

**OPERATION
AND MAINTENANCE MANUAL**

**Fire protection shut-off valve
mcr ZIPP**



Version 24.03.20.8

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Labelling used in the operation and maintenance manual

- Option available
- Option unavailable

NOTE

With the date of publication of the operation and maintenance manual, the previous versions are no longer valid.

The operation and maintenance manual does not concern the dampers manufactured before the date of its publication.

CAUTION

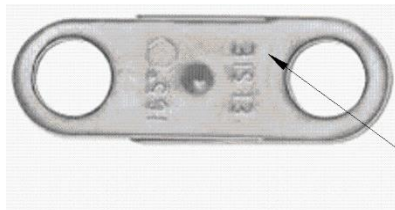
The product should be stored and used in rooms where:

- 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.



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 T_{max} (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 valve RST mechanism:



Duct inside temperature fuse

Thermal fuse for temperature	72 °C	95 °C
Temperature fuse inside the duct	T_{max} 40 °C	T_{max} 60 °C

1. INTRODUCTION

The purpose of this operation and maintenance manual is to get the user acquainted with the intended use, design, the principle of operation, correct installation and operation of the product.

The manual also includes additional information about the operating conditions, maintenance and warranty conditions of the product.

2. THE SUBJECT OF THE MANUAL

This operation and maintenance manual concerns the entire group of fire protection shut-off valves of type ZIPP. Observing recommendations included in the manual ensures correct function of the device in terms of fire protection of rooms as well as safety of the system users.

3. DEVICE INTENDED USE

Application

A mcr ZIPP type valve may be used as a fire protection shut-off valve with a duct connection as well as a transfer valve (installation without ventilation ducts).

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

Fire resistance

The mcr ZIPP type fire protection shut-off valve has the following fire resistance:

- EI120S for duct installation in walls and ceilings
- EI120 for installation without ducts in walls and ceilings
- EI180S for installation in flexible walls

Performance versions

The mcr ZIPP valve can be used as:

- a valve with a thermal release – variant:
 - RST – (automatic release)
- valve with an electromagnetic release – variant:
 - EK I - (remote release by operation of a "current pulse" – applying supply voltage)
 - EK P - (remote release by operation of a "current gap" – removing supply voltage)

The thermal release always has a principal role and ensures that the safe position of a valve is reached (activated) regardless of the operation of the electromagnetic release.

Optionally, there is a possibility to provide the valve with WK1 limit switches that signal the valve operation status (open/closed).

NOTE

As a default, the valve release temperature equals 72°C. In case another temperature value, it has to be specified in the order, after prior confirmation of the temperature value with the Sales Department.

Dimension range

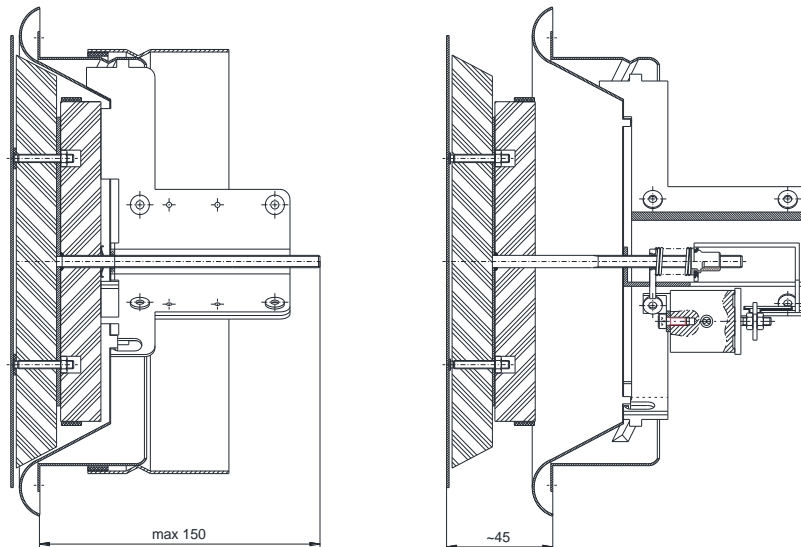
The mcr ZIPP type valve is manufactured in the following dimensions - diameters:

- Ø100
- Ø125
- Ø160
- Ø200

4. DEVICE DESIGN AND PRINCIPLE OF OPERATION

Design

The basic valve components include: a body with a round cross-section, a mobile shut-off cover (a mushroom), a connection stub pipe and a release and control mechanism started automatically after the thermal release or an electromagnetic release. The connection stub pipe is made of galvanised steel sheet. The valve nozzle is made of powder-painted steel sheet. The isolation partition is made of a fire resistant material, covered from outside with powder-painted steel sheet. The partition is set on a partially threaded mobile pin guided through the mechanism body.



Action

In a normal position, the shut-off valve is open. Closing the valve (safety position) takes place:

- remotely, by activation of an electromagnetic release 24V DC or 230V AC (controlling by the "current impulse" or a "current gap"),
- automatically, by activation of the thermal release

The design of the drive system allows regulation of performance during the time of normal valve operation (setting the gap between the mechanism body and the mushroom). The regulation takes place by rotating the mushroom along the valve axis. The flow is increased by rotating the mushroom in the counter-clockwise direction and decreased by rotating it in the clockwise direction.

NOTE

Under any circumstances do not tug at the valve cover shield in order to open it.

Release and control mechanisms

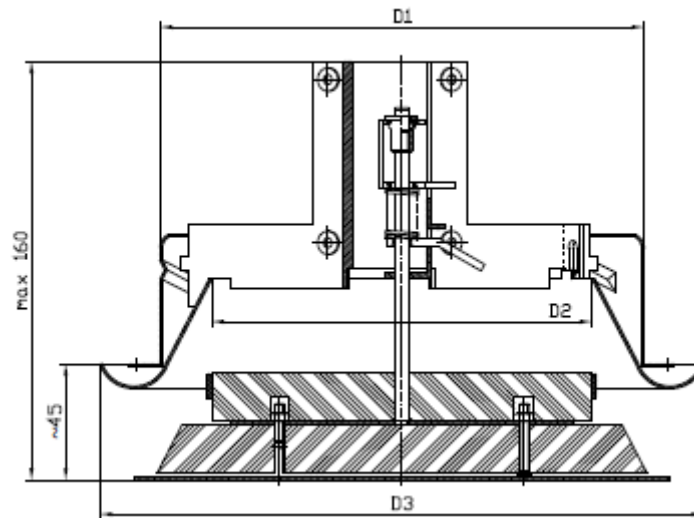
A release and control mechanism for the mcr ZIPP valve can be:

- An RST type mechanism composed of a drive spring and a fuse release
- An RST+EKI24 type mechanism composed of a drive spring, a fuse release and an electromagnetic release started by applying the supply voltage.
- An RST+EKP24 type mechanism composed of a drive spring, a fuse release and an electromagnetic release started by removing the supply voltage.
- An RST+EKI230 type mechanism composed of a drive spring, a fuse release and an electromagnetic release started by applying the supply voltage.
- An RST+EKP230 type mechanism composed of a drive spring, a fuse release and an electromagnetic release started by removing the supply voltage.

Optionally, there is a possibility to equip the valve with WK1 limit switches that signal the valve operation status (open/closed).

mcr ZIPP fire protection shut-off valve

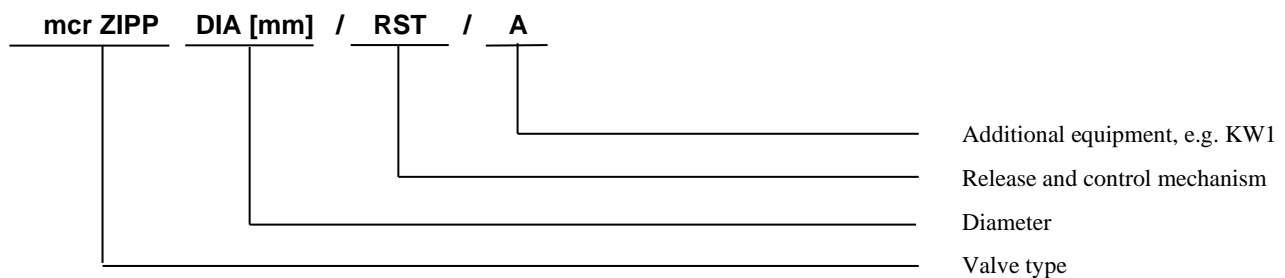
Main dimensions



DIA	D1	D2	D3
[mm]			
100	98	73	139
125	123	96	164
160	158	128	207
200	198	156	254

Main dimensions of the mcr ZIPP fire protection shut-off valve

5. DEVICE LABELLING



NOTE

As a default, the valve release temperature equals 72°C. In case another temperature value, it has to be specified in the order after prior confirmation of the temperature value with the Sales Department.

6. DEVICE INSTALLATION

NOTE

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

The mcr ZIPP valve can be installed in the following partitions (walls or ceilings):

- masonry walls – concrete with a thickness of at least 110 mm
- masonry walls from bricks or blocks at least 120 mm thick
- walls from panels at least 125 mm thick
- ceilings of at least 150 mm

Additionally, the valve can be installed:

- outside walls
- in batteries (multiple sets)

The mcr ZIPP shut-off valve may also be installed in partitions with lower fire resistance class. In case of such an installation, valves have fire protection equal to the fire protection of the partition, maintaining the smoke tightness criteria.

6.1. INSPECTION BEFORE THE INSTALLATION

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

The valve is delivered in the closed position. Before installation, it should be armed.

In order to arm the RST mechanism, the following actions have to be taken:

- screw the valve from the connection stub pipe
- rotate the valve so that the mushroom is on top
- simultaneously release the locking sheet and press the valve nozzle at its circumference (fig. 4a)
- push the fuse element onto the catches (fig. 4b)

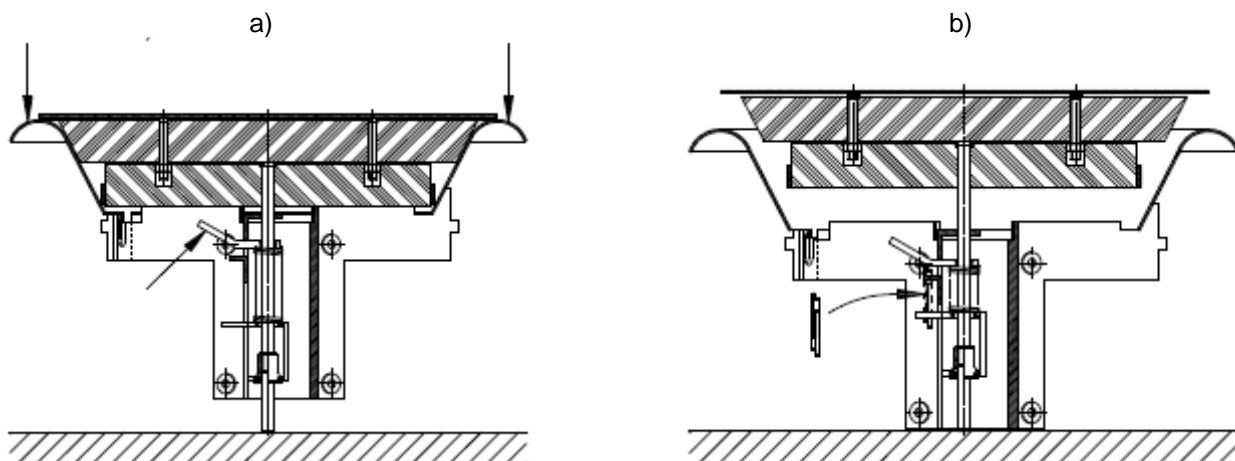


Figure 4. Arming the release and control mechanism:
a) points of applying the force; b) place of setting the thermal release.

mcr ZIPP fire protection shut-off valve

Before starting to arm the valve with the release and control mechanism of RST+EK type, make sure that the electromagnet operates correctly. In order to do so:

- plug the electrical wires into the terminal block (according to point 6.5.)
- **carefully clean the contact surfaces** and connect the plate with the electromagnet
- apply the signal that initialises the electromagnet release – supply voltage with the relevant value (after the initialising signal, the plate should detach from the electromagnet)

In order to arm the RST+EK release and control mechanism, the following actions have to be taken:

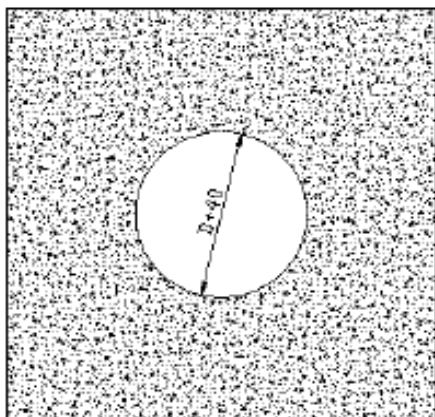
- screw the valve from the connection stub pipe
 - in the case of the RST+EKP mechanism (controlling via the "current gap"), plug all electric wires into the terminal block (in accordance with point 6.5.) and enable the electromagnet power supply.
 - in the case of the RST+EKI mechanism (controlling via the "current impulse"), plug all electric wires into the terminal block (in accordance with point 6.5.) and without enabling the electromagnet power supply.
- Connect the plate with the electromagnet
- rotate the valve so that the mushroom is on top
- simultaneously release the locking sheet and press the valve nozzle at its circumference (fig. 4a)
- push the fuse element onto the catches (fig. 2)

6.2. FIXING HOLE

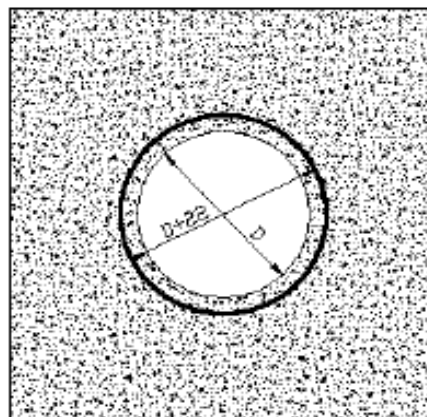
Minimum diameter of the hole that allows correct installation of the mcr ZIPP valve equals:

- $D + 22$ – in the case of a wall made of plasterboards
- $D + 40$ – in the case of concrete, masonry and ceiling partitions

In rigid walls and ceiling



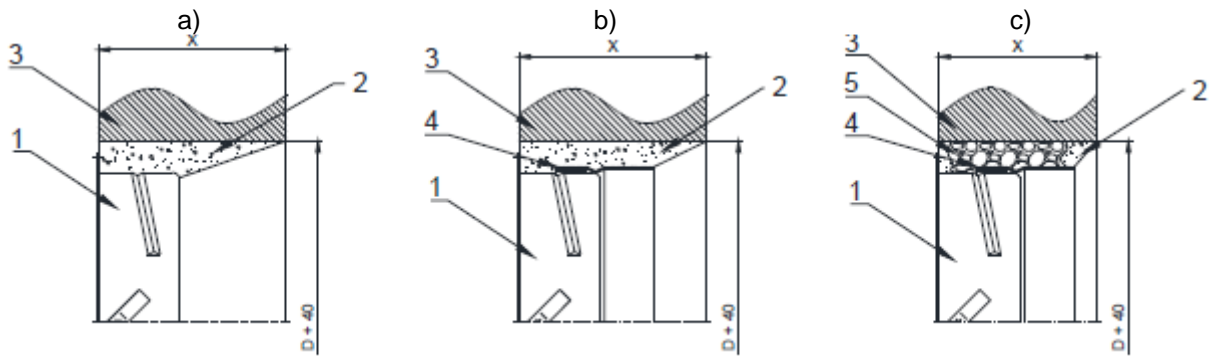
In light plasterboards walls



6.3. EMBEDDING / SETTING THE VALVE

INSTALLATION IN A CONCRETE OR MASONRY WALL

In the fixing hole, set the connection stub pipe with bent expansion sheets, so that the stub pipe axis is lined up with the hole axis. The gap between the stub pipe and the hole edge should be tightly packed with mortar or another material that provides the required fire resistance (fig. 5a). In case of installation through the wall to the duct, concurrently set the connection stub pipe and the extension stub pipe (figs 5b, 5c).

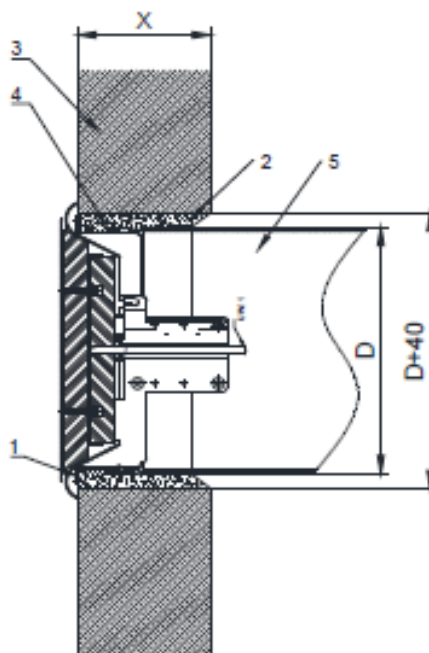


- | | | |
|-----------------------------------|------------------------------|--|
| 1- Connection stub pipe | 3 – Masonry or concrete wall | 5 – Expanding polyurethane foam EI 120 |
| 2 – e.g. gypsum plaster or mortar | 4 – Extension stub pipe | X – wall thickness |

Figure 5. Sample setting of a connection stub pipe in a masonry wall

NOTE

Pay particular attention to maintain the roundness of the connection stub pipe when filling the gap with mortar. Possible surfaces which are not round will make it impossible to set the valve.



- | | | |
|-----------------------------------|------------------------------|----------------------|
| 1- Connection stub pipe | 3 – Masonry or concrete wall | 5 – ventilation duct |
| 2 – e.g. gypsum plaster or mortar | 4 – Extension stub pipe | X – wall thickness |

Figure 7. Sample installation of the mcr ZIPP valve in a concrete or masonry wall

INSTALLATION IN A PLASTERBOARD WALL

In the fixing hole, place the connection stub pipe with bent expansion sheets, so that the stub pipe axis is lined up with the hole axis. The gap between the stub pipe and the wall should be tightly filled with mortar, polyurethane foam EI 120 or gypsum (fig. 9a). In case of installation through the wall to the duct, concurrently set the connection stub pipe and the extension stub pipe (figs 9b, 9c).

mcr ZIPP fire protection shut-off valve

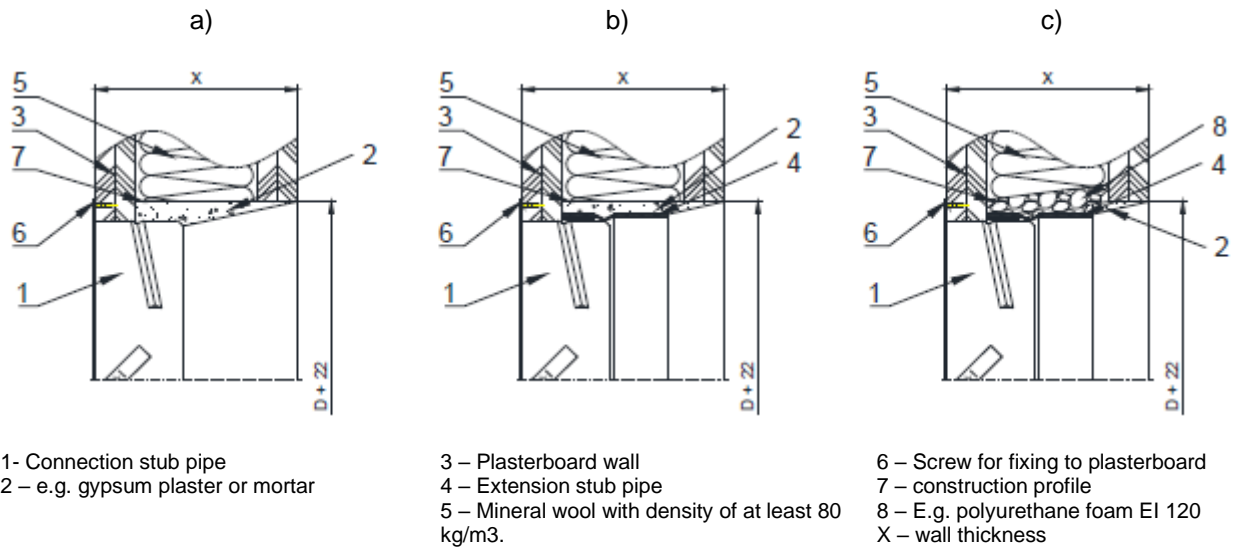


Figure 9. Sample setting of a connection stub pipe in a plasterboard wall

NOTE

Pay particular attention to maintain the roundness of the connection stub pipe when filling the gap with mortar. Possible surfaces which are not round will make it impossible to set the valve.

Set the prepared valve in the connection stub pipe. If it's possible to access the space between the nozzle and the stub pipe wall, it should be packed with mineral wool (fig. 10).

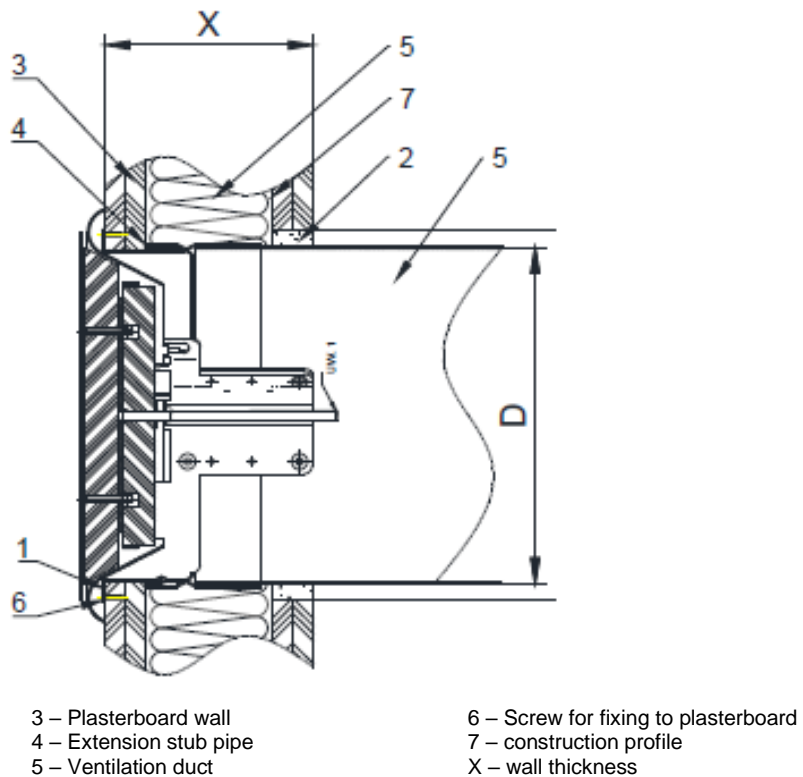
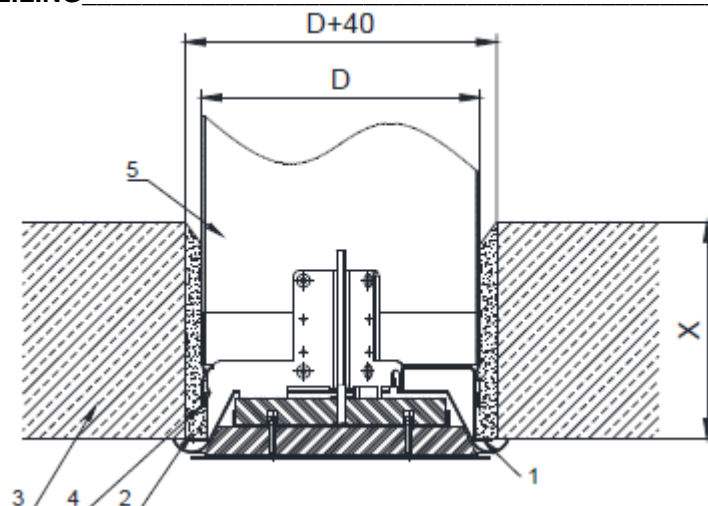


Figure 10. Sample installation of the mcr ZIPP valve in a plasterboard wall.

INSTALLATION IN THE CEILING



1- Connection stub pipe
2 – e.g. gypsum plaster or mortar

3 – Concrete ceiling
4 – Extension stub pipe

5 – ventilation duct
X – wall thickness

Figure 11. Sample method of installation for the mcr ZIPP valve in the ceiling

NOTE

During the installation of a mcr ZIPP, pay particular attention so that the thermal release (fuse element) do not get damaged, do not expose it to high temperature (fire, welders, soldering irons) that cause its activation (it is a single use element and is not subject to warranty replacement).

6.4. ELECTRICAL CONNECTIONS

Before the final setting of the valve in the connection stub pipe, connect the electrical lines for this system if there are any components that require such connection. Below you can see a connection method and the main data of the electrical components.

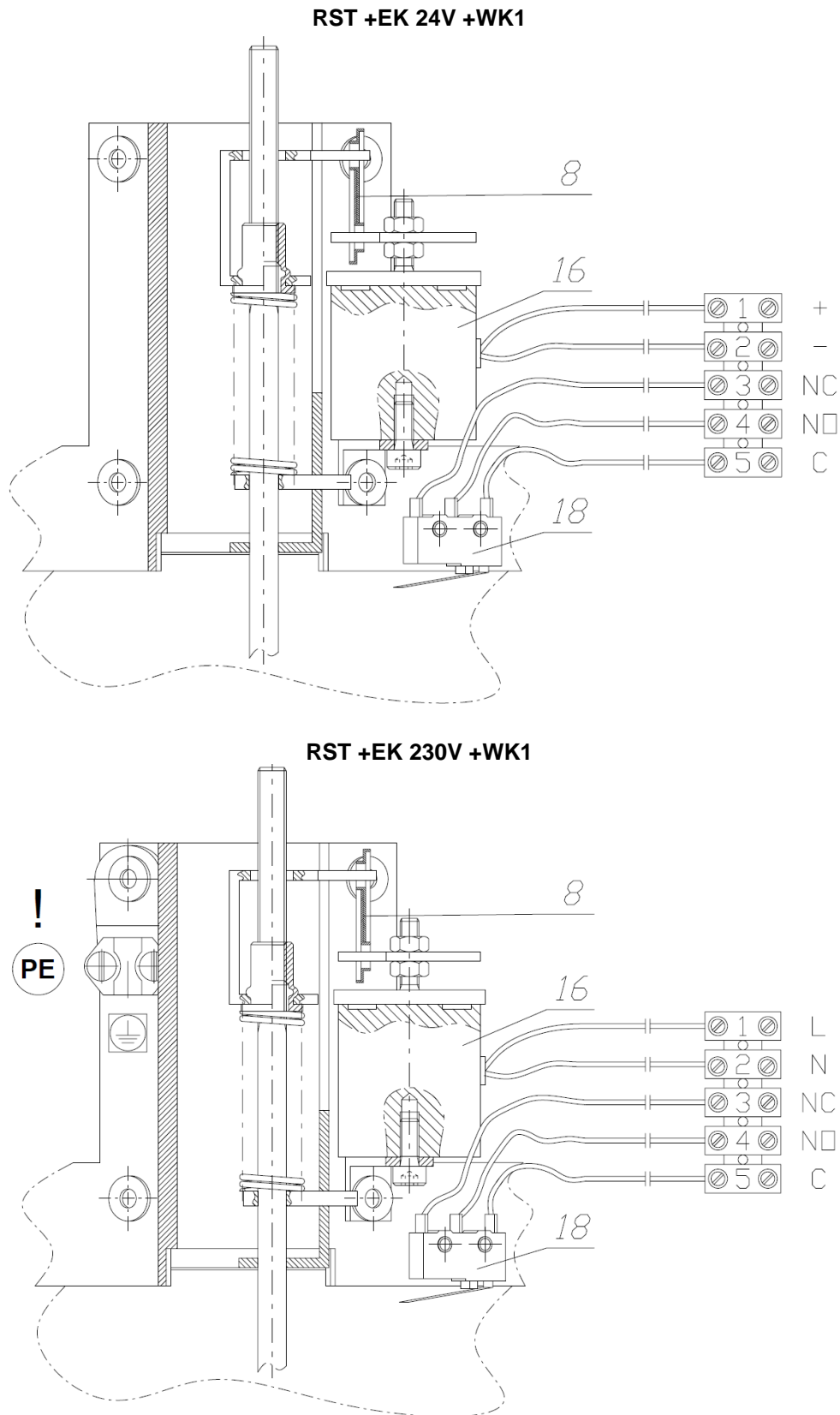


Figure 11. Connection of electrical components in a fire protection shut-off valve mcr ZIPP (8 - Thermal release; 16 - Electromagnetic release; 18 - WK1 limit switch)

mcr ZIPP fire protection shut-off valve

performance variant	RST	RST+WK1	RST +EKI24V	RST +EKP24V	RST +EKI230V	RST +EKP230V	MP230/24
thermal release	+	+	+	+	+	+	-
limit switch	-	250 V AC/5A	250 V AC/5A	250 V AC/5A	250 V AC/5A	250 V AC/5A	-
rated voltage	-	-	24V DC	24V DC	230V AC	230V AC	230V AC/ wyj. 24V DC
power intake	-	-	3,5W	1,8W	4VA	5,5VA	2W

Diagram of electrical connections for the mcr ZIPP RST+WK1 valve

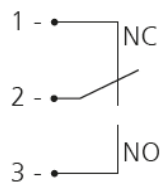
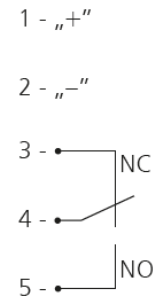


Diagram of electrical connections for the mcr ZIPP RST+EK+WK1 valve



RST+EK release and control mechanism can cooperate with the MP230/24 module. In case of using the MP230/24 component, the valve can be supplied/controlled using 230 V AC voltage. 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.

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

The electrical connection should be made exactly according to the attached diagram and in accordance with the guidelines presented in point 6.4 of this documentation. It should be performed by a person with confirmed electrical qualifications, in accordance with applicable regulations. Any valve inspection work should be performed only after disconnecting the device from the power supply.

7. TRANSPORT AND STORAGE CONDITIONS

The valves are packed in cardboard boxes. Valves' collective packages are protected against damage with foil or other covering material. The valves may be transported by any means of transport, provided that they are protected against the effects of weather conditions. Valves located on the means of transport should be secured against changing their position during transport. Before installing the valve, perform a visual inspection of each of them. Do not carry the valve by grasping the connecting cable or put the device on the trigger and control mechanism. Do not hit or drop the valve. When carrying and installing the valve, rest the valve on the sides or body edges.

The valves should be stored in closed rooms that provide protection against external weather conditions. If the valve is stored on the ground, it should be placed on securing washers in order to protect the damper 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 flaps 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

Mercor SA devices should undergo periodical technical inspections and maintenance actions, no less frequent than 12 months during the entire operation period, that is during the warranty period and after it. Inspections and maintenance should be carried out by the manufacturer or by companies that have authorisation for servicing of MERCOR SA devices.

The obligation to carry out regular service inspections of fire protection devices results from the Art. 3(3) of the Regulation by the Minister of Internal Affairs and Administration of 7 June 2010 on fire protection of buildings, other civil structures and areas (Journal of Laws 2010 No. 109, item 719).

It is recommended to execute, between inspections, the following:

- Inspections of the condition of electrical conditions, taking the mechanical damage particularly into account.
- Inspections of the condition of the supply voltage for the devices, which allowed the following tolerances:
 - 24V±10% for electric actuators
 - 24V±2% for electromagnetic release mechanism
 - 230V ±10% for electric actuators
 - 230V±2% for electromagnetic release mechanism
- Inspections of the condition of the devices' body, taking the mechanical damage particularly into account.
- Checking whether there are no obstacles which could influence correct operation of the devices.

To enable the performance of actions included in the range of service inspections, as well as service and warranty actions such as visual inspections or repairs it is mandatory that the user provides the physical access to the devices, e.g. by disassembly of the thermal insulation, disassembly of suspended ceilings, disassembly of other systems if they prevent free access to the device etc.

In the case of devices installed in ducts, it is recommended to carry out the revisions, e.g. mcr KRW type.

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

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

9. WARRANTY CONDITIONS

1. "MERCOR" SA grants 12 months of warranty for the equipment quality from the date of purchase, unless the sales contract states otherwise.
2. Submit each warranty claim to "MERCOR" SA in 7 days from the date of discovery of a warranty eligible defect
3. Submit warranty claims by calling at: tel. +48 58 341 42 45, by fax: +48 58 341 39 85, by e-mail: reklamacje@mercor.com.pl 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

mcr ZIPP fire protection shut-off valve

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.
 - 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 T_{max} (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.



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MERCOR S.A. and 380-470

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1396-CPR-0092

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

Fire damper / valve

mcr ZIPP

Nominal activation conditions / sensitivity: - sensor activation temperature - reliability sensor	Positive result Positive result
Response time: - closure time	Positive result
Reliability:	50 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 o -- >i)S EI 120 (v _e h _o i -- >o) EI 180 (v _e o -- >i)S
Operation time durability: - sensor activation temperature - reliability sensor	Positive result Positive result
Operational reliability stability: - opening / closing cycle test	Positive result