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TECHNICAL MANUAL

Fire damper MCT WIP PROV



Version mcr WIP PROV 25.02.20.5

FIRE VENTILATION SYSTEMS

CONTENTS

1.	. INTRODUCTION	4
2.	. SUBJECT	4
3.	. INTENDED USE	4
4.	. DESIGN AND OPERATING PRINCIPLE	5
5.	. DEVICE IDENTIFICATION	8
6.	. INSTALLATION	8
	6.1. PRE-ASSEMBLY INSPECTION	8
	6.2. INSTALLATION OPENING	9
	6.3. EMBEDDING / SETTING THE DAMPER	9
	6.4. ELECTRICAL CONNECTION	29
7.	. TRANSPORT & STORAGE CONDITIONS	35
8.	. MAINTENANCE AND SERVICING	35
9.	. GUARANTEE/WARRANTY TERMS & CONDITIONS	

CAUTION:



Risk of injury from sharp edges, sharp corners and thin sheet metal parts. Be careful when working.

Wear protective gloves, safety shoes and a helmet.

Danger of pinching your finger or damaging your hand when the damper partition is in operation. Be careful.

Danger of electric shock. Do not touch live components. Work related to electrical connections may only be performed by employees with appropriate qualifications and authorizations.

Before working on electrical equipment, disconnect the power supply

Technical Manual designations

Option available Option unavailable

NOTE

All previous issues of this Technical Manual expire on the date of issue hereof.

The Technical Manual does not apply to fire dampers manufactured before its date of issue.

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 insulating elements and structural elements;
- the dampers are not affected by direct sunlight and UV radiation;
- the maximum relative humidity does not exceed 80% at the temperature of +20
- 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.



1. INTRODUCTION

The purpose of this Technical Manual is to present the intended use, design, principle of operation, correct installation and operation of the mcr WIP PROV fire damper, intended for fire ventilation systems.

Prior to starting installation and operation of the device, this OMM must be reviewed in detail. Failure to follow the recommendations included in the documentation may lead to dangerous situations, damage to property and/or injuries. The manufacturer shall not be responsible for damage resulting from use that is inconsistent with this documentation.

2. SUBJECT

This Manual concerns the entire group of multi-blade fire dampers type mcr WIP PROV. Compliance with the Manual guidelines ensures correct performance of the device in terms of fire protection of rooms as well as safety of the system users.

3. INTENDED USE

Application

Type mcr WIP PROV multi-blade fire dampers may be used as: smoke control dampers for fire ventilation systems – mcr WIP PROV / V smoke control dampers for mixed fire ventilation systems – mcr WIP PROV / V-M

CAUTION:

Smoke control dampers for fire ventilation systems, designated as mcr WIP PROV /V, and smoke control dampers for mixed fire ventilation systems, designated as mcr WIP PROV / V-M, have a joint declaration of performance, as per the applicable legal regulations. The .../V, .../V–M designations and the word "mixed" used throughout this document are trade designations used by the manufacturer. The design and execution of the abovementioned dampers is the same, regardless of the trade designations.

The dampers cannot be operated in a system exposed to dust, unless included in a special, individually developed service and technical inspections program.

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) Moreover, dampers come as "right" and "left" versions, which means that the motor protective box will be placed on one of the sides of the damper.

Fire resistance

Type mcr WIP PROV fire dampers have the following fire resistance ratings. The fire resistance rating depends on application, method and place of installation of the damper.

- El 120 (ved i↔o) S1000 C10.000 AA multi damper with cover grille/*
- El 90 (ved i↔o) S1000 C10.000 AA multi damper without cover grille
- El 60 (ved i↔o) S1000 C10.000 AA multi damper without cover grille

/* the cover grille may be placed directly adjacent to the damper or at the end of the installation in which the damper is installed.

Versions

mcr WIP PROV dampers are manufactured in the following versions:

Rectangular dampers

- Rectangular dampers with separate round connections
- Circular dampers

Dimension type series

The mcr WIP PROV fire dampers are manufactured in the following size ranges:

Туре	mcr WIP PROV /V mcr WIP PROV /V-M		
Width	from 110 to 1200 mm		
Height	from 270 to 2300 mm		
Length	135 mm		
Rotation axis	Horizontal		
Max. surface area	2.76 m ²		
Min. surface area	0.029 m ²		

In addition to standard dimensions, it is possible to make dampers with intermediate dimensions.

4. DESIGN AND OPERATING PRINCIPLE

Design

The multi-blade mcr WIP PROV damper consists of a rectangular casing made of two steel sections connected with a non-combustible plate using rivets and galvanized steel sheet fasteners, a set of movable blades rotating around their axes and a trigger control mechanism. The damper casing is made of fire resistant panels and galvanized "C" shape metal sheet profiles. The whole casing is reinforced from both sides with corners made of flat steel. Intumescent and ventilation gaskets are installed on the inside of the damper on the H vertical side. The vertical edge with the actuator is protected by means of a fire resistant panel. The engine cover is installed on the H side of the damper. Each damper blade is made of two fire resistant panels, which are displaced against each other. Along the entire blade length, on both sides, there is an intumescent gasket and a ventilation gasket, attached using staples. The damper blades revolve on their own axes, which consist of two steel pins. Each pin is mounted in a brass sleeve installed on the vertical side H of the fire damper casing.

Operating principle

The operating principle and way of working of the mcr WIP PROV multi-blade fire dampers depend on their application versions:

☐ fire dampers – mcr WIP PROV /S

In the normal operating position, the dampers are open. Closing of the dampers (to the safety position) follows: automatically, by tripping the thermoelectric trigger

manually, by pressing the control button on the thermoelectric trigger

remotely, by tripping an electric axial actuator with a return spring caused by isolation from the voltage supply

 \Box automatically, by tripping the thermal trigger and the driving spring.

smoke control dampers for fire ventilation systems – mcr WIP PROV /V

In the normal operating position the dampers are closed.

Opening / closing of the dampers (to the safety position) follows:

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

remotely, by tripping the electromagnetic release and the spring as a result of energization.

 smoke control dampers for mixed fire ventilation systems – mcr WIP PROV / V-M In normal operation the dampers are closed or open, depending on the function carried out. Opening / closing of the dampers (to the safety position) follows: remotely, by tripping an electric axial actuator without a return spring, as a result of applying the supply voltage to the actuator in the right manner.
remotely, by tripping the electromagnetic release and the spring as a result of energization
transfer fire dampers – mcr WIP PROV /T
In the normal operating position the dampers are open. Closing of the dampers (to the safety position) follows: automatically, by tripping the thermoelectric trigger
remotely, by tripping an electric axial actuator with a return spring caused by isolation from the supply voltage
automatically, by tripping the thermal trigger and the driving spring
☐ relief fire dampers – mcr WIP PROV /T-G
In the normal operating position the dampers are open or closed. Depending on the requirements, the damper is closed or opened:
remotely, by tripping an electric axial actuator with a return spring or without a return spring (caused by connecting or isolating from the supply voltage). The actuator does not have a thermoelectric trigger. Actuator operation is initiated by the building's fire protection system.
Manual inspection of the operation of dampers with an electric actuator for maintenance purposes is

Manual inspection of the operation of dampers with an electric actuator for maintenance purposes is possible using a dedicated wrench, which is inserted into the socket marked on the actuator and then a rotational motion allows to set the damper partition in the desired position. Rotate the wrench slowly, smoothly and carefully. Rotating the wrench too fast or too rapidly may damage the internal actuator gear or the power transmission system.

Manual inspection of the correct operation of dampers with a trigger control gear in the integrated version, performed for maintenance purposes, is possible by pressing the lever on the gear. In the case of dampers with electric actuators, manual inspection to confirm proper damper operation should be performed using an mcr T2 tester.

CAUTION:

Never pull directly on the damper blade to open or close the device. This may result in damage of the self-locking driving gear of the damper, and is not covered by guarantee. It is recommended that dampers be opened and closed when the ventilation system is deactivated.

Trigger control gears

The following trigger control gears are available for the mcr WIP PROV fire dampers:

Electric actuator:





Sp	ring gear:											
\square	RST	/S	/	νΓ	/M	/T	RST/K	W1/S	/S	/V	/M	/T
	RST/KW1/24P	/S	/	νΓ	/M	/T	RST/K	W1/24I	/S	/V	/M	/T
	RST/KW1/230P	/S	/	V	/M	/T	RST/K	W1/230I	/S	/V	/M	/T

Basic dimensions



Fig. mcr WIP PROV damper with LC box for the control trigger gear

5. DEVICE IDENTIFICATION



6. INSTALLATION

CAUTION:

During the installation of the damper and finishing works with it, there is a need to consider possibility of future access to the device and possibility of disassembly the control-release mechanism in order to perform maintenance or technical review (LC box).

mcr WIP PROV dampers may be installed in the vertical position with a horizontal rotation axis for the device partition blades:

in/on walls of vertical masonry shafts, made of solid concrete,

in/on walls of vertical masonry shafts, made of bricks or masonry units,

in/on a vertical building shaft made of fire protection boards with the required fire resistance,

in/on vertical shafts made of fire protection materials, with a density of at least 525 kg/m³ and a wall thickness of at least 50 [mm], tested according to EN1366-8 and/or EN1366-9

in/on horizontal shafts made of fire protection materials, with a density of at least 525 kg/m³ and a wall thickness of at least 50 [mm], tested according to EN1366-8 and/or EN1366-9, between sections of such ducts, on the lateral walls of ducts, at duct terminations.

Additionally, the fire dampers can be installed:

beyond walls - installation on/in horizontal ducts

damper adjacent to damper or damper over damper

_ in banks (sets)

If the damper is installed in or on the wall of a duct whose wall thickness is smaller than required, the thickness around the perimeter of the installed damper should be increased, e.g. by installing an additional board or other building element with fire-resistant properties.

6.1. PRE-ASSEMBLY INSPECTION

Each fire damper is inspected by the manufacturer before packing and shipping. After unpacking the delivered damper, visually examine it for any damage or casing deformations, which could have occurred during transport. Check whether the damper opens and closes correctly.

6.2. INSTALLATION OPENING

The recommended size of the hole enabling proper installation of the mcr WIP PROV damper depends on the method and place of installation.

For a damper installed on a horizontal section of a duct made of fireproof boards, a gap of 5-10 mm should be left in the opening on each side of the flap and filled with assembly mortar around the perimeter.

For a damper mounted on a horizontal section of a duct made of fireroof boards "butt-to-side" to the duct wall, the damper should be sealed at the point where the flange meets the wall and enclosed around the perimeter with board bands with a minimum thickness of 50 mm and sealed with mounting mortar.

The damper installed in the wall of a vertical smoke exhaust duct or vertical building shaft must be equipped with a band around the perimeter (horizontal section of the duct) with a wall thickness of at least 50 mm. The gap (width 5-10 mm) between the band and the wall of the shaft/duct and between the band and the flap should be filled around the perimeter with mounting mortar.

6.3. EMBEDDING / SETTING THE DAMPER

mcr WIP PROV fire dampers can work in a vertical position where the partition (damper blades) rotation axis is a horizontal axis. The release and control mechanism can be located on the right or left side of the damper in any direction of air flow.

Prior to installation the damper at the destination site, level and immobilize the device. After these operations, manually activate the damper partition, checking that it rotates correctly (does not interfere with the housing elements, etc.). Then close the damper partition for the duration of the installation and make sure to secure the damper elements (partition, seals, gears, movable elements, limiters etc.) with foil or other covering material until masonry and finishing works are completed. The device partition must remain closed until the mortar used for its installation sets. After setting the mortar, open and close the damper again to check its correct operation. When installing mcr WIP PROV dampers, pay special attention not to expose the intumescent gaskets installed in the fire damper casing to high temperature. Proper operation of the damper is impossible, when gaskets are swollen. After installation, remove the protection elements, carefully clean the fire damper and make sure that there is no debris which could obstruct proper performance of the device. Using drills, screws, bolts or other elements that pierce through the casing to the inside of the damper is prohibited, unless such sites have been marked by the manufacturer.

Installation examples:

Installation of an mcr WIP PROV damper directly on a vertical construction shaft

Admissible shaft execution versions:

- Solid shaft reinforced concrete, wall thickness according to the required fire resistance
- Brick shaft made of bricks, blocks, hollow bricks, wall thickness according to the required fire resistance

Shaft closing wall:

Execution version - material: as above



Installation of an mcr WIP PROV damper directly on a vertical construction shaft

Admissible shaft execution versions:

- Solid shaft reinforced concrete, wall thickness according to the required fire resistance
- Brick shaft made of bricks, blocks, hollow bricks, wall thickness according to the required fire resistance

Shaft closing wall:

• Execution version - material: as above



- 2 Masking grille
- 3 Construction shaft
- 4 Mounting mortar*
- 5 Suspension system rod
- 6 Suspension system, mounting
- 7 Suspension system horizontal element
- 8 Elements made of fireproof boards
- 9 Horizontal section of the duct made of fireproof boards according to EN 1366-8, board thickness min. 50 mm
- 10 Fire-retardant board band around the perimeter of the damper, board thickness min. 50 mm
- X = min 135mm
- Z= min 50 mm board band,
- Y = min 40mm board band,



Top view - vertical shaft



Installation of an mcr WIP PROV damper in a solid or masonry a vertical construction

shaft Admissible shaft execution versions:

- Solid shaft reinforced concrete, wall thickness according to the required fire resistance
- Brick shaft made of bricks, blocks, hollow bricks, wall thickness according to the required fire resistance

Shaft closing wall:

• Execution version - material: as above



Installation of an mcr WIP PROV damper on a solid or masonry a vertical construction

shaft Admissible shaft execution versions:

- Solid shaft reinforced concrete, wall thickness according to the required fire resistance
- Brick shaft made of bricks, blocks, hollow bricks, wall thickness according to the required fire resistance

Shaft closing wall:

- Execution version material: as above
- 1 mcr WIP PROV damper
- 2 Masking grille
- 3 Construction shaft
- 4 Closing wall of the shaft
- 5 Installation mortar*
- 6 Suspension system, mounting
- 7 Suspension system horizontal element
- 8 Suspension system, mounting
 9 Elements made of fireproof boards
- 9 Elements made of fireproof boards
 10 Horizontal section of the duct made of fireproof

boards according to EN 1366-8, board thickness min. 50

 $11-\mbox{Fire}$ protection board band around the perimeter of the hatch

X = min 135mm

Z= min 50 mm - board band,

Y = min 40mm - board band,





Installation of an mcr WIP PROV damper in a solid or masonry a vertical construction

shaft Admissible shaft execution versions:

- Solid shaft reinforced concrete, wall thickness according to the required fire resistance
- Brick shaft made of bricks, blocks, hollow bricks, wall thickness according to the required fire resistance

Shaft closing wall:

• Execution version - material: as above, horizontal section of the duct according to EN1366-8, inside the shaft opening



mm

Installation of an mcr WIP PROV damper in a wall made of panels, vertical construction

shaft Admissible shaft execution versions:

• Fire-resistant system wall made of boards, made in accordance with the manufacturer's recommendations of the solution used

Shaft closing wall:

• Fire-resistant system wall made of boards, made in accordance with the manufacturer's recommendations of the solution used



Installation of an mcr WIP PROV damper in a vertical fire ventilation duct or an air supply duct

Possible duct execution versions:

• Self-supporting duct made of boards with an appropriate fire resistance rating, according to EN1366-8, execution as per the recommendations of the selected solution's manufacturer

Duct closing wall:

• Execution version: material as above, installation between the walls of the duct in its lumen



Installation of an mcr WIP PROV damper on a vertical fire ventilation duct or an air supply duct

Possible duct execution versions:

Self-supporting duct made of boards with an appropriate fire resistance rating, according to • EN1366-8, execution as per the recommendations of the selected solution's manufacturer

Duct closing wall:

Installation on a duct wall, install board bands along the perimeter of the damper. Trims width: at least 135 mm, bands thickness: no less than 50 mm,

- 1 mcr WIP PROV damper
- 2 Self-supporting duct, made of boards, board thickness min. 50 mm
- 3 Board installation bands, board thickness min. 50 mm
- 4 Cover grille
- 5 Installation mortar* 6 - Suspension system



Top view – vertical duct



Vertical cross-section

Installation of an mcr WIP PROV damper in a horizontal branch duct/section from a vertical fire ventilation duct or air supply duct

Possible duct execution versions:

• Self-supporting duct made of boards with an appropriate fire resistance rating, according to EN1366-8, execution as per the recommendations of the selected solution's manufacturer

Duct closing wall:

- Installation in the duct opening, away from the vertical duct. Bands thickness: no less than 50 mm,
- 1 mcr WIP PROV damper
- 2 Self-supporting duct, made of boards
- 3 Horizontal duct section, board thickness min. 50 mm
- 4 Cover grille
- 5 Installation mortar*
- 6 Suspension system
- 7 Additional installation trims, board thickness min. 50 mm
- 8 Connectors, e.g. tap-screws



Top view – vertical duct



Vertical cross-section

Installation of an mcr WIP PROV damper on a horizontal branch duct/section from a vertical fire ventilation duct or air supply duct

Possible duct execution versions:

• Self-supporting duct made of boards with an appropriate fire resistance rating, according to EN1366-8, execution as per the recommendations of the selected solution's manufacturer

Duct closing wall:

- Installation on the duct wall (front), away from the vertical duct. Bands thickness: no less than 50 mm,
- 1 mcr WIP PROV damper
- 2 Self-supporting duct, made of boards3 Horizontal duct section, board thickness min.
- 50 mm
- 4 Cover grille
- 5 Installation mortar*
- 6 Suspension system
- 7 Additional installation trims, board thickness min. 50 mm
- 8 Horizontal duct section, board thickness min. 50 mm
- 9 Connectors, e.g. tap-screws







Vertical cross-section

Installation of an mcr WIP PROV damper on/in a horizontal fire ventilation duct or air supply duct section

Possible duct execution versions:

• Self-supporting duct made of boards with an appropriate fire resistance rating, according to EN1366-8, execution as per the recommendations of the selected solution's manufacturer

Possible installation options:

- On the duct wall (front) cover the damper along the perimeter with additional bands. Bands thickness: no less than 50 mm, trim material density: at least 525 kg/m³
- In the duct use system trims to connect the duct sections, if required by the manufacturer of the selected solution



- 1 mcr WIP PROV damper
- 2 Self-supporting duct
- 3 System bands for the duct section or trim for covering the damper
- 4 Suspension system
- 5 Installation mortar*
- 6 Cover grille adjacent to the damper or at the system termination

Installation of an mcr WIP PROV damper on/in a lateral wall of a horizontal fire ventilation duct or air supply duct section

Possible duct execution versions:

• Self-supporting duct made of boards with an appropriate fire resistance rating, according to EN1366-8, execution as per the recommendations of the selected solution's manufacturer

Possible installation options:

- On any lateral wall of a vertical duct (front) cover the damper along the perimeter with additional trims. Bands thickness: no less than 50 mm,
- In any lateral wall of a vertical duct if the damper protrudes beyond the duct wall, cover the damper along the perimeter with additional bands. Bands thickness: no less than 50 mm,



- 1 Cover grille
- 2 Horizontal duct section
- 3 Bands connecting duct section
- 4 Horizontal duct section
- 5 mcr WIP PROV damper

Installation of an mcr WIP PROV damper on a horizontal branch duct/section from a vertical fire ventilation duct or air supply duct

Possible duct execution versions:

- Vertical shaft, made of panels with the appropriate fire resistance rating, according to EN1366-8
- Horizontal duct made of sheet metal (single-compartment) with the appropriate fire
- resistance rating, according to EN1366-9 Ducting execution as per the recommendations of the selected solution's manufacturer

Duct closing wall:

- Installation in the wall/opening of a horizontal duct, away from the vertical duct. Trims thickness: no less than 50 mm,
- Damper connection to a single-compartment metal sheet duct.



Top view – vertical duct



Vertical cross-section

Installation of an mcr WIP PROV damper (damper above damper) on/in vertical fire ventilation duct, air supply duct

Possible duct execution versions:

• Self-supporting duct made of boards with an appropriate fire resistance rating, according to EN1366-8, execution as per the recommendations of the selected solution's manufacturer

Possible installation options:

In the wall (opening) of a duct or in shaft





1 - mcr WIP PROV damper

- 2 Installation mortar*
- 3 Duct or shaft wall
- 4 Cover grille
- 5 Vertical duct or shaft

6 - Strip of a fire protection panel, thickness at least 50 mm, width A at least 135 mm, placed between the dampers, sealed with installation mortar

Installation of an mcr WIP PROV damper (damper above damper) on construction shaft

Admissible shaft execution versions:

- Solid shaft reinforced concrete
- Masonry shaft made of bricks, masonry units, hollow masonry units

Possible installation options:

• On the wall (opening) of a duct or in shaft





1 - mcr WIP PROV damper

- 2 Masking grille
- 3 Shaft wall
- 4 Shaft wall
- 5 Mounting mortar*
- 6 Fire board strip, thickness min 50mm, width A, min 135mm, placed between flaps, sealed with assembly mortar
- 7 Suspension system
- 8 Suspension system
- 9 Suspension system
- 10 Plate bands, board thickness min. 50 mm
- 11-Section of the channel made of slabs according to EN 1366-8, board thickness min. 50 mm

X= min 135mm - horizontal section of the channel

- Z= min 50 mm board band,
- Y = min 40mm board band,

Installation of an mcr WIP PROV damper (damper adjacent to damper) on/in the wall of a vertical fire ventilation duct, air supply duct

Possible duct execution versions:

• Self-supporting duct made of boards with an appropriate fire resistance rating, according to EN1366-8, execution as per the recommendations of the selected solution's manufacturer

Possible installation options:

In the duct



Installation of an mcr WIP PROV damper (damper adjacent to damper) on/in construction shaft

Admissible shaft execution versions:

- Solid shaft reinforced concrete
- Masonry shaft made of bricks, masonry units, hollow masonry

Possible installation options:

• On shaft wall





- 2 Masking grille
- 3 Shaft wall
- 4 Shaft wall
- 5 Mounting mortar*
- 6 Fire board strip, thickness min 50mm, width A, min 135mm, placed between flaps, sealed with assembly mortar
- 7 Suspension system
- 8 Suspension system
- 9 Suspension system
- 10 Plate bands, board thickness min. 50 mm
- 11 section of the canal made of slabs, board thickness min. 50 mm $\,$
- X= min 135mm horizontal section of the channel Z= min 50 mm - board band,
- Y = min 40mm board band,



Adjacent dampers "left" and "right"

CAUTION:

Smoke extraction ducts, air supply ducts should be made in accordance with the specific solution manufacturer's guidelines. The ducts must have adequate fire resistance in accordance with the fire resistance provided for the entire solution (duct and damper). Seal all connections between the damper and the ducts with appropriate mortar / glue / gaskets, ensuring fire resistance. Fire ventilation ducts must meet the requirements of the EN 1366-8 and/or EN 1366-9 standards and have the appropriate certificates for use in fire protection applications.

The damper installed on ducts should be equipped with independent duct supports (supports, rods, anchors - see drawings) at a distance of up to 100 mm from the center of the damper rotation axis. The smoke exhaust duct and the damper should not be elements supporting each other.

MWP system mesh cover grille



Fig. MWP cover grille for the mcr WIP PROV damper

NOTE

The mcr WIP PROV damper is supplied by the manufacturer along with a MWP system mesh cover grille. The grille and its installation on the damper or at the termination point of the system where the damper is installed is mandatory for the damper to be classified as EIS120. If there is no cover grill installed, the damper will have a resistance rating of EIS60 or EIS 90. Where additional architectural requirements apply, the design of system cover grilles allows to cover the damper and grille with additional cover grilles or to replace the MWP grille with any steel cover grille.

Connection with steel ducts

For the installation of ventilation ducts are provided the rivet nuts in the corners of the damper. In case of need for additional anchorage of the ventilation duct to the damper, it is possible to use hexagon—type self-tapping screws K type ST 3,5x13mm made of galvanized steel according to DIN 7504. The element may be attached to the steel frame of the damper along the perimeter at the sites marked on the following drawing with a dashed line:



Fig. Installation of steel ventilation ducts with an mcr WIP PROV damper

MST lamella-type cover grille



Fig. MST Cover grille for the mcr WIP PROV damper

An alternative solution for an MWP cover grille is an MST lamella-type cover grille The grill is available in two variants: MST-30 and MST-50.

The grille consists of the internal body, which is attached to the wall by means of screws, as well as an external cover frame, attached onto the body following installation. This solution ensures that the installation screws are not visible, which guarantees high aesthetic parameters of the solution. As standard, the cover grill is painted RAL 9010. It may be painted into any RAL colour upon demand.

6.4. ELECTRICAL CONNECTIONS

If the damper has control elements or other parts which need to be connected to the electrical grid, they should be connected after correct mounting of fire damper in the wall. Connection diagrams and basic electrical data of control-release mechanisms with which fire dampers mcr WIP PROV are supplied are shown below. Gears admitted to use with the damper have been marked under item 4 of this Technical Manual.

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 BE series Belimo BLE series Belimo BEE series Belimo BEN series 	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 24 V 50/60 Hz DC 24 V	AC 220-240 V 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, 250 V	2xSPDT 3 A, 250 V~
- 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 ₂	2x0.75 mm ₂
- auxiliary switch	6x0.75 mm ₂	6x0.75 mm ₂
Movement time: (0-90°)		
- motor	120 s	120 s
- return spring	16 s	16 s
Operating temperature range	- 30+50°C	- 30+50°C
Sound pressure level:		
- motor	max. 45 dB (A)	max. 45 dB (A)
- spring	~ 63 dB (A)	~ 63 dB (A)

Technical specifications -	BE24, BE24-ST	BE230	BLE24, BLE24-ST	BLE230
actuators				
Power supply	AC 24 V 50/60 Hz DC 24 V	AC 220-240 V 50/60 Hz	AC 24 V 50/60 Hz DC 24 V	AC 220-240 V 50/60 Hz
Power demand:				
- 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		I		II
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
Auxiliary circuit breaker:	2xSPDT	2xSPDT	2xSPDT	2xSPDT

	6(3) A, 250 V	6(3) A, 250 V	3 A, AC 250 V	3 A, AC 250 V
 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 mm2	3x0.75 mm2	3x0.75 mm2	3x0.75 mm2
 auxiliary switch 	6x0.75 mm2	6x0.75 mm2	6x0.75 mm2	6x0.75 mm2
Movement time: (0-90°)	60.0	60 a	20.0	20.0
- motor	60 S	60 S	30 \$	30 8
Operating temperature	- 30 +50°C	- 30 +50°C	- 30+50°C	- 30+50°C
range	- 30 30 C	- 30 30 C		
Sound pressure				
level:				
- motor	max. 62 dB (A)			

Technical specifications - actuators	BEE24, BEE24-ST	BEE230	BEN24, BEN24-ST	BEN230
Power supply	AC 24 V 50/60 Hz	AC 220-240 V 50/60	AC 24 V 50/60 Hz	AC 220-240 V 50/60
Fower supply	DC 24 V	Hz	DC 24 V	Hz
Power demand:				
 for spring tensioning 	2.5 W	3.5 W	3 W	4 W
 for spring holding 	0.1 W	0.4 W	0.1 W	0.4 W
Sizing (apparent power)	5 VA	6 VA	6 VA	7 VA
Appliance class		II		
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
	2xSPDT	2xSPDT	2xSPDT	2xSPDT
Auxiliary circuit breaker:	3 A AC 250 V	3 A AC 250 V	3 A, AC 250 V	3 A, AC 250 V
- activation position	5° 00°	5° 90°	5° 90°	E° 90°
[degrees]	5,00	5,80	5,00	5,80
Torque:				
- motor	25 Nm	25 Nm	15 Nm	15 Nm
Cable connection:				
- motor (L = 1 m)	3x0.75 mm2	3x0.75 mm2	3x0.75 mm2	3x0.75 mm2
 auxiliary switch 	6x0.75 mm2	6x0.75 mm2	6x0.75 mm2	6x0.75 mm2
Movement time: (0-90°)	60 a	60 a	20 .	20.0
- motor	60 S	60 S	30.8	30.8
Operating temperature	20 +55°C	20 +55°C	20 +55°C	20 +55°C
range	- 30+55 C	- 30+55 C	- 30+55 C	- 30+55 C
Sound pressure				
level:				
- motor	max. 58 dB (A)			

Technical specifications - 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 220-240 V 50/60 Hz
Power demand:				
- for spring tensioning	2.5 W	3.5 W	4 W	5 W
- for spring holding	0.8 W	1.1 W	1.4 W	2.1 W
Sizing (apparent power)	4 VA	6.5 VA	6 VA	10 VA
Appliance class		II		ll
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
Auxiliary circuit breaker:	2xSPDT	2xSPDT	2xSPDT	2xSPDT

	3(0.5) A AC 250 V	3(0.5) A AC 250 V	3(0.5) A, 250 V	3(0.5) A, 250 V
 activation position [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
Cable connection:				
- motor (L = 0.9 m)	2x0.75 mm ₂	2x0.75 mm ₂	2x0.75 mm ₂	2x0.75 mm ₂
- auxiliary switch	6x0.75 mm ₂	6x0.75 mm ₂	6x0.75 mm ₂	6x0.75 mm ₂
Movement time: (0-90°)				
- motor	60 s	60	60 s	60 s
- return spring	20 s	20 s	20 s	20 s
Operating temperature	20 150°C	20 50%	20 155%	20 15500
range	- 30+50 C	- 30+50 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)



Fig. Connection diagram for the BF24-Tand BF230-T actuators



Fig. Connection diagram for the BFL24-T, BFL230-T, BFN24-T, BFN230-T, BF24-TN and BF230-TN



Fig. Connection diagram for the BE24, BEE24, BEN24, BE230, BEE230 and BEN230 actuators



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

Caution

The BE and BEN, BEE 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 $24 V \pm 10\%$ or $230 V \pm 10\%$. Power supply devices other than listed above may cause malfunction and will not be covered by the guarantee conditions.

EXBF actuators

Technical specifications	EXBF 24	EXBF 230			
Zone	1, 2, 2	21, 22			
ATEX classification	II 2 GD EEx d IIC T6				
Power supply	24 V AC ±20% 50/60 Hz / 24 V DC-10/+20%	230 V AC ±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 6 A (3) max 250 V AC	2 x SPDT 6 A (3) max 250 V AC
: - activation position	5°, 80°	5°, 80°
Torque:		
- motor	18 Nm	18 Nm
- spring	12 Nm	12 Nm
Movement time: (90°C)		
- motor	150 s	150 s
 return spring 	20 s	20 s
Ambient	-20+50°C	- 20+50°C
temperature		



Fig. Connection diagram for EXBF actuators

Caution:

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

RST/KW1 trigger control gear

The RST/KW1/S version has limit switches installed in the gear itself. The electrical connections shall be made by connecting 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.

	RST/KW1/S	RST/KW1/24I	RST/KW1/24P	RST/KW1/24I +MP230/24	RST/KW1/24I +MP230/24
Supply voltage	Х	24 V – 48 V DC	24 V – 48 V DC	230 V AC	230 V AC
Power consumption	Х	3.5 W	1.6 W	4.5 W	2.5 W
Holding force	Х	12 daN	12 daN	12 daN	12 daN
Operating temperature	72°C +-2°C				

of the thermal trigger					
WK1d / WK2d limit switch	NO/NC (switching contact) 5 A, 230 V 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 ² - limit switch: cable 0.6 m, 6x0.5 mm ²				
Rotation angle	92°				
Movement time	Max. 2 s - spring				
Sense of rotation	Left				
Gear 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, NC type (normally closed)	Wire no. 6–7, NO type (normally
	green / geay	Brown / pink
	Wire no. 4–5, NO type (normally	Wire no. 7–8, NC type (normally
	open)	closed)
	Gray / blue	Pink / yellow



1-biały/white 2-czerwony/red 3-zielony/green 4-szary/gray 5-niebieski/blue 6-brązowy/brown 7-różowy/pink 8-żółty/yellow







Caution

The location of the limit switches is shown for the fire damper in the safety position.

The RST/KW1 trigger control can work with the MP230/24 module. If the MP230/24 module is installed, the fire damper can be powered/controlled with 230 V AC voltage.

The proper performance of the device with electric actuators requires the rated supply voltage of 24 V \pm 2% or 230 V \pm 2%, as applicable. Power supply devices other than listed above may cause malfunction and will not be covered by the guarantee conditions.

7. TRANSPORT & 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;
- 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.

8. MAINTENANCE AND SERVICING

The equipment from "Mercor" S.A. requires periodic technical inspection and maintenance at least every 12 months throughout its operating life, i.e. during the guarantee and warranty period, as well as after this period. Inspection and maintenance may only be carried out by the manufacturer or contractors authorised by "Mercor" S.A. to service its products

The obligation to carry our regular service inspections of fire protection devices results from the § 3 Section 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 (Dz. U. 2010, no. 109 item 719).

The following activities are recommended for the user between inspections:

- Check the electrical connections, especially for all mechanical damage.
- Verify the power supply values for the equipment with the following tolerances:
 - > 24 V ±10% for electric actuators
 - > 24 V ±2% for electromagnetic triggers
 - > 230 V ±10% for electric actuators
 - \succ 230 V ±2% for electromagnetic triggers
- Check the device casing, especially for mechanical damage.
- Check for any obstructions to proper operation of the equipment.
- Check the condition of gaskets.

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

Refer all matters related to technical inspection, maintenance and servicing of this equipment to the "Mercor" S.A. Service Department, <u>serwis@mercor.com.pl</u>, tel. +48 58 341 42 45 ext. 170, from 8 AM to 4 PM (Mo-Fri).

9. GUARANTEE/WARRANTY TERMS & CONDITIONS

- 1. "MERCOR" SA grants 12 months of guarantee/warranty for the equipment quality from the date of purchase, unless the sales contract states otherwise.
- 2. Submit each guarantee/warranty claim to "MERCOR" SA in 7 days from the date of discovery of a defect eligible under the guarantee (and/or warranty).
- 3. Submit guarantee/warranty claims by calling at: tel. +48 58 341 42 45, 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 guarantee/warranty period, "MERCOR" SA warrants and represents to remove them in shortest possible time from serving the written guarantee/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 guarantee/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 / guarantee 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,
- 9. if they prevent free access to the device. 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 guarantee/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.

- 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. This warranty shall be made immediately void and null if:
 - The buyer/guarantee/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).
- 12. The Buyer/party authorized under the guarantee and warranty shall be required to operate the equipment properly (as per the Technical Manual) and perform periodical technical inspections and maintenance activities, as per the rules stipulated in this document under the "SERVICING AND MAINTENANCE" section.

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

Le contraction de la contracti		
MFRCOR S.	A. i 380-470	
MERCON SI		
24		
2434-CPR-0374		
PN-FN 12101-8:2012 (FN 12101-8:2011)		
Fire ventilation smoke control damper – single- and multi-zone		
mcr WIP PROV /V and mcr WIP PROV /V-M		
Nominal operation conditions/efficiency:	-	
- Closing/Opening at the right time	Automatic actuation – positive result	
and within an admissible time		
Response time:		
- closure time	Automatic actuation – positive result	
Reliability:	10,000 cycles – positive result	
Fire resistance:		
- Integrity E		
- Insulation I	El 120 (ved i< >0)S 1000C 10 000 AAmulti	
- Smoke leakage S	EI 90 (ved i< >0)S 1000C 10 000 AAmulti	
- Mechanical stability (E class)	EI 60 (ved i< >0)S 1000C 10 000 AAmulti	
- Maintenance of the cross section (E class)		
Durability:		
- with time-delay	Positive result	
- operational reliability retained	Positive result	