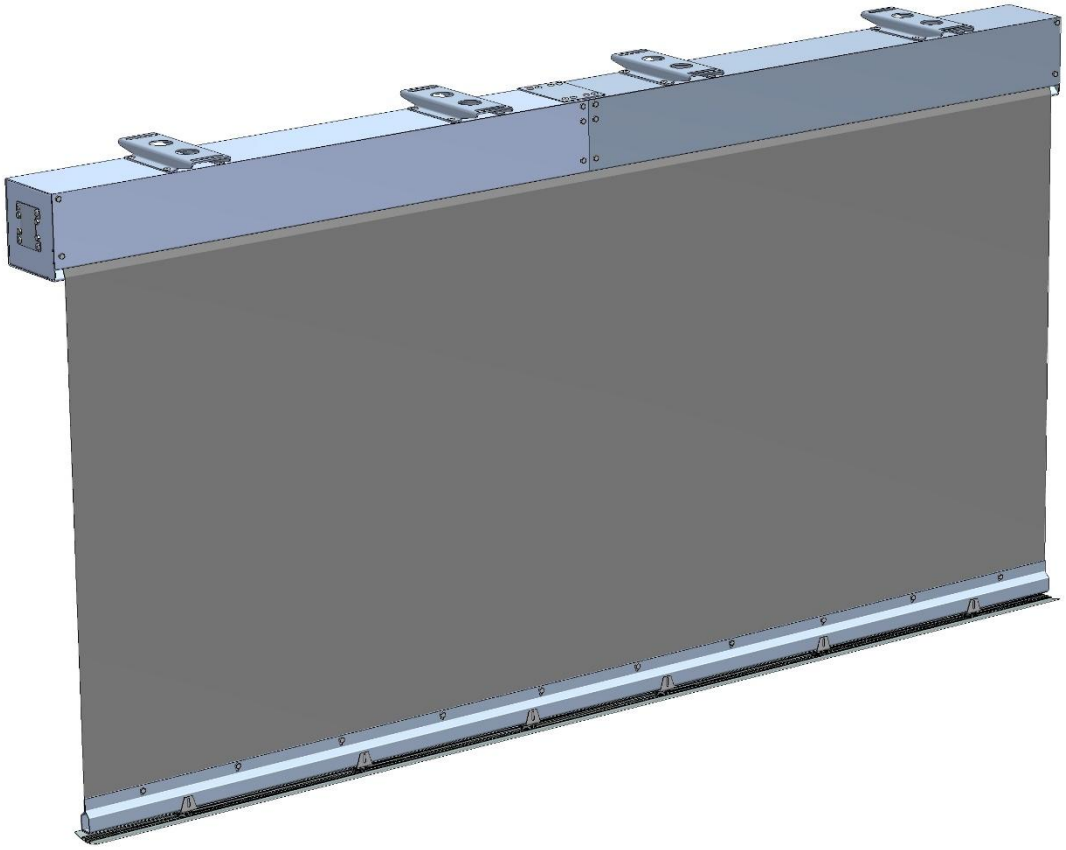
Fire protection systems

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

tel. (+48) 58 341 42 45

OPERATION AND MAINTENANCE DOCUMENTATION
mcr PROSMOKE CE/CE1 automatic rolling curtain



Nr dok: HO.25.02529.doc rew.: **B**

KRS 0001107620, District Court Gdańsk-Północ in Gdańsk, VII Economic Department of the National Court Register.
Amount of share capital: PLN 27 703 750.00. Tax Identification Number (NIP): 957-117-40-34, EU VAT: PL 957-117-40-34,
National Official Business Register (Regon): 528751602, Business ID (BDO): 000664567.

Table of Contents

1. INTRODUCTION

This operation and maintenance manual (OMM) allows the user to become familiar with the purpose, structure, principle of operation, proper installation and operating of mcr PROSMOKE CE/CE1 automatic rolling curtains. Also, the documentation contains additional information on the conditions of use, maintenance and warranty of the product.

Following the instructions contained in the operation and maintenance manual will ensure proper operation of the smoke exhaust systems and the safety of the users of the system.

Mercor Light&Vent reserves the right to make changes to the product or to this document without notice.

The operation and maintenance manual applies to mcr PROSMOKE CE/CE1 curtains equipped with end switches for smooth adjustment of the upper and the lower position (by using the R60/8G electric motor manufactured by BECKER – Antriebe GmbH).

2. PURPOSE OF THE DEVICE

mcr PROSMOKE CE/CE1 rolling curtains form part of a smoke control system also including other products by Mercor Light&Vent, such as mcr PROLIGHT point smoke exhaust vents, mcr PROLIGHT system skylights and smoke exhaust vents integrated with continuous rooflights, mcr 9705 and mcr 0204 smoke exhaust control units, and others.

mcr PROSMOKE CE/CE1 rolling curtains are used to define smoke zone in the space under the ceiling in smoke and heat gravitational exhaust systems. Fire smoke is collected in the smoke containers, and then is removed by smoke exhaust vents, e.g. mcr PROLIGHT. Defining smoke zone in the space under the ceiling, the curtains confine the spread of smoke, prevent it from cooling off and form a smoke layer of a designed thickness, ensuring appropriate conditions for mcr PROLIGHT smoke exhaust vents to operate in.

In standby mode, mcr PROSMOKE CE/CE1 rolling curtains are concealed in casing, and in case of a fire, they are automatically lowered to the designed height. When the alarm is reset, the curtains can be rolled up again.

mcr PROSMOKE CE/CE1 smoke curtains have certificate of conformity CE no. 1396-CPR-0021, meeting the requirements of the EN 12101-1 standard, granted by notified certification body no. 1396. According to the above-mentioned standard, the curtains are classified as ASB2 or ASB4.

It is the designer of the building who is responsible for designing a smoke exhaust system properly and choosing appropriate curtains for a particular application. mcr PROSMOKE CE/CE1 curtains are not intended for use as smoke-tight doors. The curtains are fire-protection devices, and as such may not function as gates or the like, and are not designed for daily operation/use for other purposes.

3. STRUCTURE OF THE CURTAINS

Rolling curtains consist of a casing, a roller with smoke-tight fabric rolled up with bottom ballast, and a drive system (Fig. 1).

The casing is a two-piece one, having a fixed part and an inspection cover made as K, C, L, K-T types (Fig. 3, Fig. 4).

The roller is mounted inside the casing by means of a bearing assembly with an axle from one side and on the rod of the motor form the other side, and in special cases another drive system can be used instead of the bearing assembly.

The drive system installed in the roller consists of a 24 V DC motor with a built-in brake released electrically.

The smoke-tight fabric has linear bottom ballast, ensuring that it is properly unrolled or rolled up, and minimising its deflection or ascent due to the pressure of fire gases. Optionally, the linear bottom ballast may be equipped with a ballast masking element (Fig. 5, Fig. 6).

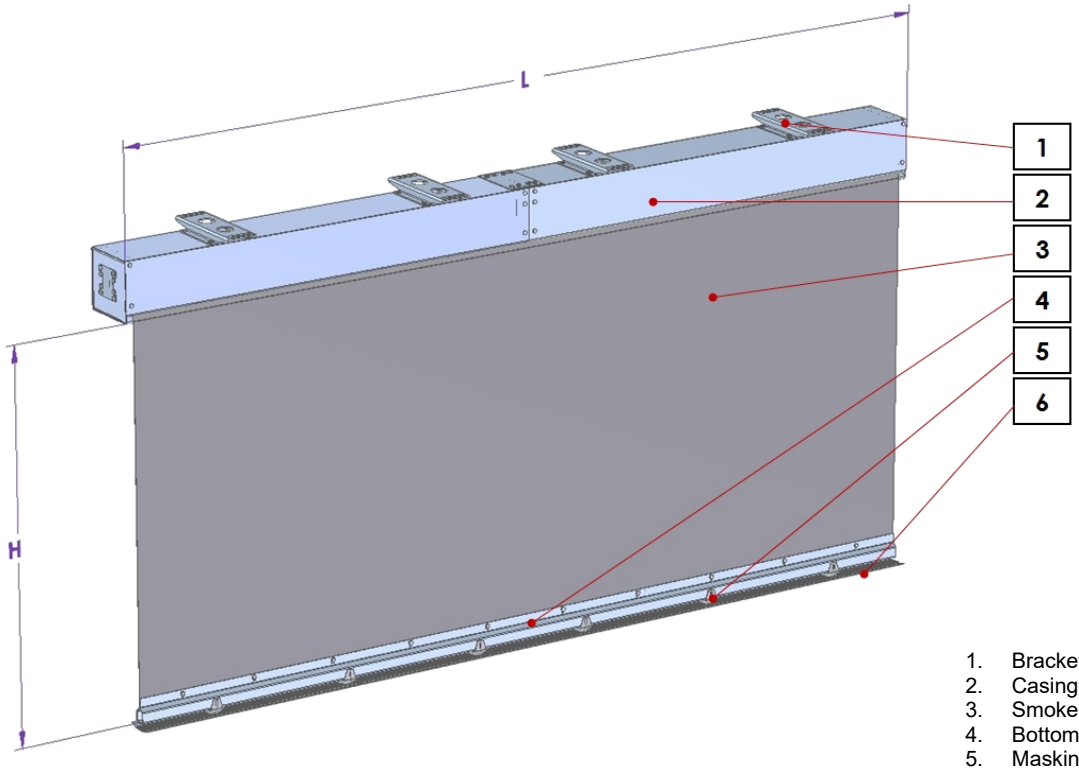
The masking element is an aluminium profile 80 mm in width, painted in any RAL colour depending on the order.

The smoke-tight material used in mcr PROSMOKE CE/CE1 curtains is not trimmed at the edges, and it becoming slightly frayed on the edges is a natural process that does not affect the use or the quality of the product.

Single curtains are made with a length of up to 6 m. In order to obtain curtains longer than 6 m, a specific number of curtains of smaller dimensions is joined into assembles of the required length.

Optionally, the curtain may be equipped with side guides reducing the gaps.

The steel sheets used in the curtains comply with the PN-EN 10346:2015-09 standard for surface type A.



1. Bracket
2. Casing
3. Smoke-tight material
4. Bottom ballast
5. Masking element holder
6. Masking element

Fig. 1 Structure of the mcr PROSMOKE CE/CE1 roller curtain.

NOTE: While planning the installation of the curtain, allow for the presence of the elements that protrude beyond the outline of the casing:

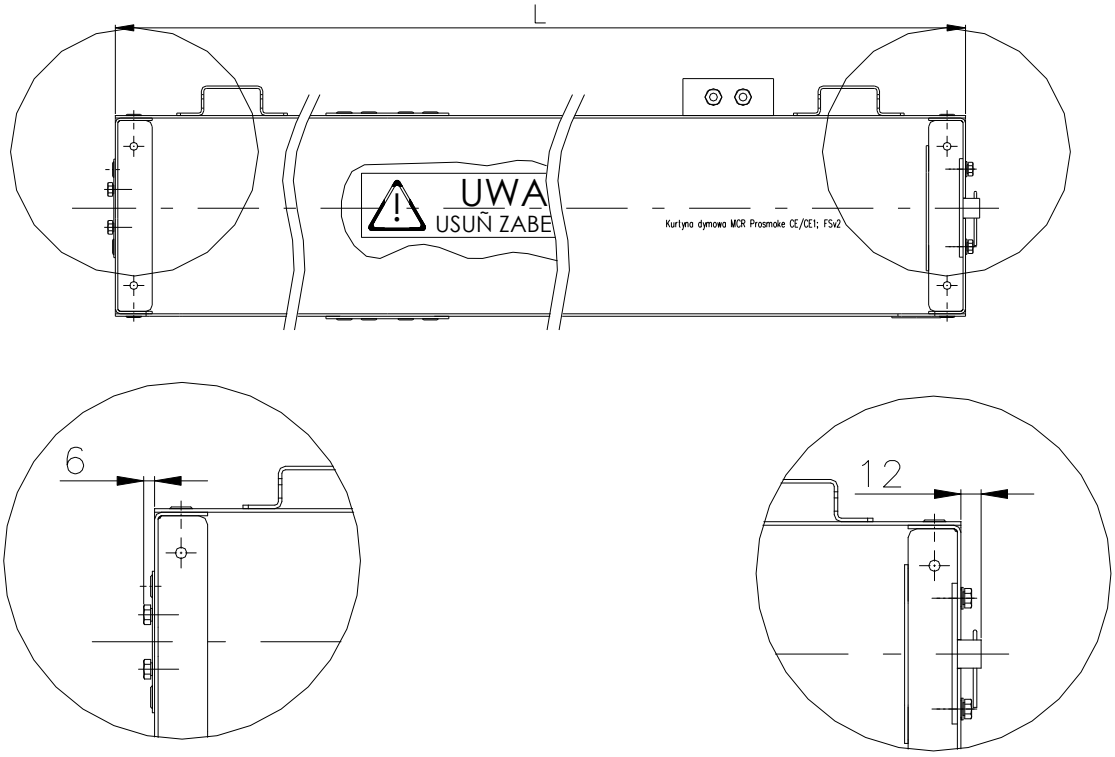
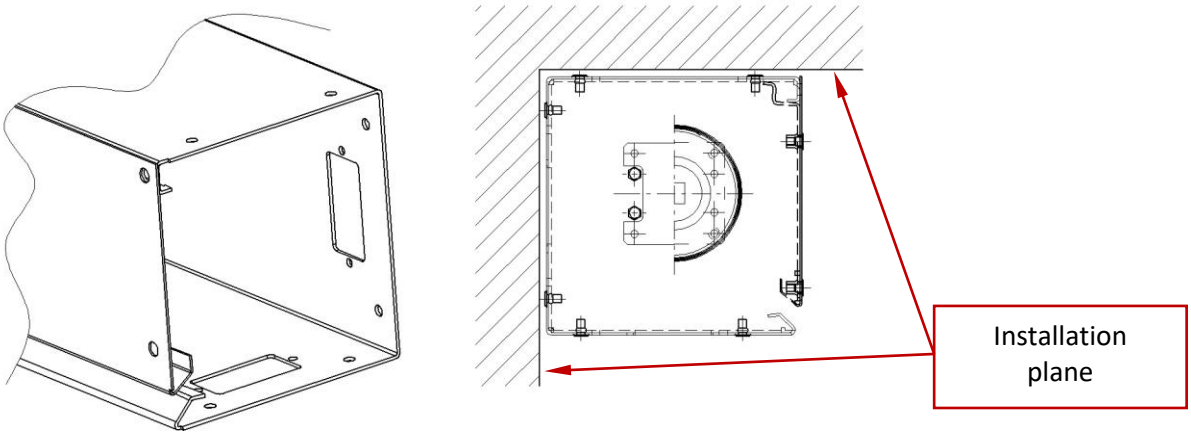
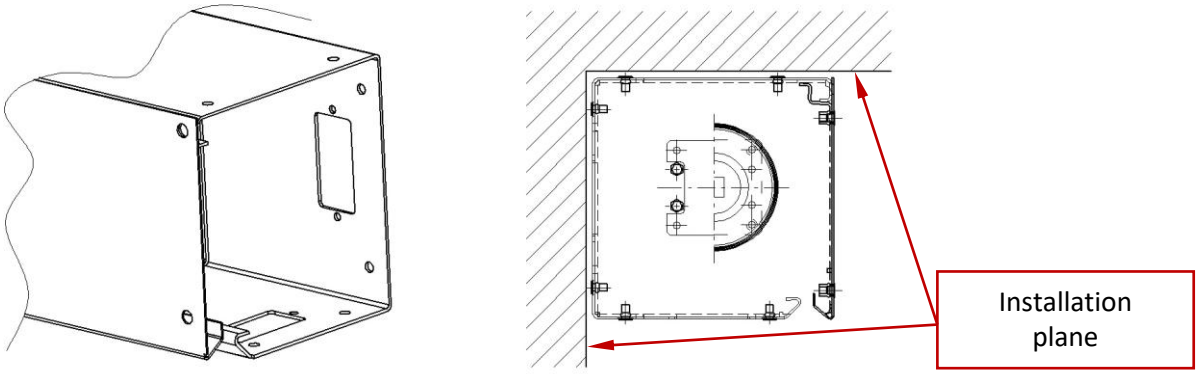


Fig. 2 Length of the elements protruding from the casing of the mcr PROSMOKE CE/CE1 curtain.

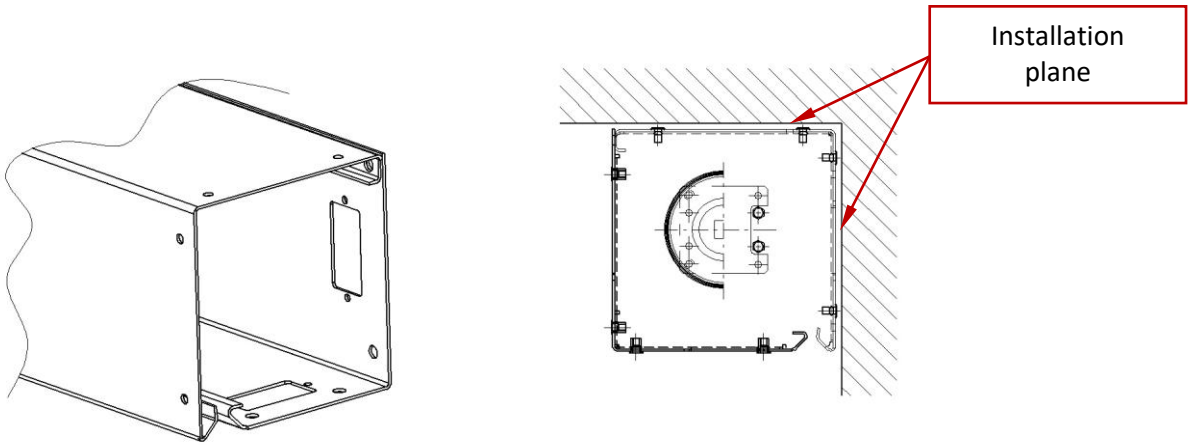


CASING OF THE K TYPE

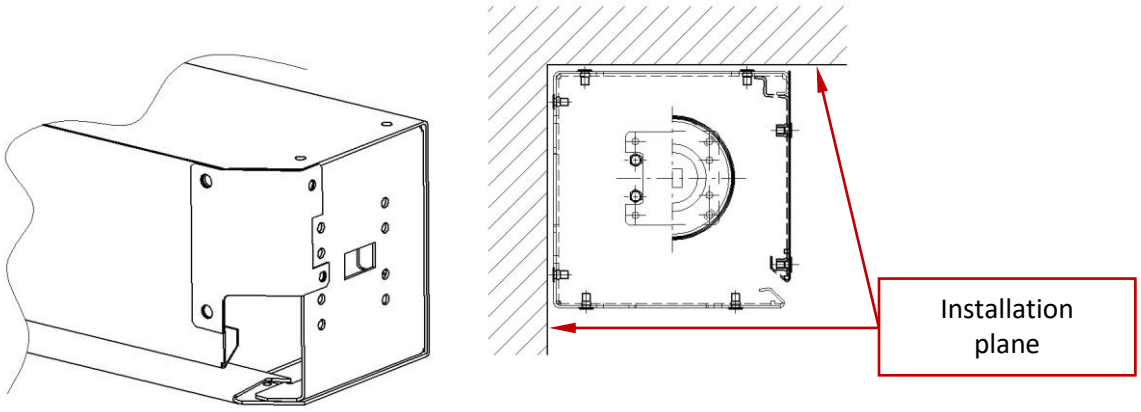


CASING OF THE C TYPE

Fig. 3 Types of the curtain casings – K, C.



CASING OF THE L TYPE



CASING OF THE K-T TYPES

Fig. 4 Types of the curtain casings – L, K-T.

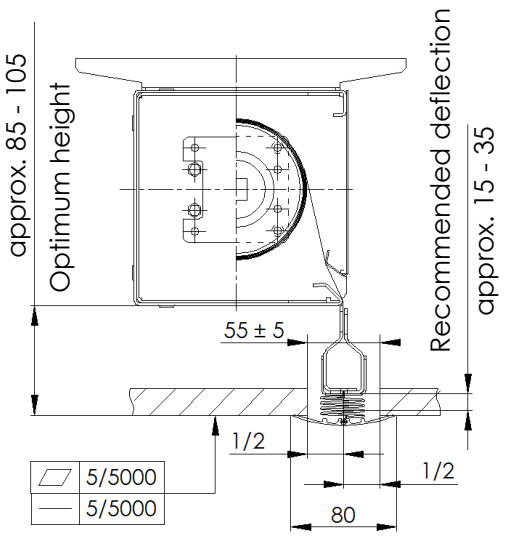


Fig. 5 Recommended position of the casings in relation to the ceiling. The width of the gap.

NOTE: Keep the rectilinearly and the flatness of the surface
of suspended ceiling near the gap of 5 mm / 5000 mm

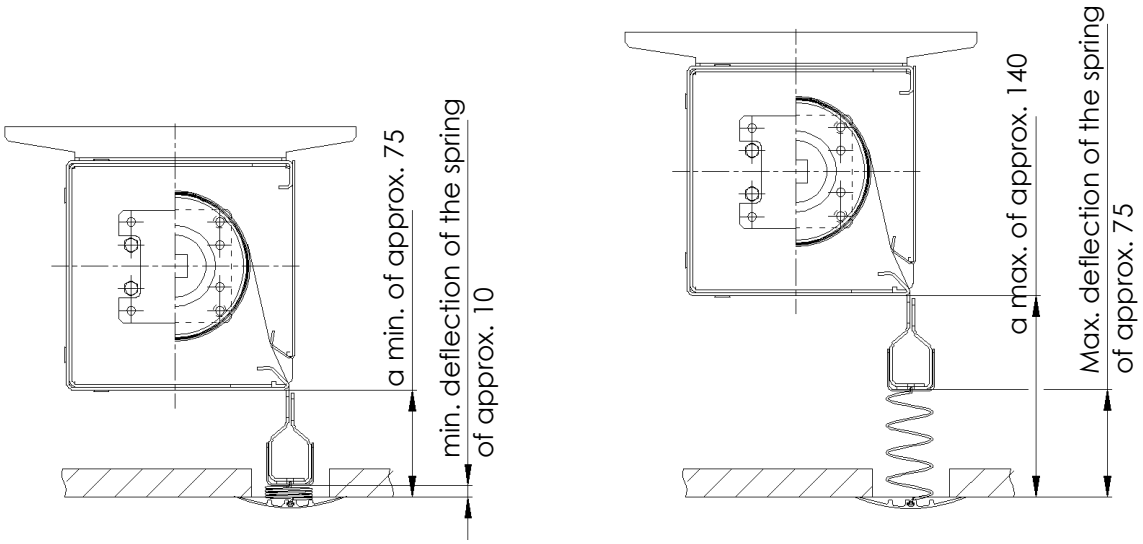


Fig. 6 Maximum and minimum distance between the casing and the ceiling, and maximum and minimum deflection of the spring of the masking element.

NOTE: Keep the minimum and the maximum deflection of the spring.
The dimension between the casing and the ceiling is approximate.

4. OPERATING PRINCIPLE OF mcr PROSMOKE CE/CE1 CURTAINS

On standby, mcr PROSMOKE CE/CE1 rolling curtains are concealed in the casings, and in case of a fire they are automatically lowered to the designed height.

The mcr PROSMOKE CE/CE1 rolling curtain must be connected to the mcr 9705-5A/8A smoke exhaust control unit (optimally with mcr R0424/48 extension modules) in order to operate properly.

To be left rolled up, the mcr PROSMOKE CE/CE1 curtain does not need constant power supply from the mcr 9705 smoke exhaust control unit. When power is supplied from the control unit due to a fire signal, the curtain is unrolled to the position to which the bottom limit switch is set.

After restoring the stand-by state of the mcr 9705 control unit, the fabric of the curtain is rolled up by the 24 V DC motor. The fabric is rolled up to the height to which the upper limit switch is set, and the curtain goes into the state of keeping the fabric rolled up.

5. TRANSPORT AND DELIVERY

Curtains are delivered assembled. The unloading should be carried out when supervised by a person authorised by the manufacturer, using widely available reloading means (e.g. forklift trucks, cranes equipped with slings with crossbars) or manually while special care is exercised to protect the curtains from damage.

6. INSTALLATION OF CURTAINS

Curtains should be installed in civil structures in accordance with their respective construction designs, in order to ensure the design gap sizes.

If the construction project does not include guidelines, the installation of curtains should follow the principles from CEN/TR 12101-4 and CR 12101-5.

Curtains should be fitted under the ceiling and to the lintels, prepared constructions or other elements of the building that are designed for that purpose. The bearing element should be made of reinforced concrete or steel. Depending on the height of the curtain, the design of the bearing element must allow for the weight of the device, approx. 200 ÷ 300 N/mb. In the case of the curtains without the installation handles, the mounting plane should be vertical or horizontal, with a flatness deviation of up to 5 mm along the length of the curtain.

The curtains installed with suspension fitting, of a length of more than ~0.5 m, should be stiffened by fixing the casing e.g. to a reinforced concrete wall, girder, etc. With multi-module curtains, the casing should be fastened together by means of self-drilling screws or rivets of a length less than 20 mm so as to eliminate uncontrolled movement of the casing in relation to each other.

NOTE: Inside the housing of curtains longer than 4 m, **protective sponges** have been placed around the curtain shaft. These **must be removed** before connecting the curtain to the power supply.

Leaving the sponge in place **may cause damage to the drive or fabric.**

6.1. Order of installation of the curtain.

Curtains equipped with installation handles:

1. In the bearing element, mount threaded rods M10 or M12 of a proper length so that they will correspond to the arrangement of the installation handles (Fig. 10). To fix the threaded rods, use fasteners suitable for the material of the bearing element (e.g. anchors HK8 HILTI).
2. Screw the M10 or M12 nuts onto the rods/
3. Suspend the curtain from the rods, using a rough finish washer M10 or M12 and a lock washer/
4. Adjust the horizontal position of the casing of the curtain, using the nuts.
5. Tighten the nuts screwed according to point 2 and check that the connections are firm.
6. Remove the inspection cover and take out the protective sponges from the curtain shaft.
7. Connect the motor of the curtain to the mcr 9705 control unit or the R042-K or mcr R0448-K extension module according to the diagram contained in the operation and maintenance manual of control unit or the module.
8. Install the side guides, if included in the order, by means of the steel fasteners.
9. Check that there are no obstructions under the curtain and the curtain unrolls to the required height and is rolled up correctly. If necessary, adjust the length of the extension of the fabric (see 6.3 “Adjustment of the limit switches:”)/
10. Check the operation of the system by triggering the alarm from all the available sources.

Curtains not equipped with installation handles:

1. Unscrew the inspection cover
2. Remove the roller with the fabric, i.e.:
    a. Remove protective sponges,
    b. zRemove the locking cotter,
    c. Unscrew the four screws securing the plate locking the motor,
    d. Unscrew the four screws securing the roller support on the opposite side of the motor,
    e. Pull out the roller by the side on which is the plug (on the opposite side of the motor),
    f. Remove the roller from the casing.
3. Make mounting openings in the casing.
4. Mount the curtain casing with steel fasteners, suitable for the substrate material and the position of the installation plane (ceiling/wall): fasteners with a minimum diameter of the connecting element of Ø10 are recommended, e.g. M10, (e.g. anchors HK8 HILTI). Note the length of the inner fastener of the casing: it may not impinge on the fabric.
5. Put the roller with the fabric into the mounted casing; carry out the installation according to the above points, but in reverse order, and in the position as before the removal.
6. Secure the roller by means of the locking cotter at both ends.
7. Fit the side guides, if included in the order, by means of steel fasteners.
8. Connect the motor of the curtain to the mcr 9705 control unit or the mcr R042-K or mcr R0448-K extension module according to the diagram contained in the operation and maintenance manual of the control unit or the module.
9. In the case of a curtain of more than 4 m, it is necessary to remove the transport sponges inside the curtain, in the middle part of the module, between the drum and the casing.
10. Check that there are no obstructions under the curtain and the curtain unrolls to the required height and is rolled up correctly. If necessary, adjust the length of the extension of the fabric (see 6.3 “Adjustment of the limit switches:”).
11. After the check and adjustment, close the inspection cover.
12. Check the operation of the system by triggering the alarm from all the available sources.

Curtains equipped with the masking element of the bottom ballast:

1. Masking elements are delivered separately, adapted to be fitted to the already installed and adjusted curtains in the facility.
2. Before fitting the masking element, attach the handle to the spring which is factory fixed to the masking element. The installation is carried out in the facility by sticking the spring into the seat in the handle.
3. The masking element with the handle is mounted onto the bottom ballast by means of self-drilling screws 4.8x13 with oval countersunk heads.
4. Limitations of using a masking element with holders (Fig. 5, Fig. 6).

While installing multi-module curtains, follow the order of the modules (outermost module, inner modules, and again outermost module) and the designed values of the materials of particular modules overlapping each other.

Install the bottom ballast of a single curtain assembly and/or a bottom ballast masking element in accordance with separate documentation.

6.2. Electrical connections.

The curtains should be controlled and powered:

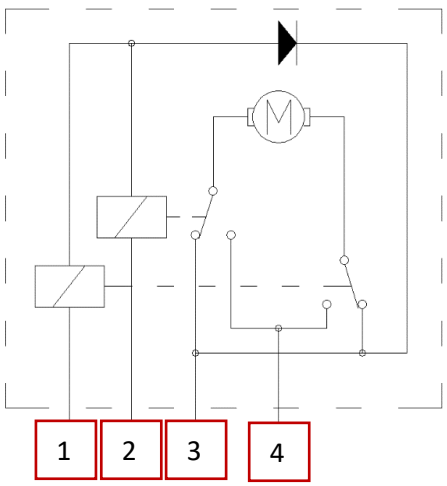
- directly from the mcr 9705 control unit in the curtain version, or
- using a set of devices: the mcr R0424-K or mcr R0448-K extension module together with the mcr 9705 or mcr 0204 control unit.
-

In the case of a set of curtains operating **with a shared load**, all curtain modules should be **powered from a single source**: either a single mcr 9705 control unit (in the curtain version) or an mcr R0424(48)-Kx extension module (Fig. 8), where x represents the number of extension module outputs equal to the number of curtain modules (motors). In such cases, cables of equal length should be used to ensure a uniform voltage drop between the control device and the motor.

Electrical connections should be made according to the operating and maintenance manual of the control units and modules, as well as in compliance with the construction project and regulations.

- Typical curtain motor current consumption during retraction: approx. 4 A.
- Maximum curtain motor current consumption: 6.3 A.
- The motor does not have built-in overload or thermal protection.
- Do not exceed the maximum motor operating time – max. 8 minutes.

Recommended wires for curtain <> control unit (extension module) – PH30 cable, e.g., HDGs/HLGs/HTKSH 4x1.5 mm² or 4x2.5 mm².



Description of motor wire terminal connections:

Wire 1 - Control contact 1
Wire 2 - Control contact 2
Wire 3 - 0 V (mass or – power supply)
Wire 4 - +24 V DC

The direction of the motor rotation is changed by applying +24 V DC to terminal 1 **OR** terminal 2.

Fig. 7 Internal circuit scheme of the R60/8G curtain motor.

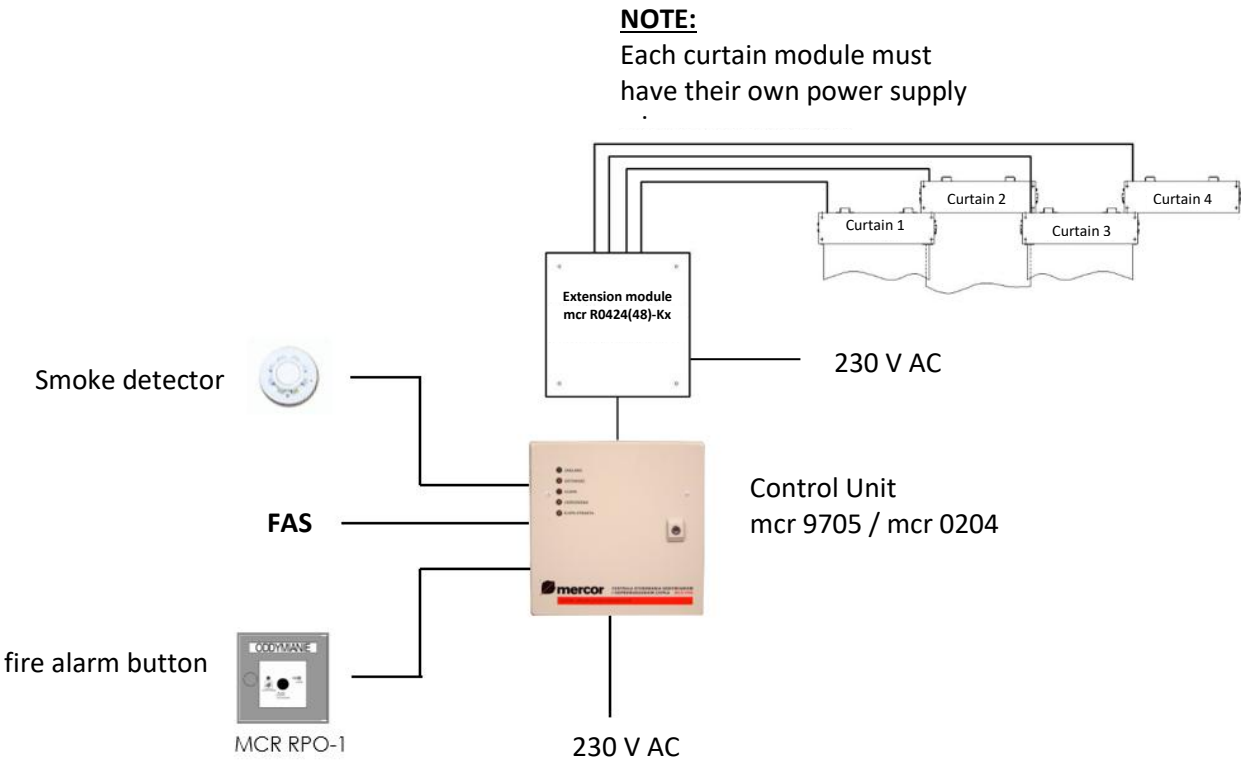


Fig. 8 Wiring diagram for the electrical connections of a multi-module curtain with a common load.

NOTE: To connect the motors of multi-module curtains working with a common load to the control panel/expansion module, cables of the same length should be used to ensure the same voltage drop across the power supply.

Number of curtain modules connected to the control unit and the extension modules:

1. Maximum number of the curtain modules:

- mcr PROSMOKE CE/CE1 for the mcr 9705-5A control unit – 2 modules, a max length of 3.99 m
- mcr PROSMOKE CE/CE1 for the mcr 9705-8A control unit – 2 modules, a length of 4 m to 6 m
- mcr PROSMOKE CE/CE1 for the mcr R0424-K extension module – 4 modules, a max length of 3.99 m
- mcr PROSMOKE CE/CE1 for the mcr R0424-K extension module – 5 modules, a length of 4 m to 6 m
- mcr PROSMOKE CE/CE1 for the mcr R0448-K extension module – 8 modules, a max length of 3.99 m
- mcr PROSMOKE CE/CE1 for the mcr R0448-K extension module – 10 modules, a length of 4 m to 6 m

In case of the necessity of using a set of curtains out of a larger number of modules than specified above, divide them into sections.

2. Each control unit and each extension module should be provided with 230 V AC power supply.

6.3. Adjustment of the limit switches:

The curtains are delivered with pre-set limit switches.
Final adjustment should be made after the curtain is installed.

1. A limit switch is marked with up/down arrows, corresponding to the rotation direction of the motor, the marks +/- indicating the change in the range.
2. The point of triggering the switch may be shifted in the direction of an arrow by rotating the adjustment screw in the + direction or in the opposite direction in relation to the arrow by rotating the control screw in the - direction.
3. One rotation of the adjustment screw causes a change in rotation of the motor shaft of approx. 10° (corresponding to a travel of approx. 1 cm of the curtain fabric).
4. In order to precisely set the limit switch and check its operation, approach the switch, having turned back the screw by at least ¼ of a rotation.

WARNING: Incorrect adjustment of the limit switches may cause damage to the curtain (motor, fabric, etc.).

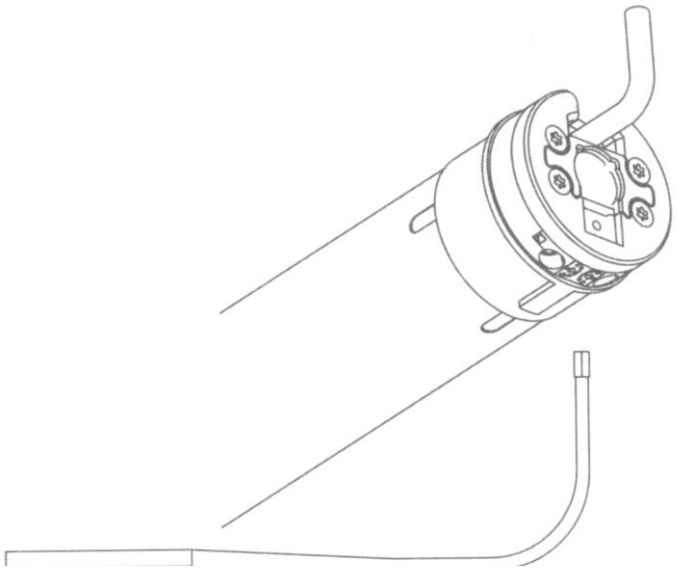
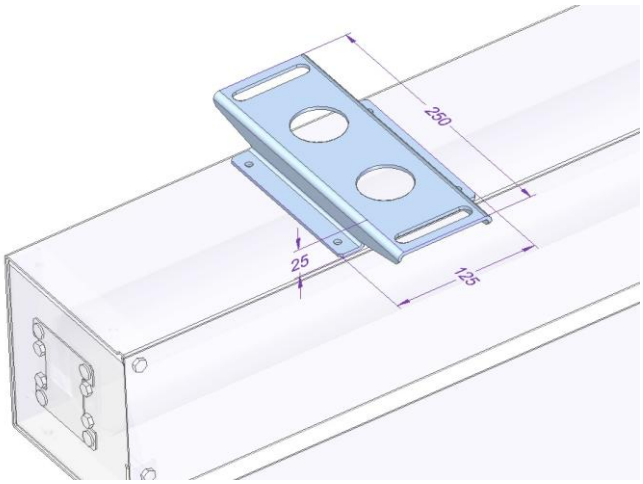


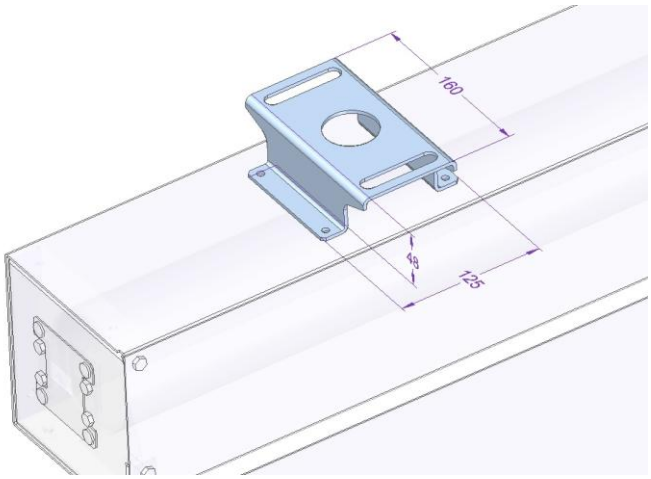
Fig. 9 Adjustment of the limit switch.

Pic. 1 Limit switches of the curtain engine (upper and lower position)

Wide bracket – TYPE A



Narrow bracket – TYPE B



Flat bracket – TYPE C
(fixed only directly to the ceiling)

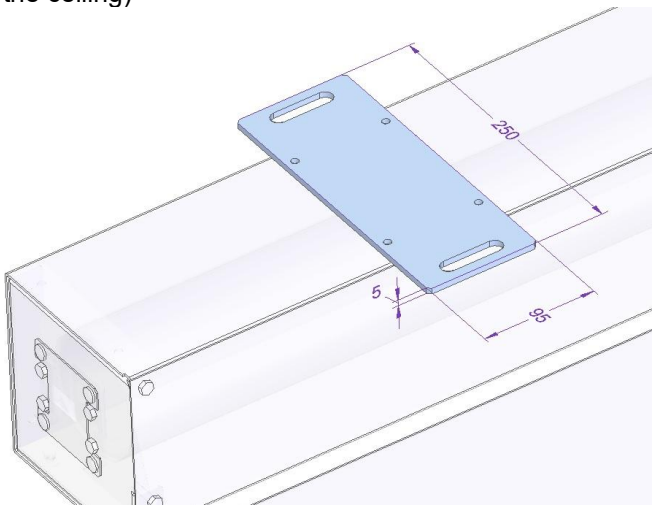


Fig. 10 Types of brackets.

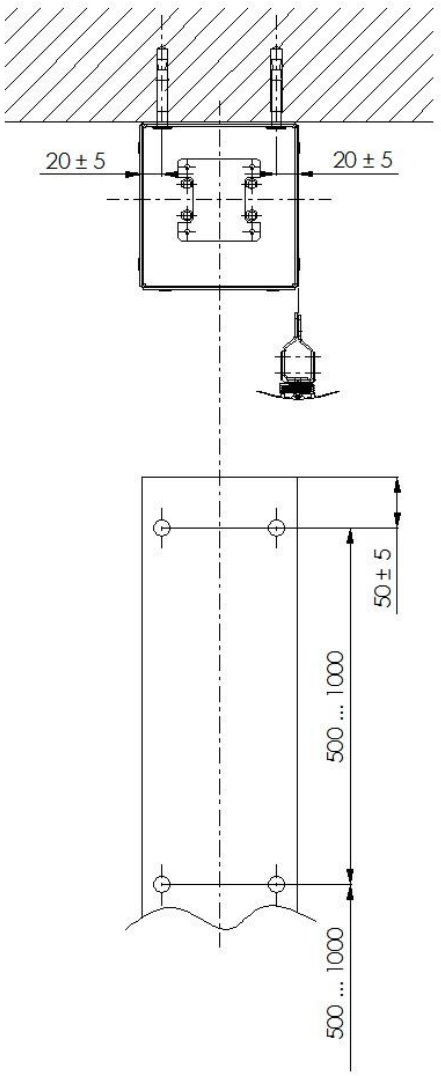


Fig. 11 Installation of a curtain without a bracket

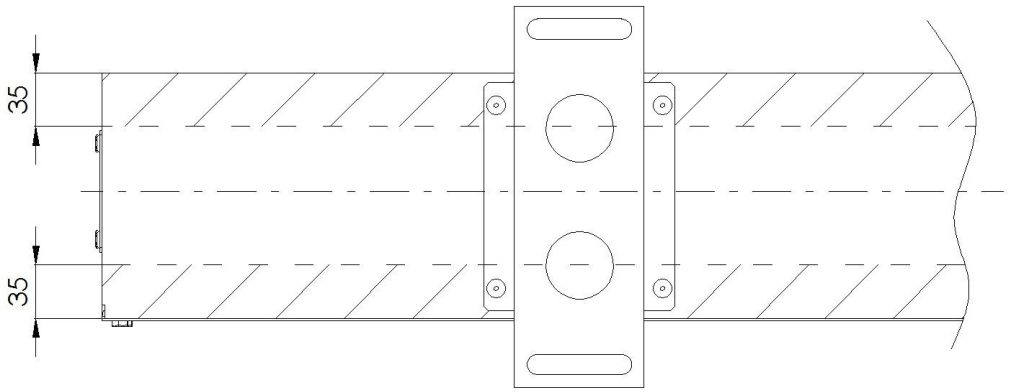


Fig. 12 Place on the casing intended for joining the curtain modules

NOTE:

1. Decorative elements and shields (e.g. suspended ceilings, wall facing) that are installed later may not interfere with the curtain being lowered freely or with access to the mechanisms of the curtain.
2. If curtains are installed together with covering profiles in the suspended ceiling, retain gaps and tolerances (Fig. 5, Fig. 6) appropriate for the corresponding width of a curtain.

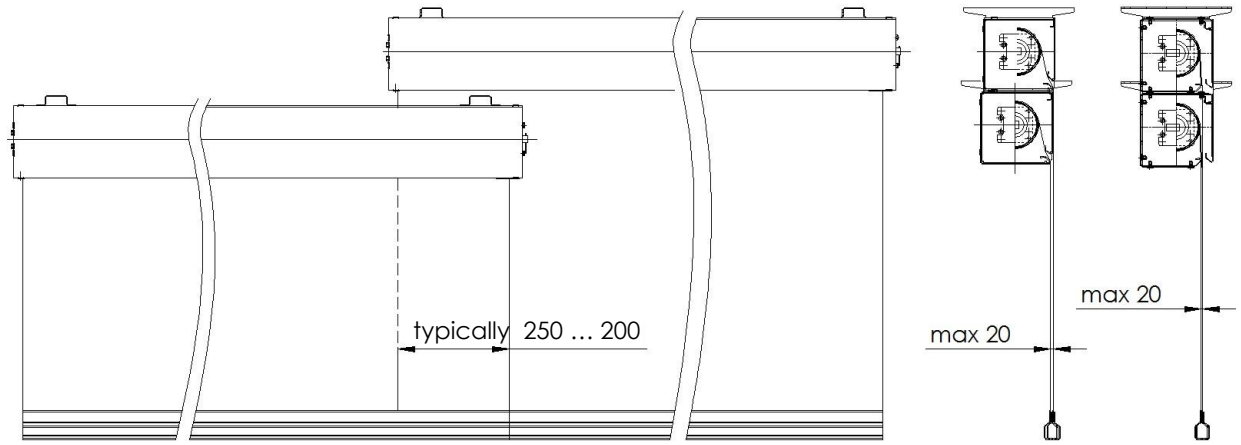


Fig. 13 Typical sizes of gaps in the traverse direction with the curtain modules arranged vertically and with the fabric overlapping.

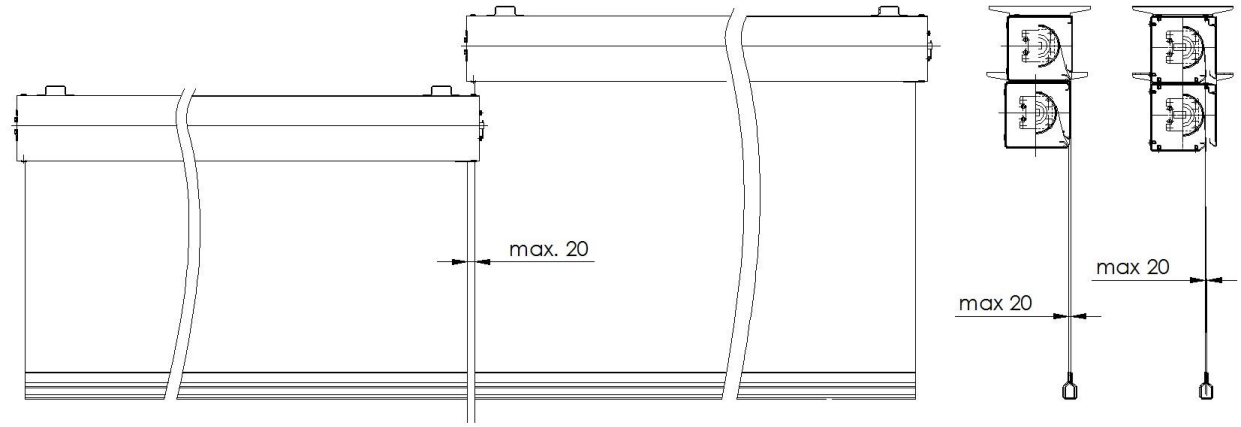


Fig. 14 Typical sizes of gaps in the traverse direction with the curtain modules arranged vertically and without the fabric overlapping

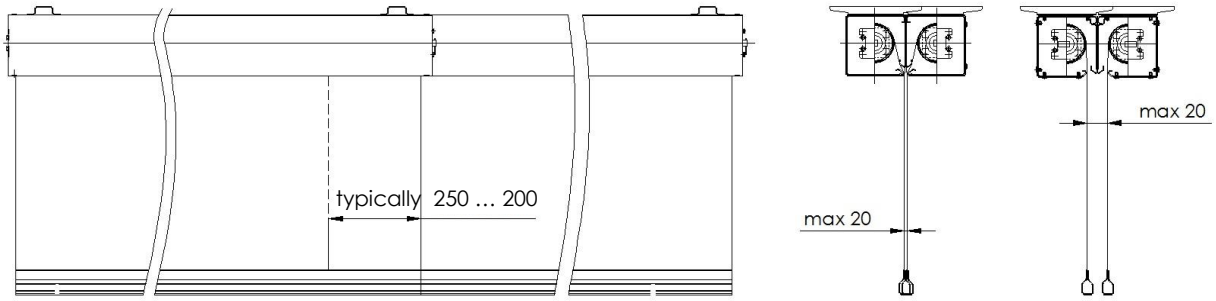


Fig. 15 Typical sizes of gaps in the traverse direction with the curtain modules with the K, C and L casings abutting, and with the fabric overlapping.

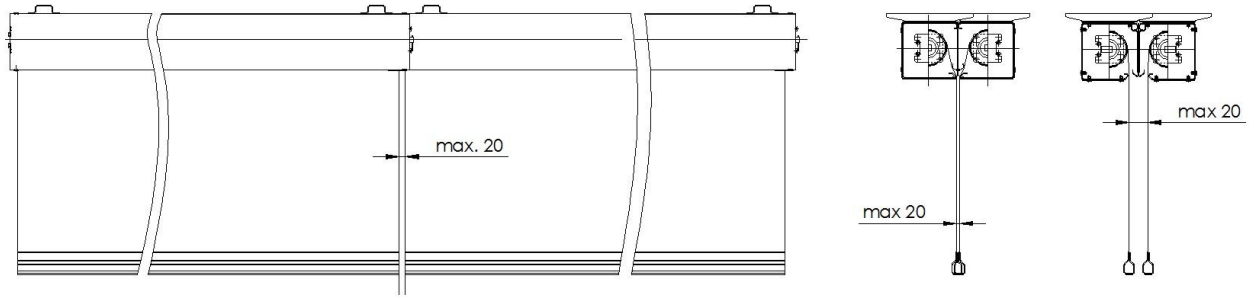


Fig. 16 Typical sizes of gaps in the traverse direction with the curtain modules with the K, C and L casings abutting, and without the fabric overlapping.

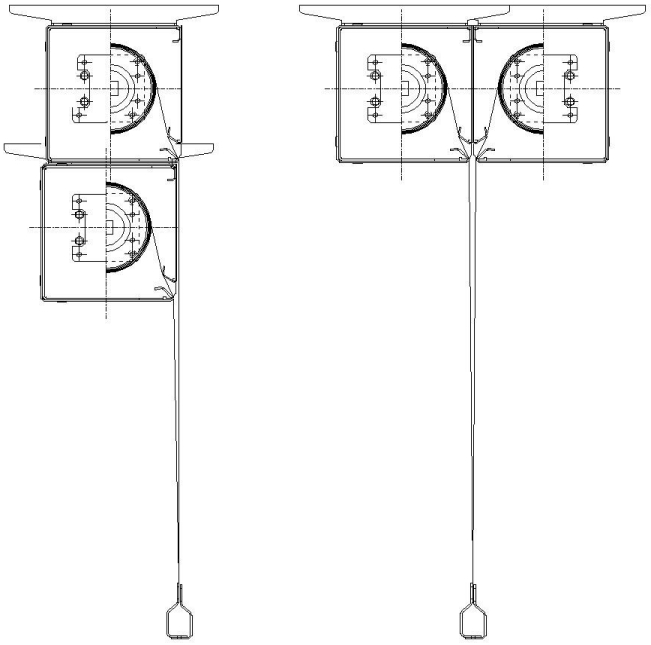


Fig. 17 Reduction of the gaps of a curtain assembly by common bottom ballast, with the K type casings arranged vertically and horizontally.

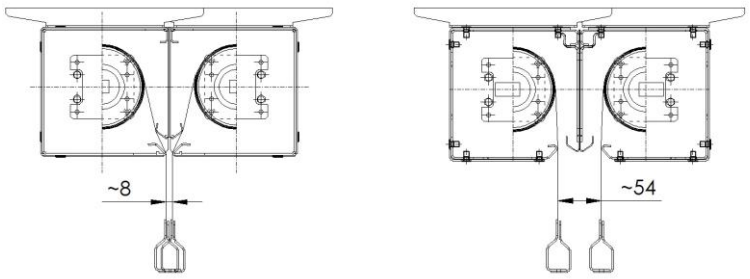
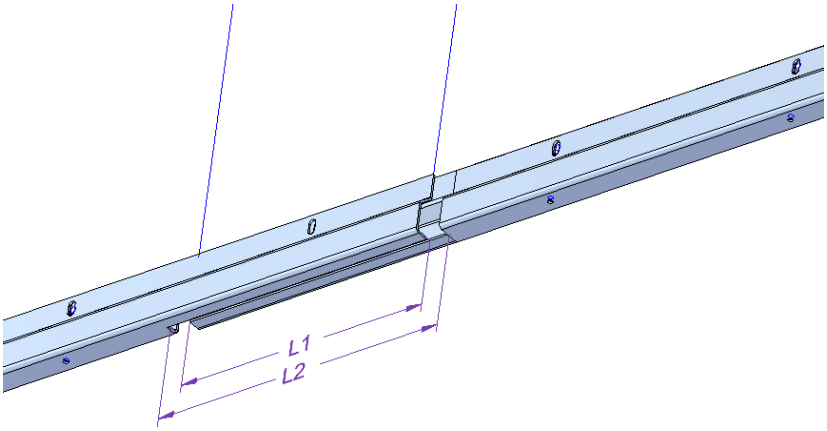
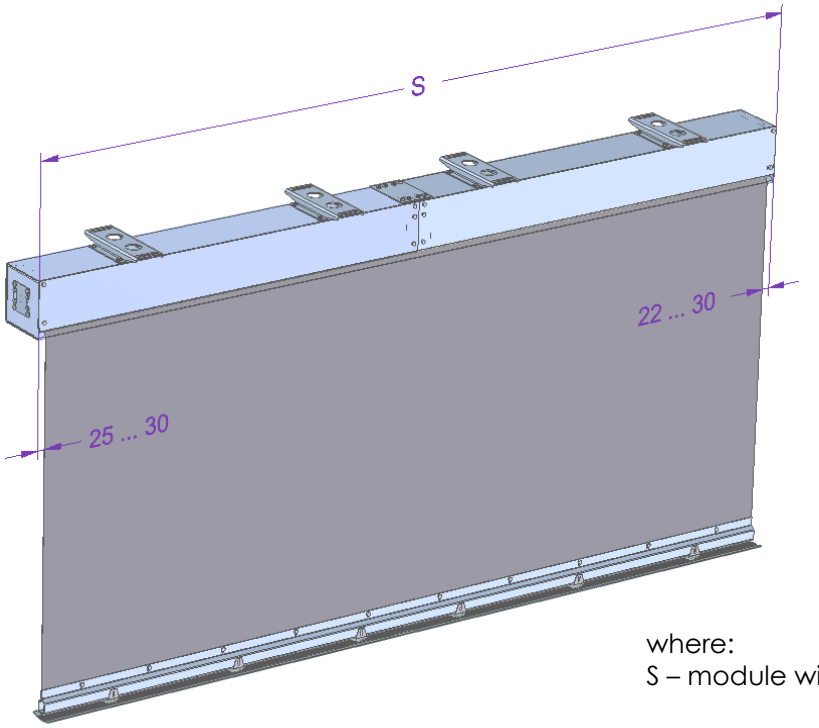


Fig. 18 Typical sizes of gaps in the traverse direction, with the curtains with the K, C and L type casing abutting.



where :
L1 – fabric overlap
L2 – bottom ballast overlap

Fig. 19 Bottom ballast overlapping, with the curtains not connected by common bottom ballast.



where:
S – module width

Fig. 20 Sizes of gaps in the longitudinal direction of mcr PROSMOKE CE/CE1 curtain.

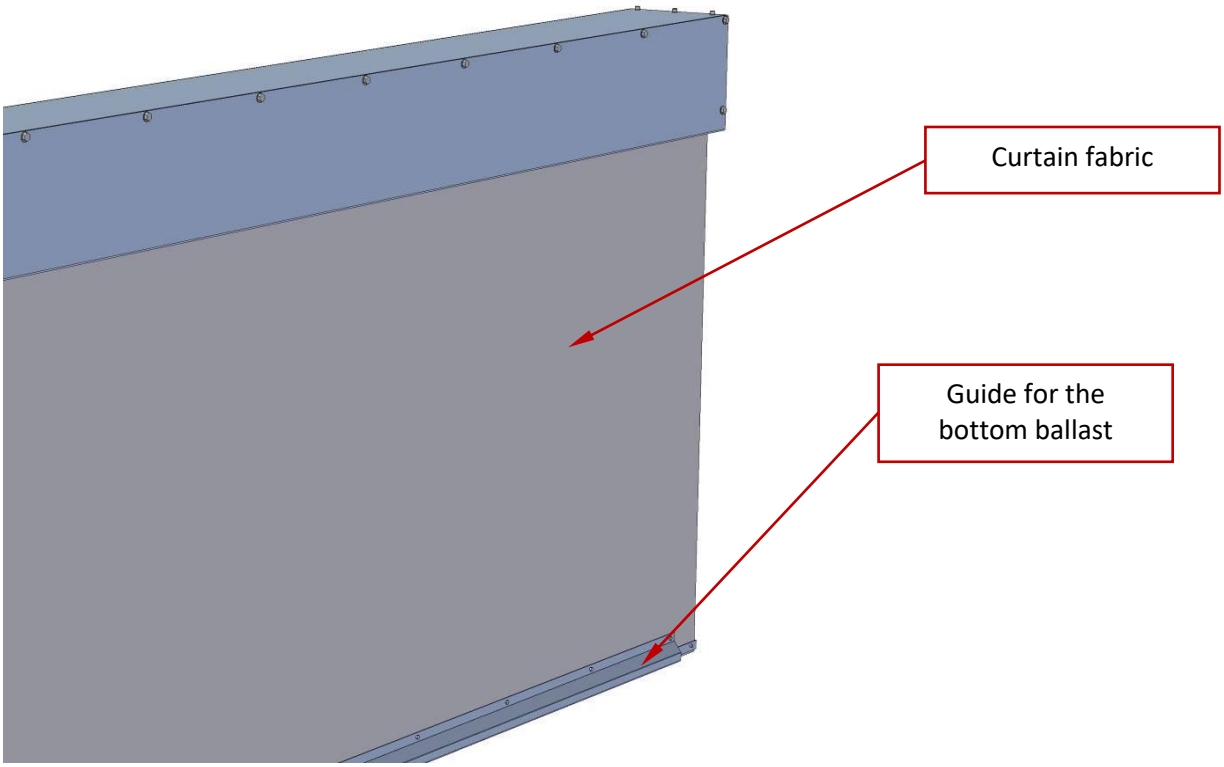


Fig. 21 Curtain ready to have side guides fitted.

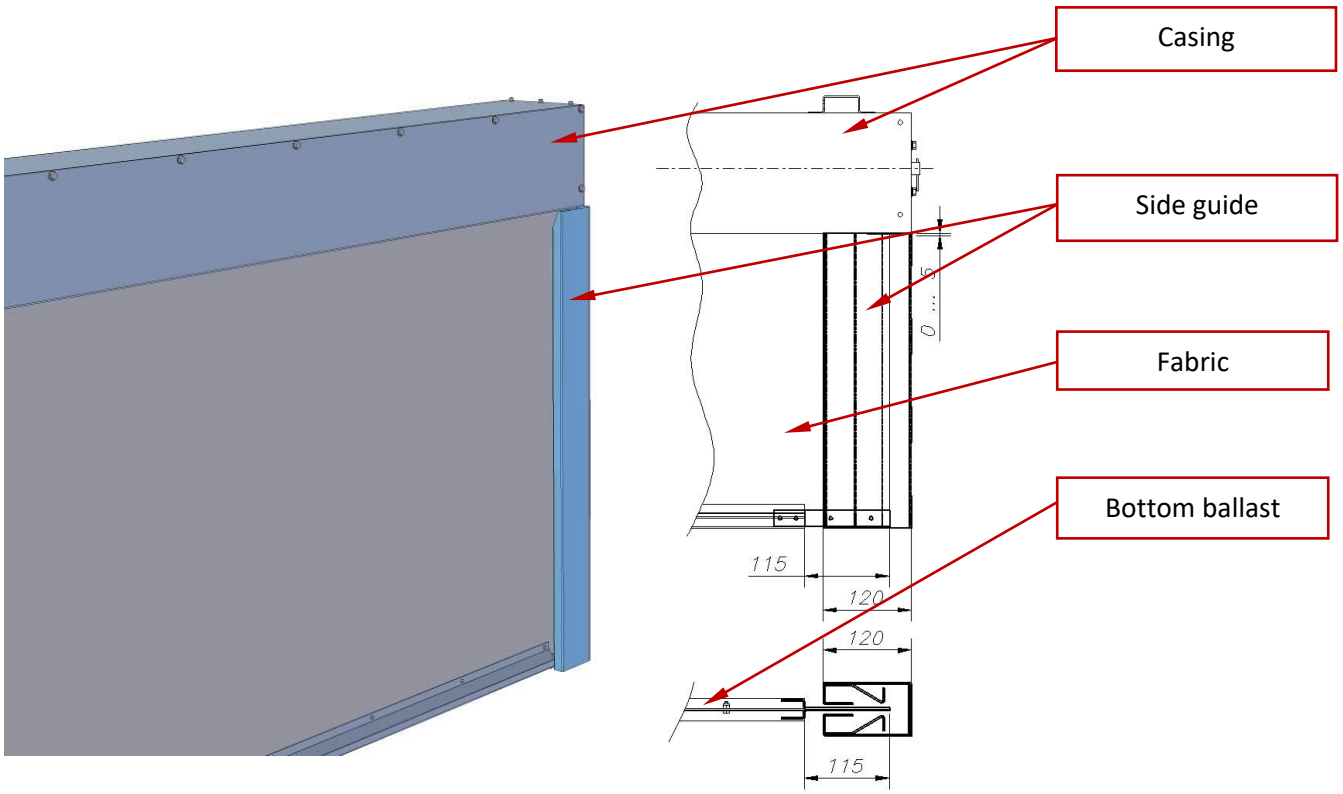


Fig. 22 Method of installing side guides.

Mount the guides to the wall using metal dowels (threaded element diameter 6…10 mm) appropriate for the wall material, through holes made in the guide elements.

7. OPERATING

In order to lower the curtains, turn on the alarm in the curtain control unit (mcr 9705 and mcr 0204).

To lift the curtains after the alarm, cancel the alarm signal and delete the alarm state in the control unit (see the operation and maintenance manual of the mcr 9705 of mcr 0204 control units).

mcr PROSMOKE rolling curtains, like mcr PROLIGHT smoke exhaust vents controlled electrically, need electric energy to operate (to be raised or lowered). mcr 9705 and mcr 0204 control units ensure the standby state of the system for 72 h and that the system can be activated at least once after that time in case of lack of the basic power supply 230 V AC. At that time, the basic power supply must be restored lest the batteries should become excessively low and damaged.

8. WARRANTY TERMS AND 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.

9. CERTIFICATE CPR

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-0021

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

AUTOMATIC SMOKE BARRIERS (ASB2, ASB4)
mcr PROSMOKE CE and mcr PROSMOKE CE 1

designed to control the movement of fire effluent within construction works by forming a barrier. Assessment and verification of constancy of performance and conditions of product use are defined in document Initial type testing report of constructional product No. C1396/08/0015/5004/SC (issued by FIRES, s.r.o., Batizovce, NB1396 on 23. 07. 2008) 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 12101-1: 2005, EN 12101-1: 2005/A1: 2006

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 23. 07. 2008 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.

Representative of Notified Body

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

In Batizovce, on 30. 06. 2025

Ing. Štefan Rástocký
Head of Product Certification Body

173672

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