



JL Marine & Engineering Pte Ltd

- Fire Damper

Marine Technology and Products Catalogue
Product Instructions



Owing to continued product development, JL reserves the right to introduce alterations without prior notice.

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INTRODUCTION

Function

The fire dampers are of a type-approved class AO-A60 for use in marine and offshore ventilation systems. All fire dampers have a fusible link and they prevent the spread of fire within the ventilation ductwork.

When the blades are in an open position, the device does not cause significant pressure loss or flow disturbance. Fire dampers are set from outside and can be installed in any position. An open-closed label is visible on the outside of the damper. Fire dampers with non-standard dimensions can also be supplied on request.

FDR and **FDC** blades are made of steel. The nominal release temperatures of the fuses are 50°C, 74°C or 100°C.

Material and Finishing

The fire dampers have a fixed frame and blades made of painted, hot-galvanised or stainless steel. The bearings and shafts are made of stainless steel and are maintenance-free.

Fire Dampers

FDR Model



The FDR fire dampers are designed to prevent fires from spreading within both rectangular and circular ventilation ductworks. They are type-approved class AQ(A60) fire dampers for use in marine and offshore ventilation systems. In the open position, the fire dampers cause non-significant pressure losses, noise and flow disturbances.

In the event of fire, the dampers shut automatically, triggered by fusible links. This applies to all dampers. Dampers in the shut position have minimal leakage.

All fire dampers are set from the outside. An open-closed indicator shows the current setting. The fire dampers can be installed in any position, and can also be supplied on request with non-standard dimensions.

Features

Available materials for frame, blades, bearings and shafts shown below; shafts and bearings are maintenance-free

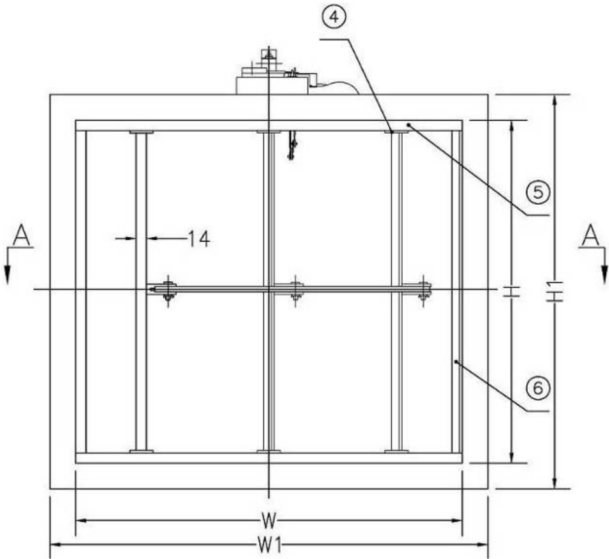
| Part | Material | Finishing |
|----------|---------------------------|-----------------------|
| Frame | Carbon steel | Painted or galvanised |
| Frame | Stainless steel | |
| Blades | Steel | Painted or galvanised |
| Blades | Stainless steel | |
| Bearings | Stainless steel or bronze | |
| Shafts | Stainless steel | |

- Nominal release temperatures of fuses are 50 °C, 74 °C or 100 °C; other release temperatures also possible
- Low weight due to patented double skin blade structure
- Suitable for installation in any position
- Maximum duct pressure of 5000 Pa; maximum air velocity of 15 m/s

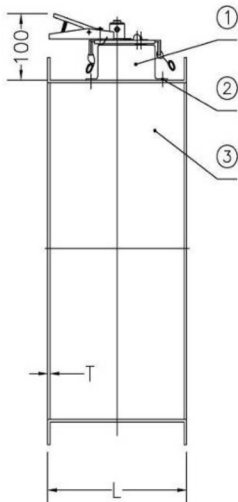
Specifications

The standard frame material thickness is 3 mm. Frame thicknesses of 3-5 mm according to SOLAS can also be supplied.

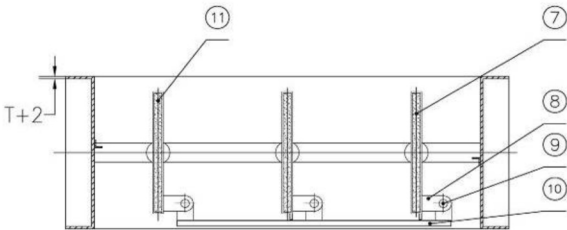
Rectangular Type: Dimensions



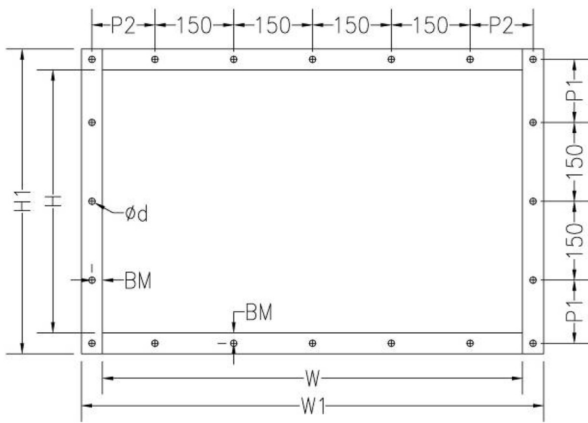
FDR General Dimensions



Side View



A-A View



Flange Details

Flanges are continuously welded on both sides:

- 5mm<P1 and P2<150mm
- BM is the distance from the inside to centreline hole

Dimensions

| Flange Size | W1 | H1 | d | BM |
|-----------------------------|-------|-------|----|----|
| If W or H \leq 350 | W+60 | H+60 | 10 | 15 |
| If 350 < W or H \leq 1000 | W+80 | H+80 | 12 | 20 |
| If W or H > 1000 | W+100 | H+100 | 14 | 25 |

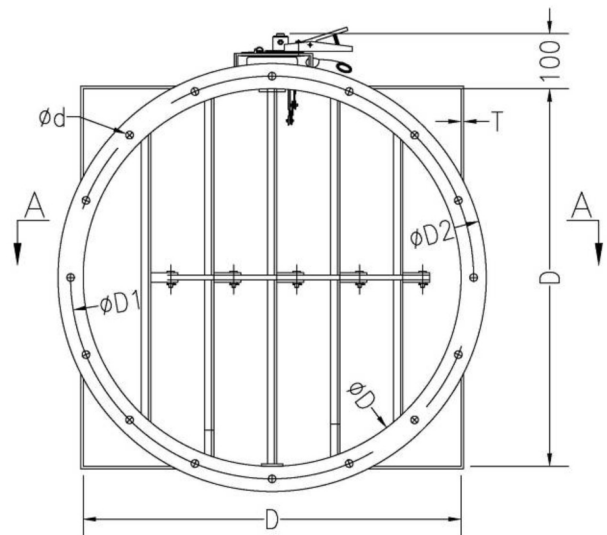
Frame Thickness List

| Frame thickness according to SOLAS | T | L |
|------------------------------------|---|-----|
| If $100 < W$ or $H < 449$ | 3 | 250 |
| If $450 < W$ or $H < 649$ | 4 | 250 |
| If W or $H > 650$ | 5 | 250 |

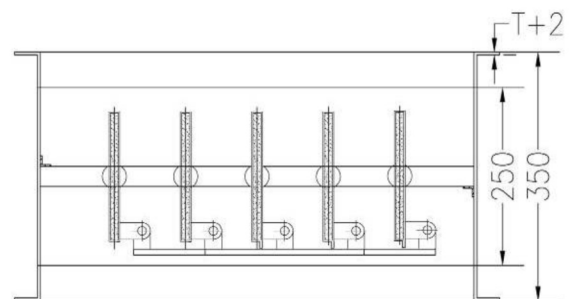
Accessories List

| Part | Specification | Qty | Remark |
|------|------------------|-------|----------|
| 1 | Auto controller | 1 | Assemble |
| 2 | Screw M5x8 | 4 | Q235-A |
| 3 | Body | 1 | Assemble |
| 4 | Axle sleeve | 2 * n | |
| 5 | Shaft bed | 2 | Q235-A |
| 6 | Door sheet | 2 | Q235-A |
| 7 | Valve plate no.1 | 1 | Assemble |
| 8 | Small lever arm | 1Set | Q235-A |
| 9 | Pin bolt | 1Set | Q235-A |
| 10 | Lever arm | 1 | Q235-A |
| 11 | Valve plate no.2 | 1 | Assemble |

Circular Type: Dimensions



FDR General Dimensions



A-A View

Dimensions

| Flange Size | D1 | D2 | d | n |
|-------------------------|------|-------|----|----|
| If $D \leq 160$ | D+30 | D+60 | 10 | 4 |
| If $160 < D \leq 355$ | | | | 8 |
| If $355 < D \leq 500$ | D+40 | D+80 | 12 | 12 |
| If $500 < D \leq 710$ | | | | 16 |
| If $710 < D \leq 1000$ | | | | 24 |
| If $1000 < D \leq 1120$ | | | | |
| If $D > 1120$ | D+50 | D+100 | 14 | 32 |

Fire Dampers

FDC Model



The FDC fire dampers are designed to prevent fires from spreading within circular ventilation ductwork. They are type-approved class AO[A60] fire dampers for use in marine and offshore ventilation systems. In the open position, the fire dampers cause non-significant pressure losses, noise and flow disturbances.

In the event of fire, the dampers shut automatically, triggered by fusible links. This applies to all dampers. Dampers in the shut position have minimal leakage.

All fire dampers are set from the outside. An open-closed indicator shows the current setting. The fire dampers can be installed in any position, and can also be supplied on request with non-standard dimensions.

Features

Available materials for frame, blades, bearings and shafts shown below; shafts and bearings are maintenance-free

| Part | Material | Finishing |
|----------|---------------------------|-----------------------|
| Frame | Carbon steel | Painted or galvanised |
| Frame | Stainless steel | |
| Blades | Steel | Painted or galvanised |
| Blades | Stainless steel | |
| Bearings | Stainless steel or bronze | |
| Shafts | Stainless steel | |

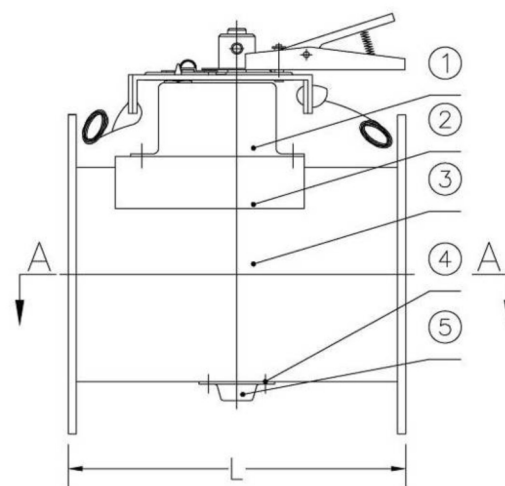
- Nominal release temperatures of fuses are 50 °C, 74 °C or 100 °C; other release temperatures also possible
- Low weight due to patented double skin blade structure
- Suitable for installation in any position
- Maximum duct pressure of 5000 Pa; maximum air velocity of 15 m/s

Specifications

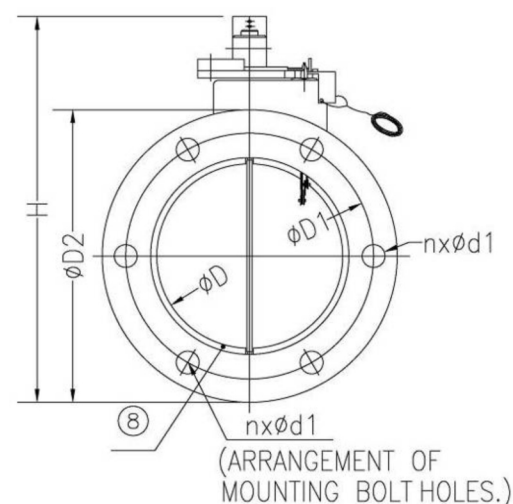
The standard frame material thickness is 3 mm. Frame thicknesses of 3-5 mm according to SOLAS can

also be supplied.

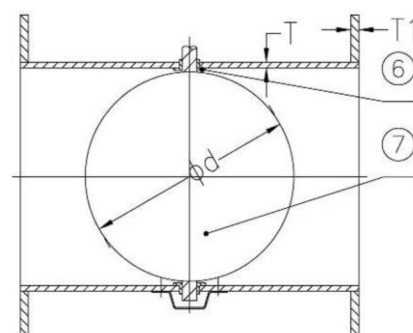
Dimensions



FDC General Dimensions



Side View



A-A View

**Dimensions**

| Model | d | D | D1 | D2 | H | L |
|---------|------|------|------|------|------|------|
| FDC100 | 95 | 100 | 136 | 155 | 250 | 250 |
| FDC125 | 120 | 125 | 161 | 180 | 275 | 250 |
| FDC150 | 145 | 150 | 186 | 205 | 300 | 250 |
| FDC160 | 155 | 160 | 196 | 215 | 310 | 250 |
| FDC175 | 170 | 175 | 211 | 230 | 325 | 350 |
| FDC200 | 195 | 200 | 236 | 255 | 350 | 250 |
| FDC250 | 245 | 250 | 286 | 305 | 400 | 300 |
| FDC300 | 295 | 300 | 336 | 355 | 450 | 350 |
| FDC315 | 310 | 315 | 351 | 370 | 465 | 350 |
| FDC350 | 345 | 350 | 396 | 432 | 515 | 400 |
| FDC400 | 395 | 400 | 446 | 482 | 565 | 450 |
| FDC450 | 445 | 450 | 496 | 532 | 615 | 500 |
| FDC500 | 495 | 500 | 556 | 592 | 670 | 550 |
| FDC600 | 595 | 600 | 660 | 696 | 775 | 700 |
| FDC700 | 695 | 700 | 760 | 796 | 875 | 800 |
| FDC800 | 795 | 800 | 860 | 896 | 975 | 900 |
| FDC900 | 895 | 900 | 970 | 1010 | 1085 | 1000 |
| FDC1000 | 995 | 1000 | 1070 | 1110 | 1185 | 1100 |
| FDC1200 | 1195 | 1200 | 1280 | 1330 | 1395 | 1300 |

Other sizes available on request

Installation Dimensions

| Model | n x d1 | T | T1 | Weight | |
|---------|--------|-----|------|--------|--|
| FDC100 | 6x 9 | 4 * | 6 * | | |
| FDC125 | | | | | |
| FDC150 | | | | | |
| FDC160 | | | | | |
| FDC200 | 8x 9 | | | | |
| FDC200 | | | | | |
| FDC250 | 12x 9 | | | | |
| FDC300 | | | | | |
| FDC315 | | | | | |
| FDC350 | 12x 12 | 6 * | 8 * | | |
| FDC400 | | | | | |
| FDC450 | | | | | |
| FDC500 | 12x 15 | | | | |
| FDC600 | | | | | |
| FDC700 | 16x 15 | 8 * | 10 * | | |
| FDC800 | | | | | |
| FDC900 | 20x 19 | 9 * | 12 * | | |
| FDC1000 | | | | | |
| FDC1200 | 20x 24 | | | | |

* Other thicknesses available on request

Accessories

| Part | Specification | Qty | Remark |
|------|-----------------|-----|----------|
| 1 | Auto controller | 1 | Assemble |
| 2 | Bed plate | 1 | Q235-A |
| 3 | Body | 1 | Assemble |
| 4 | Screw | 8 | Q235-A |
| 5 | Shaft support | 1 | Q235-A |
| 6 | Thrust plate | 2 | H62 |
| 7 | Valve disc | 1 | Assemble |
| 8 | Door seal | 2 | Q235-A |

Function

The fire dampers are of a type-approved class AO-A60 for use in marine and offshore ventilation systems. The FDB and FDL can be installed in rectangular or circular ducts, and the FDD in circular ducts. All fire dampers (except model MAN) have a fusible link, and they prevent the spread of fire and flue gases within the ventilation ductwork.

When the blades are in an open position, the device does not cause significant pressure loss or flow disturbance. Fire dampers are set from outside and can be installed in any position. An open-closed indicator is visible on the outside of the damper. Fire dampers with non-standard dimensions can also be supplied on request.

FDB blades have silicone seals (effective up to 300 °C) and thermal expansion seals (effective from 150°C). The nominal release temperatures of the fuses are 50°C, 74°C or 100°C.

FDD blades have glass fibro seals (effective up to 300°C) and thermal expansion seals (effective from 150°C). The nominal release temperatures of the fuses are 50°C, 74°C or 100°C.

FDL blades are made of steel. The nominal release temperatures of the fuses are 50°C, 74°C or 100°C.

Material and Finishing

The fire dampers have a fixed frame and blades made of painted, hot-galvanised or stainless steel. The bearings and shafts are made of stainless steel and are maintenance-free.

Description

EL: Electrical spring return motor; standard actuators are Belimo BF24, BF24-T (24 VAC±20 % 50...60Hz; 24VDC ±10 %) or Belimo BF230, BF230-T (220-240 VAC 50...60 Hz). The motor contains built-in open-closed limit switches. A separate junction box is included in the EL-model.

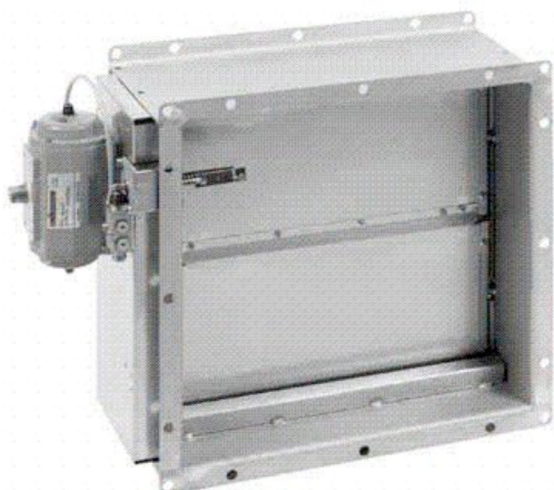
PNL: Pneumatic actuator, material AISI 316, 4 -8 bar

PNR: Pneumatic rotating actuator, 4-6 bar

SP: Manual spring-actuated damper with fusible link

DOT: Manual override function

Fire Dampers FDB Model



The FDB fire dampers are designed to prevent fires and gases from spreading within both rectangular and circular ventilation ductworks. They are type-approved class AO(A60) fire dampers for use in marine and offshore ventilation systems. In the open position, the fire dampers cause non-significant pressure losses, noise and flow disturbances.

In the event of fire, the dampers shut automatically, triggered by fusible links. This applies to all dampers, except the manually operated version. Dampers in the shut position have minimal leakage.

All fire dampers are set from the outside. An open-closed indicator shows the current setting. The fire dampers can be installed in any position, and can also be supplied on request with non-standard dimensions.

Features

- Both rectangular and circular versions made in 12 standard sizes; non-standard sizes can also be made while keeping within the set minimum and maximum dimensions
- Optional blades contain silicone seals (effective up to 300°C) for low leakage in normal conditions and thermal expansion graphite seals (effective from 150°C) to increase tightness up to 50% in case of fire (as required by NORSOK)
- Available materials for frame, blades, bearings and shafts shown below; shafts and bearings are maintenance-free

| Part | Material | Finishing |
|----------|---------------------------|-----------------------|
| Frame | Carbon steel | Painted or galvanised |
| Frame | Stainless steel | |
| Blades | Steel | Painted or galvanised |
| Blades | Stainless steel | |
| Bearings | Stainless steel or bronze | |
| Shafts | Stainless steel | |

- Nominal release temperatures of fuses are 50 °C,

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74 °C or 100 °C; other release temperatures also possible

- Low weight due to patented double skin blade structure
- Suitable for installation in any position
- Automatic electrical, pneumatic, spring or manual operation systems available
- Maximum duct pressure of 5000 Pa and maximum air velocity of 15 m/s

Operation Principles

The operation of the different types of FDB fire dampers depends on the construction methods used. The available models and how they react when temperatures rise are described below.

- FDB-EL: A fusible link releases and cuts off the operating voltage to the spring return motor, which causes the spring to close the damper blades. The fire damper opens automatically when the fuse is replaced and the operating voltage to the motor is re-established.
- FDB-PNR and FDB-PNL: A fusible link releases and cuts off operating pressure to the spring return actuator, which causes the springs to close the damper blades. The fire damper opens automatically when the fuse is replaced and the pneumatic air supply is re-established.
- FDB-SP: A fusible link is released, which allows the spring to close the damper blades. When the fuse is replaced, the fire damper must be reset into the open position manually.

Available Actuators

- FDB-EL: Electrical spring return motor with built-in open-closed limit switches; standard actuators are BLF24, BF24 (24 VAC 50/60 Hz 24 VDC) or BLF230, BF230 (230 VAC 50/60 Hz) or BF120 (120 VAC 50/60 Hz); separate junction box
- FDB-PNL: Pneumatic linear actuator; material AISI 316
- FDB-PNR: Pneumatic rotating actuator; 4-6 bar; optional junction box
- FDB-SP: Manual spring-actuated damper with fusible link
- FDB-MAN: Manual operation without actuator or fusible link
- DOT: Manual override function for EL and PNL models
- Other actuators available on request

Accessories

The following accessories are available for the FDB fire dampers:

| Components | Options |
|---------------------|--|
| Actuators | <ul style="list-style-type: none"> Stainless steel EEX-approved |
| Piping and fittings | <ul style="list-style-type: none"> Stainless steel |
| Controls | <ul style="list-style-type: none"> Solenoid valve (stainless steel, brass, EEX) Electric valve Manual valve Pneumatic valve (manual, linear, rotating) Quick exhaust valve Limit switches, also as EEX FD-CON-2 open-closed control box for EL-type dampers Spring release Pressure regulator |
| Junction box | <ul style="list-style-type: none"> Stainless steel Plastic EEX-approved |
| Construction | <ul style="list-style-type: none"> Frame (stainless steel, carbon steel - painted or galvanised) Special low-leakage model Bearings (stainless steel, brass, bronze) Counter flanges |



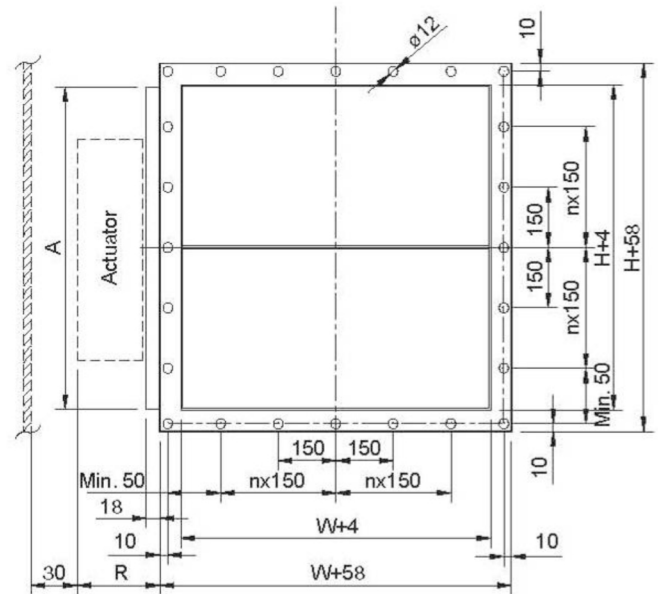
FD-Con-2 Switch Box

Specifications

The FDB fire dampers meet international standards for both rectangular (width B 100-1200 mm and height H 100-1600 mm, 50 mm division) and circular (Ø100-1250 mm) ducts. Non-standard dimensions and flange drilling are available on request. Modular construction sizes up to 2400x3200 mm are also available.

The standard frame material thickness is 3 mm. Frame thicknesses of 3-5 mm according to SOLAS can also be supplied.

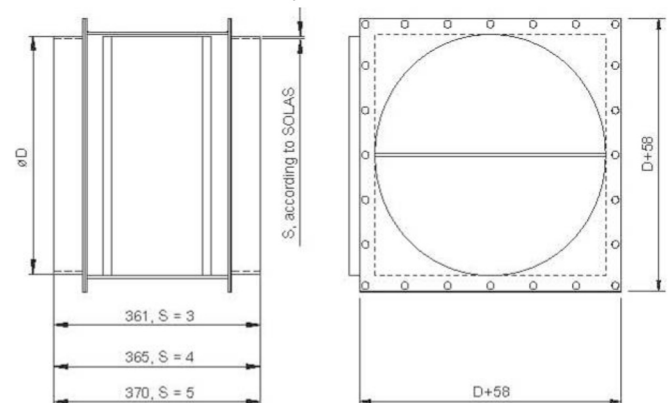
Dimensions



FDB General Dimensions



FDB Top Dimensions



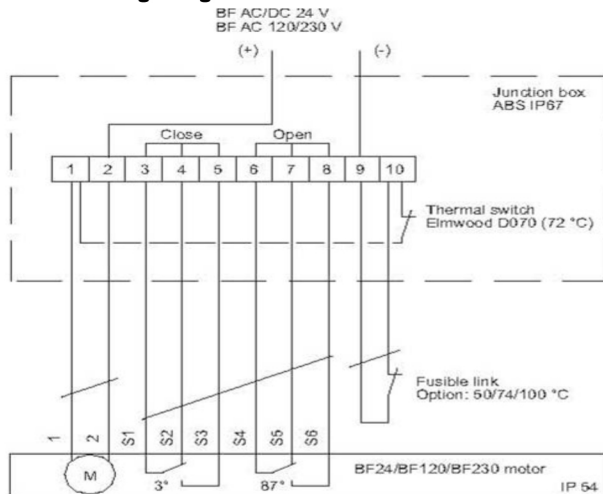
FDB Circular Connections Dimensions

| Frame thickness according to SOLAS | S | L |
|------------------------------------|---|-----|
| If $100 < W \text{ or } H < 449$ | 3 | 210 |
| If $450 < W \text{ or } H < 649$ | 4 | 212 |
| If $W \text{ or } H > 650$ | 5 | 215 |

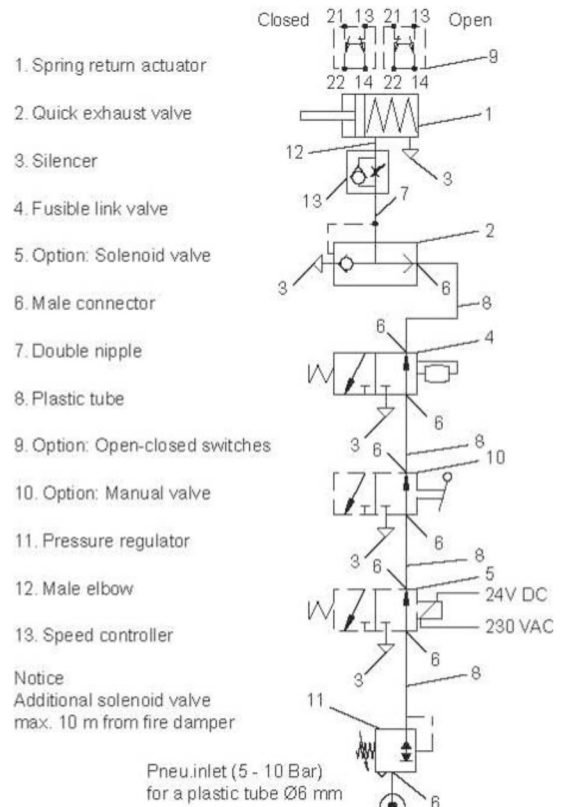
The effects of the actuators on the dimensions are shown below:

| Actuator Type | | Dimensions | |
|---------------|------------------------------|------------|------------------------------|
| | | R | A |
| FDB-EL | 24 V, 120 V, 230 V | 90 | H |
| FDB-PNL | Linear actuator 245/300 N | 110 | H ≤ 500 = 500 H > 500 = H |
| FDB-PNR | Pneumatic rotating actuator | 170 | H |
| FDB-SP | Spring | 140 | H |

FDB-EL Wiring Diagram



FDB-PNR/PNL Pneumatic Diagram



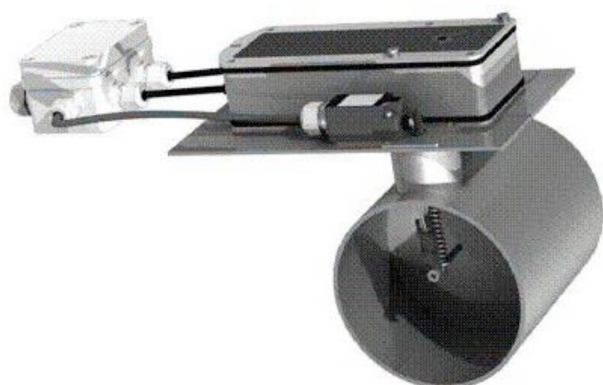
Weights

The weights are for the FDB2-EL with frame thicknesses of 3 mm and 3-5 mm according to SOLAS, e.g., 30 (39) means 30 kg for 3 mm frames and 39 kg for 3-5 mm frames. Values for non-standard sizes can be extrapolated.

| Height, H [mm] | Width, B [mm] | | | | | | | | | | | | | D2 ØD [mm] | Weight [kg] |
|-------------------|---------------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|------|---------------|----------------|
| | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | | | |
| 100 | 10 (10) | 12 (12) | 13 (13) | 15 (15) | 17 (19) | 18 (22) | 20 (26) | 22 (28) | 23 (30) | 25 (33) | 27 (36) | 29 (39) | 100 | 12 (12) | |
| 200 | 12 (12) | 14 (14) | 15 (15) | 17 (17) | 19 (22) | 21 (24) | 23 (29) | 25 (32) | 27 (35) | 28 (37) | 30 (40) | 32 (43) | 125 | 13 (13) | |
| 300 | 12 (12) | 16 (16) | 18 (18) | 20 (20) | 22 (25) | 24 (28) | 27 (34) | 29 (37) | 31 (40) | 33 (43) | 35 (45) | 37 (48) | 160 | 14 (14) | |
| 400 | 16 (16) | 18 (18) | 20 (20) | 23 (23) | 25 (28) | 27 (31) | 29 (37) | 32 (40) | 34 (44) | 36 (47) | 38 (50) | 40 (53) | 200 | 16 (16) | |
| 500 | 18 (19) | 21 (22) | 23 (25) | 26 (28) | 28 (32) | 31 (35) | 33 (42) | 36 (45) | 38 (48) | 40 (52) | 43 (55) | 45 (58) | 250 | 20 (20) | |
| 600 | 20 (22) | 23 (24) | 25 (28) | 28 (31) | 31 (35) | 33 (38) | 36 (46) | 38 (50) | 41 (52) | 44 (56) | 46 (59) | 49 (63) | 315 | 24 (24) | |
| 700 | 22 (28) | 25 (32) | 28 (35) | 31 (39) | 34 (43) | 37 (46) | 39 (50) | 42 (54) | 45 (57) | 48 (61) | 51 (65) | 54 (68) | 400 | 31 (31) | |
| 800 | 24 (31) | 27 (34) | 30 (38) | 33 (42) | 36 (46) | 39 (50) | 42 (54) | 45 (57) | 48 (61) | 51 (65) | 54 (69) | 57 (73) | 500 | 37 (44) | |
| 900 | 26 (34) | 29 (38) | 33 (42) | 36 (46) | 39 (50) | 42 (54) | 45 (58) | 49 (62) | 52 (66) | 55 (70) | 58 (74) | 62 (78) | 630 | 46 (57) | |
| 1000 | 28 (36) | 31 (40) | 35 (44) | 38 (49) | 41 (53) | 45 (57) | 48 (62) | 52 (65) | 55 (70) | 58 (74) | 62 (78) | 65 (82) | 800 | 61 (83) | |
| 1100 | 30 (39) | 34 (44) | 37 (48) | 41 (53) | 45 (57) | 48 (61) | 52 (66) | 55 (70) | 59 (75) | 63 (79) | 66 (83) | 70 (88) | 1000 | 81 (110) | |
| 1200 | 32 (42) | 36 (46) | 40 (51) | 43 (55) | 47 (60) | 51 (65) | 55 (70) | 58 (74) | 62 (79) | 66 (83) | 70 (88) | 73 (92) | 1250 | 109 (146) | |
| 1300 | 34 (45) | 39 (50) | 42 (54) | 46 (58) | 50 (63) | 54 (69) | 58 (74) | 61 (78) | 66 (84) | 70 (87) | 74 (92) | 78 (97) | | | |
| 1400 | 36 (48) | 41 (54) | 44 (57) | 48 (61) | 53 (66) | 57 (73) | 62 (78) | 65 (83) | 70 (88) | 74 (92) | 78 (97) | 82 (102) | | | |
| 1500 | 38 (51) | 43 (58) | 47 (61) | 51 (64) | 56 (70) | 60 (76) | 65 (82) | 68 (87) | 74 (92) | 79 (97) | 82 (102) | 87 (107) | | | |
| 1600 | 40 (53) | 45 (63) | 49 (64) | 54 (67) | 59 (73) | 63 (80) | 68 (86) | 71 (91) | 77 (97) | 83 (101) | 87 (107) | 92 (113) | | | |

Weights include the actuators BF24 or BF230. The weights of other models are found by adding or subtracting the following values to the weights of the FDB2-EL: FDB2-PNL = +1 kg, FDB2-PNR = +1 kg, FDB2-SP = -2 kg, FDB2-MAN = -3 kg.

Fire Damper FDD Model



The FDD fire dampers are designed to prevent fires and gases from spreading within circular ventilation ductwork. They are type-approved class AO(A60) fire dampers for use in marine and offshore ventilation systems. In the open position, the fire dampers cause non-significant pressure losses, noises and flow disturbances.

In the event of fire, the dampers shut automatically, triggered by fusible links. This applies to all dampers, except the manually operated version. The leakage is minimal when the dampers are shut.

All fire dampers are set from the outside. An open-closed indicator shows the current setting. The fire dampers can be installed in any position.

Features

- 6 standard sizes; non-standard sizes can also be made while keeping within the set minimum and maximum dimensions
- Flanges optional
- Blades contain glass fibro seals (effective up to 300°C) and thermal expansion graphite seals (effective from 150°C)
- Available materials for frame, blades, bearings and shafts shown below; shafts and bearings are maintenance free

| Part | Material | Finishing |
|----------|---------------------------|-----------------------|
| Frame | Carbon steel | Painted or galvanised |
| Frame | Stainless steel | |
| Blades | Steel | Painted or galvanised |
| Blades | Stainless steel | |
| Bearings | Stainless steel or bronze | |
| Shafts | Stainless steel | |

- Nominal release temperatures of fuses are 50 °C, 74 °C or 100 °C; other temperatures also possible
- Very low leakage
- Automatic electrical, pneumatic, spring or manual operation system available

- Maximum duct pressure of 5000 Pa and maximum air velocity of 15 m/s
- Suitable for installation in any position

Operation Principles

The operation of the different types of FDD fire dampers depends on the construction methods used. The available models and how they react when temperatures rise are described below.

• FDD-EL: A fusible link is released and cuts off operating voltage to the spring return motor, which causes the spring to close the damper blades. The fire damper opens automatically when the fuse is replaced and the operating voltage to the motor is re-established.

• FDD-PNL: A fusible link is released and cuts off operating pressure to the spring return actuator, which causes the springs to close the damper blades. The fire damper opens automatically when the fuse is replaced and the pneumatic air supply is re-established.

• FDD-SP: A fusible link is released, which allows the spring to close the damper blades. When the fuse is replaced, the fire damper must be reset to the open position manually.

Available Actuators

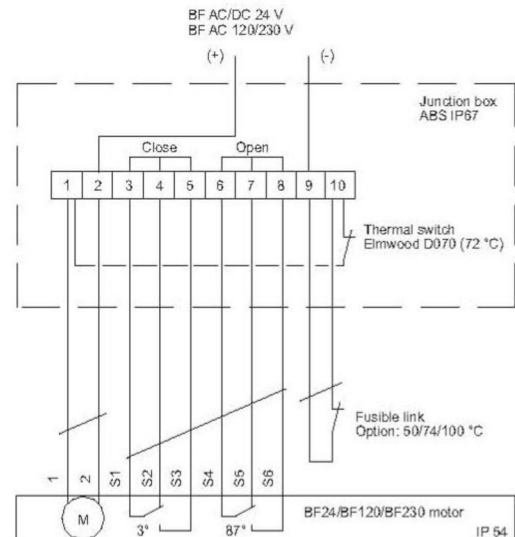
- FDD-EL: Electrical spring return motor; standard actuators are BF24, BF24-T (24 VAC 50/60 Hz; 24 VDC) or BF230, BF230-T (230-240 VAC 50/60 Hz); motor with built-in open-closed limit switches; separate junction box
- FDD-PNL: Pneumatic actuator; material AISI 316; 4-10 bar; optional junction box
- FDD-SP: Manual spring-actuated damper with fusible link
- DOT: Manual override function for EL and PNL models
- Other actuators available on request

Accessories

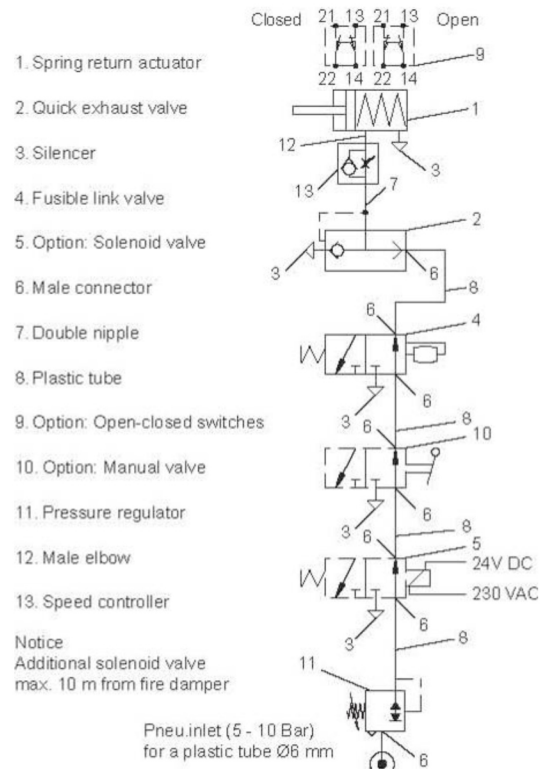
The following accessories are available for the FDD fire dampers:

| Components | Options |
|---------------------|--|
| Actuators | <ul style="list-style-type: none"> Stainless steel EEX-approved |
| Piping and fittings | <ul style="list-style-type: none"> Stainless steel |
| Controls | <ul style="list-style-type: none"> Solenoid valve (stainless steel, brass, EEX) Electric valve Manual valve Pneumatic valve (manual, linear, rotating) Quick exhaust valve Limit switches, also as EEX FD-CON-2 open-closed control box for EL-type dampers Spring release Pressure regulator |
| Junction box | <ul style="list-style-type: none"> Stainless steel Plastic EEX-approved |
| Construction | <ul style="list-style-type: none"> Frame (stainless steel, carbon steel – painted or galvanized) Special low leakage model Bearings (stainless steel, brass, bronze) Counter flanges |

FDD-EL Wiring Diagram



FDD-PNL Pneumatic Diagram



Remote Controller



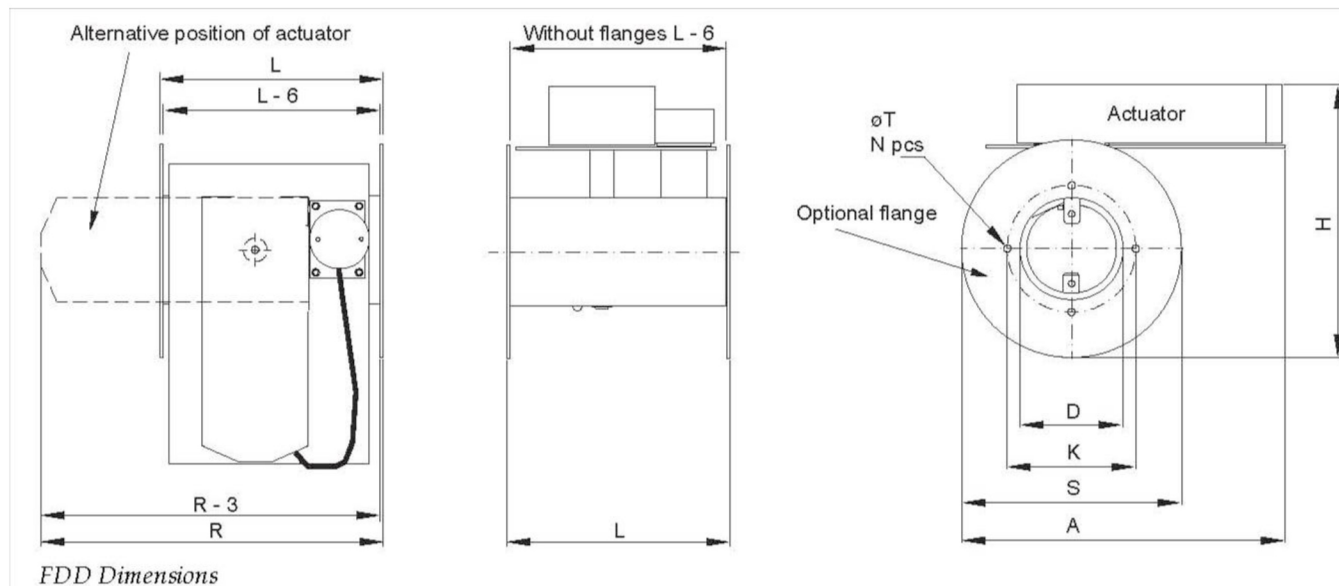
FD-Con-2 Switch Box

Specifications

The FDD fire dampers meet international standards (Ø100-315 mm). Sizes Ø100 and Ø125 are not made in stainless steel.

Special flange drillings are optional. The thickness of the frame material is 3 mm, at a minimum.

Dimensions



FDD Dimensions

| D | S | K | T | N | L | FDD-EL | | | FDD-PNL | | | FDD-SP + FDD-MAN | | |
|-----|-----|-----|----|---|-----|--------|-----|-----|---------|-----|-----|------------------|-----|---|
| | | | | | | H | A | R | H | A | R | H | A | R |
| 100 | 200 | 120 | 7 | 4 | 206 | 295 | 300 | 320 | 295 | 500 | 520 | 295 | 200 | – |
| 125 | 225 | 150 | 7 | 4 | 206 | 310 | 315 | 320 | 310 | 515 | 520 | 310 | 225 | – |
| 160 | 260 | 185 | 7 | 4 | 206 | 350 | 330 | 320 | 350 | 530 | 520 | 350 | 260 | – |
| 200 | 300 | 225 | 7 | 4 | 326 | 390 | 350 | 365 | 390 | 550 | 565 | 390 | 300 | – |
| 250 | 350 | 280 | 10 | 4 | 326 | 440 | 375 | 365 | 440 | 575 | 565 | 440 | 350 | – |
| 315 | 415 | 355 | 10 | 8 | 326 | 505 | 410 | 365 | 505 | 610 | 565 | 505 | 415 | – |

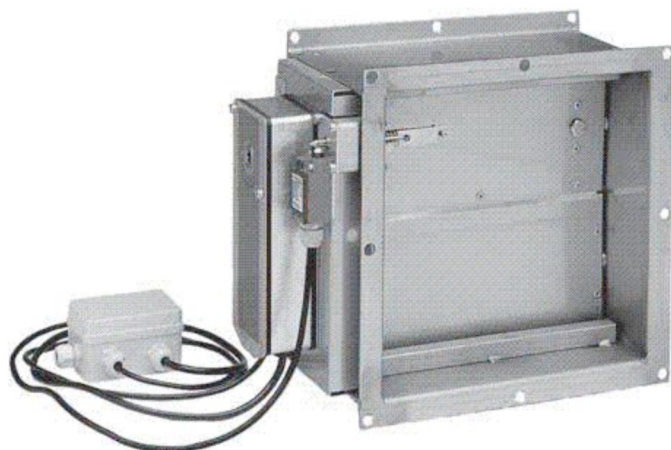
Weights

The weights of the different models of FDD fire dampers without flanges are shown below. The weight of the FDD-EL includes the actuator weight (BF24 or BF230). Values for non-standard sizes can be extrapolated.

| Size ØD [mm] | FDD-EL [kg] | FDD-PNL [kg] | FDD-SP [kg] |
|-----------------|----------------|-----------------|----------------|
| 100 | 9 | 10 | 6 |
| 125 | 10 | 11 | 7 |
| 160 | 12 | 13 | 9 |
| 200 | 17 | 18 | 14 |
| 250 | 24 | 25 | 21 |
| 315 | 28 | 29 | 25 |

Fire Damper

FDL Model



The FDL fire dampers are designed to prevent fires and gases from spreading within both rectangular and circular ventilation ductworks. They are type-approved class AQ(A60) fire dampers for use in marine and offshore ventilation systems. With the blades in an open position, the FDL dampers cause non-significant pressure losses, noise or flow disturbances.

In the event of fire, the dampers shut automatically, triggered by fusible links. This applies to all dampers, except the manually operated version. Dampers in the shut position have minimal leakage.

All fire dampers are set from the outside. An open-closed indicator shows the current setting. The fire dampers can be installed in any position. Dampers with non-standard dimensions are available on request.

Features

- Both rectangular and circular versions made in 12 standard sizes; non-standard sizes can also be made while keeping within the set minimum and maximum dimensions
- Blades without sealing
- Nominal release temperatures of fuses are 50°C, 74°C or 100°C; other release temperatures are also possible
- Suitable for installation in any position
- Automatic electrical, pneumatic, spring or manual operation systems
- Available materials for frame, blades, bearings and shafts shown below; shafts and bearings are maintenance-free

| Part | Material | Finishing |
|----------|---------------------------|-----------------------|
| Frame | Carbon steel | Painted or galvanised |
| Frame | Stainless steel | |
| Blades | Steel | Painted or galvanised |
| Blades | Stainless steel | |
| Bearings | Stainless steel or bronze | |
| Shafts | Stainless steel | |

- Maximum duct pressure of 5000 Pa and maximum air velocity of 15 m/s

Operation Principles

The operation of the different types of FDL fire dampers depends on the construction methods used. The available models and how they react when temperatures rise are described below.

• FDL-EL: A fusible link releases and cuts off the operating voltage to the spring return motor, which causes the spring to close the damper blades. The fire damper opens automatically when the fuse is replaced and the operating voltage to the motor is re-established.

• FDL-PNR and FDL-PNL: A fusible link releases and cuts off operating pressure to the spring return actuator, which causes the springs to close the damper blades. The fire damper opens automatically when the fuse is replaced and the pneumatic air supply is re-established.

• FDL-SP: A fusible link is released, which allows the spring to close the damper blades. When the fuse is replaced, the fire damper must be reset into the open position manually.

Available Actuators

- FDL-EL: Electrical spring return motor with built-in open-closed limit switches; standard actuators are BF24, BF24-T (24 VAC 50/60 Hz 24 VDC), BF230, BF230-T (230 VAC 50/60 Hz) or BF120 (120 VAC 50/60 Hz); separate junction box
- FDL-PNL: Pneumatic linear actuator; material AISI 316
- FDL-PNR: Pneumatic rotating actuator
- FDL-SP: Manual spring-actuated damper with fusible link
- DOT: Manual override function for EL and PNL models
- Other actuators available on request

Owing to continued product development, JL reserves the right to introduce alterations without prior notice.

Accessories

The following accessories are available for the FDL fire dampers:

| Components | Options |
|---------------------|--|
| Actuators | <ul style="list-style-type: none"> Stainless steel EEX-approved |
| Piping and fittings | <ul style="list-style-type: none"> Stainless steel |
| Controls | <ul style="list-style-type: none"> Solenoid valve (stainless steel, brass, EEX) Electric valve Manual valve Pneumatic valve (manual, linear, rotating) Quick exhaust valve Limit switches, also as EEX FD-CON-2 open-closed control box for EL-type dampers Spring release Pressure regulator |
| Junction box | <ul style="list-style-type: none"> Stainless steel Plastic EEX-approved |
| Construction | <ul style="list-style-type: none"> Frame (stainless steel, carbon steel – painted or galvanised) Special low leakage model Bearings (stainless steel, brass, bronze) Counter flanges |

Remote Controller



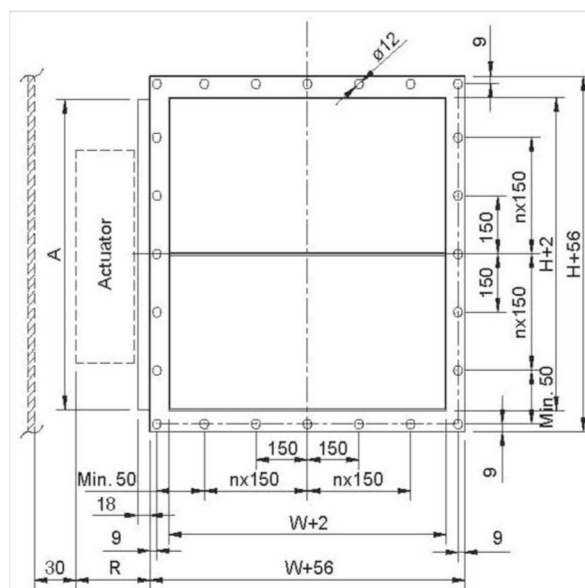
FD-Con-2 Switch Box

Specifications

The FDL fire dampers meet international standards for both rectangular (width B 100-1300 mm and height H 100-1200 mm, 50 mm division) and circular (Ø100-1250 mm) ducts. Non-standard dimensions and flange drilling are available on request. Modular construction sizes up to 2600x2400 mm are also available.

The standard frame material thickness is 3 mm. Frame material thicknesses according to SOLAS are available on request.

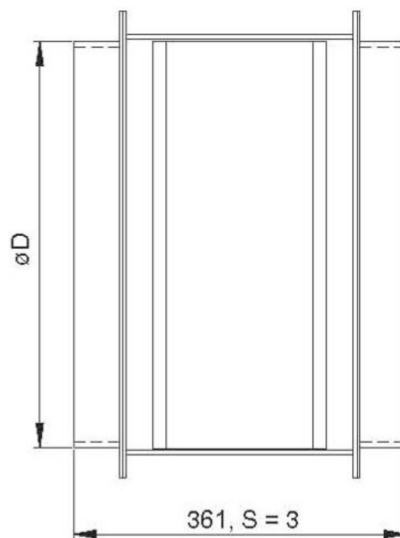
Dimensions



FDL General Dimensions



FDL Top Dimensions



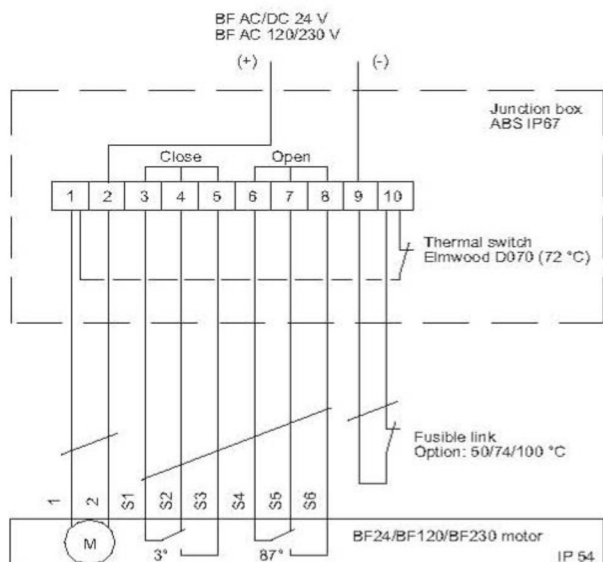
FDL Circular Connections Dimensions

| Frame thickness according to SOLAS | S | L |
|------------------------------------|---|-----|
| If 100 < W or H < 449 | 3 | 210 |
| If 450 < W or H < 649 | 4 | 212 |
| If W or H > 650 | 5 | 215 |

The effects of the actuators on the dimensions are shown below:

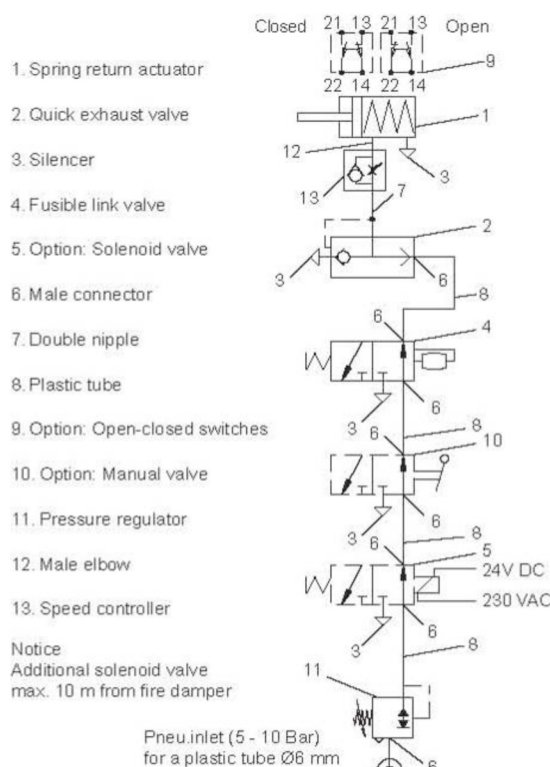
| Actuator Type | | Dimensions | |
|---------------|------------------------------|------------|------------------------------|
| | | R | A |
| FDL-EL | 24 V, 120 V, 230 V | 90 | H |
| FDL-PNL | Linear actuator 245/300 N | 110 | H ≤ 500 = 500 H > 500 = H |
| FDL-PNR | Pneumatic rotating actuator | 170 | H |
| FDL-SP | Spring | 140 | H |

FDL-EL Wiring Diagram



Weights

FDL-PNR/PNL Pneumatic Diagram



The weights are for the FDL-EL with frame thicknesses of 3 mm and 3-5 mm according to SOLAS, e.g., 28 (36) means 28 kg for 3 mm frames and 36 kg for 3-5 mm frames. Values for non-standard sizes can be extrapolated.

| Height, H [mm] | Width, B [mm] | | | | | | | | | | | | | D2 ØD [mm] | Weight [kg] |
|-------------------|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------------|----------------|
| | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | | |
| 100 | 10 (10) | 12 (12) | 13 (13) | 15 (15) | 17 (19) | 18 (22) | 20 (26) | 22 (28) | 23 (30) | 25 (33) | 27 (36) | 29 (39) | 30 (41) | 100 | 12 (12) |
| 200 | 12 (12) | 14 (14) | 15 (15) | 17 (17) | 19 (22) | 21 (24) | 23 (29) | 25 (32) | 27 (35) | 28 (37) | 30 (40) | 32 (43) | 34 (45) | 125 | 13 (13) |
| 300 | 12 (12) | 16 (16) | 18 (18) | 20 (20) | 22 (25) | 24 (28) | 27 (34) | 29 (37) | 31 (40) | 33 (43) | 35 (45) | 37 (48) | 39 (51) | 160 | 14 (14) |
| 400 | 16 (16) | 18 (18) | 20 (20) | 23 (23) | 25 (28) | 27 (31) | 29 (37) | 32 (40) | 34 (44) | 36 (47) | 38 (50) | 40 (53) | 43 (56) | 200 | 16 (16) |
| 500 | 18 (19) | 21 (22) | 23 (25) | 26 (28) | 28 (32) | 31 (35) | 33 (42) | 36 (45) | 38 (48) | 40 (52) | 43 (55) | 45 (58) | 48 (62) | 250 | 20 (20) |
| 600 | 20 (22) | 23 (24) | 25 (28) | 28 (31) | 31 (35) | 33 (38) | 36 (46) | 38 (50) | 41 (52) | 44 (56) | 46 (59) | 49 (63) | 51 (66) | 315 | 24 (24) |
| 700 | 22 (28) | 25 (32) | 28 (35) | 31 (39) | 34 (43) | 37 (46) | 39 (50) | 42 (54) | 45 (57) | 48 (61) | 51 (65) | 54 (68) | 57 (72) | 400 | 31 (31) |
| 800 | 24 (31) | 27 (34) | 30 (38) | 33 (42) | 36 (46) | 39 (50) | 42 (54) | 45 (57) | 48 (61) | 51 (65) | 54 (69) | 57 (73) | 60 (77) | 500 | 37 (44) |
| 900 | 26 (34) | 29 (38) | 33 (42) | 36 (46) | 39 (50) | 42 (54) | 45 (58) | 49 (62) | 52 (66) | 55 (70) | 58 (74) | 62 (78) | 65 (82) | 630 | 46 (57) |
| 1000 | 28 (36) | 31 (40) | 35 (44) | 38 (49) | 41 (53) | 45 (57) | 48 (62) | 52 (65) | 55 (70) | 58 (74) | 62 (78) | 65 (82) | 68 (86) | 800 | 61 (83) |
| 1100 | 30 (39) | 34 (44) | 37 (48) | 41 (53) | 45 (57) | 48 (61) | 52 (66) | 55 (70) | 59 (75) | 63 (79) | 66 (83) | 70 (88) | 73 (92) | 1000 | 81 (110) |
| 1200 | 32 (42) | 36 (46) | 40 (51) | 43 (55) | 47 (60) | 51 (65) | 55 (70) | 58 (74) | 62 (79) | 66 (83) | 70 (88) | 73 (92) | 77 (97) | 1250 | 109 (146) |

Weights include the actuators BF24 or BF230. The weights of other models are found by adding or subtracting the following values to the weights of the FDL-EL: FDL-PNL = +1 kg, FDL-PNR = +1 kg, FDL-SP = -2 kg; FDL-MAN = -3 kg.