Fire protection systems

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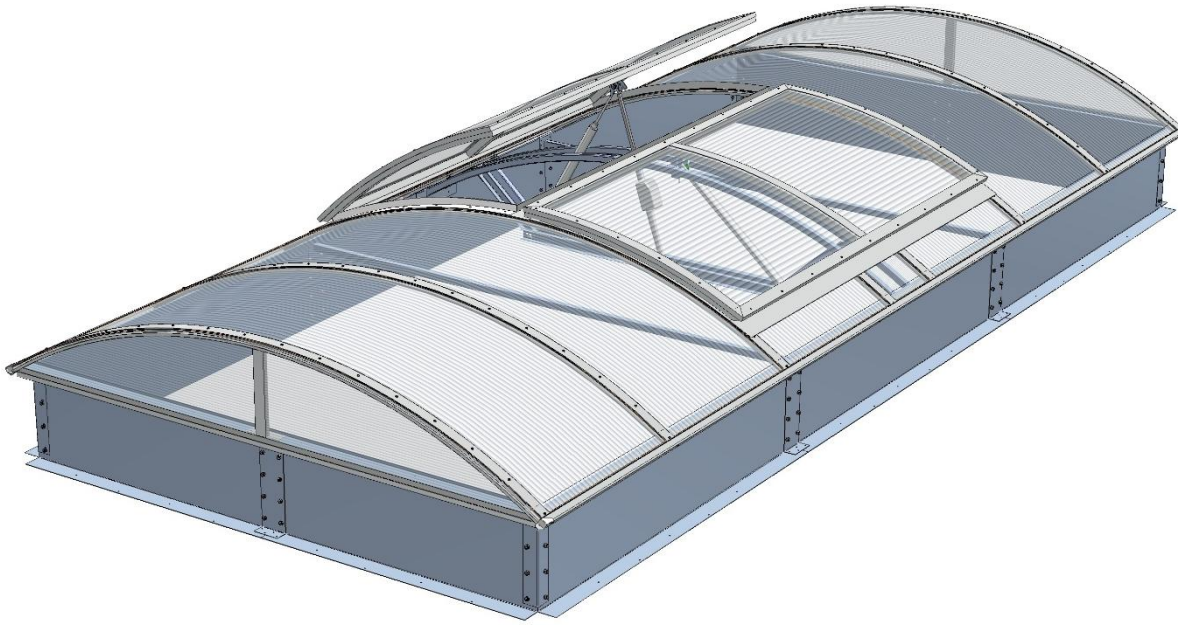
# OPERATIONS AND MAINTENANCE MANUAL. Continuous rooflights with integrated smoke vents with ventilation function of mcr PROLIGHT system



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**WARNING!**

**Thermal valves in vents with pneumatic control are not armed for transport safety reasons.**

**Such vents are NOT ready for operations.**

**Arm the thermal valve and screw in $CO_2$ fuse (see section 9.1).**

# 1 INTRODUCTION

The aim of this operation and maintenance manual (OMM) is to acquaint the user with purpose, construction, principle of operation, correct assembly and operation of segments of continuous rooflights of the system mcr PROLIGHT including integrated smoke vents and ventilation hatches. The OMM contains also additional information on operating conditions, maintenance, and terms of guarantee of the product.

Observing the recommendations contained in the operation and maintenance manual shall ensure correct functioning of the systems in the scope of smoke exhaust and/or venting, as well as the safety of the system users.

**NOTE:**

**Any works related with installation, operation, maintenance and servicing of the roof hatches may only be performed in compliance with the health and safety rules, and with use of appropriate personal protective equipment – including first of all – the fall arrest devices. Any works at height related to electrical connections, etc. may only be performed by personnel with appropriate qualifications.**

# 2 INTENDED USE OF THE DEVICE

Continuous rooflights and skylights of the system mcr PROLIGHT are devices installed on the roof above production floors, storage spaces, sporting halls, shops, staircases in residential buildings, communication routes in public buildings – wherever daylight illumination is required. Continuous rooflights and skylights may be equipped with smoke vents, smoke and ventilation hatches, or ventilation hatches.

Vents mounted on continuous rooflights and skylights of the system mcr PROLIGHT are used:

- As smoke exhaust vents to exhaust fumes, combustion gases and heat energy from enclosed spaces (production floors, storage spaces, public facilities, etc.) to the outside of buildings, in order to protect human lives and property by:
  - maintaining escape routes with low smoke levels,
  - facilitating fire-fighting action by creating a low layer with low smoke levels,
  - providing protection for the building structure and outfit,
  - limiting fire damage caused by smoke, hot combustion gases and thermal decomposition products.
- As ventilation hatches or smoke vents with additional daily ventilation to perform the daytime natural ventilation function.

Smoke vents in continuous rooflights and skylights are a part of the smoke control system which includes other products of Mercor Light&Vent, such as: alone standing smoke vents **mcr PROLIGHT**, **mcr THERMOLIGHT**, **mcr ULTRA THERM**, smoke curtains **mcr PROSMOKE**, control panels **mcr 9705** i **mcr 0204**, extending modules **mcr R0424,-48**, smoke exhaust windows ans air inlet windows **mcr OSO THERM**, smoke exhaust louvers **mcr LAM** and air inlet louvers **mcr LAM N**.

Continuous rooflights and skylights of the system mcr PROLIGHT with integrated smoke vents, smoke exhaust and ventilation hatches, and ventilation hatches, are accommodated for mounting on flat and sloped roofs, covered with roofing paper, PVC membrane, corrugated roof sheet, roofing tiles or any other material.

The continuous rooflights and skylights of the mcr PROLIGHT system comply with the requirements of the PN-EN 14963:2006 standard, and the smoke vents and smoke and ventilation hatches built into the arc-shaped rooflight comply with the requirements of the harmonized standard PN-EN 12101-2:2005 (EN 12101-2:2003), which was confirmed by the CPR certificate (Certificate of Constancy of Performance) No. **1396-CPR-0039**.

# 3 GENERAL DESIGN AND TYPES OF THE DEVICE

## 3.1 Construction and components of a continuous rooflights or skylight.

The continuous rooflight or skylight of the system mcr PROLIGHT consists of:

- base
- vault of the rooflight
- vent with control equipment (which are variable depending on whether the version is with smoke exhaust or ventilation vents)

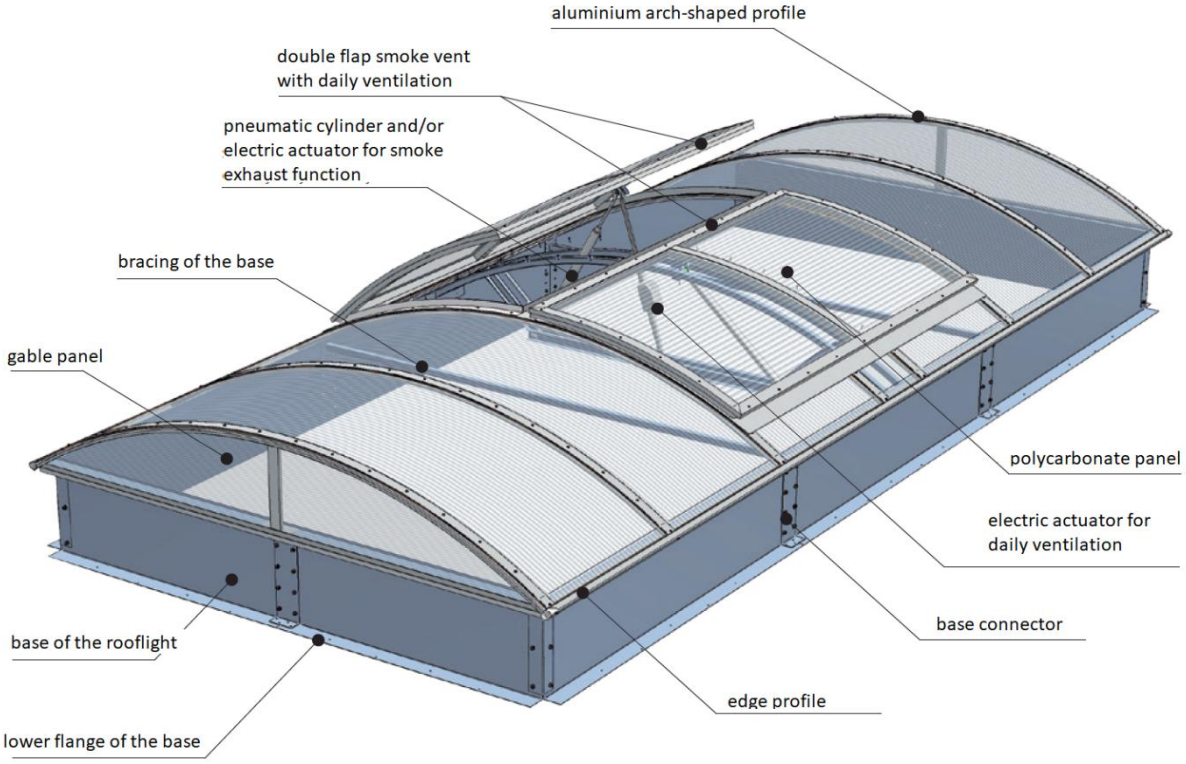



*Fig. 1 Construction of a continuous rooflight based on the example of an arch-shaped rooflight with a 2-leaf smoke vent.*

The base of continuous rooflights is made of galvanised steel sheet of thickness 1.25÷5 mm and standard modular length 2500 & 3000 mm. The bases are made from sheet metal meeting the requirements of the PN-EN 10346:2015-09 standard with surface type A.

Two main types of base are used: standard (Fig. 1), intended for mounting on roof structure elements, or overlay, intended for mounting on an existing plinth. Typical height of the standard base is 300 mm or 500 mm.

The standard base is equipped with a lower shelf – base flange – used to attach the base to the trimmer beam or to the roof structure. The base modules are connected to each other using screw connections. The base is attached to the ground using self-drilling screws, machine screws or expansion plugs, depending on the materials the supporting structure is made of. Standard bases are stiffened with bracing every 2500÷3000 mm made of cold-bent steel profiles located on the top of the base and – optionally - also at the bottom of the base. If overlay base is applied, the plinth must have appropriate bracing.

Standard bases can be equipped with anti-burglary bars or safety nets that are resistant to impact from a large soft body with an energy of up to 1200 J (according to EN 14963). Due to the overhang of the safety net, their use is limited to a base span of 3.6 m (max. overhang approx. 45 cm below the attachment point). Thermal insulation of the base is not an element of the rooflight kit and is to be provided on site by the customer.

The vault of he rooflight is made of a transparent filling supported on a structure of aluminum profiles: load-bearing profiles (under the polycarbonate the filling) and pressure profiles (above the polycarbonate). The edge profile is installed along the rooflight at the edge of the polycarbonate.

Standard type of filling for the rooflight vault and smoke vents are: cellular polycarbonates: 10 mm, 16 mm, 20 mm, 25 mm, optionally equipped with a polyester panel in order to achieve the $B_{ROOF}$(t1) class. Other types of filling are possible: solid polycarbonate or acrylic plates, after confirming technical possibilities.

The rooflight vault is connected to the base by means of fasteners (machine screws, sheet metal screws, self-drilling sheet metal screws, blind rivets). The vault may be equipped with additional elements supporting the load-bearing profiles made of steel sections as well as the longitudinal braces made of steel or aluminum sections.

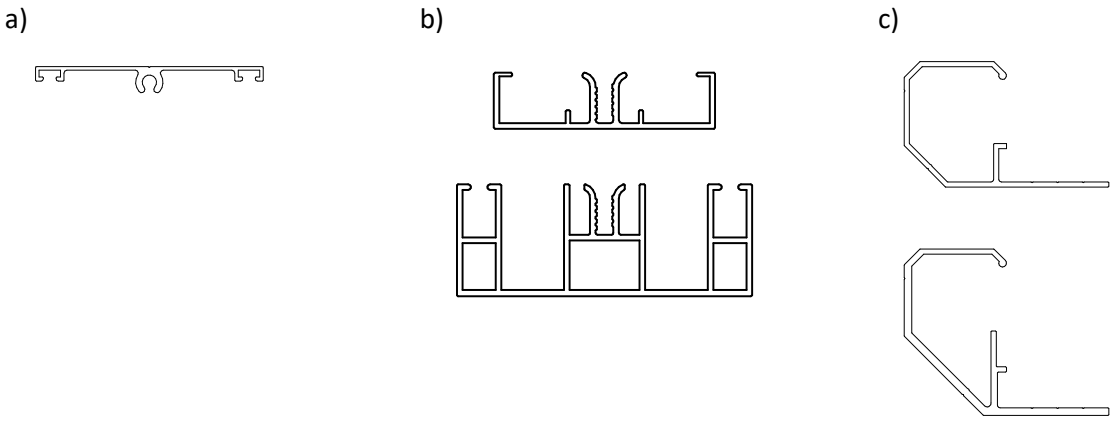



*Fig. 2 Basic shapes of aluminum profiles used in the mcr PROLIGHT system rooflights: a) pressure profile, b) load-bearing profiles, c) edge profiles.*

On the top oft he rooflight vault smoke vents and/or ventilation hatches can be installed. The vents may be of single-leaf or double-leaf type. The vents are actuated using pneumatic actuators (compressed $CO_2$ for smoke exhaust, compressed air for ventilation) or electrical actuators (24 V- for smoke exhaust or smoke exhaust and daily ventilation, 230 V~ – for ventilation).

Smoke exhaust vents may be actuated both manually by the user and automatically by thermal fuses installed inside the vents, MCR type smoke exhaust control units, or fire signalling control panels.

The surface quality of the aluminum sheets used is in accordance with the provisions of the PN EN 485-1 standard.

## 3.2 Types of the continuous rooflights

### Arch-shaped continuous rooflight.

R – radius of the continuous rooflight (depending on the filling)
S – span of the continuous rooflight (0.5 m ÷ 7 m)
L – length of the continuous rooflight (unlimited)
f – deflection of the continuous rooflight (depending on the radius and span)
h – height of the base (standard 300 mm and 500 mm)

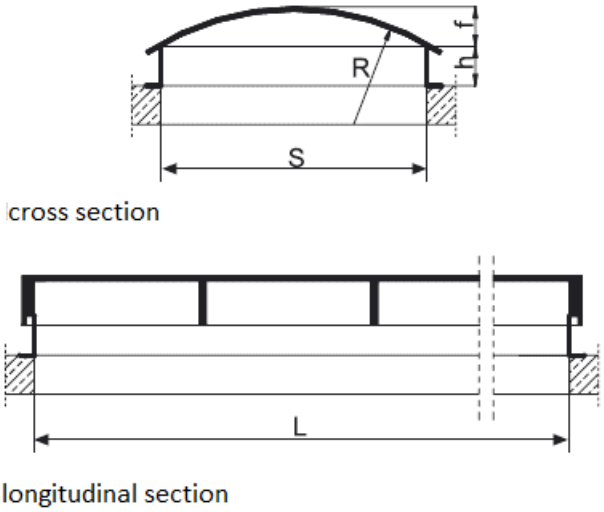



*Fig. 3 Schematic drawing of an arch-shaped continuous rooflight*

### Triangular shaped rooflights and piramide skylights

α – inclination angle of the continuous rooflight walls (standard 30° or 45°)
S – span of the continuous rooflight(0.5 m ÷ 7 m)
L – length of the continuous rooflight (unlimited)
H – height of the continuous rooflight (depending on the radius and span)
h – height of the base (standard 300 mm and 500 mm)

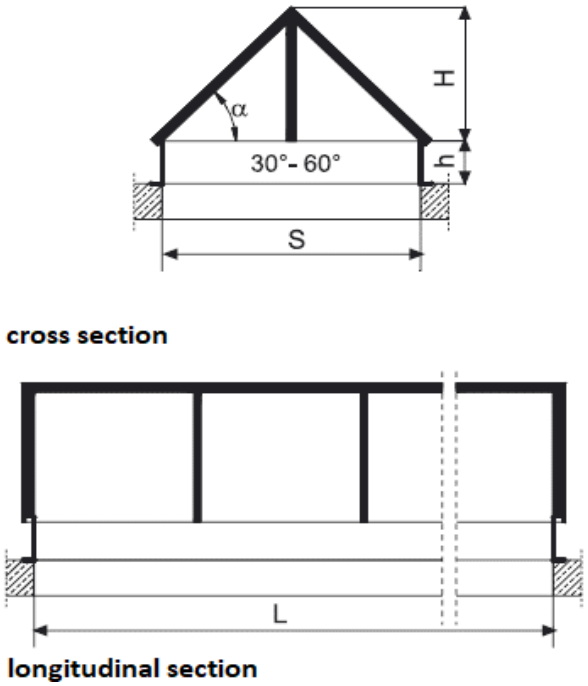
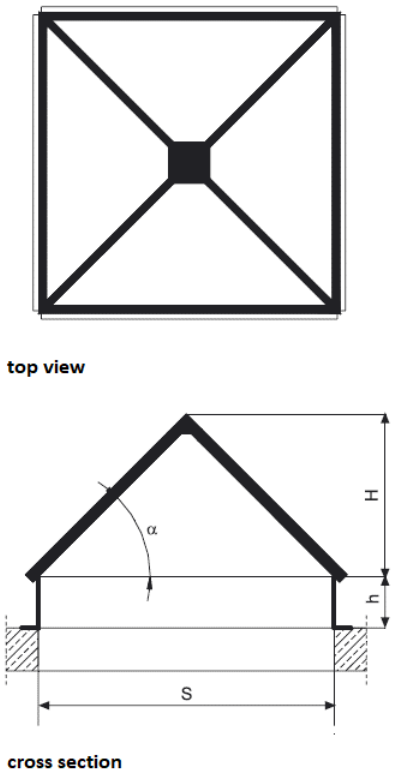



*Fig. 4 Schematic drawing of an triangular shaped continuous roofligh*

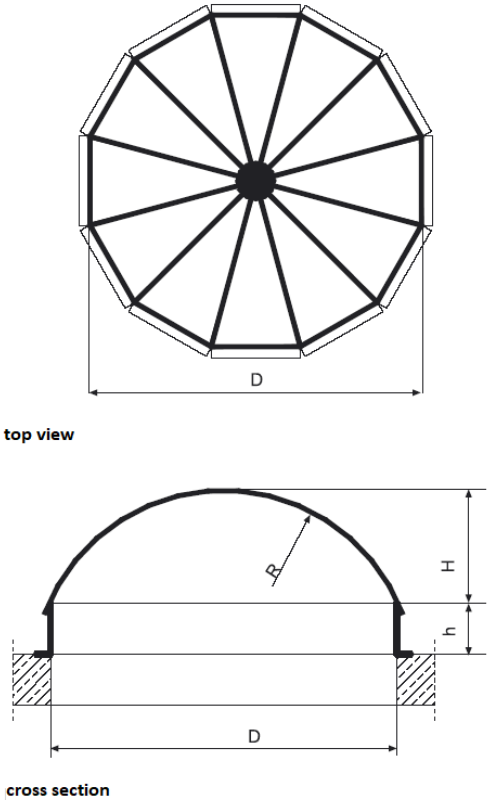
Pyramid shaped skylight




α – inclination angle of the pyramid walls (standard 30° or 45°)
S – span of the skylight (0.5 m ÷ 7 m)
H – height of the pyramid (depending on the inclination angle and span)
h – height of the base (standard 300 mm and 500 mm)

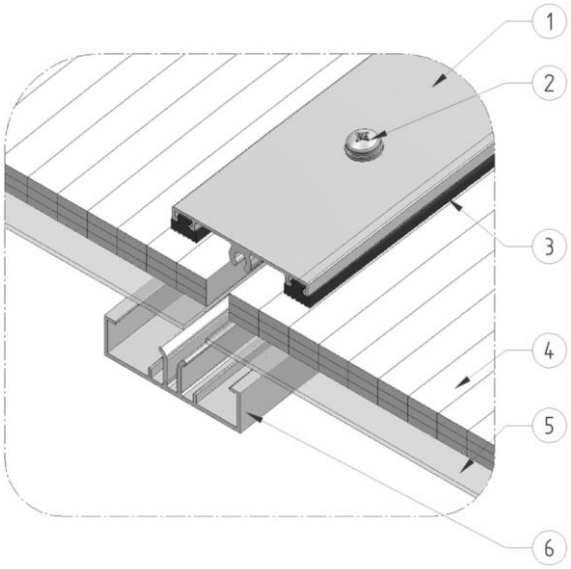
*Fig. 5 Pyramid shaped rooflight – schematic drawing*

Dome shaped skylight (igloo type).




R – radius of the dome (depending on the fillingl)
D – diameter of the skylight (min. 0.5 m; max 7 m)
H – height of the dome (depending on the diameter and radius)
h – height of the base (standard 300 mm and 500 mm))

*Fig. 6 Dome shaped (igloo type) rooflight – schematic drawing*




1. Pressure profile
2. Pressure screw with seal
3. Pressure profile seal
4. Cellular polycarbonate panel
5. Polyester panel
6. Load-bearing profile

*Fig. 7 Structure of the glazing panel in the vault of the mcr PROLIGHT rooflight to achieve the BROOF(t1) classification.*

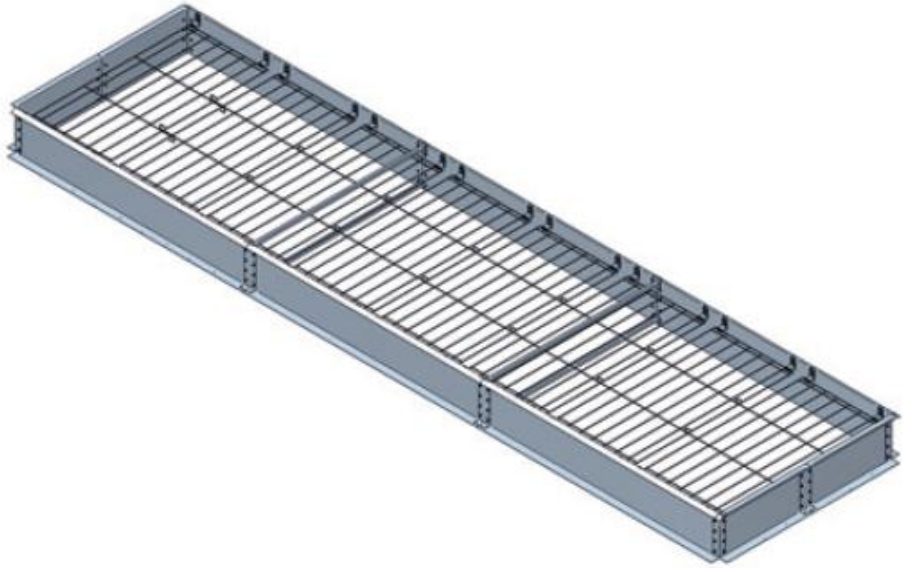


*Fig. 8 Base of the mcr PROLIGHT rooflight system with a safety net. Possible deflection of the net is not shown.*

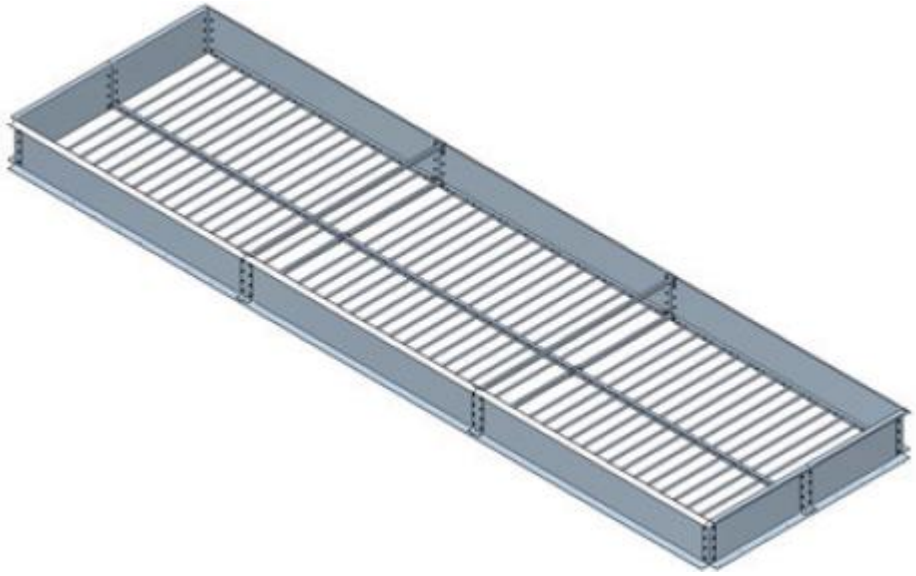


*Fig. 9 Base of the mcr PROLIGHT rooflight system with an anti-burglary bars.*

# 4 TRANSPORT AND DELIVERY

Segments of continuous rooflights and smoke vents are delivered to the assembly site in parts (elements of the base, aluminium sections of the dome, overlay vents, filling (polycarbonate), control elements for vents and connecting elements). This is due to the large size of continuous rooflights, the necessity to protect individual elements of vents against damage during transport, and to ensure the safety of road traffic. Unloading should be performed under supervision of a person authorised by the manufacturer, using commonly available unloading means (e.g. forklifts with forks adapter to pallets length, cranes equipped with lifting slings and cross-beams) or manually, with special attention to protection of the elements of continuous rooflights against damage.

Edge profiles delivered to the installation site should be stored in accordance with the storage instructions on the packaging.


*Fig. 10 Guidelines for storing edge profiles in accordance with the sticker attached to the profile packaging.*

# 5 ASSEMBLY OF THE CONTINUOUS ROOFLIGHTS

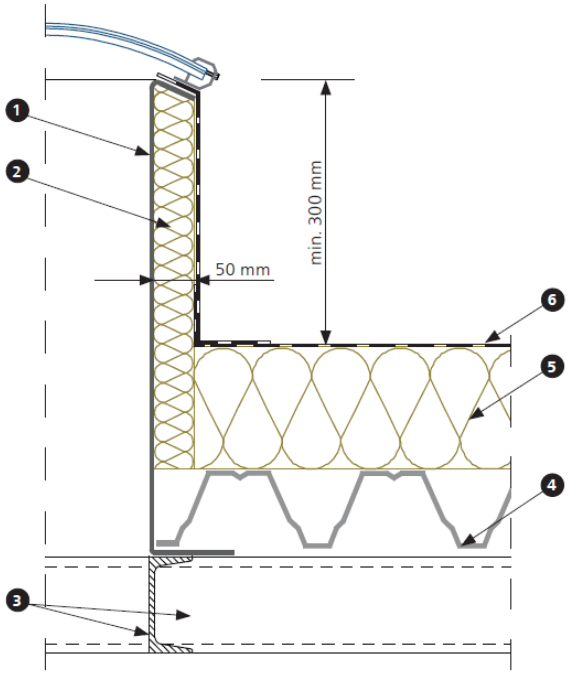
Assembly of continuous rooflights is important for correct operations of the product and should be performed by Mercor Light&Vent or a duly authorised company.

The assembly should be conducted according to the **„Installation Manual of mcr PROLIGHT rooflights”** delivered by Mercor Light&Vent.

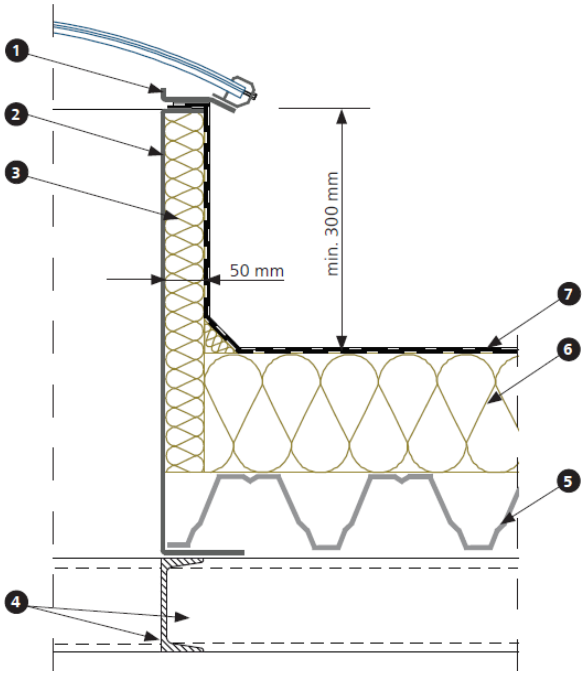
# 6 ROOFING WORKS ON THE BASES OF THE CONTINUOUS ROOFLIGHTS

In order to perform proper roofing work of the rooflight base, the waterproofing should be rolled up on the upper shelf of the thermally insulated rooflight base (in the case of a standard base) or on the existing plinth (in the case of an overlay base). Roofing works should be carried out in compliance with the recommendations of the waterproofing manufacturer and good roofing practice.

Rooflight vault or overlay base can be then mounted on the prepared standard base or pre-treated plinth, respectively.

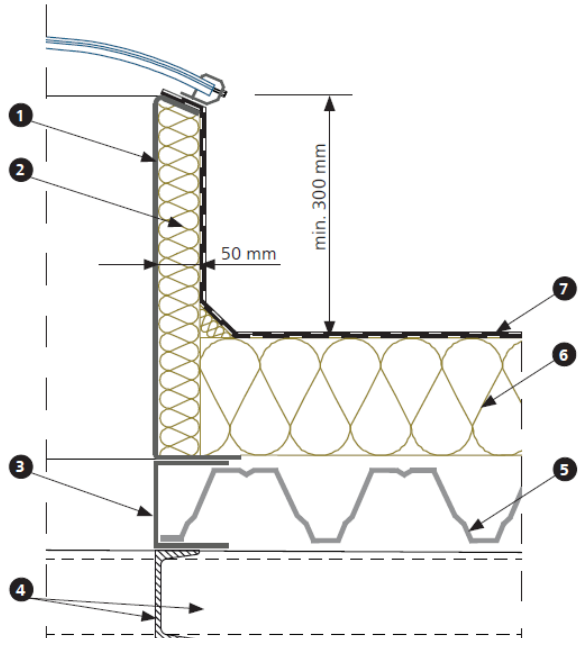



*1 – continuous rooflight standard base*
*2 – thermal insulation oft he base*
*3 – supporting steel profile (roof purlin or tripper-beam)*
*4 – corrugated metal sheet*
*5 – thermal insulation of the roof*
*6 – PVC membrane*

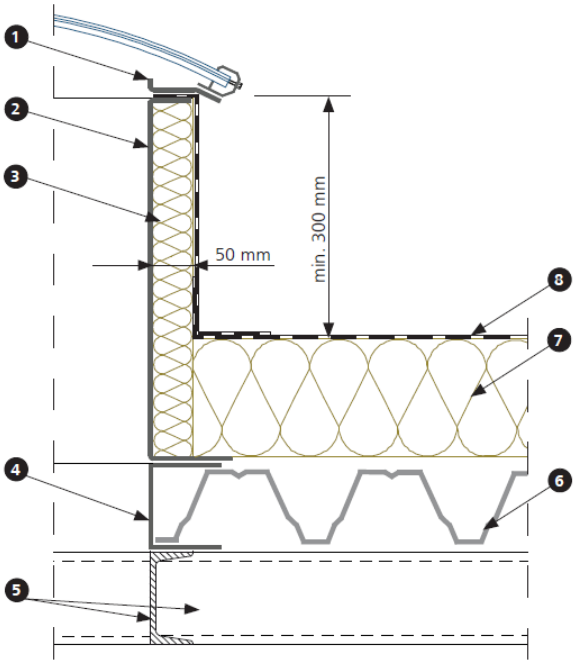



*1 – continuous rooflight overlay base*
*2 – continuous rooflight standard base*
*3 – thermal insulation of the base*
*4 – supporting steel profile (roof purlin or tripper-beam)*
*5 – corrugated metal sheet*
*6 – thermal insulation of the roof*
*7 – roofing paper*

*Fig. 11 Installation of the rooflight base on steel structure – under the corrugated steel.*

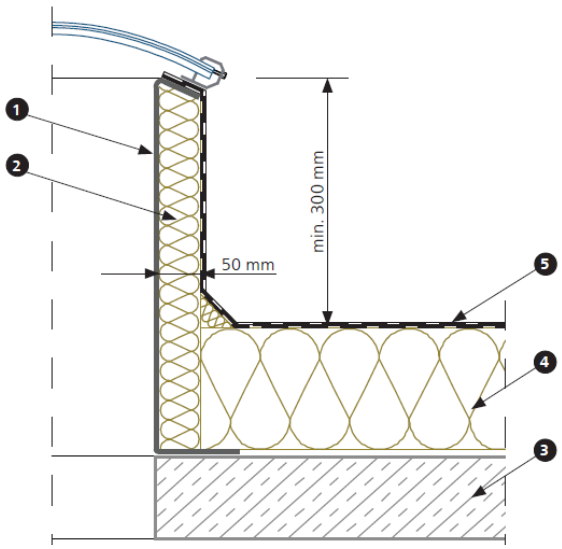



*1 - continuous rooflight standard base*
*2 - thermal insulation of the base*
*3 – additional flashing (masking element)*
*4 – supporting steel profile (roof purlin or tripper-beam)*
*5 – corrugated metal sheet*
*6 – thermal insulation of the roof*
*7 – roofing papaer*

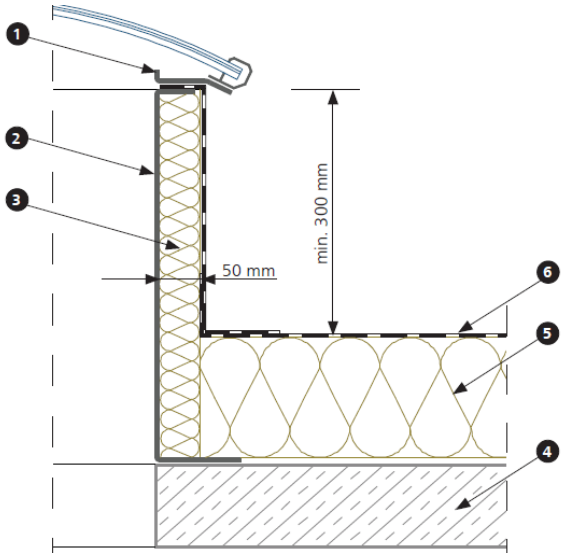



*1 - continuous rooflight overlay base*
*2 – continuous rooflight standard base*
*3 - thermal insulation oft he base*
*4 – additional flashing (masking element)*
*5 – supporting steel profile (roof purlin or tripper-beam)*
*6 – corrugated metal sheet*
*7 – thermal insulation of the roof*
*8 – PVC membrane*

*Fig. 12 Installation of the rooflight base on steel structure – on the corrugated steel.*

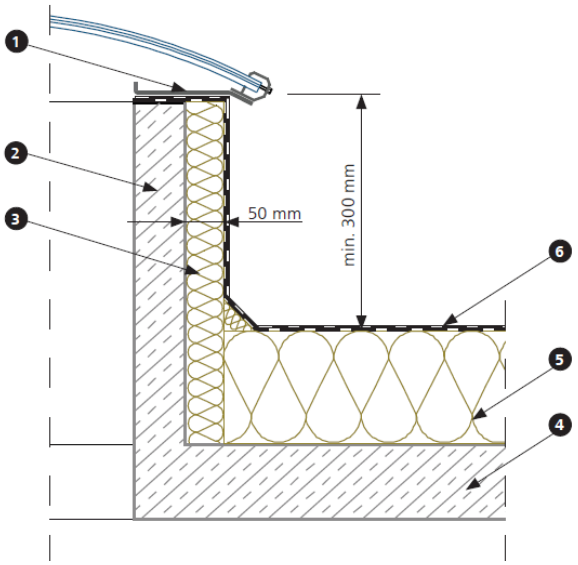



*1 - continuous rooflight standard base*
*2 - thermal insulation of the base*
*3 – ceiling, e.g. reinforced concrete slab*
*4 – thermal insulation of the roof*
*5 – roofing paper*




*1 - continuous rooflight overlay base*
*2 - continuous rooflight standard base*
*3 - thermal insulation of the base*
*4 – ceiling, e.g. reinforced concrete slab*
*5 – thermal insulation of the roof*
*6 – PVC membrane*

*Fig. 13 Installation of the rooflight base on reinforced concrete structure.*




*1 - continuous rooflight overlay base*
*2 – plinth (concrete, steel or wood)*
*3 - thermal insulation of the plinth*
*4 – ceiling, e.g. reinforced concrete slab*
*5 - thermal insulation of he roof*
*6 – rofing paper*

*Fig. 14 Installation of the rooflight overlay base on reinforced concrete, steel or wooden plinth.*

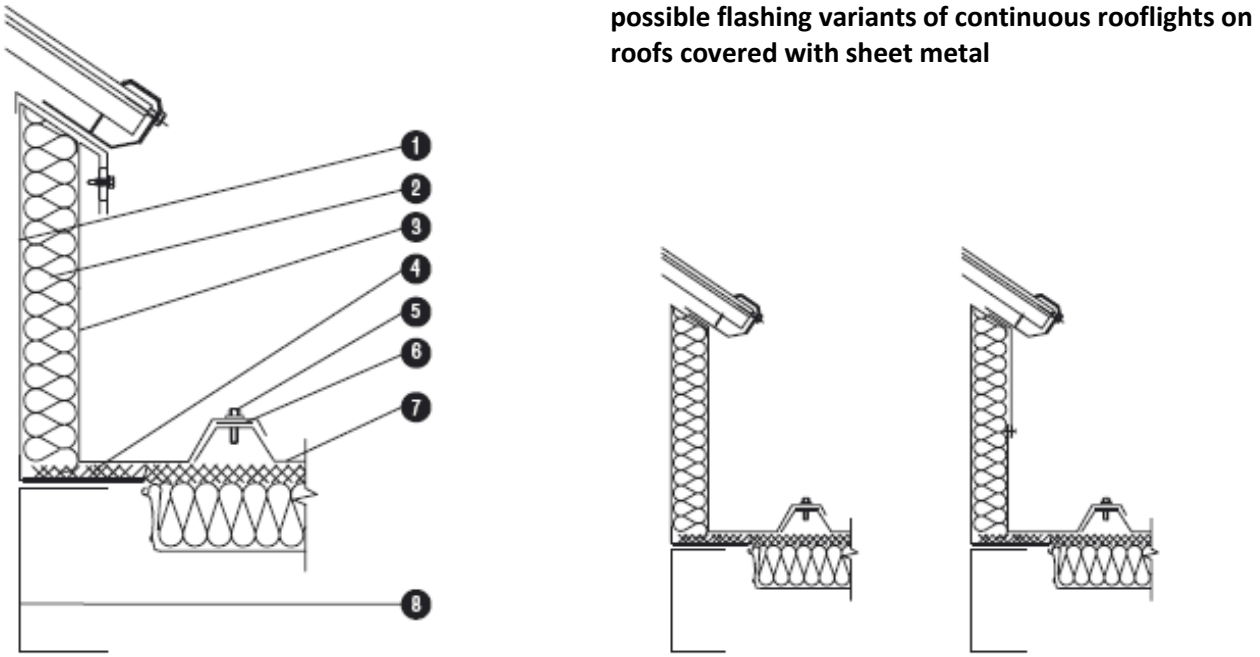



*Fig. 15 Installation of steel base on the system roofing steel structure with aluminium flashings.*

*1. steel base of the rooflight*
*2. thermal insulation of the base*
*3. external aluminium finishing*
*4. thermal insulation of the roof*
*5. system bolt*
*6. system gasket*
*7. covering sheet metal*
*8. supporting structure*

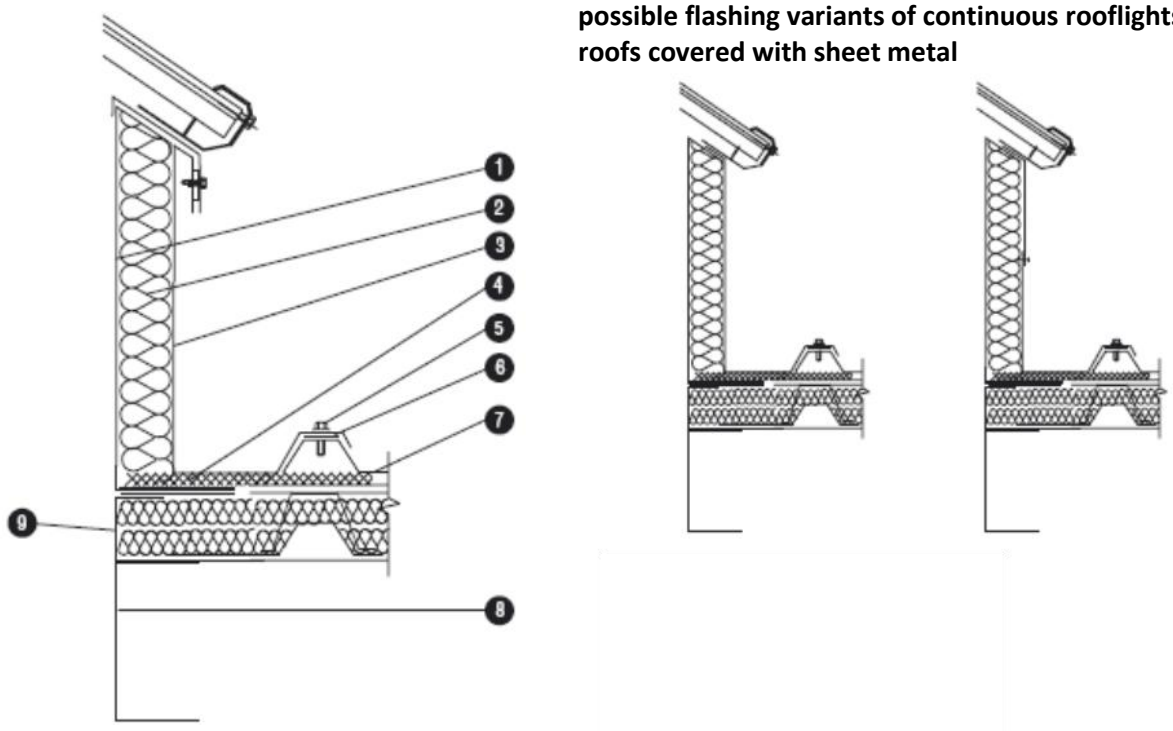



*Fig. 16 Installation of steel base on the system roofing steel structure with aluminium flashings.*

*1. steel base of the rooflight*
*2. thermal insulation of the base*
*3. external aluminium finishing*
*4. thermal insulation of the roof*
*5. system bolt*
*6. system gasket*
*7. covering sheet metal*
*8. supporting structure*
*9. additional flashing (masking element)*

# 7 WIND DEFLECTORS

Wind deflectors are used for increasing the active surface area of smoke exhaust of the smoke vents. Deflectors are made of aluminium sheet. They may be painted in any colour of RAL palette. Height: 100 – 450 mm, depending on the type and size of the vent. Given that wind deflector and vent sizes must be matched, the products should be adjusted to each other.

Shown below are the methods of installation of the wind deflectors depending on the vent type:

- single-leaf vents: Wind deflector's screen the inlet hole; each baffle screens 1/3 of the vent length and half of the vent width. Wind deflector's wind screens should be fixed to the brackets which are welded onto the vent base. Use supplied M6x16 screws, M6 nuts with polyamide inserts, M6 rough pads (two sets per bracket), and special rectangular pads (two sizes).
- double-leaf vents: Wind deflector's screen the width of the inlet hole on both sides of the gutter. Baffle wind screens should be fixed to the brackets which are welded onto the vent base. Use supplied M6x16 screws, M6 nuts with polyamide inserts, and M6 rough pads (two sets per bracket). A "fore-bracket" will be delivered if the baffle is more than 300 mm high. The fore-bracket should be installed once the wind screen is set: fix it to the baffle and onto the skylight clamp profile on the vent front side (sheetmetal screws with cylindrical head, Ø5.5 + pad with seal).

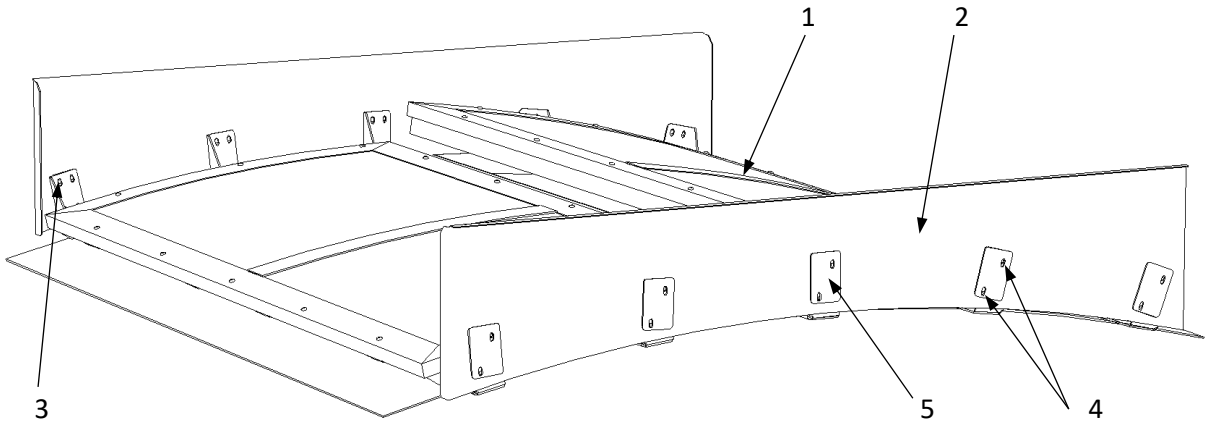
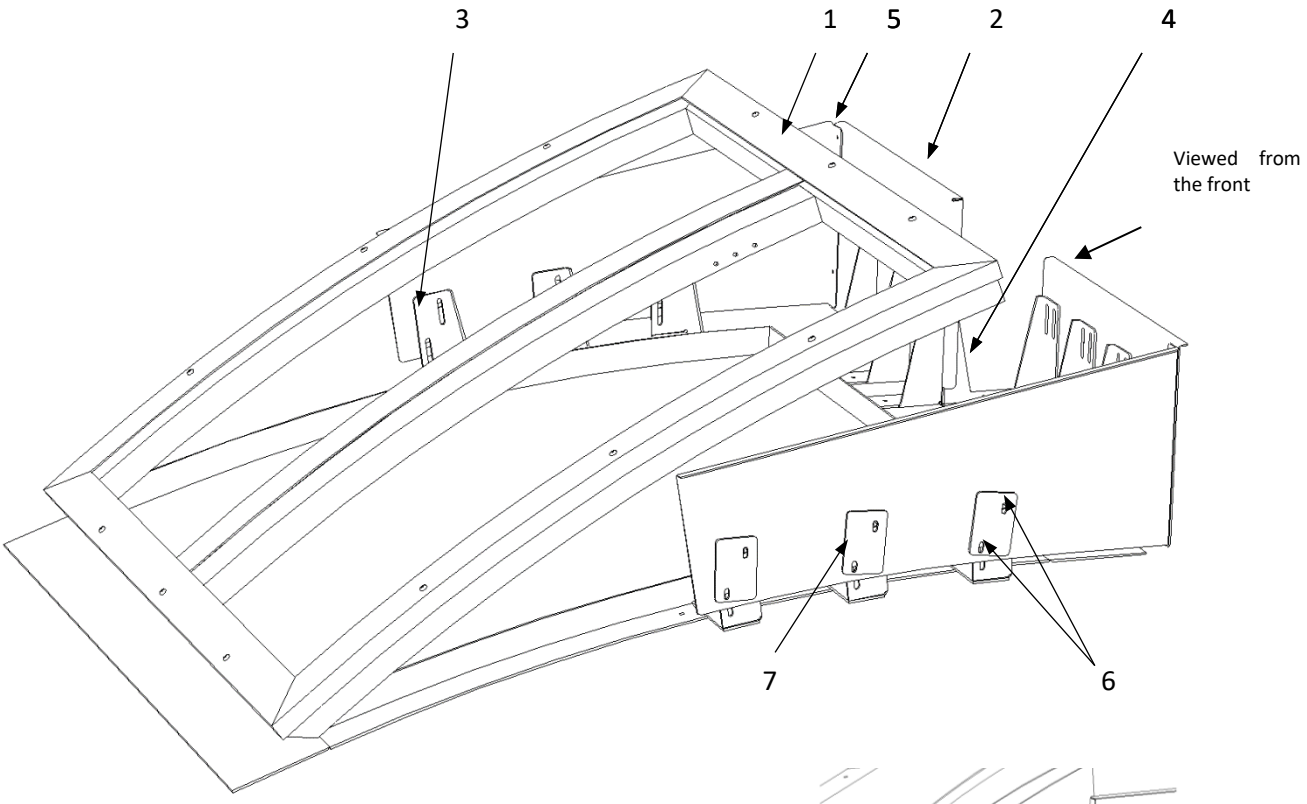
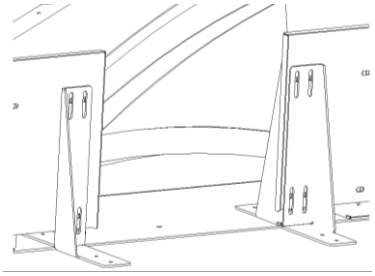



*Fig. 17 Wind deflectors on double leaf vent integrated in a rooflight.*

1. *Vent*
2. *Wind deflector*
3. *Wind deflector's bracket*
4. *Bolted connection*
5. *Rectangular pad / strengthening plate*




1. *Vent*
2. *Wind deflectro*
3. *Wind deflector's side bracket*
4. *Wind deflector's front bracket*
5. *Riveted connection*
6. *Bolted connection*
7. *Rectangular pad / strengthening plate*



Front view (visible front defelector's brackets)

*Fig. 18 Wind deflectors on single leaf vent integrated in a rooflight.*

# 8 VENT LEAF ADJUSTMENT

## (mechanical hook lock, eyebolts, T-shaped adjustable locking bolt)

The vent leaf is connected to the actuator using a mechanical lock. The lock is locked on a T-shaped bolt. Pneumatic cylinders and electrical spindle actuators are connected to the mechanical lock with an eye bolt that is screwed into the piston rod/spindle of the actuator. Play of the vent leaf should be reduced by screwing in the eye bolt and the correct locking by adjusting the T-bolt and the eye bolt. The eye bolt and the T-bolt should be protected against screwing out with a locknut.

In the case if an additional 230 V~ electrical actuator is used for comfort ventilation in pneumatic smoke exhaust system, the T-bolt is screwed into the rack or the spindle of the electrical actuator

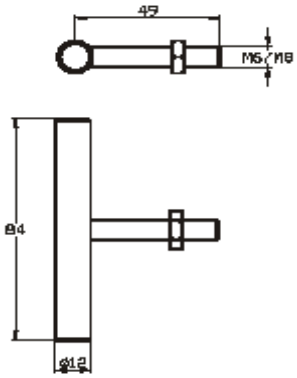


*Fig. 19 T-bolt (locking element)*

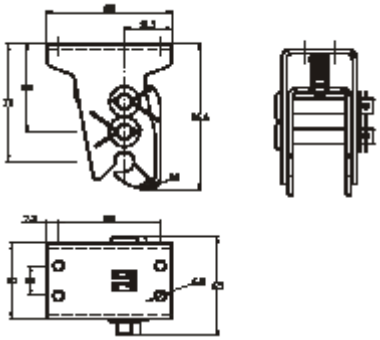


*Fig. 21 Mechanical hook lock*

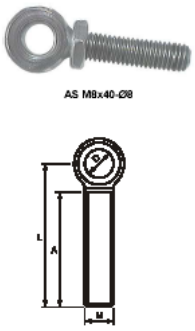


*Fig. 20 Eye bolt*

1. Vent leaf
2. Mechanical hook lock
3. Piston rod of the pneumatic cylinder
4. Rack of the venting actuator
5. T-bolt


*Fig. 22 Connection of the actuators with the hook lock.*

## 9 CONTROL

Operation of the smoke exhaust vents and ventilation hatches in continuous rooflights requires some devices for their opening and closing. These devices form a control system for smoke exhaust or smoke exhaust and ventilation. Depending on the type of devices used, a smoke exhaust control system may be executed as:

- pneumatic system,
- electrical system,
- pneumatic-electrical system (pneumatic part for smoke exhaust and electrical part controlling the ventilation).

Depending on the method of control, the vents are equipped with pneumatic cylinders with thermal release valve, electrical actuators, and additionally with pneumatic and electrical actuators for natural ventilation control.

In case of control mechanism failure and it is not possible to close the vent leaf, please contact the service department immediately (see section SERVICE, MAINTENANCE, OPERATION).

If it is required to close the leaf immediately before the technician arrives, you should: disconnect the immobilized actuator from the leaf (e.g. disconnect the eyebolt from the mechanical hook lock or unscrew the eyebolt from the actuator), then close the leaf and secure it against opening in closed position.

## 9.1 Pneumatic control

After the smoke exhaust actuator is installed in the cross-bar, make the necessary connections of the pneumatic system and adjust the pneumatic cylinder. The adjustment involves connecting the eye bolt of the pneumatic cylinder with the pin of the mechanical lock and appropriately adjusting it so that the lock snaps securely onto the locking element.

Pneumatic systems between cylinders , thermal release valves and other control elements should be executed using e.g. copper/steel tube for smoke exhaust control systems and flexible tube for ventilation only control systems.

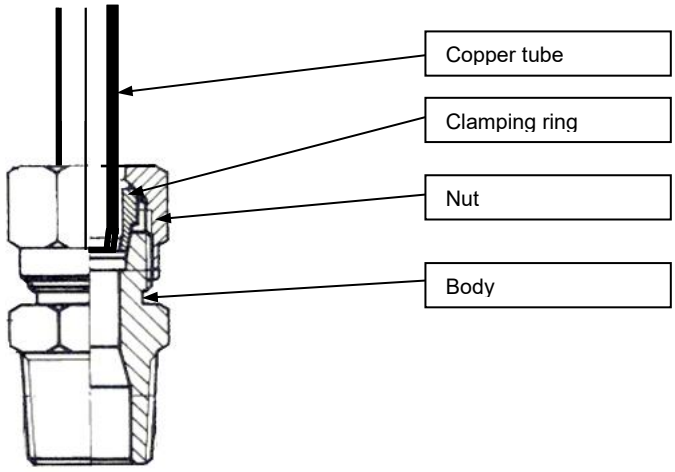



*Fig. 23 Method of installing hard pipes (steel, copper) of the smoke exhaust system in a connector with a cutting ring.*

Threaded connections of pipe fittings with valves, actuators, etc. are sealed using suitable chemical agents, e.g. Loctite 243 (recommended) or Teflon tape, by applying it on the thread. Loctite 243 should be applied in several (2 – 3) drops on the thread. After making the screwed connection, Loctite 243 sets, sealing the connection and protecting it against uncontrolled loosening (important in the case of connections with pneumatic cylinder). Such protected hose joint may only be unscrewed using hand tools

**WARNING:**

**For safety reasons during transport, the supplied thermal relese valve is not armed. After the vent is mounted in the continuous rooflight, the thermal relese valve should be armed**.

Before arming the thermal release remove all plugs in the connectors and threaded holes of the thermal release body Then please proceed as follows:

a) Type **TAVE-3, TAVZ-3**:
   - check if the **release screw (1)** is unscrewed, and if not, fully unscrew it manually
   - free the space for the **thermo bulb (2)** of any contamination,
   - insert **thermo bulb (2)** so that the tip points in the direction of the tension screw and manually tighten the screw fastening the ampoule
   - slide in the **valve slider (4)**,
   - fully tighten the **release screw (1)** – manually,
   - check if the piercing needle is positioned below the bottom oft he cartridge socket and if the gasket is present in the cartridge socke,
   - manually screw in the **$CO_2$ bottle (3)**.

b) Type **TAVE-4, TAVZ-4**:
   - Screw the **reset tool / single-use reset tool** (see: *Fig. 27*) completely into the bottle screw-in thread.
   - free the space for the **thermo bulb (2)** of any contamination,
   - insert thermo bulb so that the tip points in the direction of the **tension screw (1)** and then hand tight fix,
   - remove reset tool / single-use reset tool,
   - Check with the **status gauge** that it is ready for operation (back of reset tool, see *Fig. 26*)
   - Screw in **$CO_2$ bottle (3)**.

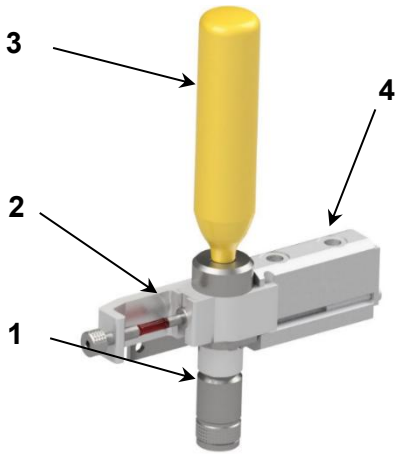



*Fig. 24 Thermal release valve (on example of TAVZ 3).*

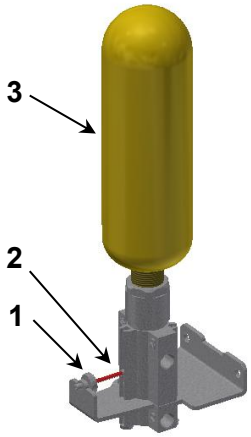



*Fig. 25 Thermal release valve (on example of TAVZ 4).*

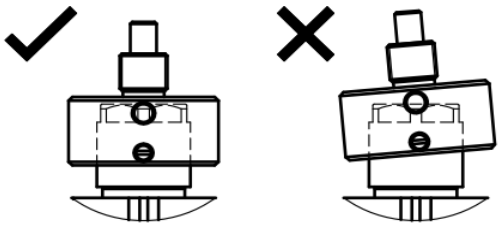


*Fig. 26 Reset tool / status gauge.*

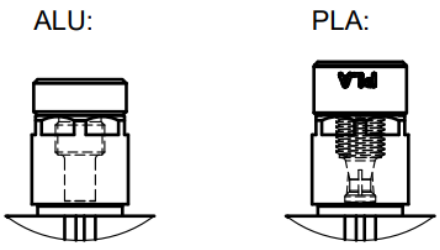



*Fig. 27 Single use reset tool.*

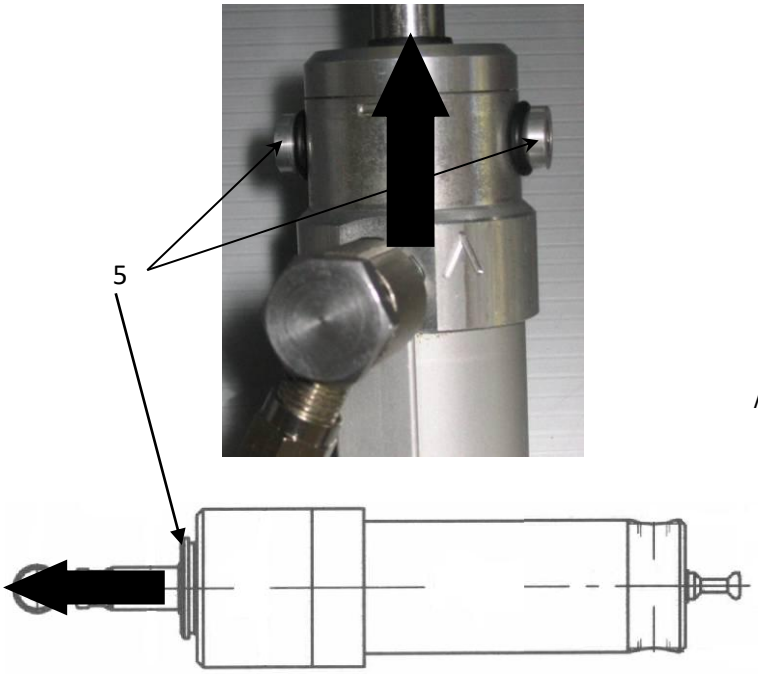



*Fig. 28 Unlocking the pneumatic cylinder: upper picture – PUAV type, lower picture PVZ type.*

Pneumatic cylinders for smoke exhaust have an internal locking that prevents the closing of a fully opened vent leaf. Method of closing the vent leaves after emergency opening for systems without the remote closing function:

1. Release $CO_2$ from the system by unscrewing the $CO_2$ bottle from the thermal valve or the emergency box **(note: the system is under high pressure – unscrew slowly, note: the cartridge may freeze)**.
2. Release the **locks of the cylinder (5)**, by lifting them in the direction of the operating movement of the actuator (in accordance with the arrow in *Fig. 28*).
3. Lower the vent leaf.
4. Check if the leaf is fully locked.
5. Repeat the steps 2 – 4 for the other leaf.
6. Insert a new $CO_2$ bottle into the thermal relese valve or the emergency box.
7. If needed replace the thermal fuse (alcohol ampoule (2). **NOTE: For TAVx-4, first remove the $CO_2$ bottle, then insert the reset tool, and then remove the ampoule by loosening the ampoule tension screw. Skipping the previous steps will damage your TAVx-4!**

## 9.2 Electric control

After the electrical smoke exhaust actuator is installed in the cross-bar, make the necessary electrical connections and adjust the actuator. The adjustment involves connecting the eye bolt of the electric actuator with the pin of the mechanical lock and appropriately adjusting the T-bolt so that the lock snaps securely onto the locking element, and at the same time the electric actuator is turned off after closing the leaf by a limit switch, not an overload switch.

After adjusting the actuator, tighten all screws connecting the actuator with the traverse to a torque of 10 Nm, and secure the eyebolt with a lock nut. It is recommended to secure threaded connections with Loctite 243 or similar.

Method of connecting G or SG actuator (wire poles):

| | | | |
|---|---|---|---|
| brown wire +<br>blue wire – | } Spindle moves in | brown wire –<br>blue wire + | } Spindle moves out |

To control and power the G and SG electric actuators installed inside the smoke vents the user should use the smoke and ventilation control units type mcr9705 and mcr0204 and the extension modules type mcrR0424 and/or mcrR0448.

It is recommended that the opening of the leaf of single-leaf vents with a 24 V actuator for the ventilation function does not exceed 30°, which corresponds to an opening time of approx. 20 s.

## 9.3 Ventilation function

The ventilation functions may be realised using 2 basic methods:

- using pneumatic actuators with adequate piping system,
- using an additional electrical actuator supplied with 230 V~ (figure below).

The electrical actuator for ventilation is usually not factory-mounted due to transport considerations. It should be mounted in the upper cross-bar into the prepared holes, using fixing plugs ST 12-1/8 (for the Exxx-230 actuators) or fixing plugs M8x8/ Ø 12x13 (actuator VN1 230V) or threaded bolts (actuator JMBB-500-300-LA) delivered with the actuator. It is recommended to secure ST12 and M8x8/Ø 12x13 fixing plugs against unscrewing with Loctite 243 or similar.

The venting actuator is equipped with a T-shaped screw, which should be installed instead of the eyebolt. The mechanical hook lock should snap onto the T-shaped screw.

A weather monitoring station, e.g. mcr P054, is recommended in the ventilation control system, to automatically close the vents in the case of a strong wind or rain, in order to protect the user property and the vent structure against damage.

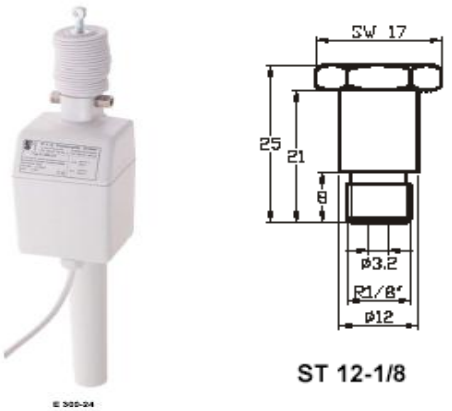



*Fig. 29 Electric actuator for daily ventilation Exxx-230 and fixing plug ST 12-1/8*

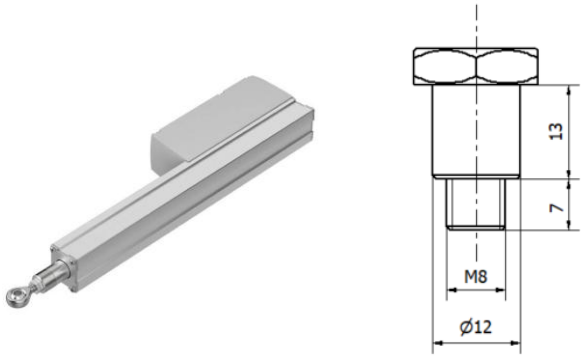



*Fig. 30 Fig. 28 Electric actuator for daily ventilation VN1 230V and fixing plug M8x8/Ø 12x13.*

Connection diagrams for 230 VAC electrical actuators.

Actuator of type E-xxx-230 has two circuits:

- operating – movement direction control (wire: black/brown – blue),
- signalling (wire: 2 x white; signalling of actuator opening – voltage-free contact)

| Nr | Wire color |
|---|---|
| 1 | *BLACK* |
| 2 | *BROWN* |
| 3 | *BLUE* |
| 4 | *WHITE* |
| 5 | *WHITE* |

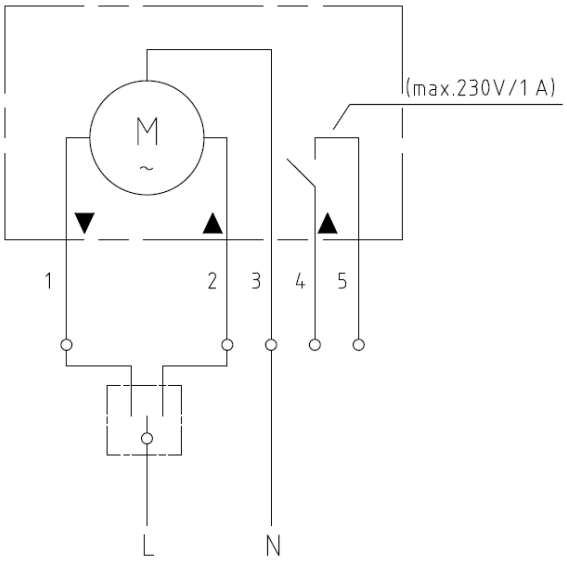



*Fig. 31 Connection diagram of the E-xxx-230.*

Actuator of type JMBB-500-300-LA has two circuits:

- operating – movement direction control (wires: brown / black1 - blue),
- signalling (wires: black2/black3; signalling of actuator opening – voltage-free contact).

| Nr | Wire color |
|---|---|
| 1 | *BROWN* |
| 2 | *BLACK 1* |
| 3 | *BLUE* |
| 4 | *BLACK 2* |
| 5 | *BLACK 3* |

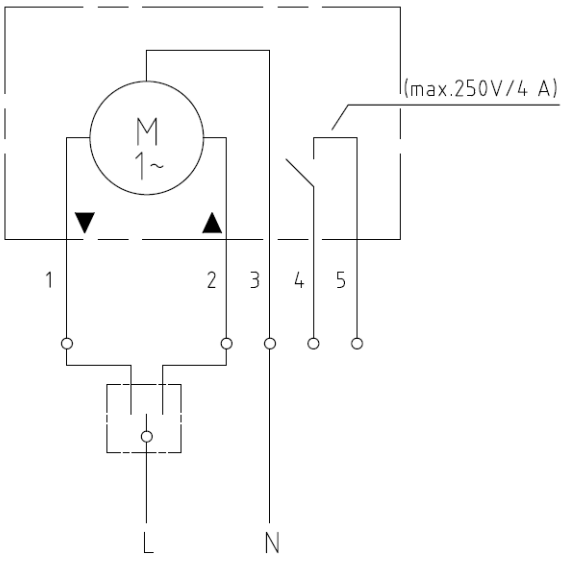



*Fig. 32 Connection diagram of the JMBB-500-300-LA.*

Actuator of type VN1 230V has two circuits:

- operating – movement direction control (wires: brown/black - blue),
- signalling (wires: white/grey).

| Nr | Wire color |
|---|---|
| 1 | *BROWN* |
| 2 | *BLACK* |
| 3 | *BLUE* |
| 4 | *WHITE* |
| 5 | *GREY* |

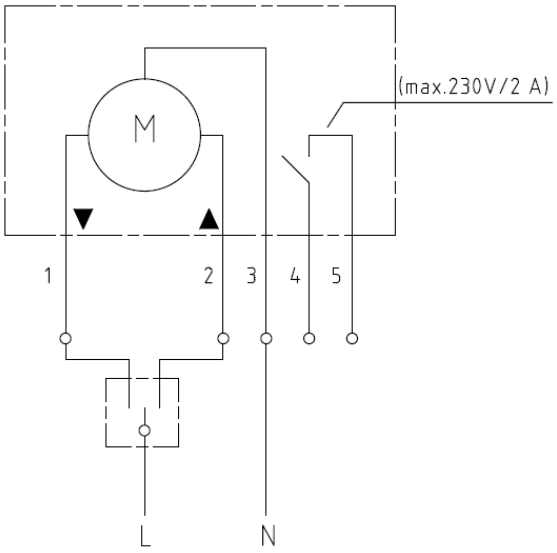



*Fig. 33 Connection diagram of the VN1 230V.*

## 10 SERVICE, MAINTENANCE, OPERATING

Devices manufactured by Mercor Light&Vent should be subjected to **periodic technical inspections** and maintenance activities **every 6 months** during the entire period of operation, i.e. during the warranty period and after the warranty period. Inspections and maintenance should be **carried out by the manufacturer** or by companies authorized to service Mercor Light&Vent devices.

In order to be able to perform activities included in the scope of service inspections as well as service and warranty activities, such as inspections or repairs, it is necessary to **provide physical access to the installed devices**. If the devices are mounted on the roof, access to the roof must also be provided (ladder or lift).

The following actions performed by the user are recommended between the inspections:

1. Checking the condition of electrical wiring with special attention to mechanical damage.
2. Checking the condition of pneumatic system with special attention to mechanical damage.
3. Checking the condition of mechanical locks (whether they are fully closed and not blocked).
4. Checking the condition of gaskets.
5. Periodical cleaning of the surfaces of polycarbonate panels: for cleaning use a sponge or soft fabric and lukewarm water with common household mild cleansers. Do not scrub the panels with brushes or sharp things. Do not use abrasive materials, strong alkaline substances, solvents, etc. In doubtful cases make a test of the cleaning agent on a sample or a small surface.

Surface bending or waving may occur on the external walls of multi-wall polycarbonate panels installed in rooflights, skylights and hatches. This does not affect the tightness, load-bearing capacity and thermal parameters of polycarbonate panels, vents and rooflights.

Due to natural processes occurring in nature, condensation of water vapor may occur in the chambers of polycarbonate panels. This is most often manifested by the appearance of mist or, in the case of heavy moisture, by visible drops. If air exchange is ensured by diffusion between the air inside

the chambers and the outside air, after some time the moisture content in both areas will equalize and the visual effects described above will disappear.

Condensation of water vapor does not affect the life of the material or the quality of the product.

### ATTENTION

**It is prohibited to use salt to clear snow from roofs on which the mcr PROLIGHT continuous rooflights and skylights are installed – it may cause discoloration and damage to polycarbonate panels and aluminum profiles. Damage to the product caused in this way does not constitute grounds for filing a complaint.**

In matters related to technical inspections, maintenance and service of devices, please contact the representatives of the Mercor Light&Vent service department by phone: +48 58 341 42 45 ext. 170, Mo – Fr, 8.00-16.00 o'clock, e-mail: serwis@mercor.com.pl.

## 11 WARRANTY CONDITIONS

1. Mercor Light&Vent grants a 12-month quality guarantee for equipment, starting from the date of purchase, unless the agreement provides otherwise.

2. Each defect under guarantee should be reported to a local representative of Mercor Light&Vent immediately, i.e. within 7 days of its discovery.

3. Applications can be made by phone at +48/ 58 341 42 45, by email to claim@mercor.com.pl or by sending a letter to: Mercor Light&Vent, Grzegorza z Sanoka 2, 80-408 Gdańsk, Poland.

4. If during the term of guarantee any physical defects of the equipment become evident, Mercor Light&Vent shall remove them as soon as possible, subject to paragraph 5.

5. Mercor Light&Vent 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. Liability under the Guarantee covers only defects resulting from causes inherent in the equipment sold.

7. 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.

8. In accordance with the generally accepted practice, 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;
- damages due to aggressive external factors, especially chemical and biological ones.
- parts liable to natural wear and tear during operation (e.g. seals) unless a manufacturing fault has occurred;
- damages due to improper transport, unloading and storage of the device;
- damages due to installation inconsistent with the OMM and the rules of good construction practice;
- 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.

9. Guarantee and warranty is void in the following cases:
   - The Buyer/Guarantee Holder makes design modifications on his own without consulting Mercor Light&Vent,
   - Maintenance or periodic servicing are not done in due time or are performed by unauthorized persons or a service center not authorized by Mercor Light&Vent, or the equipment is operated in the wrong way,
   - Any interference of unauthorized persons – except activities connected with normal operation of the equipment.

10. The Buyer/Guarantee Holder is responsible for proper operation and maintenance of the equipment and for regular (min. twice a year) servicing according to service and maintenance instructions included in OMM.

**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 Light&Vent.
3. On issues related to service please contact a local representative of Mercor Light&Vent.

**Other conditions:**

1. As regards matters not regulated by these “Warranty terms and conditions”, the law applicable is Polish law.
2. Any disputes that may arise in connection with the “Warranty terms and conditions” shall be settled through negotiations between the Parties. This provision is not an arbitration clause.
3. If the Parties fail to reach an agreement by negotiation, any disputes arising from or related to the contract shall be settled by the Polish court competent for the seat of the Seller.

# 12 CERTIFICATE OF CONSTANCY OF PERFORMANCE (smoke vents integrated in continuous rooflights)

SNAS
Reg. No. 041/P-007

NOTIFIED BODY 1396
Osloboditeľov 282, 059 35 Batizovce, Slovakia
Tel.+421 52 285 1611, www.fires.sk

FIRES
The Experts on Fire Safety

## Certificate of constancy of performance

### 1396-CPR-0039

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction products Regulation or CPR), this certificate applies to the construction product

**Natural smoke and heat exhaust ventilator, type mcr PROLIGHT integrated in arc-shaped continuous roof lights**

a device designed to move smoke and hot gases out of construction works naturally under conditions of fire. Assessment and verification of constancy of performance and conditions of product use are defined in document Initial type testing report of constructional product No. C1396/10/0005/4203/SC (issued by FIRES, s.r.o., Batizovce, NB1396 on 01. 06. 2010) and reports of continuous surveillances of factory production control, carried out during the validity of the certificate. The product is

**placed on the market under the name or trade mark of the manufacturer**

**Mercor Light&Vent sp. z o.o.**
**ul. Grzegorza z Sanoka 2, 80-408 Gdańsk, Poland**

**and produced in the manufacturing plant**

**Mercor Light&Vent sp. z o.o.**
**ul. Kwarcowa 3A, Cieplewo, 83-031 Łęgowo, Poland.**

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard

**EN 12101-2: 2003**

under 'system 1 for the performance set out in this certificate are applied and that the factory production control conducted by the manufacturer is assessed to ensure the

**constancy of performance of the construction product.**

This certificate was first issued on 01. 06. 2010 and will remain valid as long as neither the harmonized standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

NOTIFIKOVANÁ OSOBA 1396 FIRES The Experts on Fire Safety -1- NOTIFIED BODY 1396

Representative of Notified Body

In Batizovce, on 30. 05. 2025

Ing. Štefan Rástocký
Head of Product Certification Body

173659

FIRES 136a/C-23/10/2024-E