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OPERATION AND MAINTENANCE MANUAL (OMM)

mcr FID PRO type fire damper



Rev. mcr FID PRO 23.08.03.24

FIRE VENTILATION SYSTEMS DEPARTMENT

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Markings used in the OMM

- Option available
- Option unavailable

NOTE

As at the date of issue of this Operation and Maintenance Manual, previous revisions become invalid. The Operation and Maintenance Manual does not apply to fire dampers manufactured before the date of its issue.

mcr FID PRO single-plane fire dampers

CAUTION

The product should be stored and used in rooms where:

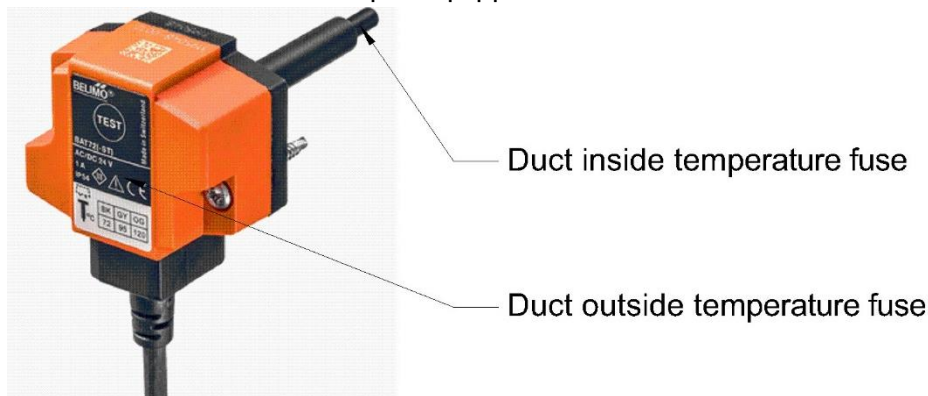
- there is no access to dust, gases, caustic vapors and other aggressive chemical vapors that can destroy the insulating elements and structural elements;
- the flaps are not affected by direct sunlight and UV radiation;
- the maximum relative humidity does not exceed 80% at the temperature of +20 °C;
- the ambient temperature is between - 20 °C and + 40 °C;
- there are no vibrations.



In the event that harmful conditions exist or may occur in the place of use, additional measures must be taken to protect the product.

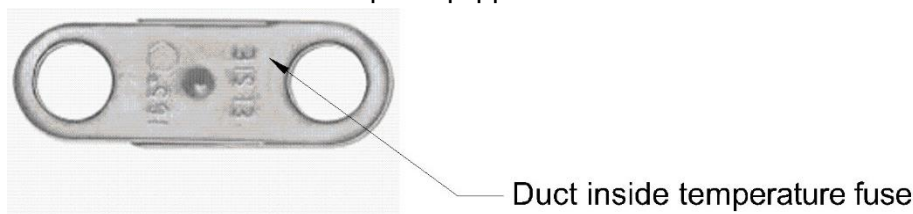
In the case of cut-off and transfer fire dampers, the device is equipped with a thermal release containing one-time temperature fuses. During normal operation, the above mentioned element should be protected against the affect of the permissible temperature Tmax (see the table below). When it is exceeded, the temperature fuses may operate, which is a normal operation and is not covered by the guarantee or warranty.

A thermal release for a damper equipped with an electric actuator:



Thermal fuse for temperature	72 °C	95 °C
Temperature fuse inside the duct	Tmax 40 °C	Tmax 60 °C
Outdoor temperature fuse	Tmax 40 °C	Tmax 40 °C

A thermal release for a damper equipped with KW1 or RST mechanism:



Thermal fuse for temperature	72 °C	95 °C
Temperature fuse inside the duct	Tmax 40 °C	Tmax 60 °C

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1. INTRODUCTION

The aim of this Operation and Maintenance Manual is to make the user familiar with the intended use, design, operating principle, correct installation and operation of the product. The OMM also contains additional information on the conditions of use, maintenance and warranty of the product.

2. SUBJECT OF THE MANUAL

This OMM applies to a whole group of mcr FID PRO type single-plane fire dampers. Complying with the recommendations included in the OMM will ensure proper functioning of the fire damper in its purpose of being a fire protection system used in interior spaces as well as the safety of its users.

3. INTENDED USE OF THE FIRE DAMPER

Use

The mcr FID PRO type single-plane fire dampers may be used as:

- fire dampers - mcr FID PRO/S
- smoke control dampers for fire ventilation - mcr FID PRO/V
- smoke control dampers for mixed-mode fire ventilations systems - mcr FID PRO/M
- transfer dampers - mcr FID PRO/T
- pressure relief dampers - mcr FID PRO/V

Fire dampers are not designed to work in ventilation systems where there is a risk of them coming into contact with dust-laden air unless they have been covered by a special, tailor-made service and technical inspections programme.

On request (non-standard execution), dampers can be made in a "version" of stainless/acid-resistant steel. This means that the elements made of galvanized steel, used in the standard version of the damper, will be replaced with stainless/acid-resistant steel. The remaining components of the damper (e.g. thermal releases, actuators, pins, blades, fire seals) will be made of materials normally used for the production of the device).

Fire resistance

The fire resistance ratings of the mcr FID PRO type fire dampers are as follows:

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

The fire ratings depend on the use as well as the manner and place of fire damper installation.

Manufacturing versions

The mcr FID PRO type fire dampers may be manufactured as:

- rectangular fire dampers
- rectangular fire dampers with circular connections
- round fire dampers

Size range

The mcr FID PRO type fire dampers are manufactured in the following dimensions:

- width: from 100 to 315 mm
- width for nipple fire dampers: 170 mm (with an option to be extended to 310 mm)
- width for coupling fire dampers: 140 mm (with an option to be extended to 280 mm)

The fire dampers may be additionally fitted with connection flanges.

Apart from the standard dimensions, there is a possibility to manufacture fire dampers with any dimensions within the above ranges. The maximum surface area of the mcr FID PRO type fire damper is 0.078 m². The minimum surface area of these fire dampers is 0.008 m².

4. DESIGN AND OPERATING PRINCIPLE OF THE FIRE DAMPER

Design

The mcr FID PRO single-plane fire dampers consist of a housing with a round cross section, movable cut-off partition as well as a release and control mechanism which is started remotely or automatically (after a thermal release has been actuated). Fire dampers' housings are made of galvanized steel sheet or stainless steel sheet. In the fire damper' housing, along its perimeter, there is an insulation perforation of suitable width. The fire damper's cut-off partition is made of non-flammable board. The partition is lined on both sides with sheet metal reinforcement. On the

mcr FID PRO single-plane fire dampers

housing, in the area of insulation perforation, an intumescent seal is installed. Along its perimeter, the partition is sealed by means of a rubber seal installed on the partition.

Normally, the fire dampers have a spigot (nipple or coupling) connection. Connection flanges are available on request.

Operation

The operating principle and behaviour of the mcr FID PRO single-plane fire dampers depends on the version and use:

fire dampers - mcr FID PRO/S

These dampers remain open during normal operation. They are closed (safety position) in the following ways:

- automatically – by actuation of the thermoelectric release
- manually – by pressing the control button on the thermoelectric release
- remotely – by actuation of the axial electric actuator with a return spring as the supply voltage disappears
- automatically – by actuation of the thermal release and the power spring

smoke control dampers for fire ventilation systems - mcr FID PRO/V

These fire dampers remain closed during normal operation. They are opened (safety position) in the following ways:

- remotely – by actuation of the axial electric actuator without a return spring as the supply voltage is appropriately applied to the actuator
- remotely – by actuation of the electromagnetic release and spring as the voltage is supplied

smoke control dampers for mixed-mode fire ventilation systems - mcr FID PRO/M

Depending on the function they serve, these fire dampers remain either closed or open during normal operation.

They are opened/closed (safety position) in the following ways:

- remotely – by actuation of the axial electric actuator without a return spring as the supply voltage is appropriately applied to the actuator

transfer dampers - mcr FID PRO/T

These dampers remain open during normal operation. They are closed (safety position) in the following ways:

- automatically – by actuation of the thermoelectric release
- manually – by pressing the control button on the thermoelectric release
- remotely – by actuation of the axial electric actuator with a return spring as the supply voltage disappears
- automatically – by actuation of the thermal release and the power spring

pressure relief fire dampers - mcr FID PRO/V

Depending on the function they serve, these fire dampers remain either closed or open during normal operation. They are opened/closed (safety position) in the following ways:

- remotely – by actuation of the axial electric actuator without a return spring as the supply voltage is appropriately applied to the actuator

It is possible to check manually the correct functioning of a fire damper with electric actuator for maintenance purposes. To do this, use a special hex key which should be placed in the socket marked on the actuator. Then, by rotating the hex key, the fire damper's partition may be set in the desired position. Bearing in mind to take enough care, rotate the hex key uniformly and slowly. Too fast and violent rotation may cause damage to the internal mechanism of the actuator or the power transmission system.

To manually check correct operation of fire dampers with a manual release and control mechanism in the integrated version for maintenance purposes, press the lever on the mechanism.

NOTE

Never try to open or close a fire damper's partition by pulling it directly. Such attempts may cause damage to the self-locking powertrain of a fire damper and this is not covered by warranty.

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

mcr FID PRO single-plane fire dampers

Release and control mechanisms

The release and control mechanism of mcr FID PRO fire dampers may be one of the following:

Electric actuator:

BF 230-T	/S	/V	/V-M	/T
BF 24-T (-ST)	/S	/V	/V-M	/T
BF 24-T-TL	/S	/V	/V-M	/T
BFL 230-T	/S	/V	/V-M	/T
BFL 24-T (-ST)	/S	/V	/V-M	/T
BFN 230-T	/S	/V	/V-M	/T
BFN 24-T (-ST)	/S	/V	/V-M	/T
BF 230-TN	/S	/V	/V-M	/T
BF 24-TN (-ST)	/S	/V	/V-M	/T
BF 24-TN-TL	/S	/V	/V-M	/T
MLF 24-T1	/S	/V	/V-M	/T

BE 230	/S	/V	/V-M	/T
BE 24 (-ST)	/S	/V	/V-M	/T
BLE 230	/S	/V	/V-M	/T
BLE 24 (-ST)	/S	/V	/V-M	/T
EXBF 230	/S	/V	/V-M	/T
EXBF 24	/S	/V	/V-M	/T
BEE 24 (-ST)	/S	/V	/V-M	/T
BEE 230	/S	/V	/V-M	/T
BEN 24 (-ST)	/S	/V	/V-M	/T
BEN 230	/S	/V	/V-M	/T
MLF 230-T1	/S	/V	/V-M	/T

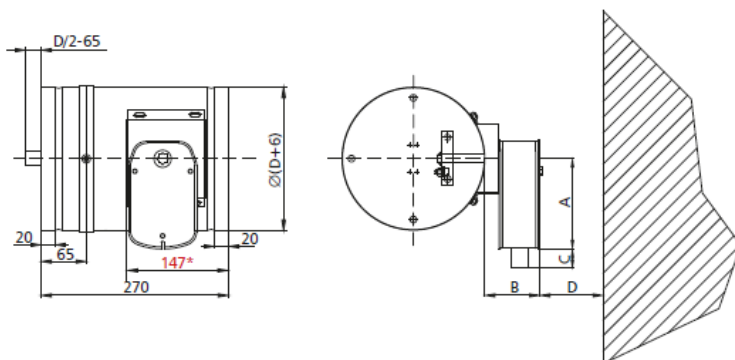
Spring mechanism:

RST	/S	/V	/M	/T
RST/KW1/24P	/S	/V	/M	/T
RST/KW1/230P	/S	/V	/M	/T

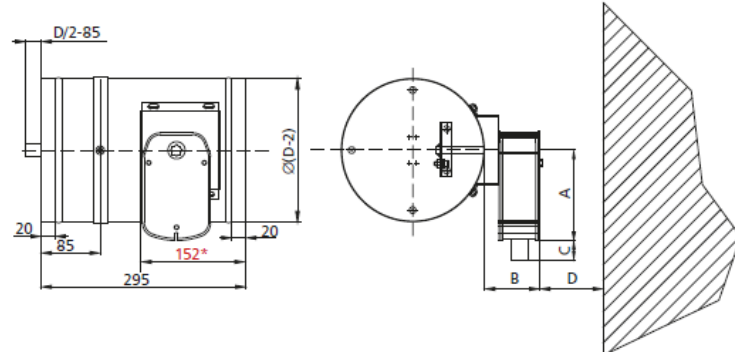
RST/KW1/S	/S	/V	/M	/T
RST/KW1/24I	/S	/V	/M	/T
RST/KW1/230I	/S	/V	/M	/T

Main dimensions

female connection type (muff)



male connection type (nipple)



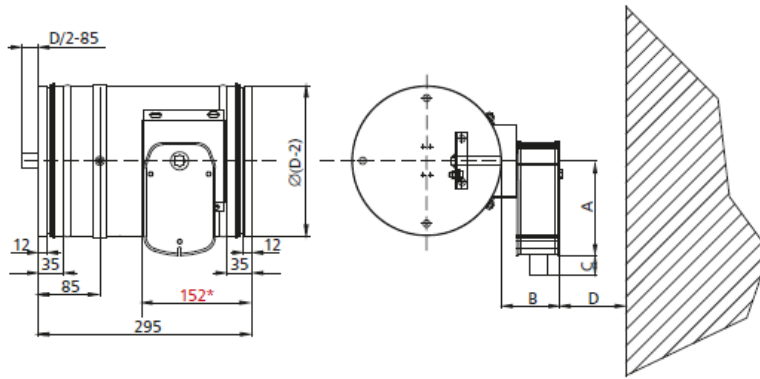
Gear	A	B	C	D
BFL	138	74	30	75
BF 24TL-ST	198	85	10	75
EXBF	225	190	55	100
MLF	160	93	30	75

* embedding border

version with circumferential seal type F

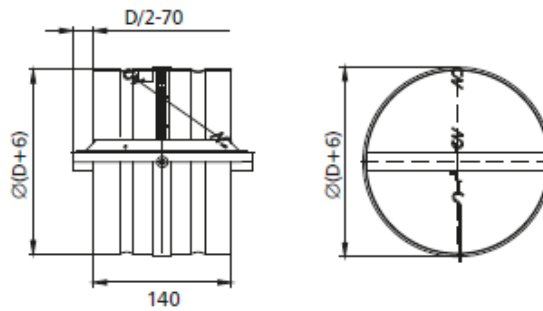
mcr FID PRO single-plane fire dampers

wersja z obwodową uszczelką F

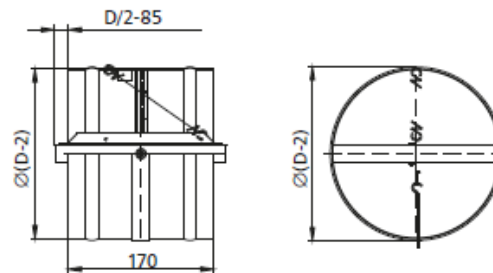


mcr FID PRO fire damper with actuator

female connection type (muff)



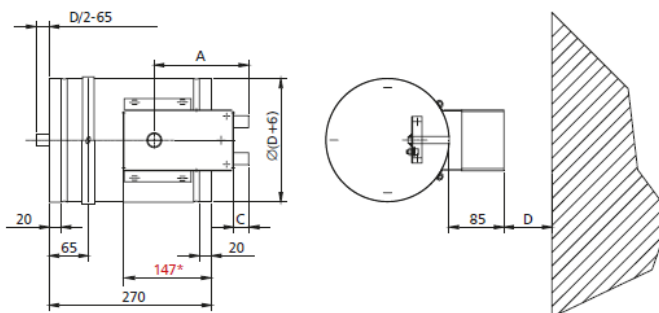
male connection type (nipple)



embed symmetrically with respect to axis

mcr FID PRO fire damper with RST

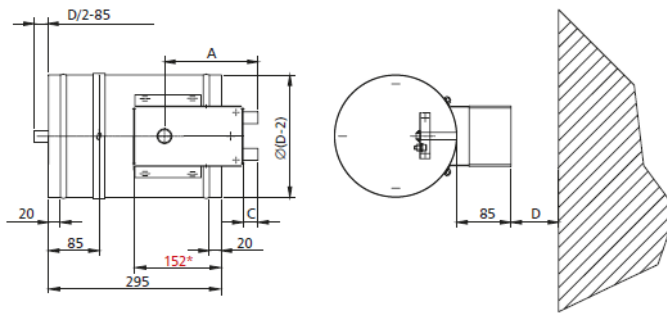
female connection type (muff)



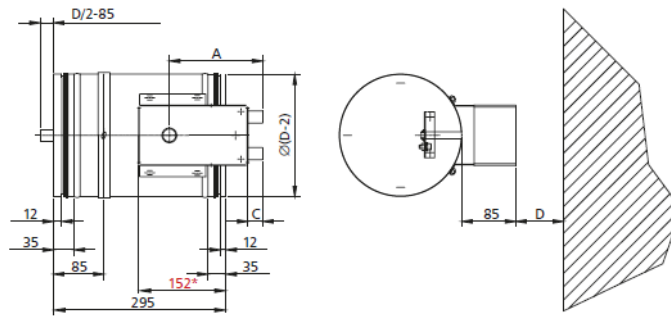
Gear	A	B	D
RST/KW1	130	30	75
* embedding border			

mcr FID PRO single-plane fire dampers

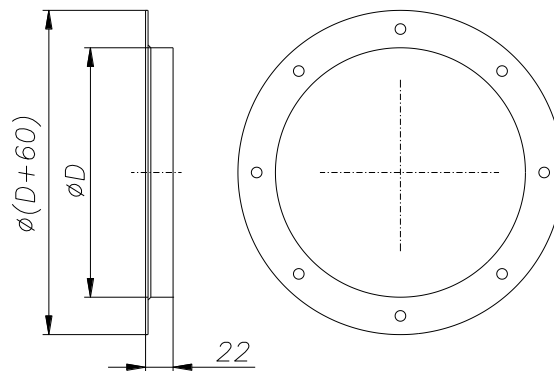
male connection type (nipple)



version with circumferential seal type F

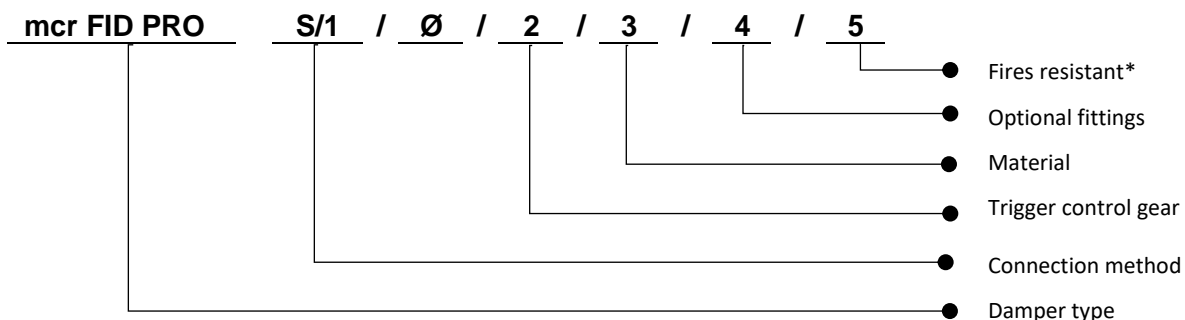


mcr FID PRO fire damper with RST/KW1



Flange dimensions in the case of the flange version of the fire damper. Spacing and quantities of openings according to EN 12220 (dimensions of flanges with circular intersection for comfort ventilation purposes).

5. MANUFACTURER'S DESIGNATION OF THE FIRE DAMPER



1 – connection method:

N or [no symbol] – male connection (nipple)

M – female connection (muff)

K – flange

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2 – control:

– trigger control mechanism RST

RST-KW1/S – thermal trigger

RST-KW1/S/WK2 – thermal trigger + limit switch (open/closed blade signal)

RST-KW1/24I – thermal trigger + “pulse” electromagnetic trigger, U = 24 V DC and a limit switch (closed/open partition signalling)

RST-KW1/24P – thermal trigger + “break” electromagnetic trigger, U = 24 V DC and a limit switch (closed/open partition signalling)

RST-KW1/230I – thermal trigger + “pulse” electromagnetic trigger, U = 230 V AC and a limit switch (closed/open partition signalling)

RST-KW1/230P – thermal trigger + “break” electromagnetic trigger, U = 230 V AC and a limit switch (closed/open partition signalling)

– Belimo trigger control mechanism

BF24TL-T-ST (with the BKN230-24MP option) – actuator with a return spring, U = 24 V, MP Bus digital control

BF24TL-TN-ST (with the BKN230-24MP option) – actuator with a return spring, U = 24 V, MP Bus digital control

EXBF24-T – explosion proof actuator with a return spring in the Ex version, U = 24 V AC/DC

EXBF230-T – explosion proof actuator with a return spring in the Ex version, U = 230 V AC

BFL24-T – actuator with a return spring, U = 24 V AC/DC

BFL230-T – actuator with a return spring, U = 230 V AC

BFL24-T-ST (with the BKN230-24 option) – actuator with a return spring, for the SBS Control system

3 – material

[no symbol] – galvanised steel, Zn 275 g/m² coating

KN – stainless steel

KK – 1.4404 acid-proof steel

4 – additional parameters

[no symbol] – trigger for 72°C

ZBAE95 – thermoelectric trigger 95°C

ZBAT95 – thermoelectric trigger at 95°C

T93-95 – thermal trigger for 95°C

Position of the control mechanism

[no symbol] – perpendicular to the axis of damper rotation

WOK – along the axis of damper rotation

Axis of rotation of the damper

[no symbol] - horizontal axis of rotation

PP – vertical axis of rotation

PP_D – vertical axis of rotation - mechanism at the bottom of the damper

PP_G – vertical axis of rotation - mechanism at the top of the damper

Extended damper casing

[no symbol] – standard casing length

400 – casing with a length of 400 mm

External perimeter seals

[no symbol] – version without seals

UKW – version with external seals

5 – fire resistance

[no symbol] – EI120 fire resistance

EI60 – EI60 fire resistance

* – for damper with RST-KW1 mechanism, a trigger control mechanism is mounted as standard along the axis of rotation – exception

6. INSTALLATION OF THE FIRE DAMPER

NOTE

During the installation of a fire damper and while conducting finishing work, you should allow for the possibility of later access to the fire damper and removal of the release and control mechanism in order to carry out possible service work and technical inspections.

The mcr FID PRO fire dampers may be installed in the following space dividing elements (walls or structural floors):

■ masonry/concrete walls with the minimum thickness of 125 mm (120 min for EIS120 class, and using mortar)

■ brickwork walls or blockwork walls with the minimum thickness of 125 mm (120 min for EIS120 class, and using mortar)

■ walls made of boards with the minimum thickness of 125 mm

mcr FID PRO single-plane fire dampers

■ structural floors with the minimum thickness of 150 mm

Additionally, fire dampers may be installed:

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

How to fill the space between the damper and the partition:

- wet - e.g. cement, gypsum or other mortar with appropriate approvals for use in construction, ensuring the required fire resistance of the set: partition / filling / flap
- dry - installation culvert system based on mineral wool and sealing / swelling mortars.

The mcr FID PRO fire dampers may also be installed in space dividing elements in buildings that have a lower fire-resistance rating. In such cases, fire dampers will have a fire-resistance rating equal to that of a space dividing element, with the condition of smoke leakage rating being satisfied. When installing a fire damper in a given type of building partition which is thinner than required, its thickness should be increased along the perimeter of the fire damper, e.g. by installing an additional board or other building element.

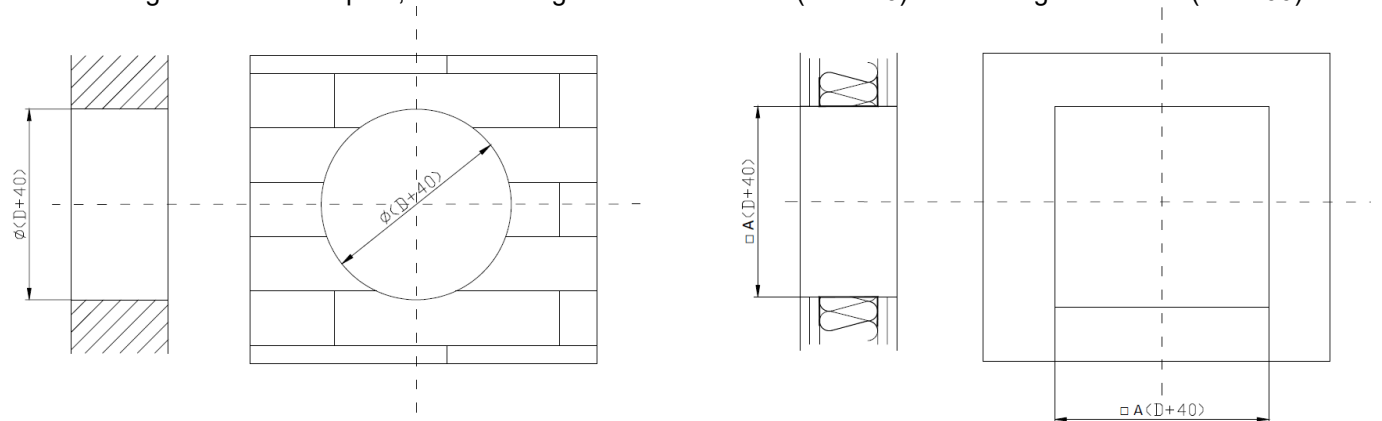
6.1. PRE-INSTALLATION INSPECTION

Each fire damper is inspected by the manufacturer before packing and transport. Once the product has been unpacked at the destination, visual inspection should be conducted to check for possible deformations of the housing or fire damper transport damage.

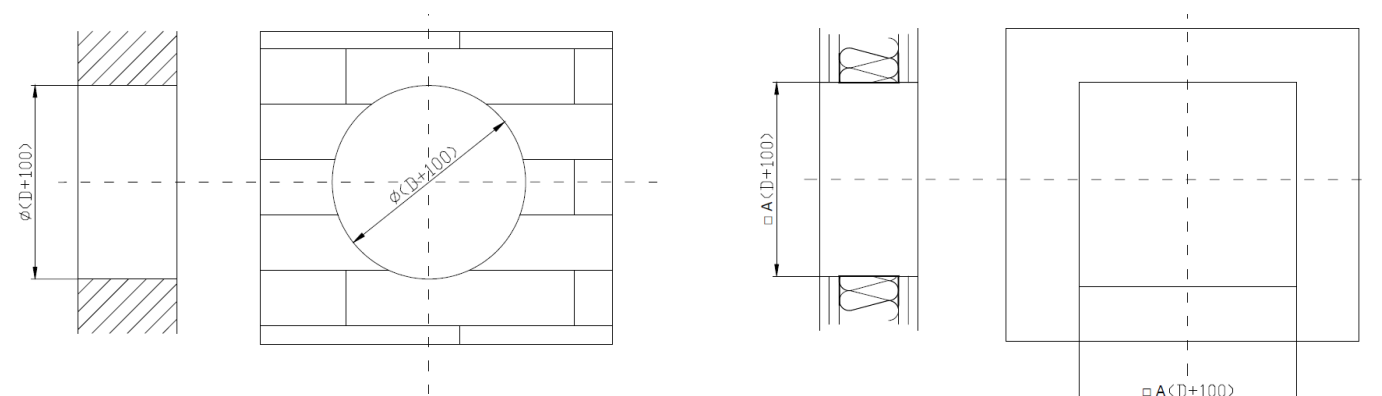
6.2. INSTALLATION OPENING

The recommended minimum size of the opening enabling correct installation of the damper is:

- for dampers installed in the wet system, filling the gap between the partition and the damper: min. $(D + 40)$ mm. In the case of flange mounted dampers, the mounting hole is a minimum $(D + 80)$ mm. For light walls $\square A (D + 40)$.
- for dampers installed in a dry system, filling the gap between the wall and the damper: min. $(D + 100)$ mm. In the case of flange mounted dampers, the mounting hole is a minimum $(D + 140)$ mm. For light walls $\square A (D + 100)$.



Preparation of the mounting hole for dampers installed using mortar

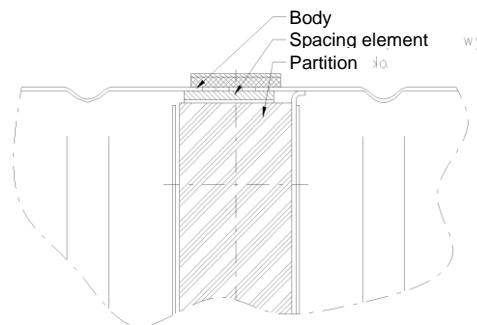


Preparation of the mounting hole for dampers installed using mineral wool

6.3. BUILDING IN (EMBEDDING) THE FIRE DAMPER

NOTE

At least a 2.5 mm gap between the body and partition has to be ensured at each place along the fire damper perimeter. The fulfilment of this requirement is a prerequisite for product warranty.



Ensuring an appropriate gap between the fire damper body and partition

The mcr FID PRO fire damper works correctly if the rotation axis of the partition is horizontal. The release and control mechanism may be located on the right or left of a fire damper irrespectively of the air flow direction. Installing a fire damper on its side, i.e. with rotation axes of the partition being vertical, is only permitted when this has been previously made known to the manufacturer at the time of placing the order.

Before building in/embedding, a fire damper should be placed axially in a space dividing element (a wall or structural floor that divides separate fire compartments), i.e. in a previously prepared opening. Next, level and secure the fire damper so that it does not move. Once the above have been completed, start manually the fire damper's partition, checking if it rotates correctly (it should not touch the housing elements, etc.). Close the fire damper's partition. The gap between the fire damper's housing and the wall should be completely filled with appropriate mixture which will provide the required fire-resistance rating of the wall and the fire damper. Moreover, special attention should be paid to ensure that the mixture does not come into contact with the equipment of the fire damper responsible for its proper operation (release and control mechanism, partition, seals and limiters). For this purpose, it is essential that you put plastic film or other material on the fire damper, which will protect it while masonry and finishing work is being carried out. The partition has to remain closed until the mixture sets. Once it has set, remove the brackets. Then, again open and close the fire damper in order to check if it works correctly. In the case of installation of a fire damper in a wall made of boards, the space between the fire damper's housing and the wall should be completely filled with A1 class non-flammable (certified) mineral wool. Its density and thickness should ensure fire-resistance not lower than that of the wall in which the fire damper has been installed. Additionally, the filled space should be sealed with an appropriate mixture or mastic having fire-resistance required by the wall.

In order to ensure fire-resistance of a fire separation, the depth to which it can be built in should never be exceeded, i.e. the rotation axis of the fire damper's partition cannot be outside the wall (off the wall surface). In the case of space dividing elements with a thickness comparable to that of a fire damper, it is recommended that the fire damper be installed in such a manner that its axis divides the thickness of the space dividing element precisely in half.

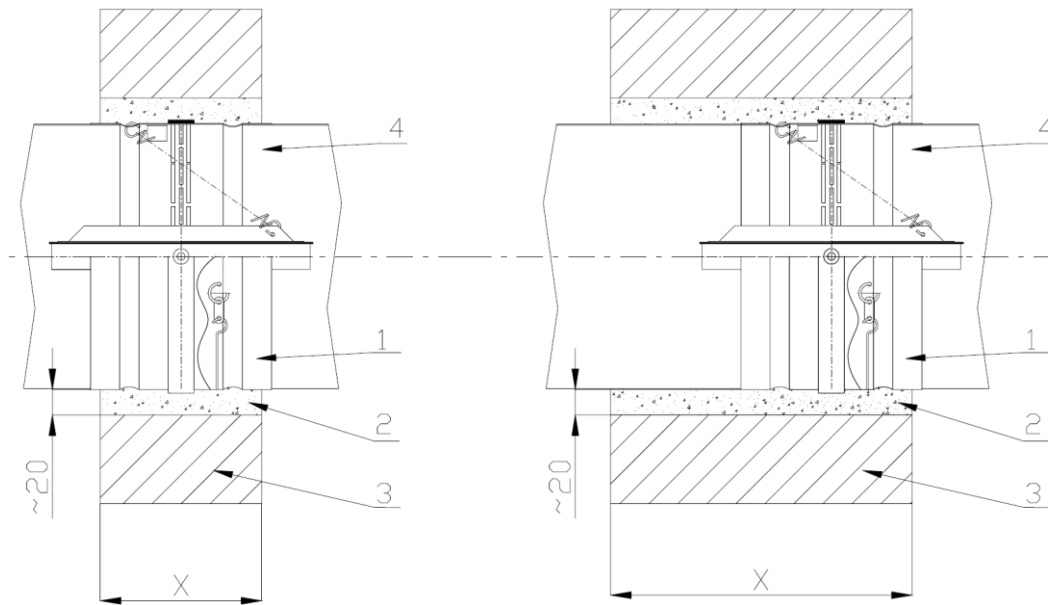
The installation of the fire damper off the wall shall be the exception to the above rule. If the fire damper is installed this way, a ventilation duct section between the fire damper's partition and fire separation shall be secured by means of fire-resistant boards or layers of mineral wool and structurally reinforced as recommended by the manufacturer of the solution. The fire resistance of the duct between the fire damper and the fire separation construction, should have a classification of not less than required for the fire damper and fire separation. The fire damper can be installed at a maximum distance of 1000mm from the fire zone space dividing elements.

The built-in fire damper has to be coaxially connected to a ventilation duct. When installing a fire damper, be sure that you do not damage its body, and in particular do not subject it to any stress. A fire damper cannot function as a "structural element" of a duct or ventilation system in which it has been installed. It is unacceptable to drill through the fire damper's housing, screw in bolts/screws and other elements that pierce through the housing towards the interior of the fire damper. Having connected the fire damper to a ventilation duct, check again if it works correctly.

When installing the mcr FID PRO fire dampers, ensure in particular that the thermal release (fusible component) is not damaged. It should not be exposed to high temperature (fire, welders, soldering irons) which causes its actuation (it is a component that has been designed to be used once only and will not be replaced under warranty). Similarly, the intumescent seals installed in the housing of the fire damper should not be exposed to high temperature.

mcr FID PRO single-plane fire dampers

Expansion of the seals makes it impossible to close the fire damper. After the installation has been completed, clean thoroughly the fire damper and ensure that no debris has been left inside, as it could affect its correct operation.



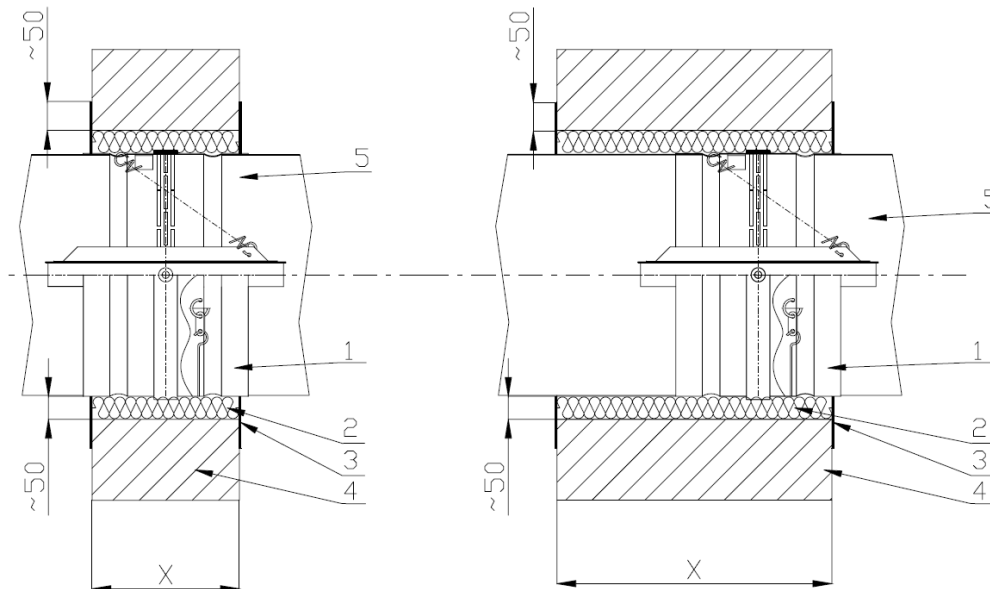
- 1. Fire damper
- 2. E.g. cement mortar

- 3. Wall
- 4. Ventilation duct

X – wall thickness

The minimum depth of filling with mortar for the length of the body of the device.

Installation of the mcr FID PRO fire damper with a spring mechanism in masonry walls, brickwork walls or blockwork walls using mortar



- 1. Fire damper
- 2. Mineral wool with a density min. 150 kg/m³

- 3. Elastic fire protection intumescent paint
- 4. Wall

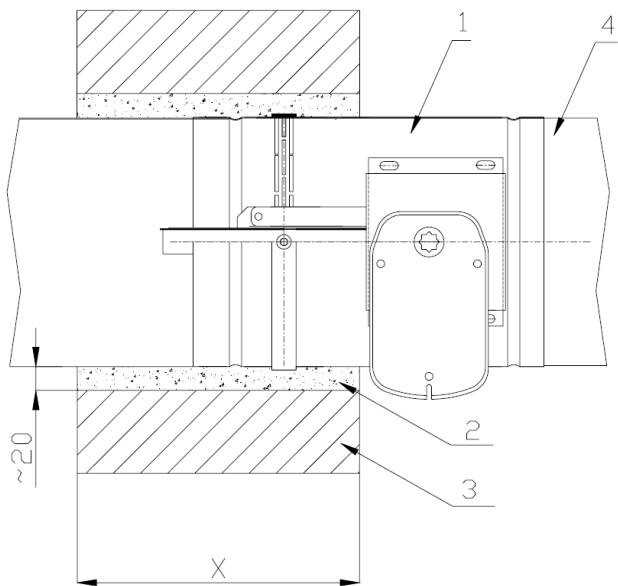
- 5. Ventilation duct
- X – wall thickness

The minimum depth of filling with mortar for the length of the body of the device.

Installation of the mcr FID PRO fire damper with a spring mechanism in masonry walls, brickwork walls or blockwork walls using mineral wool

Recommended protection of the installation passage in a dry system based on wool of min. 150 kg / m³ with non-flammability class A1 and securing the contact point of the damper with the wall and wall with fire protection intumescent paint mcr Polylac Elastic thickness 1mm, according to the picture above. The manufacturer allows the use of other materials with parameters not worse than the recommended solution and has the appropriate approval documents confirming the appropriate class of fire resistance.

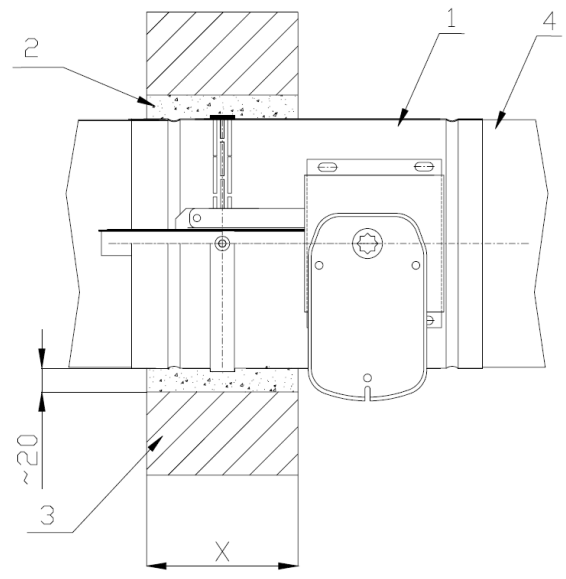
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- 1. Fire damper
- 2. E.g. cement mortar

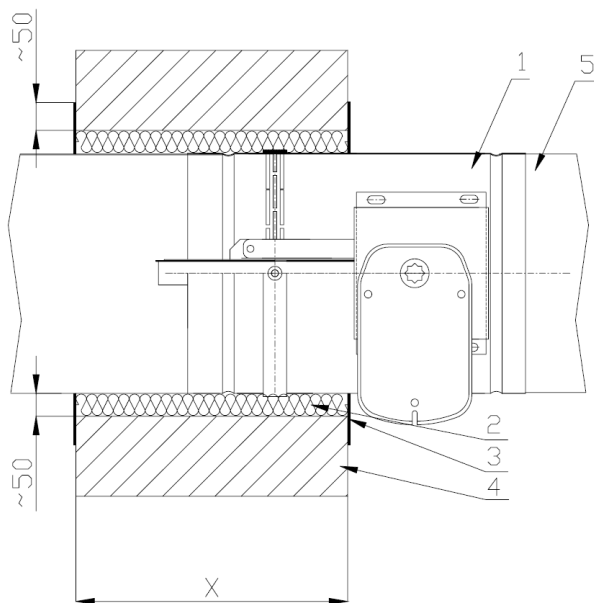
- 3. Wall
- 4. Ventilation duct

The minimum depth of filling with mortar for the length of the body of the device.



X – wall thickness

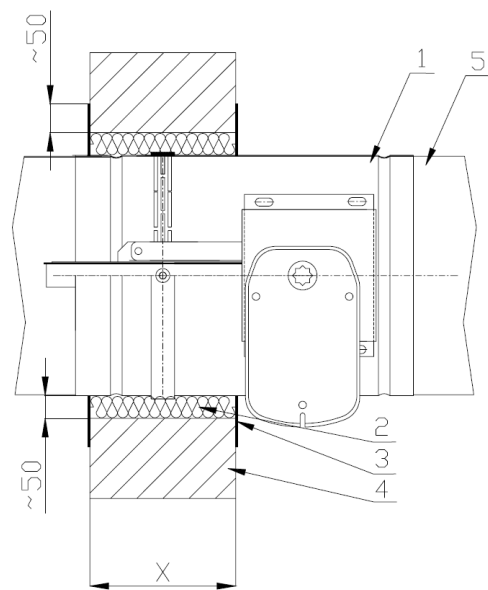
Installation of the mcr FID PRO fire damper with an electric mechanism in masonry walls, brickwork walls or blockwork walls using mortar



- 1. Fire damper
- 2. Mineral wool with a density min. 150 kg/m³

- 3. Elastic fire protection intumescent paint
- 5. Ventilation duct

The minimum depth of filling with mortar for the length of the body of the device.

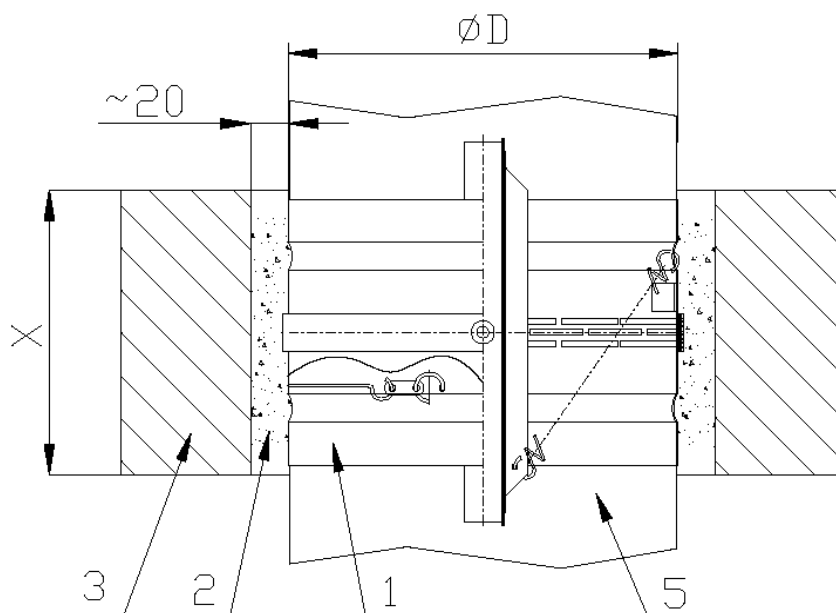


X – wall thickness

Installation of the mcr FID PRO fire damper with an electric mechanism in masonry walls, brickwork walls or blockwork walls using mineral wool

Recommended protection of the installation passage in a dry system based on wool of min. 150 kg / m³ with non-flammability class A1 and securing the contact point of the damper with the wall and wall with fire protection intumescent paint mcr Polylac Elastic thickness 1mm, according to the picture above. The manufacturer allows the use of other materials with parameters not worse than the recommended solution and has the appropriate approval documents confirming the appropriate class of fire resistance.

mcr FID PRO single-plane fire dampers

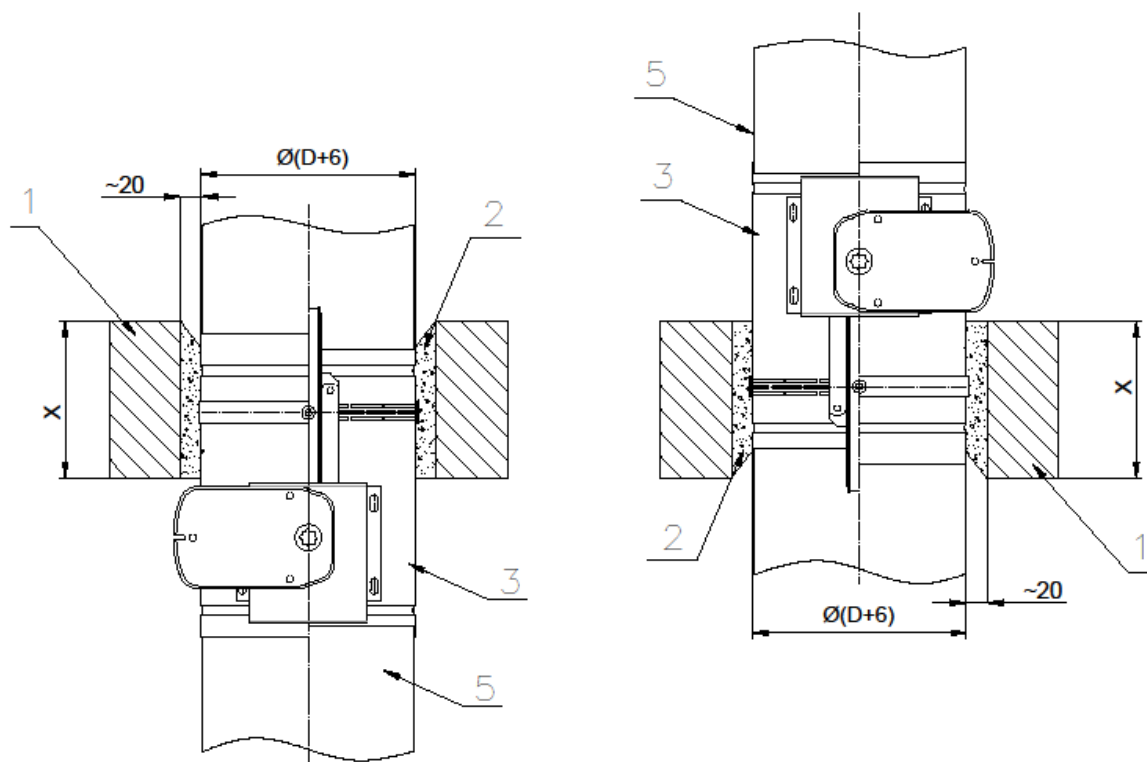


- 1. Fire damper
- 2. E.g. cement mortar

3. Structural floor

- 5. Ventilation duct
- X – structural floor thickness

Installation of the mcr FID PRO fire damper with a spring mechanism in structural floors using mortar



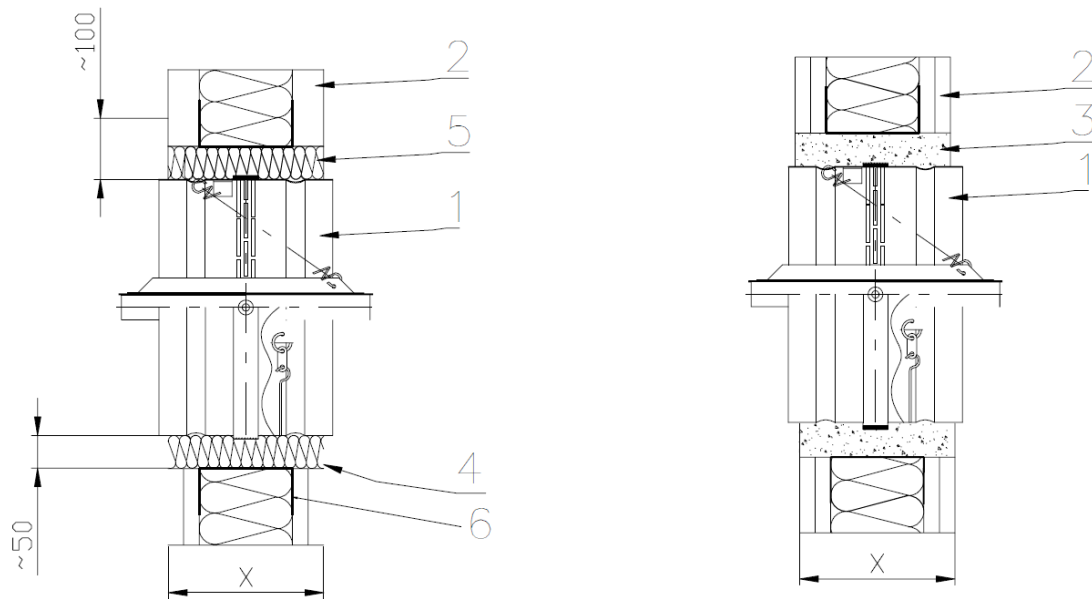
- 1. Structural floor
- 2. E.g. cement mortar

3. Fire damper

- 5. Ventilation duct
- X – structural floor thickness

Installation of the mcr FID PRO fire damper with an electric mechanism in structural floors using mortar

mcr FID PRO single-plane fire dampers



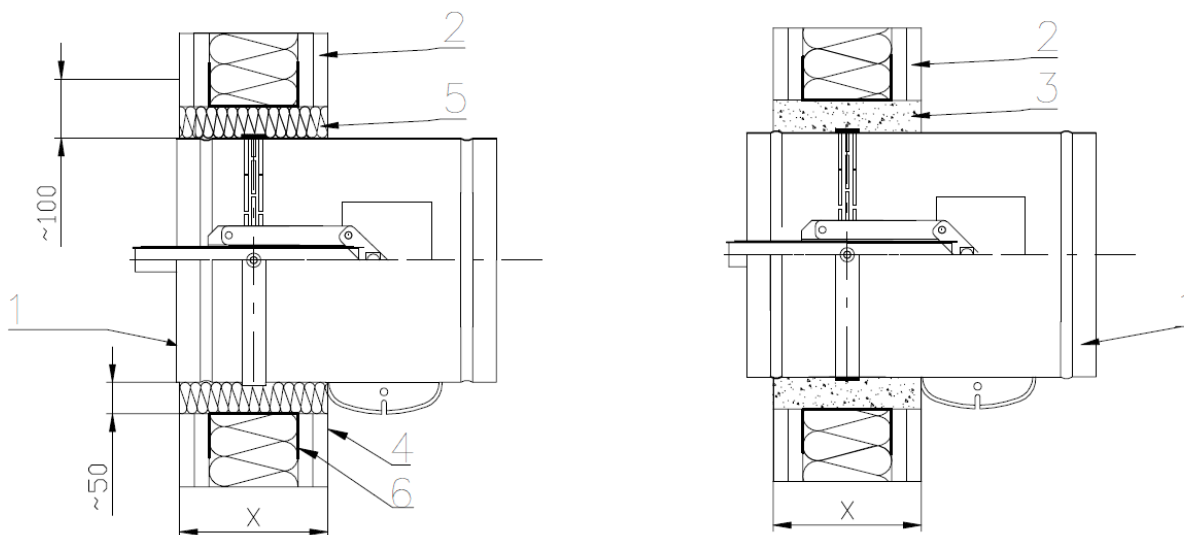
- 1. Fire damper
- 2. Flexible wall
- 3. Board, e.g. a fire-resistant gypsum board

- 4. Elastic fire protection intumescent paint

- 5. Mineral wool with a density min. 150 kg / m³
- X – wall thickness
- 6 - structural profile

Installation of the mcr FID PRO fire damper with a spring mechanism in walls made of boards

Recommended protection of the installation passage in a dry system based on wool of min. 150 kg / m³ with non-flammability class A1 and securing the contact point of the damper with the wall and wall with fire protection intumescent paint mcr Polylac Elastic thickness 1mm, according to the picture above. The manufacturer allows the use of other materials with parameters not worse than the recommended solution and has the appropriate approval documents confirming the appropriate class of fire resistance.



- 1. Fire damper
- 2. Flexible wall
- 3. Board, e.g. a fire-resistant gypsum board

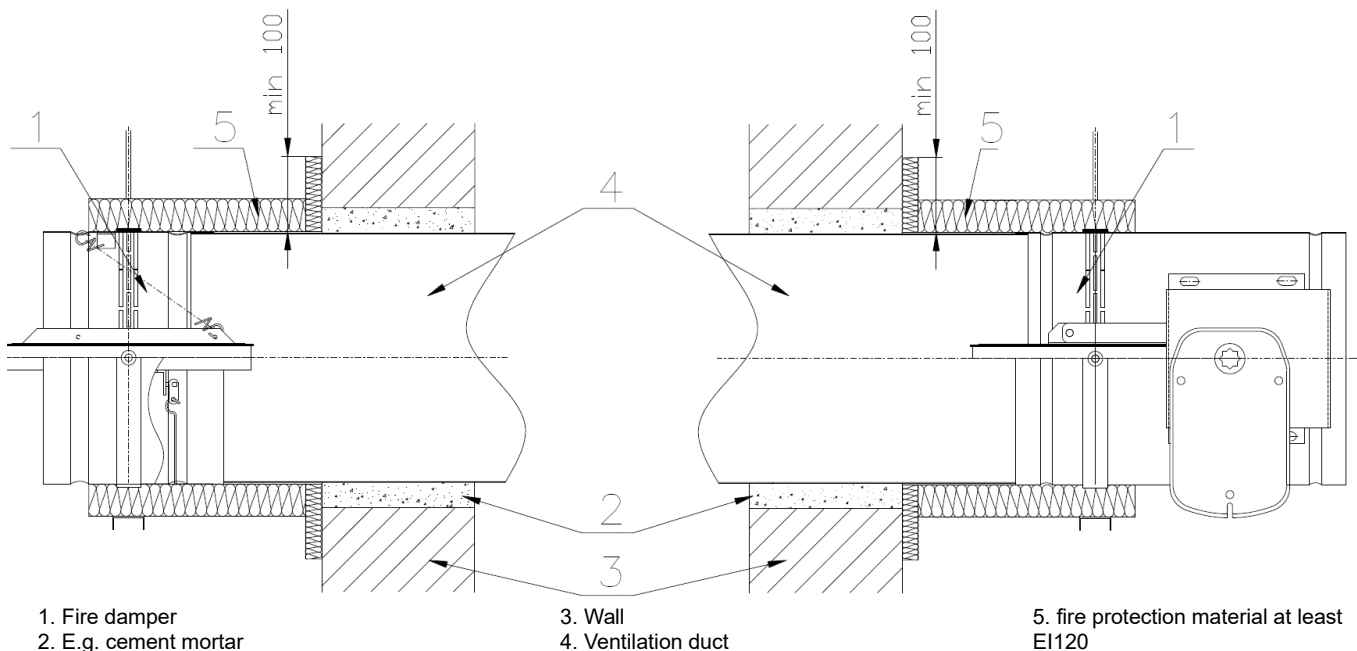
- 4. Elastic fire protection intumescent paint

- 5. Mineral wool with a density min. 150 kg / m³
- X – wall thickness
- 6 - structural profile

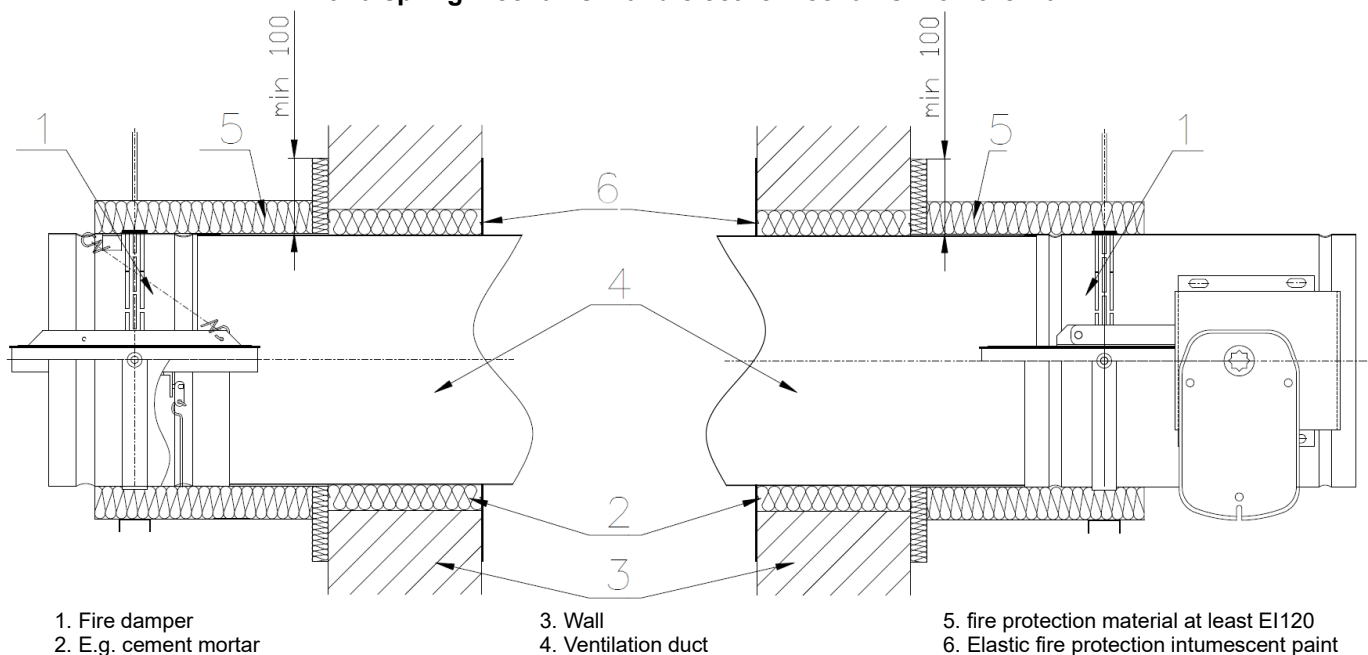
Installation of the mcr FID PRO fire damper with an electric mechanism in walls made of boards

mcr FID PRO single-plane fire dampers

Recommended protection of the installation passage in a dry system based on wool of min. 150 kg / m³ with non-flammability class A1 and securing the contact point of the damper with the wall and wall with fire protection intumescent paint mcr Polylac Elastic thickness 1mm, according to the picture above. The manufacturer allows the use of other materials with parameters not worse than the recommended solution and has the appropriate approval documents confirming the appropriate class of fire resistance.



Example illustrating how to install the mcr FID PRO fire damper with a spring mechanism and electric mechanism off the wall



Example illustrating how to install the mcr FID PRO fire damper with a spring mechanism and electric mechanism off the wall

Recommended protection of the installation passage in a dry system based on wool of min. 150 kg / m³ with non-flammability class A1 and securing the contact point of the damper with the wall and wall with fire protection intumescent paint mcr Polylac Elastic thickness 1mm, according to the picture above. The manufacturer allows the use of other materials with parameters not worse than the recommended solution and has the appropriate approval documents confirming the appropriate class of fire resistance.

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6.4. ELECTRICAL CONNECTIONS

Once a fire damper has been correctly installed, it is necessary to connect it to the electrical wiring system (using the wiring system's cables) if the fire damper is equipped with controls or other components that require such connection. Shown below are the wiring diagrams and basic electrical data of the release and control mechanisms supplied together with the mcr FID PRO fire dampers.

6.4.1. Electric actuators – electrical specification

Actuator type	Location of the damper isolation partition
- Belimo BFL series - Belimo BFN series - Belimo BF series - Mercor MLF 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	MLF 24, MLF24 T1	MLF230, MLF230 T1
Power supply	AC 24V 50/60Hz DC 24V	AC 220-240V 50/60 Hz	AC 24V 50/60Hz DC 24 V	AC 220-240V 50/60 Hz
Power demand:				
- for spring tensioning	7 W	8,5 W	7.2 W	4.2 W
- for spring holding	2 W	3 W	2,5 W	2.5 W
Sizing (apparent power)	10 VA	11 VA	10 VA	10 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 3 A, 250V~	2xSPDT 3(1,5)A AC 250V	2xSPDT 3(1,5)A AC 250V
- activation position [degrees]	5°, 80°	5°, 80°	5°, 80°	5°, 80°
Torque:				
- motor	18 Nm	18 Nm	5 Nm	5 Nm
- spring	12 Nm	12 Nm	5 Nm	5 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	120 s	120 s	75-80s	75-80s
- return spring	16 s	16 s	20s	20s
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	~ 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:				

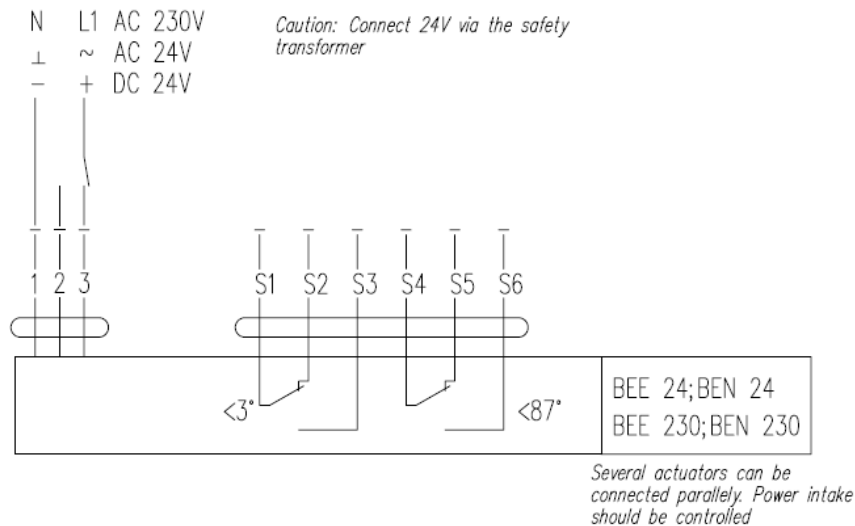
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- motor (L = 0.9 m)	3x0,75 mm ²	3x0,75 mm ²	3x0,75 mm ²	3x0,75 mm ²
- auxiliary circuit breaker	6x0,75 mm ²	6x0,75 mm ²	6x0,75 mm ²	6x0,75 mm ²
Movement time: (0-90°)	60s	60 s	30 s	30 s
- motor				
Operating temperature range	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C
Sound pressure level:	max 62 dB (A)	max 62 dB (A)	max 62 dB (A)	max 62 dB (A)
- motor				

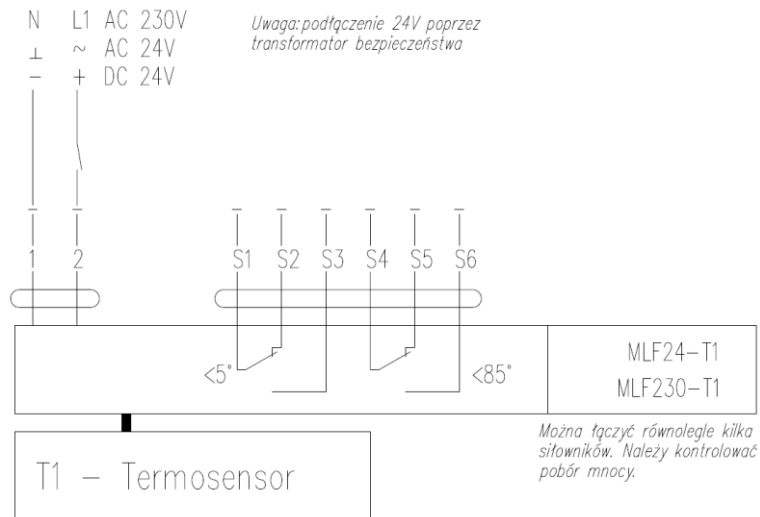
Technical specifications - Actuators	BEE24, BEE24-ST	BEE230	BEN24, BEN24-ST	BEN230
Power supply	AC 24V 50/60Hz DC 24 V	AC 220-240V 50/60 Hz	AC 24V 50/60Hz DC 24V	AC 220-240V 50/60 Hz
Power demand:				
- for spring tensioning	2,5 W	3,5 W	3 W	4 W
- for spring holding	0,1W	0,4 W	0,1 W	0,4 W
Sizing (apparent 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 ²	3x0,75 mm ²	3x0,75 mm ²	3x0,75 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°)	60s	60 s	30 s	30 s
- motor				
Operating temperature range	- 30 ...+55°C	- 30 ...+55°C	- 30 ...+55°C	- 30 ...+55°C
Sound pressure level:	max 58 dB (A)	max 58 dB (A)	max 58 dB (A)	max 58 dB (A)
- motor				

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 ²	2 x 0.75 mm ²	2 x 0.75 mm ²	2 x 0.75 mm ²
– auxiliary switch	6 x 0.75 mm ²	6 x 0.75 mm ²	6 x 0.75 mm ²	6 x 0.75 mm ²
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)

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



Note: MLF actuator cables are not marked with symbols. It should be connected based on the colors of the wires.

MLF230-T Actuator

S1 - Yellow	S4 - Violet
S2 - Blue	S5 - Gray
S3 - Green	S6 - White

MLF24-T Actuator

S1 – Yellow	S4 - Violet
S2 – Blue	S5 - Gray
S3 – Green	S6 - White

Connection diagram for the MLF24 T1 and MLF230 T1 actuators

Note:

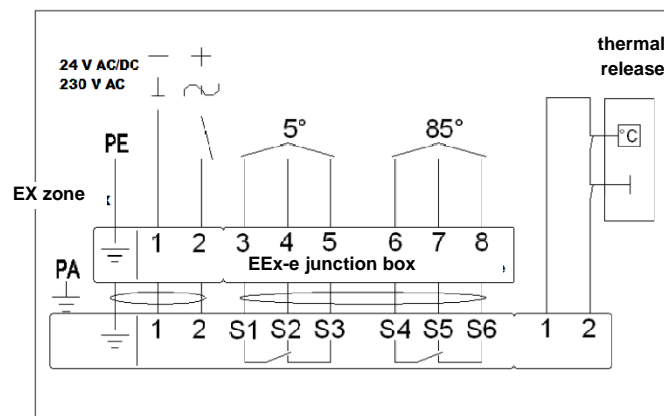
Controlling the operation of BE and BLE actuators requires connecting them to an electrical wiring system using three-wire cables. The change of rotation direction is effected by applying supply voltage to terminal 2 or 3, depending on the desired direction of rotation.

The position of limit switches for all actuator types applies to a potential free position.

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.

6.4.2. EXBF actuators

Technical specification	EXBF 24	EXBF 230
Zone	1, 2, 21, 22	
ATEX class	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:		
– when putting the spring under tension	7 W	8 W
– when in standby	2 W	3 W
Apparent power	10 VA	12.5 VA
IP rating	IP 66	IP 66
Auxiliary switch:	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



Wiring 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.

6.4.3. RST/KW1 release and control mechanism

In the RST/KW1/S manufacturing version, the limit switches are installed on the mechanism itself. Electrical connection is carried out by connecting the wires (marked accordingly) to the electrical wiring system. The fusible release link is installed on the mechanism itself. 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.

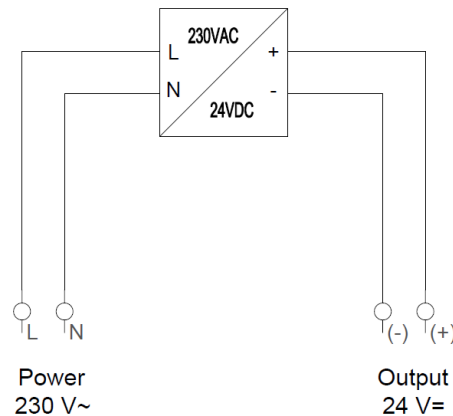
	RST/KW1/S	RST/KW1/24I	RST/KW1/24P	RST/KW1/24I +MP230/24	RST/KW1/24I
Supply voltage	X	24V–48V DC	24V–48V DC	230V AC	230V AC
Power consumption	X	3.5 W	1.6 W	4.5 W	2.5 W
Holding force	X	12 daN	12 daN	12 daN	12 daN
Thermal release actuation temperature	72°C $\pm 2^\circ$ C				
WK1d or WK2d limit switch	NO/NC (changeover switch) 5A, 230V AC				
Limit switches actuation	3°, 87°, $\pm 2^\circ$ tolerance				
Limit switches working temperature	-25 ...+85°C				

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Electrical connection	X	– release: 0.6 m cable, 2 x 0.5 mm ² – limit switch: 0.6 m cable, 6 x 0.5 mm ²			
Rotation angle	92°				
Movement time	≤ 2 s (spring)				
Rotation direction	left				
Mechanism weight	1.2 kg	1.4 kg	1.4 kg	1.5 kg	1.5 kg

KW1 mechanism power supply	WK1 limit switch	WK2 limit switch
Wire no. 1–2	Wire no. 3–4, NO type (normally open)	Wire no. 6–7, NO type (normally open)
	Wire no. 4–5, NC type (normally closed)	Wire no. 7–8, NC type (normally closed)

-MP 230/24



Connection diagram for transformer module type MP230/24

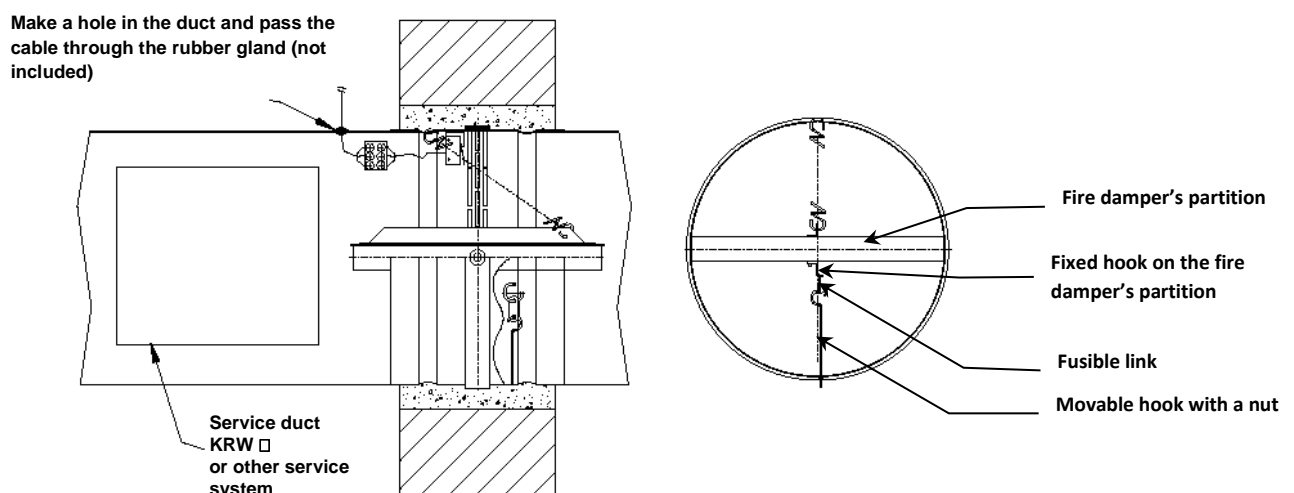
Note! The mechanism limit switches position has been provided for the safety position of the fire damper. For proper operation of a device equipped with electrical actuators, it is recommended that the rated voltage housed tolerance of 24V±2% or 230V±2%. Power supply devices other than listed above may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

6.4.4. RST release and control mechanism

In the RST manufacturing version, limit switches are installed in the fire damper's housing as separate components. The fusible release link is installed on the fire damper's partition. The power spring is installed on the fire damper's partition.

To install the fusible release link in the RST manufacturing version:

- Put the fire damper's partition in the open position.
- Apply fusible link on the hooks attached to the body of the fire damper and partition.
- Remove the nut and lock the hook on the body of the fire damper by tightening up.



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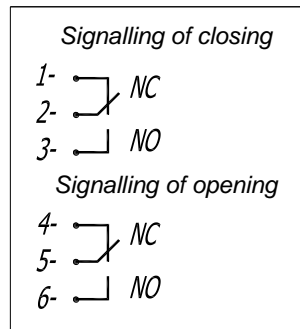
Separate limit switches of fire dampers – for the RST manufacturing version

WK1 – single limit switch – signalling of the closing of the fire damper's partition.

WK2 – a set of two limit switches – signalling of the closing and opening of the fire damper's partition.

Technical data (limit switches)

WK1 and WK2 limit switches	1 x NO/1 x NC SPDT (changeover switch) 5A, 230V AC
Limit switches working temperature	-25 ...+85°C
Housing	plastic



Note

When the partition is closed, the limit switch which signals the closing of the fire damper's partition is overridden (2–3 contact is closed).

WK1 and WK2 limit switches wiring diagram

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. Storage should take place in rooms where:

- there is no access to dust, gases, caustic vapors and other aggressive chemical vapors that can destroy insulating elements and structural elements;
- the dampers are not affected by direct sunlight and UV radiation;
- maximum relative humidity does not exceed 80% at the temperature of + 20 °C;
- the ambient temperature is between - 20 °C and + 40 °C;
- there are no vibrations.

8. MAINTENANCE AND SERVICE (REPAIRS)

Products manufactured by „MERCOR” SA should undergo periodic technical inspections and maintenance at least every 12 months throughout their service life, i.e. in the warranty period and later. Inspections and maintenance should be carried out by the manufacturer or by companies authorised to service „MERCOR” SA's products.

The obligation to conduct regular inspections of fire equipment is stipulated in § 3 section 3 of the Regulation of Minister of Internal Affairs and Administration dated 7 June 2010 on the fire protection of buildings, other structures and areas (Dz. U. [Journal of Laws] 2010 No. 109, item 719).

The recommended operations to be carried out between the inspections are as follows:

- check the condition of electrical connections, paying particular attention to 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

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- check the condition of the fire damper's body, paying particular attention to mechanical damage;
- check for causes that could possibly affect the correct operation of the fire damper.

To enable full service inspections as well as servicing, including servicing under the warranty, such as visual inspections and repairs, the user has to ensure physical access to the product, e.g. by removing thermal insulation/suspended ceilings and disassembling other systems if they prevent free access to the product, etc.

In the case of fire dampers installed in ducts, it is recommended to make a service duct such as the mcr KRW type, for instance.

If devices are installed on the roof, ensure the possibility to enter the roof (ladder or lift).

For matters relating to technical inspections, maintenance and service of our products, please contact the Service Department of „Mercor” SA at serwis@mercor.com.pl, phone 058/ 341 42 45 (extension number 170), fax 058/341 39 85, 8 am–4 pm (Mon–Fri).


9. WARRANTY TERMS AND 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 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. If the devices are used in the above-mentioned places, they should be additionally and independently protected against factors prevailing in the place of their work.
 - 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.
 - The device's thermal trigger was affected by a temperature greater than Tmax (page 3 of the Operation Manual).
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.

 2434	
MERCOR S.A. and 380-470 15 2434-CPR-0009	
PN-EN 15650:2010 (EN 15650:2010) Fire damper mcr FID PRO	
Nominal activation conditions / sensitivity: - sensor activation temperature - reliability sensor	Positive result Positive result
Response time: - closure time	Positive result
Reliability:	10 000 cycles - Positive result
Fire resistance: - Integrity E - Insulation I - Smoke leakage S - Mechanical stability (E class) - Maintenance of the cross section (E class)	EI 120 (v _e h _o i< -- >o)S EI 180 (h _o i< -- >o)S
Operation time durability: - sensor activation temperature - reliability sensor	Positive result Positive result
Operational reliability stability: - opening / closing cycle test	Positive result



2434

MERCOR S.A. and 380-470

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2434-CPR-0009

PN-EN 15650:2010 (EN 15650:2010)

Fire damper

mcr FID PRO

<p>Nominal activation conditions / sensitivity: - sensor activation temperature - reliability sensor</p>	<p>Positive result Positive result</p>
<p>Response time: - closure time</p>	<p>Positive result</p>
<p>Reliability:</p>	<p>50 cycles - Positive result</p>
<p>Fire resistance: - Integrity E - Insulation I - Smoke leakage S - Mechanical stability (E class) - Maintenance of the cross section (E class)</p>	<p>EI 60 (v_e h_o i< -- >o)S</p>
<p>Operation time durability: - sensor activation temperature - reliability sensor</p>	<p>Positive result Positive result</p>
<p>Operational reliability stability: - opening / closing cycle test</p>	<p>Positive result</p>