

FIRE PROTECTION SYSTEMS

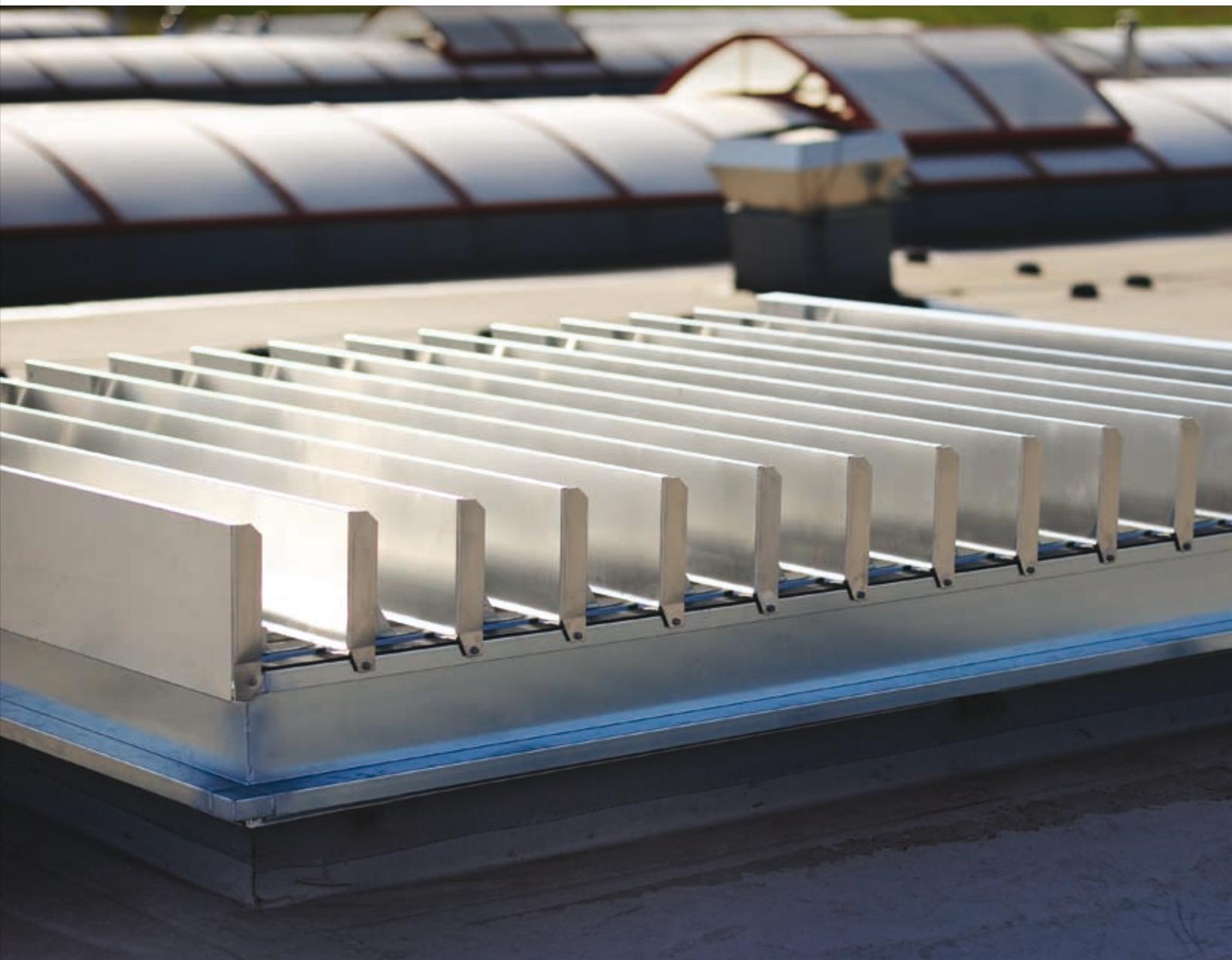
- ▶ fireproof partitions
- ▶ smoke and heat exhaust systems
- ▶ fire ventilation systems
- ▶ fire protection of building structures



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louvered ventilators

louver smoke vents mcr LAM,
louver air supply ventilators mcr LAM-N

Louver smoke vents and air-supply ventilators are used in fire ventilation systems which are designed to remove smoke. **Louver smoke vents mcr LAM** are intended to exhaust heat and smoke during fire. They can be mounted on roofs and in external walls (facades).

Louver air-supply ventilators mcr LAM-N provide compensation air and are installed in external walls (facades).

STRUCTURE

Bases of louver smoke vents and air supply ventilators are made of galvanised steel sheet 1.25mm to 2mm thick. The base can be insulated from outside if necessary. The louver base of the height up to 20cm is produced as one-piece element, and the maximum thickness of its insulation is 20mm. If the height exceeds 20cm only two-piece bases are available. Then, the upper base is 15cm high (maximum thickness of insulation is 20mm), and the height of the lower one is the remaining value of the total (insulation of up to 100mm). The lower part of the base may be equipped with a set of flashings for profiled sheet metal and a grid preventing burglaries and/or falling a man inside.

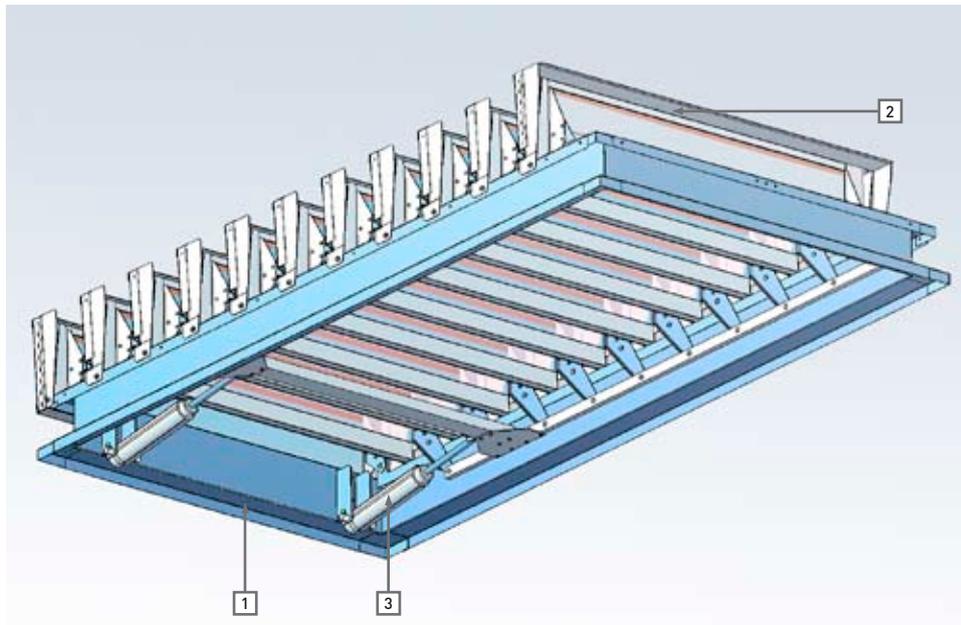


Fig. Louver vent – main units

1	base
2	blades
3	control system (electric or pneumatic actuator)

Blades are made of aluminium sheet with optional thermal insulation with the XPS foamed polystyrene of a thickness up to 20mm, or they can be made of aluminium profiles with panels of polycarbonate cavity sheets 16mm thick. They are linked cinematically so that they can rotate approximately 90 degrees. The sealing between the blades and the base is provided by the EPDM gasket and special shape of the blades and the base.

The mcr LAM smoke vent is supplied with a set of deflectors, and the mcr LAM-N air-supply ventilator is equipped with a rain shield.





Blades with filling made of polycarbonate allow additional light to enter interiors.

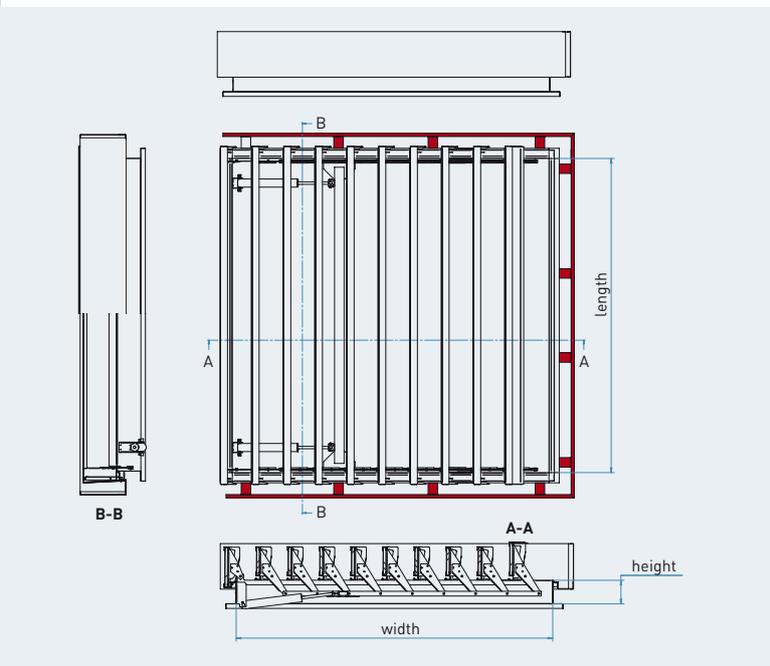


Fig. Louver vent with deflectors

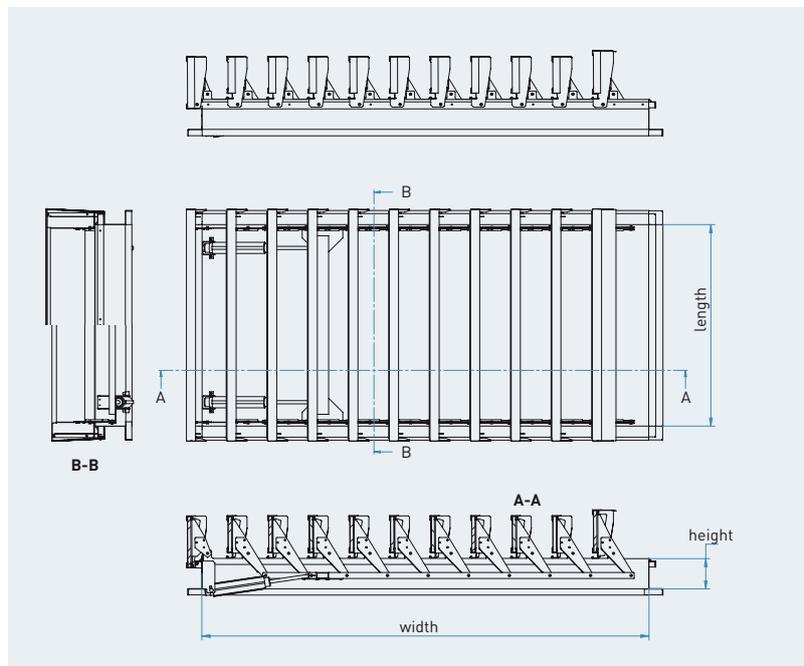
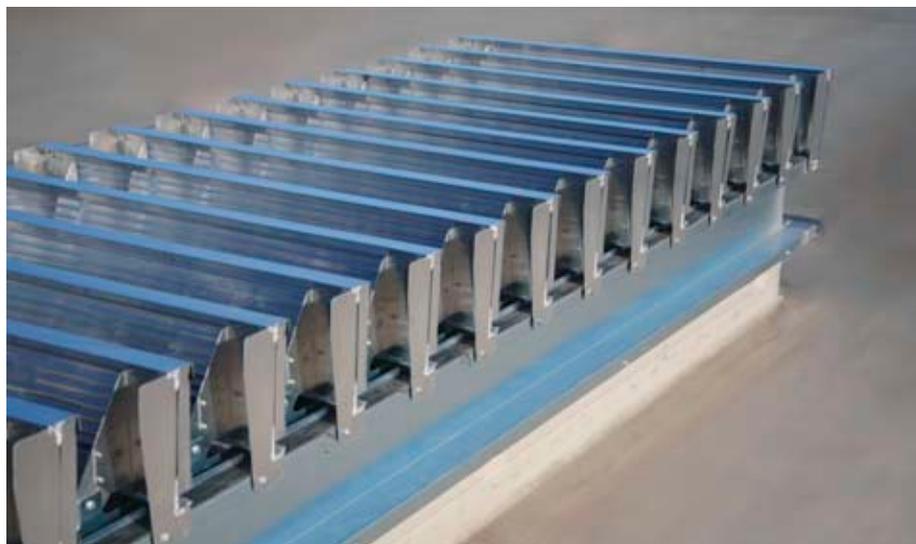


Fig. Louver vent without deflectors

Product variations:

- ▶ painted bases
- ▶ painted blades
- ▶ open and/or closed position signalling system
- ▶ painted deflectors
- ▶ painted rain shield
- ▶ grid in the lower part of the base
- ▶ aluminium flashings for profiled sheet metal in the lower part of the base



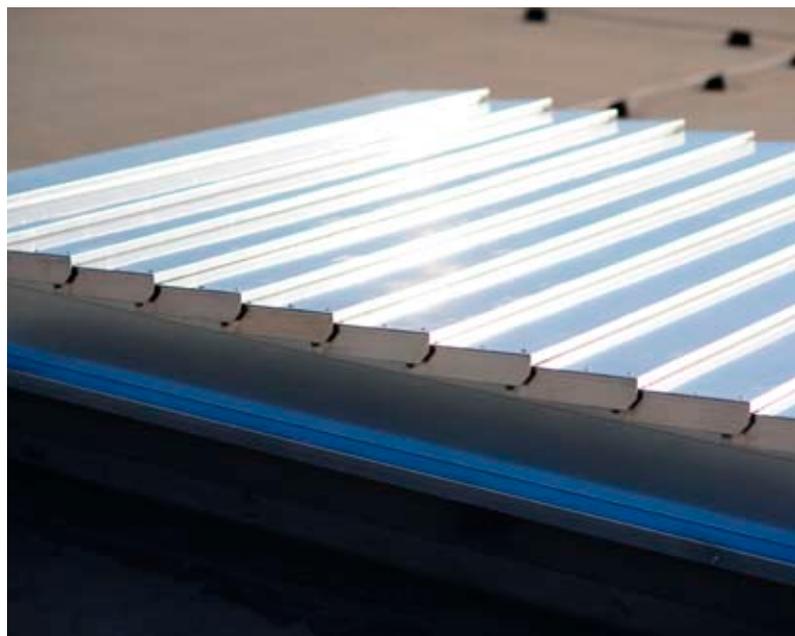


The mcr LAM-N air-supply ventilators are equipped with rain shields.

Advantages of louvers:

- ▶ possibility of mounting on roofs with considerable pitches
- ▶ high resistance to damage caused by strong wind during opening
- ▶ low power consumption
- ▶ low demand for CO₂

It is recommended to install louvers on high buildings.



Due to a special construction of blades and gaskets, louvers are completely waterproof.

CONTROL

Louver vents and air-supply ventilators are opened and closed by means of **pneumatic and electric actuators**.

For opening purposes, the **pneumatic actuator** uses the energy of compressed gas (CO₂). Depending on configuration and devices used, it can be activated automatically by the rise of temperature above the set value, or manually with the assistance of the fire signalling system by using pneumatic or electric signal, or by combining the two.

Double-action pneumatic actuators are used. They are equipped with an internal lock to ensure that the vent/ventilator is firmly positioned when closed or open (to remove smoke or supply air). The actuator's cylinder can have a diameter of 40 or 50mm.

Reusable or single-use cartridges with CO₂ performing the function of gasholders in pneumatic systems contain 24g to 40g of gas. Pneumatic actuators are controlled by the flow controller with a thermal fuse (the so-called thermal release valve) installed in the ventilator's base. Gas is released automatically from the (CO₂) cartridge installed in the controller after exceeding the nominal temperature (from 68 deg up to 182 deg). Thermal release unit may be equipped with electromagnets for remote activating by means of an electric signal (24V=), or micro-actuators for remote activating by means of a pneumatic signal.

Louver vents can be also activated by alarm boxes with CO₂ cartridges from user's level. The alarm boxes, launched manually, can additionally contain electromagnets for electric remote launch, or micro-actuators for pneumatic remote launch. The number and the size of cartridges installed in the alarm box depend on the number of ventilators connected to the alarm box, as well as the size of these ventilators and the capacity of pneumatic system.

Electric actuators for the control of smoke vents or air supply ventilators are powered with a 24V safety voltage from control devices of the mcr type.

Pneumatic and electric actuators may also be used to open ventilators for day-to-day ventilation purposes. It is necessary to connect the ventilation system with the weather-control unit which will close the ventilators in case of strong wind or rain.

DESIGNATION OF VENTS AND VENTILATORS

mcr LAM - 5 - 100 - HO.15 - E1 - S0

↑ ↑ ↑ ↑ ↑ ↑ ↑
 1 2 3 4 5 6 7

1	type designation: louver smoke vent – mcr LAM louver air-supply ventilator – mcr LAM-N
2	number of blades (5 - 15)
3	length of the ventilator (100 - 200 cm)
4	type and height of the base (H – base without thermal insulation, HO – base insulated against cold (thermal insulation is 20mm thick).
5	height of the base (15 - 60cm)
6	type of power transmission (E1 – electric 24V; C1 – CO ₂ ; opening; C2 – CO ₂ ; opening and closing)
7	type of blades filling (S0- blind filling, insulated with XPS 20mm; S- blind, not insulated; PCA 16.2- polycarbonate 16 mm - 2 chambers; PCA 16.4 - polycarbonate 16 mm - 4 chambers)

CLASSIFICATION

Opening time of the louvers is less than 60s.

Louver smoke vents are classified as follows:

- ▶ SL 250 - 1300 for electric actuators
- ▶ SL 550 - 2000 for pneumatic actuators
- ▶ WL 1500
- ▶ B 300
- ▶ F
- ▶ T(-25)
- ▶ Re300



TECHNICAL DATA

size of the vent/ventilator (mm x mm)	aerodynamic area of a vent/ventilator equipped with a deflector/rain shield (m ²)	aerodynamic area of a vent/ventilator equipped with a deflector and control jet (m ²)	ELECTRIC CONTROL						PNEUMATIC CONTROL				
			power consumption by the electric actuator for the load class						minimum size of a CO2 cartridge for the load class				
			SL 1300 (A)	SL 950 (A)	SL 750 (A)	SL 550 (A)	SL 250 (A)	facade mounting (A)	SL 2000 (g)	SL 1600 (g)	SL 1300 (g)	SL 950 (g)	SL 550 (g)
1000x1000	0,65	0,68	2,0	1,3	1,0	0,8	0,8	0,8	24	24	24	24	24
1000x1200	0,78	0,82	2,0	1,3	1,3	1,0	0,8	0,8	24	24	24	24	24
1000x1400	0,91	0,95	2,6	2,0	1,6	1,0	0,8	0,8	24	24	24	24	24
1000x1600	1,03	1,08	2x1,3	2,0	1,6	1,3	0,8	0,8	24	24	24	24	24
1000x1800	1,15	1,20	2x1,3	2,6	2,0	1,3	0,8	0,8	24	24	24	24	24
1000x2000	1,27	1,32	2x2,0	2,6	2,0	1,3	0,8	0,8	24	24	24	24	24
1200x1000	0,78	0,82	2,0	1,3	1,3	1,0	0,8	0,8	24	24	24	24	24
1200x1200	0,93	0,98	2,0	2,0	1,6	1,0	0,8	0,8	24	24	24	24	24
1200x1400	1,08	1,12	2x1,3	2,0	2,0	1,3	0,8	0,8	24	24	24	24	24
1200x1600	1,22	1,27	2x1,6	2,6	2,0	1,3	0,8	0,8	24	24	24	24	24
1200x1800	1,36	1,41	2x2,0	2x1,3	2,0	1,6	0,8	0,8	24	24	24	24	24
1200x2000	1,51	1,56	2x2,0	2x1,3	2,6	2,0	1,0	0,8	24	24	24	24	24
1400x1000	0,91	0,95	2,6	2,0	1,6	1,0	0,8	0,8	24	24	24	24	24
1400x1200	1,08	1,12	2x1,3	2,0	2,0	1,3	0,8	0,8	24	24	24	24	24
1400x1400	1,25	1,29	2x2,0	2,6	2,0	1,3	0,8	0,8	24	24	24	24	24
1400x1600	1,41	1,46	2x2,0	2x1,3	2,6	2,0	0,8	0,8	24	24	24	24	24
1400x1800	1,59	1,64	2x2,0	2x1,3	2x1,3	2,0	1,0	0,8	24	24	24	24	24
1400x2000	1,76	1,81	2x2,6	2x2,0	2x1,3	2,0	1,0	0,8	24	24	24	24	24
1600x1000	1,03	1,08	2x1,3	2,0	1,6	1,3	0,8	0,8	24	24	24	24	24
1600x1200	1,22	1,27	2x1,6	2,6	2,0	1,3	0,8	0,8	24	24	24	24	24
1600x1400	1,41	1,46	2x2,0	2x1,3	2,6	2,0	0,8	0,8	24	24	24	24	24
1600x1600	1,61	1,66	2x2,0	2x1,6	2x1,3	2,0	1,0	0,8	24	24	24	24	24
1600x1800	1,81	1,86	2x1,6	2x2,0	2x1,3	2,0	1,0	0,8	24	24	24	24	24
1600x2000	2,01	2,07	-	2x2,0	2x1,6	2,6	1,3	0,8	24	24	24	24	24
1800x1000	1,15	1,20	2x1,6	2,6	2,0	1,3	0,8	0,8	24	24	24	24	24
1800x1200	1,36	1,41	2x2,0	2x1,3	2,6	1,6	0,8	0,8	24	24	24	24	24
1800x1400	1,59	1,64	2x2,0	2x1,6	2x1,3	2,0	1,0	0,8	24	24	24	24	24
1800x1600	1,81	1,86	2x2,6	2x2,0	2x1,3	2,0	1,0	0,8	24	24	24	24	24
1800x1800	2,03	2,09	-	2x2,0	2x1,6	2,6	1,3	0,8	24	24	24	24	24
1800x2000	2,26	2,32	-	2x2,6	2x2,0	2x1,3	1,3	1,0	40	24	24	24	24
2000x1000	1,27	1,32	2x2,0	2x1,3	2,0	1,3	0,8	0,8	-	24	24	24	24
2000x1200	1,51	1,56	2x2,0	2x1,3	2,6	2,0	1,0	0,8	-	24	24	24	24
2000x1400	1,76	1,81	2x2,6	2x2,0	2x1,3	2,0	1,0	0,8	-	24	24	24	24
2000x1600	2,01	2,07	-	2x2,0	2x1,6	2,6	1,3	0,8	-	24	24	24	24
2000x1800	2,26	2,32	-	2x2,6	2x2,0	2x1,3	1,3	1,0	-	24	24	24	24
2000x2000	2,50	2,56	-	2x2,6	2x2,0	2x1,3	1,3	1,0	-	24	24	24	24
2200x1000	1,39	1,43	2x2,0	2x1,3	2,6	2,0	0,8	0,8	-	-	24	24	24
2200x1200	1,66	1,71	2x2,6	2x2,0	2x1,3	2,0	1,0	0,8	-	-	24	24	24
2200x1400	1,93	1,99	-	2x2,0	2x1,3	2,6	1,0	0,8	-	-	24	24	24
2200x1600	2,21	2,27	-	2x2,6	2x2,0	2x1,3	1,3	0,8	-	-	24	24	24
2200x1800	2,48	2,54	-	2x2,6	2x2,0	2x1,3	1,3	1,0	-	-	24	24	24
2200x2000	2,75	2,81	-	-	2x2,6	2x1,6	1,6	1,0	-	-	24	24	24
2400x1000	1,51	1,56	2x2,0	2x1,3	2,6	2,0	1,0	0,8	-	-	24	24	24
2400x1200	1,81	1,86	2x2,6	2x2,0	2x1,3	2,0	1,0	0,8	-	-	24	24	24
2400x1400	2,11	2,17	-	2x2,0	2x2,0	2x1,3	1,3	0,8	-	-	24	24	24

2400x1600	2,40	2,47	-	2x2,6	2x2,0	2x1,3	1,3	1,0	-	-	24	24	24
2400x1800	2,70	2,76	-	-	2x2,0	2x1,6	1,6	1,0	-	-	24	24	24
2400x2000	2,99	3,06	-	-	2x2,6	2x2,0	2,0	1,3	-	-	24	24	24
2600x1200	1,96	2,02	-	-	2x2,0	2x1,3	1,3	1,0	-	-	24	24	24
2600x2000	3,24	3,30	-	-	-	2x2,0	2,0	1,3	-	-	40	24	24
3000x1600	2,99	3,06	-	-	2x2,6	2x2,0	2,0	1,3	-	-	24	24	24
3000x1800	3,36	3,42	-	-	-	2x2,0	2,0	1,3	-	-	40	24	24
3000x2000	3,72	3,78	-	-	-	2x2,6	2,6	1,3	-	-	40	24	24

ASSEMBLY

Louver vents are suitable for installation on roofs as well as in walls. Assembly method depends on the building structure. They can be mounted on plinths, on roofs covered with profiled metal sheet, and on bituminous or PVC membrane roofing. Examples of installation methods are shown in the pictures below.

While installing ventilators on the roof, the guidelines contained in DTR – Technical & Operational Documentation should be followed. Due to diversified structure of walls, assembly methods must be agreed upon with the building contractor.

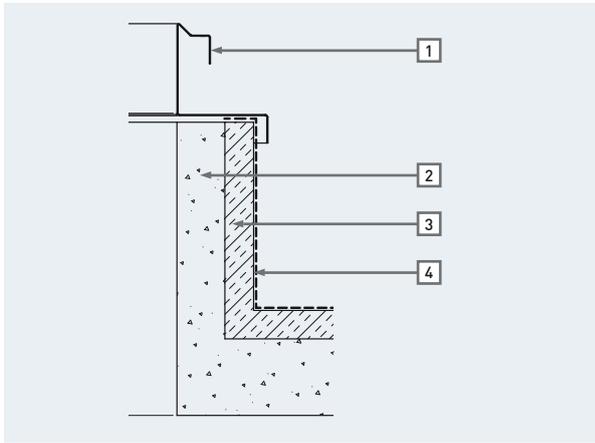


Fig. Installation of an overlay base without thermal insulation on a plinth

1	overlay base without thermal insulation of the mcr LAM vent
2	plinth
3	thermal insulation of the plinth
4	plinth and roof water insulation

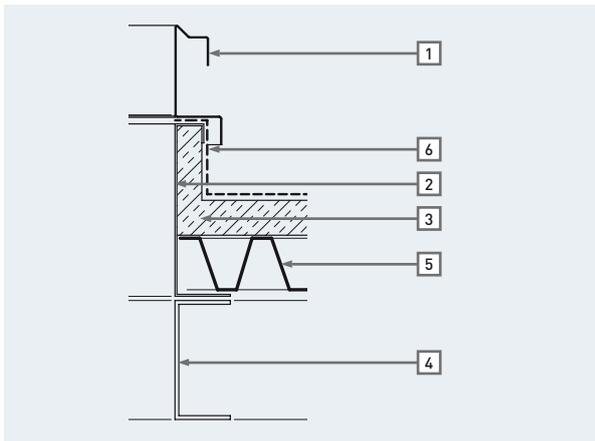


Fig. Installation of an overlay base without thermal insulation on additional base on a steel structure

1	overlay base without thermal insulation of the mcr LAM vent
2	steel base (plinth)
3	base and roof thermal insulation
4	roof load-bearing structure
5	trapezoidal sheet metal
6	water insulation

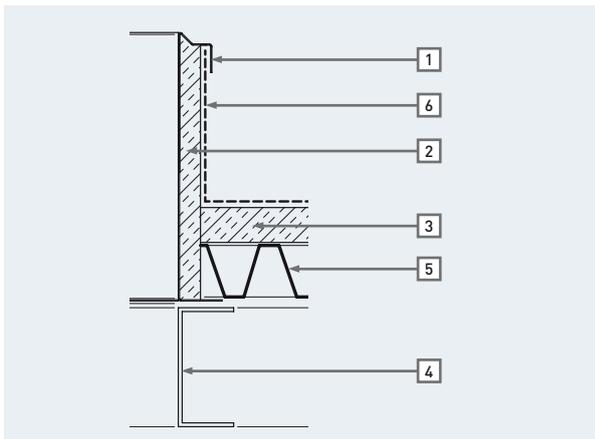


Fig. Installation of a base with thermal insulation on a steel structure

1	mcr LAM vent's base with thermal insulation
2	thermal insulation of the vent
3	roof thermal insulation
4	roof load-bearing structure
5	trapezoidal sheet metal
6	water insulation