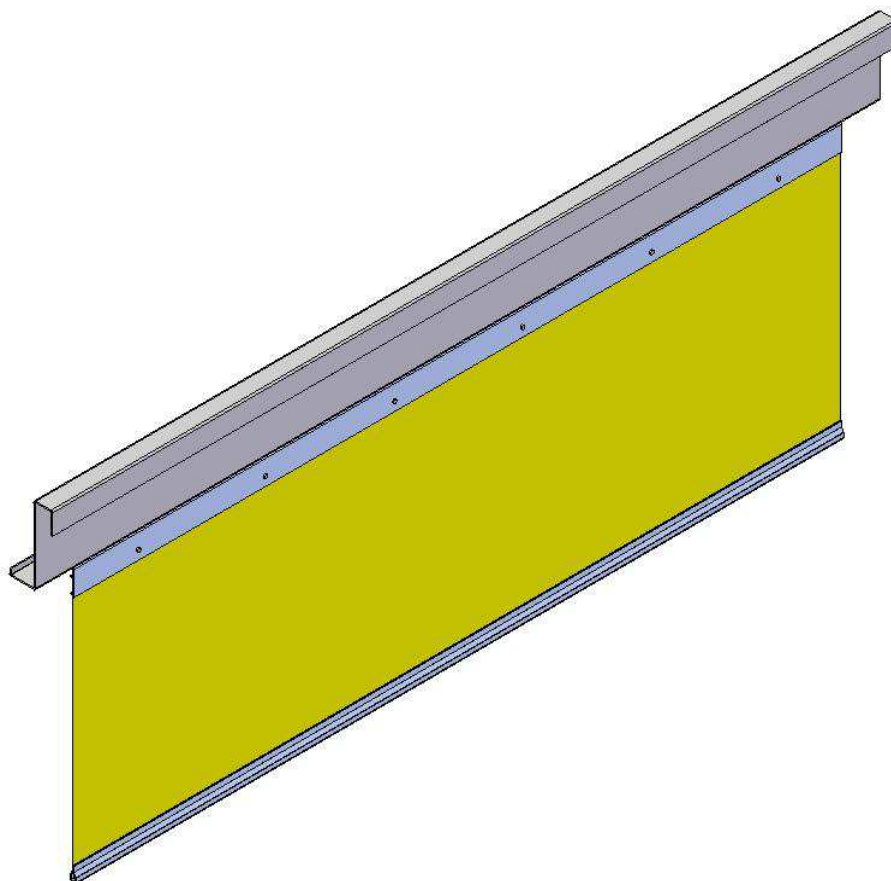


OPERATION AND MAINTENANCE MANUAL

Fixed curtain mcr PROSMOKE S CE





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1. INTRODUCTION

This Operation and Maintenance Manual (OMM) explains to the user the use and design as well as the mode of operation, correct installation and maintenance of mcr PROSMOKE S CE fixed curtains. This OMM also contains additional information on the conditions of use, maintenance and the terms of warranty for the product.

Following these instructions shall guarantee correct operation of the smoke extraction systems and the safety of the system users.

MERCOR SA reserves the rights to amend the product or this document without notice.

2. INTENDED USE

mcr PROSMOKE S CE fixed curtains form a part of the smoke extraction system, which includes also other products offered by MERCOR S.A., i.e.: mcr-PROLIGHT and mcr-PROLIGHT PLUS spot smoke vents, mcr PROLIGHT smoke vents built in skylights, MCR9705 and MCR0204 smoke extraction control units and other.

mcr PROSMOKE S CE fixed curtains are used to separate smoke containers under the ceiling, in the natural smoke and heat extraction systems. Smoke generated during fire is collected in smoke containers and then removed through smoke vents, such as mcr-PROLIGHT PLUS. By separating smoke containers under the ceiling, the curtains limit the spread of smoke, cool it down and create a layer of smoke with proper thickness, ensuring correct operation conditions for mcr-PROLIGHT and mcr-PROLIGHT PLUS smoke vents.

mcr PROSMOKE S CE smoke curtains have a **CE** certificate of conformity No. 1396-CPD-0022, compliant with the requirements of EN 12101-1:2005 standard, issued by a notified certification body No. 1396.

It is the designer of the building who is responsible for proper design of the smoke extraction system and selection of proper curtains for specific applications. mcr PROSMOKE curtains are not designed to serve as smoke-proof doors. The curtains are fire protection devices only; they cannot be used as gates or for any similar purpose. They are not intended for daily use for any other purposes.

3. DESIGN

MCR PROSMOKE S CE is a fixed curtain designed for mounting under the roof (ceiling).

The fabric is suspended to the load-bearing elements fixing the fabric. The load-bearing elements run along the upper edge of the fabric. The permissible gap between the load-bearing elements is 1 m. The load-bearing elements are made of galvanised or black (later painted) steel sheet with a minimum thickness of 3 mm. The shape of the load-bearing elements can be adjusted to the shape and position of the mounting area – usually angle brackets or flat bars. The load-bearing elements are mounted using steel connectors with a minimum diameter of Ø6 (machine screws, plugs, anchors) to the fixed elements of the building (e.g. lintels, walls, steel elements of the structure). Non-invasive installation of curtains to steel beams is also possible, using – what is called – vices.

The fabric is attached to the load-bearing elements with a steel strip (2 mm thick steel sheet with length equal to the length of the fixing unit), pressing the fabric and M8 machine screws at ca. 0.5 m intervals, secured against loosening.

The fabric is kept in a vertical position, using a linear bottom weight. The weight is provided by elements with length up to 6 m. The standard weight of this element is ca. 3÷3.5 kg/m; it can be increased up to 7 kg/m.

The fabric of the curtain is made of vertical or horizontal strips sewn together in order to achieve the desired dimensions. The shape of the fabric can be either rectangular or trapezoidal. At the sewing stage, service penetrations for technical installations can be made in the fabric. The location and dimensions of such penetrations should be determined before sewing and provided as design intents for making fixed curtains.

4. TRANSPORT AND DELIVERY

The curtains are supplied unassembled. The product should be unloaded under the supervision of a person authorised by the manufacturer using generally available unloading equipment (e.g. forklift trucks) or manually, paying special attention to avoid damage to the fabric.

5. INSTALLATION OF CURTAINS

The curtains should be mounted under the ceiling, to lintels, specially prepared structures or other elements of the building designed for that purpose. The load-bearing element should be either concrete or steel. The weight of the device should be taken into account while designing the load-bearing element: ca. $90 \div 120$ N/m (standard installation), depending on the height of the curtain. The mounting plane should be either vertical or horizontal with flatness deviations up to 5 mm along the curtain.

Recommended installation order:

1. Fix the load-bearing element using proper connectors (usually M8 x 30 screws).
2. Attach an initial weight to the fabric.
3. Attach the fabric and the pressing element (screw using M8 x 30 screws).
4. Attach the proper weight (after removing the initial weight).

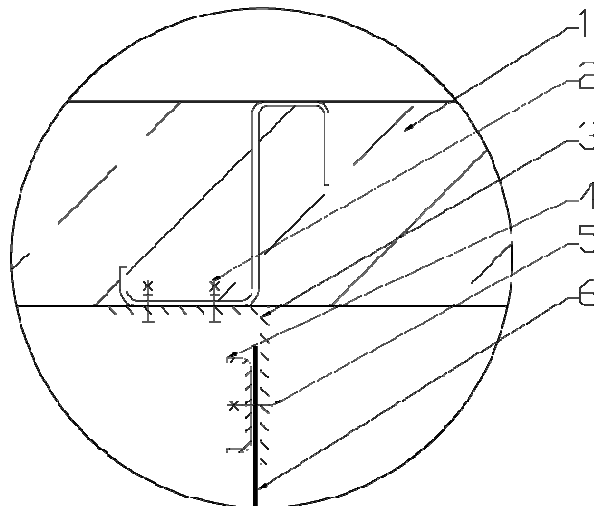
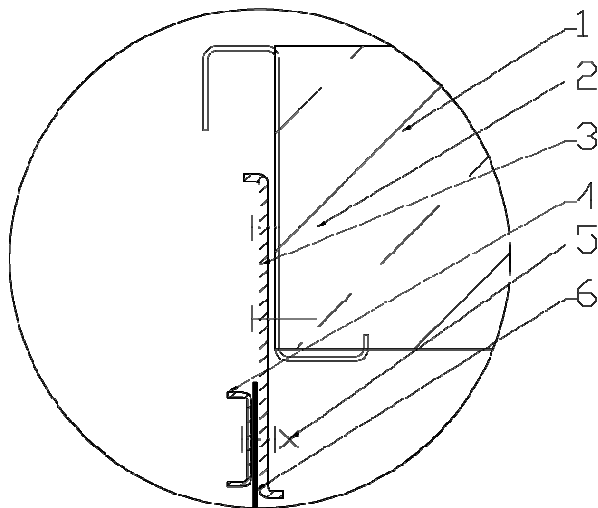


Fig. 1. Typical method of installation of mcr PROSMOKE S CE under a lintel



Description:

1. Fixed element of the building
2. Connectors for fixing to the fixed elements
3. Load-bearing element (depending on the planned installation method: angle bracket, U-bar
4. Pressing element
5. Set of connectors (M8 screw, coarse flat washers 2 pcs., secure nut)
6. Smoke-proof fabric
7. Vice

Fig. 2. Typical method of installation of mcr PROSMOKE S CE curtain on a lintel

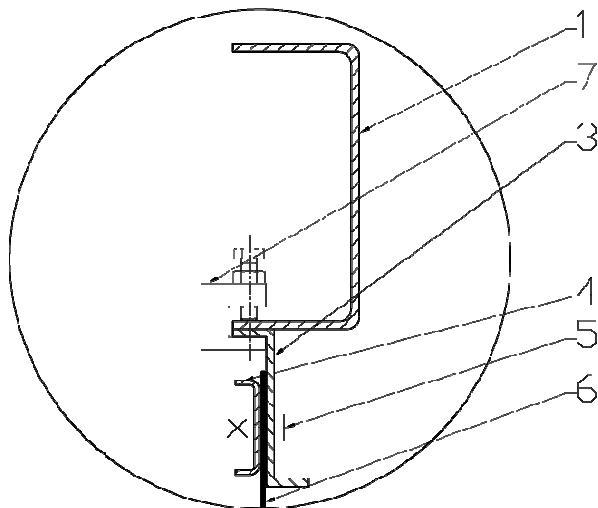


Fig. 3. Typical method of installation of mcr PROSMOKE S CE curtain to a steel sheet element using vices

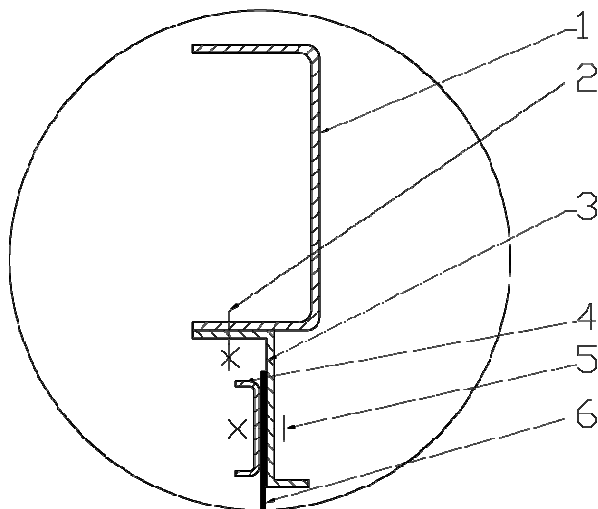


Fig. 4. Typical method of installation of mcr PROSMOKE S CE curtain to a steel sheet element using machine screws

6. GUIDELINES FOR MOUNTING mcr *PROSMOKE S CE* CURTAINS TO THE BUILDING ELEMENTS

- I. Determine the shape and dimensions of the curtains and the fixing elements so that the design dimensions of gaps between the curtain and elements of the building are maintained. If there is no description of gaps in the design, it is recommended that they do not exceed:
- 20 mm for curtains with height up to 2 m,
 - 40 mm for curtains with height between 2 m and 6 m,
 - 60 mm for curtains with height exceeding 6 m,

so that they meet the recommendations of PN EN12101-1 standard.

- II. The gap between the curtain and the ceiling, if any, should be blinded with a partition made of steel or aluminium sheet, mineral wool or other non-flammable material (class A1 acc. to EN13501-1).
- III. The dimensions and shape of load-bearing fixing elements may vary depending on the material of the base as well as on the dimensions and shape of the base or the connectors used, and they should be finally determined by the installer on the basis of the available data.
- IV. The load-bearing elements of the curtain should be fixed to the fixed elements of the building (lintel, ceiling, wall, beam, etc.) using metal connectors:
- machine screws, min. M6 (or bigger),
 - steel anchors, min. M6, recommended: M8 (or bigger),
 - brass or steel expansion anchors (with min. M6 thread or bigger),
 - on suspended steel bars, min. M8 (or bigger).
- V. The distance between the connectors should not exceed 1 m.
- VI. When using connectors with specific fire resistance classes, observe the relevant guidelines concerning their use.
- VII. Typical connectors used for mounting load-bearing elements of the curtains:

HILTI compliant with AT-0602-102/2006, especially:

- for the ceiling: HKL anchor,
- HLC M6 anchors or bigger, HKH M6 or bigger, HKD,
- HUS 7,5 HSA F/R M6 connectors or bigger.

FISHER:

- FUR10 and FUR14 plugs,
- FAZ, FBN, FZA, FZEA, FH, FSA, TA M, EA, EA-N, FNA anchors, size M6 or bigger,
- FBS 8 concrete screws or bigger,
- anchors for hollow slabs – FHY M8 or bigger.

It is possible to use other connectors. It is recommended to choose connectors with fire resistance corresponding to the curtain used (proper load-bearing capacity in 60 min).

- VIII. The anchoring depth should be at least 60 mm in materials, such as concrete, brick, etc. for connectors without tested fire resistance.
- IX. Use protections against loosening of threaded connections (e.g. proper screw glue, spring washers or secure nuts).

7. TERMS OF WARRANTY AND SERVICE

1. MERCOR SA grants a 12-month quality warranty for the devices, counting from the purchase date, unless agreed otherwise in the agreement.
2. If during the warranty period any physical defects in the devices occur, MERCOR SA shall remove such defects within 21 days from the date of receiving a written notification, subject to clause 5.
3. In the case of defects resulting from improper use of the devices or other causes mentioned in clause 6, the buyer/the warranty holder shall incur the costs of removal of such defects.
4. Liability under the warranty covers only defects attributable to the devices sold.
5. MERCOR SA reserves the right to extend the repair time in the case of a complicated repair or if the repair requires purchase of non-standard components [elements] or spare parts.
6. The warranty does not cover the following:
 - Damage to and failure of the devices caused by improper use, tampering, lack of technical inspection or maintenance;
 - Damage to the devices not attributable to MERCOR SA, in particular acts of God, such as torrential rain, flood, hurricane, flooding, lightning strike, grid overvoltage, explosion, hail, fall of an aircraft, fire, avalanche, landslide and secondary damage resulting from the above acts of God. Torrential rain means rain with intensity ratio of at least 4, determined by IMiGW [*Institute of Meteorology and Water Management*]. If such a ratio cannot be determined, the actual conditions and extent of damage proving the event of torrential rain will be taken into consideration at the place of damage. Hurricane means wind speed of at least 17.5 m/s (damage is deemed to be caused by hurricane if hurricane is proven to have occurred in the proximity);
 - Damage caused as a result of failing to report a discovered defect;
 - Deterioration of the quality of coating caused by natural ageing process (discolouring, oxidation);
 - Defects caused by the use of abrasive or corrosive cleaning agents;
 - Parts subject to natural wear during use (e.g. gaskets), unless they have a factory defect;
 - Damage done as a result of aggressive external factors, especially chemical and biological factors.
7. Any defect covered by warranty must be reported to MERCOR SA immediately, i.e. within 7 days from the date of discovering such a defect.
8. The buyer/warranty holder must use the devices as instructed and carry out technical inspections and maintenance at least twice a year.
9. The warranty shall become void immediately in the following cases:
 - If the buyer/warranty holder on their own, without consulting MERCOR SA beforehand, makes any modifications to the original design;
 - If the technical inspections and maintenance are not carried out in time or are carried out by unauthorised persons or service not authorised by MERCOR SA, or if the devices are used improperly;
 - Any tampering by unauthorised persons – except the normal course of use and maintenance of the devices – has been performed.
10. In the cases specified in clause 9, liability of MERCOR SA under statutory warranty is also excluded.

In cases not regulated by these terms of warranty, the relevant provisions of the Civil Code shall apply.

Service

1. The devices should be subject to technical inspections and maintenance every 6 months during the whole period of use (§ 3 clause 3 of the Regulation of the Minister of Internal Affairs and Administration dated 21 April 2006 on fire protection of buildings, other building structures and areas Dz. U. of 2006 No. 80, item 563).
2. Technical inspections and maintenance should be carried out by companies authorised by MERCOR SA (§ 3 clause 3 of the Regulation of the Minister of Internal Affairs and Administration dated 21 April 2006 on fire protection of buildings, other building structures and areas Dz. U. of 2006 No. 80, item 563).
3. In cases related to technical inspections, maintenance and service, please contact our Service Department by phone at 58 341 42 45 ext. 173, 175, 177 or fax at: 58 341 39 85 from 8 a.m. to 4 p.m. (Mon-Fri).

8. CERTIFICATE

 Product Certification Body accredited by Slovak national accreditation service	 Reg. No. 041/P-007	NOTIFIED BODY No. 1396 Osloboditeľov 282, 059 35 Batizovce, Slovakia tel. +421 52 7752398 fax. +421 52 7881412 e-mail: info@fires.sk http://www.fires.sk	 The Experts on Fire Safety
<h3>EC-CERTIFICATE OF CONFORMITY</h3> <h4>1396 – CPD – 0022</h4>			
<p>In compliance with the Directive 89/106/EEC of the Council of European Communities of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to the construction products (Construction Products Directive - CPD), amended by the Directive 93/68/EEC of the Council of European Communities of 22 July 1993, it has been stated that the construction product</p>			
<h4>STATIC SMOKE BARRIERS (SSB); MCR PROSMOKE S CE</h4>			
<p>having the performances and used in conditions given by initial type testing report No.: C-1396/08/0032/5004/SC, issued by FIRES s.r.o., NB 1396, Slovakia, on 23. 07. 2008,</p>			
<p>placed on the market by</p> <p>MERCOR SA, ul. Grzegorza z Sanoka 2, 80-408 Gdańsk, Poland</p> <p>and produced in the factory</p> <p>MERCOR SA, Zakład Produkcyjny, ul. Kwarцова 3A, Cieplewo, 83 031 Łęgowo, PL</p>			
<p>is submitted by the manufacturer to a factory production control and to the further testing of samples taken at the factory in accordance with a prescribed test plan and that the notified body – FIRES, s.r.o. - has performed the initial type-testing for the relevant characteristics of the product, the initial inspection of the factory and of the factory production control and performs the continuous surveillance, assessment and approval of the factory production control.</p>			
<p>This certificate attests that all provisions concerning the attestation of conformity and the performances described in Annex ZA of the standard</p>			
<h4>EN 12101-1: 2005, EN 12101-1:2005/A1: 2006</h4>			
<p>were applied and that the product fulfils all the prescribed requirements.</p>			
<p>This certificate was first issued on 23. 07. 2008 and remains valid as long as the conditions laid down in the harmonised technical specification in reference or the manufacturing conditions in the factory or the FPC itself are not modified significantly.</p>			
Batizovce, 23. 07. 2008		 Ing. Mária Gasperová Head of Product Certification Body	
023338	FIRES 136/C-18/02/2008-E		