



**mcr LAM**

louvered vents

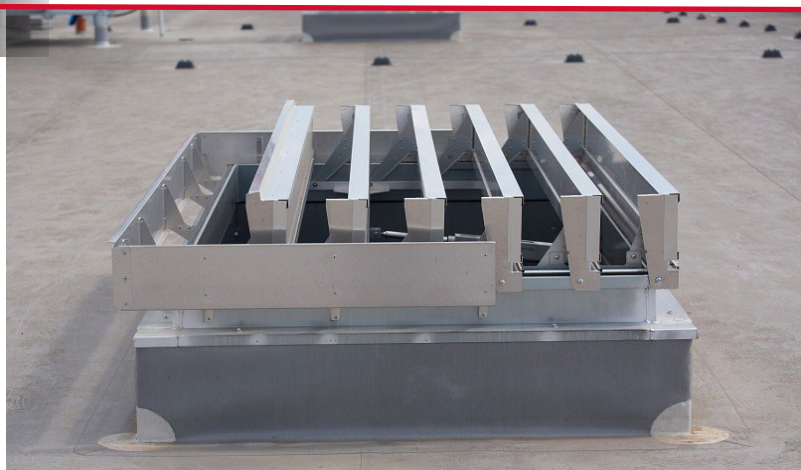
## LOUVERED VENTS



Smoke and hot gases generated during fire pose a serious hazard to the life of people in burning rooms, to the property stored in the building and to the building's structure. The basic role of a smoke extraction and aeration system is to lower the temperature inside by extracting hot gases using smoke extraction devices and to supply cool air using aeration devices. Such system makes it possible to carry out evacuation and firefighting action, and to minimize material losses. The key role in such a system, a part from mcr PROLIGHT smoke vents and mcr PROSMOKE smoke curtains, is played by mcr LAM louvered vents.

MERCOR's louvered vents mcr LAM can be used in various types of facilities, from storage, production and sports halls, through commercial buildings (mainly shopping arcades and atriums) to tall buildings. Thanks to their numerous advantages, they are more and more commonly used in natural smoke extraction system designs.

Louver smoke vents mcr LAM are approved for use in all EU countries on the basis of a certificate of conformity with EN-12101-2 European Standard.







## ADVANTAGES OF LOUVERED VENTS

### AESTHETIC QUALITIES

- [ ] numerous colour options are available – powder coating enables clients to choose custom colours from RAL colour system

### MULTI-FUNCTIONALITY

- [ ] smoke extraction
- [ ] air- supply
- [ ] daily ventilation
- [ ] a single vent can serve smoke extraction or aeration functions as part of the smoke extraction and daily ventilation system in non-fire conditions
- [ ] additional illumination in buildings by using polycarbonate blades

### ECO-FRIENDLINESS

- [ ] low power and compressed CO<sub>2</sub> consumption
- [ ] the product does not contain any harmful substances and is recyclable

### RESISTANCE

- [ ] to wind load (up to WL = 4000 N/m<sup>2</sup>), allowing installation on high buildings
- [ ] to impact (up to 1200 J)
- [ ] to corrosion (aluminium bases are equipped with aluminium rivets and stainless steel connectors)
- [ ] to heavy snow load (up to SL=2000 N/m<sup>2</sup>)
- [ ] wind deflectors resistant to vibrations caused by wind or rain

### ASSEMBLING IN MANY OPTIONS

- [ ] vents can be installed in facades and roofs with any inclination angle
- [ ] vents can be used in roof and facade openings with area up to 9.5 m<sup>2</sup> (**vent dimension range from 80 x 50 cm to 380 x 250 cm**)
- [ ] a wide range of flange types enabling installation of vents on various types of roofing and facades
- [ ] available width of flanges: from 7 to 32 cm
- [ ] easy installation – the client receives a preassembled product that does not require further processing on site
- [ ] the product does not interfere with other roof equipment – blades of louvered vents do not exceed geometrical dimensions of the device, which is especially important on roofs of tall buildings or roofs with many other objects

### HIGH QUALITY

- [ ] the production process is managed in accordance with ISO 9001 standard
- [ ] each vent is subject to thorough quality control before shipment to Clients
- [ ] certified product in accordance with EN 12101-2 standard in an accredited FIRES laboratory

## CONSTRUCTION OF LOUVERED VENT

The basic components of each louvered vent are as follows: base, flange, blades and actuator. Wind deflectors are mounted only in louver smoke vents mounted on roof.

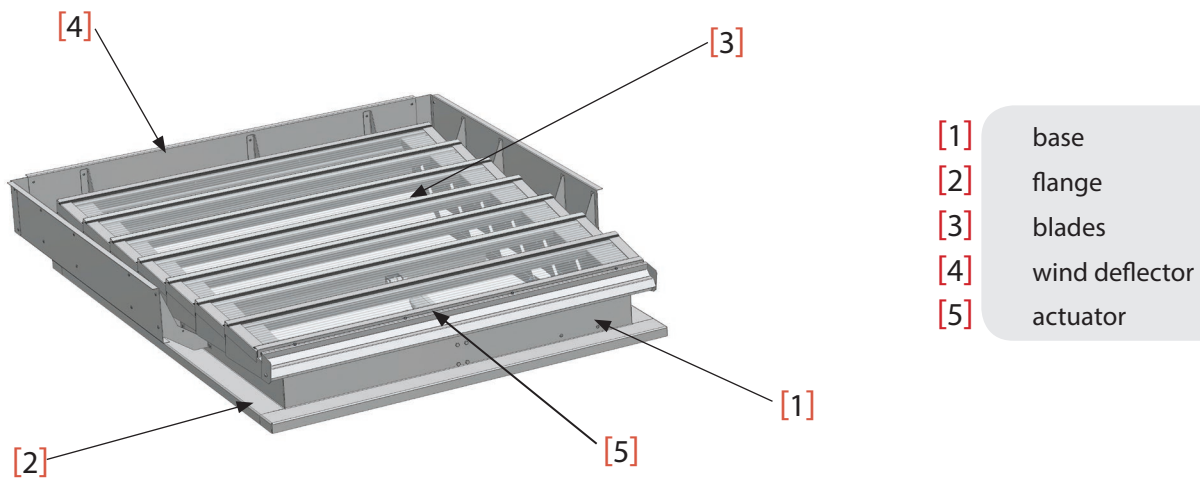


Fig. Construction of louvered vent

## BASE

The base of a louvered vent is made of 1.25 mm thick galvanized steel sheet or 2 mm thick aluminium sheet (AlMg<sub>3</sub> type). It can be either non-insulated (H) or insulated from the outside with 20 mm thick mineral wool (HO). Standard height of the base is 15 – 25 cm.

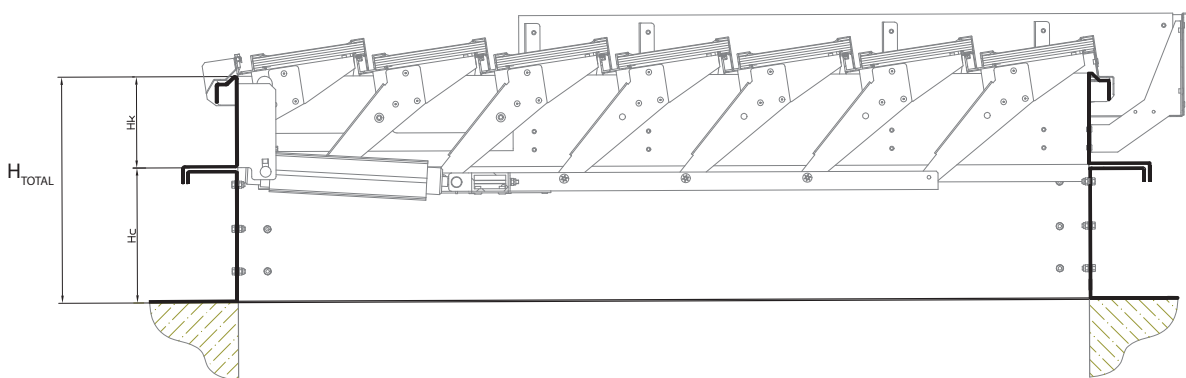
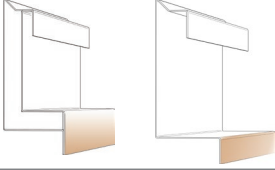
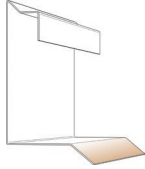


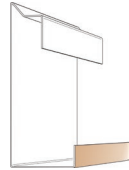


Fig. Louvered vent with bottom base.

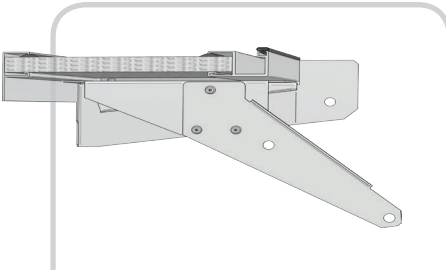
If the designed base is higher than 25 cm, there is possibility of produce and deliver a bottom base with a maximum height of  $H_c = 70$  cm, made of 1.25 mm thick galvanized steel sheet or 2 mm thick aluminium sheet (non-insulated element, not preassembled on production).

FLANGE

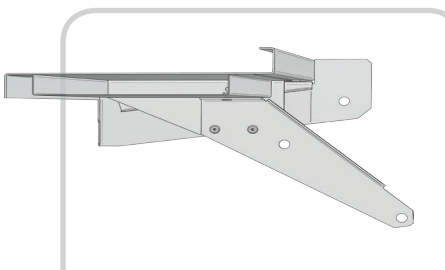
type	flange	examples of installation
[ P1 ]		overlay type of vents placed on roof (installation on existing plinth)
[ P2 ]		trapezoidal sheet roofs (sandwich type)
[ P3 ]		facade vents, vents mounted on trapezoidal sheet roofs (sandwich type)
[ P4 ]		facade vents
[ P11 ]		vents combined with continuous rooflights

BLADES

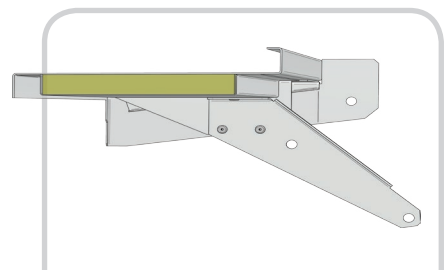
Blades are connected in such a way that at the same time they turn by 90 degrees. Special design of blades and the base as well as EPDM sealing between them ensure complete water tightness of the louvered vent.



**[ filling:]**  
16 mm thick cellular polycarbonate  
(opal or transparent) - PCA16



**[ filling:]**  
made of non-insulated aluminium  
profiles (non-transparent filling)  
- SO



**[ filling:]**  
made of formed aluminium sheet  
profiles, insulated with 20 mm thick  
extruded polystyrene (non-transparent  
filling) - SO+XPS

Wind deflector, as one of the elements of a louver smoke vent mounted in the roof, increases the vent's active area. The height of the wind deflector depends on the total height of the device together with the existing plinth ( $H_{TOTAL}$ ) and is selected to ensure the best value of active area.

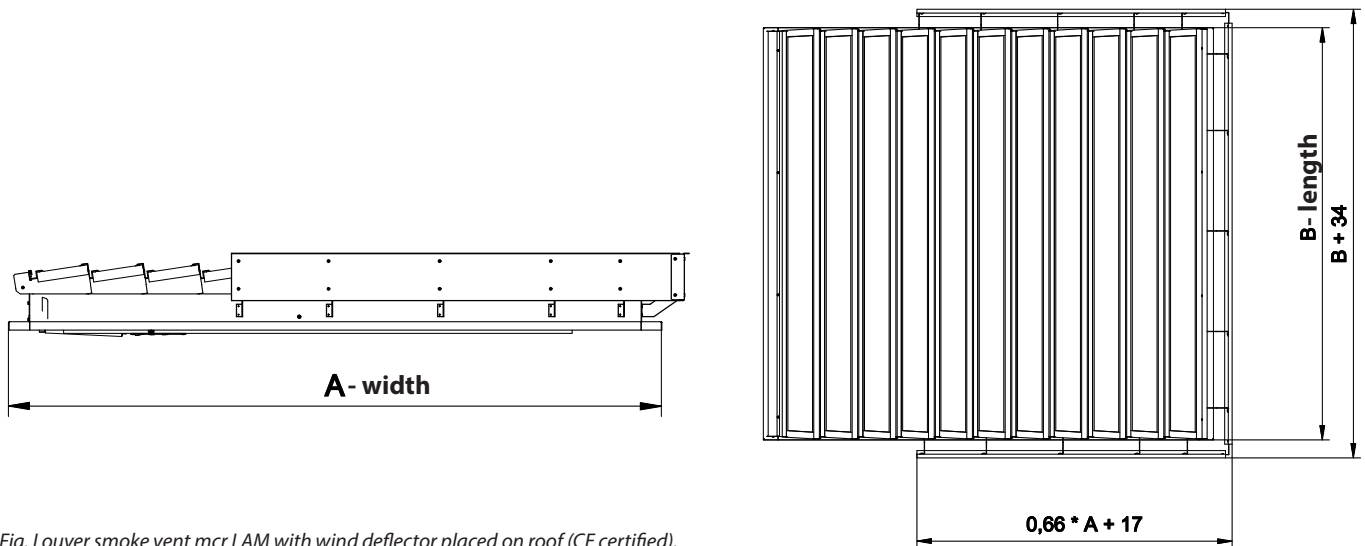


Fig. Louver smoke vent mcr LAM with wind deflector placed on roof (CE certified).

A louvered vent mounted on a building facade is not equipped with wind deflector, but could be equipped with a rain shield.

PARAMETERS OF LOUVERED VENT mcr LAM ACCORDING TO 1396-CPD-0032 CERTIFICATE OF CONFORMITY

Parameters	Description
Re 300	Reliability, 300 cycles of opening and closing to the smoke extraction position (vent with E1 electric control and C1, C2 pneumatic control).
Re 1000	Reliability, 1000 cycles of opening and closing to the smoke extraction position (vent with C3 pneumatic control with gas spring).
Re 10 000	Reliability, 10 000 cycles of opening and closing to the ventilation position (dual purpose ventilator).
SL SL 250 ÷ 1300 SL 550 ÷ 2000 SL 125 ÷ 250 SL 0	Guaranteed operability under snow load [N/m <sup>2</sup> ] - vents equipped with E1 electric control - vents equipped with C1, C2 pneumatic control - vents equipped with C3 pneumatic control with gas spring - independent facade vents
WL WL 1500 WL 3000 WL 4000	Guaranteed operability of vents under wind load [N/m <sup>2</sup> ] - whole range - vents with a maximum of 12 blades, each 150 cm long - vents with a maximum of 12 blades, each 100 cm long
B 300	Vent resistance to high temperatures (300 °C).
E	Vent fire class.
T(-25) or T(00)	Vent resistance to low temperatures (-25 °C or 0 °C).
Aa	Active area of smoke extraction.
60 s	Maximum vent's opening time to the working position.

The control system is an integral part of louvered vents. It controls smoke extraction, ventilation or aeration of the building. Depending on the type of devices used, it can be either pneumatic or electric.

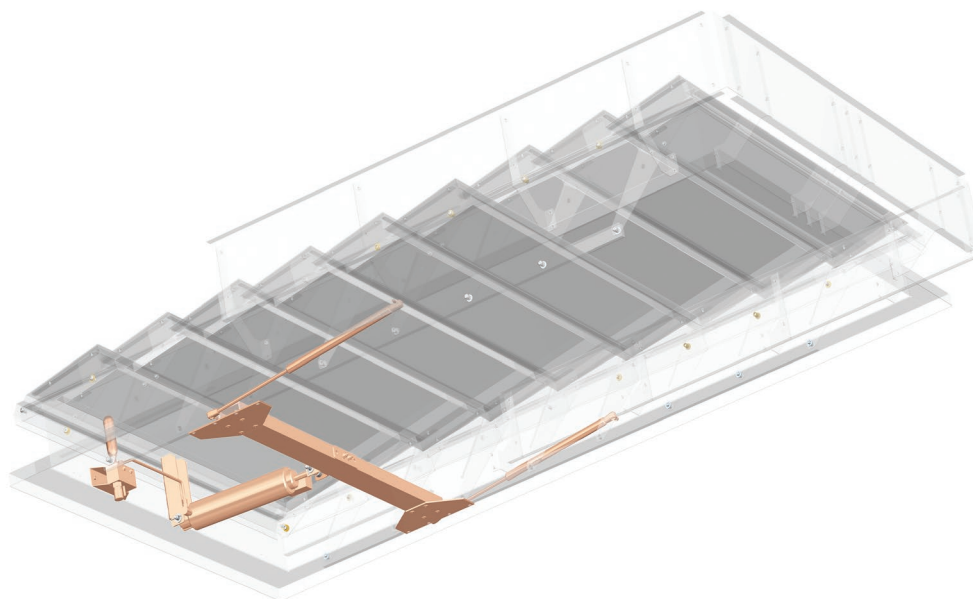
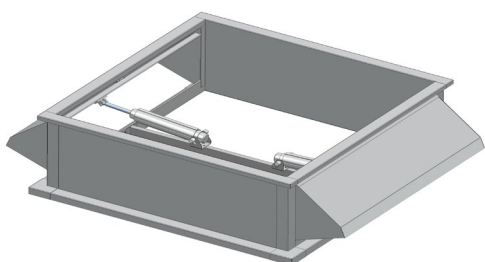


Fig. Louvered vent with C3 control system (opening: CO<sub>2</sub>, closing: gas spring)

- [ C1 ]** – vent equipped with a pneumatic actuator together with fuse and CO<sub>2</sub> cylinder installed in the thermal valve; CO<sub>2</sub> cylinder for opening, manual closing
- [ C2 ]** – vent equipped with pneumatic actuator together with fuse and CO<sub>2</sub> cylinders installed in the thermal valve; CO<sub>2</sub> cylinder for opening and closing
- [ C3 ]** – vent equipped with a pneumatic actuator together with fuse and CO<sub>2</sub> cylinder installed in the thermal valve with a gas spring for closing; CO<sub>2</sub> cylinder for opening
- [ E1 ]** – vent equipped with 24V DC electric actuator
- [ E2 ]** – vent equipped with 230V AC electric actuator for daily ventilation

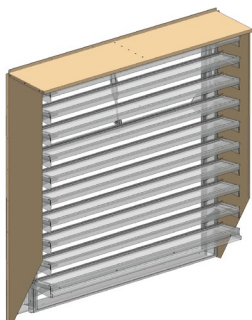
List of current of electric actuators 24V (type E1)*					
Light entrance dimensions width x length [mm x mm]	current consumption of electric actuator for load class				installation in facade [A]
	SL 750 [A]	SL 550 [A]	SL 250 [A]	SL 125 [A]	
800x500	0,8	0,8	0,8	0,8	0,8
1000x1000	1,0	0,8	0,8	0,8	0,8
1000x2000	2,0	1,3	0,8	0,8	0,8
1400x1400	2,0	1,3	0,8	0,8	0,8
1800x2000	2x2,0	2x1,3	1,3	1,3	1,0
2000x2500	2x2,0	2x2,0	1,3	1,3	1,3
3000x2000	-	2x2,6	2,6	2,6	1,3
3000x2500	-	-	2x1,3	2x1,3	1,3
3800x2500	-	-	-	2x1,3	2x0,8

\* immediate sizes possible



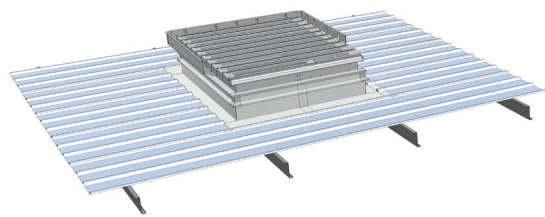
### [ ALL-WEATHER VENTILATION BASE ]

- [ ] all-weather ventilation base placed below louvered vent for natural ventilation even in a harsh weather conditions (rain or snow)
- [ ] all-weather base is equipped with side wings, which open and close by small pneumatic actuators
- [ ] made of aluminium AlMg<sub>3</sub>
- [ ] height: from 300 to 500 mm
- [ ] maximum ventilation area:  
100mm x 3800mm x 2 = 0,76m<sup>2</sup>
- [ ] permanent ventilation option (without side wings)
- [ ] aluminium flashing of the base for installation on a roof made of profiled steel sheet
- [ ] opening and/or closing signals (end switch)
- [ ] delivered on site fully assembled and ready for on-roof installation



### [ RAIN SHIELDS ]

- [ ] they increase the vent's resistance to weather conditions
- [ ] they can be an element of a facade louvered vent (smoke extraction, ventilation or aeration vent)



### [ ALUMINIUM FLASHING ]

- [ ] aluminum flashing of the base for installation in a roof made of profiled steel sheet

### [ END SWITCH ]

- [ ] possibility of monitoring blades position (opening and/or closing signals)

## AVAILABLE OPTIONS

- [ ] steel or aluminium base
- [ ] base painting
- [ ] painting of metal elements of blades (except insulated blades - SO+XPS)
- [ ] painting of wind deflectors and rain shields
- [ ] various filling of blades



## TECHNICAL SPECIFICATION OF A LOUVERED VENT

List of active areas of selected vents\*

light entrance dimensions of mcr LAM			active areas
number of blades [pcs]	width [mm]	length [mm]	Aa [m <sup>2</sup> ]
4	800	500	0,23
5	1000	1000	0,62
5	1000	2000	1,27
7	1400	1400	1,24
9	1800	2000	2,32
10	2000	2500	3,24
15	3000	2000	3,89
15	3000	2500	4,88
19	3800	2500	6,18

\* immediate sizes possible

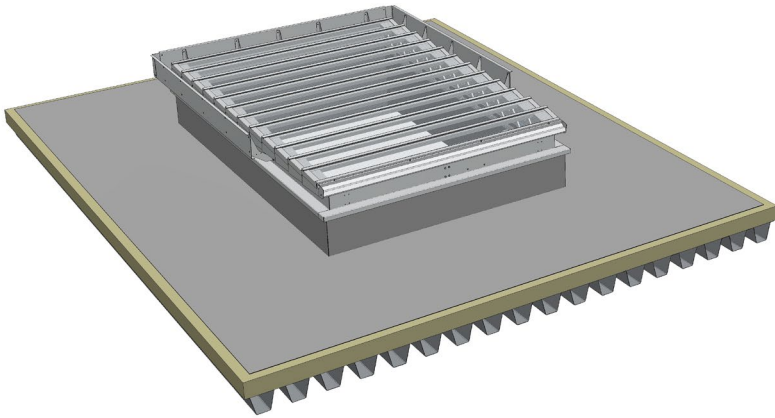
List of vent's weights with non-insulated aluminium bases

number of blades	length of blades								
	100 cm	120 cm	140 cm	160 cm	180 cm	200 cm	220 cm	240 cm	250 cm
5	33,0 kg	36,0 kg	39,0 kg	42,0 kg	45,0 kg	48,0 kg	51,0 kg	54,0 kg	57,0 kg
6	37,0 kg	40,5 kg	44,0 kg	47,5 kg	51,0 kg	54,5 kg	58,0 kg	61,5 kg	65,0 kg
7	41,0 kg	45,5 kg	49,0 kg	52,5 kg	56,0 kg	59,5 kg	63,0 kg	66,5 kg	70,0 kg
8	45,0 kg	50,5 kg	56,0 kg	61,5 kg	67,0 kg	72,5 kg	78,0 kg	83,5 kg	89,0 kg
9	49,0 kg	55,5 kg	61,0 kg	67,0 kg	73,0 kg	79,0 kg	85,0 kg	91,0 kg	97,0 kg
10	53,0 kg	59,0 kg	66,0 kg	72,5 kg	79,0 kg	85,5 kg	92,0 kg	98,5 kg	105,0 kg
11	57,0 kg	64,0 kg	71,0 kg	78,0 kg	85,0 kg	92,0 kg	99,0 kg	106,0 kg	113,0 kg
12	61,0 kg	68,5 kg	76,0 kg	83,5 kg	91,0 kg	98,5 kg	106,0 kg	113,5 kg	121,0 kg
13	65,0 kg	73,0 kg	81,0 kg	89,0 kg	97,0 kg	105,0 kg	113,0 kg	121,0 kg	129,0 kg
14	69,0 kg	77,5 kg	86,0 kg	94,5 kg	103,0 kg	111,5 kg	120,0 kg	128,5 kg	137,0 kg
15	73,0 kg	82,0 kg	91,0 kg	100,0 kg	109,0 kg	118,0 kg	127,0 kg	136,0 kg	145,0 kg

List of vent's weights with non-insulated galvanized steel bases

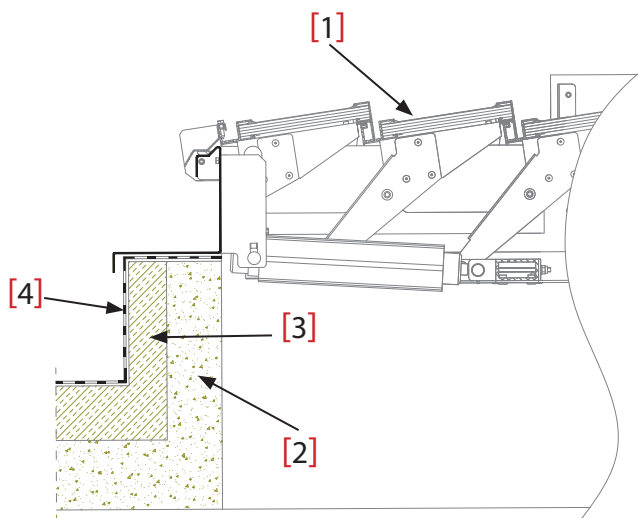
number of blades	length of blades								
	100 cm	120 cm	140 cm	160 cm	180 cm	200 cm	220 cm	240 cm	250 cm
5	48,5 kg	52,5 kg	56,5 kg	60,5 kg	64,5 kg	68,5 kg	72,5 kg	76,5 kg	80,5 kg
6	55,5 kg	60,0 kg	64,5 kg	69,0 kg	73,5 kg	78,0 kg	82,5 kg	87,0 kg	91,5 kg
7	62,5 kg	66,0 kg	70,5 kg	75,5 kg	79,5 kg	84,0 kg	88,5 kg	93,0 kg	97,5 kg
8	69,5 kg	76,0 kg	82,5 kg	89,0 kg	95,5 kg	102,0 kg	108,5 kg	115,0 kg	121,5 kg
9	76,5 kg	83,5 kg	90,5 kg	97,5 kg	104,5 kg	111,5 kg	118,5 kg	125,5 kg	132,5 kg
10	83,5 kg	91,0 kg	98,5 kg	106,0 kg	113,5 kg	121,0 kg	128,5 kg	136,0 kg	143,5 kg
11	90,5 kg	98,5 kg	106,5 kg	114,5 kg	122,5 kg	130,5 kg	138,5 kg	146,5 kg	154,5 kg
12	97,5 kg	106,0 kg	114,5 kg	123,0 kg	131,5 kg	140,0 kg	148,5 kg	157,0 kg	165,5 kg
13	104,5 kg	113,5 kg	122,5 kg	131,5 kg	140,5 kg	149,5 kg	158,5 kg	167,5 kg	176,5 kg
14	111,5 kg	121,0 kg	130,5 kg	140,0 kg	149,5 kg	159,0 kg	168,5 kg	178,0 kg	187,5 kg
15	118,5 kg	128,5 kg	138,5 kg	148,5 kg	158,5 kg	168,5 kg	178,5 kg	188,5 kg	198,5 kg

## INSTALLATION OF LOUVERED VENTS IN A ROOF



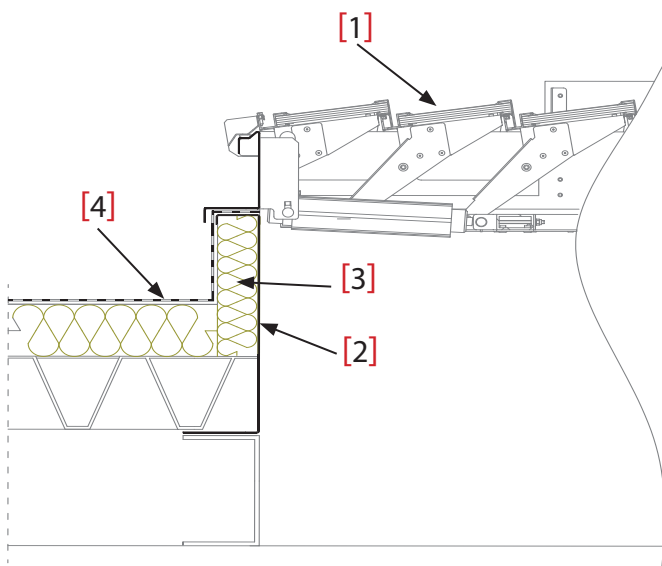
Louvered vents can be installed either on roofs or in facades. The installation method depends on the construction of the building. It is possible to install louvered vents on plinths, roofs covered with profiled steel sheets as well as roofs with bituminous or membrane roofing.

Before assembly of the vent user should get acquainted with guidelines described in operation and maintenance manual provided by producer.



- [1] louvered vent
- [2] plinth on the roof
- [3] thermal insulation of the plinth
- [4] waterproof insulation of the plinth and the roof

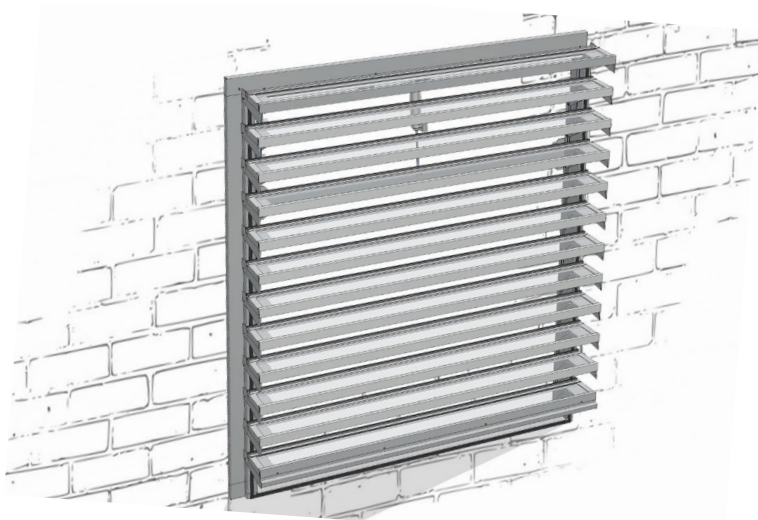
Fig. Installation of a non-insulated overlay base on an existing plinth.



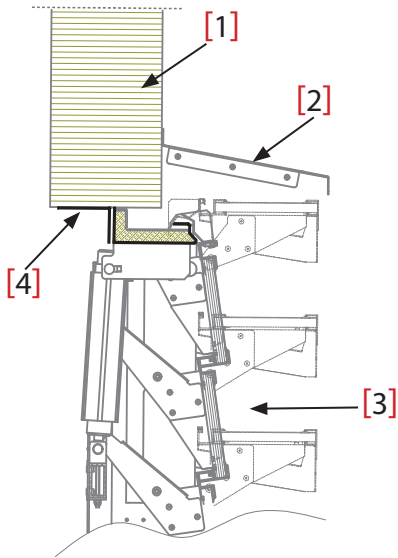
- [1] louvered vent
- [2] bottom base of the vent
- [3] thermal insulation
- [4] hydro insulation

Fig. Installation of a non-insulated overlay base together with a bottom base (supplied by Mercor).

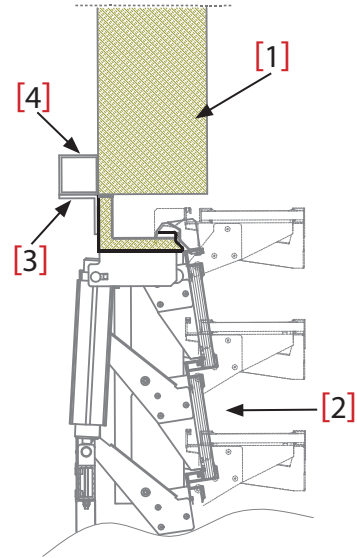
# INSTALLATION OF LOUVERED VENTS IN A FACADE



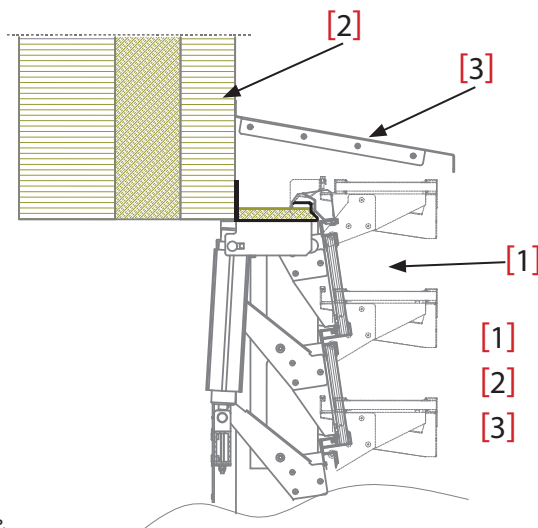
Before installing louvered vents in facades, it is recommended to consult the manufacturer in order to choose the best way of installation.



- [1] wall (facade)
- [2] rain shield (optional)
- [3] louvered vent
- [4] fixing angle profile



- [1] wall (facade)
- [2] louvered vent
- [3] fixing angle profile
- [4] support structure



- [1] louvered vent
- [2] wall (facade)
- [3] rain shield (optional)

Fig. Examples of installation louvered vents in facade.

## FIRE PROTECTION SYSTEMS

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

**WE PROVIDE  
TAILOR-MADE SOLUTIONS**



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