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OPERATION
AND MAINTENANCE MANUAL

Fire damper
type mcr FID S/… c/P

Version FID C 16.07.04.4

FIRE VENTILATION SYSTEMS DEPARTMENT

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Labelling used in the operation and maintenance manual

■ Option available
□ Option unavailable

NOTE

With the date of publication of the operation and maintenance manual, the previous versions are no longer valid.
The operation and maintenance manual does not concern the dampers manufactured before the date of its publication.

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. THE SUBJECT OF THE MANUAL

This manual concerns the entire group of single-plane fire dampers type mcr FID S/X c/P. Observing recommendations included in the manual ensures correct function of the device in terms of fire protection of rooms as well as safety of the system users.

3. DEVICE INTENDED USE

Application

Single-plane fire dampers type mcr FID S/X c/P may be used:

- [■] as shut-off fire dampers – mcr FID S/S c/P
- [ ] as shut-off fire dampers for fire ventilation systems – mcr FID S/V c/P
- [ ] as shut-off fire dampers for mixed fire ventilation systems – mcr FID S/M c/P
- [ ] as transfer dampers – mcr FID S/T c/P
- [ ] as relief dampers – mcr FID S/G c/P

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

Fire resistance

Damper type mcr FID S/S c/P have the fire resistance of:

[ ] EI60S	[ ] /S	[ ] /V	[ ] /M	[ ] /T	[ ] /G	[■] EI120S	[■] /S	[ ] /V	[ ] /M	[ ] /T	[ ] /G
[ ] EI60	[ ] /S	[ ] /V	[ ] /M	[ ] /T	[ ] /G	[ ] EI120	[■] /S	[ ] /V	[ ] /M	[ ] /T	[ ] /G
[ ] E60S	[ ] /S	[ ] /V	[ ] /M	[ ] /T	[ ] /G	[ ] E120S	[■] /S	[ ] /V	[ ] /M	[ ] /T	[ ] /G
[ ] E60	[ ] /S	[ ] /V	[ ] /M	[ ] /T	[ ] /G	[ ] E120	[■] /S	[ ] /V	[ ] /M	[ ] /T	[ ] /G

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

Performance versions

Dampers mcr FID S/S c/P may be performed as:

- [■] Rectangular dampers
- [ ] Rectangular dampers with round connections
- [ ] Round dampers

Dimension type series

Dampers mcr FID S/S c/P are performed in the following dimensions:
Width: between 200 and 800 mm
Height: between 200 and 400 mm
Width: between 296 and 390 mm
Apart from the standard dimensions there is a possibility of performing dampers with intermediate dimensions. The maximum surface of dampers of type mcr FID S/S c/P equals: 0.32 m^2. The minimum surface of the dampers equals 0.04 m^2.

4. DEVICE DESIGN AND PRINCIPLE OF OPERATION

Design

The single-plane dampers mcr FID S/S c/P are made of an enclosure with a rectangular cross-section, a portable shut-off partition and a release and control mechanism activated manually or automatically after the thermal release is activated. The damper enclosure is made of a steel, galvanised steel sheet, or a stainless steel one. In the damper enclosure, on its circumference, the insulation perforation with the relevant width is performed. The shut-off partition of dampers is made of a non-flammable plate and is set in a sheet reinforcement profile. On the enclosure, in the place where the insulation is performed, there is a swelling gasket. The sealing at the partition circumference is effected by a rubber gasket installed on the partition. The enclosure is ended from both ends with flange connections.

Action

The principle of action and behaviour of single-plane dampers mcr FID S/X c/P depends on the version of their application:

- ■ **shut-off fire dampers – mcr FID S/S c/P**

  In normal operating position, the dampers are open. Closing the dampers (safety position) takes place:
  - ■ automatically, by activation of the thermoelectric release
  - ■ manually, by pressing the control button at the thermoelectric release
  - ■ remotely, by activation of an electric axial actuator with a return spring, as a result of removing its supply voltage
  - ■ automatically, by activation of the thermal release and the actuation spring
- ☐ **shut-off fire dampers for fire ventilation systems – mcr FID S/V c/P**

  In normal operating position, the dampers are closed. Opening the dampers (safety position) takes place:
  - ☐ remotely, by activation of 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 activation of the electromagnetic release and a spring as a result of applying the voltage
- ☐ **shut-off fire dampers for mixed fire ventilation systems – mcr FID S/M c/P**

  In normal operation dampers are closed or open, depending on the function carried out. Opening/closing the dampers (safety position) takes place:
  - ☐ remotely, by activation of the electrical axial actuator without a return spring in order to apply supply voltage to the actuator in the right manner
- ☐ **transfer fire dampers – mcr FID S/T c/P**

  In normal operating position, the dampers are open. Closing the dampers (safety position) takes place:
  - ☐ automatically, by activation of the thermoelectric release
  - ☐ manually, by pressing the control button at the thermoelectric release
  - ☐ remotely, by activation of an electric axial actuator with a return spring, as a result of removing its supply voltage
  - ☐ automatically, by activation of the thermal release and the actuation spring
- ☐ **relief fire dampers – mcr FID S/G c/P**

  In normal operating position, the dampers are open. Closing the dampers (safety position) takes place:
  - ☐ remotely, by activation of an electric axial actuator with a return spring, as a result of removing its supply voltage The actuator has no thermoelectric release.

It is possible to check the correctness of damper co-operation with an electrical actuator manually, for service purposes using a special hex wrench placed in the socket marked on the actuator, and rotated to set the damper partition in the relevant position. Wrench rotation should be done evenly, slowly and carefully. Too quick or too rapid rotation of the key may cause damage of the internal actuator mechanism, or damage of the drive transmission system.

In the integrated version it is possible to check the correctness of damper co-operation with a release and control manually, for service purposes by pressing a lever on the mechanism.

NOTE

In any case it is forbidden to pull directly by the damper partition in order to open or close it. Such an action may cause damage of the devices' self-braking drive mechanism and is not covered by the warranty.

It is recommended that the fire damper were opened and closed when the ventilation system is turned off.

Release and control mechanisms

A release and control mechanism for mcr FID S/x c/P dampers can be:

An electrical motor

☐ 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
☐ BF 24	☐ /S	☐ /V	☐ /M	☐ /T	☐ /G

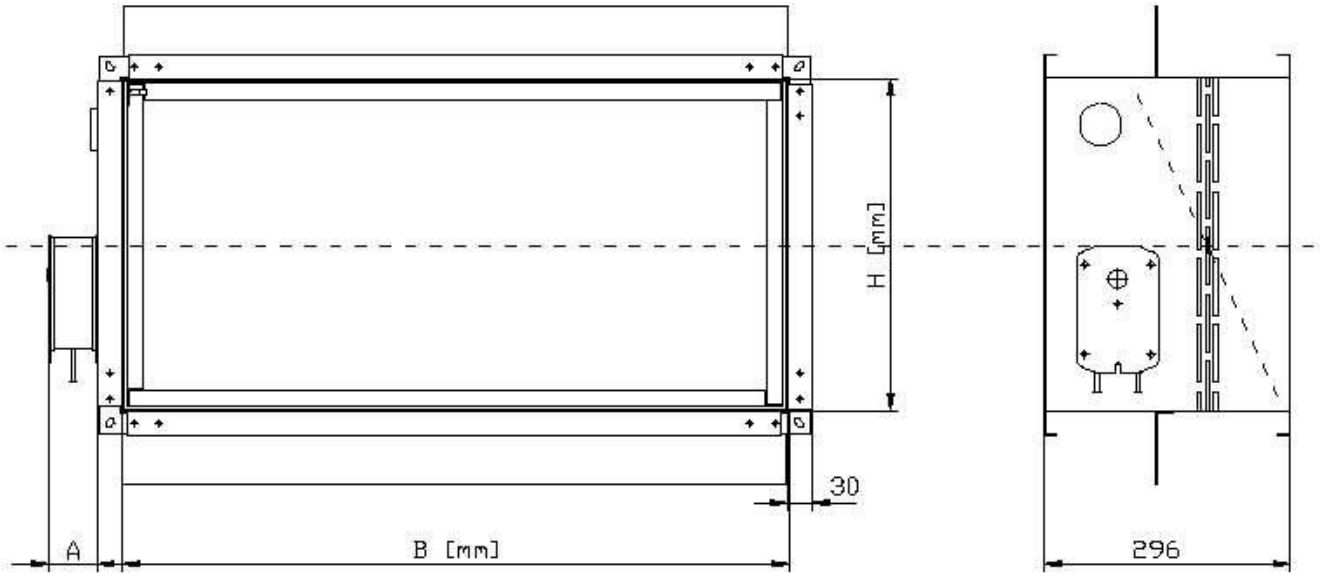
☐ BF 230	☐ /S	☐ /V	☐ /M	☐ /T	☐ /G
■ EXBF 230	■ /S	☐ /V	☐ /M	☐ /T	☐ /G
☐ BLF 24	☐ /S	☐ /V	☐ /M	☐ /T	☐ /G
☐ BLF 230	☐ /S	☐ /V	☐ /M	☐ /T	☐ /G
☐ BE 24	☐ /S	☐ /V	☐ /M	☐ /T	☐ /G
☐ BLE 230	☐ /S	☐ /V	☐ /M	☐ /T	☐ /G
■ BFL 24-T(-ST)	■ /S	☐ /V	☐ /M	☐ /T	☐ /G
☐ BFN 24-T	☐ /S	☐ /V	☐ /M	☐ /T	☐ /G
■ BF 24-T-TL	■ /S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

A spring mechanism:

■ 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

Main dimensions



Mcr FID S/X c/P damper – main dimensions

	BF	BLF	BFL	BFN	BE	BLE	RST/KW1	RST	EXBF
A [mm]	65	65	53	57	76	62	80	70	175

5. DEVICE LABELLING

mcr FID S / x c/P 400 (B) x 400 (H) / [RST] / WK1

- WK1 – Additional equipment
- [RST] – Release and control mechanism
- 400 (B) x 400 (H) – Dimensions of an active opening in [mm]
- x – Application: S, V, T, M, G
- S – Damper type

6. DEVICE ASSEMBLY

NOTE
During the assembly of dampers and the finishing works, take into account the possibility of access to the device later and the disassembly of release and control mechanism in order to carry out the possible service works and technical inspections.

The mcr FID S/X c/P dampers may be installed in the following partitions (walls or ceilings):
- masonry walls – concrete with a thickness of at least 110 mm
- masonry walls from bricks or blocks at least 115 mm thick
- walls from panels at least 125 thick
- ceilings of at least 150 mm

Additionally, dampers can be installed:
- outside walls
- in batteries (multiple sets)

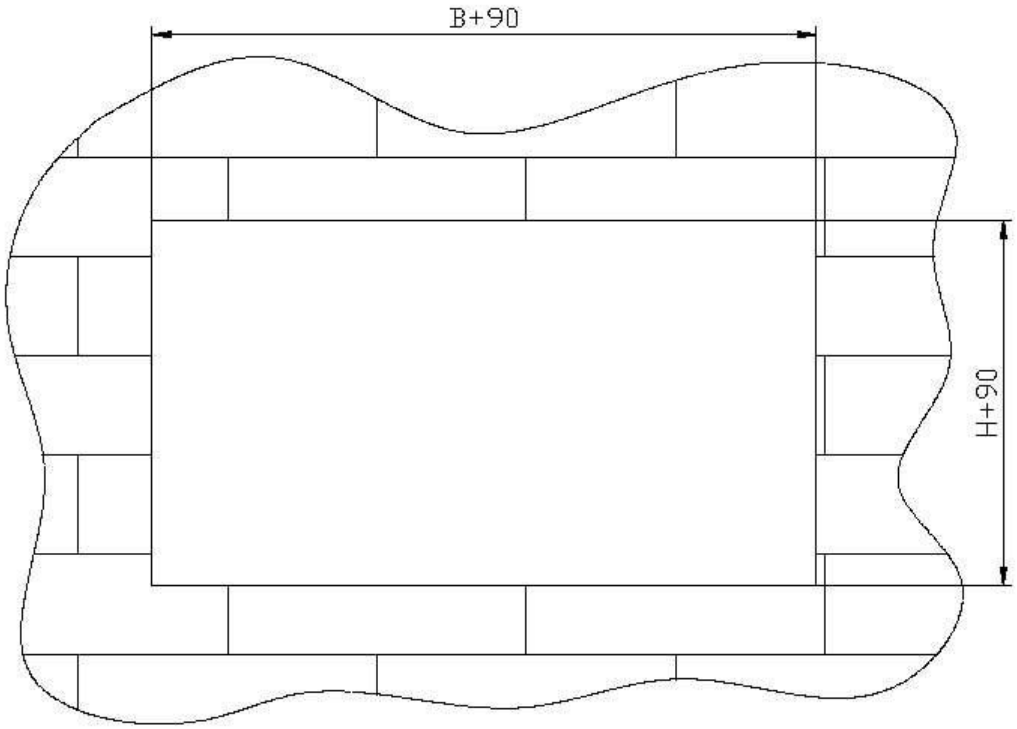
The mcr FID S/X c/P shut-off dampers may also be installed in partitions with a lower class of fire resistance. In case of such an installation, dampers have fire protection equal to the fire protection of the partition, maintaining the smoke tightness criteria. In the case of installing the damper in a specific type of wall with thickness lower than required, locally increase its thickness at the circumference of the installed damper, for instance by installing an additional panel or another construction element.

6.1. INSPECTION BEFORE THE ASSEMBLY

Each damper is inspected before packaging and transporting by the manufacturer. After unpacking at the recipient, inspect visually in terms of possible deformation of the casing or damper damage during transport.

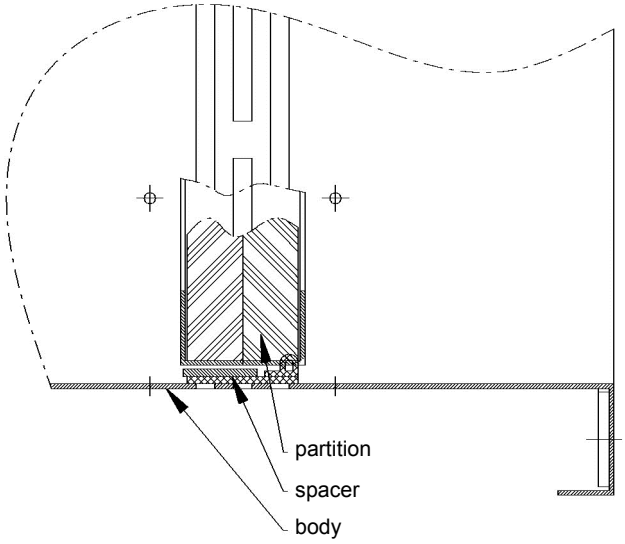
6.2. FIXING HOLE

The minimum dimensions of the hole which allows correct installation of a rectangular damper is (B+90)x(H+90) mm.

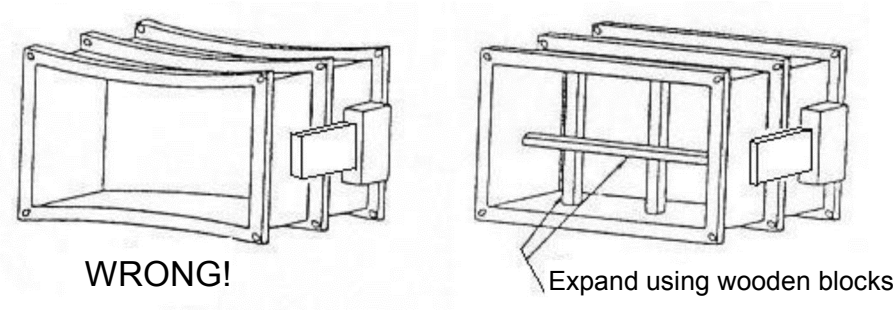


6.3. EMBEDDING / SETTING THE DAMPER

NOTE
Ensure that at each place of the damper circumference there is a 2.5 mm gap between the body and the partition. Fulfilling this comment is a condition of keeping the product warranty.



Securing the gap size between the damper body and the partition.



Protecting the damper against buckling.

Correctness of the mcr FID S/X c/P damper is maintained when the partition rotation axis is horizontal. The release and control mechanism may be located on the right or on the left hand side of the damper at any direction of air flow. Installation of the damper in such a way that the partition rotation axes are vertical is allowed only after prior notification of the Manufacturer at the device order.

Before embedding/setting, place the damper axially in the partition (wall or ceiling which separates fire zones) in the previously prepared hole. Then, level out and secure the device. After these actions, manually start the damper partition, checking whether it rotates correctly (does not collide with the enclosure elements etc.). Close the damper partition. Carefully fill the gap between the damper casing and the wall with the right mortar that ensures wall and damper fire resistance, taking particular attention so that it does not get on the acting elements (release and control mechanism, partition, gaskets, limits). To ensure it, it is mandatory to secure the damper with film, or any other cover until the masonry and finishing works are concluded. The damper must remain closed until the mortar binds. After the mortar binds, remove supports, open and close the damper in order to check the correctness of its operation. In the case of installing the damper in a wall made of panels, tightly fill the space between the damper enclosure and the wall with mineral wool with A1 fire protection rating confirmed by a certificate, as well as density and thickness that ensures fire resistance no less than the fire resistance of the wall in which the damper is installed. The filled space should additionally be sealed with a relevant 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 observe the border of embedding - the damper rotation axis must not be outside the wall.

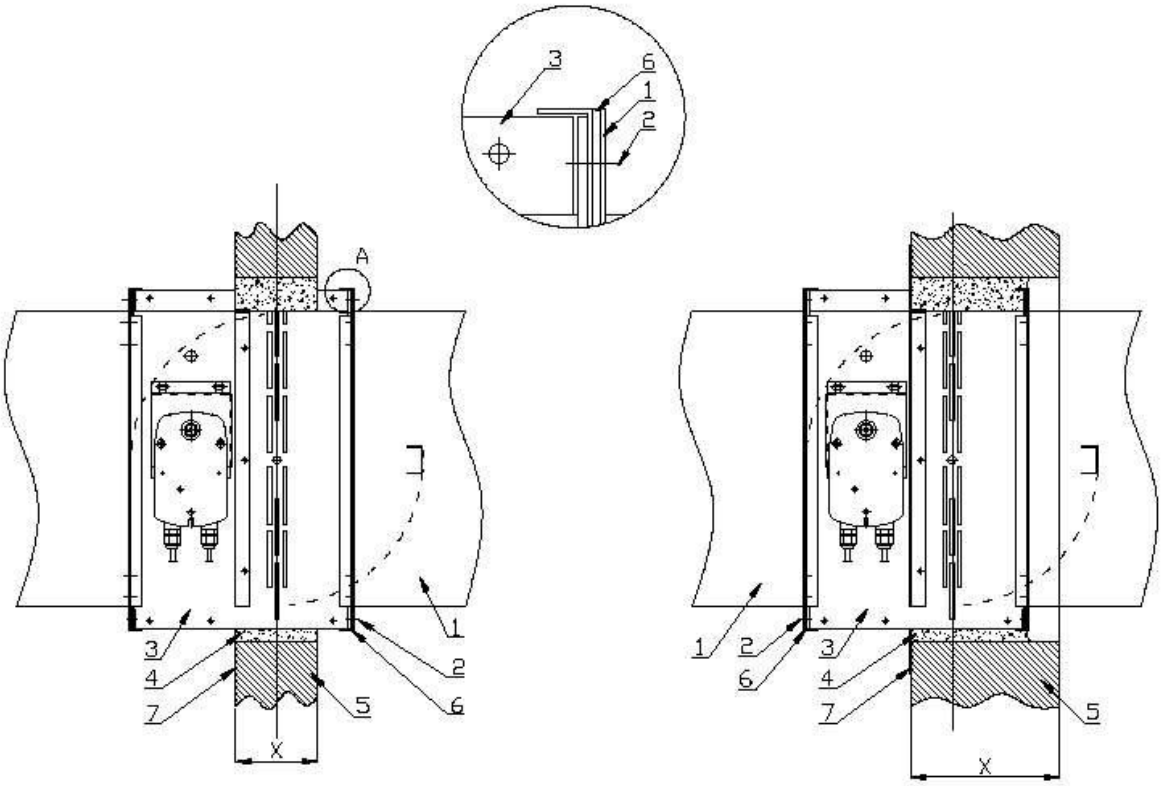
Installation of the damper outside the wall is considered a violation of this rule. In case of such an application of dampers, the section of the ventilation duct present between the damper partition and the fire separation has to be protected using fire protection panels or layers of mineral wool, as well as a structural reinforcement in accordance with the Manufacturer's recommendation.

Connecting the embedded damper to the ventilation duct has to be made coaxially. During the damper installation, the damage to the damper body should be prevented, particularly its strains. The damper may not be a "load bearing element" of the duct or the ventilation system on which it is installed. Drilling through the damper enclosure, driving screws, bolts or other elements passing through the enclosure to the inside of the damper is unacceptable. After connecting the ventilation duct, check the correctness of damper operation again.

During the installation of a mcr FID S/X c/P damper, pay particular attention so that the thermal release (fuse element) do not get damaged, do not expose it to high temperature (fire, welders, soldering irons) that cause its activation (it is a single use element and is not subject to warranty replacement). Do not expose swelling gaskets installed in the damper enclosure to high temperature. Gasket swelling makes it impossible to close the damper. After finishing the installation, carefully clean the damper and make sure that there is no debris which could influence the correctness of operation.

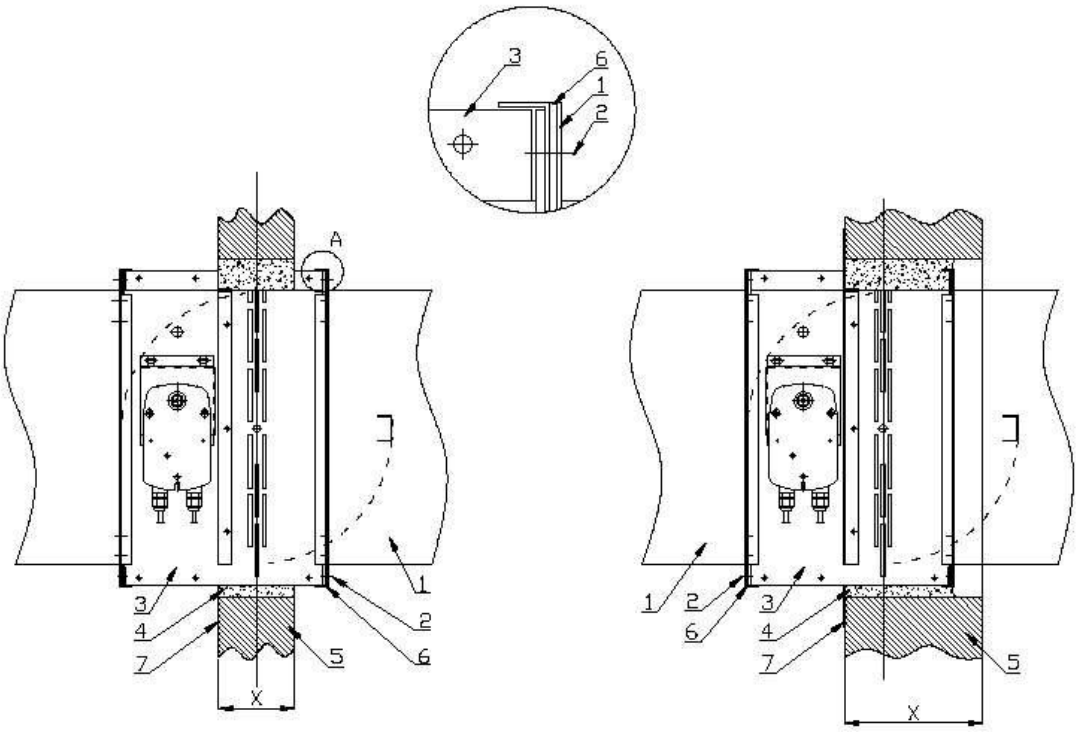
NOTE

It is crucial to observe the device embedding border, so that the release and control mechanism is outside the separation wall and allows easy access.



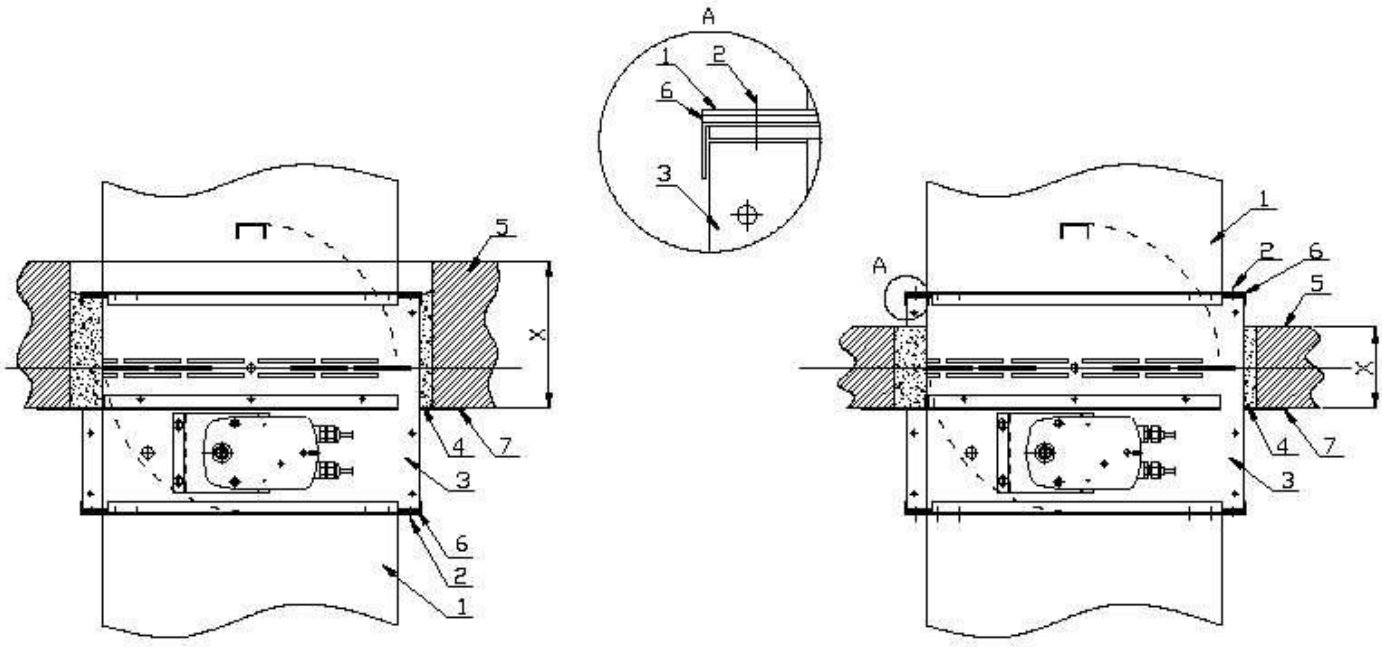
1 – Ventilation duct.
2 – Sheet-metal screw ST4.2x16
3 – Damper mcr FID S/X c/P BxH.
4 – E.g. cement mortar
5 – Masonry wall.
6 – Temperature resistant gasket
7 – A section - embedding border
X – wall thickness

Sample installation of the mcr FID S/X c/P damper in masonry and concrete walls



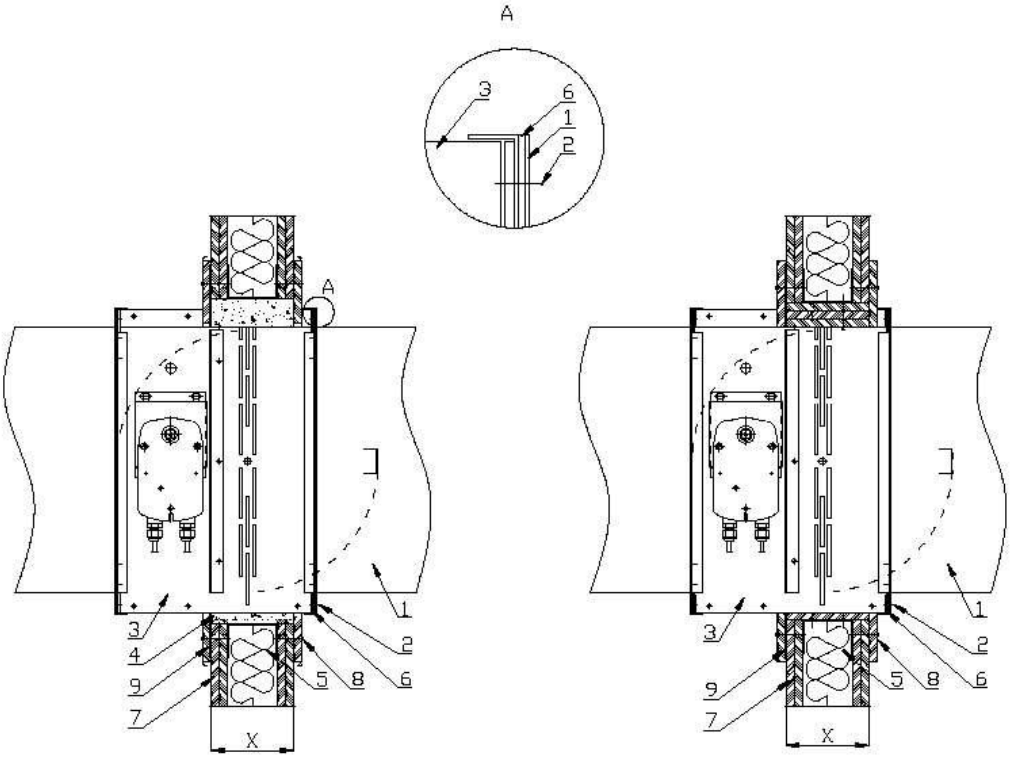
1 – Ventilation duct.
2 – Sheet-metal screw ST4.2x16
3 – Damper mcr FID S/X c/P BxH.
4 – E.g. cement mortar
5 – A wall from concrete blocks or full bricks
6 – Temperature resistant gasket
7 – A section - embedding border
X – wall thickness

Sample installation of the FID S/X c/P damper in a concrete block or full brick walls



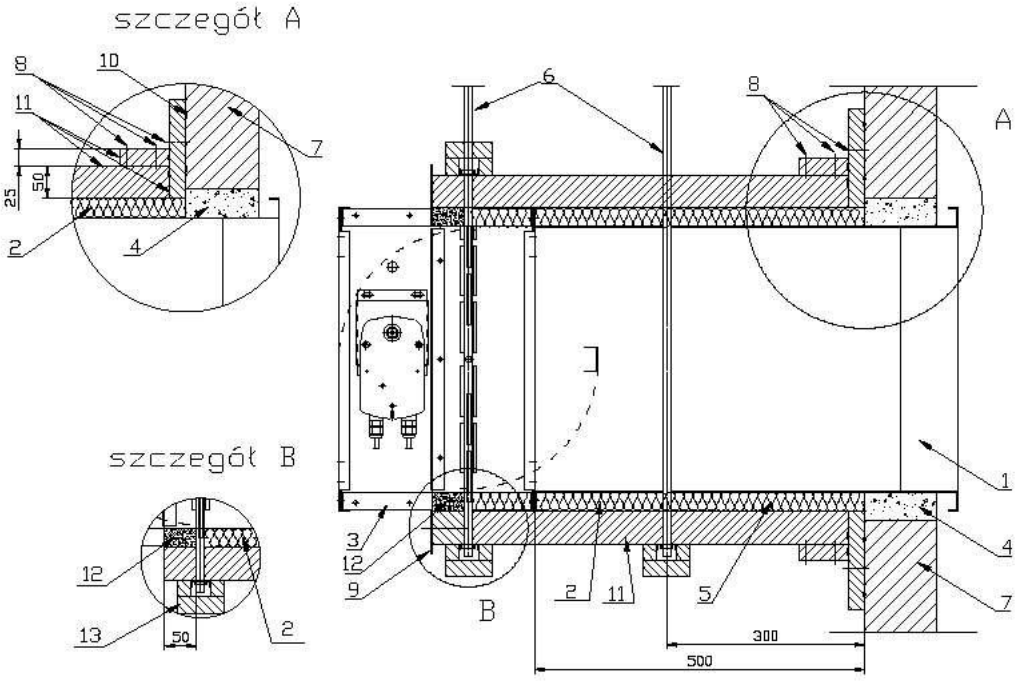
1 – Ventilation duct.
2 – Sheet-metal screw ST4.2x16
3 – Damper mcr FID S/S c/P BxH.
4 – E.g. cement mortar
5 – Ceiling
6 – Temperature resistant gasket
7 – A section - embedding border
X – Wall thickness

Sample installation of a FID S/X c/P damper in a ceiling



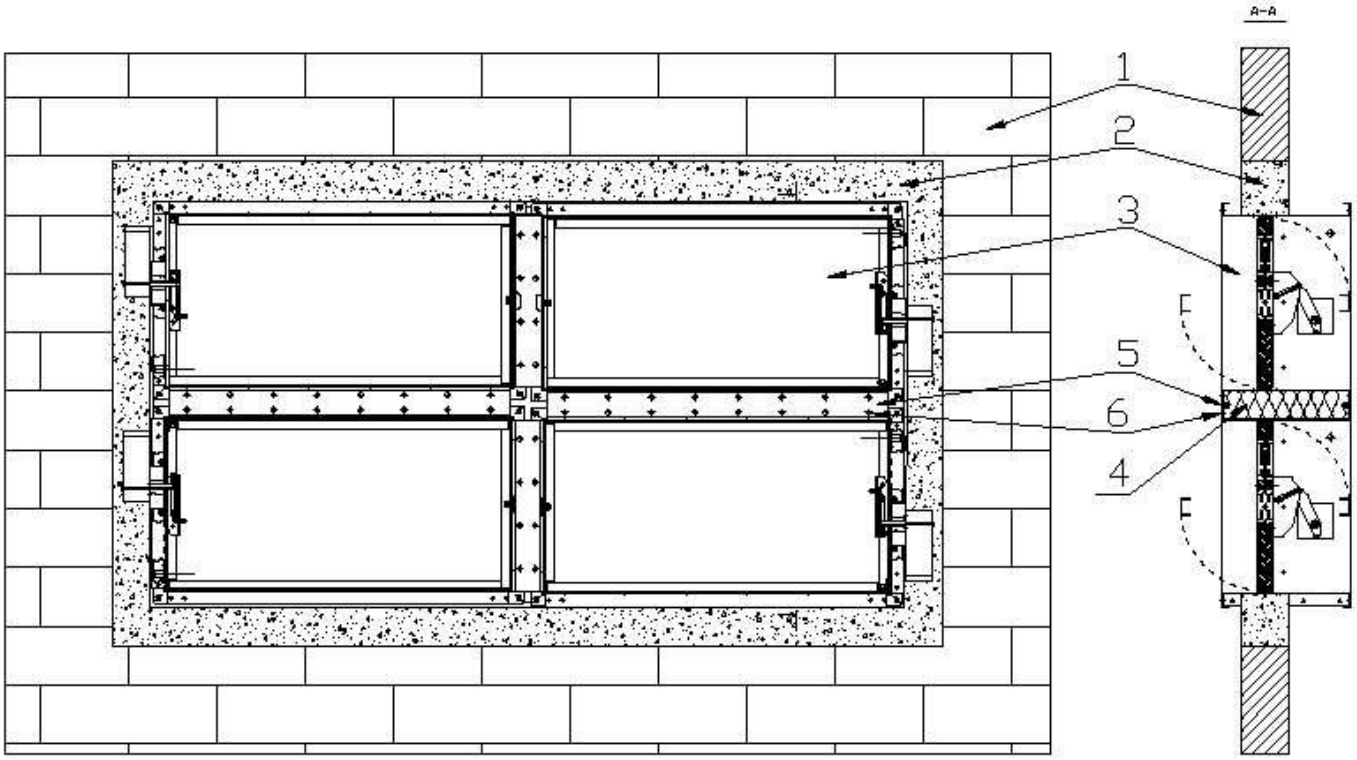
1 – Ventilation duct.
2 – Sheet-metal screw ST4.2x16
3 – Damper mcr FID S/X c/P BxH.
4 – E.g. cement mortar.
5 – Mineral wool with density of at least 80 kg/m3.
6 – Temperature resistant gasket
7 – Panel wall
8 – Screw ST5.5x38
9 – A section - embedding border
X – Wall thickness

Sample installation of the mcr FID S/X c/P damper in a panel wall



1 – Ventilation duct.
2 – Sheet-metal screw ST4.2x16
3 – Damper mcr FID S/X c/P BxH.
4 – E.g. cement mortar.
5 – Mineral wool with density of at least 80 kg/m3 and min. thickness 30 mm
6 – An M12 bar suspension element
7 – Wall
8 – Screw ST3.5x50
9 – A section - embedding border
10 – Panel joint sealing, e.g. Promat H 84
11 – Gypsum cardboard panel, thickness depending of partition's fire resistance rating (E.g. Promatect L500, 50 mm – for EI120)
12 - E.g. gypsum mortar
13 – Suspension element insulation

Sample installation of the mcr FID S/X c/P damper outside a wall.



1 – E.g. a masonry wall
2 – E.g. cement mortar
3 – Damper mcr FID S/X c/P BxH.
4 – Mineral wool with density of at least 80 kg/m3.
5 – Installation flat bar, width 60 mm
6 – Screw ST8x16

Sample installation of the mcr FID S/X c/P damper in a multiple set (a battery that consists of 4 dampers)

6.4. ELECTRICAL CONNECTIONS

After correct embedding of the damper, if it has control elements or other elements that require connecting the electrical installation, connect the lines of this installation to the damper. Below we can see the connection diagrams and the basic electrical data of the release and control mechanisms supplied with the mcr FID S/X c/P dampers.

Electrical actuators – electrical information

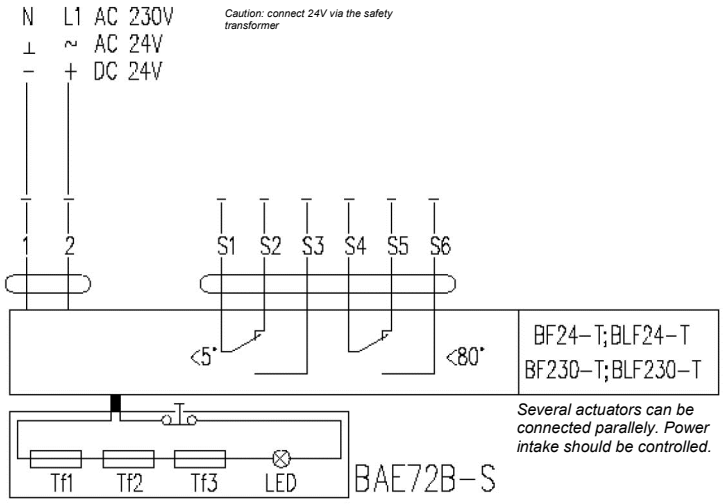
Actuator type	Location of the damper partition
- Belimo series BFL - Belimo series BFN	Open partition – actuator indication 90˚ Closed partition – actuator indication 0˚
- Belimo series BF - Belimo series BLF	Open partition – actuator indication 90˚ Closed partition – actuator indication 0˚
- Belimo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

Technical data	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: - when winding the spring - when sustaining the spring	 5 W 2.5 W	 5 W 3 W	 7 W 2 W	 8 W 3 W
dimensioning (apparent power)	7 VA	7 VA	10 VA	12.5 VA
protection class	III	II	III	II

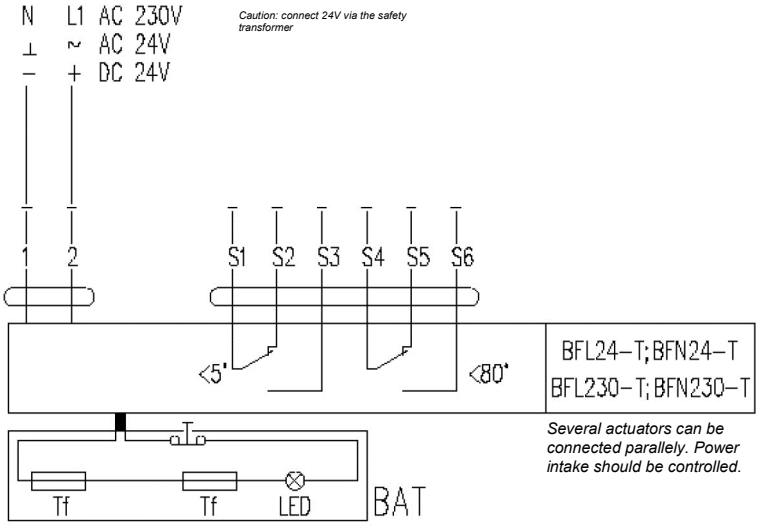
IP (Ingress Protection) Rating	IP 54	IP 54	IP 54	IP 54
auxiliary circuit breaker:	2xSPDT 6 (1.5)A AC 250V	2xSPDT 6 (1.5)A AC 250V	2xEPU 6(3) A, 250V	2xEPU 6(3) A, 250V~
- activation point [degrees]	5°, 80°	5°, 80°	5°, 80°	5°, 80°
torque - motor - spring	 4 Nm 4 Nm	 4 Nm 4 Nm	 18 Nm 12 Nm	 18 Nm 12 Nm
cable connection: - motor (length 0.9 m) - auxiliary circuit breaker	 2x0.75 mm^2 6x0.75 mm^2	 2x0.75 mm^2 6x0.75 mm^2	 2x0.75 mm^2 6x0.75 mm^2	 2x0.75 mm^2 6x0.75 mm^2
movement time: (0-90°) - motor - return spring	 40-75 s ≈20 s	 40-75 s ≈20 s	 140 s ≈16 s	 140 s ≈16 s
operation temperature - range	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C
sound pressure level: - engine - spring	 max 45 dB (A) ~ 62 dB (A)	 max 45 dB (A) ~ 62 dB (A)	 max 45 dB (A) ~ 62 dB (A)	 max 45 dB (A) ~ 62 dB (A)

Technical data	**BE24 , BE24-ST**	**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: - when moving - when sustaining	 12 W 0.5 W	 8 W 0.5 W	 4 W 0.5 W	 4 W 0.5 W
dimensioning (apparent power)	18 VA	15 VA	10 VA	10 VA
protection class	III	II	III	II
IP (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	40 Nm	40 Nm	15 Nm	15 Nm
movement time: (0-90°)	< 60 s for 90°	< 60 s for 90°	< 30 s for 90°	< 30 s for 90°
operation temperature - range	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C
sound pressure level	~ 62 dB (A)	~ 62 dB (A)	~ 62 dB (A)	~ 62 dB (A)

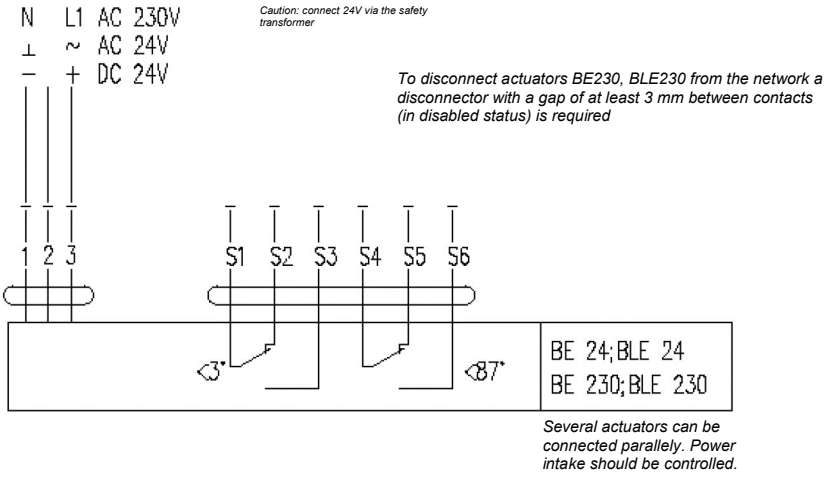
Technical data – actuators	**BFL24 (BFL24-T)**	**BFL230 (BFL230-T)**	**BFN24 (BFN24-T)**	**BFN230 (BFN230-T)**
Power supply	AC 24 V 50/60 Hz DC 24 V	AC 220–240 V 50/60 Hz	AC 24 V 50/60 Hz DC 24 V	AC 220-240V 50/60 Hz
Power demand: – when putting the spring under tension – when in standby	 2.5 W 0.7 W	 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 ≈ 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)



Connection diagram for actuators BF24-T, BLF24-T, BF230-T, BLF230-T.



Connection diagram for actuators BFL24-T, BFL230-T, BFN24-T, BFN230-T.

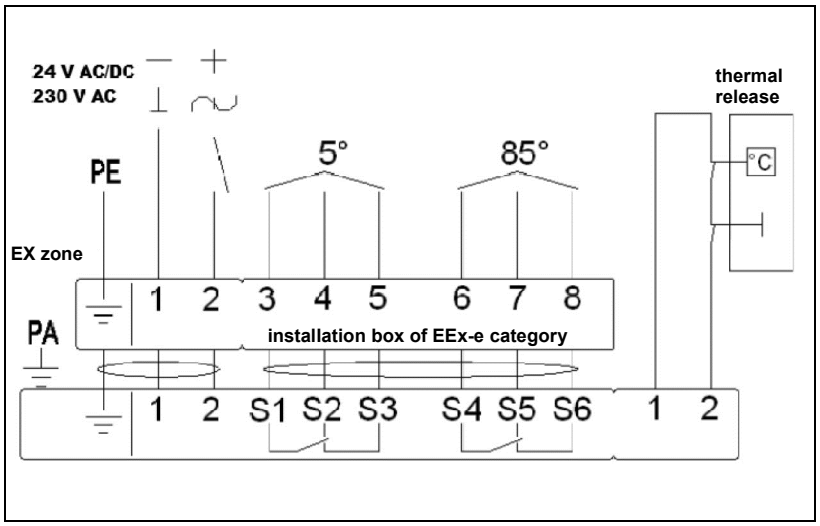


Connection diagram for actuators BE24, BLE24, BE230, BLE230.

Caution:
Controlling the operation of BE and BLE actuators requires a connected three-wire system. Changing the actuator direction of rotation takes place by applying power voltage to contacts no. 2 or 3, depending on the desired direction of rotation.
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±10% or 230V±10%. Power supply devices other than listed above may cause malfunction and will not be covered by the warranty conditions.

EXBF dictionaries

Technical data	EXBF B 001 2 ...0 N 000	EXBF A 001 2 ...0 N 000
Zone	1, 2, 21, 22	
ATEX classification	II 2 GD EEx d IIC T6	
Power supply	24 V AC ±20% 50/60 Hz / 24 VDC-10/+20%	230 V AC ±14% 50/60 Hz
power demand:		
- when winding the spring	7 W	8 W
- when sustaining the spring	2 W	3 W
dimensioning (apparent power)	10 VA	12.5 VA
IP (Ingress Protection) Rating	IP 66	IP 66
auxiliary circuit breaker:	2 x SPDT 6A (3) max 250 V AC	2 x SPDT 6A (3) max 250 V AC
- activation point	5°, 80°	5°, 80°
torque		
- motor	18 Nm	18 Nm
- spring	12 Nm	12 Nm
movement time: "90°C"		
- motor	150 s	150 s
- return spring	≈20 s	≈20 s
ambient temperature	-20 ...+50°C	- 20 ...+50°C



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±10% or 230V±10%. Power supply devices other than listed above may cause malfunction and will not be covered by the warranty conditions.

Release and control mechanism RST/KW1
In the version RST/KW1/S, limit switches are installed in the mechanism itself. Electrical connection involves connecting the correctly labelled wires to the system. A fuse release is installed in the mechanism.

	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
Absorbed power	X	3.5W	1.6W	4.5W	2.5W
Holding force	X	12 daN	12 daN	12 daN	12 daN
Activation temperature of the thermal release	72^0C +-2^0C				

Limit switch WK1d or WK2d	NO/NC (switching contact) 5A, 230V AC	
Activation of switches	3^0, 87^0 – allowance +- 2^0	
Temperature of operation of limit switches	-25 ...+85^{0}C	
Electric connection	X	- release: cable 0.6 m, 2x0.5 mm2 - limit switch: cable 0.6 m, 6x0.5 mm2
Rotation angle	92^0	

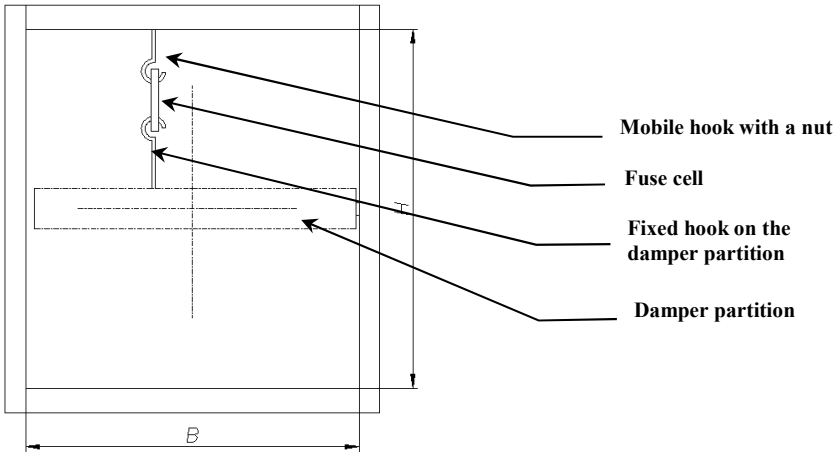
Movement time	Max 2s - spring				
Direction of rotation	Left				
Mechanism weight	1.2 kg	1.4 kg	1.4 kg	1.5 kg	1.5 kg

Power supply for the KW1 mechanism:	**Limit switch WK1**	**Limit switch WK2**
Wire number: 1-2	Wire number: 3-4 – type NO (normally opened)	Wire number: 6-7 – type NO (normally opened)
	Wire number: 4-5 – type NC (normally contacted)	Wire number: 7-8 – type NC (normally contacted)

Warning! - Location of limit switches of the mechanism was shown for the damper safety position
For proper operation of a device equipped with electrical actuators, it is recommended that the rated voltage housed tolerance of 24V±2% or 230V±2%. Power supply devices other than listed above may cause malfunction and will not be covered by the warranty conditions.

Release and control mechanism RST
In the RST version, the limit switches are installed inside the damper enclosure as independent subassemblies. The fuse release can be found on the damper partition. The drive spring is installed on the damper partition.
In order to install the fuse release in the RST version:

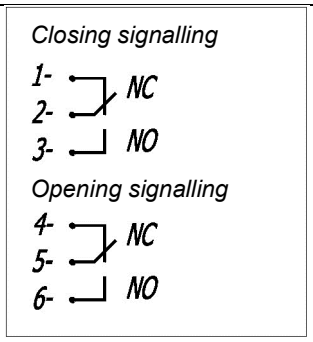
- Set the damper partition in the open position
- We put the fuse cells on hooks attached to the damper body and to the partition.
- We draw in and lock the hook on the damper body by tightening the nut.



Independent damper limit switches – for the RST variant
WK1 – a single switch – signalling the state of closing the damper partition.
WK2 – a set of two switches – signalling the state of closing and opening the damper partition.

Switch technical data

Limit switch WK1 and WK2	1xNO/1xNC SPDT (switching contact) 5A, 230V AC
Temperature of operation of limit switches	-25 ...+85^{0}C
Cabinet	Plastic



Warning
The moment the partition closes, the switch signalling the damper closing is controlled (contact 2-3 is closed).

Electric connection diagram of limiting switches WK1 and WK2

7. TRANSPORT AND STORAGE CONDITIONS

Fire dampers are packaged in cardboard boxes or placed on pallets. Dampers are protected against damage by film or another covering material. Damper transport may take place using any means of transport, provided they are protected against weather factors. Dampers placed on means of transport should be secured against shifting of position during transport. Before installing dampers, control each of them visually. Do not move the damper by holding by the connection cable or put a device on a release and control mechanism. Do not hit or drop the damper. When moving and installing, support the damper on the sides or edges of the body.
Dampers should be stored in closed rooms that provide protection against external weather conditions. In the case dampers are stored on the ground, place them on protection pads in order to protect them against damage.

8. MAINTENANCE AND SERVICE

Mercor SA devices should undergo periodical technical inspections and maintenance actions, no less frequent than 12 months during the entire operation period, that is during the warranty period and after it. Inspections and maintenance should be carried out by the manufacturer or by companies that have authorisation for servicing of MERCOR SA devices.
The obligation to carry our regular service inspections of fire protection devices results from the Art. 3(3) of the Regulation by the Minister of Internal Affairs and Administration of 7 June 2010 on fire protection of buildings, other civil structures and areas (Journal of Laws of 2010 No. 109, item 719).
It is recommended to execute, between inspections, the following:

- Inspections of the condition of electrical conditions, taking the mechanical damage particularly into account.
- 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
- Inspections of the condition of the devices' body, taking the mechanical damage particularly into account.
- Checking whether there are no obstacles which could influence correct operation of the devices.

To enable the performance of actions included in the range of service inspections, as well as service and warranty actions such as visual inspections or repairs it is mandatory that the user provides the physical access to the devices, e.g. by disassembly of the thermal insulation, disassembly of suspended ceilings, disassembly of other systems if they prevent free access to the device etc.
In the case of devices installed in ducts, it is recommended to carry out the revisions, e.g. mcr KRW type.
If devices are installed on the roof, ensure the possibility to enter the roof (ladder or lift).

In the matters related with technical inspections, maintenance and the device service, contact the representatives of the Service Department of Mercor SA serwis@mercor.com.pl, tel. 058/ 341 42 45 internal 170 or fax 058/ 341 39 85 from 8 AM to 8 PM (Mon - Fri).

9. WARRANTY CONDITIONS

1. MERCOR SA issues a 12-month guarantee of quality for devices, counting from the date of purchase, unless the agreement states otherwise.
2. If, within the warranty period, physical defects of devices are found, MERCOR SA undertakes to remove them within the term no longer than 21 days counting from the date the written report is received and the purchase order or agreement is delivered, subject to point 6.

3. MERCOR SA reserves the right to prolong the repair time in the case of complex repairs or repairs that require the purchase of non-standards subassemblies or spare parts.
4. The warranty covers only the defects resulting from the sold devices.
5. In the case of defects resulting from incorrect operation of devices or from other causes indicated in point 6, the buyer / party entitled to the warranty will be charged with costs of removing it.
6. The warranty does not cover:
   - damage and faults of devices caused by incorrect operation, tampering by the user, lack of periodic technical inspections, non-performance of maintenance actions described in the part "SERVICE AND MAINTENANCE" of this document:
   - device damage resulting from causes other than the ones on the part of MERCOR SA, in particular: random events, specifically: torrential rain, flood, hurricane, inundation, lightning strike, overvoltage in the electrical network, explosion, hail, aircraft crash, fire, avalanche, landslide and secondary damage resulting from the abovementioned causes. Torrential rain is the rainfall intensity indicator of at least 4, set by the Institute of Meteorology and Water Management. In case setting the aforementioned indicator is impossible, the actual status and the extent of damage in the place they arise is taken into consideration to show the action of a torrential rain. A hurricane is a wind with speed no less than 17.5 m/s (damage is considered as caused by the hurricane if there is action of a hurricane in the nearest neighbourhood);
   - damage resulting from omission of the obligation to immediately report the found defect;
   - worsening the quality of coatings caused by their natural ageing processes;
   - defects caused by using abrasive or aggressive cleaning agents;
   - damage resulting from action of aggressive external factors, particularly chemical and biological, or which origin is related to manufacturing processes and actions carried out in the object or in its direct vicinity of the object where the devices are installed;
   - parts that undergo natural wear during operation (e.g. gaskets), unless they show a factory defect;
   - damage resulting from incorrect transport, handling or storage of the device;
   - damage resulting from the assembly which is not compliant with the provisions of this Manual and the best construction practices;
   - devices or their parts in case the rating plate or warranty seals are damaged or removed.
7. A complaint application should be sent to MERCOR SA within 7 days from the date the defect covered by the warranty is found.
8. Complaint applications can be made under the phone number: 58/341-42-45, by fax: 58/341-39-85, by e-mail: reklamacje@mercor.com.pl or by sending the document to the address: MERCOR SA, ul. Grzegorza z Sanoka 2, 80-408 Gdańsk.
9. The Buyer / the party authorised for the warranty is obliged to correctly operate the devices and carry out the periodical technical inspections and maintenance actions, in accordance with the rules described in this document in the part "SERVICE AND MAINTENANCE" of this document.
10. The warranty expires immediately in case:
    - the Buyer / the party authorised for the warranty introduces construction changes within its own scope without prior agreement about this fact with MERCOR SA,
    - the periodic technical inspections and maintenance actions were not performed in time or were performed by unauthorised people or a service that did not have the MERCOR SA authorisation, or in the case the devices were operated incorrectly,
    - there was any tampering by unauthorised people, apart from actions included within normal operation of the devices.
11. In the cases specified in point 10, the liability of MERCOR SA for the warranty does not apply.
12. The condition of removing the defects is that the reporting party provides access to the full works front, particularly free access to rooms where the devices were installed and providing the necessary revisions, disassembly of thermal insulation, disassembly of suspended ceilings, disassembly of other systems if they prevent free access to the device etc.

To any matters unregulated herein, the applicable provisions of the Civil Code shall apply.