

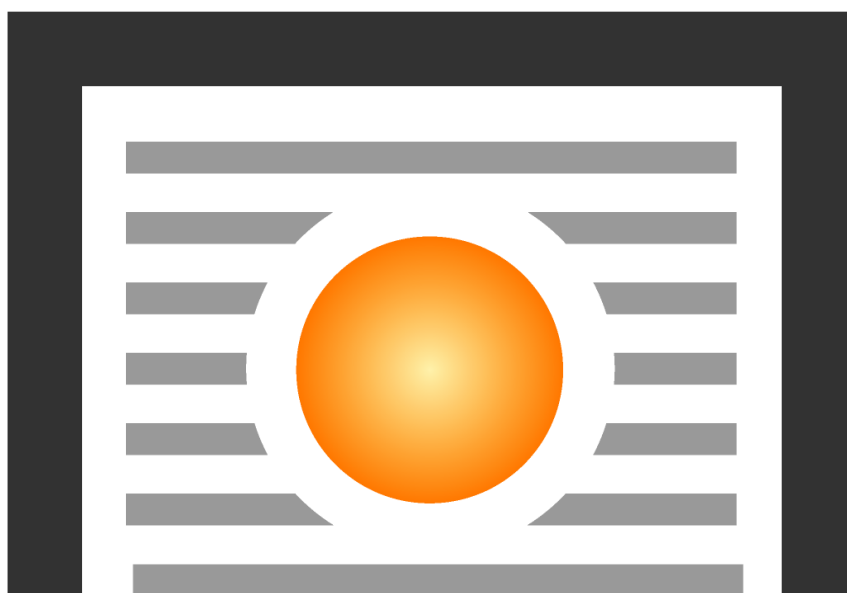
Fire damper:

Single blade fire cut-off damper for comfort ventilation



Model FID S/x...p/X

Operation and maintenance manual (OOM)



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Technical Manual designations:

- Option available
- Option unavailable

NOTE

All previous issues of this Technical Manual expire on the date of issue hereof.
The Technical Manual does not apply to the fire dampers manufactured before its date of issue.

1. Introduction

The purpose of this operation and maintenance manual is to get the user acquainted with the intended use, design, the principle of operation, correct installation and operation of the product. The manual also includes additional information about the operating conditions, maintenance and warranty conditions of the product.

2. Subject

This manual concerns the entire group of single-plane fire dampers type FID S/... p/... . Compliance with the Manual guidelines ensures correct functioning of the device in terms of fire protection of rooms as well as safety of the system users.

3. Device intended use

3.1 Application

Single-plane fire dampers type FID S/... p/... (square cross-section) may be used:

- as shut-off fire dampers – FID S/S p/P
- as shut-off fire dampers for fire ventilation systems – FID S/V p/P
- as shut-off fire dampers for mixed fire ventilation systems – FID S/M p/P
- as transfer dampers – FID S/T p/P
- as relief dampers – FID S/T p/P

Single-plane fire dampers type FID S/X p/P (circular) may be used:

- as shut-off fire dampers – FID S/S p/O
- as shut-off fire dampers for fire ventilation systems – FID S/V p/O
- as shut-off fire dampers for mixed fire ventilation systems – FID S/M p/O
- as transfer dampers – FID S/T p/O
- as relief dampers – FID S/T p/O

ⓘ Caution:

















































Shut-off fire dampers for fire ventilation systems the FID S/V p/P and fire dampers for mixed fire ventilation systems the FID S/V-M p/P, have one declaration of performance in accordance with the requirements of law.

The marker -M and the word "mixed" used in the document are trademarks used by the manufacturer. The construction and execution of the above dampers is the same regardless of the commercial mark.
























The dampers cannot be operated in systems exposed to dust, except for when they are included in a special, individually developed programme of service and technical inspections.

3.2 Fire resistance

Damper type FID S/... p/O has the following fire resistance:

	EI60S		/S		/V		/M		/T		/G		EI120S		/S		/V		/M		/T		/G
	EI60S		/S		/V		/M		/T		/G		EI120		/S		/V		/M		/T		/G
	E60S		/S		/V		/M		/T		/G		E120S		/S		/V		/M		/T		/G
	E60S		/S		/V		/M		/T		/G		E120		/S		/V		/M		/T		/G




Damper type FID S/... p/O has the following fire resistance:

	EI60S		/S		/V		/M		/T		/G		EI120S		/S		/V		/M		/T		/G
	EI60S		/S		/V		/M		/T		/G		EI120		/S		/V		/M		/T		/G
	E60S		/S		/V		/M		/T		/G		E120S		/S		/V		/M		/T		/G
	E60S		/S		/V		/M		/T		/G		E120		/S		/V		/M		/T		/G

depending on application, method and place of installation of the damper.

3.3 Form versions

The available FID S/... p/... fire damper form versions include:

-  Rectangular dampers – FID S/... p/P
-  Rectangular dampers – FID S/... p/P with round connections (diameter range $630 < D < 1000$)
-  Round dampers – FID S/... p/O

3.4 Dimension type series

The FID S/... p/P fire dampers are manufactured in the following size ranges:

Width: 200 to 1500 mm
 Height: 200 to 1500 mm
 Width: 296 to 390 mm

i Aside from the standard dimensions, the fire dampers may also be manufactured in intermediate sizes. The damper casing can be made longer on request. Maximum surface area of type FID S/[S,T,G] p/P dampers: 1.8 m². Maximum surface area of type FID S/[V] p/P dampers: 1.5 m². Maximum surface area of type FID S/[M] p/P dampers: 1.25 m². The minimum damper surface area is 0.04 m².

The FID S/... p/O fire dampers are manufactured in the following size ranges:

Diameter: 125 to 630 mm
 Width: 296 to 390 mm

i Aside from the standard dimensions, the fire dampers may also be manufactured in intermediate sizes. The damper casing can be made longer on request. Maximum surface area of type FID S/... p/O dampers: 0.31 m². The minimum damper surface area is 0.01 m².

4. Design and operating principle

4.1 Design

The FID S/... p/... single-plane fire dampers comprise a casing with a rectangular or circular cross-section (depending on the form version), a moving isolation partition, made of two segments separated by a fire-proof panel, and a trigger control gear which is tripped remotely or automatically by tripping a thermal trigger. The damper casing is made of steel sheet, galvanized steel sheet or stainless steel sheet and with a required width. The isolation partition is made of a fire-proof panel set in a reinforcement profile made of metal sheet. The inner side of the fire damper casing features a intumescent gasket. There are stop shapes fastened to the inner casing surface and made of steel, galvanized steel or stainless steel sheet, which limit the rotating motion of the isolation partition. The stop shapes are lined with a ventilation-grade seal. The rectangular form version has both ends of the fire damper body with flanged connections, whereas the circular form version features nipple connections ($\varnothing D-2$). The circular form version can also be manufactured with flanged ends.

4.2 Function

The operating principle and behaviour of the FID S/... p/... single-plane dampers depend on their application versions:

■ shut-off fire dampers – FID S/S p/P

In the normal operating position the dampers are open. The dampers are closed (to the safety position) as follows:

- automatically, by tripping the thermoelectric trigger
- manually, by pressing the control button at the thermoelectric trigger
- remotely, by activation of an electric axial actuator with a return spring, caused by isolation from the supply voltage
- automatically, by tripping the thermal trigger and the driving spring

■ shut-off fire dampers for fire ventilation systems – FID S/V p/P

In normal operating position the dampers are closed. The dampers are opened (to the safety position) as follows:

- remotely, by tripping an electric axial actuator without a return spring, as a result of applying the supply voltage to the actuator in the right manner.
- remotely, by tripping the electromagnetic release and a spring as a result of applying the voltage

■ shut-off fire dampers for mixed fire ventilation systems – FID S/M p/P

In normal operation the dampers are closed or open, depending on the function carried out. The dampers are opened/closed (to the safety position) as follows::

- remotely, by tripping the electrical axial actuator without a return spring in order to apply supply voltage to the actuator in the right manner
- remotely, by tripping the electromagnetic release and a spring as a result of applying the voltage

transfer fire dampers – FID S/T p/P

In the normal operating position the dampers are open or closed. The dampers are switched to the safety position as follows:

- automatically, by tripping the thermoelectric trigger
- manually, by pressing the control button on the thermoelectric trigger
- remotely, by tripping an electric axial actuator with a return spring caused by isolation from the supply voltage
- automatically, by tripping the thermal trigger and the driving spring

relief fire dampers – FID S/G p/P

In normal operation the dampers are closed or open, depending on the function carried out. The dampers are opened/closed (to the safety position) as follows:

- remotely, by tripping an electric axial actuator with a return spring caused by isolation from the supply voltage. The actuator has no thermoelectric trigger.

The operating principle and behaviour of the FID S/... p/... single-plane dampers depend on their application versions:

shut-off fire dampers – FID S/S p/O

In the normal operating position the dampers are open. The dampers are closed (to the safety position) as follows:

- automatically, by tripping the thermoelectric trigger
- manually, by pressing the control button on the thermoelectric trigger
- remotely, by tripping an electric axial actuator with a return spring caused by isolation from the supply voltage
- automatically, by tripping the thermal trigger and the driving spring

shut-off fire dampers for fire ventilation systems – FID S/V p/O

In the normal operating position the dampers are closed. The dampers are opened (to the safety position) as follows:

- remotely, by tripping an electric axial actuator without a return spring, as a result of applying the supply voltage to the actuator in the right manner.
- remotely, by tripping the electromagnetic release and a spring as a result of applying the voltage

shut-off fire dampers for mixed fire ventilation systems – FID S/M p/O

In normal operation the dampers are closed or open, depending on the function carried out. The dampers are opened/closed (to the safety position) as follows:

- remotely, by tripping the electrical axial actuator without a return spring in order to apply supply voltage to the actuator in the right manner
- remotely, by tripping the electromagnetic release and a spring as a result of applying the voltage

transfer fire dampers – FID S/T p/O

In the normal operating position the dampers are open or closed. The dampers are switched to the safety position as follows:

- automatically, by tripping the thermoelectric trigger
- manually, by pressing the control button on the thermoelectric trigger
- remotely, by tripping an electric axial actuator with a return spring caused by isolation from the supply voltage
- automatically, by tripping the thermal trigger and the driving spring

relief fire dampers – FID S/G p/O

In normal operation the dampers are closed or open, depending on the function carried out. The dampers are opened/closed (to the safety position) as follows:

- remotely, by tripping an electric axial actuator with a return spring caused by isolation from the supply voltage. The actuator has no thermoelectric trigger.

It is possible to manually service check the proper performance of the dampers with electrical actuators by placing a special hex wrench in the socket marked on the actuator and rotating it to set the damper isolating partition in the relevant position. Rotate the wrench slowly, smoothly and carefully. Rotating the wrench too fast or too rapidly may damage the internal actuator gear or the drive transmission system.

It is possible to manually service check the proper performance of the integrated damper with the trigger control gear by pressing the lever on the gear.

The T2 tester is recommended to check the proper performance of dampers with electric actuators.

⚠ CAUTION

Never pull directly on the damper isolation partition to open or close the device. This may result in damage of the self-locking driving gear of the damper that is not covered by warranty. It is recommended that the fire damper were opened and closed when the ventilation system is turned off.

4.3 Trigger control gears

The following trigger control gears are available for the FID S/... p/... fire dampers::

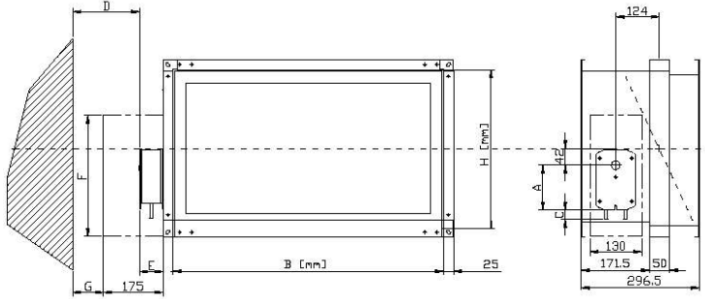
Electrical actuator:

BF 230-T	/S	/V	/M	/T	/G
BLF 230-T	/S	/V	/M	/T	/G
BF 24-T (-ST)	/S	/V	/M	/T	/G
BLF 24-T (-ST)	/S	/V	/M	/T	/G
BE 230	/S	/V	/M	/T	/G
BLE 230	/S	/V	/M	/T	/G
BFL 230-T	/S	/V	/M	/T	/G
BFN 230-T	/S	/V	/M	/T	/G
EXBF 24	/S	/V	/M	/T	/G
BF24	/S	/V	/M	/T	/G
BF 230	/S	/V	/M	/T	/G
EXBF 230	/S	/V	/M	/T	/G
BLF 24	/S	/V	/M	/T	/G
BLF 230	/S	/V	/M	/T	/G
BE 24	/S	/V	/M	/T	/G
BLE 24	/S	/V	/M	/T	/G
BFL 24-T (-ST)	/S	/V	/M	/T	/G
BFN 24-T (-ST)	/S	/V	/M	/T	/G
BF 24-T-TL	/S	/V	/M	/T	/G

Spring gear:

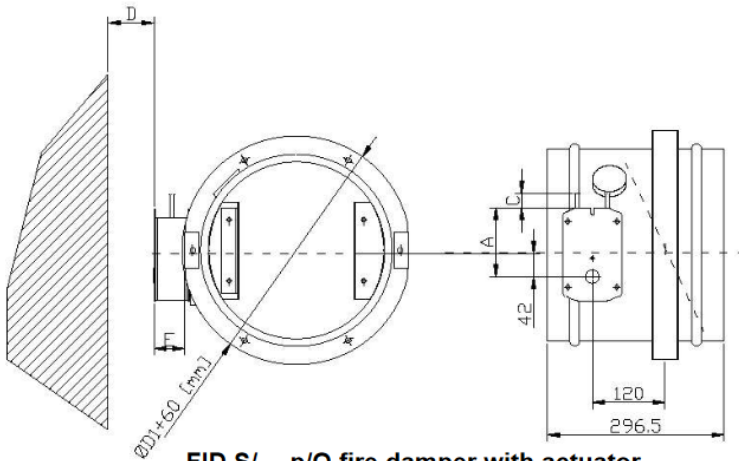
RST	/S	/V	/M	/T	/G
RST/KW1/24P	/S	/V	/M	/T	/G
RST/KW1/S	/S	/V	/M	/T	/G
RST/KW1/24I	/S	/V	/M	/T	/G

4.4 Basic dimensions



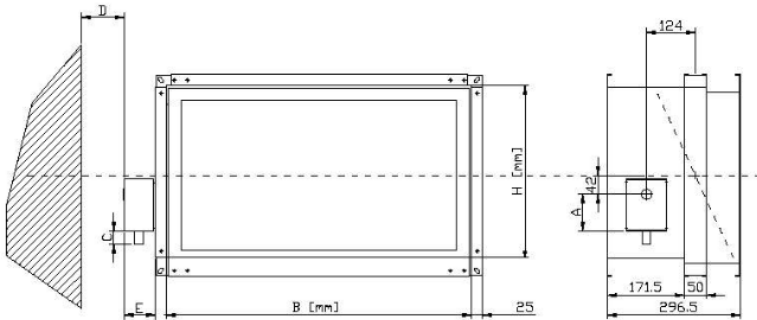
FID S/... p/P fire damper with actuator

Gear	A	C	D	E	F	G
BLF	130	30	75	70	X	X
BFN	157	30	75	62	X	X
BFL	138	30	75	58	X	X
BF	198	10	75	175	X	X
EXBF	225	55	75	175	X	X
BE	198	10	X	81	345	75
BLE	130	30	X	70	305	75



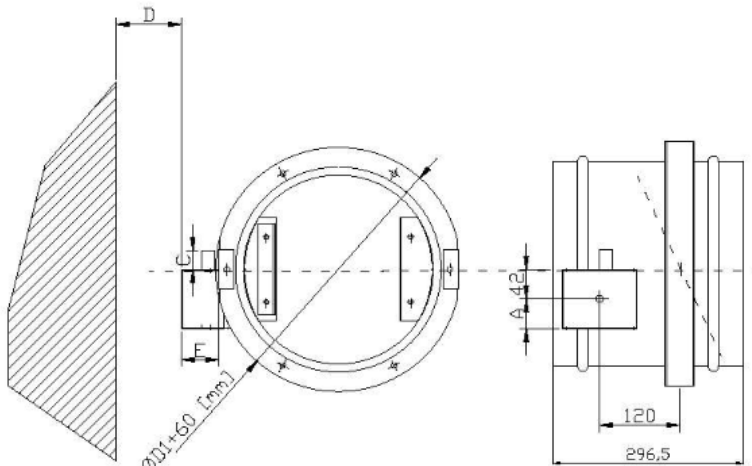
FID S/... p/O fire damper with actuator

Gear	A	C	D	E
BLF	130	30	75	50
BFN	157	30	75	42
BFL	138	30	75	38
BF	198	10	75	50
EXBF	225	55	75	160
BE	198	10	75	61
BLE	130	30	75	50



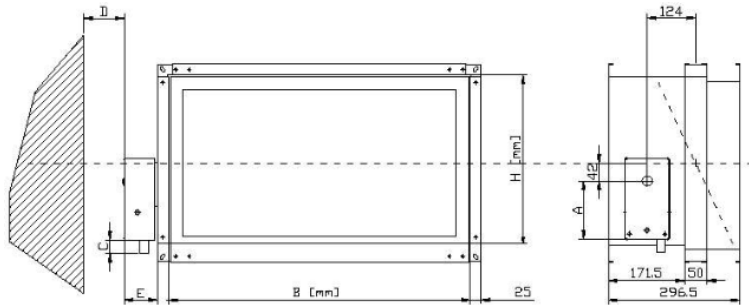
FID S/... p/P fire damper with RST

Gear	A	C	D	E
RST	50	30	75	75



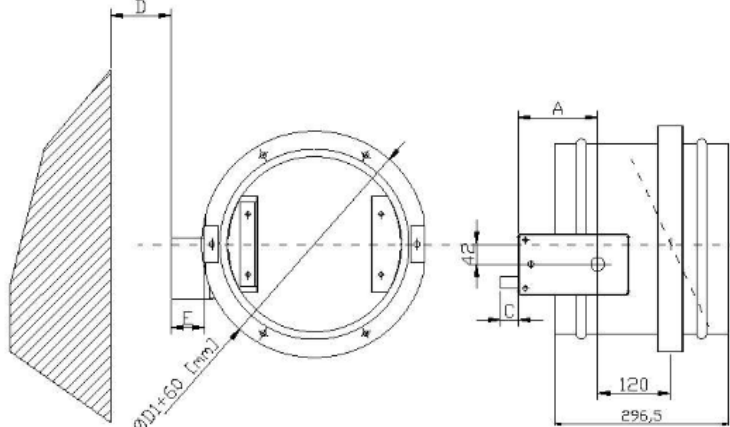
FID S/... p/O fire damper with RST

Gear	A	C	D	E
RST	40	30	75	55



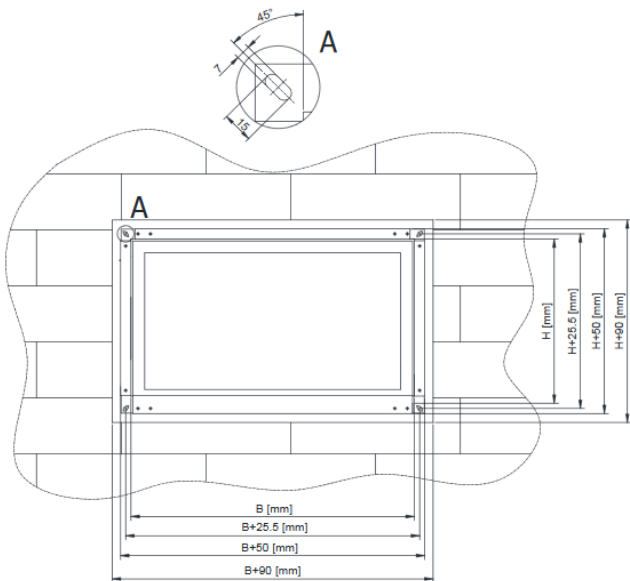
FID S/... p/P fire damper with RST/KW1

Gear	A	C	D	E
RST/KW1	130	30	75	85

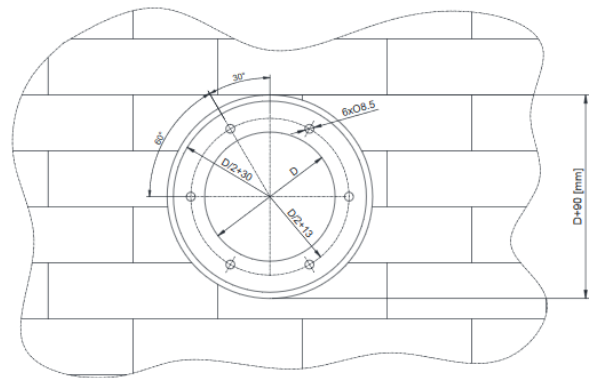


FID S/... p/O fire damper with RST/KW1

Gear	A	C	D	E
RST/KW1	130	30	75	65

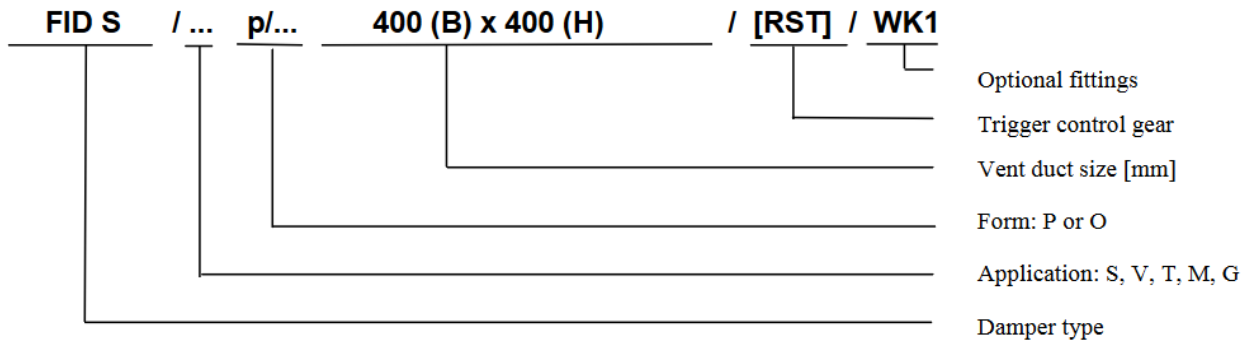


FID S/...p/P damper installation frame



FID S/...p/O damper installation flange

5. Device identification



6. Device assembly

ⓘ CAUTION

During the assembly of the damper and installation finish, future access to the device and removal of the trigger control gear must be considered to enable servicing and inspection.

The FID S/... p/P dampers can be installed in the following partitions (i.e. walls or ceilings):

- masonry and concrete walls min. 110 mm thick
- masonry walls of bricks or blocks min. 110 mm thick
- panel walls min. 125 mm
- floor slabs min 150 mm thick

Additionally, the dampers can be installed:

- Outside of walls*
- in batteries (multiple damper sets)

* Available for the FID S/S p/P damper:

The FID S/... p/O dampers can be installed in the following partitions (i.e. walls or ceilings):

- masonry and concrete walls min. 110 mm thick
- masonry walls of bricks or blocks min. 110 mm thick
- panel walls min. 125 mm
- floor slabs min 150 mm thick

Additionally, the dampers can be installed:

- Outside of walls
- in batteries (multiple damper sets)

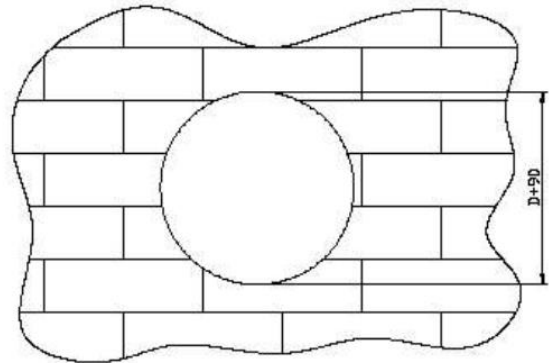
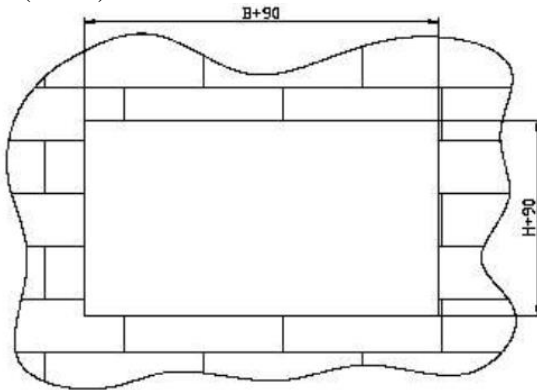
The FID S/... p/... fire dampers may also be installed in partitions with a lower class of fire resistance. In this case the damper fire resistance is equal to the partition fire resistance if the smoke tightness is met. When installing the fire damper in a wall the thickness of which is below the required minimum, increase the thickness at the installation location e.g. by adding an extra slab or other suitable construction material around the damper circumference.

6.1 Pre-assembly inspection

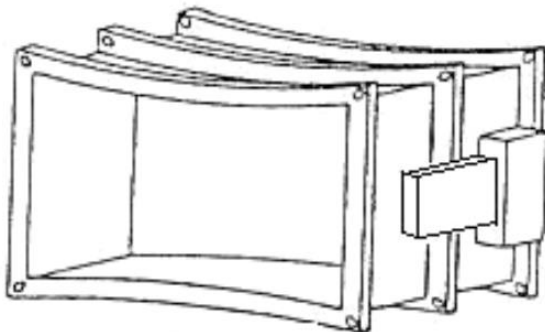
Each fire damper is factory inspected by the manufacturer prior to packing and shipping. Upon unpacking the delivered fire damper, visually examine it for any damage in transport or casing deformation.

6.2 Installation opening

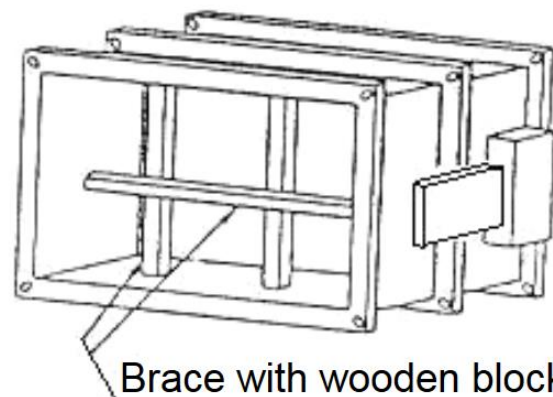
The minimum dimensions of the installation opening that permits correct installation of the rectangular damper is $(B+90) \times (H+90)$ mm. The minimum dimensions of the installation opening for the circular damper is $(D+90)$ mm.



6.3 Embedding / Fixing the damper



WRONG!



Protecting the damper against buckling

The FID S/... p/.. fire damper will work properly if the isolation partition rotation axis is horizontal. If the fire damper must have the axis in the vertical, state this when ordering. In this case the manufacturer adds optional accessories with keep clearance between the damper body and the partition at the damper bottom. If the fire damper must be installed with the rotation axis vertical when the device has already been delivered on site, follow Section; *Fire dampers with vertical rotation axis*.

The trigger control gear may be located on the right or on the left-hand side of the damper at any direction of air flow.

Before embedding/fixing, place the damper axially aligned within the partition (the wall or ceiling which separates the fire zones) in the finished installation opening. Level the device and secure in place. Next, actuate the damper isolation partition by hand to verify that the rotation is correct (i.e. there is no collision

with the damper casing parts, etc.). Close the damper isolation partition. Install the bracing as shown in the figure. Carefully fill the gap between the damper casing and the wall with a proper mortar formula that ensures proper wall and damper fire resistance, and do not let the mortar get into the damper actuation components (i.e. the trigger control gear, the isolation partition, gaskets and stops). To do this, the fire damper must be covered with plastic film or other suitable material and remain so until the embedding and finishing is done. The damper must remain closed until the mortar has cured. Once the mortar has cured, remove the temporary supports and open and close the fire damper to verify its performance. When installing the fire damper in a panel wall, fill the space between the damper casing and the wall with mineral wool certified for A1 fire protection rating; the mineral wool density and thickness must ensure fire resistance no less than the fire resistance of the wall in which the fire damper is installed. The filled space must additionally be sealed with a proper mortar or putty that has the fire resistance required for the wall.

In order to ensure the fire resistance of the fire separation element, it is mandatory to keep the embedding envelope boundary: the damper isolation partition rotation axis must be within the wall envelope.

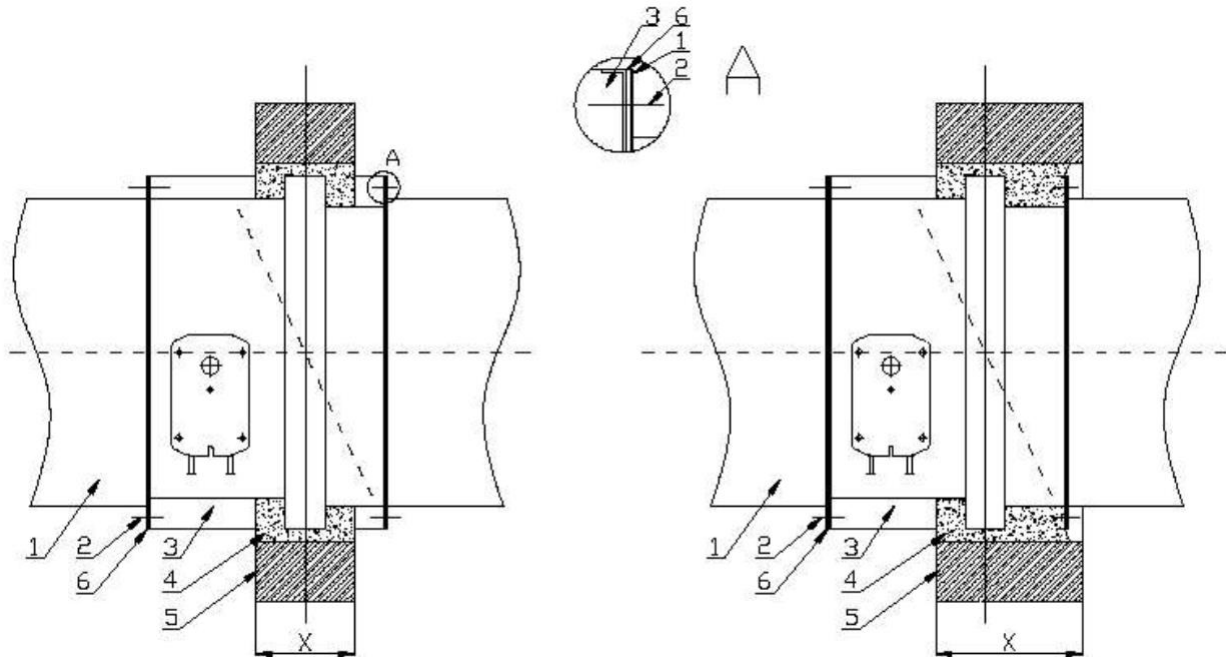
The embedded fire damper must be coaxially connected to the ventilation duct. Protect the fire damper casing from damage, and specifically from straining the casing during the installation process. The fire damper cannot bear the load of the ventilation duct or the ventilation system in which it is installed. Drilling the damper enclosure or driving screws, bolts or other elements that pierce through the casing to the inside of the damper is prohibited. Once connected to the ventilation ducts, re-verify the fire damper performance.

During the installation of the FID S/... p/... fire damper mind specifically that the thermal trigger (a fusible element) must not be damaged or exposed to high temperature (from fire, and welding/soldering equipment), which might trigger it (it is a single use element and not subject to warranty replacement). Do not expose the intumescent gaskets installed in the fire damper casing to high temperature. Swollen gaskets make it impossible to close the damper. With the installation finished, carefully clean the fire damper and make sure that there is no debris which could influence proper performance of the device.

ⓘ CAUTION

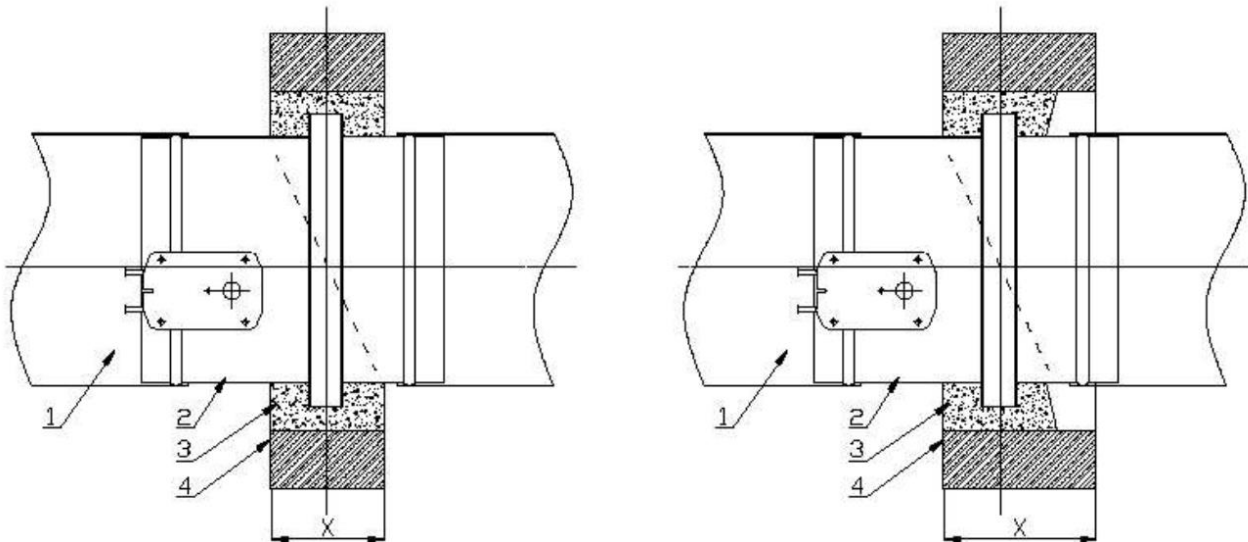
It is crucial to keep the device embedding envelope so that the trigger control gear is outside of the wall envelope and easily accessible.

6.3.1 Installation example of the FID S/...p/P fire damper in masonry and concrete walls



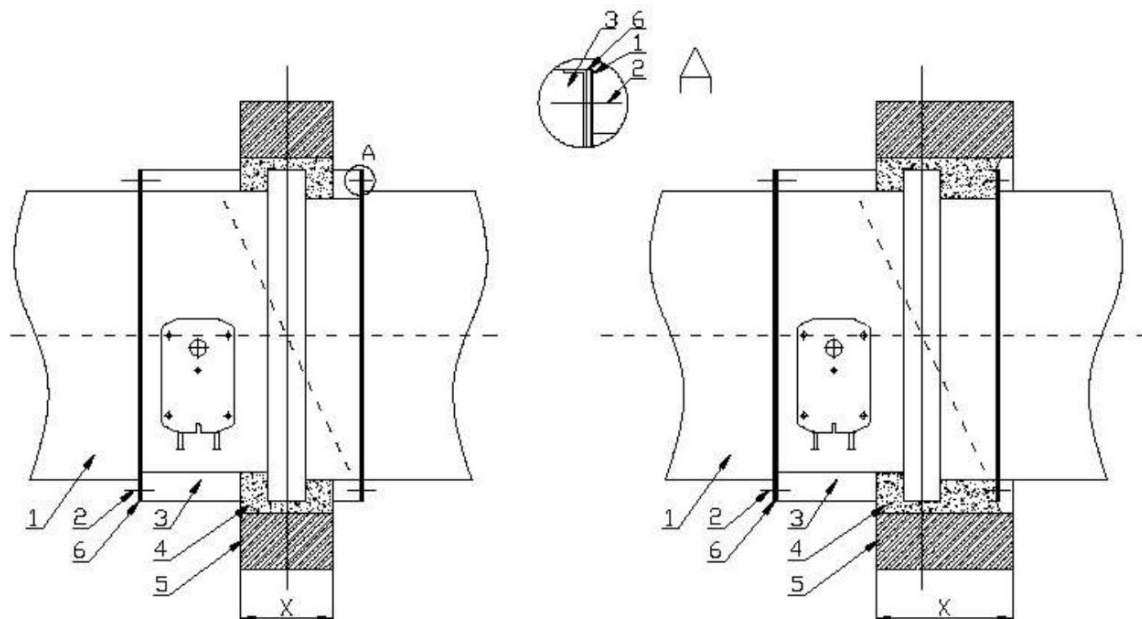
- 1. Ventilation duct
- 2. Sheet-metal screw, ST4.2x16
- 3. FID S/... p/P fire damper, BxH
- 4. Cement mortar (or other as suitable)
- 5. Masonry wall
- 6. Ventilation-grade seal
- X. Wall thickness

6.3.2 Installation example of the FID/S... p/O fire damper in masonry and concrete walls



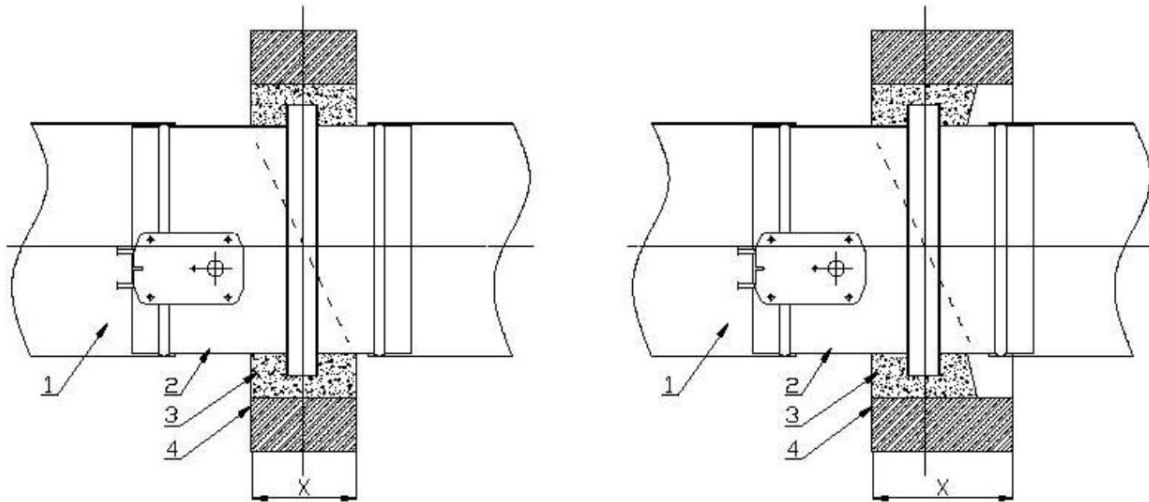
- 1. Ventilation duct
- 2. FID S/... p/O fire damper, ØD
- 3. Cement mortar (or other as suitable)
- 4. Masonry wall
- X. wall thickness

6.3.3 Installation example of the FID S/... p/P fire damper in concrete block or solid brick walls



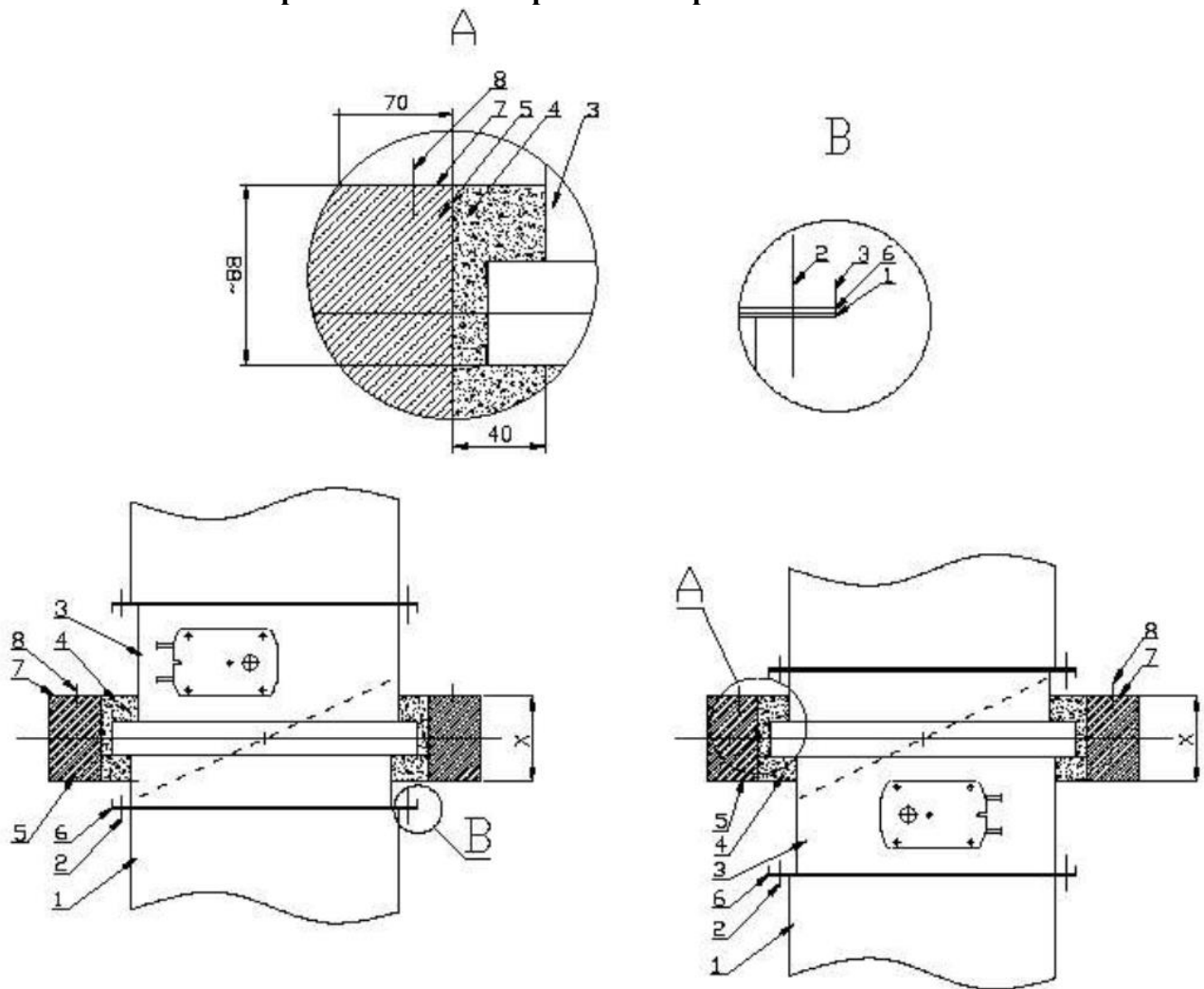
1. Ventilation duct
2. Sheet-metal screw, ST4.2x16
3. FID S/... p/P fire damper, BxH.
4. Cement mortar (or other as suitable)
5. Wall of concrete blocks or solid bricks
6. Ventilation-grade seal
- X. Wall thickness

6.3.4 Installation example of the FID S/... p/O fire damper in concrete block or solid brick walls

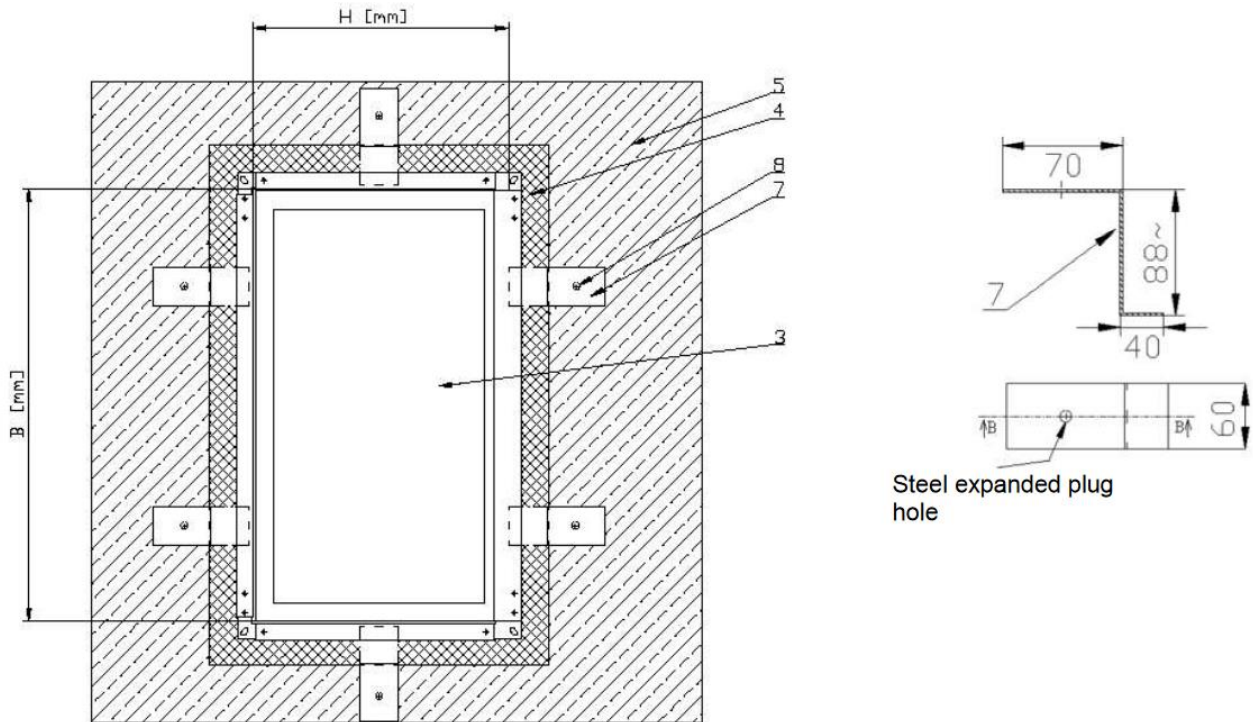


1. Ventilation duct.
2. FID S/... p/O fire damper, $\varnothing D$
3. Cement mortar (or other as suitable)
4. Wall of concrete blocks or solid bricks
- X. wall thickness

6.3.5 Installation example of the FID S/... p/P fire damper in a floor slab

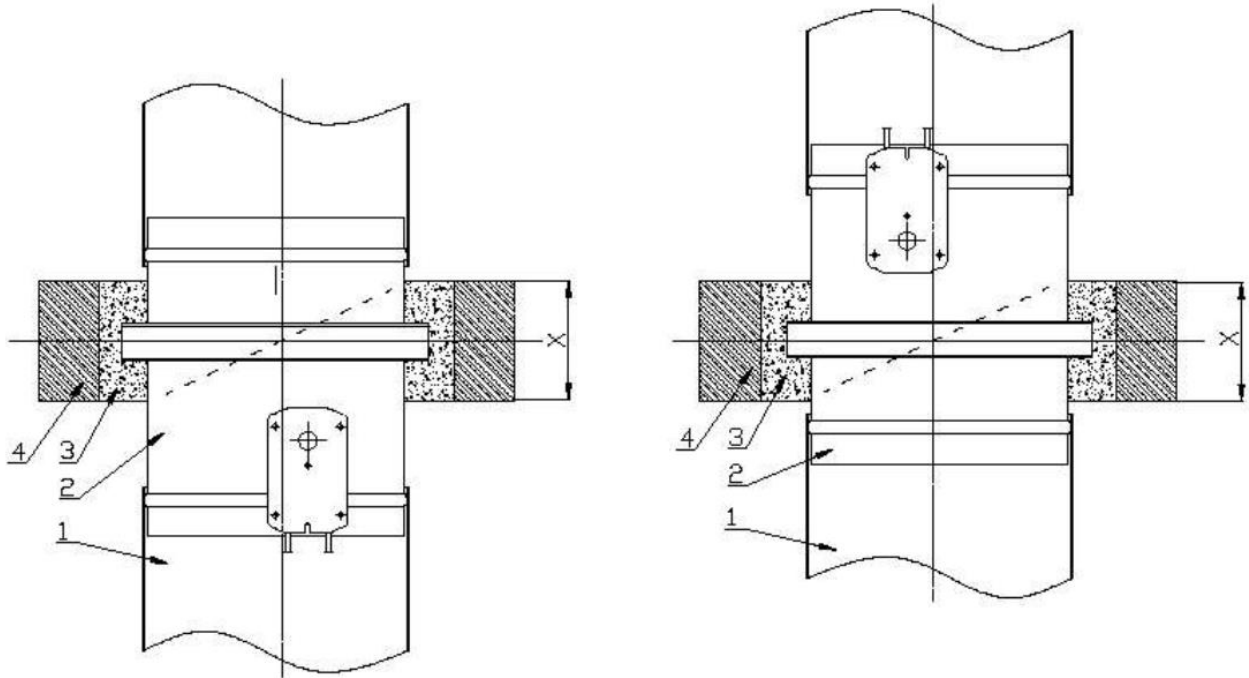


6.3.6 Installation example of the FID S/... p/P fire damper in a floor slab, cont'd



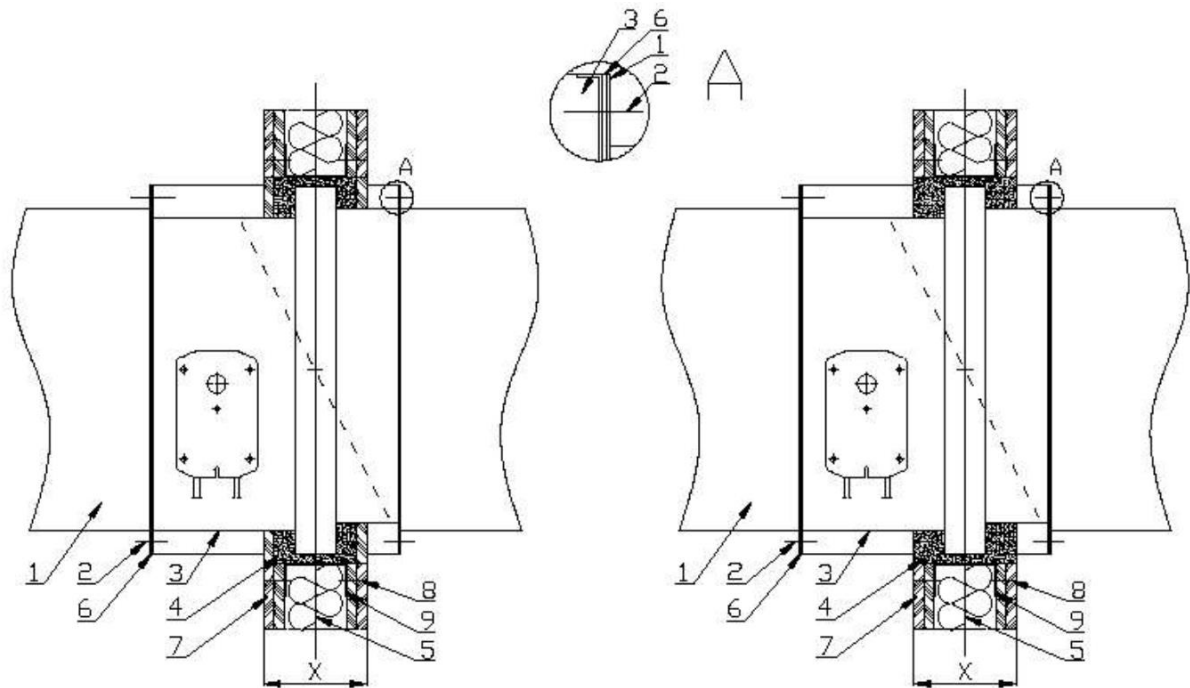
- | | | |
|----------------------------------|---|---|
| 1. Ventilation duct | 4. Cement mortar (or other as suitable) | 7. Installation profile |
| 2. Sheet-metal screw, ST4.2x16 | 5. Floor slab | 8. Steel expanded plug w/M8 metal screw |
| 3 FID S/... p/P fire damper, BxH | 6. High temperature gasket | X. Wall thickness |

6.3.7 Installation example of the FID S/... p/O fire damper in a floor slab



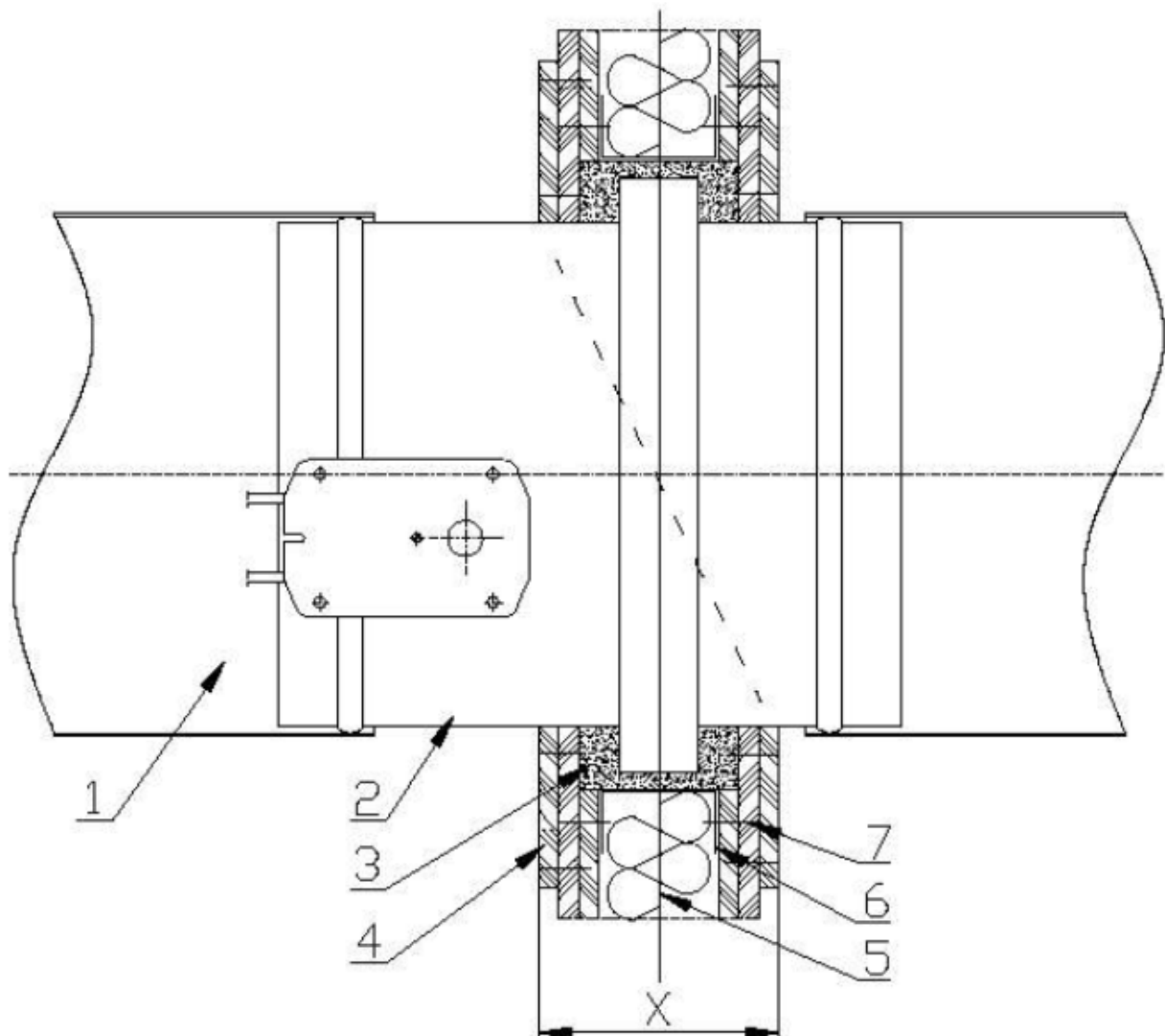
1. Ventilation duct.
2. FID S/... p/O fire damper, ØD
3. Cement mortar (or other as suitable)
4. Floor slab
- X. Wall thickness

6.3.8 Installation example of the FID S/... p/P fire damper in a panel wall



- | | | |
|----------------------------------|---|-----------------------|
| 1. Ventilation duct | 4. Cement mortar (or other as suitable) | 7. Panel wall |
| 2. Sheet-metal screw, ST4.2x16 | 5. Mineral wool, min. density = 80kg/m ³ | 8. Screw, ST5.5x35 |
| 3 FID S/... p/P fire damper, BxH | 6. High temperature gasket | 9. Structural profile |
| | | X. Wall thickness |

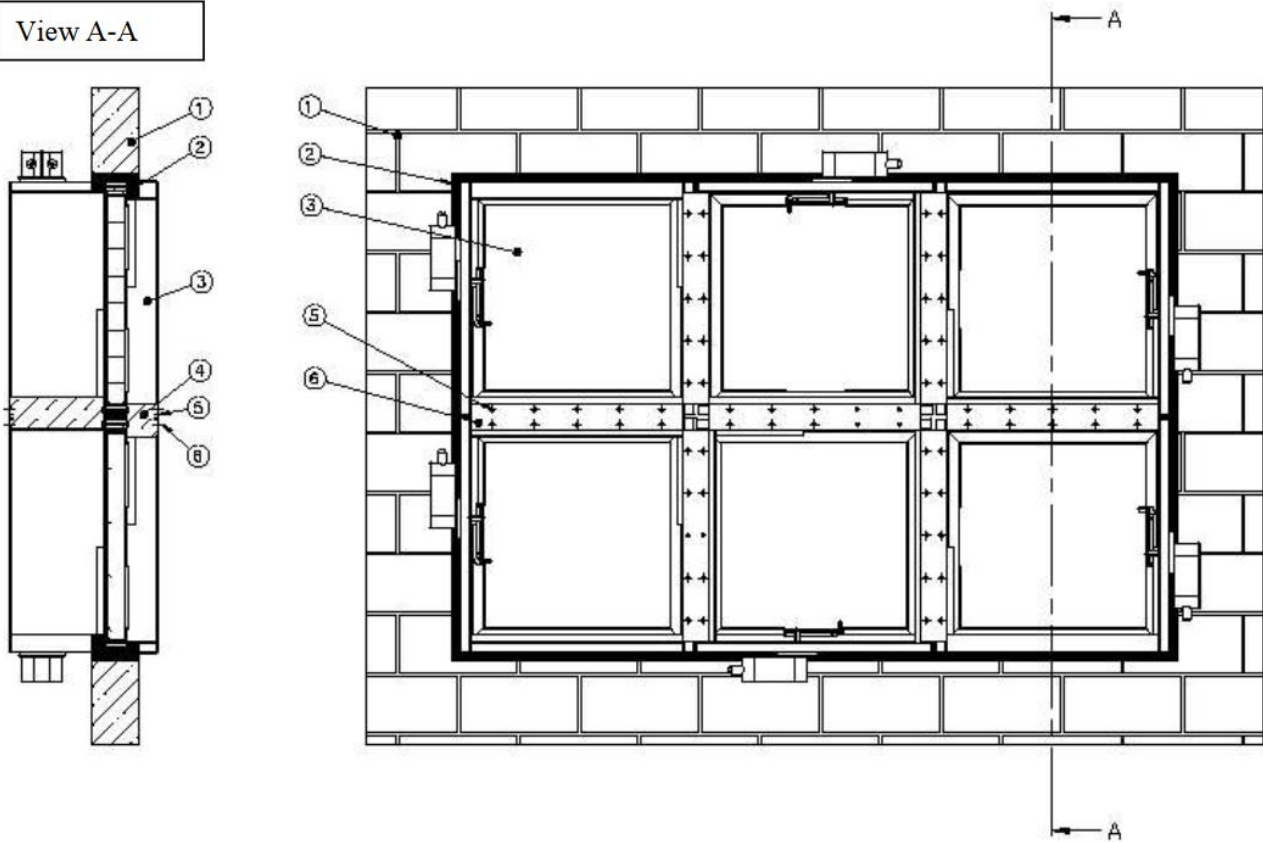
6.3.9 Installation example of the FID S/... p/O fire damper in a panel wall



- | | | |
|---------------------------------|---|--------------------|
| 1. Ventilation duct | 4. Panel wall | 7. Screw, ST5.5x35 |
| 2. FID S/...p/O fire damper, ØD | 5. Mineral wool, min density = 80 kg/m ³ . | X Wall thickness |
| 3. E.g. cement mortar | 6. Structural profile | |

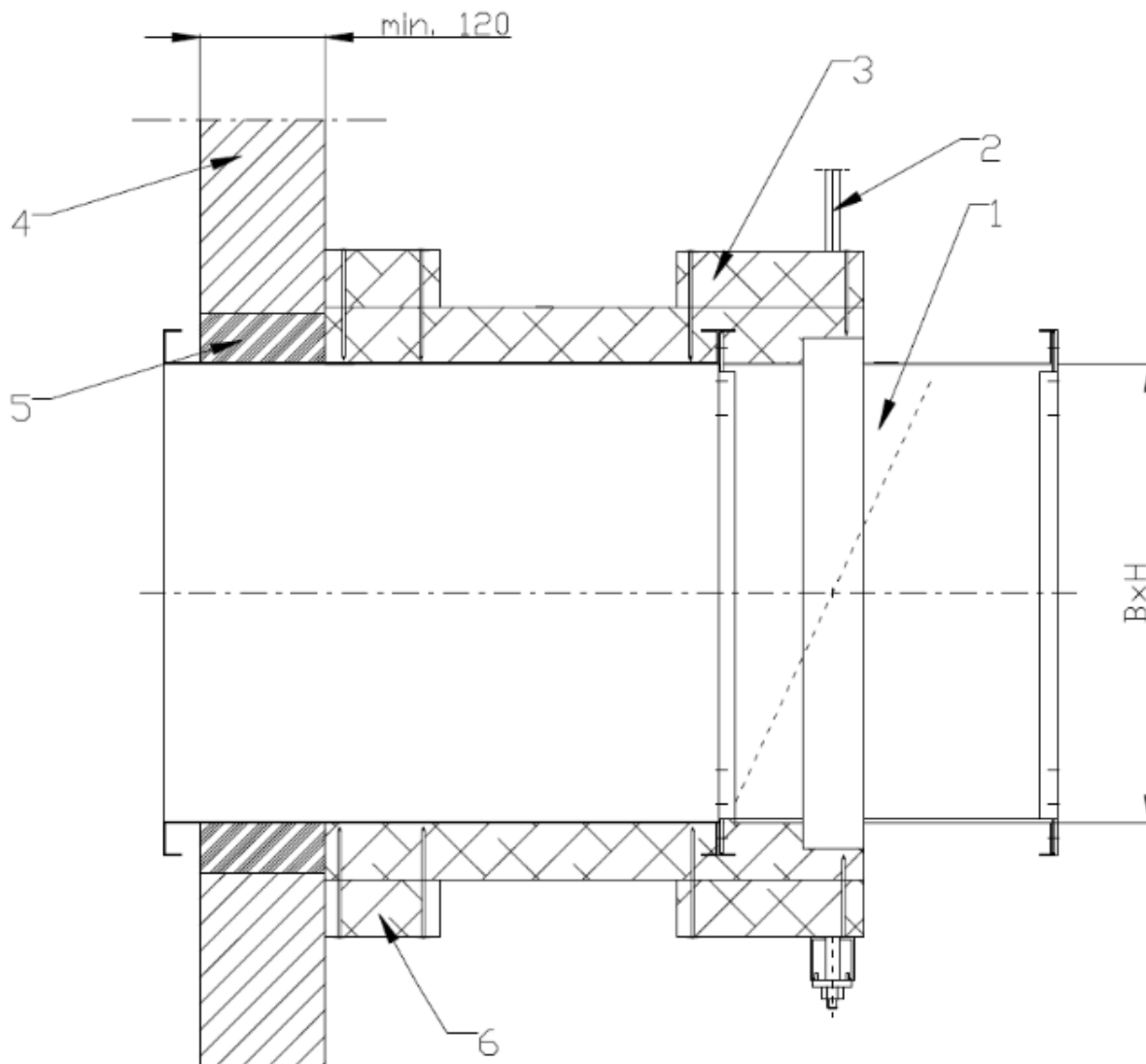
6.3.10 Installation example of the FID S/... p/P fire damper as a multiple damper set (a battery of 6)

View A-A



- | | |
|--|---|
| 1. e.g. a masonry wall | 4. Mineral wool with density of at least 80 kg/m ³ |
| 2. Masonry mortar (or other as suitable) | 5. Installation flat bar, width = 60 mm |
| 3. FID S/... p/P fire damper, BxH | 6. Screw, ST8x16 |

6.3.11 Installation example of the FID S/... p/P outside of walls



- | | |
|--|--|
| 1. FID S/... p/P fire damper, BxH | 4. Solid wall |
| 2. Threaded rod | 5. Masonry mortar (or other as suitable) |
| 3. Fire protective board that provides fire resistance in class EIS120 | 6. Fire protective band |

6.4 Electronical connections

With the fire damper properly installed and embedded connect the electrical system wiring to the fire damper, if the device features controls or other parts that require electric power supply. The following shows the connection diagrams and basic electrical data for the trigger control gears supplied with the FID S/... p/... fire dampers.

6.4.1 Electrical actuators – electrical information

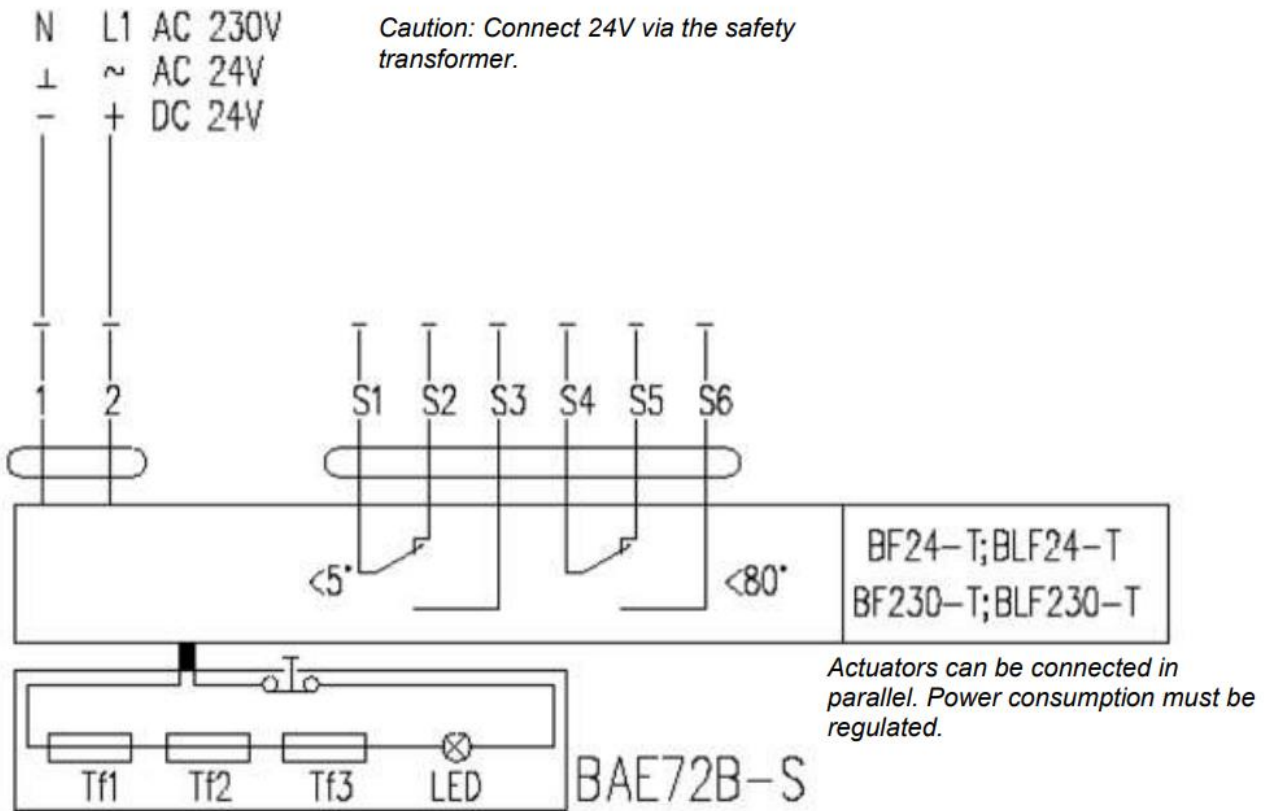
Actuator type	Location of the damper partition
- Belimo BFL series	Open isolation partition – actuator indication 90
- Belimo BFN series	Closed isolation partition – actuator indication 0
- Belimo BF series	Open isolation partition – actuator indication 90
- Belimo BLF series	Closed isolation partition – actuator indication 0
- Belimo BE series	Open partition – actuator indication 0
- Belimo BLE series	Closed partition – actuator indication 90

Technical specifications	BLF 24 (BLF24-T)	BLF230 (BLF230-T)	BF 24 (BF24-T)	BF230 (BF230-T)
Power supply	AC 24V 50/60Hz DC 24 V	AC 220-240V 50/60 Hz	AC 24V 50/60Hz DC 24V	AC 220-240V 50/60 Hz
Power demand:				
- for spring tensioning	5 W	5 W	7 W	8 W
- for spring holding	2.5 W	3 W	2 W	3 W
Sizing (apparent power)	7 VA	7 VA	10 VA	12.5 VA
Appliance class	III	II	III	II
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
auxiliary circuit breaker:	2xSPDT 6 (1.5)A AC 250V	2xSPDT 6 (1.5)A AC 250V	2xEPU 6(3) A, 250V	2xEPU 6(3) A, 250V~
- activation point [degrees]	5°, 80°	5°, 80°	5°, 80°	5°, 80°
Torque:				
- motor	4 Nm	4 Nm	18 Nm	18 Nm
- spring	4 Nm	4 Nm	12 Nm	12 Nm
Cable connection:				
- motor (L = 0.9 m)	2x0.75 mm ²	2x0.75 mm ²	2x0.75 mm ²	2x0.75 mm ²
- auxiliary circuit breaker	6x0.75 mm ²	6x0.75 mm ²	6x0.75 mm ²	6x0.75 mm ²
Movement time: (0-90°)				
- motor	40-75 s	40-75 s	140 s	140 s
- return spring	≈20 s	≈20 s	≈16 s	≈16 s
Operating temperature range	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C
Sound pressure level:				
- motor	max 45 dB (A)	max 45 dB (A)	max 45 dB (A)	max 45 dB (A)
- spring	~ 62 dB (A)	~ 62 dB (A)	~ 62 dB (A)	~ 62 dB (A)

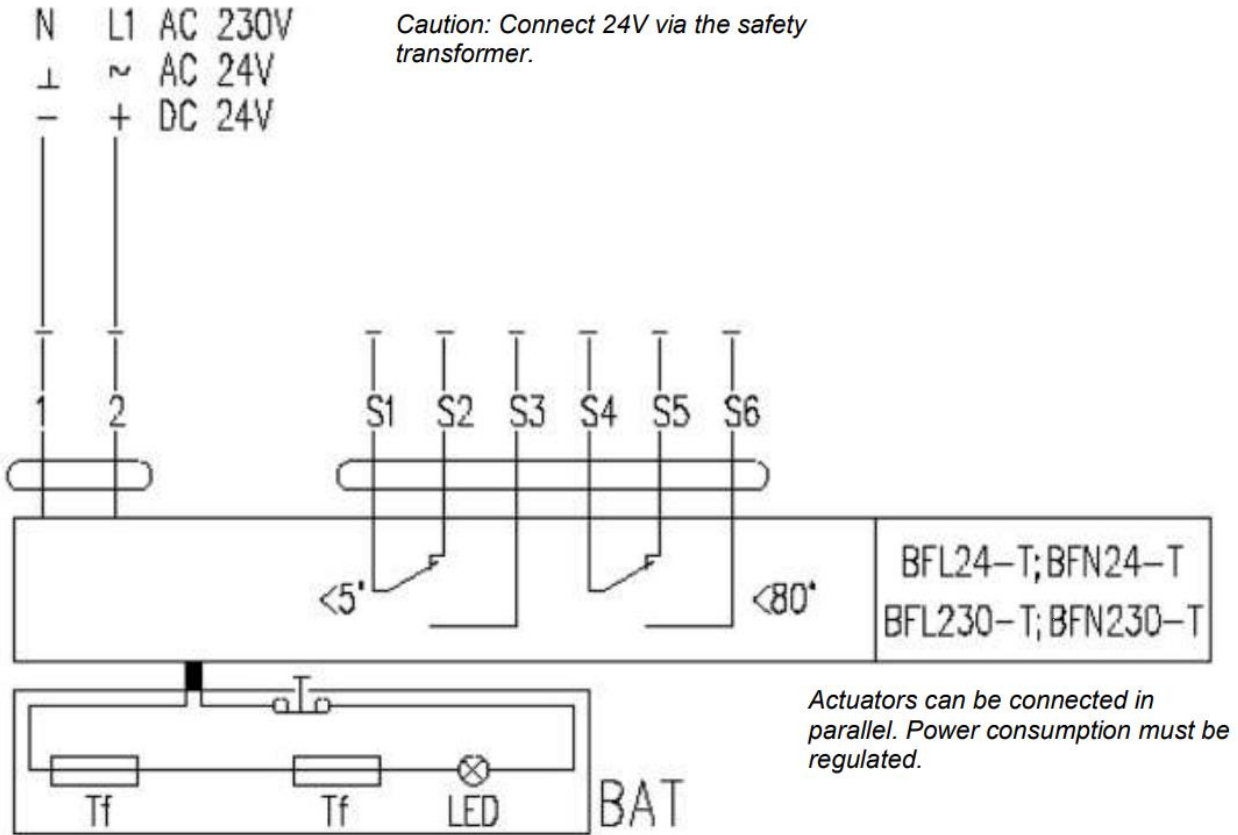
Technical specifications - Actuators	BE24	BE 230	BLE24	BLE 230
Power supply	AC 24V 50/60Hz DC 24V	AC 220-240V 50/60 Hz	AC 24V 50/60Hz DC 24V	AC 220-240V 50/60 Hz
Power demand: - for spring tensioning - for spring holding	12 W 0.5 W	8 W 0.5 W	7.5 W 0.5 W	5 W 1 W
Sizing (apparent power)	18 VA	15 VA	9 VA	12 VA
Appliance class	III	II	III	II
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
auxiliary circuit breaker:	2xSPDT 3A AC 250V	2xSPDT 3A AC 250V	2xSPDT 6(3) A, 250V	2xSPDT 6(3) A, 250V~
- activation position [degrees]	3°, 87°	3°, 87°	3°, 87°	3°, 87°
Torque: - motor - locking	40 Nm 50 Nm	40 Nm 50 Nm	15 Nm 20 Nm	15 Nm 20 Nm
Cable connection: - motor (L 0.9 m) - auxiliary circuit breaker	3x0.75 mm ² 6x0.75 mm ²	3x0.75 mm ² 6x0.75 mm ²	3x0.75 mm ² 6x0.75 mm ²	3x0.75 mm ² 6x0.75 mm ²
Movement time: (0-90°) - motor	60 s	60 s	60 s	60 s
operation temperature – range	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C
Sound pressure level: - motor	max. 62 dB (A)	max. 62 dB (A)	max. 62 dB (A)	max. 55 dB (A)

Technical data – actuators	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 220-240V 50/60 Hz
Power demand: – when putting the spring under tension – when in standby	2.5 W 0.7 W	3,5 W 1.1 W	4 W 1.4 W	5 W 2.1 W
Apparent power	4 VA	6.5 VA	6 VA	10 VA
Protection class	III	II	III	II
IP rating	IP 54	IP 54	IP 54	IP 54
auxiliary switch:	2 x PDT 3 (0.5)A AC 250V	2 x PDT 3 (0.5) A AC 250V	2 x SPDT 3(0.5) A, 250 V	2 x SPDT 3(0.5) A, 250 V
– activation point [degrees]	5°, 80°	5°, 80°	5°, 80°	5°, 80°
Torque: – motor – spring	4 Nm 3 Nm	4 Nm 3 Nm	9 Nm 7 Nm	9 Nm 7 Nm
Wire connection: – motor (length: 0.9 m) – auxiliary switch	2 x 0.75 mm ² 6 x 0.75 mm ²	2 x 0.75 mm ² 6 x 0.75 mm ²	2 x 0.75 mm ² 6 x 0.75 mm ²	2 x 0.75 mm ² 6 x 0.75 mm ²
Movement time (0–90°): – motor – return spring	60 s ~ 20 s	60 s ~ 20 s	60 s ~ 20 s	60 s ~ 20 s
Working temperature range	–30 ...+55°C	–30 ...+55°C	–30 ...+55°C	–30 ...+55°C
Sound pressure level: – motor – spring	max 43 dB (A) ~ 62 dB (A)	max 43 dB (A) ~ 62 dB (A)	max 55 dB (A) ~ 67 dB (A)	max 55 dB (A) ~ 67 dB (A)

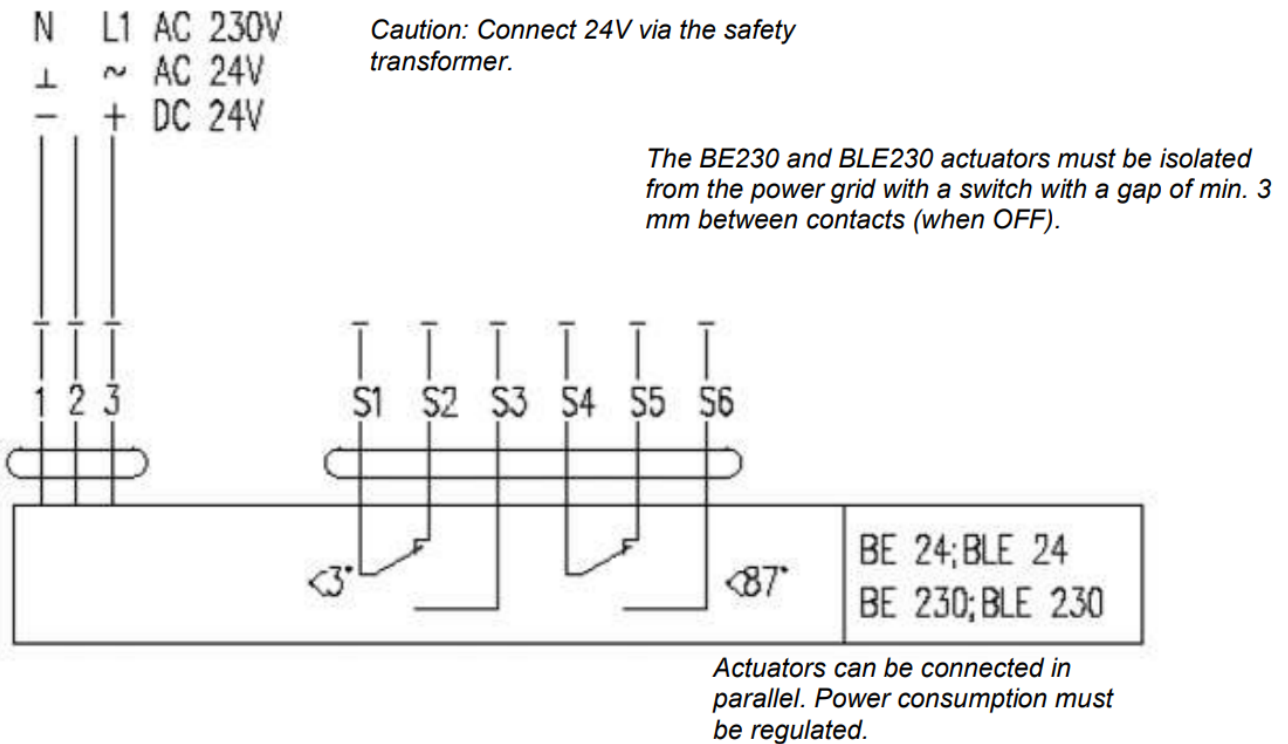
6.4.2 Connection diagram for actuators BF24-T, BLF24-T, BF230-T and BLF230-T actuators



6.4.3 Connection diagram for actuators BFL24-T, BFL230-T, BFN24-T and BFN230-T actuators



6.4.4 Connection diagram for actuators BE24, BLE24, BE230 and BLE230 actuators



Note:

The BE and BLE actuator operating control requires a three-wire system. The actuator sense of rotation is switched by applying the supply voltage to terminal 2 or 3, depending on the desired sense.

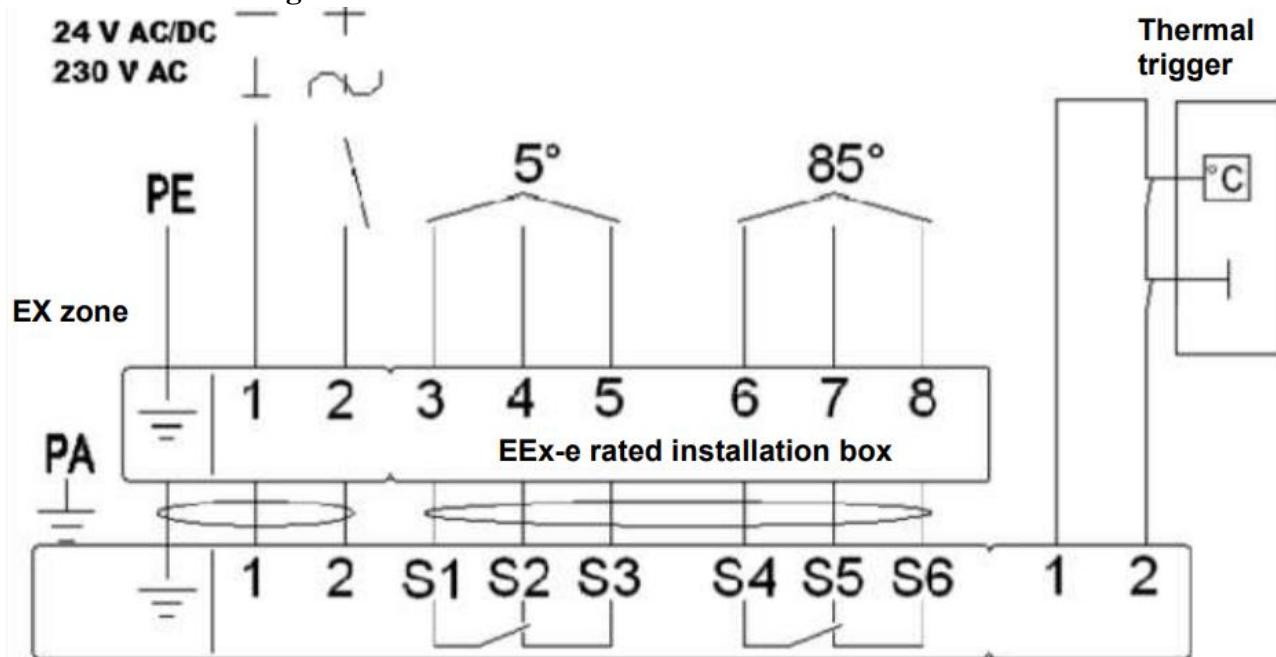
The location of the limit switches for all types of actuators is shown for the position without voltage.

For proper operation of a device equipped with electrical actuators, it is recommended that the rated voltage housed tolerance of $24V \pm 10\%$ or $230V \pm 10\%$. Power supply devices other than listed above may cause malfunction and will not be covered by the warranty conditions.

6.5 EXBF actuators

Technical data	EXBF B	EXBF A
Zone	1, 2, 21, 22	
ATEX classification	II 2 GD EEx d IIC T6	
Power supply	24 V AC $\pm 20\%$ 50/60 Hz / 24 VDC-10/+20%	230 V AC $\pm 14\%$ 50/60 Hz
Power demand: - for spring tensioning - for spring holding	7 W 2 W	8 W 3 W
Sizing (apparent power)	10 VA	12.5 VA
Ingress protection rating	IP 66	IP 66
Auxiliary circuit breaker: - activation position	2 x SPDT 6A (3) max 250 V AC 5°, 80°	2 x SPDT 6A (3) max 250 V AC 5°, 80°
Torque: - motor - spring	18 Nm 12 Nm	18 Nm 12 Nm
Movement time: (90°) - motor - return spring	150 s ≈ 20 s	150 s ≈ 20 s
ambient temperature	-20 ...+50°C	-20 ...+50°C

6.5.1 Connection diagram for EXBF actuators



Caution:

For proper operation of a device equipped with electrical actuators, it is recommended that the rated voltage housed tolerance of $24V \pm 10\%$ or $230V \pm 10\%$. Power supply devices other than listed above may cause malfunction and will not be covered by the warranty conditions.

6.6 RST/KW1 trigger control gear

The RST/KW1/S version has the limit switches installed in the gear itself. The electrical connections shall be made by connecting the properly labelled conductors to the electrical system. A fusible trigger is installed in the gear.

	KW1/S....	KW1/24I	KW1/24P....	KW1/230I....	KW1/230P....
Supply voltage	X	24 V – 48 V DC	24 V – 48 V DC	230V AC	230V AC
Power consumption	X	3.5W	1.6W	4.5W	2.5W
Holding force	X	12 daN	12 daN	12 daN	12 daN
Thermal trigger trip point	72°C +2°C				
WK1d / WK2d limit switch	NO/NC (switching contact) 5A, 230V AC				
Switch trigger	3°, 87° – tolerance: +/- 2°				
Limit switch operating temperature	-25 ...+85°C				
Electric connection	X	- release: cable 0.6 m, 2x0.5 mm ² - limit switch: cable 0.6 m, 6x0.5 mm ²			
Rotation angle	92°				
Movement time	Max. 2s – spring				
Sense of rotation	CCW				
Gear weight	1.2 kg	1.4 kg	1.4 kg	1.5 kg	1.5 kg

KW1 gear power supply:	WK1 limit switch	WK2 limit switch
Wire number: 1-2	Wire number: 3-4 – NO (normally opened)	Wire number: 6-7 – NO (normally opened)
	Wire number: 4-5 – NC (normally closed)	Wire number: 7-8 – NC (normally closed)

⚠ Caution! - Location of limit switches is show for the fire damper in the safety position

For proper operation of a device equipped with electrical actuators, it is recommended that the rated voltage housed tolerance of $24V \pm 2\%$ or $230V \pm 2\%$. Power supply devices other than listed above may cause malfunction and will not be covered by the warranty conditions.

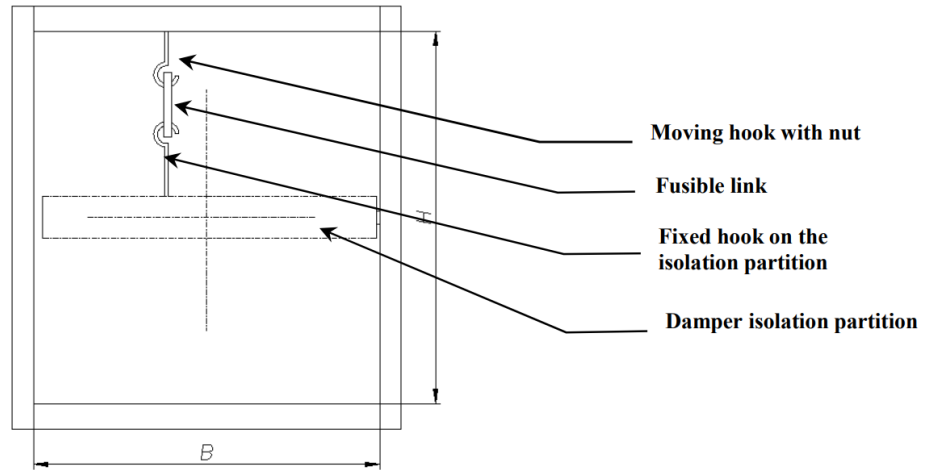
6.7 RST trigger control gear

In the RST version the limit switches are independent units installed inside the fire damper casing. The fusible release is located on the damper isolation partition. The driving spring is installed on the damper isolation partition. Installation of the RST fusible release:

- Switch the fire damper isolation partition open
- Install the fusible link on the hooks attached to the fire damper casing and the isolation partition
- Tighten the nut to lock the hook on the fire damper casing

i Caution

The drawing is indicative only and applies both to the rectangular and circular form versions.



6.7.1 Independent limit switches – RST version

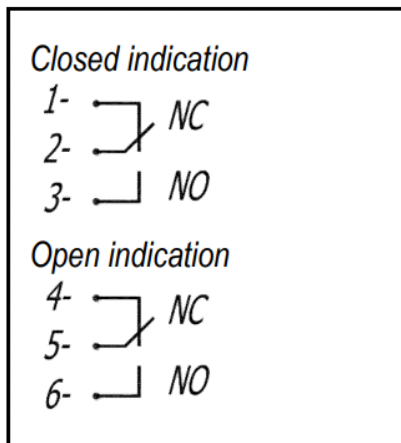
WK1 – single switch – indicates that the fire damper is closed.

WK2 – tandem of switches – indicates that the fire damper is closed or open.

6.8 Switch technical specifications

WK1 and WK2 limit switch	1xNO/1xNC SPDT (switching contact) 5A, 230V AC
Limit switch operating temperature	-25 ...+85°C
Body	Plastic

6.8.1 Electric connection diagram of WK1 and WK2 limit switches

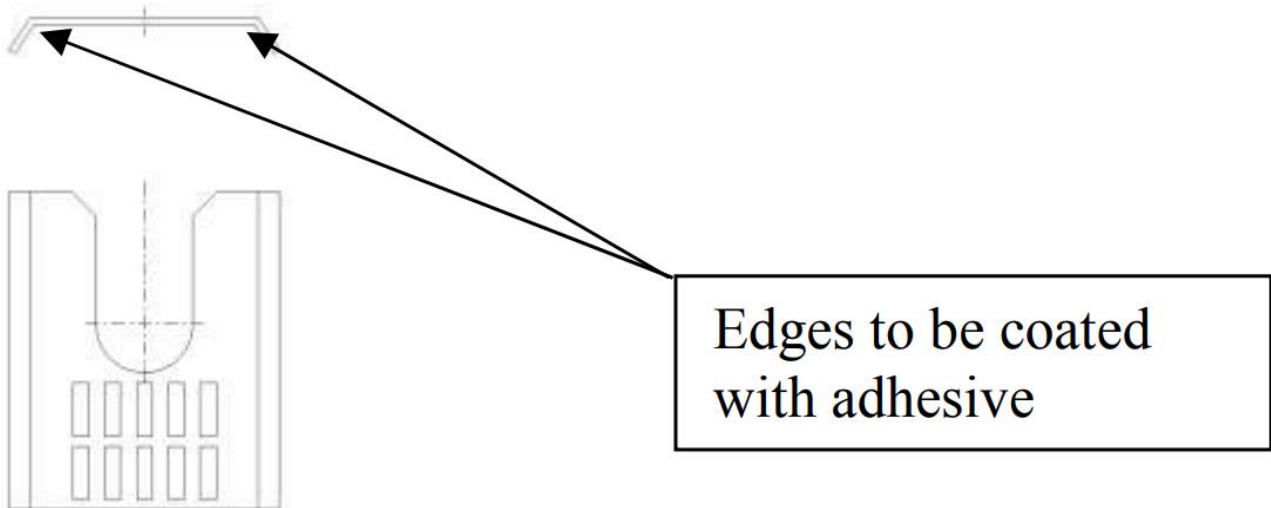


i Caution

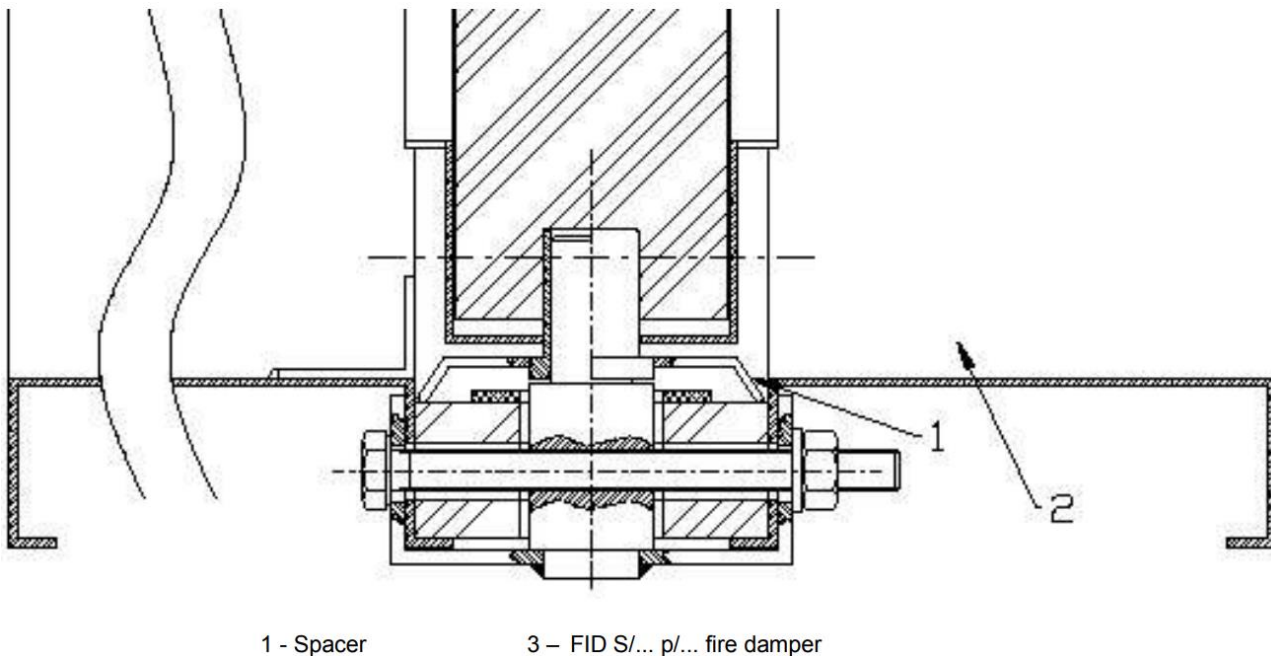
When the isolation partition closes, the closed indication limit switch is switched over (contacts 2-3 are closed).

6.9 Fire damper with vertical rotation axis

Before embedding a fire damper with the vertical rotation axis and if not otherwise agreed with the manufactures, place a spacer at the bottom part of the damper isolation partition axis of rotation, i.e. between the casing and the isolation partition. Cover the entire edge bending length of the spacer with the Würth Adhesive Sealant K+D. The adhesive will keep the spacer in place.



6.9.1 Space between the isolation partition and the casing – installation location



ⓘ Caution:

The manufacturer shall not be liable for any damage due to improper or inconsistent execution of the above.

7. Transport and storage conditions

The fire dampers are packed in cardboard boxes or on pallets. The fire dampers are protected against damage by plastic film or another cover. The fire dampers may be transported on any vehicle which protects them from weather. The fire dampers loaded on the vehicle shall be secured from shifting in transit. Before installing the fire dampers visually inspect each unit. Do not handle the damper by holding the connection cable or rest the damper on its trigger control gear. Do not strike or drop the fire damper. When handling and installing, support the fire damper casing sides or edges.

Store the fire dampers in sheltered rooms that protect from outdoor elements. If the fire dampers are stored on the ground, place them on spacers to prevent damage.

8. Maintenance and service

The equipment from Safevent ApS requires periodic technical inspection and maintenance at least every 12 months throughout its operating life, i.e. during the warranty and post-warranty period. Inspection and maintenance may only be carried out by the manufacturer or contractors authorised by the manufacturer to service its products. Regular service inspections of fire protection equipment is mandatory in Poland according to § 3 Section 3 of the Polish Regulation of the Ministry of the Interior and Administration of 7 June 2010 on the fire protection of buildings, other structures and areas (Polish Journal of Laws, Year 2010, No. 109 Item 719).

Do these recommended actions in the inspection intervals:

- Check the electrical connections, especially for all mechanical damage.
- Inspections of the condition of the supply voltage for the devices, which allowed the following tolerances:
 - 24V±10% for electric actuators
 - 24V±2% for electromagnetic release mechanism
 - 230V ±10% for electric actuators
 - 230V±2% for electromagnetic release mechanism
- Check the equipment casing, especially for all mechanical damage.
- Check for any obstructions to proper performance of the equipment.

To facilitate the activities under service inspection, servicing and warranty claim response, e.g. visual inspection or repairs, the equipment user/operator shall provide physical access to the equipment by removing thermal insulation, suspended ceiling, and other installations, as required and applicable to warrant unobstructed access. Inspection ports, e.g. type KRW are recommended for equipment installed in ducts. In the case of roof mounted equipment, provide access to the area (via ladders or elevated platforms).

Refer all matters related to technical inspection, maintenance and servicing of this equipment to Safevent. Contact information can be found on in English on: www.safevent.dk/en and in Danish on www.safevent.dk/da

9. Warranty conditions

1. Safevent ApS grants 12 months of warranty for the equipment quality from the date of purchase, unless the sales contract states otherwise.
2. If physical defects of equipment are found during the warranty period, Safevent ApS warrants and represents to remove them in 21 days from serving the written warranty claim with the proof of purchase or sales contract, subject to Item 6.
3. Safevent ApS has the right to extend the time of repair if the defect removal is complicated or requires purchase of custom components or spare parts.
4. The warranty liability only covers all defects arising from causes present in the equipment at the date of sale.
5. Defects caused by improper operation or otherwise as listed in Item 6 herein, the buyer / warranty beneficiary will be charged with the costs of their removal.
6. The warranty does not cover:
 - Any damage or failure of the equipment caused by improper operation, tampering, failure to conduct periodic technical inspection and/or maintenance established in the Technical Manual “Maintenance and service”.
 - Any damage beyond reasonable control of Safevent ApS, and specifically: caused by force majeure, such as torrential rainfall, flooding, hurricanes, inundation, lightning strike, power grid overvoltage, explosion, hail, collision with aircraft, fire, avalanche, landslide and

indirect damage due to those causes. Torrential rainfall is understood as any rainfall with the effectiveness factor of 4 or higher according to the definition of the Polish Institute of Meteorology and Water Management - National Research Institute (IMGW-PIB). If the effectiveness factor value specified in the preceding sentence cannot be reasonably established, the actual condition and extent of damage shall be considered at the site of their origin as the action of torrential rain. Hurricane is understood as any wind with a minimum speed of 17.5 m/s (and damage shall be recognised as caused by hurricanes if the action of such weather phenomenon has been found in the direct vicinity of the damaged property).

- Damage due to failure to immediately report any defect found.
 - Deterioration in the quality of coatings due to natural weathering/ageing.
 - Defects caused by abrasive or aggressive cleaning agents.
 - Damage caused by aggressive external influence, specifically chemical or biological in nature, or when the origin of which is related to the production processing or activity carried out within the facility protected by the equipment or in its direct vicinity.
 - Wearing parts and consumables (e.g. gaskets/seals), unless they have defects of workmanship and/or material.
 - Damage caused by improper transport, handling, unloading and/or storage of the equipment.
 - Damage caused by installation of the equipment in violation of this Technical Manual and/or good construction practice.
 - The equipment and/or parts thereof with removed or damaged nameplate (rating plate) and/or warranty seals.
7. Submit each warranty claim to Safevent ApS in 7 days from the date of discovery of a warranty eligible defect.
 8. Submit warranty claims by calling at: tel. +45 88 63 89 00, by e-mail: gb@safevent.dk or by traditional mail: Safevent ApS, Mads Clausens Vej 6, 9800 Hjørring, Denmark.
 9. The buyer/warranty rights holder is required to operate the equipment properly and carry out technical inspection and maintenance according to the Technical Manual "Maintenance and service".
 10. This warranty shall be made immediately void and null if:
 - The buyer/warranty rights holder modifies the product design without prior authorisation from Safevent ApS.
 - Periodic technical inspection and/or maintenance is not carried out per schedule and/or is carried out by unauthorised personnel or service providers not authorised to do so by Safevent ApS and/or the equipment has not been properly operated.
 - Unauthorised personnel attempts any intervention in the product outside of the normal operation and maintenance of this equipment.
 11. Any circumstances listed in Item 10 will relieve Safevent ApS from the obligation of surety.
 12. The defects may be removed if the warranty claimant provides free access to facilitate this, especially to the rooms where the equipment has been installed, and provides the necessary inspection access, removal of thermal insulation systems, suspended ceiling, and any other installations which obstruct access to the equipment, etc.

The relevant provisions of the Polish Civil Code shall apply to all matters not regulated in these Warranty Terms & Conditions