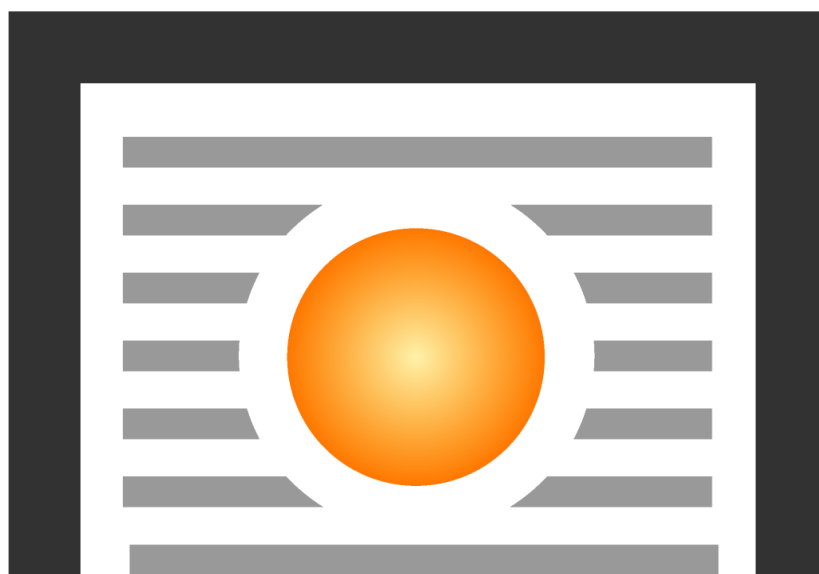


Fire damper: Curtain fire dampers



Model FS/fire shield

Technical Catalogue



SAFE • VENT[®]

Table of content

| | |
|--|----|
| 1. Application | 4 |
| 2. Design | 5 |
| 3. Versions | 6 |
| 3.1 FS I/F – cut-off fire damper for E120(ve ho↔io) rigid walls and ceilings | 6 |
| 3.2 FS DWFX-C – cut-off fire damper for E120(ve ho↔io) lightweight walls | 6 |
| 4. Dimensions | 7 |
| 4.1 101 series (rectangular dampers) with a curtain partly in the air stream – from 100x100 mm to 1250x1000 mm. | 7 |
| 4.2 201 series (rectangular dampers) with a curtain outside the air stream – from 100x250 mm to 1250x1000 mm. | 7 |
| 4.3 301 series (circular dampers) with a curtain outside the air flow – from D100 to D1000 mm. | 7 |
| 5. Installation | 8 |
| 5.1 Preparation of installation openings | 8 |
| 5.2 Sample installation of FS I/F dampers | 9 |
| 5.3 Sample installation of FS DWFX-C dampers | 10 |
| 5.4 Sample installation of FS dampers with duct covers | 11 |
| 6. Technical parameters | 12 |
| 7. Flow characteristics | 13 |
| 8. Weights of FS curtain dampers | 14 |
| 9. Options | 15 |
| 9.1 Trigger control mechanism | 15 |
| 9.2 MSSP and MSDP independent limit switches | 16 |
| 10. Marking | 17 |
| 11. Power Supply Control | 18 |
| 11.1 Cooperation with smoke exhaust/cut-off dampers – drive quick selection table | 18 |
| 11.2 Actuators | 19 |
| 11.2.1 BF electric actuators | 19 |
| 11.2.2 BE, BLE electric actuators | 21 |
| 11.2.3 BFL, BFN ELECTRIC ACTUATORS | 22 |
| 11.2.4 EXBF actuators | 23 |
| 11.3 RST trigger control mechanisms | 24 |
| 11.3.1 Independent limit switches – RST version | 24 |
| 11.3.2 Switch specifications | 24 |
| 11.4 RST-KW1 mechanisms | 25 |
| 11.4.1 Description of electrical connections: | 25 |

| | |
|---|----|
| 11.5 Manufacture standards | 26 |
| 11.5.1 FID S/S c/P damper | 26 |
| 11.5.2 FID S/S p/P, FID S/S p/O, FID S/V p/P damper | 27 |
| 11.5.3 FID PRO/S damper | 27 |
| 11.5.4 WIP/S, WIP/V, WIP/V-M, WIP/T, WIP/T-G damper | 27 |
| 11.5.5 WIP PRO/S, WIP PRO/V, WIP PRO/V-M damper with an actuator | 27 |
| 11.5.6 WIP PRO/S, WIP PRO/V, VIP PRO/V-M damper with RST-KW1 mechanism | 28 |



E120

- Certificate of constancy of performance 0832-CPR-P0001.
- Dampers certified for compliance with EN 15650.
- Dampers qualified under EN 13501-3 and tested under EN 1366-2.
- Narrow cut-off dampers with a stainless steel curtain with a large active surface.

1. Application

The FS fire dampers with a thermal trigger are used in vertical construction partitions to allow the air to flow through. The purpose of the dampers is to maintain the fire resistance of the partition, in which they are installed.

During normal operation, the dampers remain open. The dampers switch to safe mode (close):

- **Automatically**, by the thermal trigger tripping at 72°C,
- Manually (in test mode), by pressing the manual release button (trigger control mechanism),
- Remotely, by the EM electromagnetic trigger tripping (optional).

Dampers with EM electromagnetic triggers (optional) close as a result of power supply cut-off due to the action of return springs in the damper. The dampers open upon the application of the power supply to trigger terminals and upon manual lifting of the steel curtain.

Dampers with a thermal trigger control mechanism close as a result of the action of the drive spring in the damper, activated by the triggering of the thermal trigger or manually, by pressing the dedicated button on the panel. The dampers are opened manually, by lifting the steel curtain and locking it in the trigger control mechanism clamps.

The FS curtain dampers used in the systems protecting escape routes from smoke remain open during the fire, which ensure the supply of fresh air to escape routes. If the fire develops further, the dampers are automatically closed as a result of thermal trigger tripping to prevent the spreading of fire.

2. Design

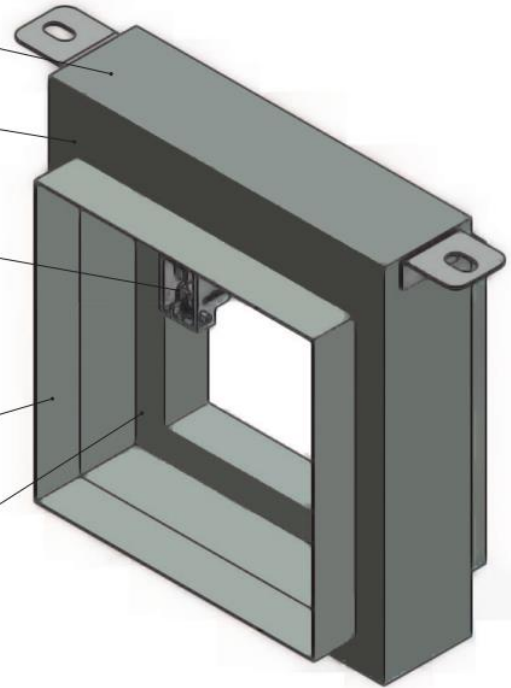
steel cut-off curtain under casing

casing

trigger control mechanism
(thermal trigger - panel at 72°C)

connection pipe

ribbon springs



The FS dampers consist of a double casing with a rectangular cross section, a moving blade in the form of a falling foldable curtain and a trigger control mechanism (panel), which is activated remotely or automatically when the thermal trigger is tripped. The damper casing is made of galvanised steel sheet. The casing total length is 90 mm for rectangular dampers and 92 mm for circular dampers. On two sides, each damper is equipped with a connection piece with the length of 38 mm for rectangular dampers and 60 mm for circular dampers. The damper curtain is made of stainless steel sheet. The steel flat bar on casing exterior is installed to tighten the device after its activation.

The mechanism of curtain the FS dampers, which moves the curtain, consists of two ribbon springs, placed inside of the damper sides, along its height. If the allowed temperature is exceeded in the casing, the trigger control mechanism is triggered and the spring-powered curtain is lowered. It is possible to equip the damper with an EM mechanism for remote control.

3. Versions

3.1 FS I/F – cut-off fire damper for E120(ve ho↔io) rigid walls and ceilings



The FS I/F damper is suitable for installation in rigid walls.

The cut-off curtain of stainless steel falls when the temperature of 72°C is exceeded or if the voltage is removed from the EM trigger control mechanism (optional).

The damper may be equipped with a MSSP curtain closing limit switch or a MSDP curtain closing and opening limit switch.

3.2 FS DWFX-C – cut-off fire damper for E120(ve ho↔io) lightweight walls



The FS DWFX-C damper is suitable for installation in newly constructed lightweight walls.

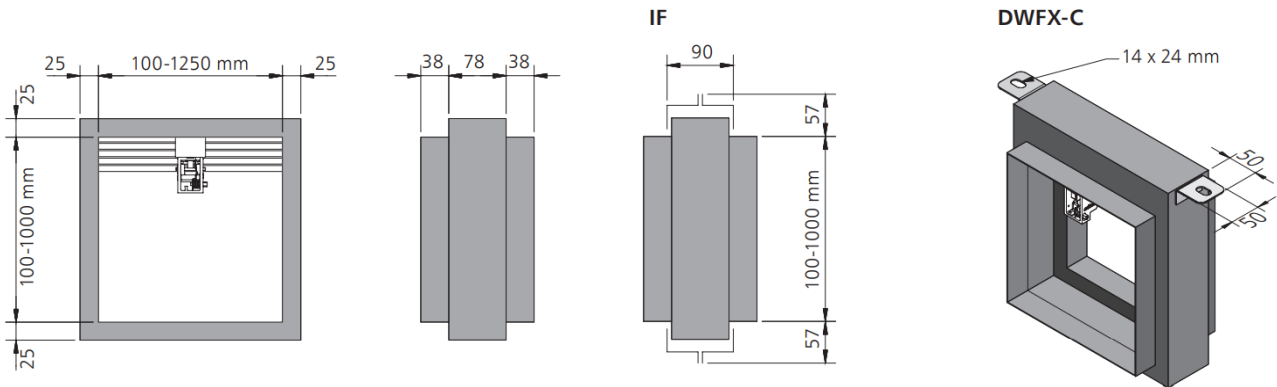
The cut-off curtain of stainless steel falls when the temperature of 72°C is exceeded or if the voltage is removed from the EM trigger control mechanism (optional).

The damper may be equipped with a MSSP curtain closing limit switch or a MSDP curtain closing and opening limit switch.

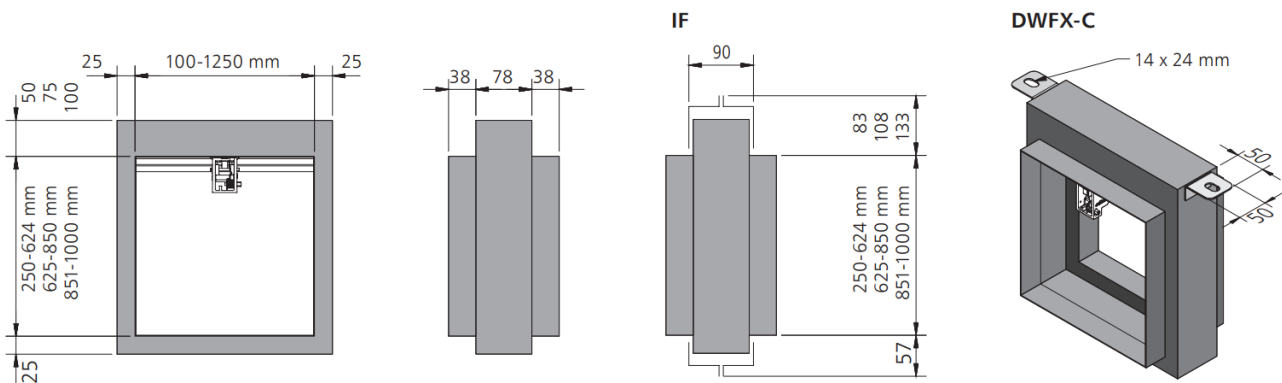
4. Dimensions

The FS transfer dampers are manufactured in three series:

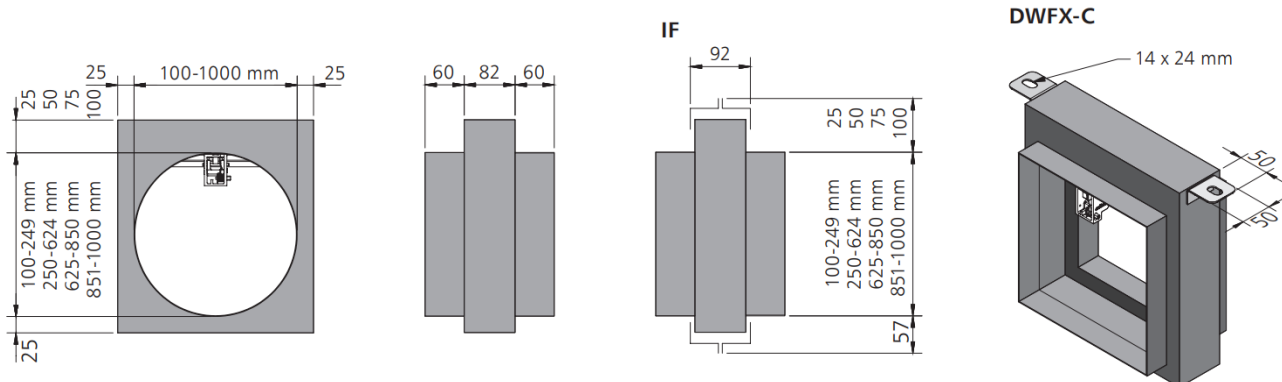
4.1 101 series (rectangular dampers) with a curtain partly in the air stream – from 100x100 mm to 1250x1000 mm.



4.2 201 series (rectangular dampers) with a curtain outside the air stream – from 100x250 mm to 1250x1000 mm.



4.3 301 series (circular dampers) with a curtain outside the air flow – from D100 to D1000 mm.



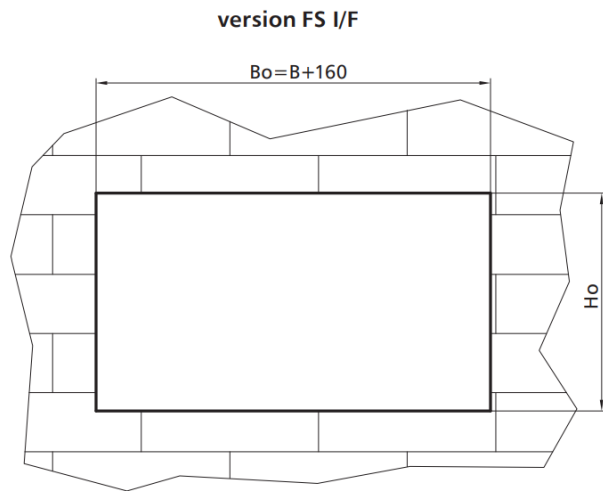
Apart from the standard dimensions, fire dampers may be manufactured with intermediate dimensions (in 1 mm increments in the given range).

5. Installation

The FS I/F dampers are E120(ve he i↔o)-rated if installed in concrete partitions, made of full bricks or cellular concrete blocks with the thickness of at least 110 mm and concrete ceilings with the thickness of at least 150 mm.

The FS DWFX-C dampers are E120(ve i↔o)-rated if installed in lightweight walls of cardboard-plaster panels, on a steel framework with the thickness of at least 125 mm.

5.1 Preparation of installation openings

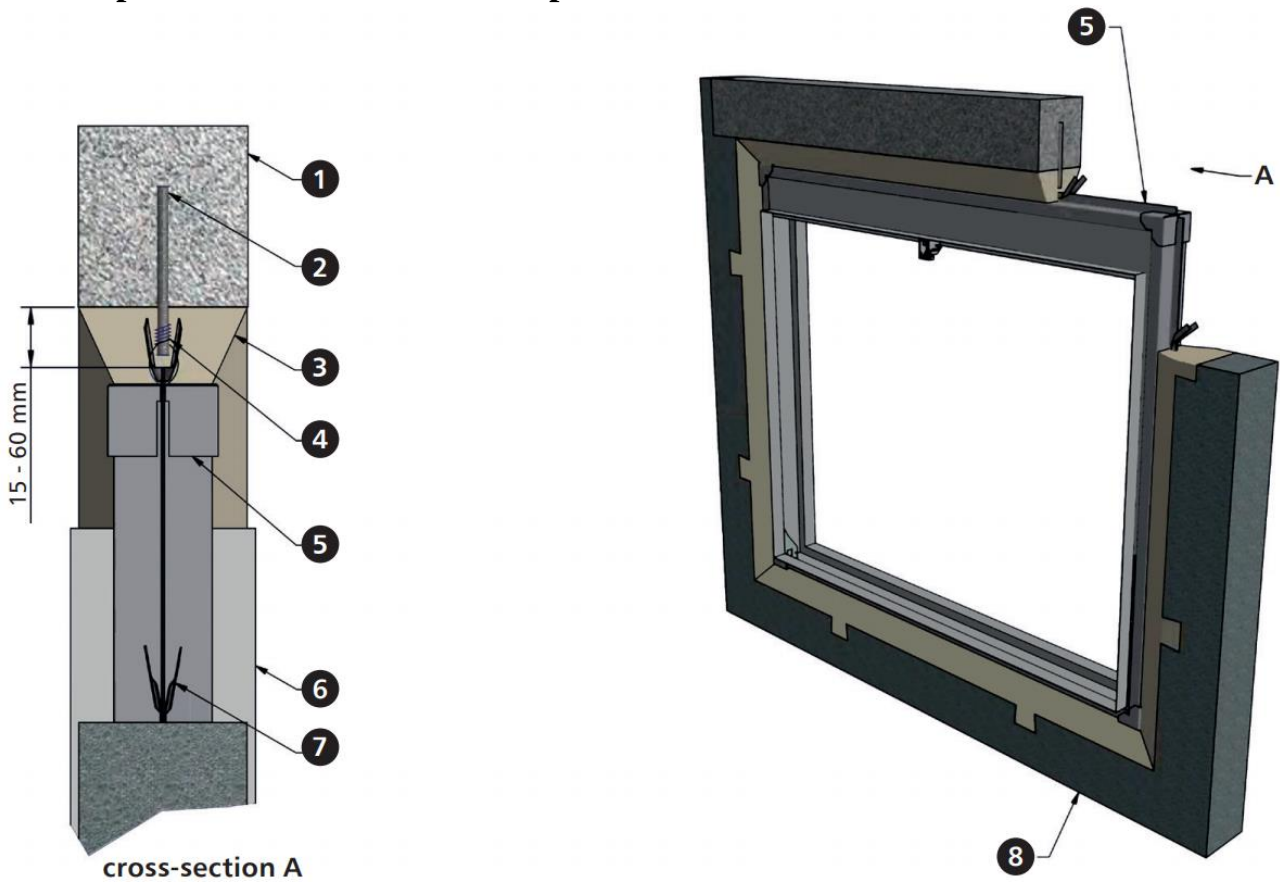


$H_o = H + 160^*$ for FS 101 I/F
 $H_o = H + 180^*$ for FS 201 I/F 250-624 mm
 $H_o = H + 205^*$ for FS 201 I/F 625-850 mm
 $H_o = H + 230^*$ for FS 201 I/F 851-1000 mm
 * applies also to FS 301 I/F

version FS DWFX-C

The dampers are installed during the construction of the plaster-cardboard panel wall (the damper is embedded in the wall of panels).

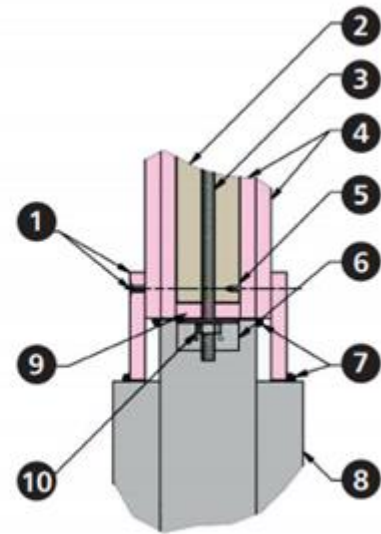
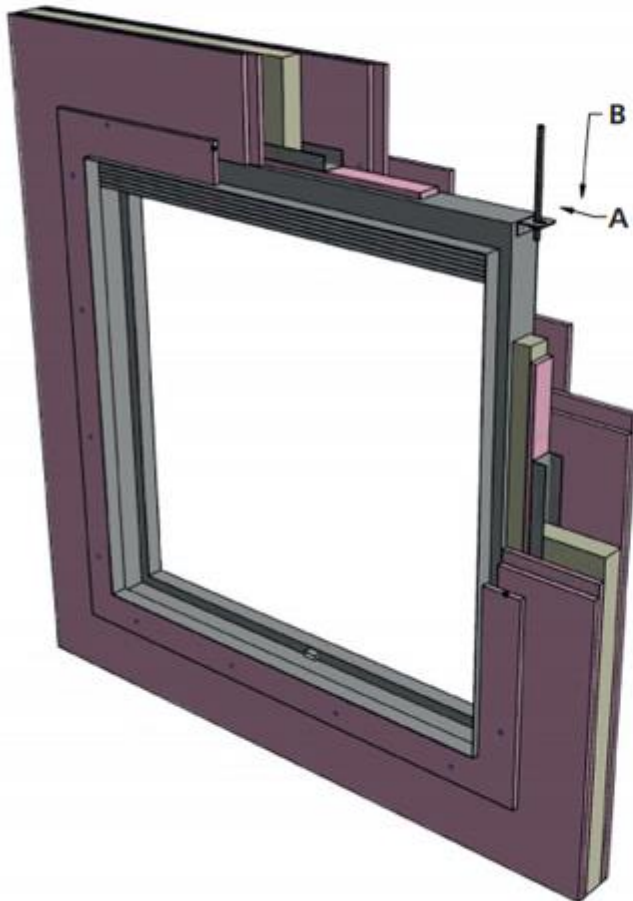
5.2 Sample installation of FS I/F dampers



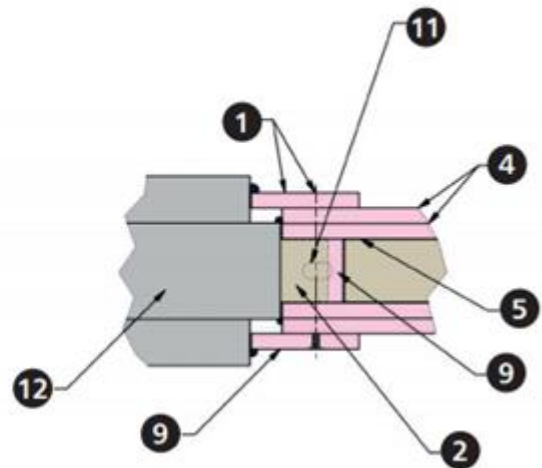
1. Lintel
2. Steel anchors \varnothing min. 6.5 mm
3. 4:1 sand-cement mortar
4. Steel wire * 1.5 mm binding the anchors with frame runners

5. Installation frame
6. Fire damper FS
7. Frame runners – for bending sideways and downwards
8. Rigid partition

5.3 Sample installation of FS DWFX-C dampers



cross-section A



cross-section B

1. circumferential band of 12.5 x 100 mm plaster-cardboard panels around the damper bolted to the plaster-cardboard wall (300 mm), to the UD50 profile
2. mineral wool 33 kg/m³
3. rod M10 (pin)
4. 2 x 12.5 mm two-sided plaster-cardboard panels
5. UD50 profile

6. angle bar welded to both ends of the casing
7. low-expansion intumescent compound around the damper, on both sides
8. damper casing
9. 12.5 mm trim
10. nut M10
11. angle bar with an opening
12. fire damper FS

5.4 Sample installation of FS dampers with duct covers

NOTE: Minimum wall thickness: 155 mm.

B x H damper dimensions

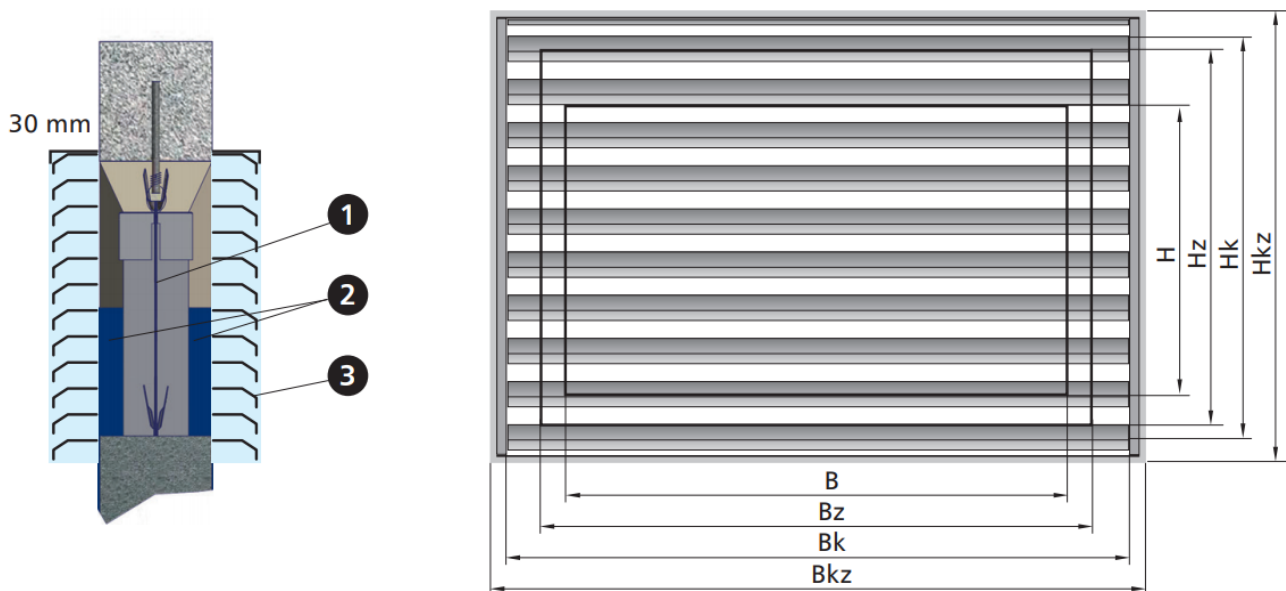
Bz x Hz damper external dimensions

Bk x Hk duct cover dimensions

Bkz x Hkz duct cover external dimensions

| type\size | H | Hz | Hk | Hkz |
|------------|----------|-------|-------|-------|
| FS 101 I/F | 100-1000 | H+114 | H+160 | H+210 |
| FS 201 I/F | 250-624 | H+140 | H+180 | H+230 |
| FS 201 I/F | 625-850 | H+165 | H+205 | H+255 |
| FS 201 I/F | 851-1000 | H+190 | H+230 | H+280 |

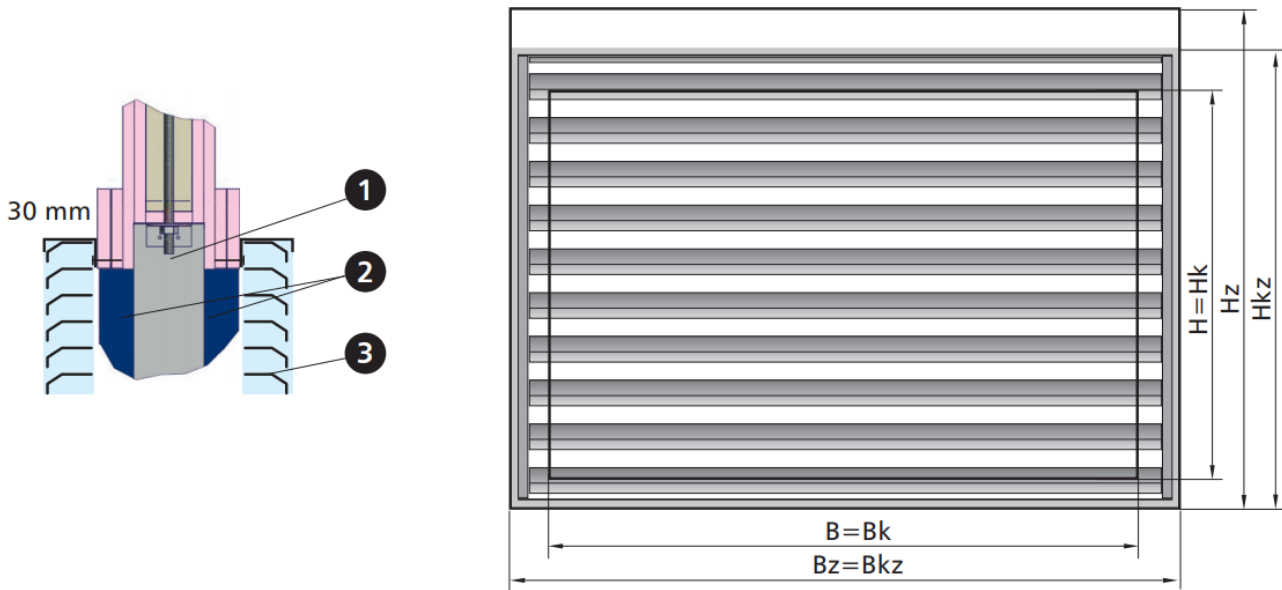
| type\size | B | Bz | Bk | Bkz |
|------------|----------|-------|-------|-------|
| FS 101 I/F | 100-1000 | B+114 | B+160 | B+210 |
| FS 201 I/F | 100-1000 | B+114 | B+160 | B+210 |



1. Fire damper FS
2. Duct - ventilation straight connection piece
3. Duct cover

| type\size | H | H _z | H _k | H _{kz} |
|-----------------|----------|----------------|----------------|-----------------|
| FS 101 / DWFX-C | 100-1000 | H+50 | H | H+50 |
| FS 201 / DWFX-C | 250-624 | H+75 | H | H+50 |
| FS 201 / DWFX-C | 625-850 | H+100 | H | H+50 |
| FS 201 / DWFX-C | 851-1000 | H+125 | H | H+50 |

| type\size | B | B _z | B _k | B _{kz} |
|-----------------|----------|----------------|----------------|-----------------|
| FS 101 / DWFX-C | 100-1000 | B+50 | B | B+50 |
| FS 201 / DWFX-C | 100-1000 | B+50 | B | B+50 |



1. Fire damper FS
2. Duct - ventilation straight connection piece
3. Duct cover

6. Technical parameters

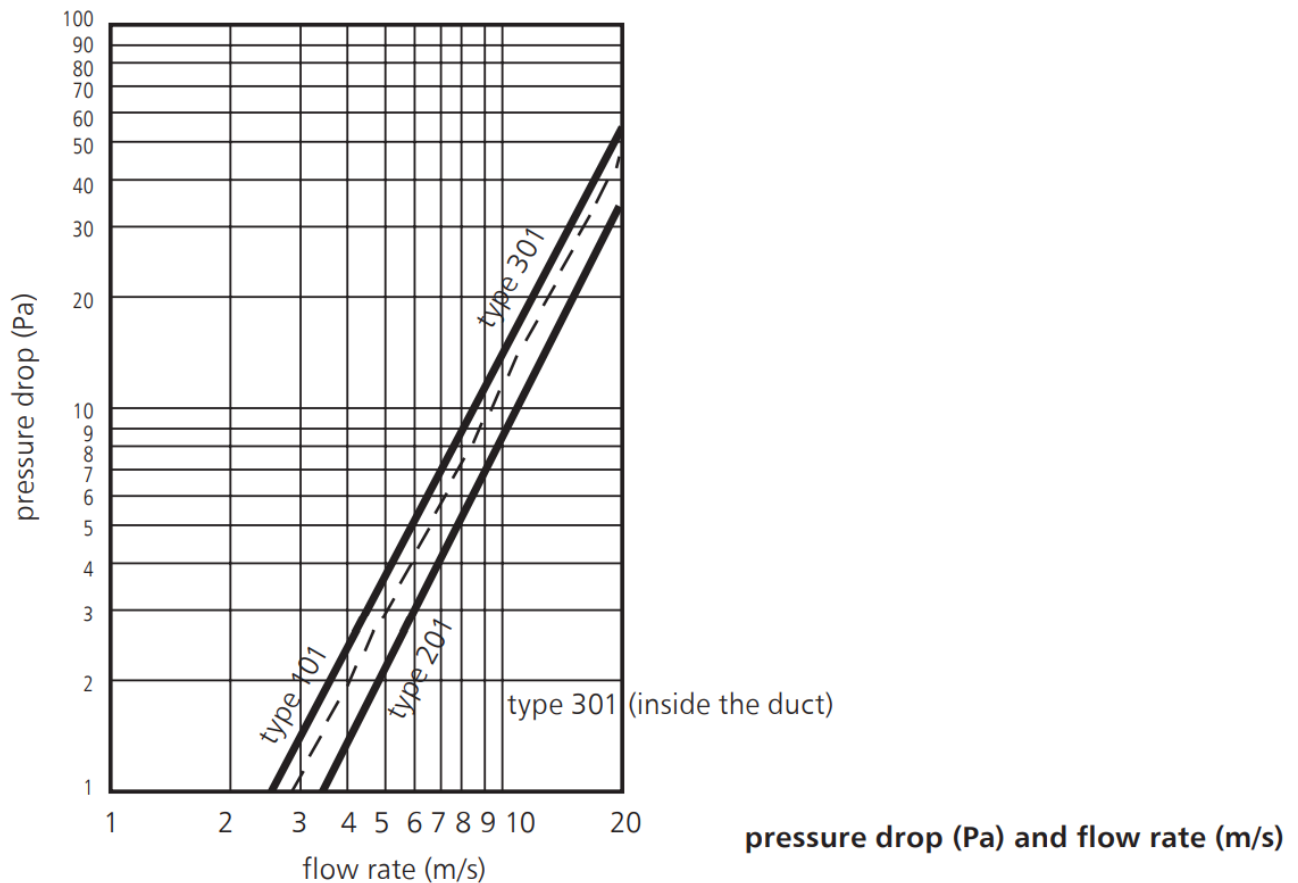
Damper active surface in relation to the B and H nominal and B_z and H_z total dimensions

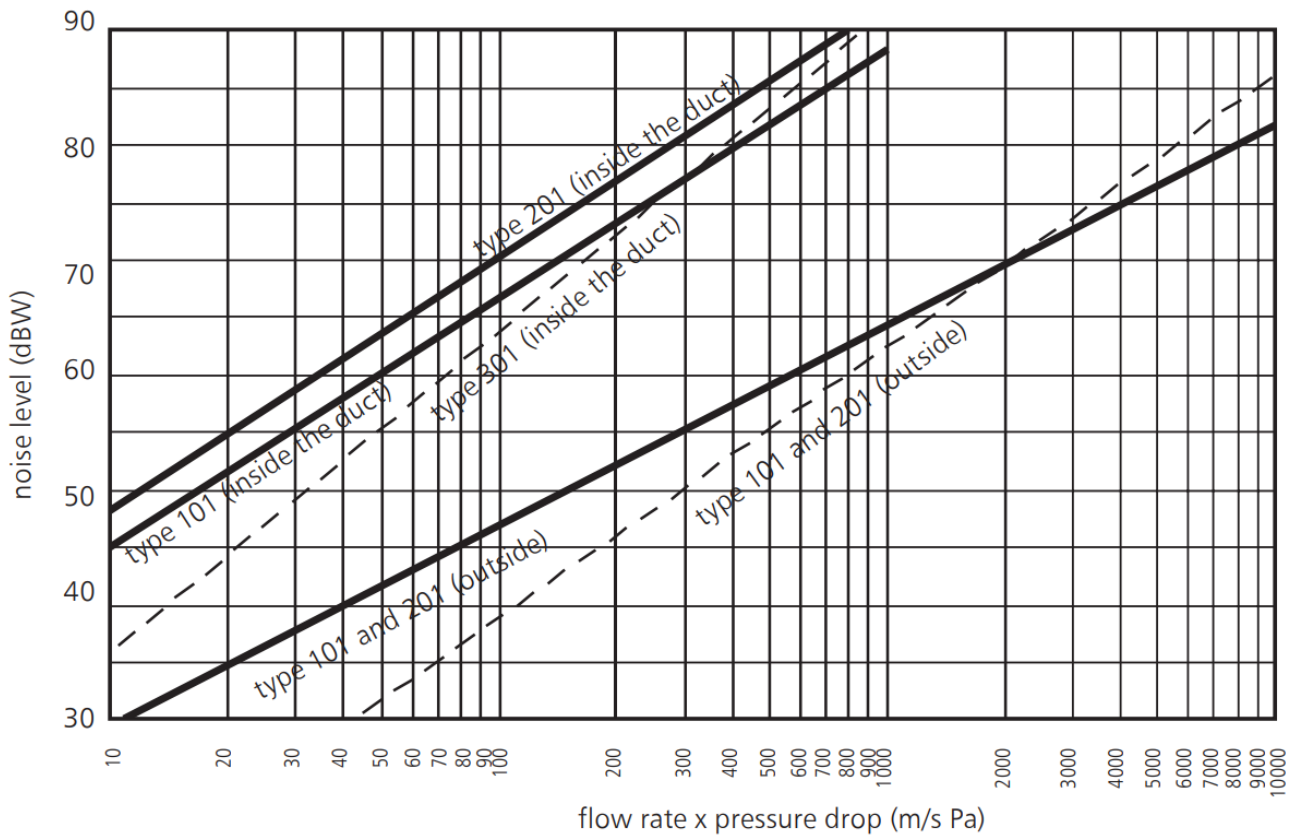
| | | 101 series | | | | | | | | | | | | | |
|-------|------|------------|------|------|------|------|------|------|------|------|------|------|------|-------------------------------|--|
| H \ B | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1250 | | |
| 100 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 | 0.11 | 0.12 | 0.13 | 150 | |
| 200 | 0.02 | 0.04 | 0.06 | 0.08 | 0.10 | 0.12 | 0.14 | 0.16 | 0.18 | 0.20 | 0.22 | 0.24 | 0.25 | 250 | |
| 300 | 0.03 | 0.06 | 0.09 | 0.12 | 0.15 | 0.18 | 0.21 | 0.24 | 0.27 | 0.30 | 0.33 | 0.36 | 0.37 | 350 | |
| 400 | 0.03 | 0.07 | 0.11 | 0.15 | 0.19 | 0.23 | 0.27 | 0.31 | 0.35 | 0.39 | 0.43 | 0.47 | 0.49 | 450 | |
| 500 | 0.04 | 0.09 | 0.14 | 0.19 | 0.24 | 0.29 | 0.34 | 0.39 | 0.44 | 0.49 | 0.54 | 0.59 | 0.62 | 550 | |
| 600 | 0.05 | 0.11 | 0.17 | 0.23 | 0.29 | 0.35 | 0.41 | 0.47 | 0.53 | 0.59 | 0.65 | 0.71 | 0.74 | 650 | |
| 700 | 0.05 | 0.12 | 0.19 | 0.26 | 0.33 | 0.40 | 0.47 | 0.54 | 0.61 | 0.68 | 0.75 | 0.82 | 0.85 | 750 | |
| 800 | 0.04 | 0.12 | 0.20 | 0.28 | 0.36 | 0.44 | 0.52 | 0.60 | 0.68 | 0.76 | 0.84 | 0.92 | 0.96 | 850 | |
| 900 | 0.04 | 0.13 | 0.22 | 0.31 | 0.40 | 0.49 | 0.58 | 0.67 | 0.76 | 0.85 | 0.94 | 1.03 | 1.07 | 950 | |
| 1000 | 0.03 | 0.13 | 0.23 | 0.33 | 0.43 | 0.53 | 0.63 | 0.73 | 0.83 | 0.93 | 1.03 | 1.13 | 1.18 | 1050 | |
| | 150 | 250 | 350 | 450 | 550 | 650 | 750 | 850 | 950 | 1050 | 1150 | 1250 | 1300 | B _z H _z | |

| 201 series | | | | | | | | | | | | | | |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------|
| H \ B | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1250 | |
| 250 | 0.03 | 0.05 | 0.08 | 0.10 | 0.13 | 0.15 | 0.18 | 0.20 | 0.23 | 0.25 | 0.28 | 0.30 | 0.31 | 325 |
| 300 | 0.03 | 0.06 | 0.09 | 0.12 | 0.15 | 0.18 | 0.21 | 0.24 | 0.27 | 0.30 | 0.33 | 0.36 | 0.38 | 375 |
| 400 | 0.04 | 0.08 | 0.12 | 0.16 | 0.20 | 0.24 | 0.28 | 0.32 | 0.36 | 0.40 | 0.44 | 0.48 | 0.50 | 475 |
| 500 | 0.05 | 0.10 | 0.15 | 0.20 | 0.25 | 0.30 | 0.35 | 0.40 | 0.45 | 0.50 | 0.55 | 0.60 | 0.63 | 575 |
| 600 | 0.06 | 0.12 | 0.18 | 0.24 | 0.30 | 0.36 | 0.42 | 0.48 | 0.54 | 0.60 | 0.66 | 0.72 | 0.75 | 675 |
| 700 | 0.07 | 0.14 | 0.21 | 0.28 | 0.35 | 0.42 | 0.49 | 0.56 | 0.63 | 0.70 | 0.77 | 0.84 | 0.88 | 800 |
| 800 | 0.08 | 0.16 | 0.24 | 0.32 | 0.40 | 0.48 | 0.56 | 0.64 | 0.72 | 0.80 | 0.88 | 0.96 | 1.00 | 900 |
| 900 | 0.09 | 0.18 | 0.27 | 0.36 | 0.45 | 0.54 | 0.63 | 0.72 | 0.81 | 0.90 | 0.99 | 1.08 | 1.13 | 1025 |
| 1000 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 | 1.10 | 1.20 | 1.25 | 1125 |
| | 150 | 250 | 350 | 450 | 550 | 650 | 750 | 850 | 950 | 1050 | 1150 | 1250 | 1300 | Bz \ Hz |

| 301 series | | | | | | | | | | |
|----------------|------|------|------|------|------|------|------|------|------|------|
| D | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| active surface | 0.01 | 0.03 | 0.07 | 0.13 | 0.20 | 0.28 | 0.38 | 0.50 | 0.64 | 0.79 |
| Hz | 150 | 250 | 375 | 475 | 575 | 675 | 800 | 900 | 1025 | 1125 |
| Bz | 150 | 250 | 350 | 450 | 550 | 650 | 750 | 850 | 950 | 1050 |

7. Flow characteristics





Flow rate (m/s) x pressure drop (Pa) and noise level (dBW)

Acoustic power spectrum for FS dampers (outside)

| frequency | Hz | 63 | 125 | 250 | 500 | 1k | 2k | 3k | 4k |
|-----------|----|----|-----|-----|-----|----|----|----|----|
| typ 101 | dB | 10 | 7 | 3 | 9 | 13 | 20 | 30 | 33 |
| typ 201 | dB | 10 | 7 | 3 | 9 | 13 | 20 | 30 | 33 |
| typ 301 | dB | 13 | 10 | 3 | 7 | 11 | 12 | 26 | 42 |

Acoustic power spectrum for FS dampers (inside the duct)

| frequency | Hz | 63 | 125 | 250 | 500 | 1k | 2k | 3k | 4k |
|-----------|----|----|-----|-----|-----|----|----|----|----|
| typ 101 | dB | 4 | 12 | 16 | 18 | 22 | 20 | 32 | 38 |
| typ 201 | dB | 4 | 11 | 17 | 19 | 22 | 30 | 33 | 40 |
| typ 301 | dB | 4 | 10 | 16 | 18 | 21 | 24 | 30 | 38 |

8. Weights of FS curtain dampers

| active opening dimensions □Ø(mm) | approximate weights of dampers [kg] | | | | | | | | | | | | | | | | | | |
|-------------------------------------|-------------------------------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
| 101 series/DWFX-C | 1.6 | 2.1 | 2.8 | 3.5 | 4.2 | 5.0 | 5.7 | 6.9 | 7.5 | 8.6 | 9.5 | 10.9 | 12.0 | 13.1 | 13.8 | 15.2 | 16.7 | 18.1 | 19.0 |
| 101 series/ I/F | 3.8 | 4.6 | 5.7 | 6.8 | 8.0 | 9.2 | 10.7 | 11.8 | 12.9 | 14.1 | 15.8 | 17.9 | 19.1 | 20.2 | 21.4 | 23.3 | 25.2 | 27.4 | 29.2 |
| 201 series/DWFX-C | - | - | - | 4.1 | 4.6 | 5.4 | 6.0 | 7.1 | 8.0 | 9.3 | 10.5 | 12.1 | 12.7 | 14.4 | 16.0 | 17.5 | 19.0 | 20.5 | 22.0 |
| 201 series/ I/F | - | - | - | 7.4 | 8.5 | 9.6 | 10.4 | 12.6 | 13.8 | 15.3 | 16.8 | 18.0 | 20.3 | 21.7 | 23.6 | 25.5 | 27.6 | 29.8 | 31.0 |
| 301 series/DWFX-C | 2.3 | 3.0 | 4.0 | 5.4 | 6.5 | 7.6 | 8.8 | 10.2 | 11.7 | 13.2 | 14.9 | 16.9 | 18.7 | 20.5 | 22.4 | 24.5 | 26.7 | 28.8 | 31.0 |
| 301 series/ I/F | 4.4 | 5.5 | 6.9 | 9.0 | 10.4 | 11.7 | 13.6 | 15.5 | 16.5 | 18.5 | 20.3 | 22.2 | 42.5 | 27.8 | 30.4 | 32.8 | 35.2 | 38.9 | 42.0 |

9. Options

9.1 Trigger control mechanism

Mechanism operation description:

The EM mechanism is designed to operate FS transfer dampers. After the removal of the power supply voltage the mechanism lock is released, which causes in the steel cord movement and damper operation. The mechanism is not equipped with a drive (return) spring. That spring is installed directly on the damper.

Versions:

- EM24 - Mechanism supplied with the voltage of 24 V AC/DC
 - released by the removal of the power supply voltage
- EM240 - mechanism supplied with the voltage of 230 V AC
 - released by the removal of the power supply voltage



Specifications

| | EM24 | EM240 |
|-----------------------|-------------------------------|----------------|
| power supply voltage | 24 V AC/ DC | 230 V AC 50 Hz |
| rated current | 120 m A | 10 m A |
| electrical connection | wire 3 x 0.75 mm ² | |
| weight | 1.6 kg | 1.6 kg |

Electrical diagram of the mechanism

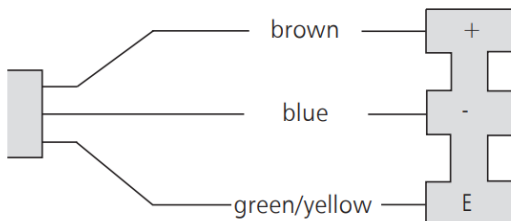
Mechanism power supply

brown lead – „+” supply or „L”

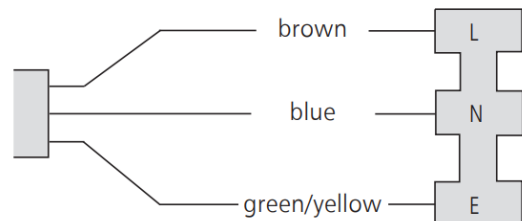
blue lead – mass „-” or „N”

green-yellow lead - ground „E”

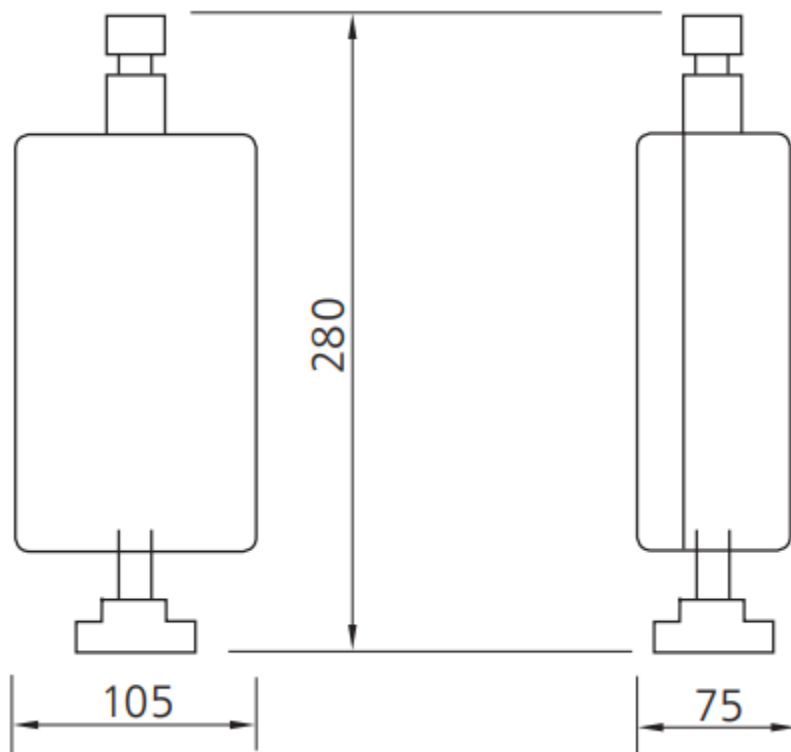
24 V AC/DC



230 V AC



Mechanism dimensions



9.2 MSSP and MSDP independent limit switches

Operation description:

The limit switch is used to signal the position of the fire damper partition.

Versions:

- | | |
|------|--|
| MSSP | - single switch – closed partition damper signaling |
| MSDP | - assembly of two switches – closed and open partition damper signaling. |



Specifications

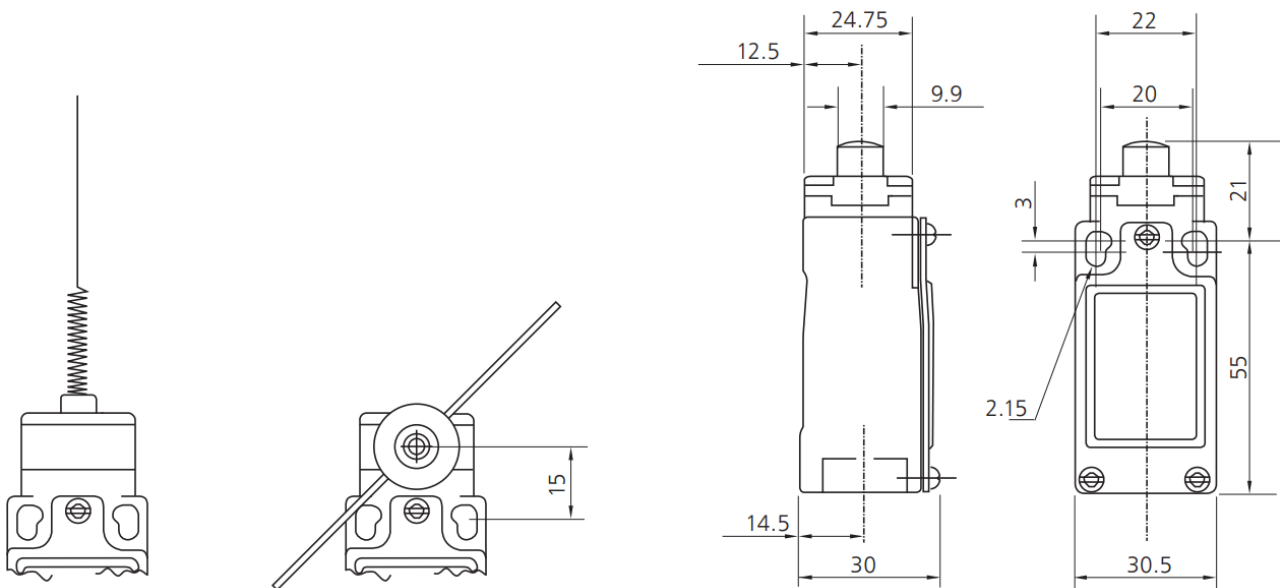
| | |
|------------------------------------|----------------------------------|
| MSSP and MSDP limit switch | 1NO/1NC SPDT (switching contact) |
| limit switch operating temperature | -25°C do +85°C |
| service durability | 5 000 000 cycles |
| voltage | 300 V AC i 250 V DC |
| current | 10 A |
| head version | „cat whiskers“ or „steel rod“ |
| ingress protection rating | IP 66 |

Electrical diagram of the mechanism

MSSP - Single limit switch. Closed damper signaling:

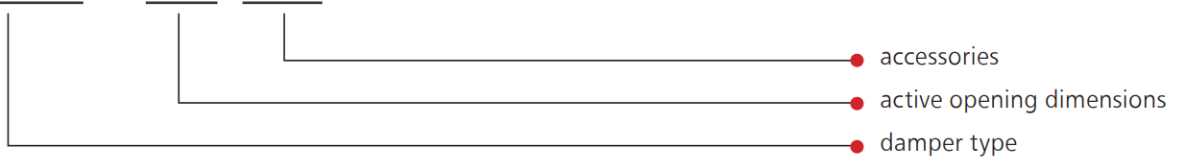
MSDP - Two limit switch:

- Contacts 13 and 14 NO (normally open)
- Contacts 21 and 22 NC (normally closed)



10. Marking

FS 201 / IF / B x H / MSSP



Type:

- FS 101** - square or rectangular damper with a curtain partly in the air stream
FS 201 - square or rectangular damper with a curtain outside the air stream
FS 301 - circular damper with a curtain outside the air stream
+ IF - installation frame for rigid partitions
+ DWFX-C - frame for installation before the assembly of dry partition walls

Accessories:

- MSSP** - single limit switch (closed damper signaling)
- MSDP** - two single limit switches (closed and open damper signalling)
- EM24** - electromagnetic trigger (power supply voltage of 24 V AC/DC)
- EM240** - electromagnetic trigger (power supply voltage of 230 V AC)
- MKPZ** - masking cover x 1 front. x 2 front and rear

11. Power Supply Control

11.1 Cooperation with smoke exhaust/cut-off dampers – drive quick selection table

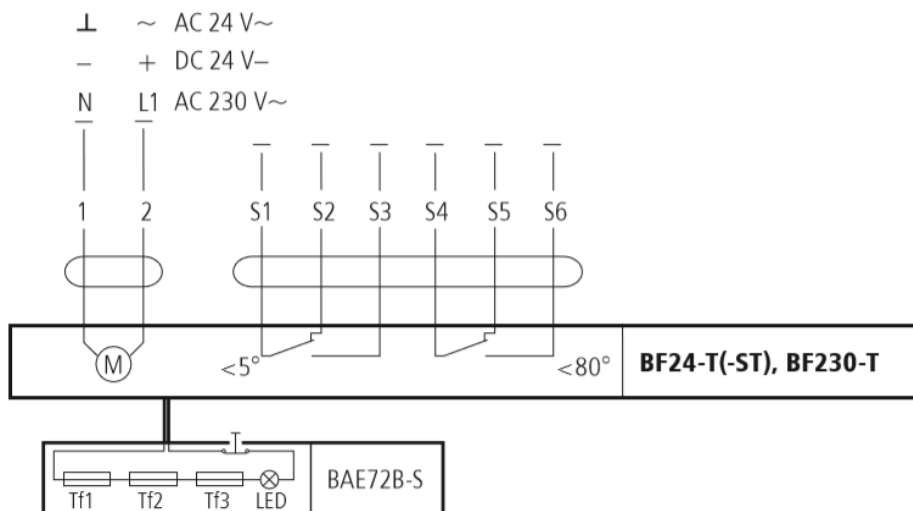
| | FID S/S c/P | FID S/S p/P FID S/S p/O | FID S/V p/P FID S/V-M p/P | FID PRO | WIP/ S | WIP/T | WIP/T- G | WIP/V WIP/V-M | WIP PRO/S | WIP PRO/V WIP PRO/V-M |
|----------------|----------------|----------------------------|------------------------------|------------|-----------|-------|-------------|------------------|--------------|--------------------------|
| BF24-T (ST) | | X | | | X | X | | | X | |
| BF230-T | | X | | | X | X | | | X | |
| BFL24-T (-ST) | X | X | | X | X | X | | | X | |
| BFL230-T | X | X | | X | X | X | | | X | |
| BFN24-T (-ST) | X | X | | | X | X | | | X | |
| BFN230-T | X | X | | | X | X | | | X | |
| BE24 | | | X | | | X | | X | | X |
| BE230 | | | X | | | X | | X | | X |
| BLE24 | | | X | | | X | | X | | X |
| BLE230 | | | X | | | X | | X | | X |
| EXBF24-T | X | X | | X | X | X | | | X | |
| EXBF230-T | X | X | | X | X | X | | | X | |
| BF24TL-T (-ST) | X | X | | X | X | X | | | X | |
| RST | X | X | | X | | | | | | |
| RST/WK1 | X | X | | X | | | | | | |
| RST/WK2 | X | X | | X | | | | | | |
| RST-KW1/S | X | X | | X | | | | | | |
| RST-KW1/S/WK2 | X | X | | X | X | X | X | | X | |
| RST-KW1/24I | X | X | | X | | | | | | |
| RST-KW1/24P | X | X | | X | | | | | X | |
| RST-KW1/230I | X | X | | X | | | | | | |
| RST-KW1/230P | X | X | | X | | | | | X | |
| BF24 (-ST) | | | | | | | X | | | |
| BF230 | | | | | | | X | | | |
| BFL24 (-ST) | | | | | | | X | | | |
| BFL230 | | | | | | | X | | | |
| BFN24 (-ST) | | | | | | | X | | | |
| BFN230 | | | | | | | X | | | |

11.2 Actuators

11.2.1 BF electric actuators

| SPECIFIKATIONS | BF24 (BF24-T) | BF230 (BF230-T) |
|-----------------------------|----------------------------|-----------------------------|
| Power supply | AC 24 V 50/60 Hz DC 24 V | AC 220-240 V 50/60 Hz |
| Power demand: | | |
| - For spring tensioning | 7 W | 8 W |
| - For holding | 2 W | 3 W |
| Sizing (apparent power) | 10 VA | 11 VA |
| Protection class | III | II |
| Ingress protection rating | IP 54 | IP 54 |
| Auxiliary circuit breaker: | 2 x EPU 3 (0.5) A 250 V | 2 x EPU 3 (0.5) A 250 V~ |
| - Activation position | 5°, 80° | 5°, 80° |
| Torque | | |
| - Motor | 18 Nm | 18 Nm |
| - Return spring | 12 Nm | 12 Nm |
| Cable connection: | | |
| - Motor (length: 0.9 m) | 2 x 0.75 mm ² | 2 x 0.75 mm ² |
| - Auxiliary circuit breaker | 6 x 0.75 mm ² | 2 x 0.75 mm ² |
| Movement time (0-90°) | | |
| - Motor | 120 s | 120 s |
| - Return spring | ~16 s | ~16 s |
| Operating temperature range | -30...+50°C | -30...+50°C |
| Sound intensity level: | | |
| - Motor | max 45 dB (A) | max 45 dB (A) |
| - Return spring | ~63 dB (A) | ~63 dB (A) |

11.2.1.1 Electrical diagram of the BF...-T series actuator:



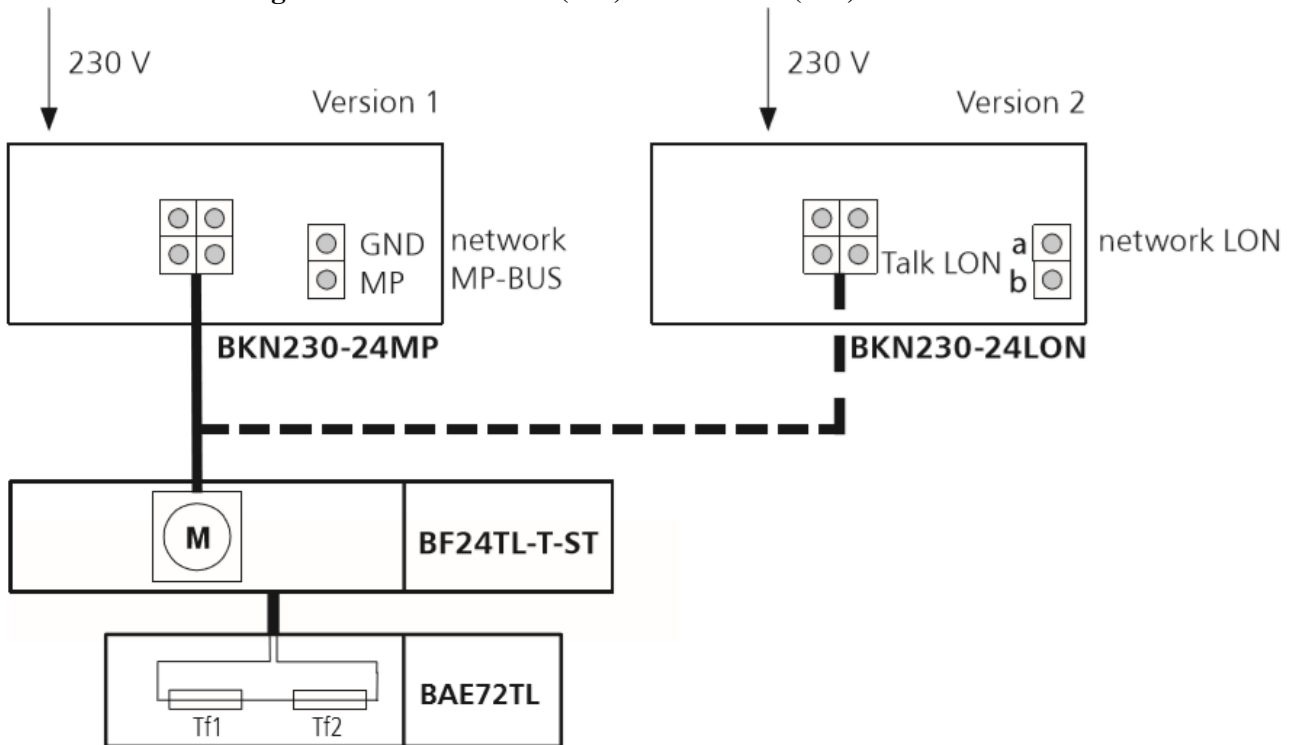
note: 24 V connection through a safety transformer.

To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further actuators in parallel. Check the power consumption.

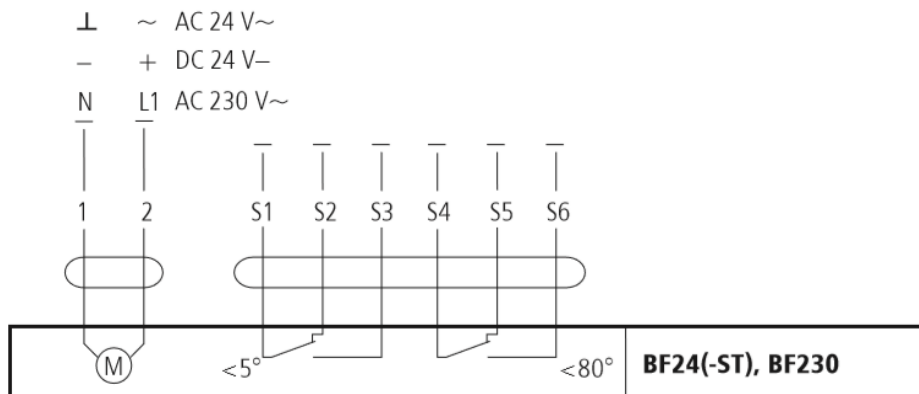
note:

The location of the actuator limit switches is shown for the no voltage position.

11.2.1.2 Electrical diagram of the BF24TL-T(-ST) and BF24TL(-ST) actuator:



11.2.1.3 Electrical Diagram of the BF series actuator:



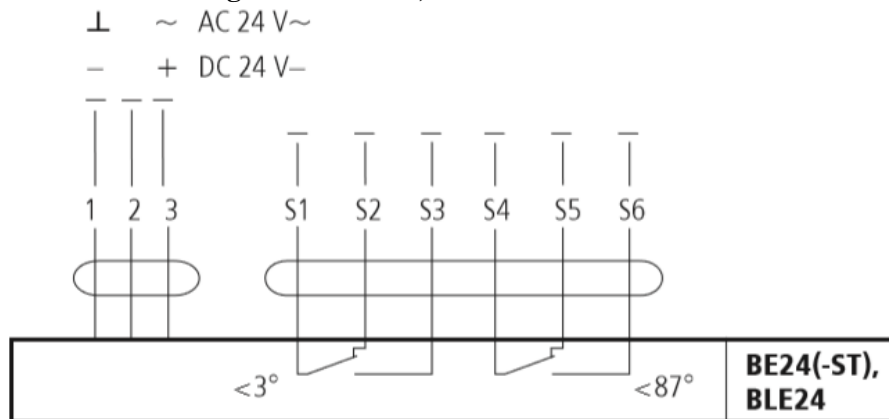
note: 24 V connection through a safety transformer. To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further actuators in parallel. Check the power consumption.

note: The location of the actuator limit switches is shown for the no voltage position.

11.2.2 BE, BLE electric actuators

| Specifications | BE24, BE24-ST | BE230 | BLE24 | BLE230 |
|-------------------------------|--------------------------------|--------------------------------|-----------------------------|-----------------------------|
| Power Supply | AC 24 V 50/60 Hz | AC 230 V 50/60 Hz | AC 24 V 50/60 Hz DC 24 V | AC 230 V 50/60 Hz |
| Power demand: | | | | |
| - In movement | 12 W | 8 W | 7.5 W | 5 W |
| - For holding | 0.5 W | 0.5 W | 0.5 W | 0.5 |
| Sizing (apparent power) | 18 VA | 15 VA | 9 VA | 12 VA |
| Protection class | III | II | III | II |
| Ingress protection rating | IP 54 | IP 54 | IP 54 | IP 54 |
| Auxiliary circuit breaker: | 2 x SPDT 6 (1.5) A AC 250 V | 2 x SPDT 6 (1.5) A AC 250 V | 2 x EPU 3 (1.5) A 250 V | 2 x EPU 3 (1.5) A 250 V~ |
| - Activation position | 5°, 80° | 5°, 80° | 5°, 80° | 5°, 80° |
| Torque - motor | 40 Nm | 40 Nm | 15 Nm | 15 Nm |
| Movement time (0-90°) – motor | < 60 s for 90° | < 60 s for 90° | < 30 s for 90° | < 30 s for 90° |
| Operating temperature | -30...+50°C | -30...+50°C | -30...+50°C | -30...+50°C |
| Sound intensity level | ~62 dB (A) | ~62 dB (A) | ~62 dB (A) | ~62 dB (A) |

11.2.2.1 Electric diagram of the BE, BLE series actuator

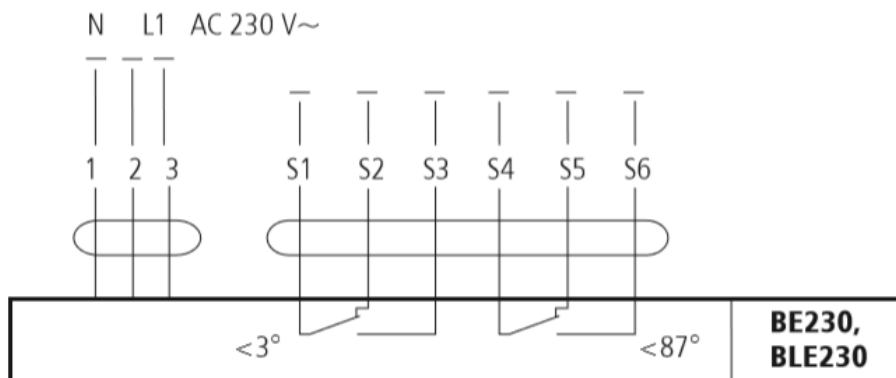


note:

The actuator operation control requires routing three wire system to it. The actuator rotation sense is changed by the application of the power supply voltage to the terminal 2 or 3, depending on the desired direction.

note: 24 V connection through a safety transformer.

To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further drives in parallel. Check the power consumption.



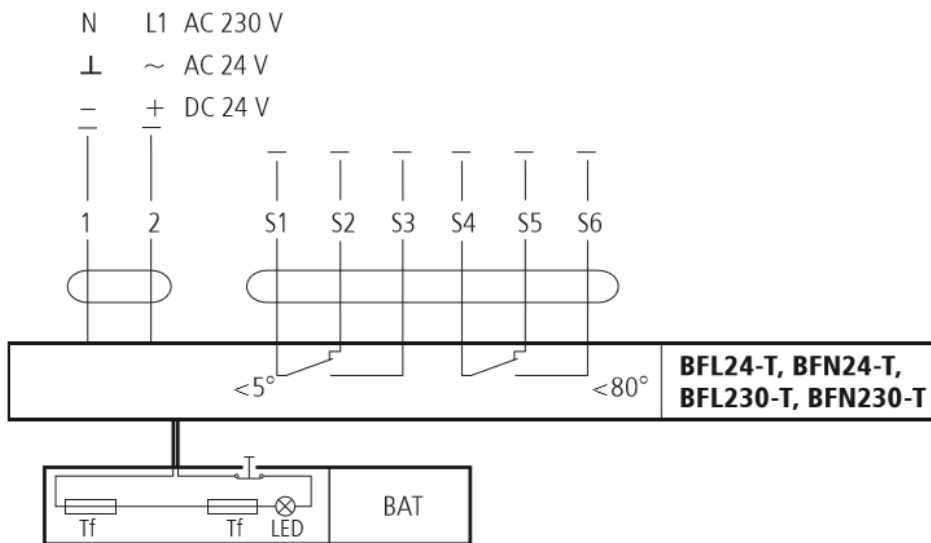
note:

The location of the actuator limit switches is shown for the no voltage position.

11.2.3 BFL, BFN ELECTRIC ACTUATORS

| Specifications | BFL24 (BFL24-T) | BFL230 (BFL230-T) | BFN24 (BFN24-T) | BFN230 (BFN230-T) |
|----------------------------|--------------------------------|--------------------------------|-----------------------------|----------------------------|
| Power Supply | AC 24 V 50/60 Hz DC 24 V | AC 220-240 V 50/60 Hz | AC 24 V 50/60 Hz DC 24 V | AC 220-240 V 50/60 Hz |
| Power demand: | | | | |
| - Spring tensioning | 2.5 W | 3.5 W | 4 W | 5 W |
| - For holding | 0.7 W | 1.1 W | 1.4 W | 2.1 |
| Sizing (apparent power) | 4 VA | 6.5 VA | 6 VA | 10 VA |
| Protection class | III | II | III | II |
| Ingress protection rating | IP 54 | IP 54 | IP 54 | IP 54 |
| Auxiliary circuit breaker: | 2 x SPDT 3 (0.5) A AC 250 V | 2 x SPDT 3 (0.5) A AC 250 V | 2 x EPU 3 (0.5) A 250 V | 2 x EPU 3 (0.5) A 250 V |
| - Activation position | 5°, 80° | 5°, 80° | 5°, 80° | 5°, 80° |
| Torque | | | | |
| - motor | 4 Nm | 4 Nm | 9 Nm | 9 Nm |
| - return spring | 3 Nm | 3 Nm | 7 Nm | 7 Nm |
| Movement time (0-90°): | | | | |
| - motor | < 60 s | < 60 s | < 60 s | < 60 s |
| - return spring | ~20 s | ~20 s | ~20 s | ~20 s |
| Operating temperature | -30...+55°C | -30...+55°C | -30...+55°C | -30...+55°C |
| Sound intensity level | | | | |
| - motor | max 43 dB (A) | max 43 dB (A) | max 55 dB (A) | max 55 dB (A) |
| - return spring | ~62 dB (A) | ~62 dB (A) | ~67 dB (A) | ~67 dB (A) |

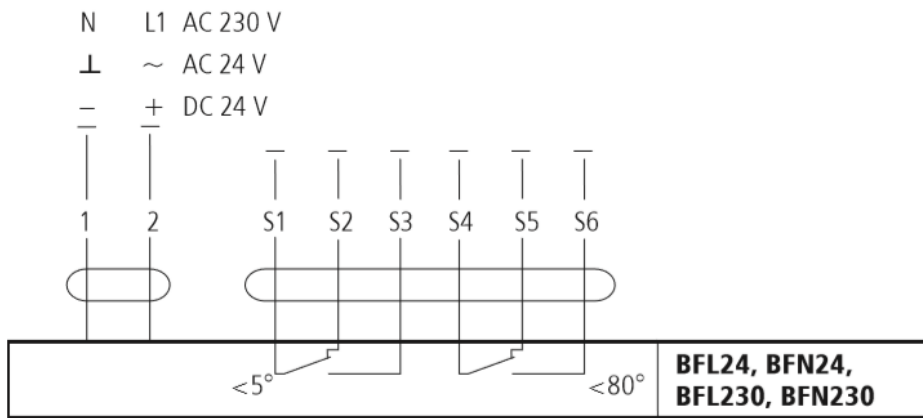
11.2.3.1 Electrical diagram of the BFL...-T, BFN...-T series actuator:



note: 24 V connection through a safety transformer. To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further actuators in parallel. Check the power consumption.

note: The location of the actuator limit switches is shown for the no voltage position.

11.2.3.2 Electrical diagram of the BFL, BFN series actuator:



note: 24 V connection through a safety transformer.

To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further actuators in parallel. Check the power consumption.

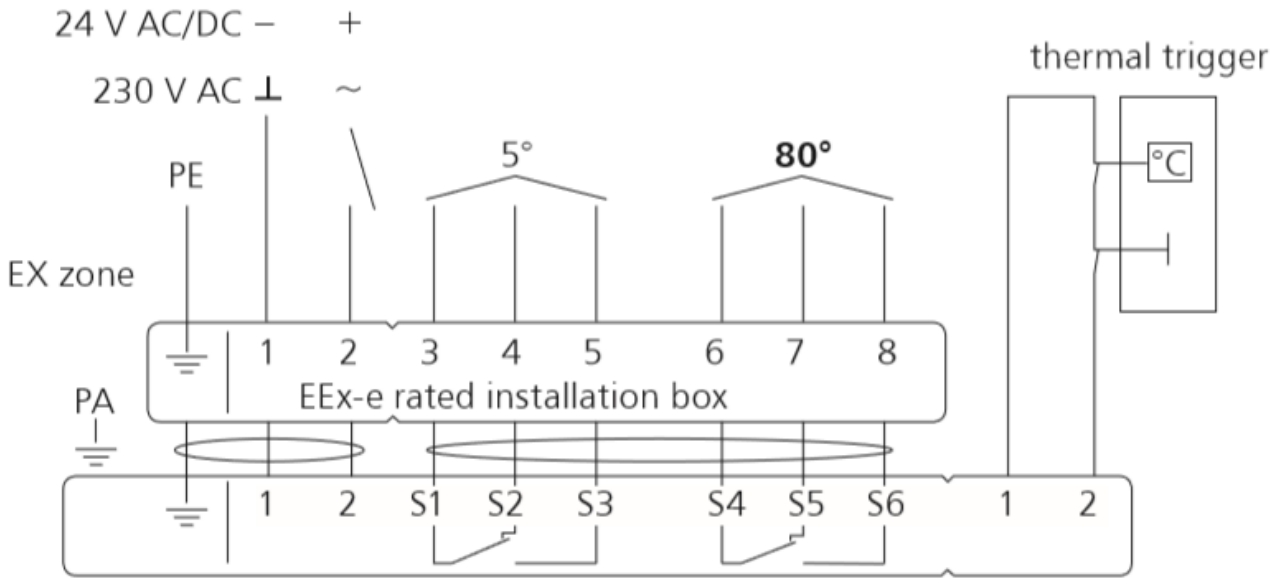
note:

The location of the actuator limit switches is shown for the no voltage position.

11.2.4 EXBF actuators

| SPECIFIKATIONS | EXBF B 001 2...0 N 000 | EXBF A 001 2 ...0 N 000 |
|----------------------------|---|-------------------------------|
| Zone | 1, 2, 21, 22 | |
| ATEX-rating | II 2 GD EEx d IIC T6 | |
| Power supply | 24 V AC $\pm 20\%$ 50/60 Hz / 24 V DC - 10/+20% | 230 V AC $\pm 14\%$ 50/60 Hz |
| Power demand: | | |
| - For spring tensioning | 7 W | 8 W |
| - For holding | 2 W | 3 W |
| Sizing (apparent power) | 10 VA | 11 VA |
| Ingress protection rating | IP 66 | IP 66 |
| Auxiliary circuit breaker: | 2 x SPDT 6 A (3) max 250 v AC | 2 x SPDT 6 A (3) max 250 V AC |
| - Activation position | 5°, 80° | 5°, 80° |
| Torque: | | |
| - Motor | 18 Nm | 18 Nm |
| - Return spring | 12 Nm | 12 Nm |
| Movement time (0-90°) | | |
| - Motor | 150 s | 150 s |
| - Return spring | ~20 s | ~20 s |
| Ambient temperature | -30...+50°C | -30...+50°C |

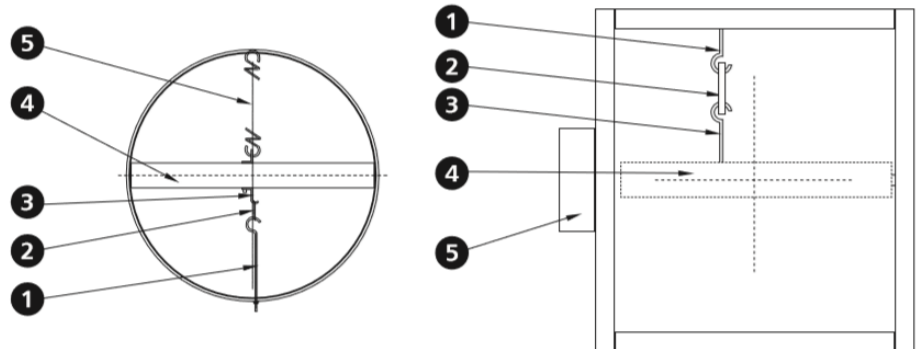
11.2.4.1 Connection diagram for EXBF and EXBF...-T actuators:



11.3 RST trigger control mechanisms

In the RST version the WK1 limit switches are independent units installed inside the fire damper casing. The thermal trigger is on the damper blade. The driving spring is installed on the damper blade or in a guard box on its casing.

1. Moving hook with nut
2. Fusible link
3. Fixed hook on the damper blade
4. Damper blade
5. Drive spring



11.3.1 Independent limit switches – RST version

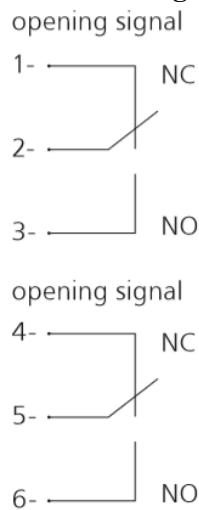
WK1 – limit switch (closed damper blade signal)

WK2 – limit switch (closed/open damper blade signal)

11.3.2 Switch specifications

| | |
|------------------------------------|------------------------------|
| WK1 and WK2 limit switch | 1xNO/1xNC SPDT 5 A, 230 V AC |
| Limit switch operating temperature | -25 ... +85°C |
| Casing | plastic |

11.3.2.1 Electric connection diagram of WK1 and WK2 limit switches



note:

When the damper blade closes, the closed indication limit switch is switched over (contacts 2-3 are closed).

11.4 RST-KW1 mechanisms

| | RST-KW1/S | RST-KW1/S/WK2 | RST-KW1/24I | RST-KW1/24P | RST-KW1/230I | RST-KW1/230P |
|---------------------------------------|------------------------|---------------|------------------------------------|-------------------------|-----------------------------|-------------------------|
| Rated voltage | - | - | 24 V – 48 V DC | 24 V – 48 V DC | 230 AC | 230 AC |
| Power consumption | - | - | 3.5 W | 1.6 W | 2 W | 2 W |
| Thermal trigger | 74°C (optionally 95°C) | | | | | |
| Connections – trigger | - | - | Wire 0.6m, 2 x 0.5 mm ² | | | |
| Connections – limit switches | - | - | Wire 0.6m, 6 x 0.5 mm ² | | | |
| Limit switch | - | - | 2 x BI/NC 5A. 230 V AC | | | |
| Movement time | max. 2 s | | | | | |
| Mechanism operation control (closing) | - | - | Voltage application „pulse” | Voltage removal „break” | Voltage application „pulse” | Voltage removal „break” |
| Mechanism operation control (opening) | Manual | Manual | Manual | Manual | Manual | Manual |
| Pulse width | max. 1 s | | | | | |

11.4.1 Description of electrical connections:

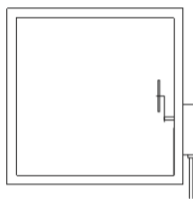
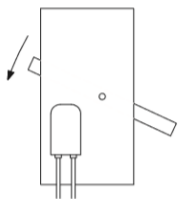
| RST-KW1 mechanism power supply | Closing limit switch | Opening limit switch |
|--------------------------------|--|--|
| Wire number: 1-2 | Wire number: 3-4 – NO (normally open) | Wire number 6-7 – NO (normally open) |
| | Wire number 4-5 – NC (normally closed) | Wire number 7-8 – NC (normally closed) |

11.5 Manufacture standards

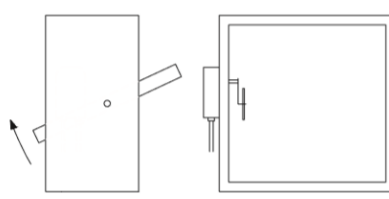
| Damper type | Description | Standard | Option |
|------------------------------------|-------------------------------------|----------|--------|
| FID S/S c/P | Right damper | X | |
| | Inverse damper | | X |
| | Left damper | | X |
| | Actuator normal to the axis flow | X | |
| | Actuator along the axis flow | | |
| FID S/S p/P FID S/V p/P | Right damper | X | |
| | Inverse damper | | X |
| | Left damper | | X |
| | Actuator normal to the axis flow | X | |
| | Actuator along the axis flow | | X |
| FID S/S p/O | Right damper | X | |
| | Inverse damper | | |
| | Left damper | | |
| | Actuator normal to the axis flow | X | |
| | BF actuator along the v (exception) | X | |
| | Actuator along the axis flow | | X |
| FID PRO | Right damper | X | |
| | Inverse damper | | |
| | Left damper | | |
| | Actuator normal to the axis flow | X | |
| | Actuator along the axis flow | | X |
| WIP | Right damper | | |
| | Inverse damper | | X |
| | Left damper | | X |
| | Actuator normal to the axis flow | X | |
| | Actuator along the axis flow | X | |
| WIP PRO | Right damper | | X |
| | Inverse damper | | X |
| | Left damper | X | |
| | Actuator normal to the axis flow | X | |
| | Actuator along the axis flow | | |

11.5.1 FID S/S c/P damper

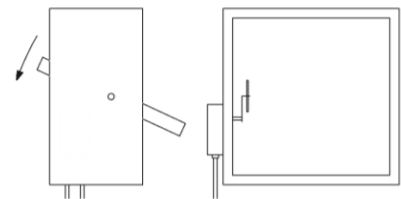
right damper standard



inverse damper
(wires downward)



left damper

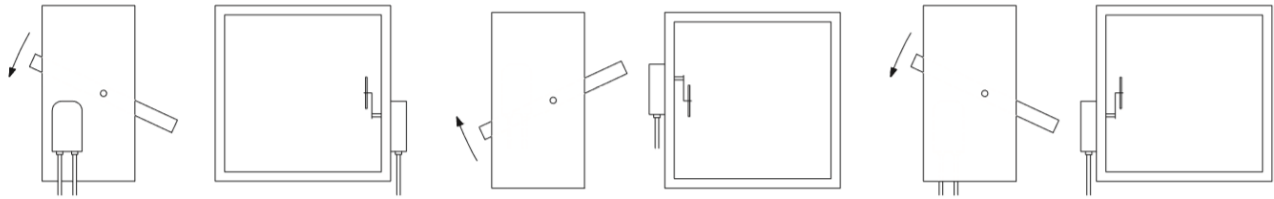


11.5.2 FID S/S p/P, FID S/S p/O, FID S/V p/P damper

right damper standard

inverse damper
(wires downward)

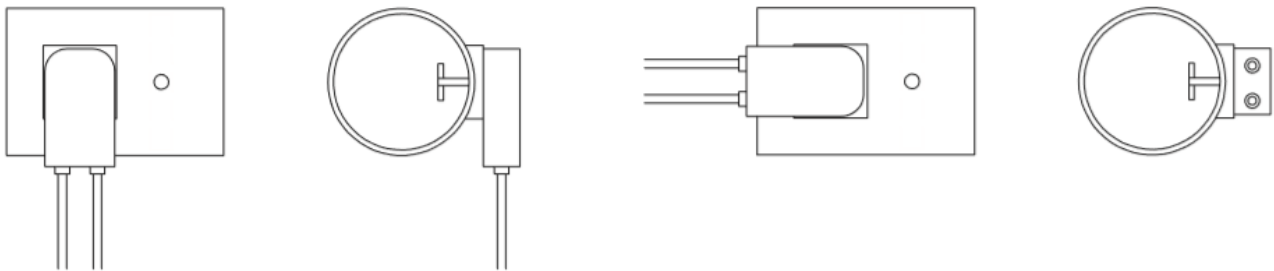
left damper



11.5.3 FID PRO/S damper

right damper
standard

actuator along the axis flow



11.5.4 WIP/S, WIP/V, WIP/V-M, WIP/T, WIP/T-G damper

left damper
standard

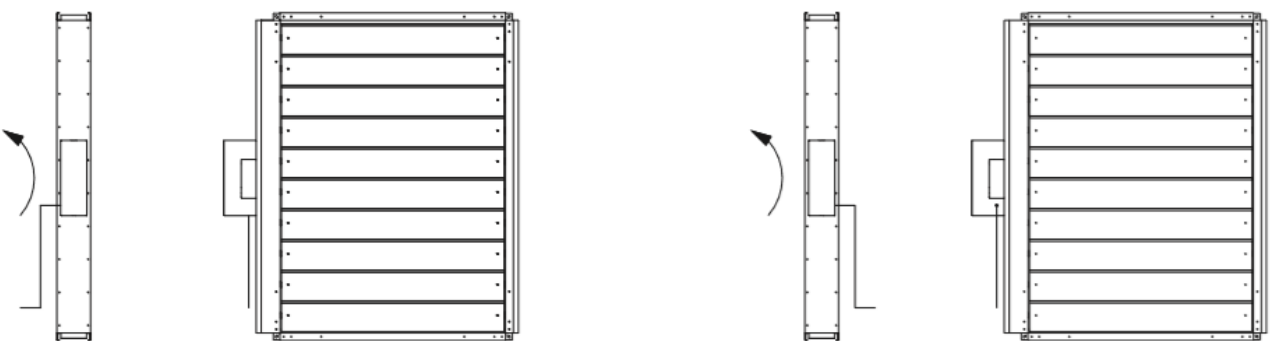
inverse damper
(wires downward)



11.5.5 WIP PRO/S, WIP PRO/V, WIP PRO/V-M damper with an actuator

left damper
standard

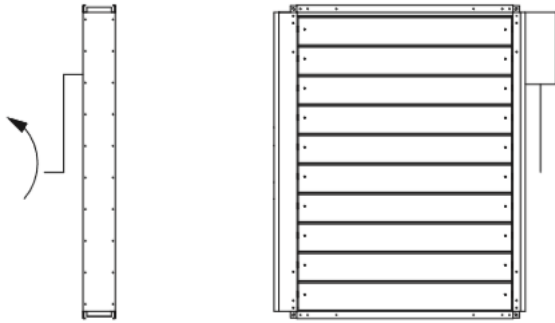
inverse damper
reversed cable outlet



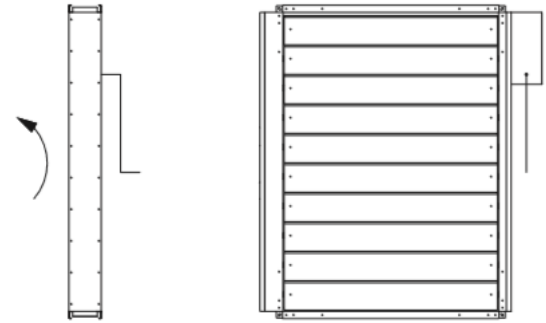
i Installation in reversed horizontal and vertical position available

11.5.6 WIP PRO/S, WIP PRO/V, VIP PRO/V-M damper with RST-KW1 mechanism

left damper
standard



inverse damper
reversed cable outlet



i Installation in reversed horizontal and vertical position available