Systemy zabezpieczeń przeciwpożarowych
Fire protection systems

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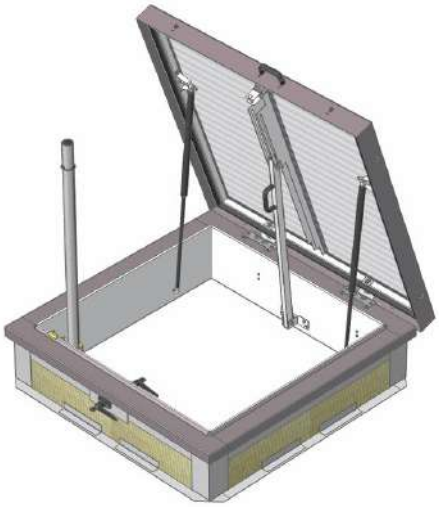
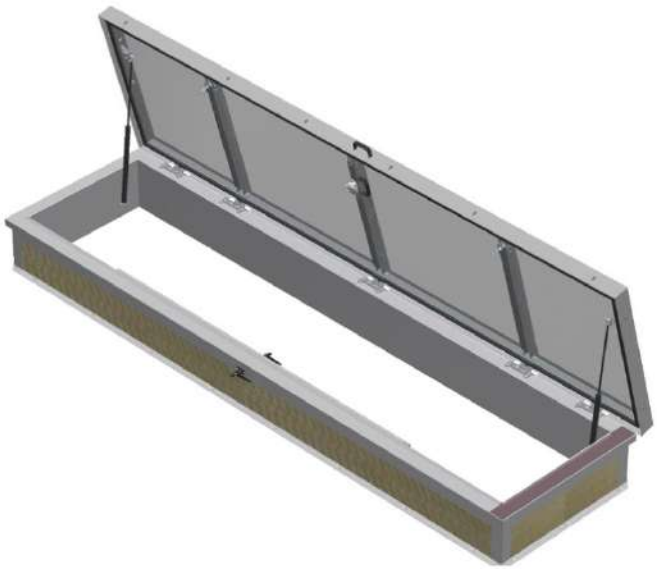
OPERATION AND MAINTENANCE MANUAL

Roof Access Hatch
mcr-PROROOF LD
mcr PROROOF ST





KRS 0000217729, Sąd Rejonowy Gdańsk-Północ, w Gdańsk, VII Wydział Gospodarczy Krajowego Rejestru Sądowego
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1. INTRODUCTION

The Operation and Maintenance Manual contains information on the intended use, design, principle of operation, installation and operation of mcr PROROOF roof access hatches. It also contains additional information on the operating conditions, maintenance and product warranty.

This Operation and Maintenance Manual applies to the following products:

- mcr PROROOF LD roof access hatches – ladder type;
- mcr PROROOF ST roof access hatches – stair type.

Please follow the instructions in this Operation and Maintenance Manual to ensure user safety and failure-free device operation.

CAUTION
All works related to the installation, operation, maintenance and servicing of the roof access hatches and skylights must be carried out in accordance with health and safety regulation using the required personal protective equipment including fall protection devices. Working at height, including connections of the electrical devices can be carried out by qualified personnel only.

2. INTENDED USE

mcr PROROOF LD roof access hatches provide access to the building roof and can be used with a ladder (not included) positioned inside the hatch.

mcr PROROOF ST access hatches provide access to the building roof and can be used directly from the stairs.

The roof access hatches with translucent glazing can also provide natural light to the rooms below.

Do not use the roof access hatches for any other purposes.

3. DESIGN

The roof access hatches include an aluminium sheet base insulated with a 60 mm PIR panel, a 25 mm multi-chamber polycarbonate glazing sheet, a lock, gas spring(s) and a locking mechanism. The steel sheets used in the vents comply with PN-EN 10346:2015-09 for surface type A. The surfaces of the aluminum sheets used comply with the provisions of the PN-EN 485-1 standard. An EPDM gasket is fitted between the leaf and the base.

The lock allows to lock the hatch from the inside and from the outside with a single key.

A locking mechanism keeps the leaf in open position.

mcr PROROOF LD hatches are fitted with a locking mechanism - an angle brace and a guide for locking the hatch.

mcr PROROOF ST hatches are locked by the gas spring-integrated locking mechanism available in two types:

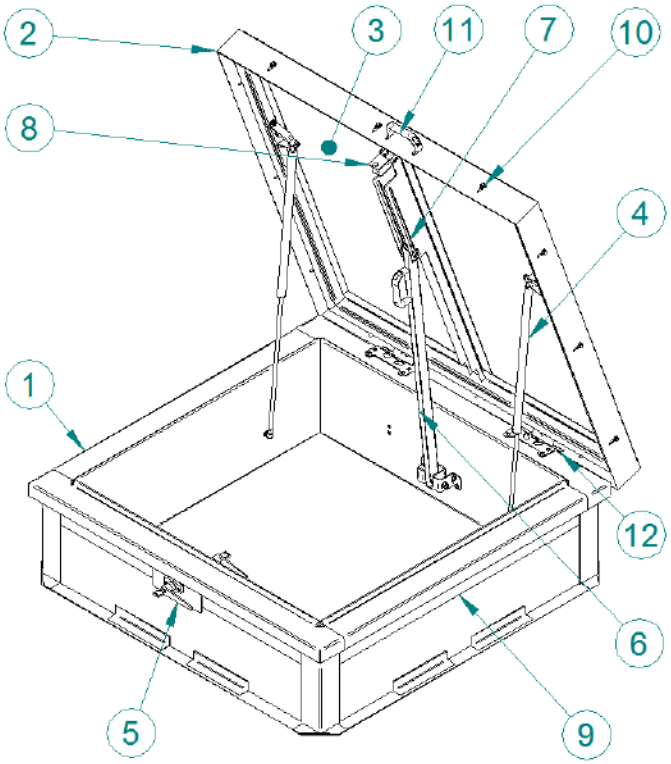
1. Type 1 - gas springs with locking tube with direct release;
2. Type 2 - gas springs with internal locking mechanism released with a central lever.

The type depends on the roof access hatch size.

Circumferential strip (over the insulation, directly underneath the drip cap) is prepared for installation of the PVC membrane. The strip is made of aluminium sheet.

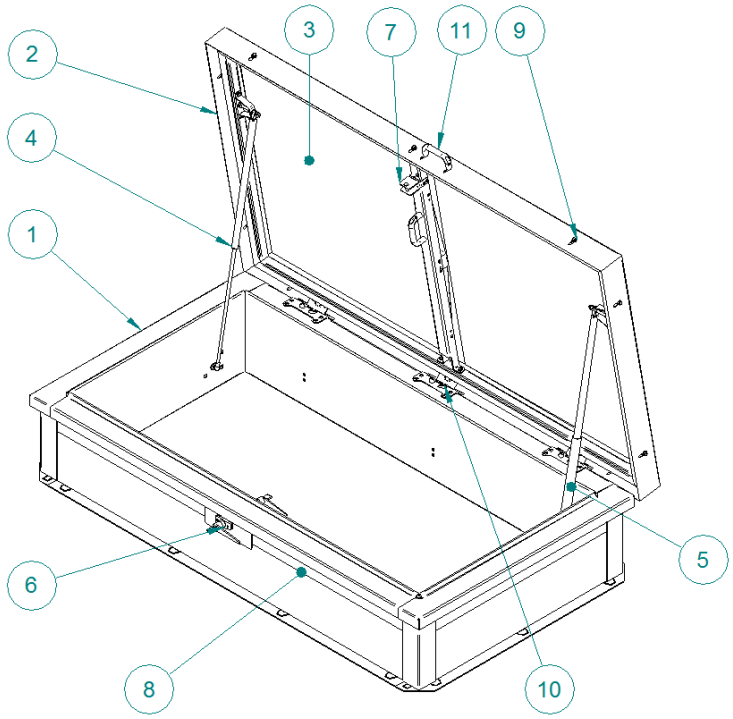
Roof access hatch - optional accessories:

- aluminium cover. The cover is fitted on the polycarbonate glazing sheet to block the natural light.
- other glazing sheets: multi-chamber polycarbonate sheets: 10 mm, 16 mm, 20 mm, 32 mm (envelope cover only), PMMA or PC domes and 20 mm or 40 mm sandwich panels in selected sizes;
- handle for easy roof access for mcr PROROOF LD roof access hatch. The handle allows easy access to the roof from the ladder.



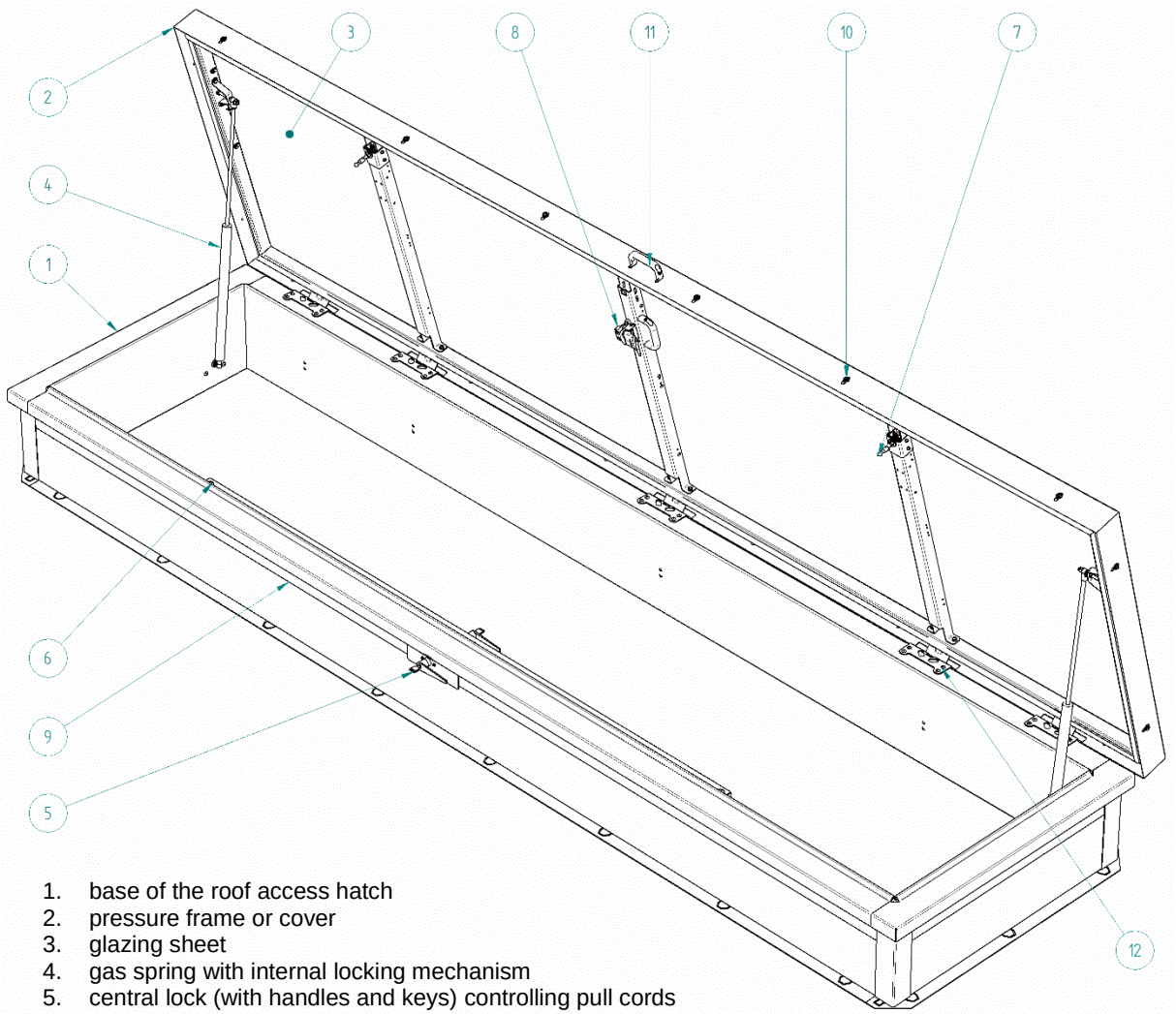
1. base
2. pressing frame or envelope cover
3. glazing sheet
4. gas spring
5. central lock (with handles and keys)
6. leaf lock
7. leaf locking mechanism guide
8. lock bolt
9. circumferential strip for fixing flashings
10. pressing frame fixing screws
11. handles
12. hinges

Fig. 1 mcr PROROOF LD roof access hatch – main components.



1. base
2. pressing frame or envelope cover
3. glazing sheet
4. gas spring without lock
5. gas springs with locking tube
6. central lock (with handles and keys)
7. lock bolt
8. circumferential strip for fixing flashings
9. pressing frame fixing screws
10. hinges
11. handle

Fig. 2 mcr PROROOF ST roof access hatch with type 1 locking mechanism (with locking tube) – main components.



1. base of the roof access hatch
2. pressure frame or cover
3. glazing sheet
4. gas spring with internal locking mechanism
5. central lock (with handles and keys) controlling pull cords
6. spring locks
7. lock bolts
8. release lever of the gas spring locking mechanism
9. circumferential strip for fixing flashings
10. pressing frame fixing screws
11. handles
12. hinges

Fig. 3 mcr PROROOF ST roof access hatch with type 2 locking mechanism (gas spring with internal locking mechanism) – main components.

4. TRANSPORT AND DELIVERY

mcr PROROOF roof access hatches are fully assembled or in some cases (additional trims), delivered as assemblies and components to secure the individual components against damage in transport and ensure transport safety.

Unload the product under supervision of an authorized manufacturer's representative using a standard handling equipment or manually following relevant health and safety regulations.

a/ b/

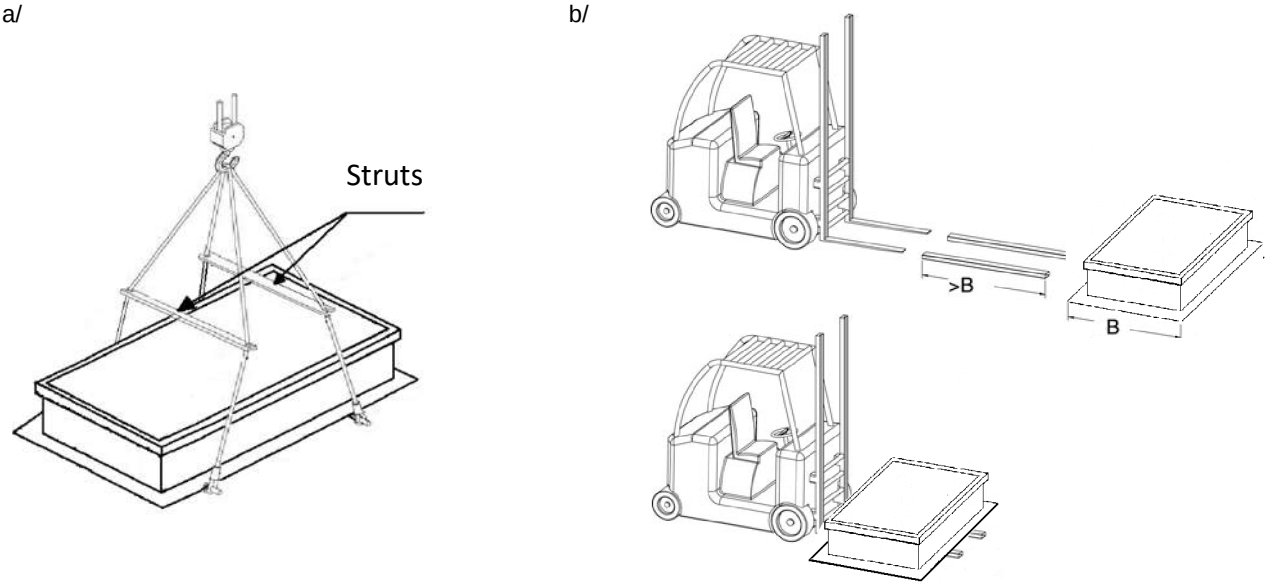


Fig. 4 Transport with a crane (a) or a forklift truck (b).

5. INSTALLATION

The devices must be installed in accordance with relevant health and safety regulation, in particular, related to working at heights using the required personal protective equipment.

The roof access hatches must be installed on structural roof components including purlins, headers, structural sheets (hatches with a standard base) or a reinforced concrete, timber or steel base (hatches with an overlay base). The roof access hatches can be installed on steel, concrete or timber roofs.

The standard roof access hatch base has a bottom shelf for supporting and attaching the roof access hatch to the supporting structure.

Use fasteners suitable for the supporting structure material. The fastener centres must not exceed 50 ÷ 60 cm.

supporting structure type	minimum fastener diameter
steel	min. Ø4.8 mm
concrete	min. Ø6 mm
timber	min. Ø6 mm

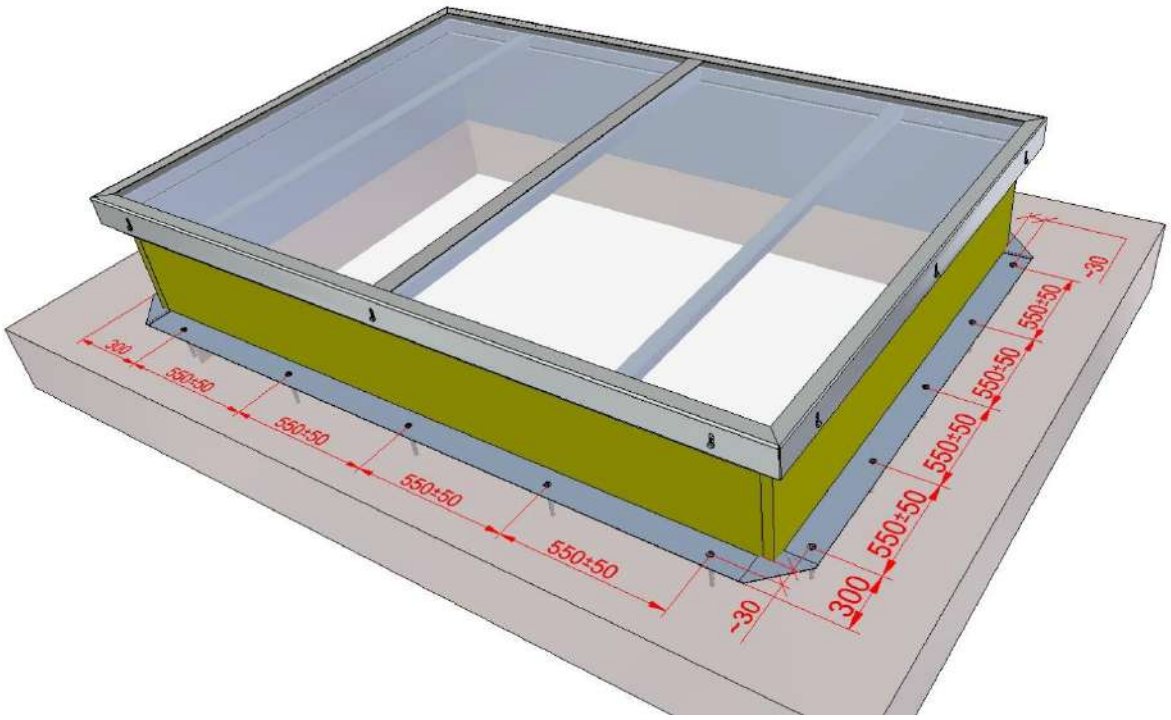


Fig. 5 General installation procedure for mcr PROROOF roof access hatch with a standard base - fastener layout.

Standard bases can be used with roofing paper, PVC membranes or sheet metal coverings.

Standard bases can be fitted on the entire parameter with a 1.5 mm thick aluminium sheet strip for the PVC membrane installation using screws. Use a sealing method that provides a durable joint with the aluminium sheet (screws can also be used for mechanical installation of the PVC membrane).

CAUTION

1. **If the roofing paper is installed over the metal sheet strips, protect the roof hatch leaf, spacer sleeves under the pressing frame, handles and pull handles against direct flame/hot air.**

2. **After installation, remove the protective film from all external aluminium components (pressing frame and sheet metal strip) and the glazing sheet (PCA, sandwich panels, acrylic dome). Any remaining protective film may cause permanent discoloration of the components and may be difficult to remove.**

3. **If the glazing sheet is installed on-site, take special precautions during installation of the polycarbonate glazing sheets. Any damage to the tape securing the edges of the polycarbonate sheet may result in dust ingress into the polycarbonate chambers and is not covered by the warranty.**

The overlay base can be mounted on an insulated plinth (thermal insulation and PVC membrane). The roof access hatch must be fixed onto the plinth in specific points, in which the base is fitted with additional reinforcing elements to guarantee safe and long-lasting installation. (See Fig. 13.)

5.1. Roof access hatch installation

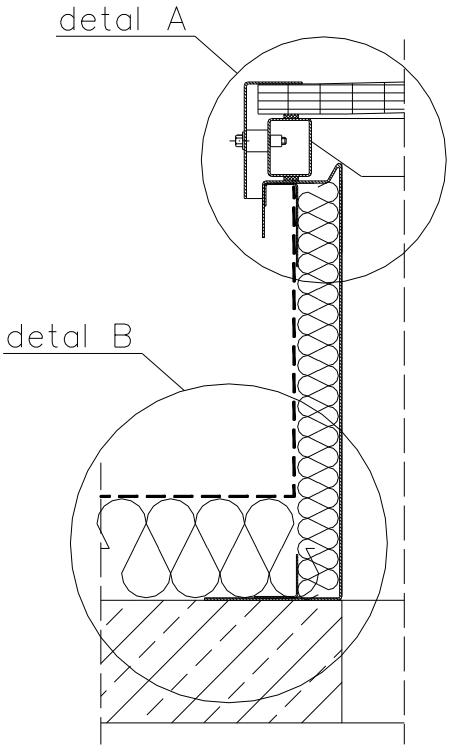
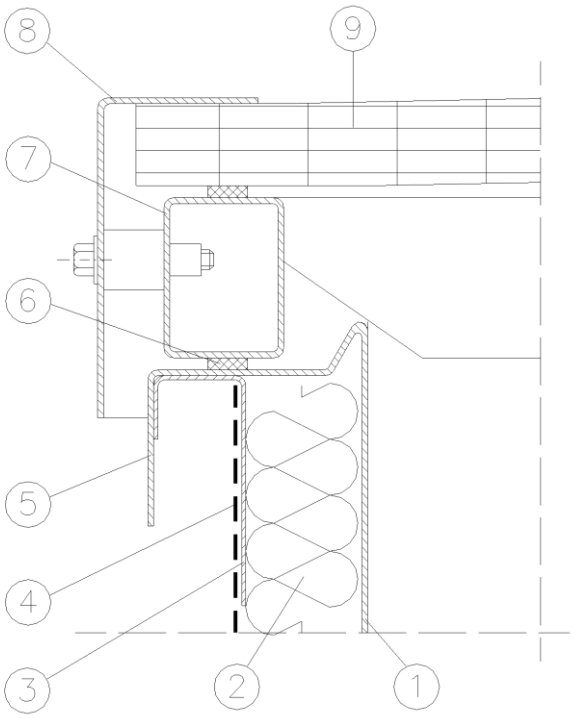
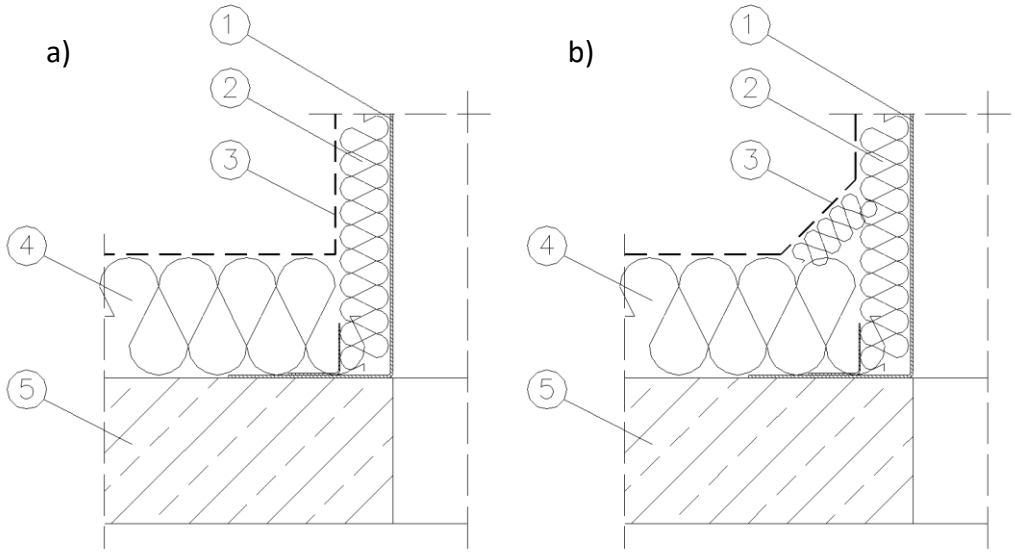


Fig. 6 **Installation of the roof access hatch with standard base on the roof structure (ITEM B) with PVC membrane or roofing paper (ITEM A).**



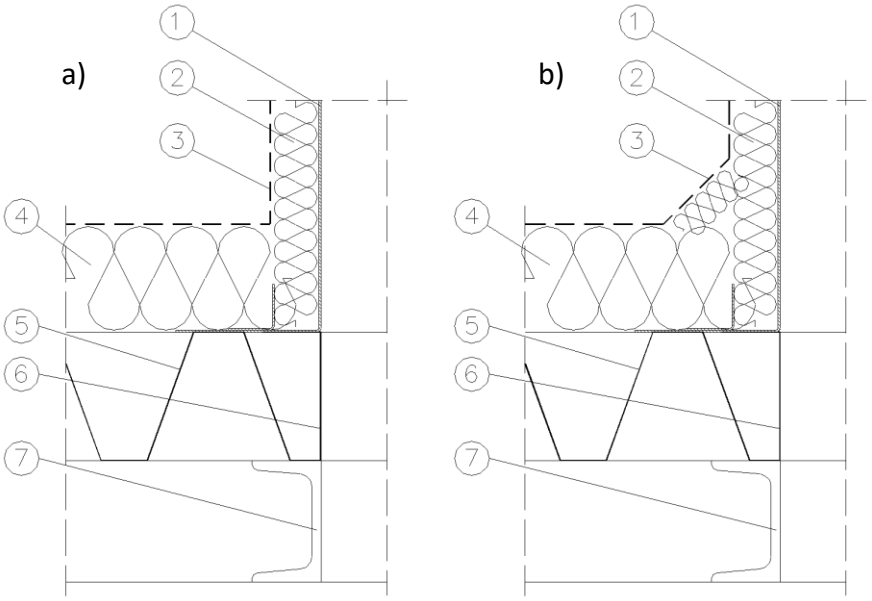
1. Base of the roof access hatch
2. Thermal insulation of the base
3. PVC coated circumferential strip for fixing flashings
4. PVC membrane or roofing paper
5. Base drip cap
6. Leaf gasket
7. Supporting frame
8. Pressure frame
9. Glazing sheet

Fig. 7 ITEM A: PVC membrane or roofing paper sealing method.



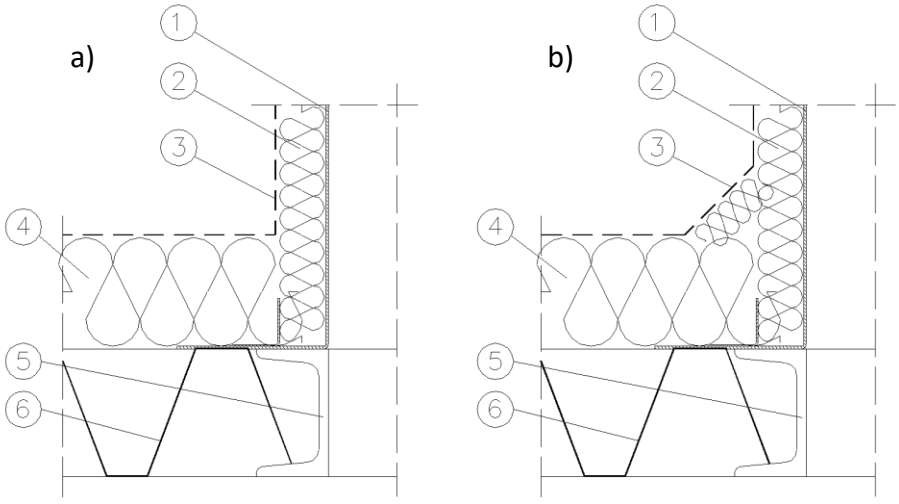
1. Base of the roof access hatch
2. Thermal insulation of the base
3. PVC membrane or roofing paper
4. Thermal insulation of the roof
5. Reinforced concrete slab

Fig. 8 ITEM B: Standard base on reinforced concrete slab (a - PVC membrane, b - roofing paper).



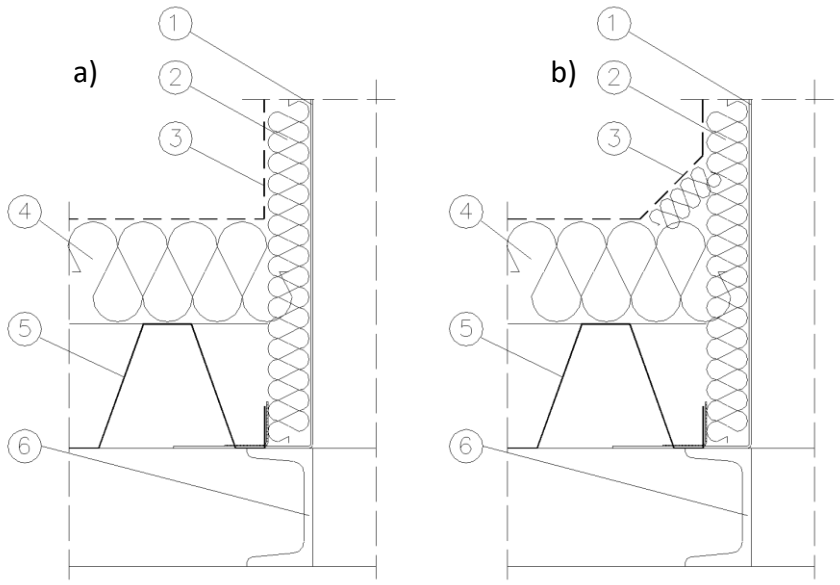
1. Base of the roof access hatch
2. Thermal insulation of the base
3. PVC membrane or roofing paper
4. Thermal insulation of the roof
5. Trapezoidal sheet
6. Additional internal flashing
7. Steel structure

Fig. 9 ITEM B: Standard base on steel structure (a - PVC membrane, b - roofing paper).



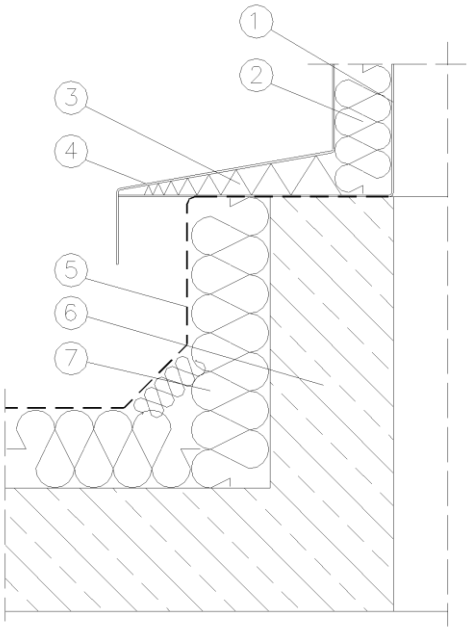
1. Base of the roof access hatch
2. Thermal insulation of the base
3. PVC membrane or roofing paper
4. Thermal insulation of the roof
5. Steel structure
6. Trapezoidal sheet

Fig. 10 ITEM B: Standard base on steel structure (a - PVC membrane, b - roofing paper).



1. Base of the roof access hatch
2. Thermal insulation of the base
3. PVC membrane or roofing paper
4. Thermal insulation of the roof
5. Trapezoidal sheet
6. Steel structure

Fig. 11 ITEM B: Standard base on steel structure (a - PVC membrane, b - roofing paper).



1. Overlay base of the roof access hatch
2. Thermal insulation of the base
3. Thermal insulation of the cover plate
4. Overlay
5. PVC membrane or roofing paper
6. Reinforced concrete plinth
7. Thermal insulation of the roof

Fig. 12 ITEM B: Overlay base on steel, timber or reinforced concrete plinth.

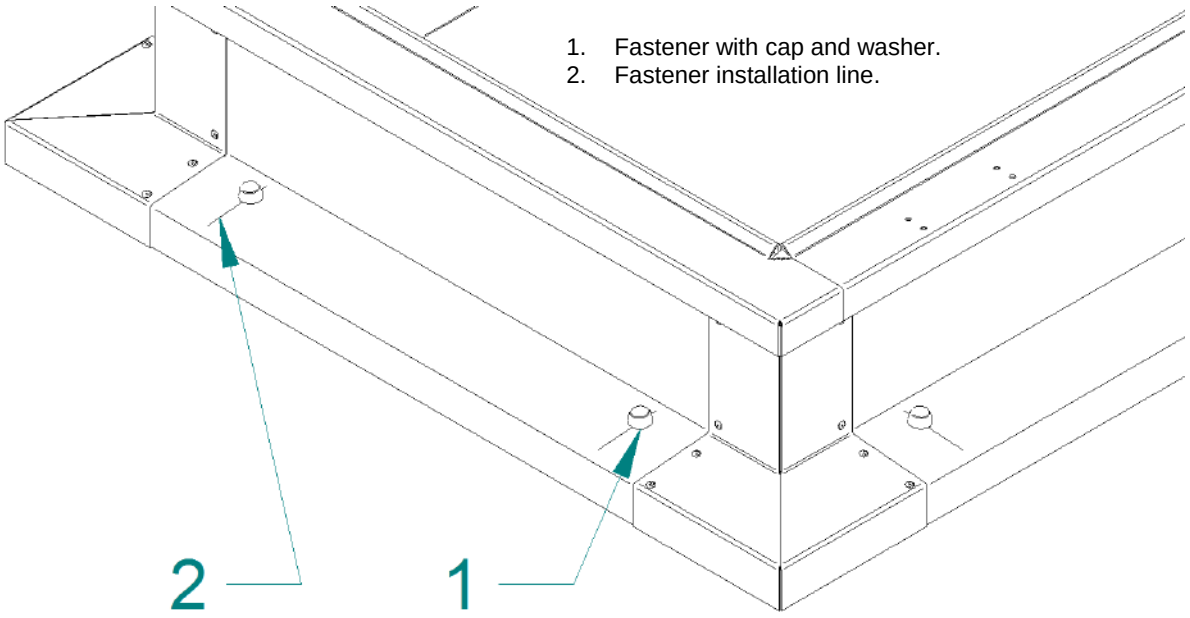


Fig. 513 Installation of the mcr PROROOF roof access hatch with overlay base - fastener layout.

6. OPERATION.

CAUTION
All works related to the installation, operation, maintenance and servicing of the roof access hatches must be carried out in accordance with health and safety regulation using the required personal protective equipment including fall protection devices.
Working at height, including connections of the electrical devices can be carried out by qualified personnel only.

CAUTION
Do not open, overheat or bend the gas spring rods. Caution! The gas springs are pressurized.

mcr PROROOF LD

1. To open the hatch from the outside or from the inside, turn the key in the handle lock and turn the handle by 90° to release the lock bolt. The handle lock can be opened on the same side it was closed.
   Note: the handles lock independently - the internal lock cannot be opened by the external lock (and vice versa). Each lock has to be opened individually.
   Both keys for the internal and external lock are identical.
   Hold the leaf handle (internal or external) and lift the hatch until fully open. The opening angle is limited by the locking mechanism guide. Move the locking mechanism to the end of the straight section of the locking mechanism guide to lock the hatch.
   Enter the hatch carefully and mind your steps. Watch your head.
   Close the hatch to maintain safety after entering or leaving the roof.

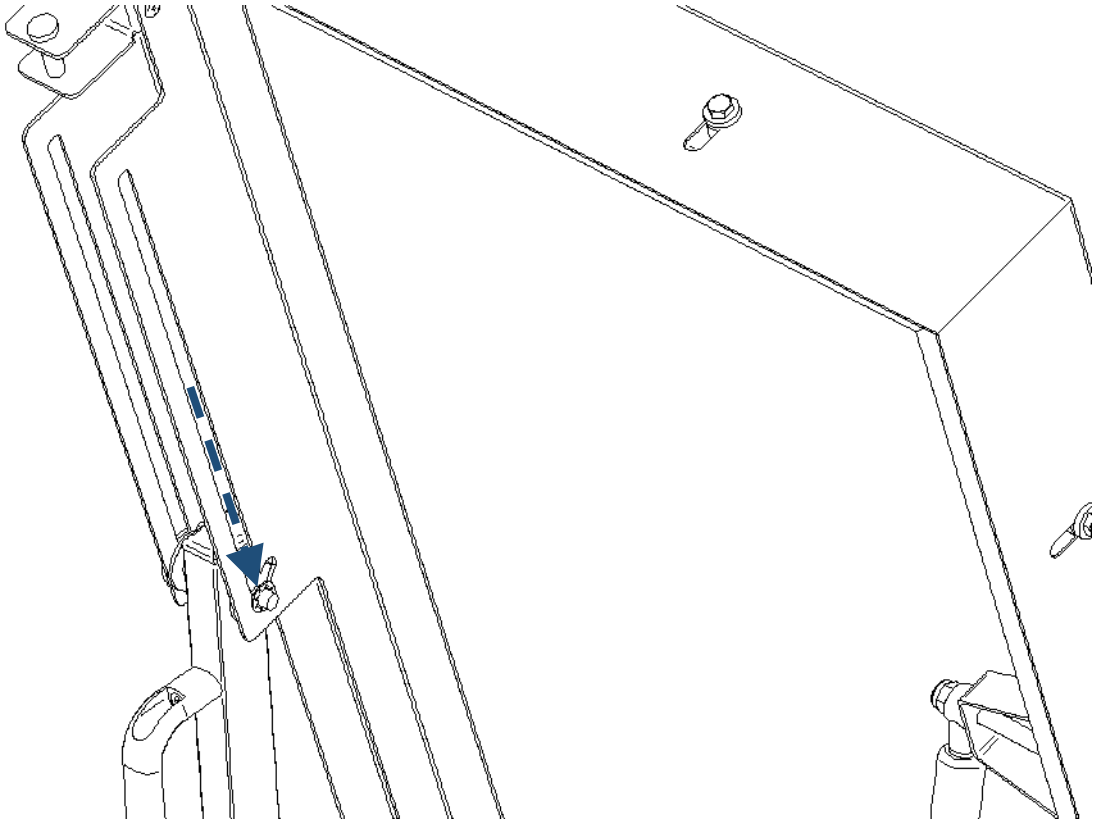


Fig. 14 The direction of locking mechanism in the guide when opening and the locking position.

2. Pull the handle of the locking mechanism to close the hatch - the locking mechanism will move along the guide (in the opposite direction to shown in Fig. 14). Close the hatch, turn the handle and lock as required.

mcr PROROOF ST

Type 1 locking mechanism (75x150 mm) - gas spring with locking tube.

1. To open the hatch from the outside or from the inside, turn the key in the handle lock and turn the handle by 90° to release the lock bolt. The handle lock can be opened on the same side it was closed.
   Note: the handles lock independently - the internal lock cannot be opened by the external lock (and vice versa). Each lock has to be opened individually.
   Both keys for the internal and external lock are identical.
   Hold the leaf handle (internal or external) and lift the hatch until fully open. The opening angle is limited by the gas spring stroke length. After opening, make sure the locking tube has changed its position to prevent accidental closing (see Fig. 15).

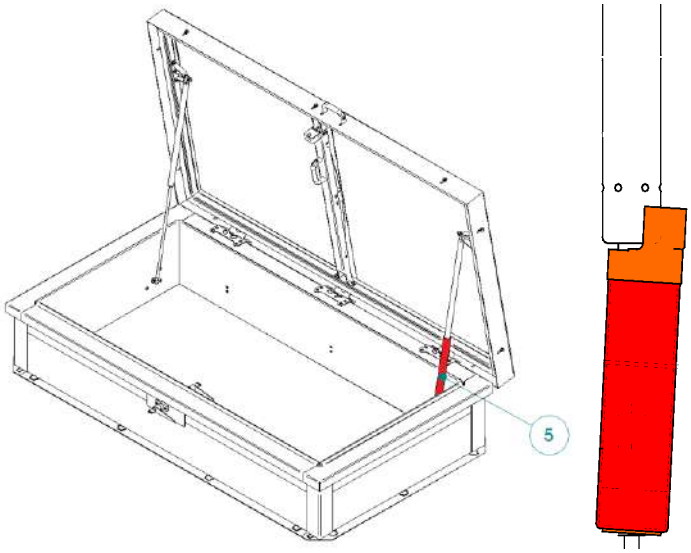


Fig. 15. mcr PROROOF ST roof access hatch with locking tube (5). Locking tube in locked position.

Enter the hatch carefully and mind your steps. Watch your head.
Close the hatch to maintain safety after entering or leaving the roof.

3. To close the hatch:
    a. press as shown in Fig. 16 to unlock the locking and allow the gas spring body to enter the locking tube;
    b. pull the internal or external handle to close the leaf, turn the handle and lock as required.

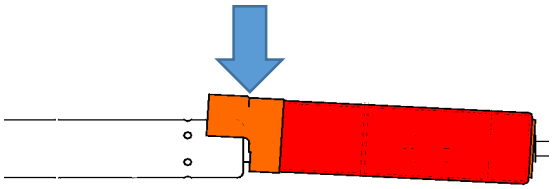


Fig. 16. Direction and locking tube unlocking point.

4. The gas springs in the mcr PROROOF ST roof access hatch with type 1 locking mechanism (locking tube) can be reversed for easy access. Proceed as follows:
    a. Open the roof access hatch.
    b. Secure the hatch against accidental closing.
    c. Remove both gas springs: remove the M8 nuts attaching the gas springs to the leaf (Fig. 17, A), remove the gas springs from the ball-and-socket joints at the base (Fig. 17, B) (do not remove the ball-and-socket joints from the base!). Remove the gas springs.
    d. Reverse and install the gas springs. Note: tighten the M8 nuts leaving 1 mm clearance.

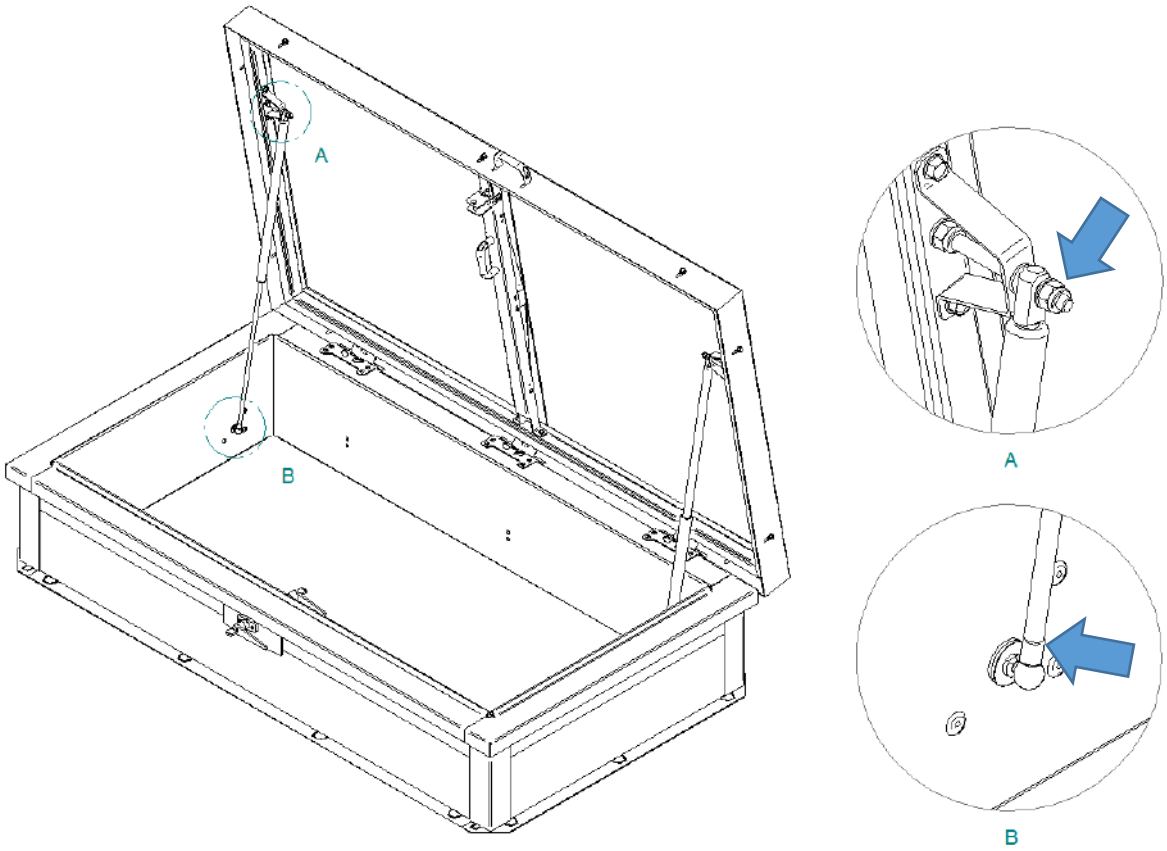


Fig. 17. Reversing the gas springs. A – M8 nut. B – ball-and-socket joint mount.

Type 2 locking mechanism (75x250 mm and 75x330 mm) - gas spring-integrated locking mechanism

1. To open the hatch from the outside or from the inside, turn the key in the handle lock and turn the handle (5) by approx. 45° to release the lock bolts (7) by the spring locks (6). After releasing the bolts (the hatch will lift slightly), the hatch can be opened. See Fig. 18.
   The handle lock can be opened on the same side it was closed.
   Note: the handles lock independently - the internal lock cannot be opened by the external lock (and vice versa). Each lock has to be opened individually.
   Both keys for the internal and external lock are identical.
   Hold the handle (internal or external) and lift the hatch.
   The gas springs have an integrated locking mechanism preventing the hatch from closing and allowing easy opening.
   Note: The hatch cannot be closed without releasing the locking mechanism (with a lever (8), Fig. 20).
   The opening angle is limited by the gas spring stroke length.

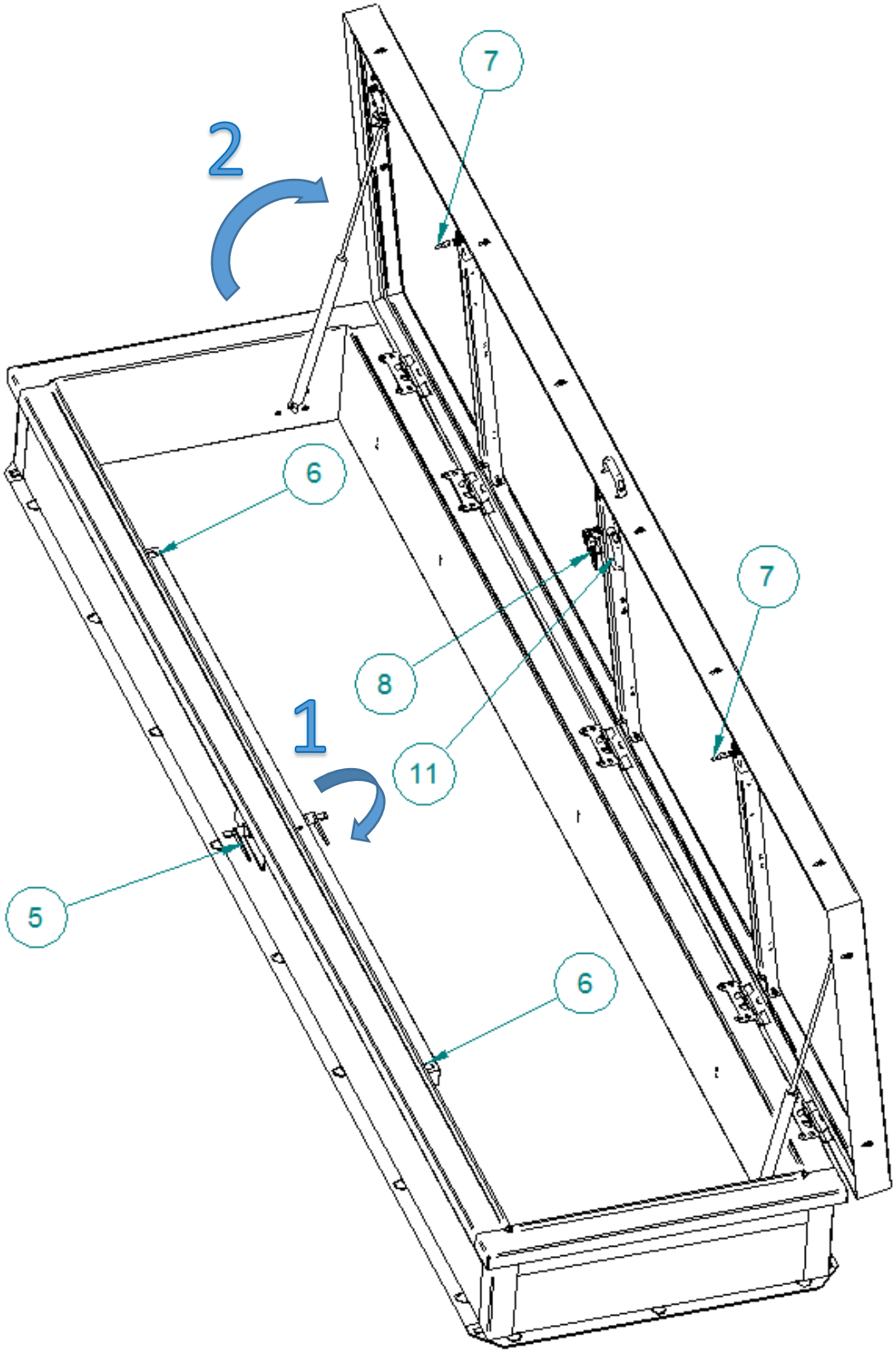


Fig. 18. mcr PROROOF ST roof access hatch with type 2 locking mechanism (gas spring-integrated locking mechanism) - opening and closing.

2. To close the hatch, **SIMULTANEOUSLY** press the release lever (8) and pull the internal handle (11) (Fig. 19). The lever can be pressed and the handle can be pulled using one hand (Fig. 20).
   At the end of the closing cycle, close the hatch while pressing the lever to make sure that the spring locks engage the bolts.

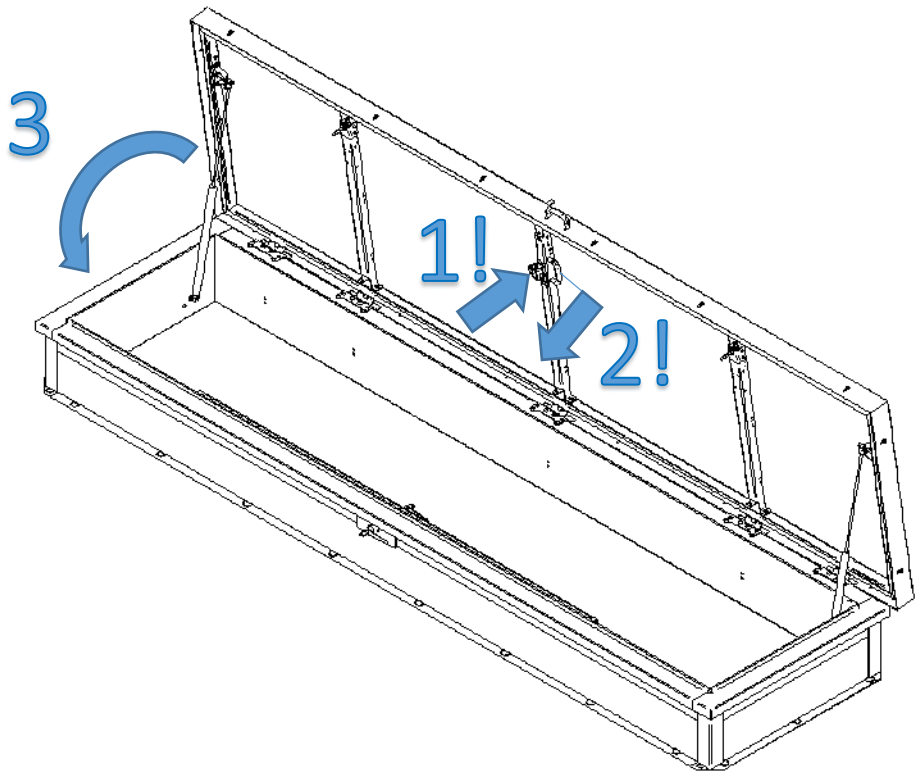


Fig. 19 mcr PROROOF ST roof access hatch with type 2 locking mechanism (gas spring-integrated locking mechanism) - closing.

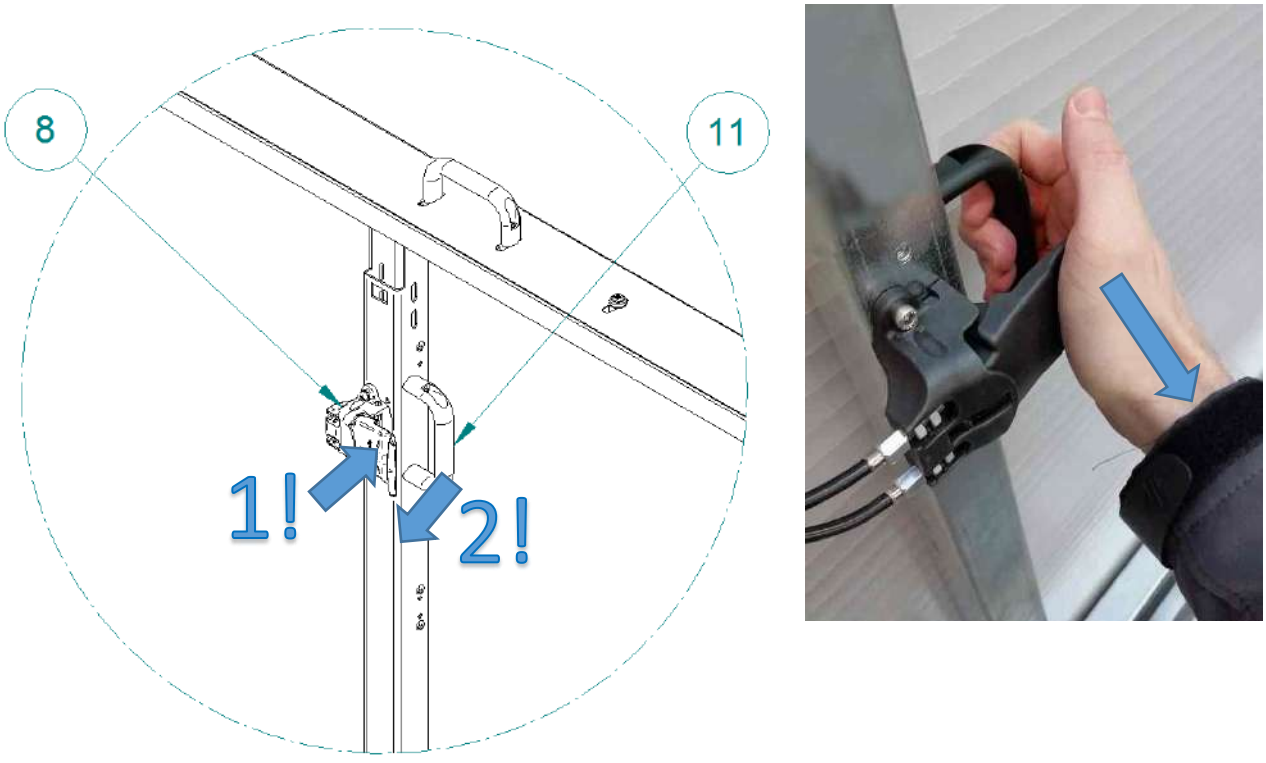


Fig. 20. Locking mechanism release lever and one-handed operation.

CAUTION
An attempt to close the hatch without releasing the locking mechanism will result in damage to the gas spring(s) brackets.

7. MAINTENANCE

The devices must be maintained in accordance with relevant health and safety regulation, in particular, related to working at heights using the required personal protective equipment.
The devices require periodical maintenance and inspections. Service and maintenance must be carried out by an authorized service centre. Service and maintenance are required annually (every 12 months) and must include the following:

1. Checking the locks (correct locking), closing and opening cycle of the spring locks; adjusting locks, bolts and cables.
2. Checking the locking mechanism (lock, locking tube, locking mechanism release lever); adjusting.
3. Checking the handle screws and the lock operation.
4. Lubricating the ball-and-socket joints, gas spring mounts and hinges. Lubricating the spring lock bolts.
5. Removing the dust from the gas spring rods.
6. Checking the gas spring brackets and ball-and-socket joints.
7. Checking and adjusting the pressing frame or the envelope cover.
8.

The following user actions are recommended between the annual inspections:

1. Checking the gas spring brackets and ball-and-socket joints.
2. Removing the dust from the gas spring rods.
3. Lubricating the hatch/base gasket with petroleum jelly (once a year).
4. Checking if the pressing frame or the envelope cover for the glazing sheet is correctly attached and adjusting as necessary.

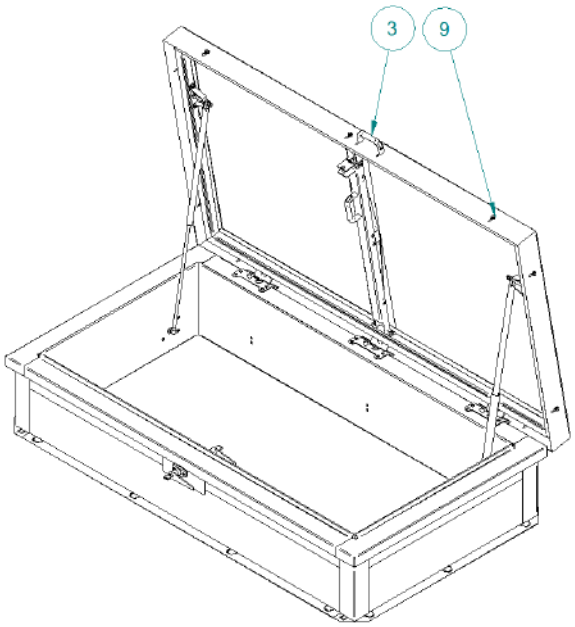


Fig. 21. Pressing frame or envelope cover fasteners.

- Loosen the mounting hex screws (ITEM 3).
- Loosen all No. 9 screws around the frame perimeter (use TORX T30 bit).
- Hold the pressing frame by hand and tighten No. 9 screws.
- Tighten the mounting hex screws (ITEM 3).

5. Cleaning the dome/polycarbonate sheet/envelope cover:

use sponge or soft cloth soaked in warm water and all-purpose cleaner. Do not use brushes or sharp tools. Do not use abrasives, alkalies, solvents etc. Always spot test on a hidden surface first.

The natural processes may cause condensation (mist or water drops) in the polycarbonate sheet chambers. With a correct air exchange (diffusion) between the polycarbonate sheet chambers and the outside, the moisture content will balance and the condensation will disappear.

The condensation does not affect product service life or quality.

CAUTION
Do not use salt to clear the roofs of snow (with mcr PROROOF roof access hatches installed). Risk of discolouration and damage to aluminium profiles, polycarbonate sheets or acrylic domes. Damage due to the use of salt is not covered by the warranty.

8. WARRANTY AND SERVICE TERMS AND CONDITIONS

1. "MERCOR" S.A. grants a 12-month quality guarantee for equipment, starting from the date of purchase, unless the agreement provides otherwise.
2. If during the term of guarantee any physical defects of the equipment become evident, "MERCOR" S.A. shall remove them within 21 days of the written notification, subject to paragraph 5.
3. In the event of defects resulting from inappropriate operation of the equipment or due to other reasons stated in par. 6, the Buyer/Guarantee Holder shall bear the costs of their removal.
4. Liability under the Guarantee covers only defects resulting from causes inherent in the equipment sold.
5. "MERCOR" S.A. reserves the right to lengthen the repair time in the event of complicated repairs or those that require non-standard sub-assemblies [elements] or spare parts to be purchased.
6. The guarantee does not cover:
   - damages and breakdowns of the equipment due to inappropriate operation, user's interference, lack of maintenance or periodic servicing;
   - equipment damages resulting from causes other than those that MERCOR is responsible for, in particular: acts of God such as torrential rainfall, flood, hurricane, flooding, stroke of thunder, overvoltage in the mains, explosion, hail, fall of aircraft, fire, avalanche, landslide and secondary damages due to the above-listed causes. Torrential rain is defined as rain with an efficiency index of at least 4 (or 5 in Chomicz scale or torrential rain grade IV (A_4)). Should it be impossible to determine the index mentioned in the previous sentence, the actual condition and the degree of damage at the place of its origin proving that it is the consequence of torrential rain will be considered. Hurricane is defined as wind blowing at the speed of at least 17.5 m/s (damages are deemed to have been caused by hurricane if the effects of hurricane have been found in the immediate neighborhood);
   - damages due to failure to immediately report the defect discovered;
   - worsened quality of coating due to the natural ageing process (fading, oxidation);
   - defects due to using abrasive or aggressive cleaning products;
   - parts liable to natural wear and tear during operation (e.g. seals) unless a manufacturing fault has occurred;
   - damages due to aggressive external factors, especially chemical and biological ones;

- ingress of dust, particles or solids with the effective grain size below 50 µm into the polycarbonate sheet chambers;
- condensation in the polycarbonate sheet chambers.

7. Each defect under guarantee should be reported to a local representative of "MERCOR" S.A. immediately, i.e. within 7 days of its discovery.
8. The Buyer/Guarantee Holder is responsible for proper operation and maintenance of the equipment and for regular (min. twice a year) servicing.
9. The Guarantee shall expire forthwith if:
   - The Buyer/Guarantee Holder makes design modifications on his own without consulting "MERCOR" S.A.,
   - Maintenance or periodic servicing are not done in due time or are performed by unauthorized persons or a service center not authorized by "MERCOR" S.A., or the equipment is operated in the wrong way,
   - Any interference of unauthorized persons – except activities connected with normal operation of the equipment.
10. Moreover, in the cases specified in par. 9, "MERCOR" S.A. has no warranty obligations.

SERVICING INSPECTIONS:

1. Devices should be subject to periodical servicing inspections every 6 months during the entire period of their operation.
2. The servicing inspections should be performed by companies having adequate authorization of MERCOR SA.
3. On issues related to service please contact local representative of "MERCOR" S.A.