blades

FSD 40 - 100, 110, 120



Sleeve Type



Standard Sizes

Width (mm)	Height (mm)	No. of Blades
200	200	1
250	250	1
300	300	1
350	350	2
400	400	3
450	450	3
500	500	4
550	600	4
600	700	5
650	800	6
700	900	6
750	1000	7
800		
850		
900		
950		
1000		

CIRCULAR SPIGOT TYPE COMBINATION FIRE SMOKE DAMPER



FSD 50 - 100

FSD SERIES
CIRCULAR SPIGOT TYPE

Constructed and in accordance to the ULL555 standard.

Description

Combination fire and smoke dampers, FSD 50 provide an automatic means of localizing areas of smoke and/or fire in ventilation systems. It prevent the distribution of fire and/or smoke through ventilation ductworks. FSD offer an effective barrier maintaining integrity in a fire situation and this is combined with low leakage characteristic for smoke management. It is suitable for installation in sheet metal ductworks or in walls or ceiling slabs made from concrete, brick and lightweight partition walls.

Standard Construction

Frame (Spigot Type):

105mmx1.5mm (16 ga) galvanized steel L=530mm

Blades:

250mm max. width, 1.5mm (16 ga.) galvanized steel.

Finish:

Mill galvanized.

Linkage:

Face linkage, parallel blade operation is standard. Linkage consist of 6mm dia. S/S steel pivot pins.

Case Bearings:

Made sintered bronze (oilite), operational temp. resistance up to 200 °C.

Fusible Link:

Standard release 74 °C. (165 °F) is std. (UL listed) Other temperatures available on request.

Axles & Control Shaft:

12mm diameter zinc plated mild steel.

Seals:

Side seal are compression type stainless steel grade 304 to close gap between case and blades.

Minimum Size:

200mm diameter, damper up to 250mm dia. high is single blade construction.

Maximum Size:

1000mm diameter as single section. Multiple section assembly with unlimited size, where each section operates independently.

For details of multiple sections consult SAFID.

FSD 50 - 110

General construction as type FSD 50 - 100 damper but blades, shafts and blade to spindle fixing in stainless steel (Grade 304).

FSD 50 - 120

General construction as type FSD 50 - 100 damper but with case, blades shafts and blade to shaft fixing and linkage all from stainless steel (Grade 304).



CIRCULAR SPIGOT TYPE COMBINATION FIRE SMOKE DAMPER

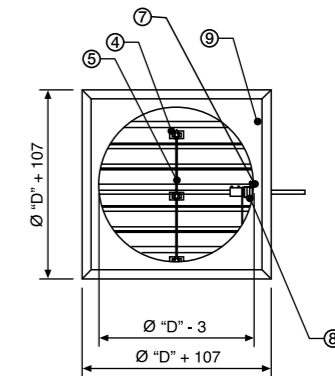
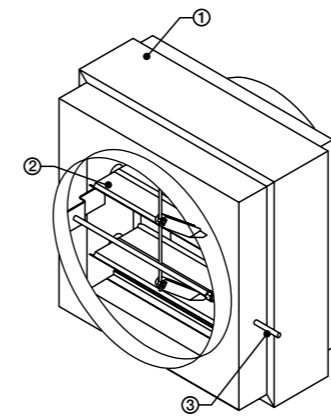
FSD SERIES [FSD 50 - 100, FSD 50 - 110, FSD 50 - 120]

Dimensions

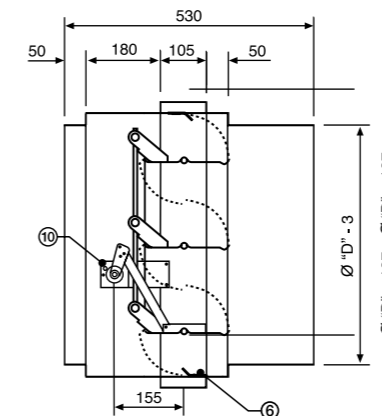
- | | | |
|------------------------------------|--------------------|--------------------|
| 1 - Casing | 2 - Blade | 3 - Drive Shaft |
| 4 - Face Linkage | 5 - Linkage Bar | 6 - Landing Angles |
| 7 - Fusible Link 74 °C (UL listed) | 8 - Closing Spring | 9 - Side Seal |
| 10 - Jack Shaft Device | | |

Circular Spigot Type

FSD 50 - 100, 110, 120



Circular Spigot Type



Standard Sizes

Diameter (mm)	No. of Blades
200	1
250	1
300	2
350	2
400	2
450	2
500	3
550	3
600	4
650	4
700	5
750	6
800	
850	
900	
950	
1000	

OVAL SPIGOT TYPE COMBINATION FIRE SMOKE DAMPER



FSD 60 - 100

FSD SERIES
OVAL SPIGOT TYPE

Constructed and in accordance to the ULL555 standard.

Description

Combination fire and smoke dampers type, FSD 60 provide an automatic means of localizing areas of smoke and/or fire in ventilation systems. It prevent the distribution of fire and/or smoke through ventilation ductworks. FSD offer an effective barrier maintaining integrity in a fire situation and this is combined with low leakage characteristic for smoke management. It is suitable for installation in sheet metal ductworks or in walls or ceiling slabs made from concrete, brick and lightweight partition walls.

Standard Construction

Frame (Spigot Case):

105mmx1.5mm (16 ga) galvanized steel L=530mm

Blades:

250mm max. width, 1.5mm (16 ga.) galvanized steel.

Finish:

Mill galvanized.

Linkage:

Face linkage, parallel blade operation is standard. Linkage consist of 6mm dia. S/S steel pivot pins.

Case Bearings:

Made sintered bronze (oilite), operational temp. resistance up to 200 °C.

Fusible Link:

Standard release 74 °C. (165 °F) is std. (UL listed) Other temperatures available on request.

Axles & Control Shaft:

12mm diameter zinc plated mild steel.

Seals:

Side seal are compression type stainless steel grade 304 to close gap between case and blades.

Minimum Size:

250 x 200mm, damper up to 250mm high is single blade construction.

Maximum Size:

1100 x 1000mm, as single section. Multiple section assembly with unlimited size, where each section operates independently.

For details of multiple sections consult SAFID.

FSD 60 - 110

General construction as type FSD 60 - 100 damper but blades, shafts and blade to spindle fixing in stainless steel (Grade 304).

FSD 60 - 120

General construction as type FSD 60 - 100 damper but with case, blades shafts and blade to shaft fixing and linkage all from stainless steel (Grade 304).



OVAL SPIGOT TYPE COMBINATION FIRE SMOKE DAMPER

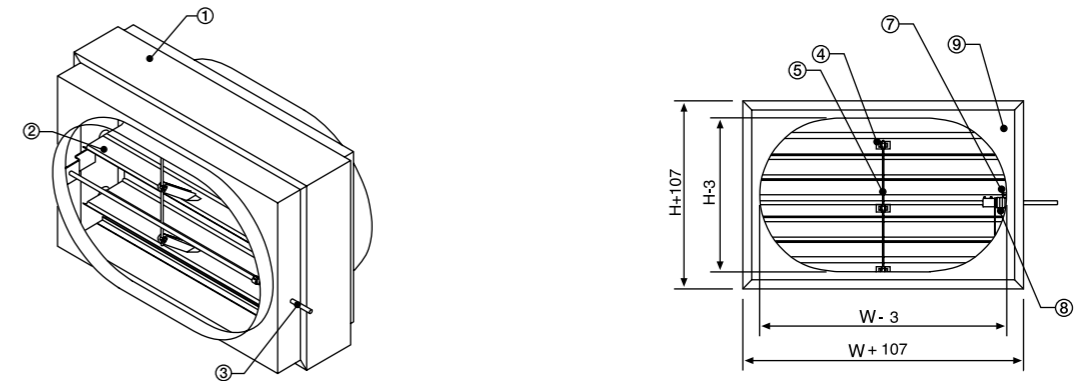
FSD SERIES [FSD 60 - 100, FSD 60 - 110, FSD 60 - 120]

Dimensions

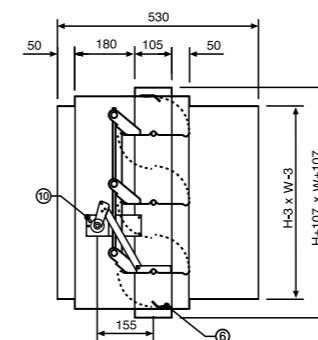
- | | | |
|------------------------------------|--------------------|--------------------|
| 1 - Casing | 2 - Blade | 3 - Drive Shaft |
| 4 - Face Linkage | 5 - Linkage Bar | 6 - Landing Angles |
| 7 - Fusible Link 74 °C (UL listed) | 8 - Closing Spring | 9 - Side Seal |
| 10 - Jack Shaft Device | | |

Oval Spigot Type

FSD 60 - 100, 110, 120



Oval Spigot Type



Standard Sizes

Width (mm)	Height (mm)	No. of Blades
250	200	1
300	250	1
350	300	2
400	350	2
450	400	2
500	450	2
550	500	3
600	550	3
650	600	4
700	650	4
750	700	4
800	750	5
850	800	5
900	850	5
950	900	6
1000	950	6
1100	1000	6

RECTANGULAR SPIGOT TYPE COMBINATION FIRE SMOKE DAMPER



FSD 70 - 100

FSD SERIES
RECTANGULAR SPIGOT TYPE

Constructed and in accordance to the ULL555 standard.

Description

Combination fire and smoke dampers type, FSD 70 provide an automatic means of localizing areas of smoke and/or fire in ventilation systems. It prevent the distribution of fire and/or smoke through ventilation ductworks. FSD offer an effective barrier maintaining integrity in a fire situation and this is combined with low leakage characteristic for smoke management. It is suitable for installation in sheet metal ductworks or in walls or ceiling slabs made from concrete, brick and lightweight partition walls.

Standard Construction

Frame (Spigot Case):

105mmx1.5mm (16 ga) galvanized steel L=530mm

Blades:

250mm max. width, 1.5mm (16 ga.) galvanized steel.

Finish:

Mill galvanized.

Linkage:

Parallel blade have standard face linkage, parallel blade operation is standard. Linkage consist of 6mm dia. S/S steel pivot pins.

Case Bearings:

Made sintered bronze (oilite), operational temp. resistance up to 200 °C.

Fusible Link:

Standard release 74 °C. (165 °F) is std. (UL listed) Other temperatures available on request.

Axles & Control Shaft:

12mm diameter zinc plated mild steel.

Seals:

Side seal are compression type stainless steel grade 304 to close gap between case and blades.

Minimum Size:

200 x 200mm, damper up to 250mm high is single blade construction.

Maximum Size:

1000 x 1000mm, as single section. Multiple section assembly with unlimited size, where each section operates independently.

For details of multiple sections consult SAFID.

FSD 70 - 110

General construction as type FSD 70 - 100 damper but blades, shafts and blade to spindle fixing in stainless steel (Grade 304).

FSD 70 - 120

General construction as type FSD 70 - 100 damper but with case, blades shafts and blade to shaft fixing and linkage all from stainless steel (Grade 304).



RECTANGULAR SPIGOT TYPE COMBINATION FIRE SMOKE DAMPER

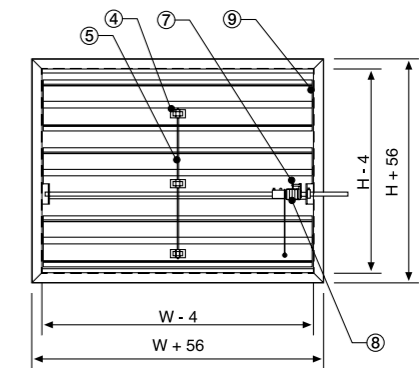
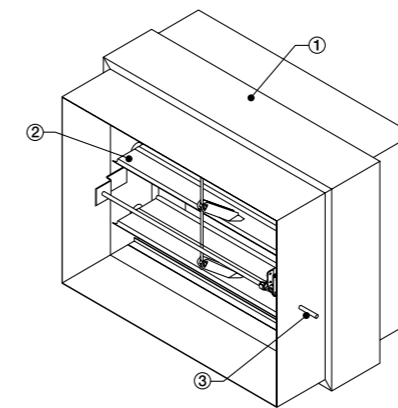
FSD SERIES [FSD 70 - 100, FSD 70 - 110, FSD 70 - 120]

Dimensions

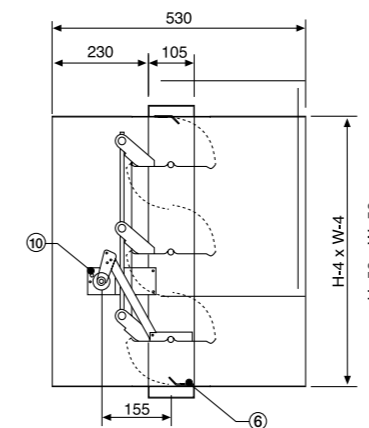
- | | | |
|------------------------------------|--------------------|--------------------|
| 1 - Casing | 2 - Blade | 3 - Drive Shaft |
| 4 - Face Linkage | 5 - Linkage Bar | 6 - Landing Angles |
| 7 - Fusible Link 74 °C (UL listed) | 8 - Closing Spring | 9 - Side Seal |
| 10 - Jack Shaft Device | | |

Rectangular Spigot Type

FSD 70 - 100, 110, 120



Rectangular Spigot Type

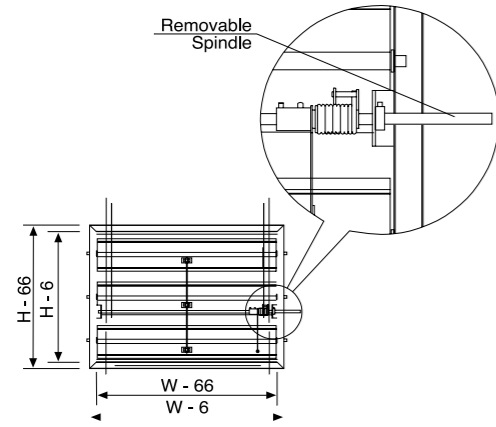


Standard Sizes

Width (mm)	Height (mm)	No. of Blades
200	200	1
250	250	1
300	300	2
350	350	2
400	400	2
450	450	3
500	500	3
550	600	4
600	700	4
650	800	5
700	900	6
750	1000	6
800		
850		
900		
950		
1000		

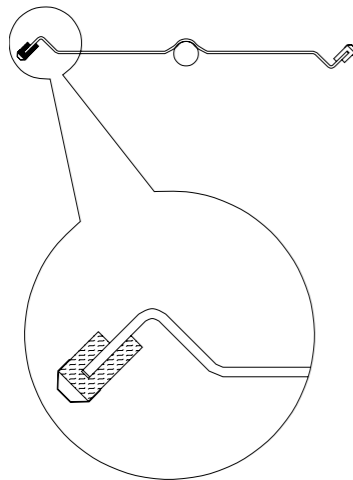
Removable Spindle

For Sleeve Type Only



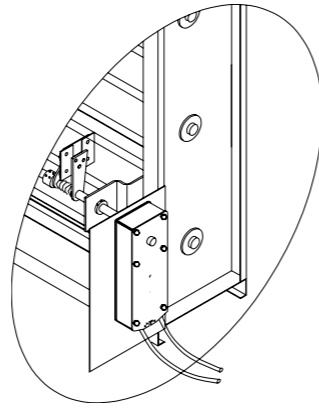
Blade Seal

Type S1 (Silicone Rubber)



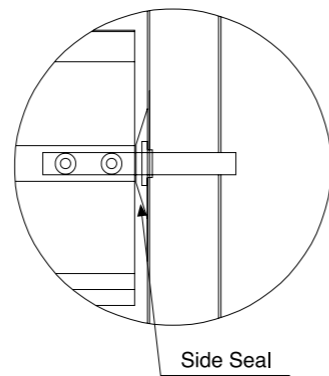
Mounting Bracket

Damper with Mounting Bracket for Actuator



Side Seal (Jamb Seal)

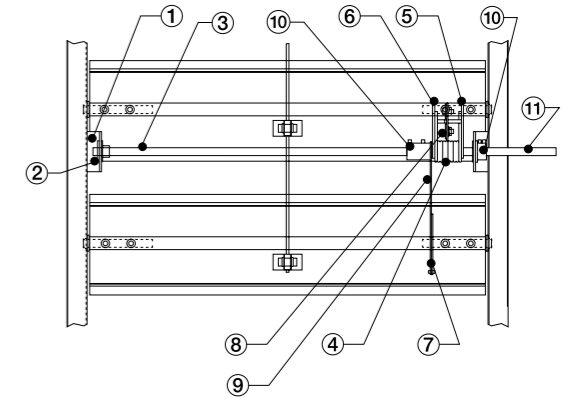
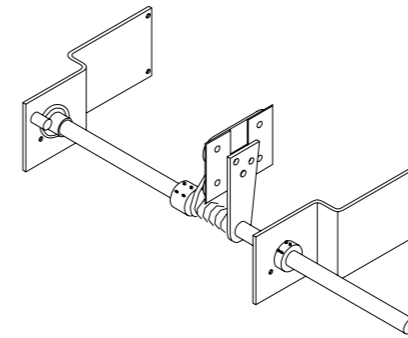
Type S2 (Stainless Steel Type 304)



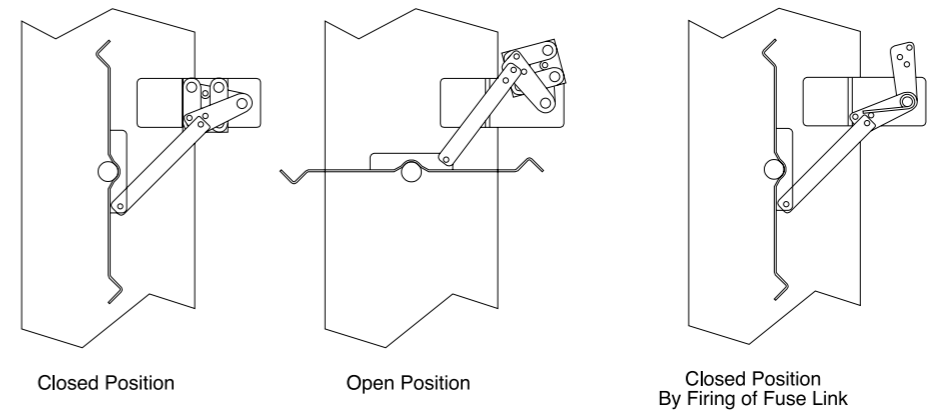
Note: Type S3 (Combination of S1 & S2)

Jack Shaft Device

- 1 - Bracket Case Mounted
- 2 - Shaft Bearing
- 3 - Through Shaft
- 4 - Coil Spring
- 5 - Fixed Link Arm
- 6 - Free Link Arm
- 7 - Blade Rotation Ink
- 8 - Fuse Link
- 9 - Connecting Link Arm
- 10 - Shaft Joint
- 11 - Drive Spindle



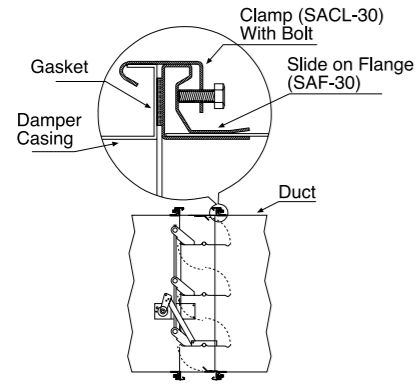
Section of Drive Device



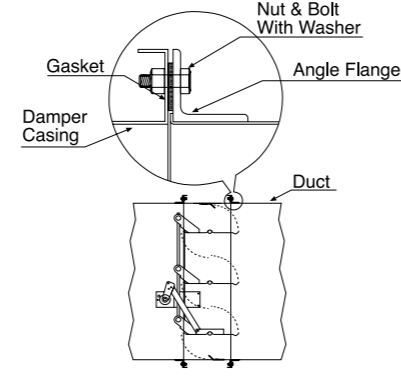
Flange Installation Details

Flange Type FSD 30

Damper to Slide On Flange Connection

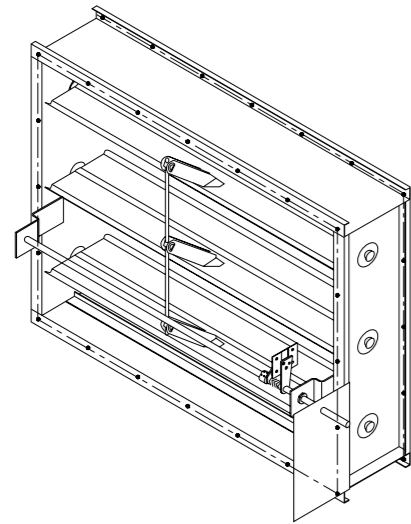


Damper to Flange Connection



Flange Installation Detail

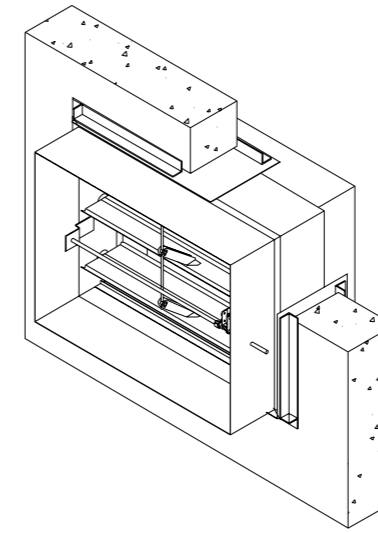
Flange Drilling Details, Type FSD 30



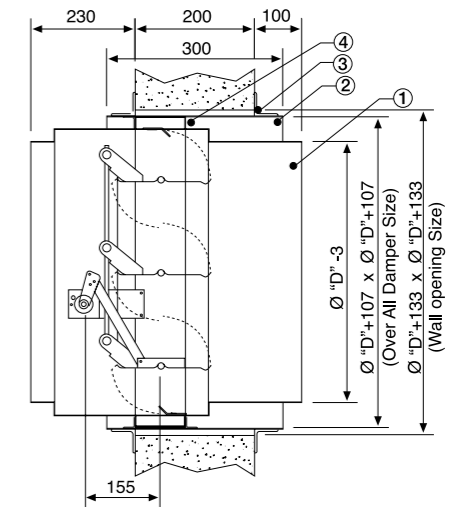
Flange Drilling Details

Width (mm)	Height (mm)	No. of Holes B Dim.	No. of Holes H Dim.
100	100	1	2
150	150	2	2
200	200	2	2
250	250	2	3
300	300	3	3
350	350	3	4
400	400	4	4
450	450	4	4
500	500	4	5
600	600	5	6
700	700	6	6
800	800	7	7
900	900	8	8
1000	1000	8	9
1100	1100	9	10
1200	1200	10	10
	1300		11
	1400		12
	1500		13
	1600		14
	1700		14
	1800		15

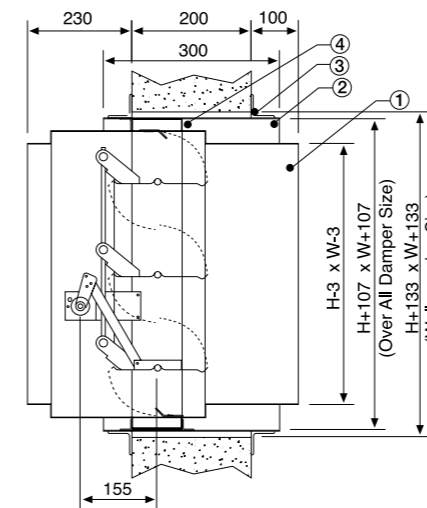
Installation Details



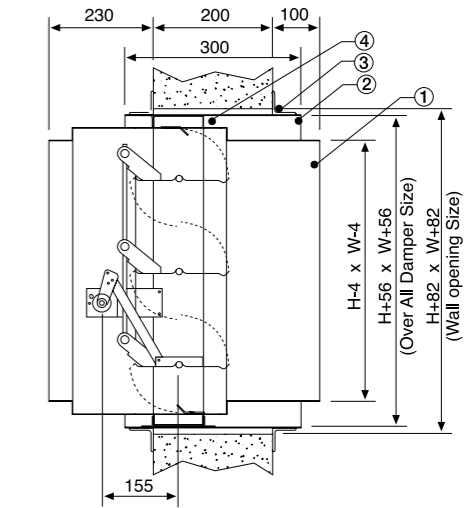
FSD 50



FSD 60



FSD 70

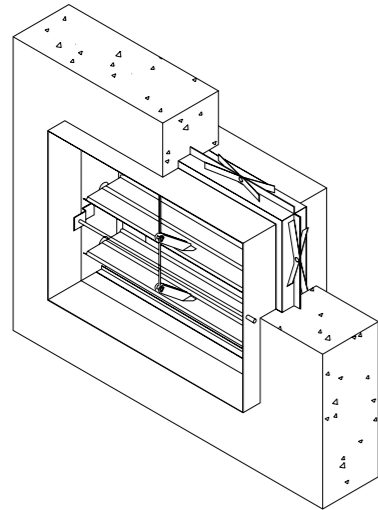


HEVAC Frame Installation Details

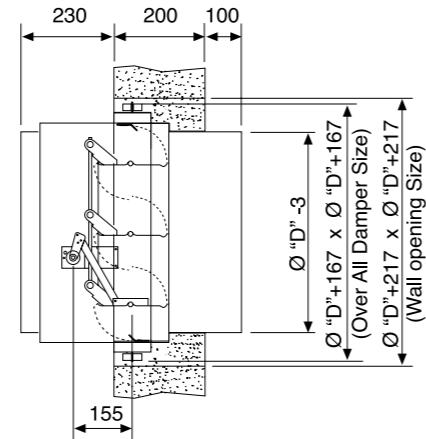
Product Range

COMBINATION FIRE & SMOKE DAMPERS

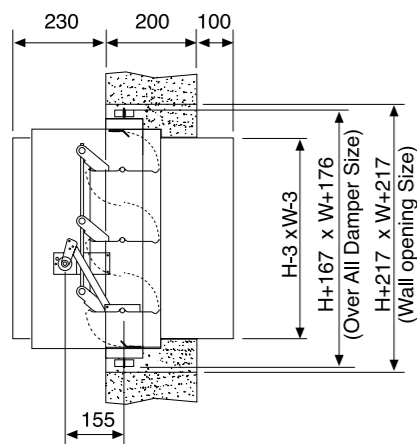
COMBINATION FIRE & SMOKE DAMPERS



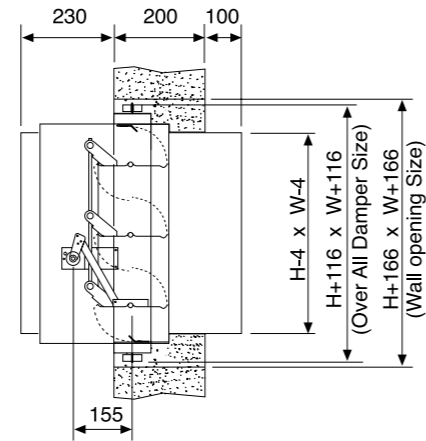
FSD 50



FSD 60



FSD 70



Seals

Construction Variants	Description
S	No seals. Not applicable.
S1	Blade edge seal to seal blades to blade joint. Blade seal is silicone rubber with temperature resistance up to 175 °C, for low leakage characteristic. Not applicable.
S2	Side seals. Fitted to close gap between frame and blades. Not applicable.
S3	Combination of S1 & S2, fitted to close gap between frame and blades and blade edge seals to seal blade to blade joint. Blade seals is silicone rubber with temperature resistance up to 175 °C, for ultra low leakage characteristic.

Belimo Actuators

Code	Type/Model
A01	BF230 spring return
A02	BF24 spring return
A03	AF230 spring return
A04	AF230-S spring return with limit switch
A05	AF230 US spring return
A06	AF120 US spring return
A07	AF230-S US spring return with limit switch
A08	AF120-S US spring return with limit switch
A09	AF24 US spring return
A10	AF24-S US spring return with limit switch
A11	AF24-SR spring return
A12	NF24 US spring return
A13	NF120 US spring return
A14	NF24-S US spring return with limit switch
A15	NF120-S US spring return with limit switch
A16	NF24-SR US Modulating
A17	SM230A open/closed
A18	SM24A open/closed
A19	SM230A-SR Modulating
A20	NM230 open/closed
A21	NM24 open/closed
A22	NM24 SR Modulating
A23	GM240 open/closed
A24	GM24 open/closed
A25	GM24-SR Modulating

Linkage

Construction Variants	Description
PB	Standard supply construction internal face linkage, parallel blade operation.

Bearings

Construction Variants	Description
B1	Construction sintered bronze oilite (standard).
B2	Sintered Bronze Oilite

Note:
For Belimo Actuators details, models and voltages see pages 230 - 249 or contact SAFID.

Order Details

Order Code	FSD 30 - 100 - PB - S3 - B1 - R - 500 x 500 - A01									
Variants										
*FSD30 = Flange (Standard Supply)										
FSD40 = Sleeve										
FSD50 = Circular Spigot										
FSD60 = Oval Spigot										
FSD70 = Rectangular Spigot										
Type										
*100 (Standard Supply)										
110										
120										
Linkage										
*PB - Parallel Blades										
Variants - Seals										
S = No Seal, not applicable for FSD type										
S1 = Blade Seal Only (Not Applicable)										
S2 = Side Seal Only (Not Applicable)										
*S3 = Side & Blade Seal (175 °C), (Standard Supply)										
Variants - Bearings										
*B1 = Sintered Bronze (Oilite)										
B2 = Stainless Steel										

Actuator
(See page 193)

Duct Size
- Square or rectangular dimension 'W' x 'H' mm
circular 'D' mm dia.
- Flat oval 'W' x 'H' mm.
- All dampers spigots are manufactured down on duct size to fit inside ductwork connections.

External Controls
**R" = Right Hand (Standard Supply)
"L" = Left Hand

* - Stands for Standard Supply.

Specifications

Combination fire and smoke dampers designed for the fire/smoke isolation of sections for ducting in ventilation systems. Basically consisting of a flanged casing, shut off blades with overlapping interlocking joints, with seals to close off gap between frame & blades. Blades are connected by internal linkage for parallel action. Damper is fitted to internal jack shaft incorporating fusible link assembly.

Manual and electric operation with low leakage blades construction are available. Side seal are compression type stainless steel grade 304 to close gap between case and blades.

Order Example

Standard
Make: SAFID
Type: FSD30-100-PB-S3-B1-R-500x500 / A01
Qty: 1

