

## **OPERATION AND MAINTENANCE MANUAL**

**Fire damper  
type mcr FID S/... c/P**



Version FID C 20.08.19.10

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### Labelling used in the operation and maintenance manual

- Option available
- Option unavailable

# mcr FID S/... c/P single-plane fire dampers

## 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With the date of publication of the operation and maintenance manual, the previous versions are no longer valid.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/... 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/... 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:

<input type="checkbox"/> EI60S	<input type="checkbox"/> /S	<input type="checkbox"/> /V	<input type="checkbox"/> /M	<input type="checkbox"/> /T	<input type="checkbox"/> /G	<input checked="" type="checkbox"/> EI120S	<input checked="" type="checkbox"/> /S	<input type="checkbox"/> /V	<input type="checkbox"/> /M	<input type="checkbox"/> /T	<input type="checkbox"/> /G
<input type="checkbox"/> EI60	<input type="checkbox"/> /S	<input type="checkbox"/> /V	<input type="checkbox"/> /M	<input type="checkbox"/> /T	<input type="checkbox"/> /G	<input type="checkbox"/> EI120	<input type="checkbox"/> /S	<input type="checkbox"/> /V	<input type="checkbox"/> /M	<input type="checkbox"/> /T	<input type="checkbox"/> /G
<input type="checkbox"/> E60S	<input type="checkbox"/> /S	<input type="checkbox"/> /V	<input type="checkbox"/> /M	<input type="checkbox"/> /T	<input type="checkbox"/> /G	<input type="checkbox"/> E120S	<input type="checkbox"/> /S	<input type="checkbox"/> /V	<input type="checkbox"/> /M	<input type="checkbox"/> /T	<input type="checkbox"/> /G
<input type="checkbox"/> E60	<input type="checkbox"/> /S	<input type="checkbox"/> /V	<input type="checkbox"/> /M	<input type="checkbox"/> /T	<input type="checkbox"/> /G	<input type="checkbox"/> E120	<input type="checkbox"/> /S	<input type="checkbox"/> /V	<input type="checkbox"/> /M	<input type="checkbox"/> /T	<input type="checkbox"/> /G

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

#### Performance versions

Dampers mcr FID 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 1000 mm

Height: between 200 and 800 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: 0.8 m<sup>2</sup>. The minimum surface of the dampers equals 0.04 m<sup>2</sup>.

### 4. DEVICE DESIGN AND PRINCIPLE OF OPERATION

#### Design

The single-plane dampers mcr FID 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

## mcr FID S/... c/P single-plane fire dampers

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/... 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/V-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.**

# mcr FID S/... c/P single-plane fire dampers

## Release and control mechanisms

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

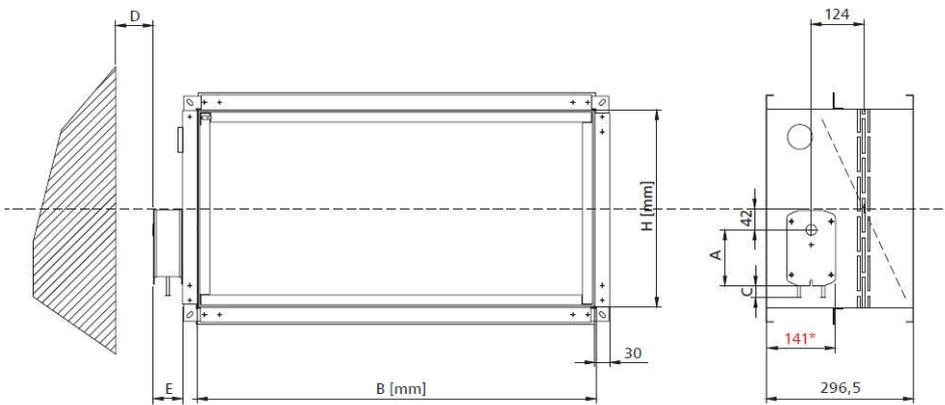
### An electrical motor

<input type="checkbox"/>	BF 230-T	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input type="checkbox"/>	BE 230	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G
<input type="checkbox"/>	BF 24-T (-ST)	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input type="checkbox"/>	BE 24	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G
<input type="checkbox"/>	BF 24-T-TL	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input type="checkbox"/>	BLE 230	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G
<input type="checkbox"/>	BFL 230-T	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input type="checkbox"/>	BLE 24	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G
<input type="checkbox"/>	BFL 24-T (-ST)	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input checked="" type="checkbox"/>	EXBF 230	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G
<input type="checkbox"/>	BFN 230-T	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input type="checkbox"/>	EXBF 24	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G
<input checked="" type="checkbox"/>	BFN 24-T (-ST)	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input type="checkbox"/>	BF 24-TN-TL	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G

### A spring mechanism:

<input checked="" type="checkbox"/>	RST	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input checked="" type="checkbox"/>	RST/KW1/S	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G
<input checked="" type="checkbox"/>	RST/KW1/24P	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input type="checkbox"/>	RST/KW1/24I	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G
<input checked="" type="checkbox"/>	RST/KW1/230P	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G	<input type="checkbox"/>	RST/KW1/230I	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/G

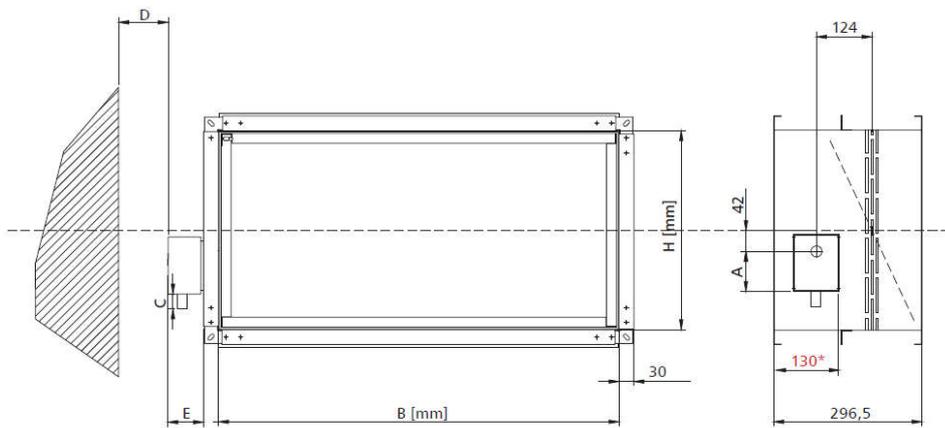
## Main dimensions



mcr FID S/... c/P fire damper with actuator

Gear	A	C	D	E
BFN	157	30	75	57
BFL	138	30	75	53
BF 24TL-ST	198	10	75	65
EXBF	225	55	75	175

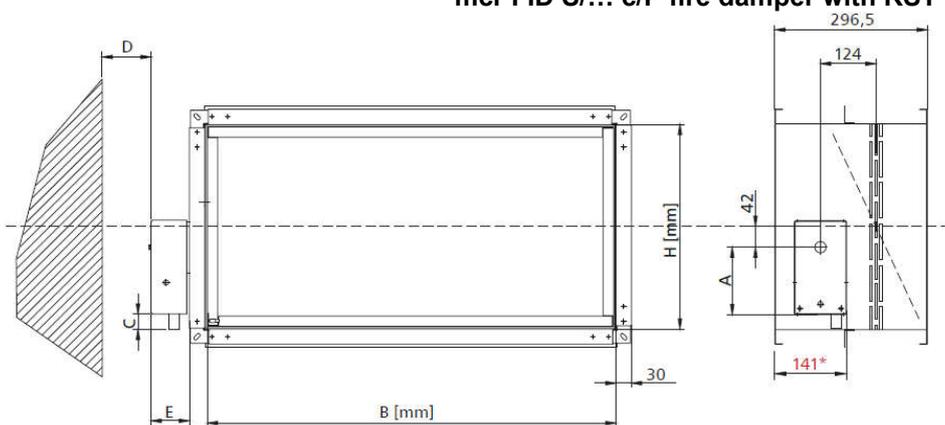
\* embedding border



mcr FID S/... c/P fire damper with RST

Gear	A	C	D	E
RST	50	30	75	70

\* embedding border



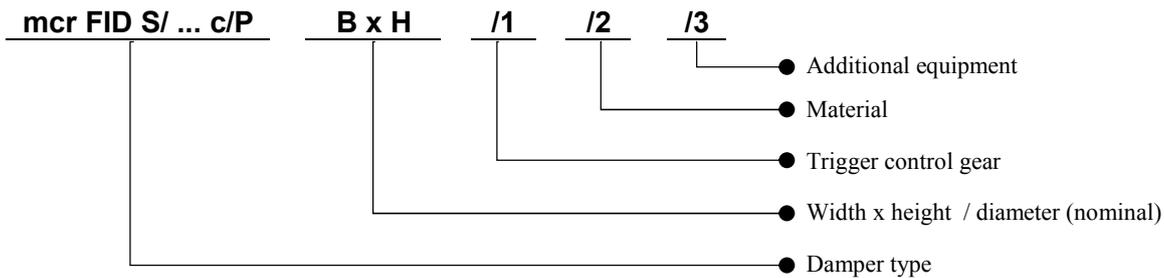
mcr FID S/... c/P fire damper with RST/KW1

mechanizm	A	C	D	E
RST/KW1	130	30	75	80

\* granica wmurowania

# mcr FID S/... c/P single-plane fire dampers

## 5. DEVICE LABELLING



## 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/... 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\*

\* only for the maximum damper dimension BxH 800x400.

Additionally, dampers can be installed:

- outside walls
- in dampers sets (multiple damper sets)

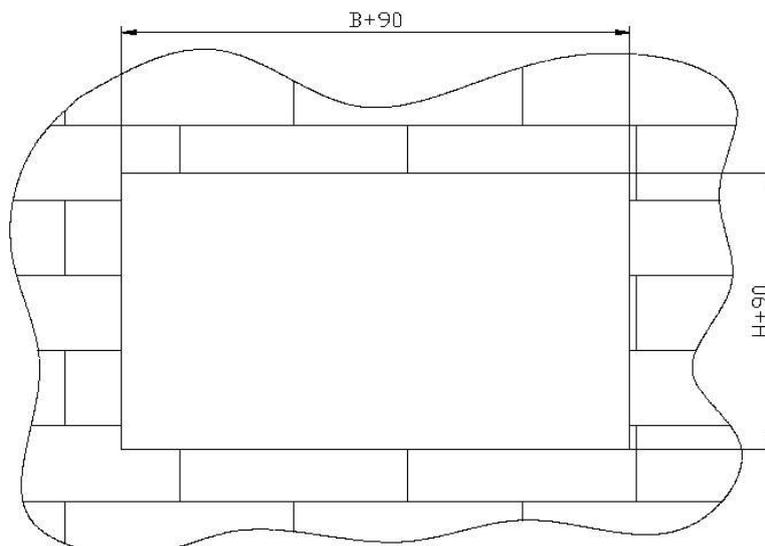
The mcr FID S/... c/P shut-off dampers may also be installed in partitions with a lower class of fire resistance. In case of such an installation, dampers have fire protection equal to the fire protection of the partition, maintaining the smoke tightness criteria. In the case of installing the damper 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

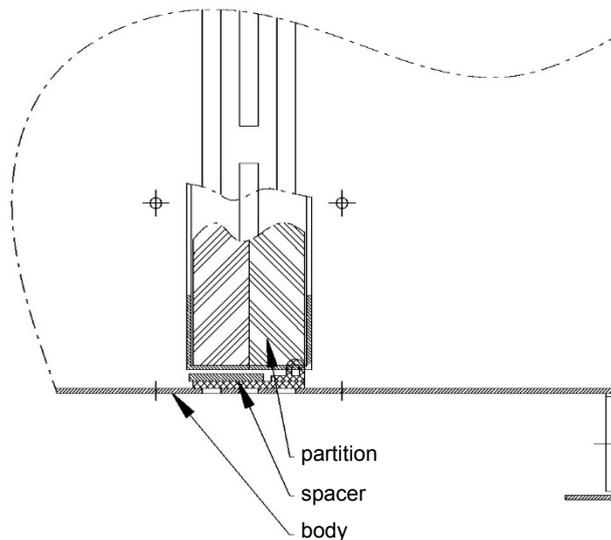
The minimum dimensions of the hole which allows correct installation of a rectangular damper is  $(B+90) \times (H+90)$  mm.



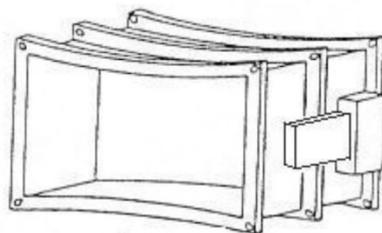
## 6.3. EMBEDDING / SETTING THE DAMPER

### NOTE

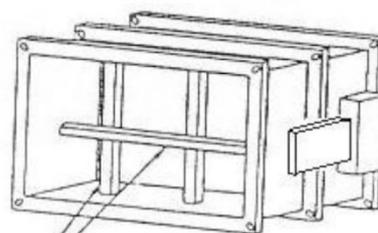
Ensure that at each place of the damper circumference there is a 2.5 mm gap between the body and the partition. Fulfilling this comment is a condition of keeping the product warranty.



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



**WRONG!**



Expand using wooden blocks

### Protecting the damper against buckling.

Correctness of the mcr FID S/... 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.

## mcr FID S/... c/P single-plane fire dampers

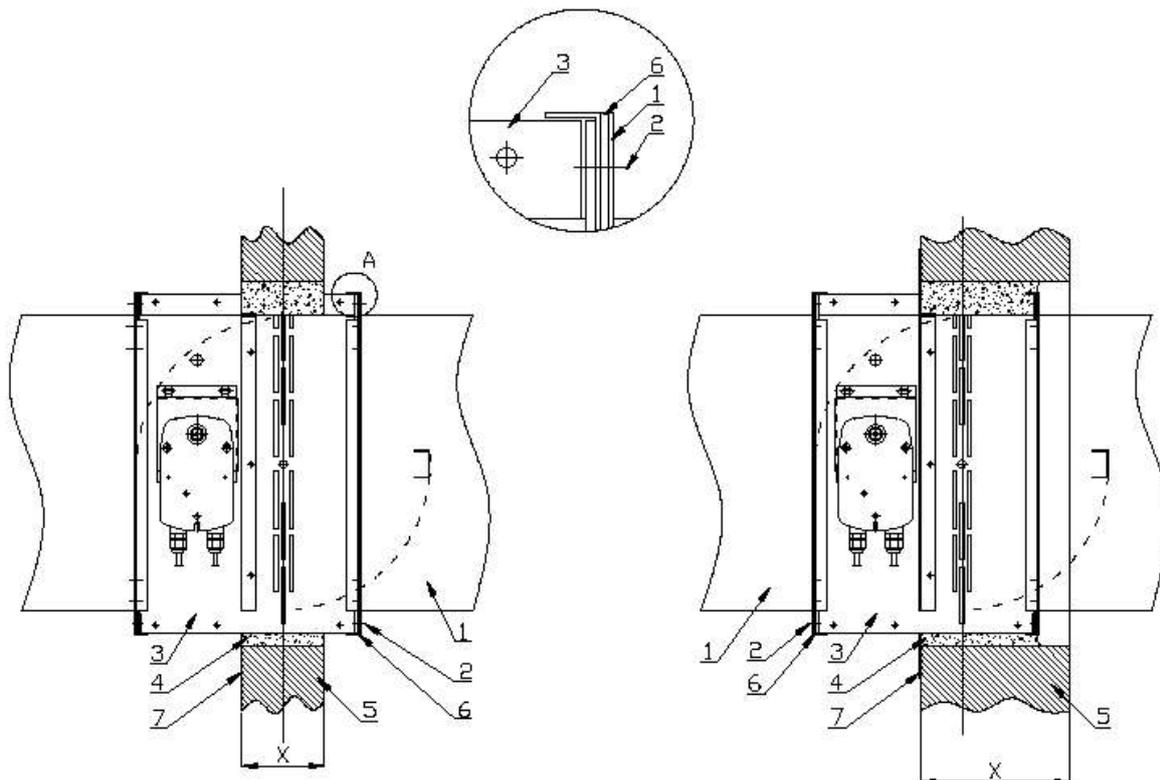
Installation of the damper outside the wall is considered a violation of this rule. In case of such an application of dampers, the section of the ventilation duct present between the damper partition and the fire separation has to be protected using fire protection panels or layers of mineral wool, as 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/... 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.**



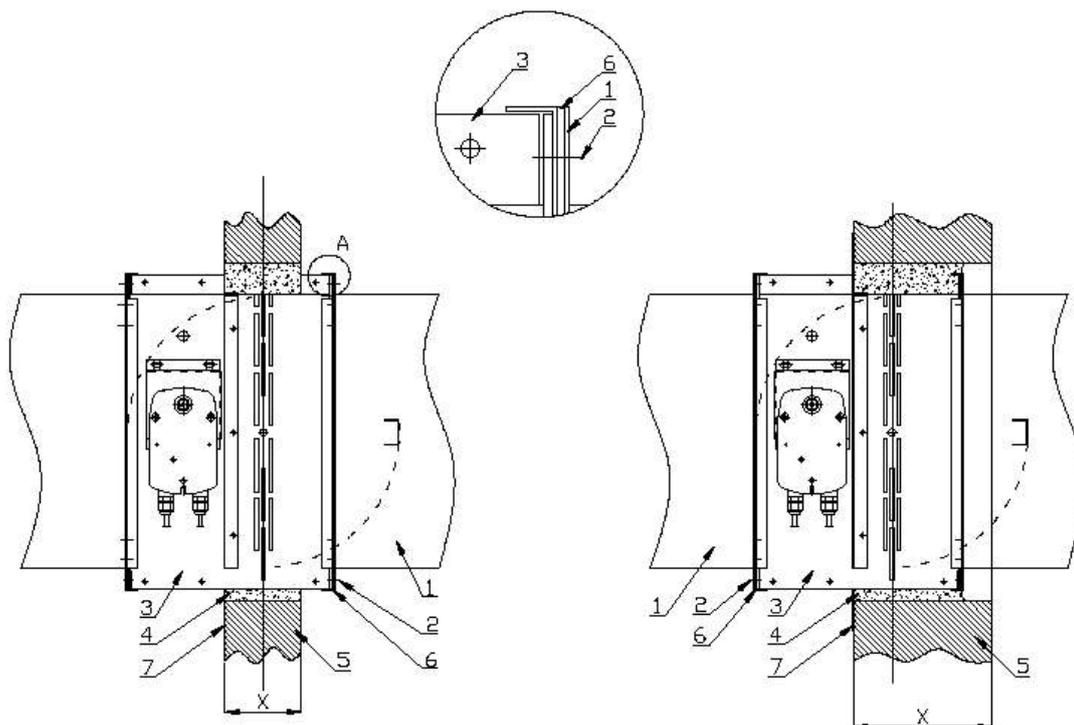
1 – Ventilation duct.  
2 – Sheet-metal screw ST4.2x16

3 – Damper mcr FID S/... c/P BxH.  
4 – E.g. cement mortar

5 – Masonry wall.  
6 – Temperature resistant gasket  
7 – A section - embedding border  
X – wall thickness

### Installation of the mcr FID S/... c/P damper in masonry and concrete walls

# mcr FID S/... c/P single-plane fire dampers

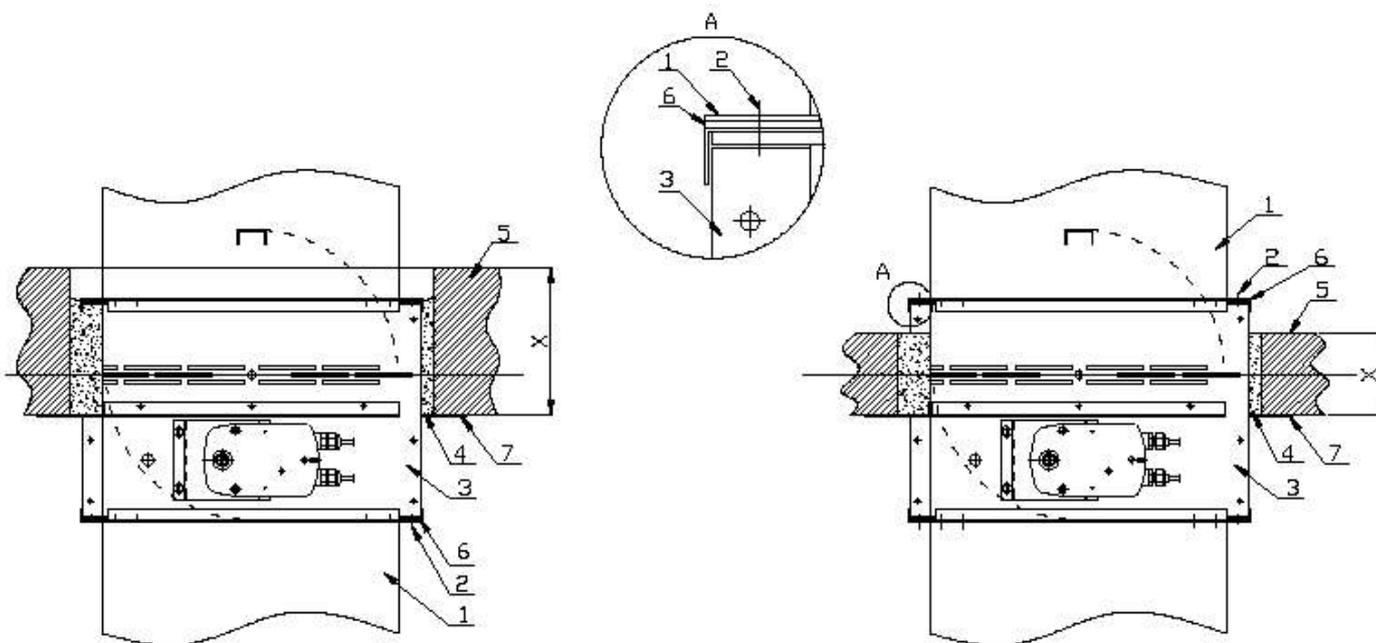


1 – Ventilation duct.  
2 – Sheet-metal screw ST4.2x16

3 – Damper mcr FID S/... 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

## Installation of the FID S/... c/P damper in a concrete block or full brick walls



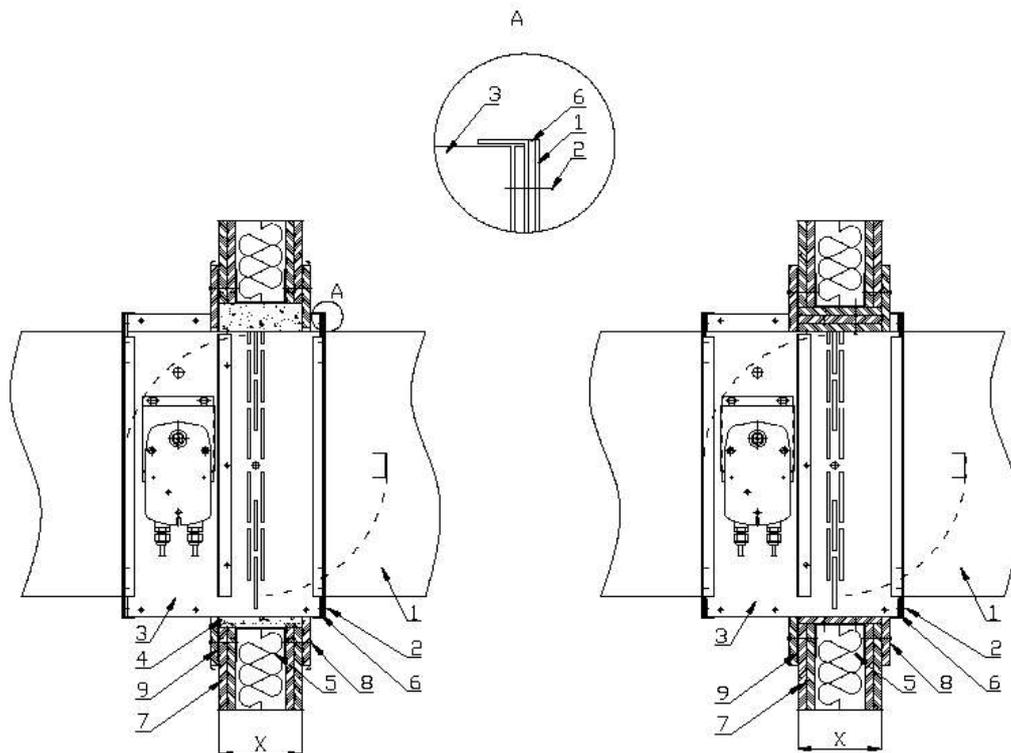
1 – Ventilation duct.  
2 – Sheet-metal screw ST4.2x16

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

## Installation of a FID S/... c/P damper in a ceiling

# mcr FID S/... c/P single-plane fire dampers

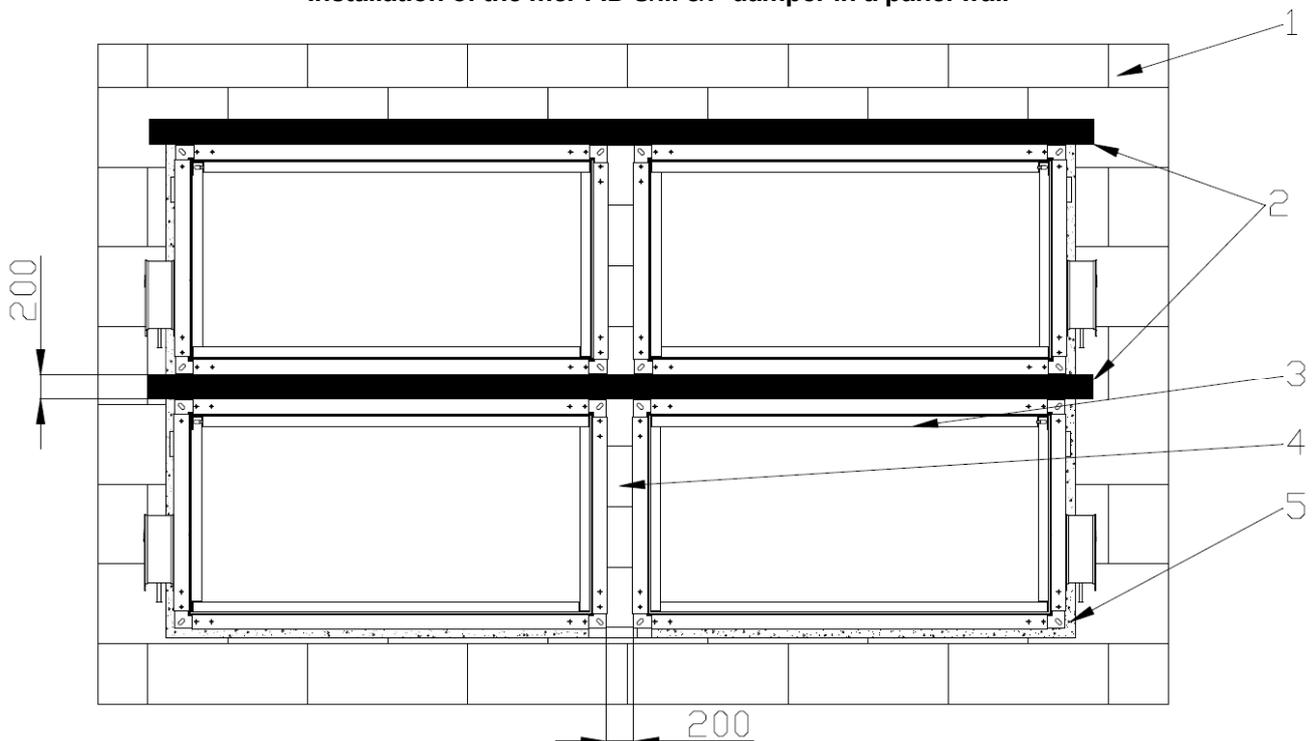


- 1 – Ventilation duct.
- 2 – Sheet-metal screw ST4.2x16
- 3 – Damper mcr FID S/... c/P BxH.

- 4 – E.g. cement mortar.
- 5 – Mineral wool with density of at least 80 kg/m<sup>3</sup>.
- 6 – Temperature resistant gasket

- 7 – Panel wall
- 8 – Screw ST5.5x38
- 9 – A section - embedding border
- X – Wall thickness

## Installation of the mcr FID S/... c/P damper in a panel wall



- 1 – e.g. a masonry wall
- 2 – A building element with fire resistance equal or higher to the building envelope resistance
- 3 – mcr FID S/... p/P fire damper, BxH.

- 4 – A building element with fire resistance equal or higher to the building envelope resistance. For example, a brick wall.
- 5 – e.g. mortar

## Installation of the mcr FID S/... c/P fire damper as a multiple damper set (a set of 4)

Other configurations of the mcr FID S /... c/P dampers modules can be made, consisting of two or more dampers, while maintaining the minimum distances between the dampers according to the drawing above.

# mcr FID S/... c/P single-plane fire 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/... c/P dampers.

### Electric actuators – electrical specification

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

Technical specifications	BF 24, BF24-T, BF24-TN	BF230, BF230-T, BF230-TN
Power supply	AC 24V 50/60Hz DC 24V	AC 220-240V 50/60 Hz
Power demand:		
- for spring tensioning	7 W	8,5 W
- for spring holding	2 W	3 W
Sizing (apparent power)	10 VA	11 VA
Appliance class	III	II
Ingress protection rating	IP 54	IP 54
Auxiliary circuit breaker:	2xSPDT 6 (3) A, 250V	2xSPDT 3 A, 250V~
- activation position [degrees]	5°, 80°	5°, 80°
Torque:		
- motor	18 Nm	18 Nm
- spring	12 Nm	12 Nm
Cable connection:		
- motor (L = 0.9 m)	2x0,75 mm <sup>2</sup>	2x0,75 mm <sup>2</sup>
- auxiliary circuit breaker	6x0,75 mm <sup>2</sup>	6x0,75 mm <sup>2</sup>
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 pressure level:		
- motor	max 45 dB (A)	max 45 dB (A)
- spring	~ 63 dB (A)	~ 63 dB (A)

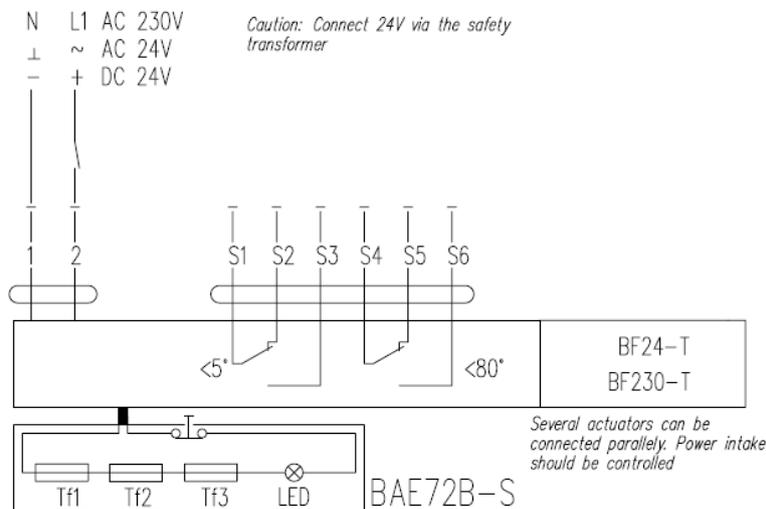
Technical specifications - Actuators	BE24, BE24-ST	BE230	BLE24, BLE24-ST	BLE230
Power supply	AC 24V 50/60Hz DC 24 V	AC 220-240V 50/60 Hz	AC 24V 50/60Hz DC 24V	AC 220-240V 50/60 Hz
Power demand:				
- for spring tensioning	12 W	8 W	7.5 W	5 W
- for spring holding	0,5W	0,5 W	0,5 W	1 W
Sizing (apparent power)	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 6(3) A, 250V	2xSPDT 6(3) A, 250V	2xSPDT 3A, AC 250V	2xSPDT 3A, AC 250V
- activation position [degrees]	3°, 87°	3°, 87°	3°, 87°	3°, 87°
Torque:				
- motor	40 Nm	40 Nm	15 Nm	15 Nm
- locking	50 Nm	50 Nm	20 Nm	20 Nm
Cable connection:				
- motor (L = 0.9 m)	3x0,75 mm <sup>2</sup>	3x0,75 mm <sup>2</sup>	3x0,75 mm <sup>2</sup>	3x0,75 mm <sup>2</sup>
- auxiliary circuit breaker	6x0,75 mm <sup>2</sup>	6x0,75 mm <sup>2</sup>	6x0,75 mm <sup>2</sup>	6x0,75 mm <sup>2</sup>
Movement time: (0-90°)				
- motor	60s	60 s	30 s	30 s
Operating temperature range	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C
Sound pressure level:				
- motor	max 62 dB (A)			

Technical specifications - Actuators	BEE24, BEE24-ST	BEE230	BEN24, BEN24-ST	BEN230
Power supply	AC 24V 50/60Hz	AC 220-240V 50/60 Hz	AC 24V 50/60Hz	AC 220-240V 50/60 Hz

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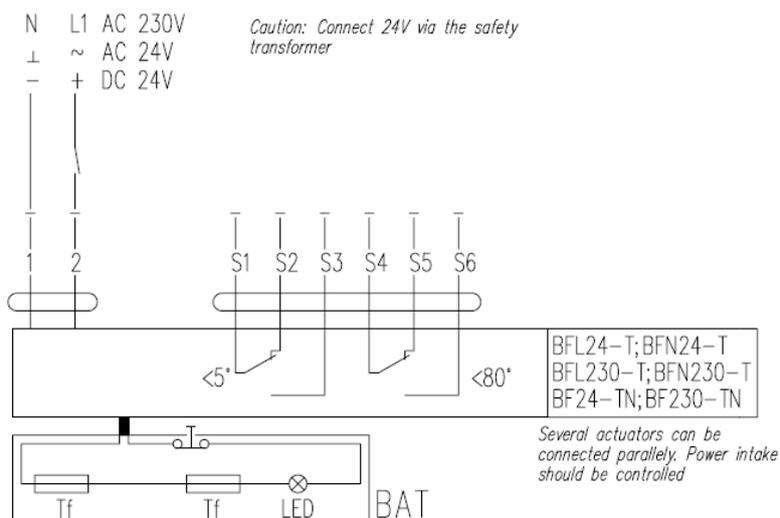
	DC 24 V		DC 24V	
Power demand:				
- for spring tensioning	2,5 W	3,5 W	3 W	4 W
- for spring holding	0,1W	0,4 W	0,1 W	0,4 W
Sizing (apparent power)	5 VA	6 VA	6 VA	7 VA
Appliance class	III	II	III	II
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
Auxiliary circuit breaker:	2xSPDT 3A AC 250V	2xSPDT 3A AC 250V	2xSPDT 3A, AC 250V	2xSPDT 3A, AC 250V
- activation position [degrees]	5°, 80°	5°, 80°	5°, 80°	5°, 80°
Torque:				
- motor	25 Nm	25 Nm	15 Nm	15 Nm
Cable connection:				
- motor (L = 0.9 m)	3x0,75 mm <sup>2</sup>	3x0,75 mm <sup>2</sup>	3x0,75 mm <sup>2</sup>	3x0,75 mm <sup>2</sup>
- auxiliary circuit breaker	6x0,75 mm <sup>2</sup>	6x0,75 mm <sup>2</sup>	6x0,75 mm <sup>2</sup>	6x0,75 mm <sup>2</sup>
Movement time: (0-90°)				
- motor	60s	60 s	30 s	30 s
Operating temperature range	- 30 ...+55°C	- 30 ...+55°C	- 30 ...+55°C	- 30 ...+55°C
Sound pressure level:				
- motor	max 58 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	2.5 W	3,5 W	4 W	5 W
– when in standby	0.7 W	1.1 W	1.4 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	4 Nm	4 Nm	9 Nm	9 Nm
- spring	3 Nm	3 Nm	7 Nm	7 Nm
Wire connection:				
– motor (length: 0.9 m)	2 x 0.75 mm <sup>2</sup>			
– auxiliary switch	6 x 0.75 mm <sup>2</sup>			
Movement time (0–90°):				
- motor	60 s	60	60 s	60 s
- return spring	≈ 20 s	≈ 20 s	≈ 20 s	≈ 20 s
Working temperature range	-30 ...+55°C	-30 ...+55°C	-30 ...+55°C	-30 ...+55°C
Sound pressure level:				
- motor	max 43 dB (A)	max 43 dB (A)	max 55 dB (A)	max 55 dB (A)
- spring	~ 62 dB (A)	~ 62 dB (A)	~ 67 dB (A)	~ 67 dB (A)

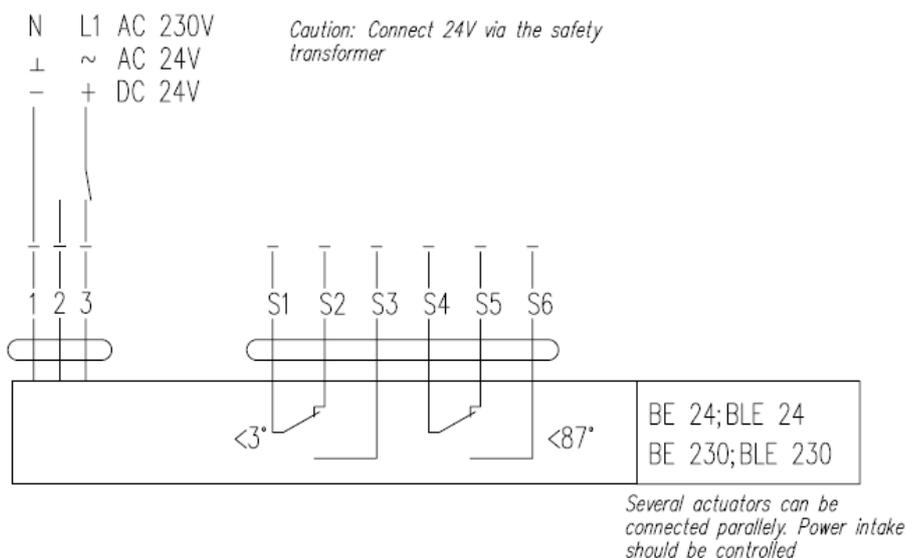


Connection diagram for the BF24-T and BF230-T actuators

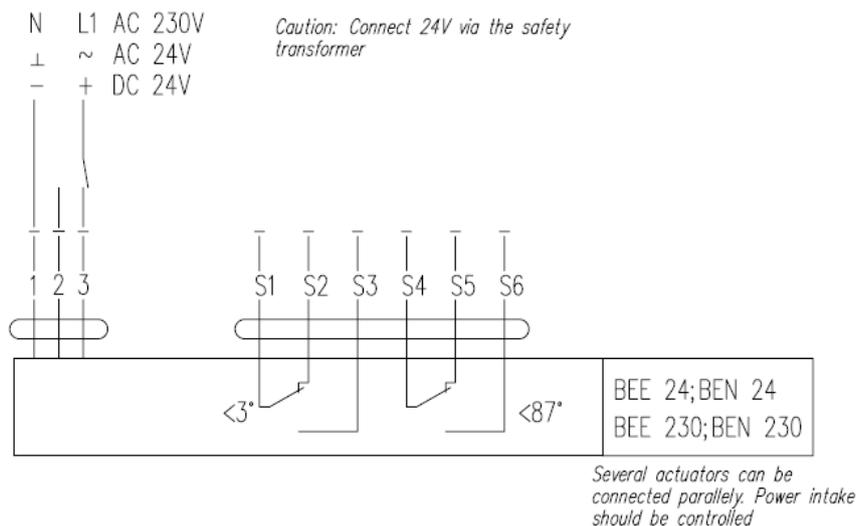
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**Connection diagram for the BFL24-T, BFL230-T, BFN24-T, BFN230-T, BF24-TN and BF230-TN actuators**



**Connection diagram for the BE24, BLE24, BE230 and BLE230 actuators**



**Connection diagram for the BEE24, BEN24, BEE230 and BEN230 actuators**

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## Note:

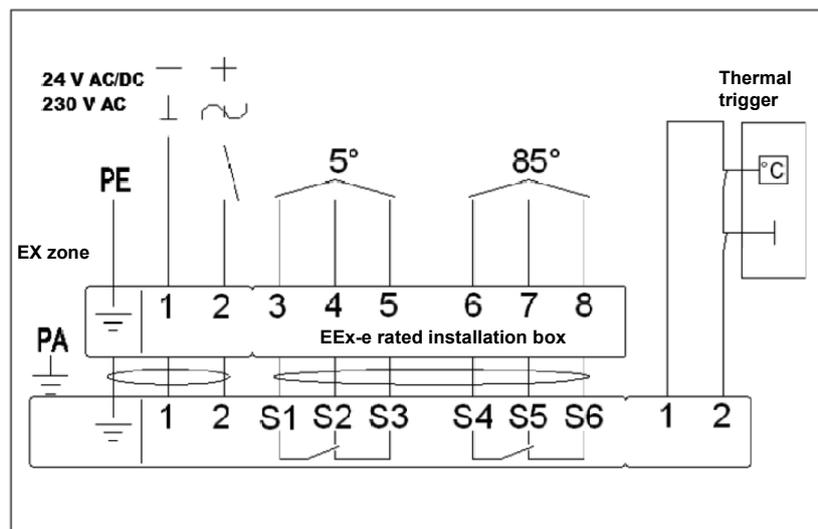
The BE and BLE actuator operating control requires a three-wire system. The actuator sense of rotation is switched by applying the supply voltage to terminal 2 or 3, depending on the desired sense.

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.

## EXBF actuators

Technical specifications	EXBF 24	EXBF 230
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	7 W	8 W
- for spring holding	2 W	3 W
Sizing (apparent power)	10 VA	12.5 VA
Ingress protection rating	IP 66	IP 66
Auxiliary circuit breaker:	2 x SPDT 6A (3) max 250 V AC	
- activation position	5°, 80°	5°, 80°
Torque:		
- motor	18 Nm	18 Nm
- spring	12 Nm	12 Nm
Movement time: (90°)		
- motor	150 s	150 s
- return spring	$\approx 20s$	$\approx 20s$
Ambient temperature	- 20 ...+50°C	- 20 ...+50°C



Connection diagram for the 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.

## RST/KW1 trigger control gear

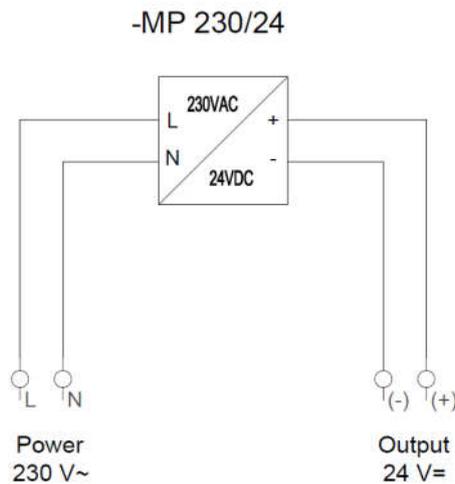
The RST/KW1/S version has the limit switches installed in the gear itself. The electrical connections shall be made by connecting the properly labelled conductors to the electrical system. A fusible trigger is installed in the gear. The dampers with the RST/KW1/230I, RST/KW1/230P mechanisms, are supplied with the RST/KW1/24... triggering and control mechanism, together with the 230/24V transformer module type MP230/24. For the trigger and control mechanism of the "impulse" type damper, adequate power must be provided to ensure that the control signal is supplied to the device in the event of fire.

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	RST/KW1/S	RST/KW1/24I	RST/KW1/24P	RST/KW1/24I +MP230/24	RST/KW1/24I +MP230/24
Supply voltage	X	24 V – 48 V DC	24 V – 48 V DC	230V AC	230V AC
Power consumption	X	3.5 W	1.6 W	4.5 W	2.5 W
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				
Electrical connection	X	- release: cable 0.6 m, 2x0.5 mm <sup>2</sup> - limit switch: cable 0.6 m, 6x0.5 mm <sup>2</sup>			

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 open)	Wire number: 6-7 – NO (normally open)
	Wire number: 4-5 – NC (normally closed)	Wire number: 7-8 – NC (normally closed)



**Connection diagram for transformer module type MP230/24**

## **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.

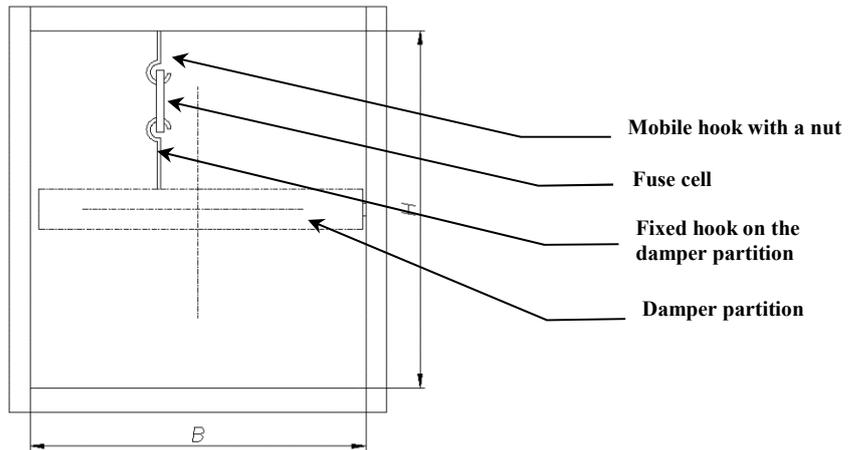
## **Release and control mechanism RST**

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.

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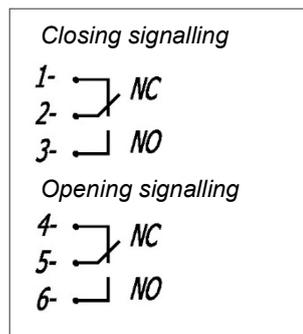
Independent damper limit switches – for the RST variant

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°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 out 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

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➤ 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](mailto: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 grants 12 months of warranty for the equipment quality from the date of purchase, unless the sales contract states otherwise.
2. Submit each warranty claim to “MERCOR” SA in 7 days from the date of discovery of a warranty eligible defect
3. Submit warranty claims by calling at: tel. +48 58 341 42 45, by fax: +48 58 341 39 85, by e-mail: [reklamacje@mercor.com.pl](mailto:reklamacje@mercor.com.pl) or by traditional mail: “MERCOR” SA, ul. Grzegorza z Sanoka 2, 80-408 Gdańsk, Poland.
4. If physical defects of equipment are found during the warranty period, “MERCOR” SA warrants and represents to remove them in shortest possible time from serving the written warranty claim with the proof of purchase or sales contract, subject to Item 10.
5. “MERCOR” SA has the right to extend the time of repair if the defect removal is complicated or requires purchase of custom components or spare parts.
6. The warranty liability only covers all defects arising from causes present in the equipment at the date of sale.
7. Defects caused by improper operation or otherwise as listed in Item 10 herein, the buyer / warranty beneficiary will be charged with the costs of their removal.
8. Condition for rectifying defects is that the applicant makes the site/localisation where devices are installed available, in particular, ensuring: the lift in the case of devices mounted at a height above 3m, free access to the rooms where the devices were installed and necessary revisions, dismantling thermal insulation, disassembling suspended ceilings, disassembling other installations, if they prevent free access to the device.
9. If the device can not be repaired at the place of its installation, “MERCOR” SA reserves the necessity of its disassembly, possible delivery to the address indicated by “MERCOR” SA and re-assembly. The cost of this operation lies with the buyer / holder of the guarantee.
10. 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 Operating and Maintenance Manual, section “SERVICING AND MAINTENANCE”.
  - Any damage beyond reasonable control of “MERCOR” SA, 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 in accordance with 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 effects 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.

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- 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 Operating and Maintenance Manual and/or good construction practice.
  - The equipment and/or parts thereof with removed or damaged nameplate (rating plate) and/or warranty seals.
11. The buyer/warranty rights holder is required to operate the equipment properly and carry out technical inspection and maintenance in accordance with the section "MAINTENANCE AND SERVICING" in the following Operating and Maintenance Manual.
12. This warranty shall be made immediately void and null if:
- The buyer/warranty rights holder modifies the product design without prior authorisation from "MERCOR" SA.
  - 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 "MERCOR" SA 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.
13. Any circumstances listed in Item 10 will relieve "MERCOR" SA from the obligation of surety.

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