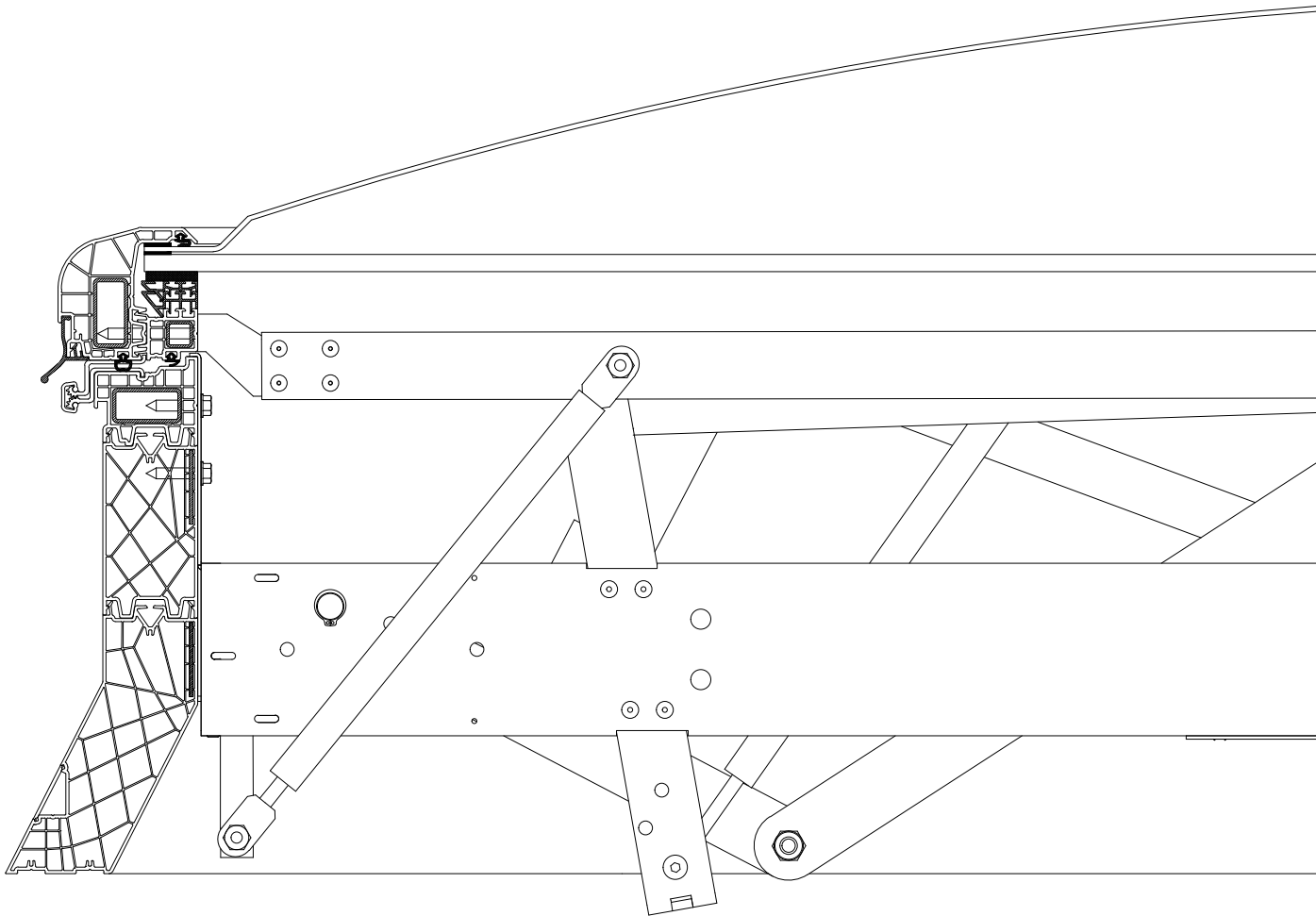


Technical Catalogue



mcr ULTRA THERM

HEAT REMOVAL AND SKYLIGHT SYSTEMS
SMOKE VENTS, FIXED SKYLIGHTS,
ROOF HATCHES, VENTILATION VENTS



Smoke exhaust and skylight systems
Technical Catalogue 03/2024

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Technical catalogue

2024

Dear Customers,

We are pleased to present to you the technical catalogue for smoke exhaust systems of the **mcr ULTRA THERM** product family. The product family comprises smoke vents, skylights, roof hatches and ventilation vents. In creating the range of these innovative products, we were guided by the knowledge of the best European specialists in designing and manufacturing PVC profiles. As a result, we succeeded not only in achieving excellent thermal insulation parameters, but also in eliminating thermal bridges from the product. Another characteristic feature of the mcr ULTRA THERM product family is high aesthetic appeal. This we obtained by using state-of-the-art technologies and materials with matching colors. With the wide range of available base models, leaf glazing and control types, the **mcr ULTRA THERM** products are characterized primarily by above-average functionality and versatility.

By giving this catalogue to you we believe that its form will make it easier for you to find the parameters and technical information of **mcr ULTRA THERM** products.

Each unit sent from "MERCOR" S.A production plants not only has the approval tests, but is also meticulously inspected to the highest standards of quality management before being shipped to the Client. We are proud to increase fire safety through the many years' presence of our products on the market.

Contact us today.
"MERCOR" S.A Team

Electronic copy
of Technical Catalogue available
at www.mercor.com.pl







1.1 Smoke vents mcr ULTRA THERM

Smoke vents are the main element of any natural smoke exhaust system; their purpose is to extract smoke, fire fumes and heat energy from enclosed areas to the outside of the building. They allow to:

- » maintain emergency routes in a state of moderate smoke level, permitting effective evacuation,
- » carry out rescue operations by locating fire,
- » reduce the risk of damaging or destroying the building structure by a sudden decrease in temperature.

The innovative mcr ULTRA THERM smoke vents with modular base made of PVC profiles with high degree of thermal insulation of down to 0.8 W/(m²K) provide superior product aesthetic from the inside and outside.

		Vent C / E	Vent NG-A	Vent with roof access C / E	Vent with roof access NG-A
Parameters					
Product classification	Certificate of Constancy of Performance (1396-CPR-0126) accordance with EN 12101-22	<ul style="list-style-type: none"> » Re300, Re168 – operational reliability during 300 or 168 opening and closing cycles to smoke exhaust position and 10,000 cycles to ventilation position (dual-function vent), » WL1500÷750 – constancy of performance of vents under wind load of 1500 Pa, 1250 Pa, 1000 Pa, 850 Pa or 750 Pa (depending on type, size and equipment), Certificate of Constancy of Performance » T(-25), T(-15), T(-05) lub T(00) – resistance of vents to low temperature of -25 °C, -15 °C, -5 °C or 0 °C, » B300 – resistance of vents to high temperature of 300 °C, » SL200, SL237, SL250, SL400, SL450, SL521, SL550, SL710, SL750, SL800, SL900 i SL950 – constancy of performance of vents under snow load, e.g.: 250 N/m², 550 N/m², 750 N/m², 800 N/m² lub 950 N/m² (depending on type of control, vent sizes and accessories). 			
Control	pneumatic (smoke removal)	●	●	-	-
	electric 24 V- / 48 V- (smoke exhaust + ventilation)	●	●	●	●
	electric 230 V~ (ventilation)	●	●	-	-
Glazing	multi-chamber polycarbonate panel	●	●	●	●
	acrylic dome*	●	●	●	●
	solid polycarbonate dome*	●	●	●	●
	ALU sandwich panel **, **	●	●	●	●
	1-layer acrylic dome and multi-chamber polycarbonate panel*	●	●	●	●
	1-layer solid polycarbonate dome and multi-chamber polycarbonate panel*	●	●	●	●
	2-layer acrylic dome and multi-chamber polycarbonate panel*	●	●	●	●
	2-layer solid polycarbonate dome and multi-chamber polycarbonate panel*	●	●	●	●

(*) Applies to selected vent dimensions

(**) ALU sandwich panel: aluminium sheet - thermal insulation - aluminium sheet

1.1.| Single-leaf smoke vents with straight steel base – type C, E

1.1.1.| Technical description of standard

- » CE-marked vent for natural smoke and heat extraction in accordance with EN 12101-2 with Certificate of Constancy of Performance No. 1396-CPR-0126,
- » smoke vents type C (square) and E (rectangular) designed for flat and pitched roofs (up to 30°), covered with roofing paper or PVC membrane,
- » straight base made of 1.25 mm thick galvanized steel sheet with a total height with frame of 300 mm or 500 mm,
- » bottom part of the base fitted with a 50 mm wide circumferential flange for mounting the vent on the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » base adapted for the installation of thermal insulation with a thickness of 50 mm,
- » leaf glazing: multi-chamber polycarbonate panel, acrylic dome, solid polycarbonate dome, multi-chamber polycarbonate panel with a 1- or 2-layer acrylic or solid polycarbonate dome, ALU sandwich panel (see chapter 4 – page 52 for details),
- » leaf frame made of white, multi-chamber, PVC profile system provides rigidity, strength and high thermal parameters,
- » vent leaf opening angle $\geq 140^\circ$,
- » hinges fixing the leaf to the base mounted on the longer side of the vent,
- » smoke exhaust control: pneumatic or electric 24 V- / 48 V-,
- » ventilation control: electric 230 V~,
- » possibility of increasing the active smoke exhaust area (A_a) by using wind deflectors or wind deflectors and an inlet deflector.

1.1.2.| Design of smoke vent

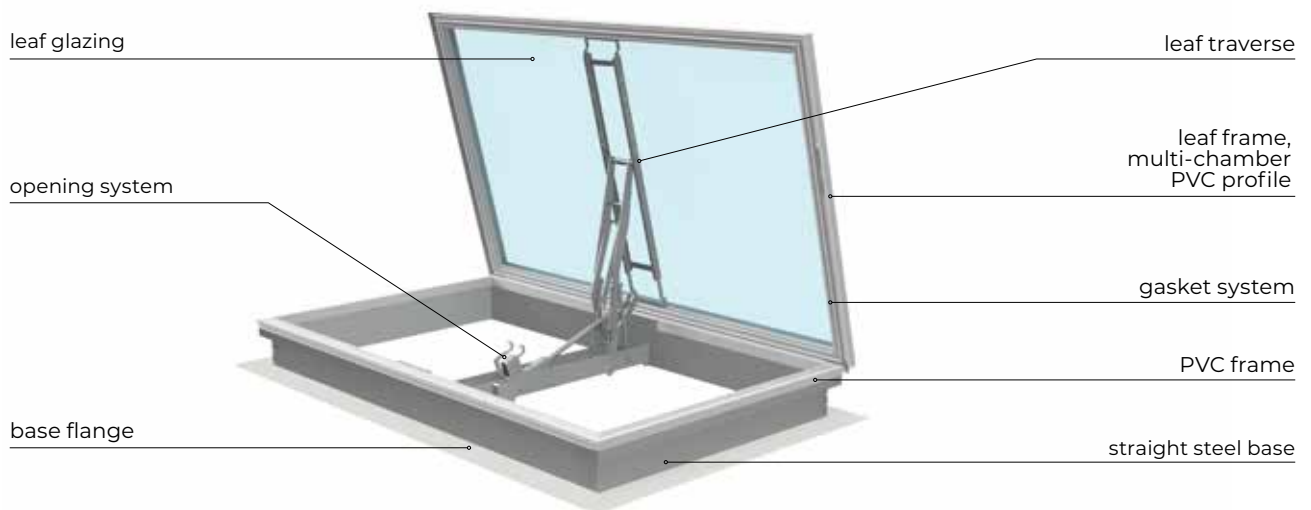


Fig. 1 Design of mcr ULTRA THERM E smoke vent with straight steel base

1.1.3.| Smoke vent options

- » custom clear opening dimensions,
- » base made of aluminium sheet,
- » custom steel and aluminium base height with frame in the range 250 ÷ 700 mm,
- » vent elements painted in any RAL color; applies to base, wind deflectors and inlet deflector,
- » change of base sheet thickness,
- » custom width of circumferential base flange in the range of 50 ÷ 100 mm,
- » selection of additional accessories (see chapter 5 – page 58 for details),
- » possibility of increasing the active aerodynamic area (A_a) by using wind deflectors or wind deflectors and inlet deflector,
- » vent with optional roof access, within the dimensional range specified in section 1.3 – page 17.

1.1.4. | **Smoke vent technical drawings**

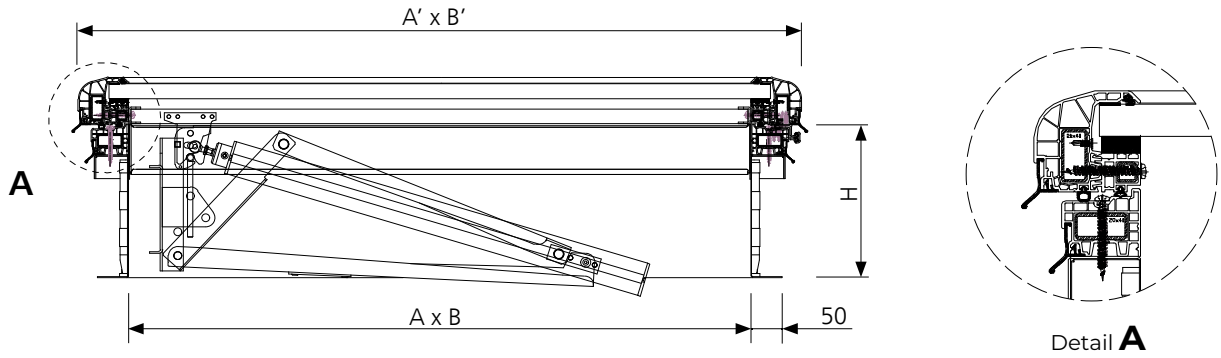


Fig. 2 Section **B-B** of mcr ULTRA THERM smoke vent in closed position, dimensions in mm

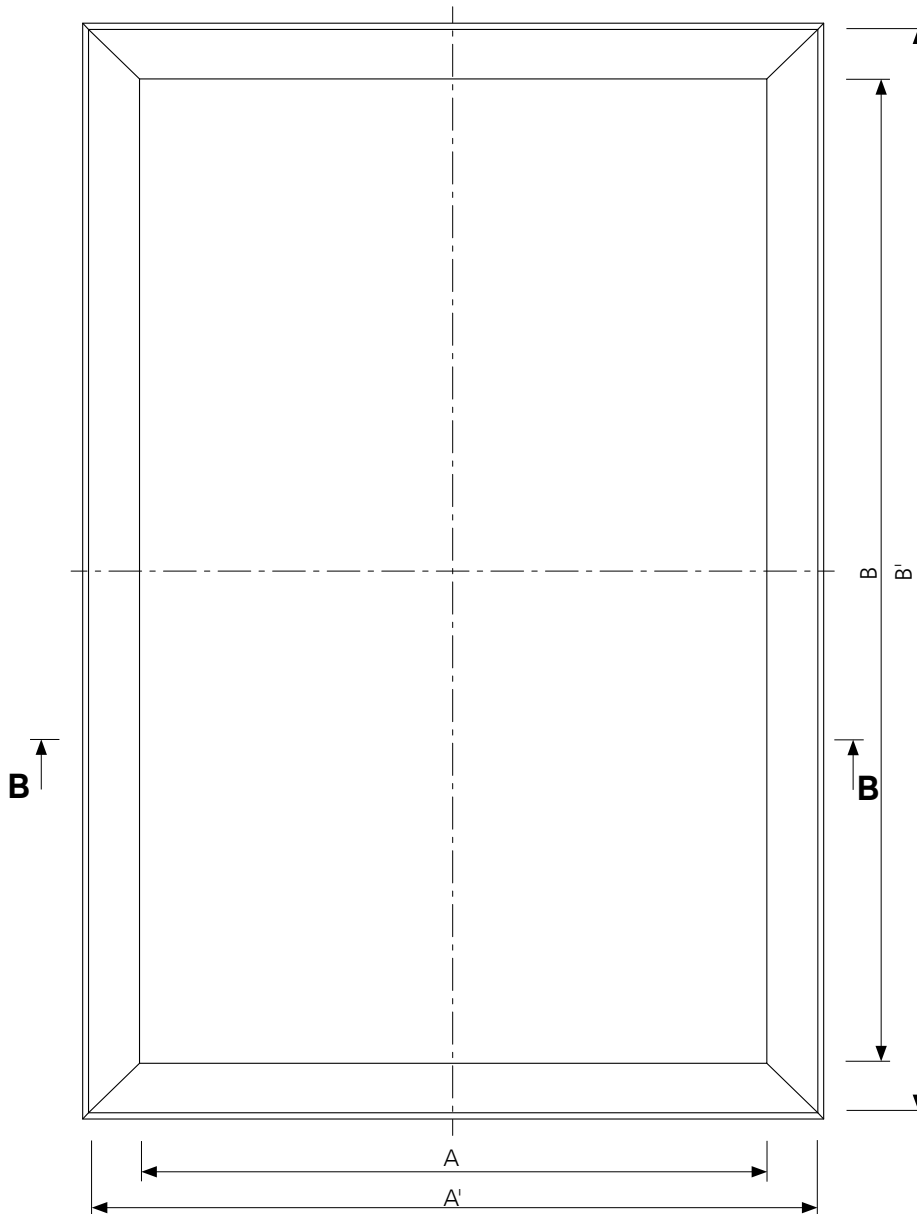


Fig. 3 Top view of mcr ULTRA THERM E smoke vent in closed position

- A, B – nominal dimension [mm], smoke vent clear opening
- A', B' – total dimension of smoke vent leaf without drip cap [mm] $A'=A+162$ mm, $B'=B+162$ mm
- H – smoke vent base height [mm], (taking into account the height of the PVC frame)

1.1.5. | Technical specification

VENT TYPE	NOMINAL DIMENSION	ACTIVE AREA A _a [m ²]						MASS(*)
	[A x B]	BASE WITH MIN. H=300 mm			BASE WITH MIN. H=500 mm			[kg]
	[mm]	WITHOUT DEFLECTORS	WIND DEFLECTORS	WIND DEFLECTORS AND INLET DEFLECTOR	WITHOUT DEFLECTORS	WIND DEFLECTORS	WIND DEFLECTORS AND INLET DEFLECTOR	
C 100	1000 x 1000	0.64	0.67	0.75	0.72	0.71	0.79	73
C 120	1200 x 1200	0.85	0.95	1.09	0.98	1.01	1.14	86
C 140	1400 x 1400	1.09	1.27	1.51	1.28	1.35	1.57	107
C 150	1500 x 1500	1.22	1.47	1.73	1.43	1.55	1.80	116
C 160	1600 x 1600	1.36	1.66	1.97	1.60	1.74	2.05	123
C 180	1800 x 1800	1.64	2.10	2.49	1.95	2.20	2.62	143
C 200	2000 x 2000	1.95	2.56	3.11	2.33	2.68	3.24	160
E 80/120	800 x 1200	0.38	-	-	0.38	-	-	72
E 90/120	900 x 1200	0.43	-	-	0.43	-	-	76
E 100/120	1000 x 1200	0.75	0.79	0.91	0.85	0.84	0.95	79
E 100/150	1000 x 1500	0.90	0.99	1.14	1.04	1.05	1.19	89
E 100/160	1000 x 1600	0.94	1.05	1.22	1.10	1.12	1.26	92
E 100/180	1000 x 1800	1.03	1.19	1.37	1.22	1.24	1.44	98
E 100/200	1000 x 2000	1.11	1.31	1.54	1.34	1.38	1.60	105
E 100/220	1000 x 2200	1.19	1.44	1.69	1.45	1.52	1.76	111
E 100/240	1000 x 2400	1.26	1.57	1.85	1.56	1.66	1.92	117
E 100/250	1000 x 2500	1.29	1.63	1.93	1.61	1.73	2.00	121
E 120/150	1200 x 1500	1.03	1.19	1.39	1.21	1.24	1.44	96
E 120/160	1200 x 1600	1.08	1.26	1.47	1.28	1.33	1.53	99
E 120/180	1200 x 1800	1.19	1.41	1.66	1.42	1.49	1.73	106
E 120/200	1200 x 2000	1.30	1.56	1.85	1.56	1.66	1.92	113
E 120/240	1200 x 2400	1.48	1.87	2.22	1.82	1.96	2.30	126
E 120/250	1200 x 2500	1.52	1.95	2.31	1.88	2.04	2.40	129
E 150/180	1500 x 1800	1.42	1.76	2.08	1.69	1.84	2.16	127
E 150/200	1500 x 2000	1.55	1.94	2.31	1.86	2.04	2.43	134
E 150/220	1500 x 2200	1.67	2.14	2.56	2.03	2.24	2.66	140
E 150/240	1500 x 2400	1.78	2.34	2.77	2.19	2.45	2.88	147
E 150/250	1500 x 2500	1.84	2.44	2.89	2.27	2.55	3.00	151
E 160/180	1600 x 1800	1.50	1.87	2.22	1.78	1.96	2.33	130
E 160/200	1600 x 2000	1.63	2.07	2.46	1.96	2.18	2.59	137
E 160/220	1600 x 2200	1.76	2.29	2.75	2.13	2.39	2.85	145
E 160/250	1600 x 2500	1.94	2.58	3.11	2.39	2.70	3.24	155
E 180/200	1800 x 2000	1.79	2.34	2.81	2.15	2.45	2.92	150
E 180/220	1800 x 2200	1.94	2.53	3.09	2.34	2.65	3.21	157
E 180/240	1800 x 2400	2.07	2.76	3.37	2.53	2.89	3.50	165
E 180/250	1800 x 2500	2.14	2.89	3.51	2.63	3.02	3.65	168
E 200/250	2000 x 2500	2.34	3.21	3.90	2.86	3.35	4.06	179

(*) Approximate mass given for a smoke vent with a base height of 300 mm with glazing of TYPE-1 mass in the form of double panel of multi-chamber polycarbonate or 1-layer acrylic dome (or solid polycarbonate) and 10 mm multi-chamber polycarbonate panel and pneumatic control.

1.1.6. | Smoke vents control

For proper operation, smoke vents and smoke + ventilation vents require connection to devices controlling their opening and closing. A set of these devices forms a system for controlling smoke exhaust or smoke exhaust + ventilation.

Depending on the type of devices used, it can be executed as:

- » pneumatic smoke control system,
- » electric 24 V- / 48 V- smoke control system with ventilation option,
- » pneumatic and electric control system; the pneumatic part is responsible for smoke extraction, the electric part 230 V~ for ventilation function.

Smoke control systems are triggered in the following way:

- » **automatic** – through a thermal fuse in the vent (pneumatic system) or through the triggering of optical smoke detectors (electric system),
- » **manual** – by releasing CO₂ cartridges in the alarm box (pneumatic system) or by using emergency pushbutton mcr RPO-1 (electrical system),
- » **fire alarm signal** – through an external impulse from the fire alarm system (FAS) sent to an electromagnet installed in the alarm box (pneumatic system) or directly to the smoke control panel (electrical system).

1.1.6.1 | Smoke vents pneumatic control

VENT TYPE	SL 550			SL 750			SL 950		
	PNEUMATIC ACTUATOR		MIN. CO ₂ CARTRIDGE SIZE	PNEUMATIC ACTUATOR		MIN. CO ₂ CARTRIDGE SIZE	PNEUMATIC ACTUATOR		MIN. CO ₂ CARTRIDGE SIZE
	STROKE	DIAMETER		STROKE	DIAMETER		STROKE	DIAMETER	
	[mm]	[mm]	[g]	[mm]	[mm]	[g]	[mm]	[mm]	[g]
C 100	640 / 629	40 / 56	24 / 24	640 / 629	40 / 56	24 / 40	640 / 629	40 / 56	24 / 55
C 120	640 / 744	50 / 56	40 / 40	640 / 744	50 / 56	24 / 55	640 / 744	50 / 56	40 / 80
C 140	840 / 879	50 / 56	40 / 80	840 / 876	50 / 63	40 / 80	840 / 960	63 / 56	40 / 120
C 150	840 / 876	50 / 63	55 / 80	840 / 960	63 / 56	40 / 80	840 / 960	63 / 56	55 / 120
C 160	1200 / 1001	50 / 63	55 / 120	1200 / 1105	50 / 56	55 / 80	1200 / 1105	63 / 63	55 / 120
C 180	1200 / 1240	50 / 63	80 / 120	1200 / 1240	63 / 63	80 / 120	1200 / -	63 / -	80 / -
C 200	1470 / 1240	63 / 63	120 / 120	1470 / -	63 / -	80 / -	- / -	- / -	- / -
E 80/120	500 / 540	40 / 56	24 / 24	500 / 540	40 / 56	24 / 40	500 / 540	40 / 56	24 / 55
E 90/120	500 / 540	40 / 56	24 / 24	500 / 540	40 / 56	24 / 40	500 / 540	50 / 56	24 / 55
E 100/120	640 / 629	40 / 56	24 / 24	640 / 629	40 / 56	24 / 40	640 / 629	50 / 56	24 / 55
E 100/150	641 / 629	40 / 56	24 / 40	640 / 629	50 / 56	24 / 40	640 / 629	50 / 56	24 / 55
E 100/160	642 / 629	40 / 56	40 / 40	640 / 629	50 / 56	24 / 40	640 / 629	50 / 56	40 / 55
E 100/180	643 / 629	50 / 56	40 / 40	640 / 629	50 / 56	24 / 40	640 / 629	50 / 56	40 / 55
E 100/200	644 / 629	50 / 56	40 / 40	640 / 629	50 / 56	40 / 55	640 / -	63 / -	40 / -
E 100/220	645 / 629	50 / 56	40 / 40	640 / 629	50 / 56	40 / 55	640 / -	63 / -	40 / -
E 100/240	646 / 629	50 / 56	40 / 55	640 / 629	50 / 63	40 / 55	- / -	- / -	- / -
E 100/250	647 / 629	50 / 56	40 / 55	640 / 629	63 / 63	40 / 55	- / -	- / -	- / -
E 120/150	640 / 744	50 / 56	40 / 55	640 / 744	50 / 56	40 / 55	640 / 741	63 / 63	40 / 80
E 120/160	640 / 744	50 / 56	40 / 55	640 / 744	50 / 56	40 / 55	- / 741	- / 63	- / 80
E 120/180	640 / 744	50 / 56	40 / 55	640 / 741	63 / 63	40 / 55	- / -	- / -	- / -
E 120/200	640 / 744	50 / 56	40 / 55	- / 741	- / 63	- / 55	- / -	- / -	- / -
E 120/240	640 / 741	63 / 63	55 / 80	- / -	- / -	- / 55	- / -	- / -	- / -
E 120/250	640 / 741	63 / 63	55 / 80	- / -	- / -	- / 80	- / -	- / -	- / -
E 150/180	840 / 876	50 / 63	55 / 120	840 / 960	63 / 56	55 / 80	840 / 960	63 / 63	55 / 120
E 150/200	840 / 960	63 / 56	80 / 80	840 / 960	63 / 63	55 / 80	840 / -	63 / -	80 / -
E 150/220	840 / 960	63 / 56	80 / 80	840 / 960	63 / 63	55 / 120	- / -	- / -	- / -
E 150/240	840 / 960	63 / 56	80 / 80	840 / 960	63 / 63	80 / 120	- / -	- / -	- / -
E 150/250	840 / 960	63 / 56	80 / 80	840 / -	63 / -	80 / -	- / -	- / -	- / -
E 160/180	1200 / 1105	50 / 56	80 / 80	1200 / 1105	50 / 56	55 / 120	1200 / 1105	63 / 63	80 / 150
E 160/200	1200 / 1105	50 / 56	80 / 80	1200 / 1105	63 / 63	55 / 120	1200 / 1105	63 / 63	80 / 150
E 160/220	1200 / 1105	50 / 56	80 / 80	1200 / 1105	63 / 63	55 / 120	1200 / -	63 / -	80 / -
E 160/250	1200 / 1105	63 / 56	80 / 120	1200 / 1105	63 / 63	80 / 120	1200 / -	63 / -	80 / -
E 180/200	1200 / 1240	63 / 63	80 / 120	1200 / 1240	63 / 63	80 / 150	1200 / -	63 / -	80 / -
E 180/220	1200 / 1240	63 / 63	120 / 120	1200 / -	63 / -	80 / -	- / -	- / -	- / -
E 180/240	1200 / 1240	63 / 63	120 / 120	1200 / -	63 / -	80 / -	- / -	- / -	- / -
E 180/250	1200 / 1240	63 / 63	120 / 120	1200 / -	63 / -	80 / -	- / -	- / -	- / -
E 200/250	1470 / -	63 / -	120 / -	- / -	- / -	- / -	- / -	- / -	- / -

The data in the table above refers to smoke vents with TYPE-1 mass glazing in the form of: 2-layer multi-chamber polycarbonate panel or 1-layer acrylic (or solid polycarbonate) dome and 10 mm multi-chamber polycarbonate panel.

The table shows the data of actuators from two manufacturers, respectively: GRASL/JOFO.

1.1.6.2. | Electric control of smoke vents

VENT TYPE	POWER CONSUMPTION OF ELECTRIC ACTUATOR FOR CLASS			
	SL 250		SL 550	
	GLAZING TYPE-1	GLAZING TYPE-2	GLAZING TYP-1	GLAZING TYPE-2
	[A]	[A]	[A]	[A]
C 100	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
C 120	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
C 140	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
C 150	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
C 160	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
C 180	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
C 200	2x4.0 / 8.0	2x4.0 / 8.0	- / 2x4.0	- / 2x8.0
E 80/120	2.5 / 2.0	2.5 / 2.0	2.5 / 2.0	2.5 / 2.0
E 90/120	4.0 / 2.0	4.0 / 2.0	4.0 / 2.0	4.0 / 2.0
E 100/120	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 100/150	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 100/160	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 100/180	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 100/200	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 100/220	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 100/240	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 100/250	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 120/150	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 120/160	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 120/180	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 120/200	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 120/240	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
E 120/250	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 8.0
E 150/180	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
E 150/200	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
E 150/220	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
E 150/240	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 2x4.0
E 150/250	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
E 160/180	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
E 160/200	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
E 160/220	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
E 160/250	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
E 180/200	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
E 180/220	4.0 / 4.0	4.0 / 8.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
E 180/240	4.0 / 8.0	4.0 / 8.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
E 180/250	4.0 / 8.0	2x4.0 / 8.0	2x4.0 / 2x4.0	2x4.0 / 2x8.0
E 200/250	2x4.0 / 8.0	2x4.0 / 8.0	- / 2x8.0	- / 2x8.0

The data in the above table refer to electrically operated 24 V- smoke vents with the following glazing:

- TYPE-1 in the form of a 2-layer multi-chamber polycarbonate panel or 1-layer acrylic (or solid polycarbonate) dome and 10 mm multi-chamber polycarbonate panel.
- TYPE-2 in the form of a 2-layer acrylic dome, solid polycarbonate dome or mix, or a 1-layer acrylic (or solid polycarbonate) dome and multi-chamber polycarbonate panel 16 mm or 20 mm or 25 mm.

The table shows the data of actuators from two manufacturers, respectively: ACTULUX/GRASL.

1.2. | Smoke vents with skew base – type NG-A

1.2.1. | Technical description of standard

- » CE-marked vent for natural smoke and heat extraction in accordance with EN 12101-2 with Certificate of Constancy of Performance No. 1396-CPR-0126,
- » smoke vents type NG-A (square and rectangular) designed for flat and pitched roofs (up to 15°), covered with roofing paper or PVC membrane,
- » skew base with total height with a frame 300 mm or 500 mm, made of:
 - white, multi-chamber, PVC profile system with high thermal insulation properties, not requiring additional insulation or
 - 1.25 mm thick galvanized steel sheet suitable for mounting thermal insulation of thickness 50 mm,
- » mounting groove in the lower part of the PVC base; a 50 mm wide circumferential flange in the steel base, for mounting the vent on the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » leaf glazing: multi-chamber polycarbonate panel, acrylic dome, solid polycarbonate dome, multi-chamber polycarbonate panel with a 1- or 2-layer acrylic or solid polycarbonate dome, ALU sandwich panel (see chapter 4 – page 52 for details),
- » leaf frame made of white, multi-chamber, PVC profile system provides rigidity, strength and high thermal parameters,
- » vent leaf opening angle $\geq 140^\circ$,
- » hinges fixing the leaf to the base mounted on the longer side of the vent,
- » smoke exhaust control: pneumatic or electric 24 V- / 48 V-
- » ventilation control: electric 230 V~,
- » possibility of increasing the active smoke exhaust area (A_a) by using wind deflectors.

1.2.2. | Design of smoke vent

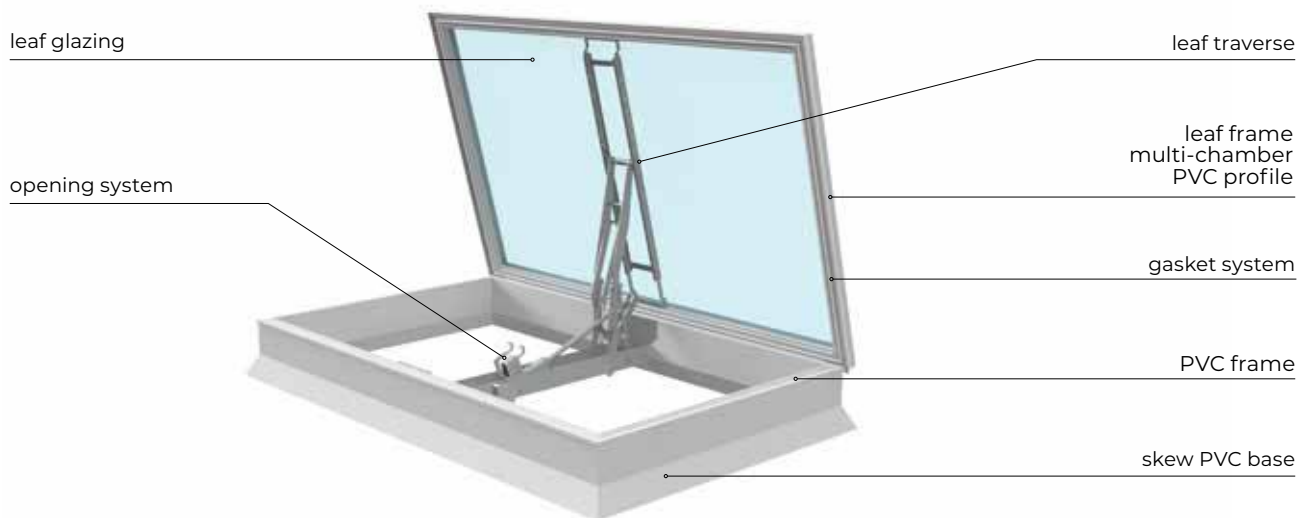


Fig. 4 Design of mcr ULTRA THERM NG-A smoke vent with skew PVC base

1.2.3. | Smoke vent options

- » custom clear opening dimensions,
- » base made of aluminium sheet,
- » custom total height of base with frame in the range 250 ÷ 700 mm,
- » vent elements painted in any color from the RAL palette: applies to deflectors and metal base,
- » change of steel or aluminium base sheet thickness,
- » custom width of circumferential steel base flange in the range of 50 ÷ 100 mm,
- » selection of additional accessories (see chapter 5 – page 58 for details),
- » possibility of increasing the active area of smoke exhaust (A_a) through the use of wind deflectors,
- » vent with optional roof access, within the dimensional range specified in section 1.3 – page 17.

1.2.4. | **Smoke vent technical drawings**

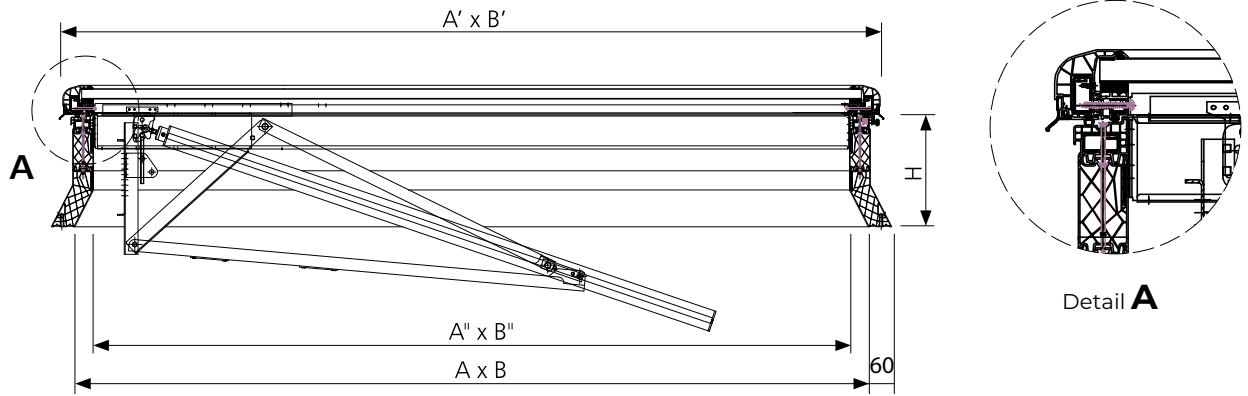


Fig. 5 Section **B-B** of mcr ULTRA THERM smoke vent in closed position

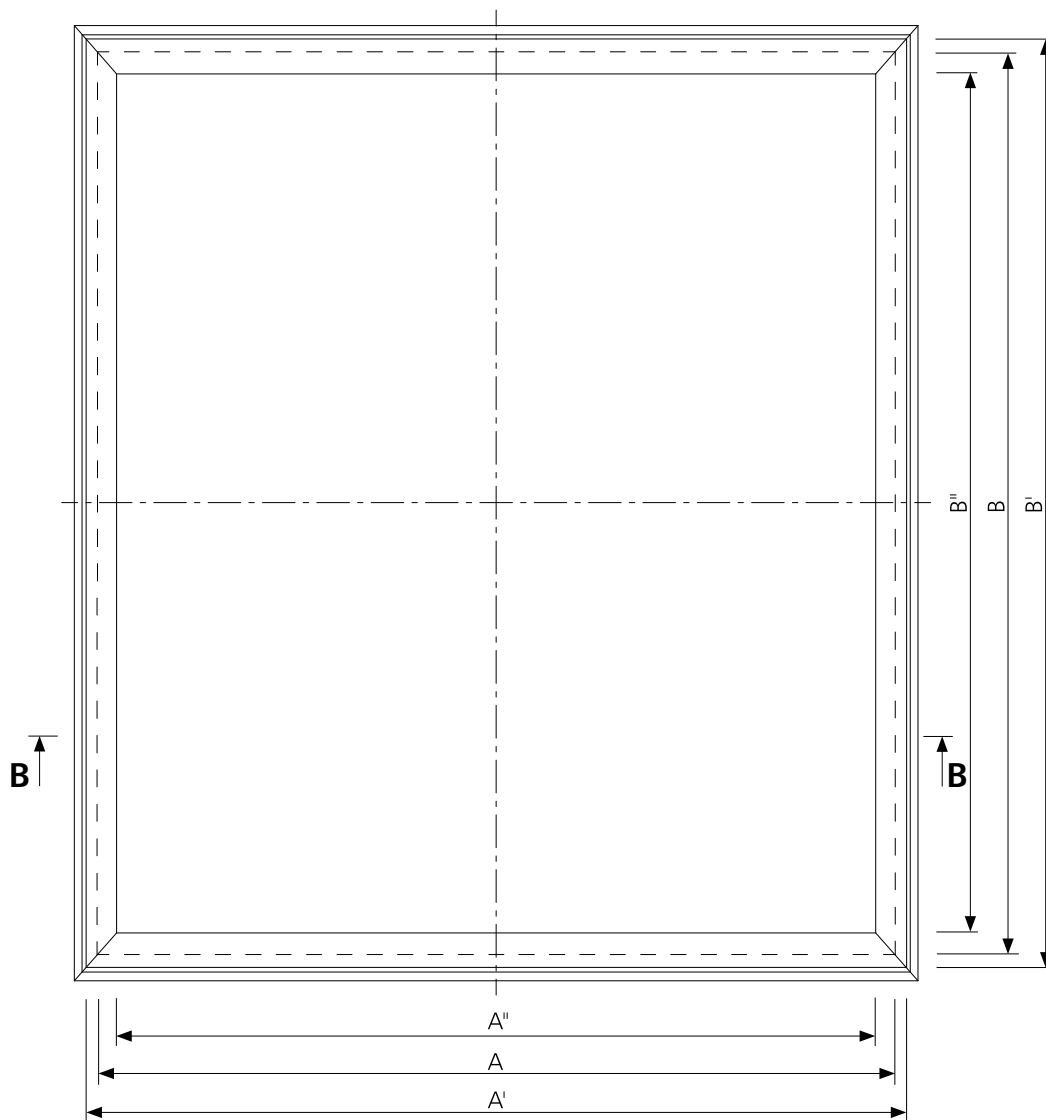


Fig. 6 Top view of mcr ULTRA THERM NG-A vent in closed position

- A, B – nominal dimension [mm], smoke vent clear opening
- A', B' – total dimension of smoke vent leaf [mm]
- A'', B'' – clear upper opening dimension of smoke vent [mm] A'' = A - 100 mm, B'' = B - 100 mm
- H – smoke vent base height [mm], (taking into account the height of the PVC frame)

1.2.5. | Technical specification

VENT TYPE	NOMINAL DIMENSION	ACTIVE AREA A _a [m ²]				MASS(*)
	[A x B]	BASE WITH MIN. H=300 mm		BASE WITH MIN. H=500 mm		[kg]
	[mm]	WITHOUT DEFLECTORS	WITH DEFLECTORS	WITHOUT DEFLECTORS	WITH DEFLECTORS	
NG-A 80/120	800 x 1200	0.34	0.57	0.34	0.57	66
NG-A 90/120	900 x 1200	0.53	0.70	0.53	0.70	70
NG-A 100/100	1000 x 1000	0.40	0.66	0.40	0.66	67
NG-A 100/120	1000 x 1200	0.48	0.79	0.48	0.82	73
NG-A 100/150	1000 x 1500	0.60	1.01	0.60	1.04	82
NG-A 100/160	1000 x 1600	0.64	1.09	0.64	1.10	86
NG-A 100/180	1000 x 1800	0.72	1.22	0.72	1.26	92
NG-A 100/200	1000 x 2000	0.80	1.36	0.80	1.40	98
NG-A 100/220	1000 x 2200	0.88	1.52	0.88	1.56	104
NG-A 100/240	1000 x 2400	0.96	1.66	0.96	1.70	111
NG-A 100/250	1000 x 2500	1.00	1.73	1.00	1.78	114
NG-A 120/120	1200 x 1200	0.58	0.96	0.58	0.99	80
NG-A 120/150	1200 x 1500	0.72	1.22	0.72	1.26	82
NG-A 120/160	1200 x 1600	0.77	1.32	0.77	1.35	93
NG-A 120/180	1200 x 1800	0.86	1.49	0.86	1.53	99
NG-A 120/200	1200 x 2000	0.96	1.66	0.96	1.73	106
NG-A 120/240	1200 x 2400	1.15	2.02	1.15	2.07	119
NG-A 120/250	1200 x 2500	1.20	2.10	1.20	2.16	122
NG-A 140/140	1400 x 1400	0.78	1.35	0.78	1.39	101
NG-A 150/150	1500 x 1500	0.90	1.55	0.90	1.62	109
NG-A 150/180	1500 x 1800	1.08	1.89	1.08	1.94	120
NG-A 150/200	1500 x 2000	1.20	2.10	1.20	2.19	127
NG-A 150/220	1500 x 2200	1.32	2.34	1.32	2.41	133
NG-A 150/240	1500 x 2400	1.44	2.56	1.44	2.66	140
NG-A 150/250	1500 x 2500	1.50	2.66	1.50	2.78	144
NG-A 150/280	1500 x 2800	-	2.98	-	3.11	154
NG-A 150/300	1500 x 3000	-	3.20	-	3.22	161
NG-A 160/160	1600 x 1600	1.02	1.79	1.02	1.84	117
NG-A 160/180	1600 x 1800	1.15	2.02	1.15	2.10	124
NG-A 160/200	1600 x 2000	1.28	2.27	1.28	2.34	130
NG-A 160/220	1600 x 2200	1.41	2.50	1.41	2.60	137
NG-A 160/250	1600 x 2500	1.60	2.84	1.60	2.96	148
NG-A 160/280	1600 x 2800	-	3.18	-	3.32	158
NG-A 160/300	1600 x 3000	-	3.46	-	3.60	165
NG-A 180/180	1800 x 1800	1.30	2.30	1.30	2.37	136
NG-A 180/200	1800 x 2000	1.44	2.56	1.44	2.66	143
NG-A 180/220	1800 x 2200	1.58	2.81	1.58	2.93	150
NG-A 180/240	1800 x 2400	1.73	3.07	1.73	3.20	157
NG-A 180/250	1800 x 2500	1.80	3.24	1.80	3.38	161
NG-A 180/280	1800 x 2800	-	3.63	-	3.78	172
NG-A 180/300	1800 x 3000	-	3.89	-	4.05	179
NG-A 200/200	2000 x 2000	1.60	2.84	1.60	2.96	153
NG-A 200/250	2000 x 2500	2.00	3.60	2.00	3.75	171
NG-A 200/280	2000 x 2800	-	4.03	-	4.20	183
NG-A 200/300	2000 x 3000	-	4.32	-	4.56	190
NG-A 210/210	2100 x 2100	1.76	3.18	1.76	3.31	161

(*) Approximate mass given for a 300 mm high smoke vent with TYPE-1 glazing in the form of a 2-layer multi-chamber polycarbonate panel or 1-layer acrylic dome or solid polycarbonate dome and 10 mm multi-chamber polycarbonate panel and with pneumatic control.

1.2.6. | Smoke vents control

For proper operation, smoke vents and smoke + ventilation vents require connection to devices controlling their opening and closing. A set of these devices forms a system for controlling smoke exhaust or smoke exhaust + ventilation.

Depending on the type of devices used, it can be executed as:

- » pneumatic smoke control system,
- » electric 24 V- / 48 V- smoke control system with ventilation option,
- » pneumatic and electric control system; the pneumatic part is responsible for smoke extraction, the electric part 230 V~ for ventilation function.

Smoke control systems are triggered in the following way:

- » **automatic** – through a thermal fuse in the vent (pneumatic system) or through the triggering of optical smoke detectors (electric system),
- » **manual** – by releasing CO₂ cartridges in the alarm box (pneumatic system) or by using emergency pushbutton mcr RPO-1 (electric system),
- » **fire alarm signal** – through an external impulse from the fire alarm system (FAS) sent to an electromagnet installed in the alarm box (pneumatic system) or directly to the smoke control panel (electrical system).

1.2.6.1. | Pneumatic control of smoke vents

VENT TYPE	SL 550*			SL 750*			SL 950*		
	PNEUMATIC ACTUATOR		MIN.CO ₂ CARTRIDGE SIZE	PNEUMATIC ACTUATOR		MIN. CO ₂ CARTRIDGE SIZE	PNEUMATIC ACTUATOR		MIN. CO ₂ CARTRIDGE SIZE
	STROKE	DIAMETER		STROKE	DIAMETER		STROKE	DIAMETER	
[mm]	[mm]	[g]	[mm]	[mm]	[g]	[mm]	[mm]	[g]	
NG-A 80/120	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
NG-A 90/120	500 / -	40 / -	24 / -	500 / -	40 / -	24 / -	500 / -	40 / -	24 / -
NG-A 100/100	500 / 540	40 / 56	24 / 24	500 / 540	40 / 56	24 / 24	500 / 540	40 / 56	24 / 40
NG-A 100/120	500 / 540	40 / 56	24 / 24	500 / 540	40 / 56	24 / 24	500 / 540	50 / 56	24 / 40
NG-A 100/150	500 / 540	40 / 56	24 / 40	500 / 540	50 / 56	24 / 24	500 / 540	50 / 56	24 / 40
NG-A 100/160	500 / 540	50 / 56	40 / 40	500 / 540	50 / 56	24 / 24	500 / 540	50 / 63	24 / 40
NG-A 100/180	500 / 540	50 / 56	40 / 40	500 / 540	50 / 56	24 / 24	500 / 540	50 / 63	24 / 40
NG-A 100/200	500 / 540	50 / 56	40 / 40	500 / 540	50 / 63	24 / 24	- / 540	- / 63	- / 40
NG-A 100/220	500 / 540	50 / 56	40 / 40	500 / 540	50 / 63	24 / 24	- / -	- / -	- / -
NG-A 100/240	500 / 540	50 / 56	40 / 40	- / 540	- / 63	- / 40	- / -	- / -	- / -
NG-A 100/250	500 / 540	50 / 63	40 / 55	- / -	- / -	- / -	- / -	- / -	- / -
NG-A 120/120	640 / 629	40 / 56	40 / 40	640 / 629	40 / 56	24 / 40	640 / 629	50 / 56	24 / 55
NG-A 120/150	640 / 629	40 / 56	40 / 40	640 / 629	50 / 56	24 / 40	640 / 629	50 / 56	40 / 55
NG-A 120/160	640 / 629	50 / 56	40 / 40	640 / 629	50 / 56	24 / 40	640 / 629	50 / 56	40 / 55
NG-A 120/180	640 / 629	50 / 56	40 / 40	640 / 629	50 / 56	40 / 55	640 / -	63 / -	40 / -
NG-A 120/200	640 / 629	50 / 56	40 / 40	640 / 629	50 / 56	40 / 55	- / -	- / -	- / -
NG-A 120/240	640 / 629	50 / 56	55 / 55	640 / -	63 / -	40 / -	- / -	- / -	- / -
NG-A 120/250	640 / 629	50 / 56	55 / 55	- / -	- / -	- / -	- / -	- / -	- / -
NG-A 140/140	840 / 744	50 / 56	40 / 55	840 / 744	50 / 56	40 / 80	840 / 741	50 / 63	40 / 120
NG-A 150/150	840 / 879	50 / 56	55 / 80	840 / 876	50 / 63	40 / 80	840 / 960	63 / 56	40 / 120
NG-A 150/180	840 / 876	50 / 63	55 / 80	840 / 960	50 / 56	40 / 80	840 / 960	63 / 63	55 / 120
NG-A 150/200	840 / 876	50 / 63	80 / 80	840 / 960	63 / 56	55 / 80	840 / 960	63 / 63	55 / 120
NG-A 150/220	840 / 876	50 / 63	80 / 120	840 / 960	63 / 63	55 / 80	840 / 960	63 / 63	55 / 120
NG-A 150/240	840 / 960	63 / 56	80 / 80	840 / 960	63 / 63	55 / 120	- / -	- / -	- / -
NG-A 150/250	840 / 960	63 / 56	80 / 80	840 / 960	63 / 63	55 / 120	- / -	- / -	- / -
NG-A 150/280	840 / 960	63 / 63	80 / 80	840 / -	63 / -	80 / -	- / -	- / -	- / -
NG-A 150/300	840 / 960	63 / 63	120 / 120	- / -	- / -	- / -	- / -	- / -	- / -
NG-A 160/160	840 / 876	50 / 63	55 / 80	840 / 960	63 / 56	40 / 80	840 / 960	63 / 63	55 / 120
NG-A 160/180	840 / 876	50 / 63	80 / 120	840 / 960	63 / 56	55 / 80	840 / 960	63 / 63	55 / 120
NG-A 160/200	840 / 960	50 / 56	80 / 80	840 / 960	63 / 63	55 / 120	840 / -	63 / -	80 / -
NG-A 160/220	840 / 960	63 / 56	80 / 80	840 / 960	63 / 63	55 / 120	- / -	- / -	- / -
NG-A 160/250	840 / 960	63 / 63	80 / 80	840 / -	63 / -	80 / -	- / -	- / -	- / -
NG-A 160/280	840 / 960	63 / 63	120 / 120	- / -	- / -	- / -	- / -	- / -	- / -
NG-A 180/180	1200 / 1105	50 / 56	80 / 80	1200 / 1105	63 / 63	55 / 120	1200 / 1105	63 / 63	80 / 150
NG-A 180/200	1200 / 1105	50 / 56	80 / 80	1200 / 1105	63 / 63	55 / 120	1200 / -	63 / -	80 / -
NG-A 180/220	1200 / 1105	50 / 56	120 / 120	1200 / 1105	63 / 63	80 / 120	1200 / -	63 / -	80 / -
NG-A 180/240	1200 / 1105	63 / 63	120 / 120	1200 / -	63 / -	80 / -	1200 / -	63 / -	80 / -
NG-A 180/250	1200 / 1105	63 / 63	120 / 120	1200 / -	63 / -	80 / -	- / -	- / -	- / -
NG-A 180/280	1200 / 1105	63 / 63	120 / 120	1200 / -	63 / -	80 / -	- / -	- / -	- / -
NG-A 180/300	1200 / 1105	63 / 63	120 / 120	- / -	- / -	- / -	- / -	- / -	- / -
NG-A 200/200	1200 / 1240	63 / 63	120 / 120	1200 / -	63 / -	80 / -	- / -	- / -	- / -
NG-A 200/250	1200 / 1240	63 / 63	120 / 150	- / -	- / -	- / -	- / -	- / -	- / -
NG-A 200/280	1200 / -	63 / -	150 / -	- / -	- / -	- / -	- / -	- / -	- / -
NG-A 200/300	1200 / -	63 / -	150 / -	- / -	- / -	- / -	- / -	- / -	- / -
NG-A 210/210	1470 / 1240	63 / 63	150 / 120	1470 / -	63 / -	80 / -	- / -	- / -	- / -

* The data in the table above are given for a smoke vent with 2-layer multi-chamber polycarbonate panel or solid polycarbonate dome with 1-layer acrylic dome or solid polycarbonate dome.

1.2.6.2. | **Electric control of smoke vents**

VENT TYPE	POWER CONSUMPTION OF ELECTRIC ACTUATOR FOR CLASS			
	SL 250		SL 550	
	GLAZING TYPE-1	GLAZING TYPE-2	GLAZING TYPE-1	GLAZING TYPE-2
	[A]	[A]	[A]	[A]
NG-A 80/120	2.5 / 2.0	2.5 / 2.0	2.5 / 2.0	2.5 / 2.0
NG-A 90/120	2.5 / 2.0	2.5 / 2.0	2.5 / 2.0	2.5 / 2.0
NG-A 100/100	4.0 / 2.0	4.0 / 2.0	4.0 / 2.0	4.0 / 2.0
NG-A 100/120	4.0 / 2.0	4.0 / 2.0	4.0 / 2.0	4.0 / 2.0
NG-A 100/150	4.0 / 2.0	4.0 / 2.0	4.0 / 4.0	4.0 / 4.0
NG-A 100/160	4.0 / 2.0	4.0 / 2.0	4.0 / 4.0	4.0 / 4.0
NG-A 100/180	4.0 / 2.0	4.0 / 2.0	4.0 / 4.0	4.0 / 4.0
NG-A 100/200	4.0 / 2.0	4.0 / 2.0	4.0 / 4.0	4.0 / 4.0
NG-A 100/220	4.0 / 2.0	4.0 / 2.0	4.0 / 4.0	4.0 / 4.0
NG-A 100/240	4.0 / 2.0	4.0 / 2.0	4.0 / 4.0	4.0 / 4.0
NG-A 100/250	4.0 / 2.0	4.0 / 2.0	4.0 / 4.0	4.0 / 4.0
NG-A 120/120	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
NG-A 120/150	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
NG-A 120/160	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
NG-A 120/180	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
NG-A 120/200	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
NG-A 120/240	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
NG-A 120/250	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
NG-A 140/140	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
NG-A 150/150	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0	4.0 / 4.0
NG-A 150/180	4.0 / 4.0	4.0 / 4.0	2x4.0 / 4.0	2x4.0 / 4.0
NG-A 150/200	4.0 / 4.0	4.0 / 4.0	2x4.0 / 4.0	2x4.0 / 8.0
NG-A 150/220	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
NG-A 150/240	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
NG-A 150/250	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
NG-A 150/280	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
NG-A 150/300	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
NG-A 160/160	4.0 / 4.0	4.0 / 4.0	2x4.0 / 4.0	2x4.0 / 4.0
NG-A 160/180	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
NG-A 160/200	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
NG-A 160/220	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
NG-A 160/250	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 2x4.0
NG-A 160/280	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
NG-A 160/300	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
NG-A 180/180	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 8.0
NG-A 180/200	4.0 / 4.0	4.0 / 4.0	2x4.0 / 8.0	2x4.0 / 2x4.0
NG-A 180/220	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
NG-A 180/240	4.0 / 4.0	4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
NG-A 180/250	4.0 / 4.0	2x4.0 / 4.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
NG-A 180/280	2x4.0 / 8.0	2x4.0 / 8.0	2x4.0 / 2x4.0	2x4.0 / 2x4.0
NG-A 180/300	2x4.0 / 8.0	2x4.0 / 8.0	- / 2x8.0	- / 2x8.0
NG-A 200/200	2x4.0 / 4.0	2x4.0 / 4.0	- / 2x4.0	- / 2x4.0
NG-A 200/250	2x4.0 / 8.0	2x4.0 / 8.0	- / 2x8.0	- / 2x8.0
NG-A 200/280	2x4.0 / 8.0	2x4.0 / 8.0	- / 2x8.0	- / 2x8.0
NG-A 200/300	2x4.0 / 8.0	2x4.0 / 2x4.0	- / 2x8.0	- / 2x8.0
NG-A 210/210	- / 8.0	- / 8.0	- / 2x4.0	- / 2x8.0

The data in the above table refer to electrically operated 24 V- smoke vents with the following glazing:
 – TYPE-1 in the form of a 2-layer multi-chamber polycarbonate panel or 1-layer acrylic or solid polycarbonate dome and 10 mm multi-chamber polycarbonate panel.
 – TYPE-2 in the form of a 2-layer acrylic dome, solid polycarbonate or mix dome, or 1-layer acrylic dome, solid polycarbonate dome and 16 mm or 20 mm or 25 mm multi-chamber polycarbonate panel.

The table shows the data of actuators from two manufacturers, respectively: ACTULUX / GRASL.

1.3. | Vent with roof access option (C, E, NG-A)

1.3.1. | Description of standard

- » classification according to the Certificate of Constancy of Performance No 1396-CPR-0126) according to EN 12101- 2,
- » smoke vents type C (square), E (rectangular) and NG-A (square and rectangular) designed for flat and pitched roofs (C/E type up to 30°, NG-A type up to 15°), covered with roofing paper or PVC membrane,
- » straight base of height 300 mm or 500 mm made of 1.25 mm thick galvanised steel sheet or skew base of height 300 mm made of PVC profile or skew base made of 1.25 mm thick galvanized steel sheet,
- » lower part of the base with a circumferential flange of width 50 mm (steel base) or 55 mm (PVC base), with which the base is fixed to the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » steel base adapted to thermal insulation of 50 mm thickness,
- » leaf glazing: multi-chamber polycarbonate panel, acrylic dome, solid polycarbonate dome, multi-chamber polycarbonate panel with a 1- or 2-layer acrylic or solid polycarbonate dome, ALU sandwich panel (see chapter 4 – page 52 for details),
- » leaf frame made of multi-chamber, white PVC profile system provides rigidity, strength and high thermal parameters,
- » vent leaf opening angle $\geq 140^\circ$,
- » hinges fixing the leaf to the base mounted on the longer side of the vent,
- » smoke exhaust control: electric 24 V- / 48 V- using one or two opening systems,
- » possibility of increasing the active smoke exhaust area (A_a) by using wind deflectors.

1.3.2. | Smoke vent design with roof access option, one actuator and PVC base

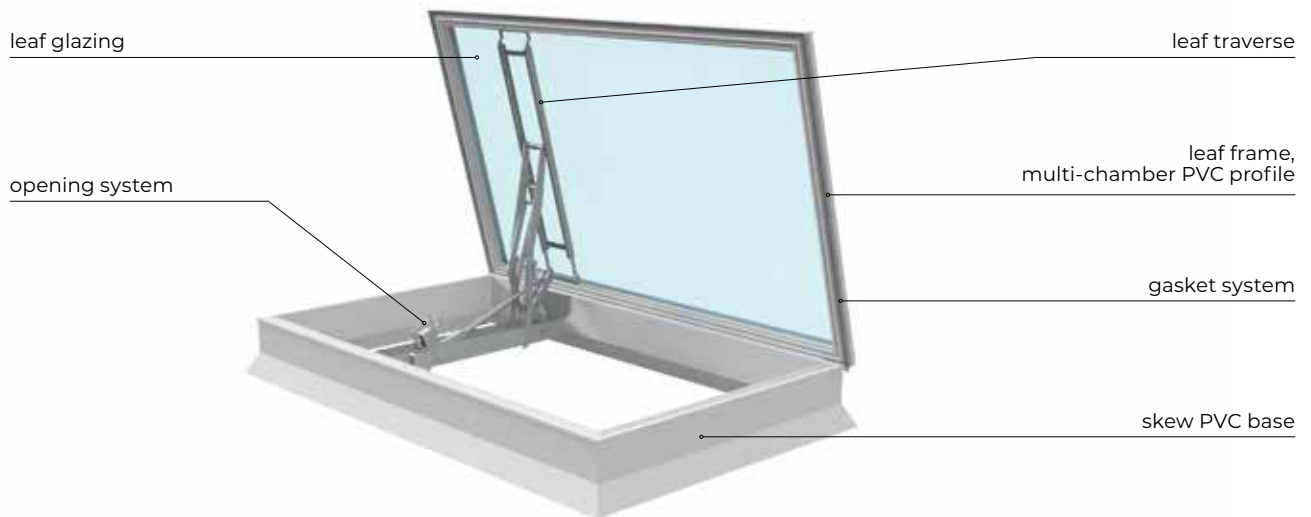


Fig. 7 Design of mcr ULTRA THERM NG-A smoke vent with skew PVC base, roof access option and one asymmetrically fixed electric actuator

1.3.3. | Smoke vent design with roof access option, one actuator and steel base

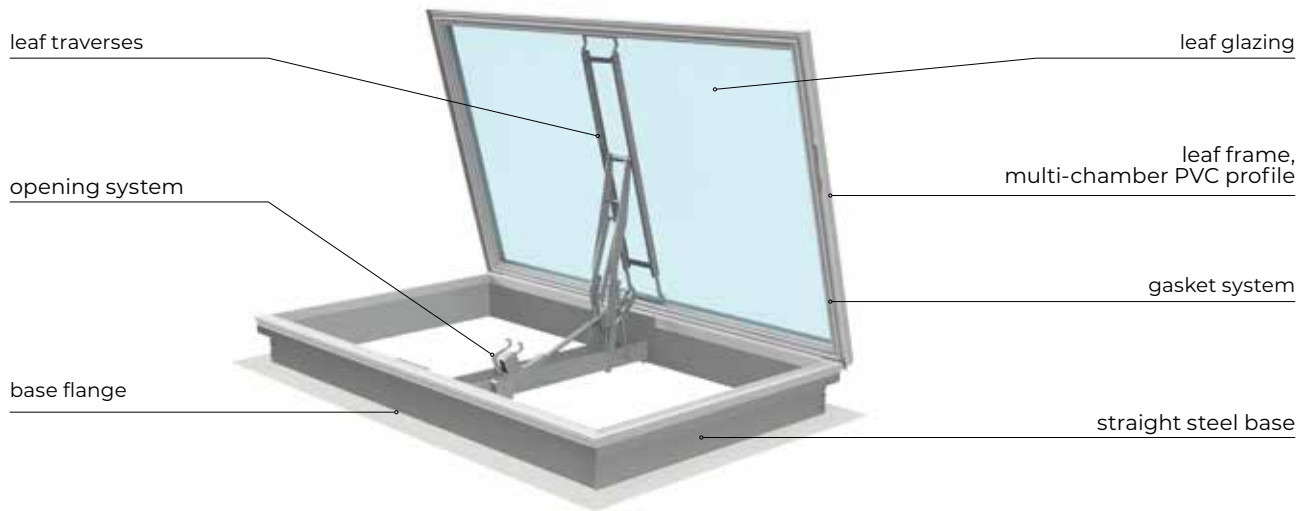


Fig. 8 Design of mcr ULTRA THERM E smoke vent with steel straight base, roof access option and one symmetrically mounted electric actuator, for side length ≥ 180 cm.

1.3.4. | Smoke vent design with roof access option, two actuators and steel base

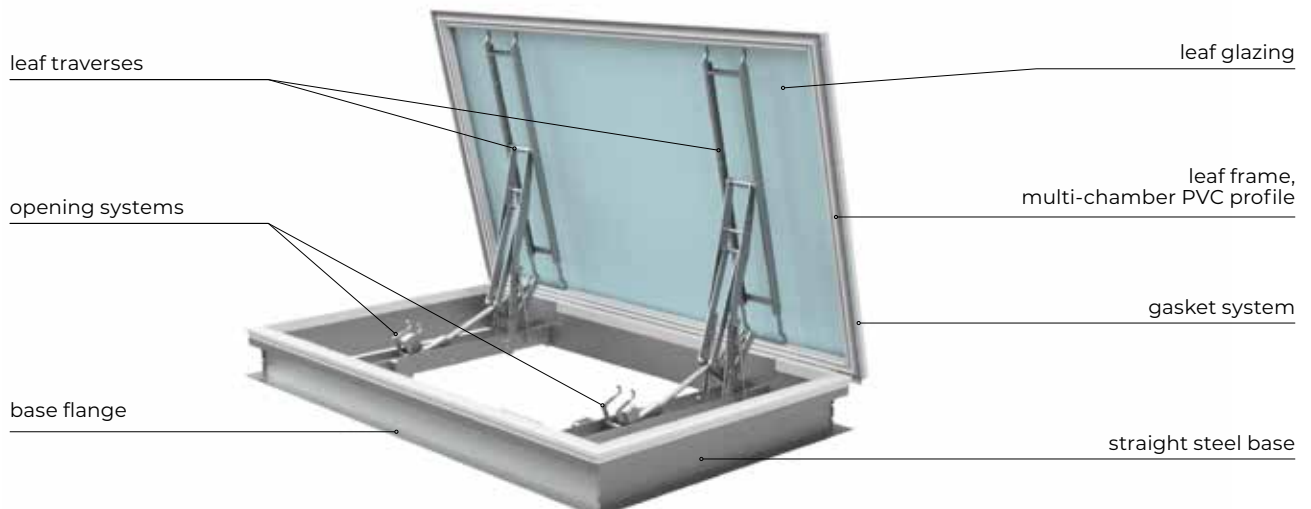


Fig. 9 Design of mcr ULTRA THERM E smoke vent with steel straight base, roof access option with two electric actuators

1.3.5. | Options of smoke vent with roof access option

- » vent elements painted in any color from the RAL palette: applies to deflectors and steel or aluminium base,
- » custom base height between 250 ÷ 700 mm,
- » change of steel or aluminium base sheet thickness,
- » custom width of circumferential base flange in the range of 50 ÷ 100 mm,
- » possibility of increasing the active area of smoke exhaust (Aa) through the use of wind deflectors.

1.3.6. | **Technical drawings of smoke vents with roof access option**

1.3.6.1. | **Technical drawings of smoke vent with roof access option and one actuator moved to side**

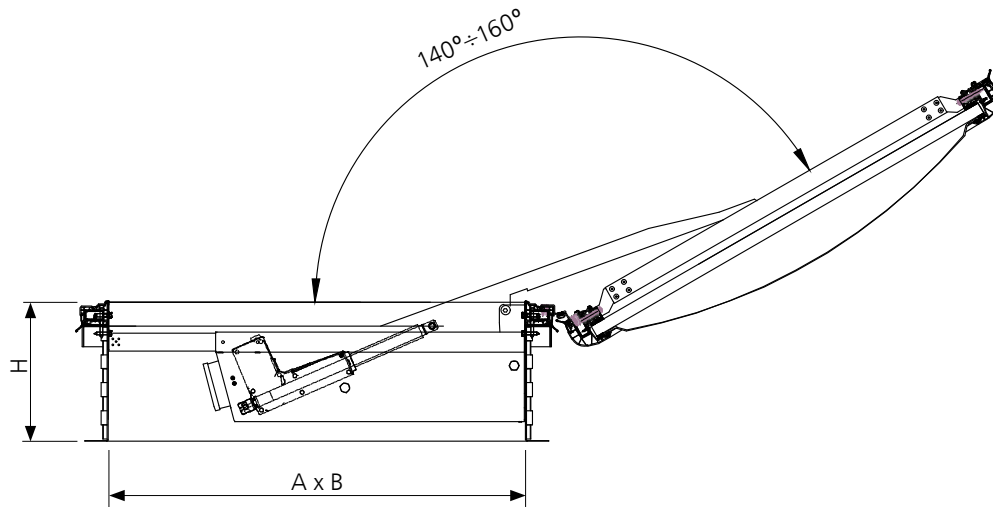


Fig. 10 Section **B-B** through mcr ULTRA THERM E smoke vent with steel straight base and roof access option in open position

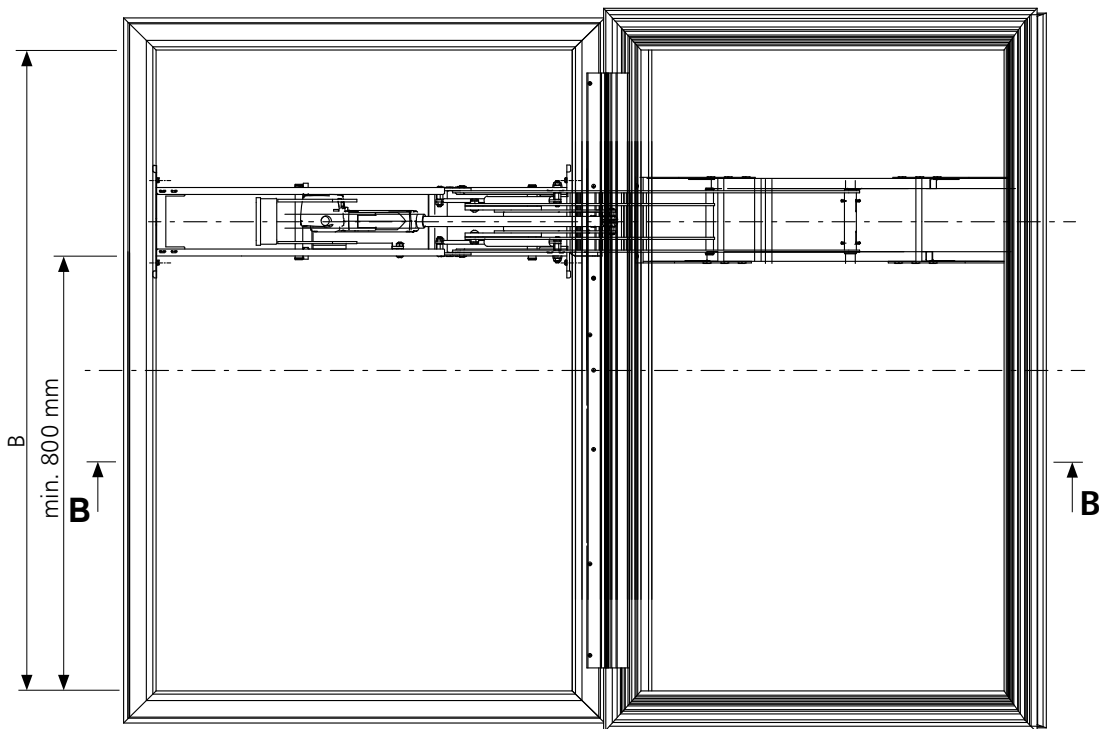


Fig. 11 Top view of mcr ULTRA THERM E smoke vent with straight steel base and roof access option in open position

A, B – nominal dimension [mm], smoke vent clear opening
 H – smoke vent base height [mm]

1.3.6.2. | **Technical drawings of smoke vent with roof access option and one actuator in the middle**

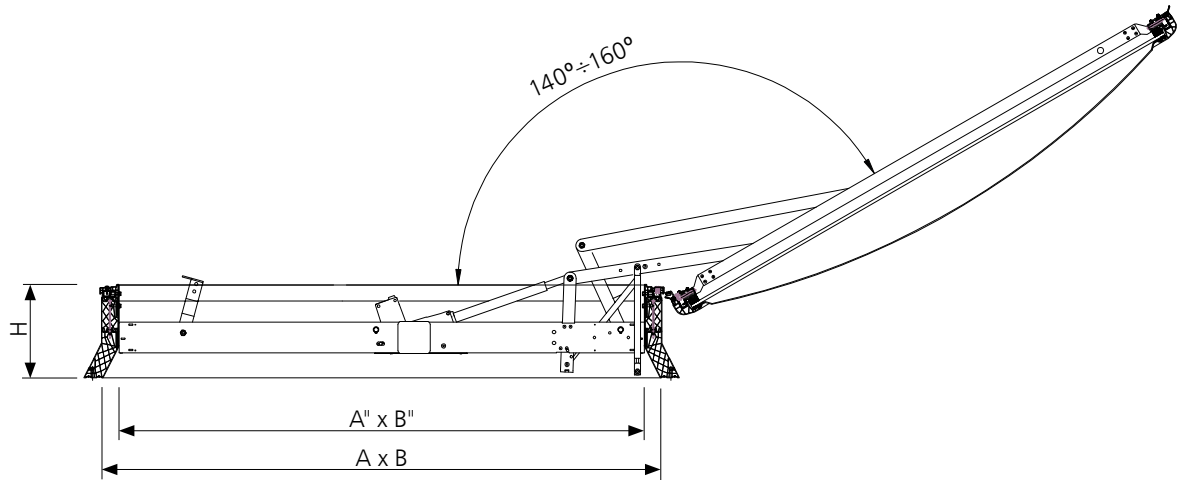


Fig. 12 Section **B-B** through mcr ULTRA THERM NG-A smoke vent with skew PVC base and roof access option in open position

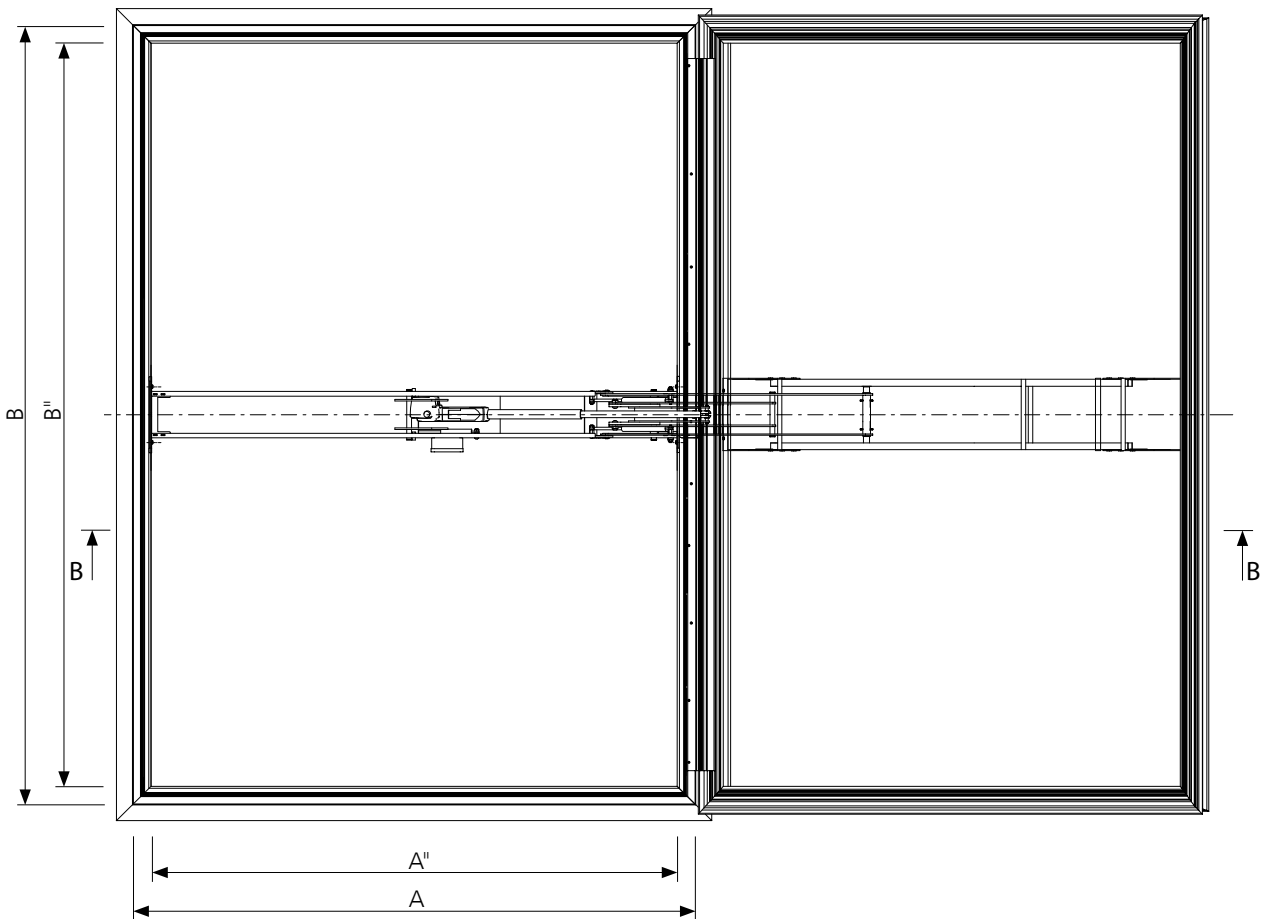


Fig. 13 Top view of mcr ULTRA THERM NG-A vent with skew PVC base and roof access option in open position

A, B – nominal dimension [mm], smoke vent clear opening
 A'', B'' – clear upper opening dimension of smoke vent [mm] A'' = A - 100 mm, B'' = B - 100 mm
 H – smoke vent base height [mm]

1.3.6.3. | **Technical drawings of smoke vent with roof access option and two actuators**

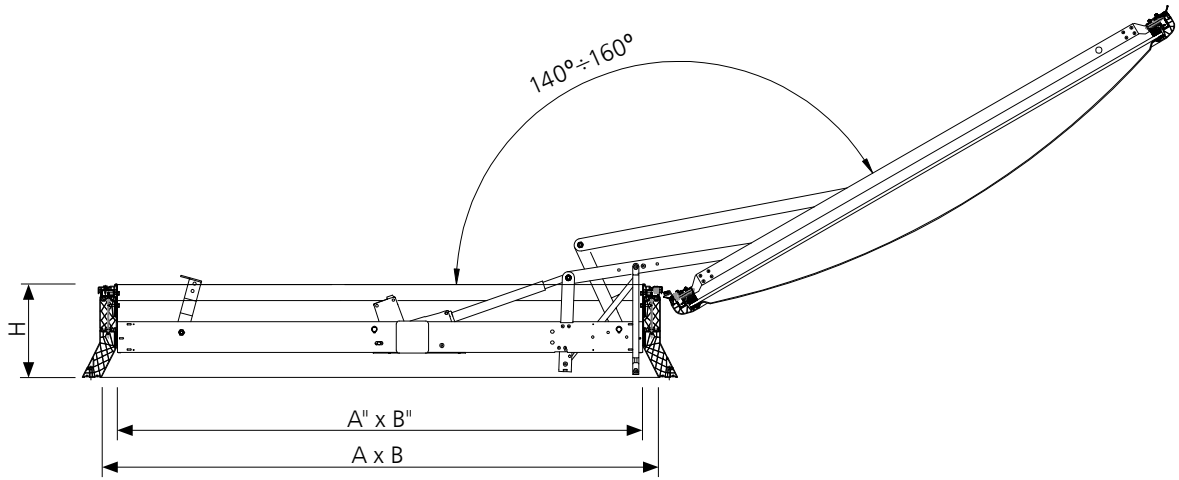


Fig. 14 Section **B-B** through mcr ULTRA THERM NG-A smoke vent with skew PVC base and roof access option in open position

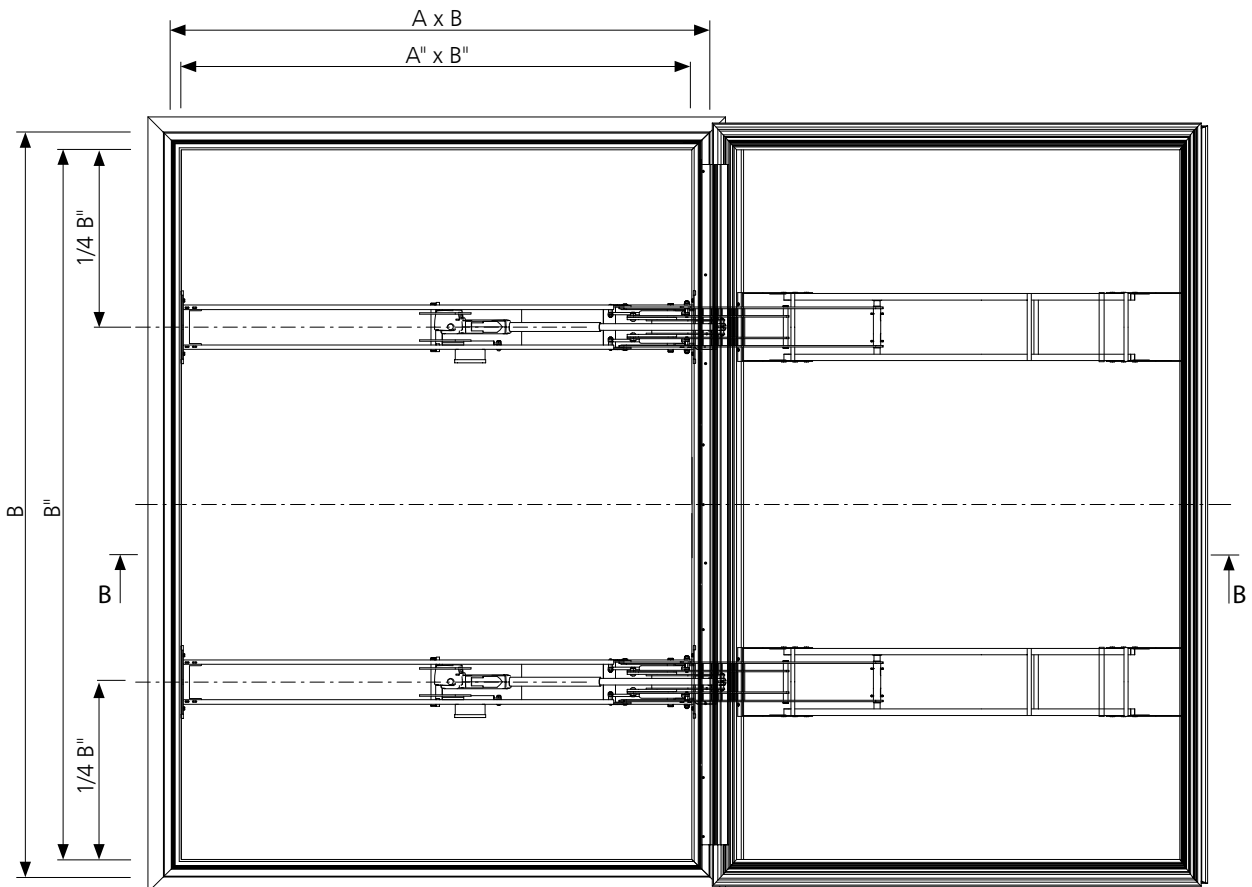


Fig. 15 Top view of mcr ULTRA THERM NG-A vent with roof access option in open position

A, B – nominal dimension [mm], smoke vent clear opening
 A'', B'' – clear upper opening dimension of smoke vent [mm] A'' = A - 100 mm, B'' = B - 100 mm
 H – smoke vent base height [mm]

1.3.7. | Technical specification

1.3.7.1. | Technical data – vents type C / E with single offset opening system

VENT TYPE	NOMINAL DIMENSION	ACTIVE AREA A _a				POWER CONSUMPTION BY APPROXIMATE ELECTRIC ACTUATOR FOR SL 500	APPROXIMATE MASS
		min. H = 300mm		min. H = 500mm			
		WITHOUT DEFLECTORS	WITH DEFLECTORS	WITHOUT DEFLECTORS	WITH DEFLECTORS		
	[mm]	[m ²]	[m ²]	[m ²]	[m ²]	[A]	[kg]
C 100	1000 x 1000	0.64	0.67	0.72	0.71	2.5 / -	74
C 105	1050 x 1050	0.69	0.74	0.78	0.78	2.5 / -	77
C 110	1100 x 1100	0.74	0.80	0.85	0.85	2.5 / -	81
C 115	1150 x 1150	0.80	0.88	0.91	0.93	2.5 / -	85
E 80/120	800 x 1200	0.38	-	0.38	-	2.5 / 2.0	72
E 90/120	900 x 1200	0.43	-	0.43	-	4.0 / 2.0	76
E 100/120	1000 x 1200	0.75	0.79	0.85	0.84	2.5 / -	79

1.3.7.2. | Technical data – vents type E with single centrally-mounted opening system

VENT TYPE	NOMINAL DIMENSION	ACTIVE AREA A _a				POWER CONSUMPTION BY APPROXIMATE ELECTRIC ACTUATOR WEIGHT FOR SL 500	APPROXIMATE MASS
		min. H = 300mm		min. H = 500mm			
		WITHOUT DEFLECTORS	WITH DEFLECTORS	WITHOUT DEFLECTORS	WITH DEFLECTORS		
	[mm]	[m ²]	[m ²]	[m ²]	[m ²]	[A]	[kg]
E 100/180	1000 x 1800	1.03	1.19	1.22	1.24	4.0 / -	98
E 100/200	1000 x 2000	1.11	1.32	1.34	1.38	4.0 / 4.0	105
E 100/220	1000 x 2200	1.19	1.45	1.45	1.52	4.0 / 4.0	111
E 100/240	1000 x 2400	1.26	1.56	1.56	1.66	4.0 / 4.0	117
E 100/250	1000 x 2500	1.29	1.63	1.61	1.73	4.0 / 4.0	121
E 120/180	1200 x 1800	1.19	1.40	1.42	1.49	4.0 / -	106
E 120/200	1200 x 2000	1.30	1.56	1.56	1.66	4.0 / 4.0	113
E 120/240	1200 x 2400	1.48	1.87	1.82	1.96	4.0 / 4.0	126
E 120/250	1200 x 2500	1.52	1.95	1.88	2.04	4.0 / 8.0	129
E 150/200	1500 x 2000	1.55	1.94	1.86	2.04	- / 8.0	134
E 150/220	1500 x 2200	1.61	2.14	2.03	2.24	- / 8.0	140
E 160/200	1600 x 2000	1.63	2.08	1.96	2.18	- / 8.0	137

1.3.7.3. | Technical data – vents type E with two opening systems

VENT TYPE	NOMINAL DIMENSION	ACTIVE AREA A _a				POWER CONSUMPTION BY APPROXIMATE ELECTRIC ACTUATOR FOR SL 550	APPROXIMATE MASS
		min. H = 300mm		min. H = 500mm			
		WITHOUT DEFLECTORS	WITH DEFLECTORS	WITHOUT DEFLECTORS	WITH DEFLECTORS		
	[mm]	[m ²]	[m ²]	[m ²]	[m ²]	[A]	[kg]
E 150/200	1500 x 2000	1.20	1.20	1.20	1.20	2x 4.0 / -	142
E 150/220	1500 x 2200	1.32	1.32	1.32	1.32	2x 4.0 / -	150
E 150/240	1500 x 2400	1.44	1.44	1.44	1.44	2x 4.0 / 2x 4.0	157
E 150/250	1500 x 2500	1.50	1.50	1.50	1.50	2x 4.0 / 2x 4.0	161
E 160/200	1600 x 2000	1.28	1.28	1.28	1.28	2x 4.0 / -	147
E 160/220	1600 x 2200	1.41	1.41	1.41	1.41	2x 4.0 / 2x 4.0	154
E 160/250	1600 x 2500	1.60	1.60	1.60	1.60	2x 4.0 / 2x 4.0	165
E 180/200	1800 x 2000	1.44	1.44	1.44	1.44	2x 4.0 / -	160
E 180/220	1800 x 2200	1.58	1.58	1.58	1.58	2x 4.0 / 2x 4.0	167
E 180/240	1800 x 2400	1.73	1.73	1.73	1.73	2x 4.0 / 2x 4.0	175
E 180/250	1800 x 2500	1.80	1.80	1.80	1.80	2x 4.0 / 2x 8.0	179
E 200/250	2000 x 2500	2.00	2.00	2.00	2.00	- / 2x 8.0	190

1.3.7.4. Technical data – vents type NG-A with single offset opening system

VENTS TYPE	NOMINAL DIMENSION	ACTIVE AREA A _a				POWER CONSUMPTION BY APPROXIMATE ELECTRIC ACTUATOR FOR SL 500	APPROXIMATE MASS
		min. H = 300mm		min. H = 500mm			
		WITHOUT DEFLECTORS	WITH DEFLECTORS	WITHOUT DEFLECTORS	WITH DEFLECTORS		
	[mm]	[m ²]	[m ²]	[m ²]	[m ²]	[A]	[kg]
NG-A 90/120	900 x 1200	0.53	0.70	0.53	0.70	2.5 / 2.0	70
NG-A 100/110	1000 x 1100	0.44	0.73	0.44	0.74	2.5	60
NG-A 100/120	1000 x 1200	0.48	0.79	0.48	0.82	2.5	66
NG-A 100/130	1000 x 1300	0.52	0.87	0.52	0.88	2.5	71
NG-A 100/140	1000 x 1400	0.56	0.94	0.56	0.97	2.5	77
NG-A 100/150	1000 x 1500	0.60	1.01	0.60	1.04	2.5	82
NG-A 110/110	1100 x 1100	0.48	0.81	0.48	0.82	2.5	63
NG-A 115/115	1150 x 1150	0.53	0.89	0.53	0.91	2.5	69
NG-A 120/120	1200 x 1200	0.58	0.96	0.58	0.99	2.5	75
NG-A 125/125	1250 x 1250	0.63	1.06	0.63	1.08	2.5	81

1.3.7.5. Technical data – vents type NG-A with single centrally mounted opening system





VENT TYPE	NOMINAL DIMENSION	ACTIVE AREA A _a				POWER CONSUMPTION BY APPROXIMATE ELECTRIC ACTUATOR FOR SL 550	MASS
		min. H = 300mm		min. H = 500mm			
		WITHOUT DEFLECTORS	WITH DEFLECTORS	WITHOUT DEFLECTORS	WITH DEFLECTORS		
	[mm]	[m ²]	[m ²]	[m ²]	[m ²]	[A]	[kg]
NG-A 100/200	1000 x 2000	0.80	1.36	0.80	1.40	4.0 / 4.0	98
NG-A 100/220	1000 x 2200	0.88	1.52	0.88	1.56	4.0 / 4.0	104
NG-A 100/240	1000 x 2400	0.96	1.66	0.96	1.70	4.0 / 4.0	111
NG-A 100/250	1000 x 2500	1.00	1.73	1.00	1.78	4.0 / 4.0	114
NG-A 120/200	1200 x 2000	0.96	1.66	0.96	1.73	4.0 / 4.0	106
NG-A 120/240	1200 x 2400	1.15	2.02	1.15	2.07	4.0 / 4.0	119
NG-A 120/250	1200 x 2500	1.20	2.10	1.20	2.16	4.0 / 4.0	122
NG-A 150/200	1500 x 2000	1.20	2.10	1.20	2.19	- / 8.0	127
NG-A 150/220	1500 x 2200	1.32	2.34	1.32	2.41	- / 8.0	133
NG-A 150/240	1500 x 2400	1.44	2.56	1.44	2.66	- / 8.0	140
NG-A 150/250	1500 x 2500	1.50	2.66	1.50	2.78	- / 8.0	144
NG-A 160/200	1600 x 2000	1.28	2.27	1.28	2.34	- / 8.0	130
NG-A 160/220	1600 x 2200	1.41	2.50	1.41	2.60	- / 8.0	137

1.3.7.6. Technical data – vents type NG-A with two opening systems

VENT TYPE	NOMINAL DIMENSION	ACTIVE AREA A _a				POWER CONSUMPTION BY APPROXIMATE ELECTRIC ACTUATOR FOR SL 550	APPROXIMATE MASS
		min. H = 300mm		min. H = 500mm			
		WITHOUT DEFLECTORS	WITH DEFLECTORS	WITHOUT DEFLECTORS	WITH DEFLECTORS		
	[mm]	[m ²]	[m ²]	[m ²]	[m ²]	[A]	[kg]
NG-A 150/200	1500 x 2000	1.20	1.20	1.20	1.20	2x 4.0 / -	136
NG-A 150/220	1500 x 2200	1.32	1.32	1.32	1.32	2x 4.0 / -	143
NG-A 150/240	1500 x 2400	1.44	1.44	1.44	1.44	2x 4.0 / -	150
NG-A 150/250	1500 x 2500	1.50	1.50	1.50	1.50	2x 4.0 / -	153
NG-A 160/200	1600 x 2000	1.28	1.28	1.28	1.28	2x 4.0 / -	140
NG-A 160/220	1600 x 2200	1.41	1.41	1.41	1.41	2x 4.0 / -	147
NG-A 160/250	1600 x 2500	1.60	1.60	1.60	1.60	2x 4.0 / 2x 4.0	158
NG-A 180/200	1800 x 2000	1.44	1.44	1.44	1.44	2x 4.0 / -	152
NG-A 180/220	1800 x 2200	1.58	1.58	1.58	1.58	2x 4.0 / 2x 4.0	160
NG-A 180/240	1800 x 2400	1.73	1.73	1.73	1.73	2x 4.0 / 2x 4.0	168
NG-A 180/250	1800 x 2500	1.80	1.80	1.80	1.80	2x 4.0 / 2x 4.0	171
NG-A 200/250	2000 x 2500	2.00	2.00	2.00	2.00	- / 2x 8.0	182

2. Fixed skylights, roof hatches, ventilation vents

The mcr ULTRA THERM family, which includes fixed skylights, roof hatches and ventilation vents, supplements the natural smoke exhaust products range of "MERCOR" S.A. Depending on the type of unit, they can serve the function of lighting, ventilation or roof access.

Parameters		APF fixed skylights	Fixed skylights	Roof hatches	Ventilation vents
					
Product classification	Declaration of Performance (according to EN 1873)	<ul style="list-style-type: none"> » Fire performance of available glazings: <ul style="list-style-type: none"> - B_{ROOF}(t1) - B-s1-d0 - B-s2-d0 - E / NPD » Fire performance of weakest element: <ul style="list-style-type: none"> - E / NPD » Resistance to external fire: <ul style="list-style-type: none"> - B_{ROOF}(t1) - F_{ROOF} » Heat transfer coefficient for the whole unit $1.2 \text{ W/(m}^2\text{K)} \leq U \leq 3.8 \text{ W/(m}^2\text{K)}$ (*), depending on: type of glazing, device type, device dimensions, insulation thickness, and the base and its height » Direct sound insulation****: <ul style="list-style-type: none"> - R_w = 20 dB for PCA16 multi-chamber polycarbonate panel - R_w = 21 dB for double multi-chamber polycarbonate panel PCA10 + PCA16 - R_w = 25 dB for PCA25 multi-chamber polycarbonate panel + PMMA 1-layer acrylic dome - R_w = 25 dB for ALU sandwich panel 			
Control	electric 230 V~ (ventilation)	-	-	-	●
	mechanical (gas springs)	-	-	●	-
Glazing	multi-chamber polycarbonate panel	●	●	●	●
	acrylic dome*	-	●	●	●
	solid polycarbonate dome*	-	●	●	●
	ALU** sandwich panel	-	-	●	●
	double multi-chamber polycarbonate panel	●	●	●	●
	classification B _{ROOF} (t1)***	●	●	-	●
	1-layer acrylic dome and multi-chamber polycarbonate panel*	-	●	●	●
	1-layer solid polycarbonate dome and multi-chamber polycarbonate panel*	-	●	●	●
	2-layer acrylic dome and multi-chamber polycarbonate panel*	-	●	●	●
	2-layer solid polycarbonate dome and multi-chamber polycarbonate panel*	-	●	●	●

(*) Applies to selected vent dimensions

(**) ALU sandwich panel: aluminium - thermal insulation - aluminium

(***) Applies to vents with single and double multi-chamber polycarbonate panel

(****) Data refer to complete units with PVC base

2.1. | mcr ULTRA THERM APF fixed skylights with straight steel base – type C, E

2.1.1. | Technical description of standard

- » fixed skylights according to EN 1873,
- » fixed skylights type C (square) and E (rectangular) intended for flat and pitched roofs covered with roofing paper or PVC membrane,
- » dimensional range of fixed skylights:
 - fixed skylights type C (square): 800 x 800 mm ÷ 1900 x 1900 mm,
 - fixed skylights type E (rectangular): 800 x 1200 mm ÷ 1900 x 3000 mm,
- » straight base made of 1.25 mm thick galvanized steel sheet with a total height with frame of 300 mm or 500 mm,
- » bottom part of the base fitted with a 50 mm wide circumferential flange for mounting the vent on the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » base adapted for the installation of thermal insulation with a thickness of 50 mm,
- » glazing: multi-chamber polycarbonate panel, glazing with B_{ROOF}(t1) classification (see chapter 4 – page 52 for details),
- » aluminium pressing frame.

2.1.2. | Design of APF fixed skylight



Fig. 16 Design of mcr ULTRA THERM APF E fixed skylight with straight steel base

2.1.3. | APF fixed skylight options

- » skylight elements painted in any RAL color (not applicable to frame made of white PVC),
- » base made of aluminium sheet,
- » custom steel and aluminium base height with frame in the range 250 ÷ 700 mm,
- » change of base sheet thickness,
- » use of additional safety elements in the form of safety net,
- » skylight with resistance to soft body impact with energy of 1200 J (SB 1200).

2.1.4. | **Technical drawings of APF fixed skylight**

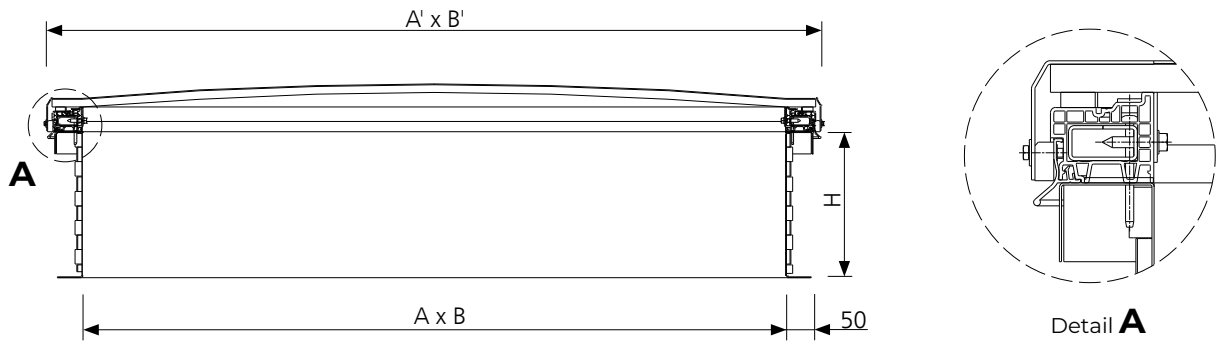


Fig. 17 Section **B-B** through mcr ULTRA THERM APF E fixed skylight, dimensions in mm

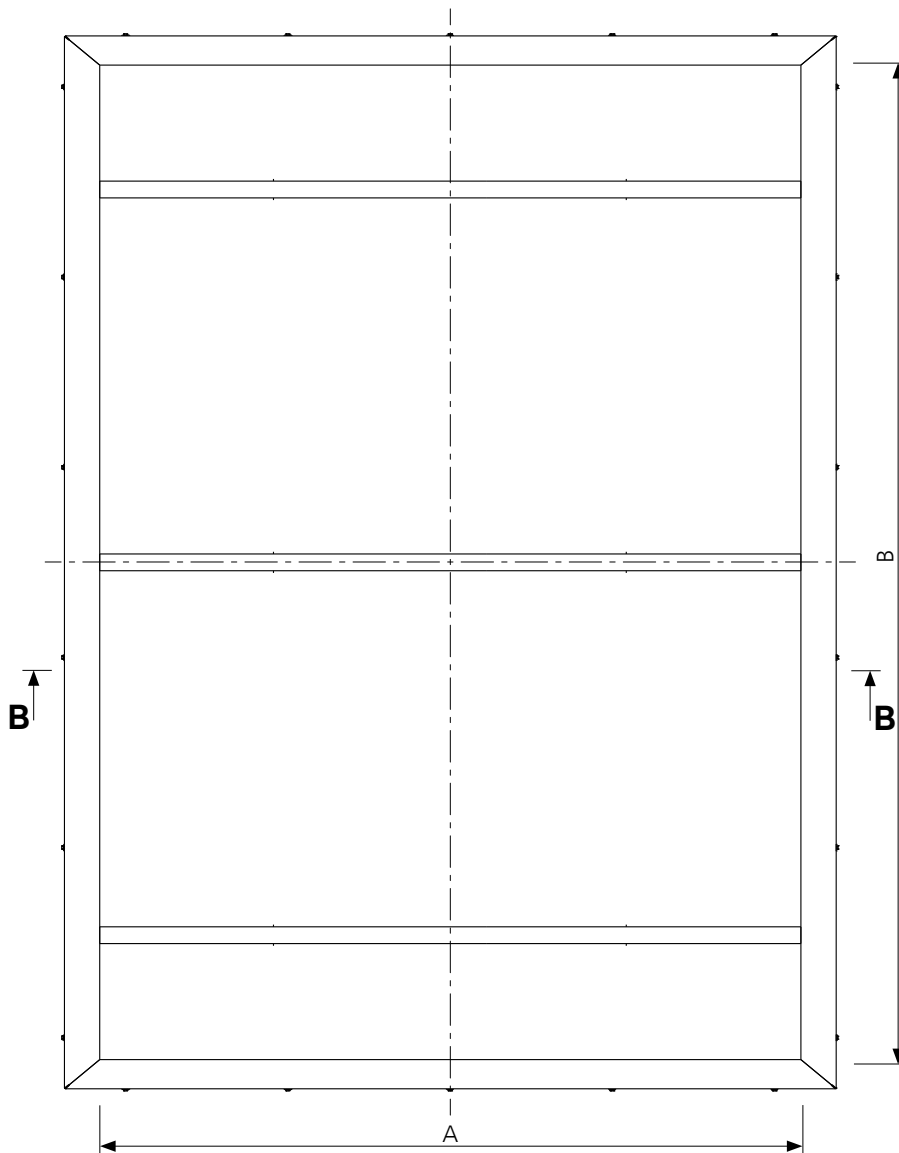


Fig. 18 Top view of mcr ULTRA THERM APF E fixed skylight

A, B – nominal size [mm] of APF fixed skylight
 A', B' – total dimension of APF fixed skylight [mm] $A'=A+142$ mm, $B'=B+142$ mm
 H – fixed skylight base height [mm]

2.1.5. | Technical specification

SKYLIGHT TYPE	NOMINAL DIMENSIONS		APPROXIMATE MASS
	A x B		
	[mm]		
C 80	800 x 800		27
C 90	900 x 900		31
C 100	1000 x 1000		39
C 120	1200 x 1200		48
C 140	1400 x 1400		63
C 150	1500 x 1500		69
C 160	1600 x 1600		74
C 180	1800 x 1800		86
C 190	1900 x 1900		92
E 80/120	800 x 1200		40
E 90/120	900 x 1200		42
E 100/120	1000 x 1200		44
E 100/150	1000 x 1500		51
E 100/160	1000 x 1600		54
E 100/180	1000 x 1800		59
E 100/200	1000 x 2000		64
E 100/220	1000 x 2200		69
E 100/240	1000 x 2400		74
E 100/250	1000 x 2500		76
E 120/150	1200 x 1500		56
E 120/160	1200 x 1600		59
E 120/180	1200 x 1800		64
E 120/200	1200 x 2000		69
E 120/240	1200 x 2400		79
E 120/250	1200 x 2500		82
E 150/180	1500 x 1800		77
E 150/200	1500 x 2000		83
E 150/220	1500 x 2200		88
E 150/240	1500 x 2400		94
E 150/250	1500 x 2500		97
E 150/280	1500 x 2800		105
E 150/300	1500 x 3000		110
E 160/180	1600 x 1800		80
E 160/200	1600 x 2000		86
E 160/220	1600 x 2200		91
E 160/250	1600 x 2500		100
E 160/280	1600 x 2800		108
E 160/300	1600 x 3000		114
E 180/200	1800 x 2000		92
E 180/220	1800 x 2200		98
E 180/240	1800 x 2400		103
E 180/250	1800 x 2500		106
E 180/280	1800 x 2800		115
E 180/300	1800 x 3000		121
E 190/200	1900 x 2000		100
E 190/250	1900 x 2500		109
E 190/280	1900 x 2800		118
E 190/300	1900 x 3000		124

2.2. | mcr ULTRA THERM APF fixed skylights with skew steel base – type NG-A

2.2.1. | Technical description of standard

- » fixed skylights according to EN 1873,
- » type NG-A (square or rectangular) fixed skylights designed for flat and pitched roofs covered with roofing paper or PVC membrane,
- » dimensional range of fixed skylights: 800 x 800 mm ÷ 2000 x 3000 mm,
- » skew base with a total height with frame of 300 mm or 500 mm made of 1.25 mm thick galvanised steel sheet adapted for the installation of thermal insulation with a thickness of 50 mm,
- » 50 mm wide circumferential flange in the steel base for mounting the vent on the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » leaf glazing: multi-chamber polycarbonate panel, glazing with B_{ROOF}(t1) classification (see chapter 4 – page 52 for details),
- » aluminium pressing frame.

2.2.2. | Design of APF fixed skylight

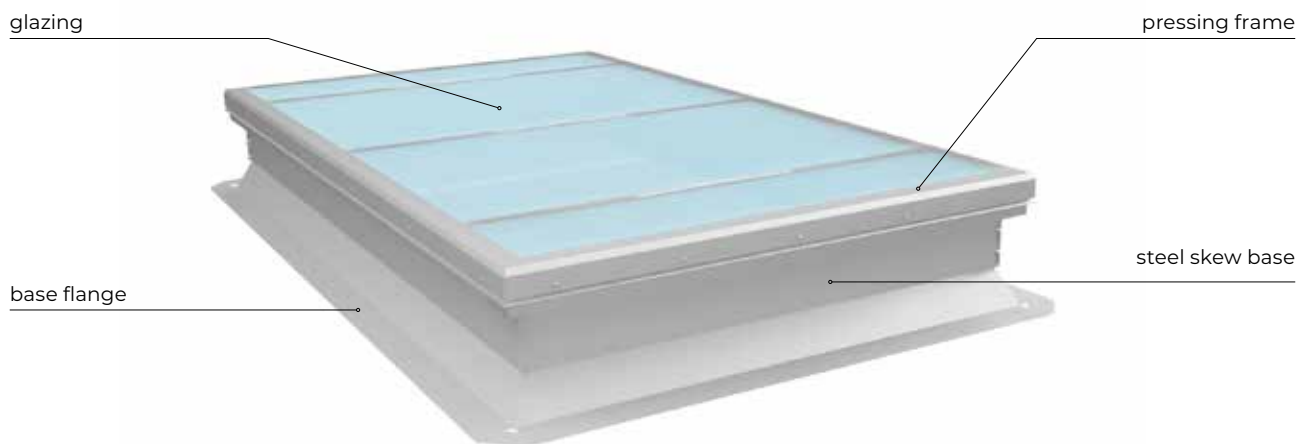


Fig. 19 Design of mcr ULTRA THERM APF NG-A fixed skylight with skew steel base

2.2.3. | APF fixed skylight options of making

- » skylight elements painted in any RAL color (not applicable to frame made of white PVC),
- » base made of steel sheet,
- » custom steel base height with frame in the range 300 ÷ 700 mm,
- » change of base sheet thickness,
- » use of additional safety elements in the form of safety net,
- » skylight making with resistance to soft body impact with energy of 1200 J (SB 1200).

2.2.4. | **Technical drawings of APF fixed skylight**

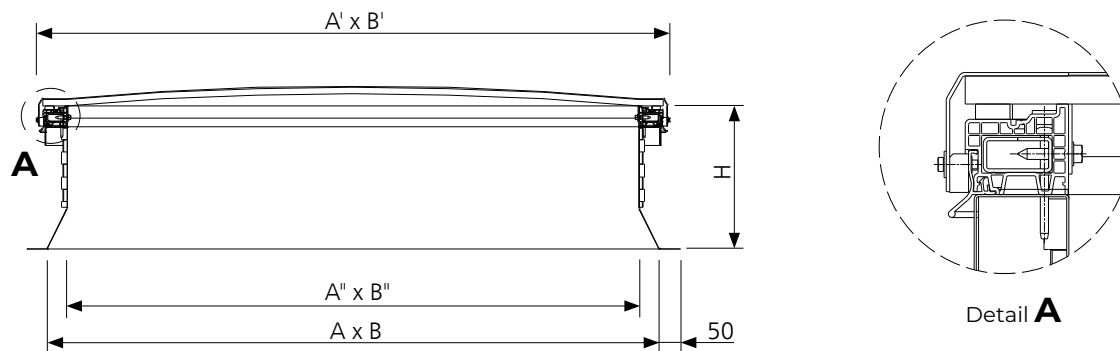


Fig. 20 Section **B-B** through mcr ULTRA THERM APF NG-A fixed skylight, dimensions in mm

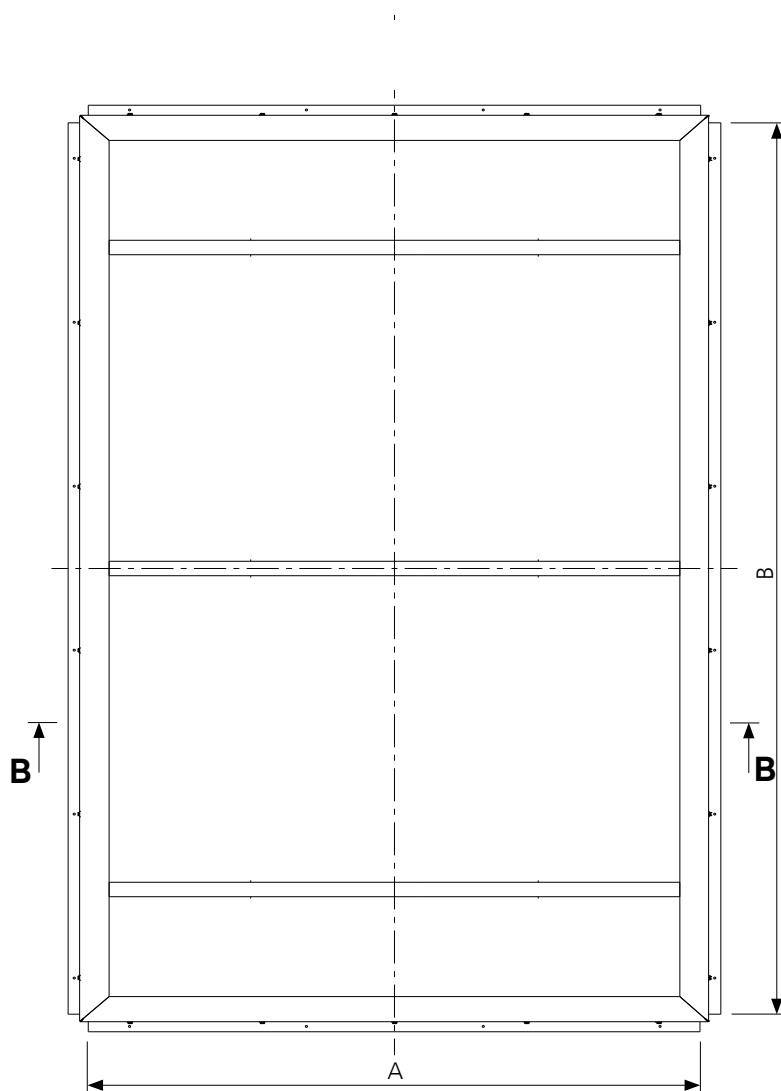


Fig. 21 Top view of mcr ULTRA THERM APF NG-A fixed skylight

- A, B – nominal size [mm] of APF fixed skylight
- A', B – total dimension of APF fixed skylight [mm] $A' = A + 142$ mm, $B' = B + 142$ mm
- A'', B – clear upper opening dimension of APF fixed skylight
- H – fixed skylight base height [mm]

2.2.5. | Technical drawings of APF fixed skylight

SKYLIGHT TYPE	NOMINAL DIMENSIONS		APPROXIMATE MASS
	A x B		
	[mm]		
NG-A 80/80	800 x 800		24
NG-A 80/90	800 x 900		26
NG-A 80/100	800 x 1000		29
NG-A 90/90	900 x 900		28
NG-A 90/100	900 x 1000		31
NG-A 100/100	1000 x 1000		35
NG-A 120/120	1200 x 1200		44
NG-A 140/140	1400 x 1400		53
NG-A 150/150	1500 x 1500		63
NG-A 160/160	1600 x 1600		69
NG-A 180/180	1800 x 1800		80
NG-A 200/200	2000 x 2000		92
NG-A 80/120	800 x 1200		35
NG-A 90/120	900 x 1200		37
NG-A 100/120	1000 x 1200		39
NG-A 100/150	1000 x 1500		47
NG-A 100/160	1000 x 1600		49
NG-A 100/180	1000 x 1800		54
NG-A 100/200	1000 x 2000		59
NG-A 100/220	1000 x 2200		64
NG-A 100/240	1000 x 2400		69
NG-A 100/250	1000 x 2500		71
NG-A 120/150	1200 x 1500		51
NG-A 120/160	1200 x 1600		54
NG-A 120/180	1200 x 1800		59
NG-A 120/200	1200 x 2000		64
NG-A 120/240	1200 x 2400		74
NG-A 120/250	1200 x 2500		77
NG-A 150/180	1500 x 1800		72
NG-A 150/200	1500 x 2000		77
NG-A 150/220	1500 x 2200		82
NG-A 150/240	1500 x 2400		88
NG-A 150/250	1500 x 2500		91
NG-A 150/280	1500 x 2800		99
NG-A 150/300	1500 x 3000		104
NG-A 160/180	1600 x 1800		74
NG-A 160/200	1600 x 2000		80
NG-A 160/220	1600 x 2200		85
NG-A 160/250	1600 x 2500		94
NG-A 160/280	1600 x 2800		102
NG-A 160/300	1600 x 3000		108
NG-A 180/200	1800 x 2000		86
NG-A 180/220	1800 x 2200		92
NG-A 180/240	1800 x 2400		97
NG-A 180/250	1800 x 2500		100
NG-A 180/280	1800 x 2800		109
NG-A 180/300	1800 x 3000		115
NG-A 200/250	2000 x 2500		107
NG-A 200/280	2000 x 2800		116
NG-A 200/300	2000 x 3000		122

2.3. | Fixed skylights with straight steel, base – type C, E

2.3.1. | Technical description of standard

- » fixed skylights according to EN 1873,
- » fixed skylights type C (square) and E (rectangular) intended for flat and pitched roofs covered with roofing paper or PVC membrane,
- » dimensional range of fixed skylights:
 - fixed skylights type C (square): 800 x 800 mm ÷ 2000 x 2000 mm,
 - fixed skylights type E (rectangular): 800 x 1200 mm ÷ 2000 x 3000 mm,
- » straight base of height 300 mm or 500 mm made of 1.25 mm thick galvanised sheet metal,
- » bottom part of the base fitted with a 50 mm wide circumferential flange for mounting the vent on the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » base adapted for the installation of thermal insulation with a thickness of 50 mm,
- » leaf glazing: multi-chamber polycarbonate panel, acrylic dome, solid polycarbonate dome, multi-chamber polycarbonate panel with 1- or 2-layer acrylic or solid polycarbonate dome, glazing with B_{ROOF}(t1) classification (see chapter 4 – page 52 for details),
- » leaf frame made of white, multi-chamber PVC profile system provides rigidity, strength and high thermal parameters.

2.3.2. | Fixed leaf design

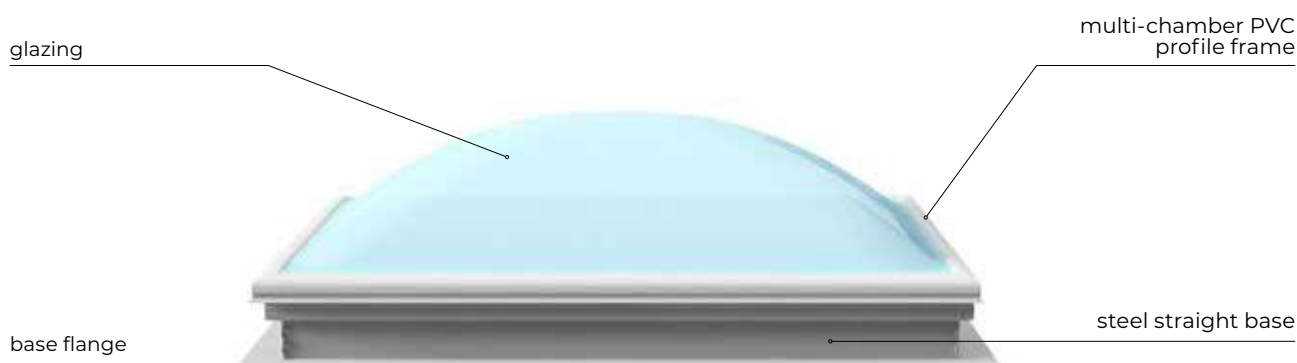


Fig. 22 Design of mcr ULTRA THERM E fixed skylight

2.3.3. | Fixed skylight options

- » skylight elements painted in any RAL color (not applicable to frame made of white PVC),
- » custom base height 250 ÷ 700 mm,
- » change of base sheet thickness,
- » optional use of additional safety elements in the form of safety net,
- » skylight with resistance to soft body impact with energy of 1200 J (SB 1200).

2.3.4. | **Technical drawings of fixed skylight with steel straight base**

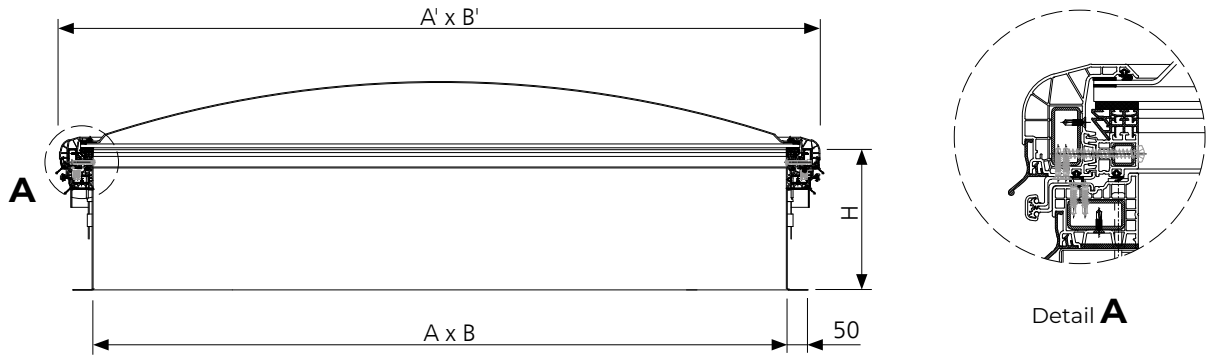


Fig. 23 Section **B-B** through mcr ULTRA THERM APF E fixed skylight, dimensions in mm

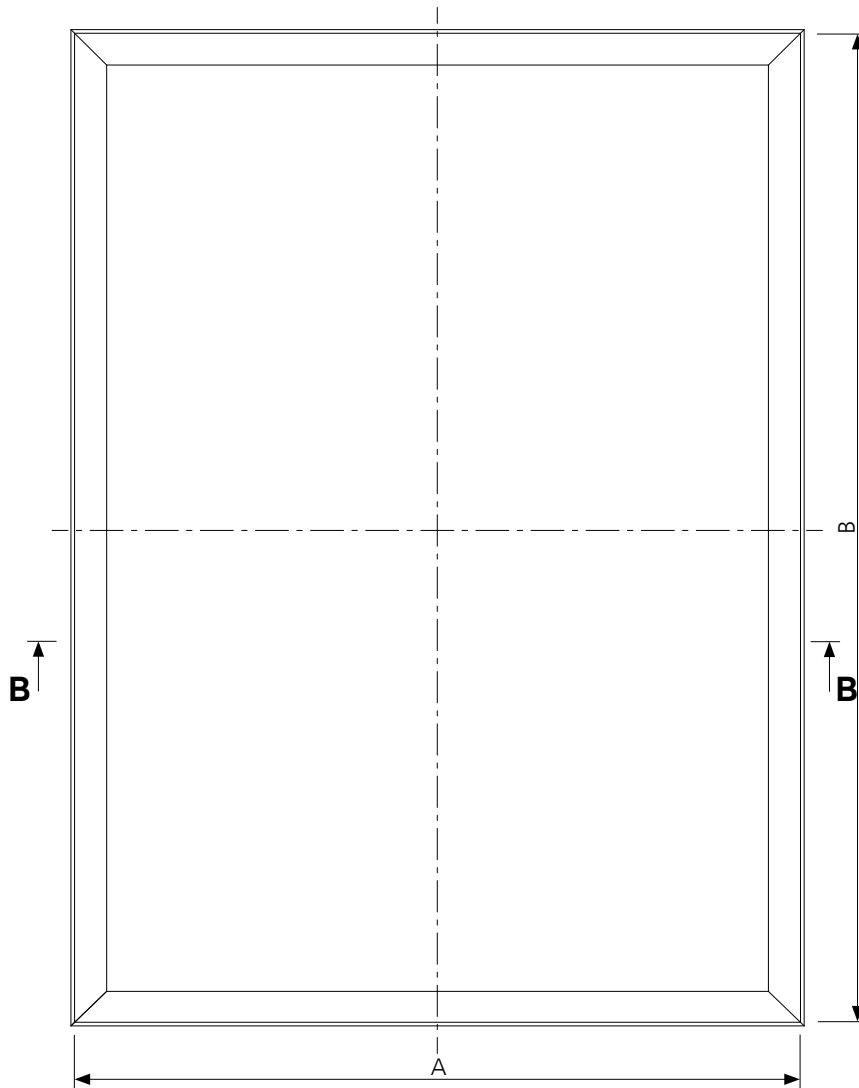


Fig. 24 Top view of mcr ULTRA THERM E fixed skylight

A, B – nominal size [mm] of fixed skylight
 A', B' – total dimension of fixed skylight [mm] $A' = A + 162$ mm, $B' = B + 162$ mm
 H – fixed skylight base height [mm]

2.3.5. | Technical specification

SKYLIGHT TYPE	NOMINAL DIMENSIONS		APPROXIMATE MASS
	A x B		
	[mm]		
C 80	800 x 800		38
C 90	900 x 900		45
C 100	1000 x 1000		56
C 120	1200 x 1200		69
C 140	1400 x 1400		82
C 150	1500 x 1500		88
C 160	1600 x 1600		95
C 180	1800 x 1800		109
C 190	1900 x 1900		116
C 200	2000 x 2000		123
E 80/120	800 x 1200		57
E 90/120	900 x 1200		60
E 100/120	1000 x 1200		63
E 100/150	1000 x 1500		73
E 100/160	1000 x 1600		76
E 100/180	1000 x 1800		82
E 100/200	1000 x 2000		89
E 100/220	1000 x 2200		95
E 100/240	1000 x 2400		102
E 100/250	1000 x 2500		105
E 120/150	1200 x 1500		79
E 120/160	1200 x 1600		82
E 120/180	1200 x 1800		89
E 120/200	1200 x 2000		96
E 120/240	1200 x 2400		109
E 120/250	1200 x 2500		112
E 150/180	1500 x 1800		99
E 150/200	1500 x 2000		106
E 150/220	1500 x 2200		113
E 150/240	1500 x 2400		120
E 150/250	1500 x 2500		124
E 150/280	1500 x 2800		134
E 150/300	1500 x 3000		141
E 160/180	1600 x 1800		102
E 160/200	1600 x 2000		109
E 160/220	1600 x 2200		117
E 160/250	1600 x 2500		127
E 160/280	1600 x 2800		138
E 160/300	1600 x 3000		145
E 180/200	1800 x 2000		116
E 180/220	1800 x 2200		124
E 180/240	1800 x 2400		131
E 180/250	1800 x 2500		135
E 180/280	1800 x 2800		146
E 180/300	1800 x 3000		153
E 190/200	1900 x 2000		126
E 190/250	1900 x 2500		138
E 190/280	1900 x 2800		150
E 190/300	1900 x 3000		157
E 200/250	2000 x 2500		142
E 200/280	2000 x 2800		154
E 200/300	2000 x 3000		161

2.4. | Fixed skylights with skew PVC base type NG-A

2.4.1. | Technical description of standard

- » fixed skylights according to EN 1873,
- » fixed skylights type NG-A (square and rectangular) designed for flat and pitched roofs covered with roofing paper or PVC membrane,
- » dimensional range of fixed skylights: 800 x 800 mm ÷ 2000 x 3000 mm,
- » skew base of height 300 mm or 500 mm made of PVC profile,
- » bottom part of the base fitted with a 50 mm wide circumferential flange for mounting the vent on the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » base adapted for the installation of thermal insulation with a thickness of 50 mm,
- » leaf glazing: multi-chamber polycarbonate panel, acrylic dome, solid polycarbonate dome, multi-chamber polycarbonate panel with 1- or 2-layer acrylic or solid polycarbonate dome, glazing with B_{ROOF}(t1) classification (see chapter 4 – page 52 for details),
- » leaf frame made of white, multi-chamber PVC profile system provides rigidity, strength and high thermal parameters.

2.4.2. | Fixed leaf design



Fig. 25 Design of mcr ULTRA THERM NG-A fixed skylight with skew PVC base

2.4.3. | Fixed skylight options of making

- » skylight elements painted in any RAL color (not applicable to frame made of white PVC),
- » base made of 1.25 mm thick galvanized sheet metal,
- » custom base height 250 ÷ 700 mm,
- » change of base sheet thickness,
- » optional use of additional safety elements in the form of safety net,
- » skylight making with resistance to soft body impact with energy of 1200 J (SB 1200).

2.4.4. | **Technical drawings of fixed skylight with skew PVC base**

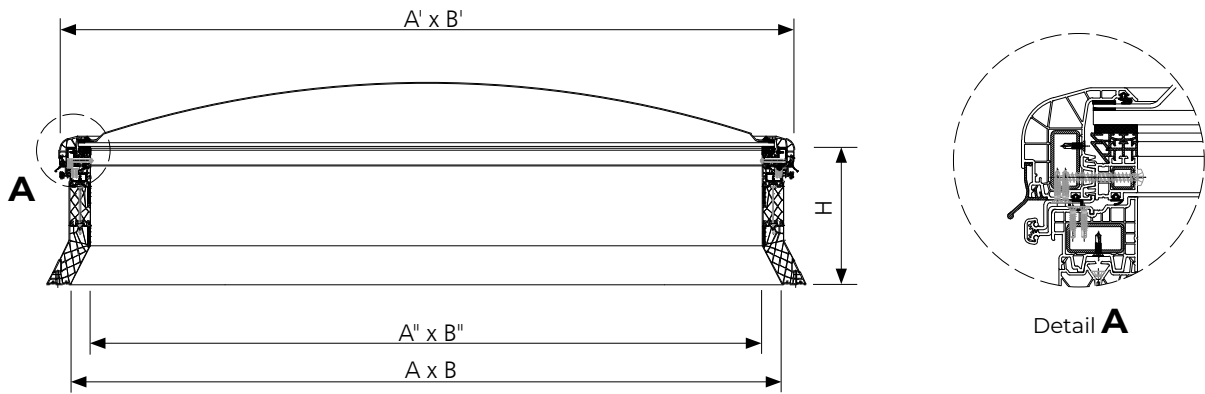


Fig. 26 Section **B-B** through *mcr ULTRA THERM NG-A* fixed skylight

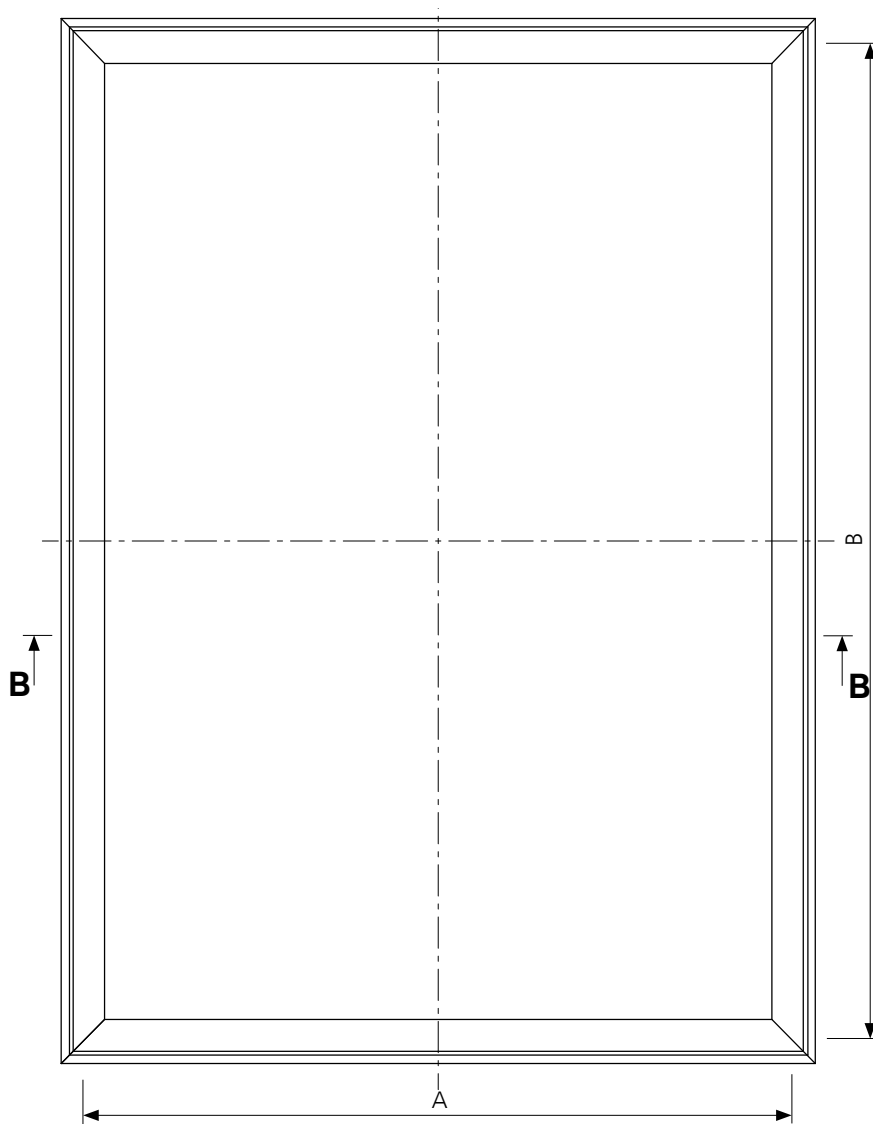


Fig. 27 Top view of *mcr ULTRA THERM NG-A* fixed skylight

- A, B – nominal size [mm] of fixed skylight
- A', B' – total dimension of fixed skylight [mm] $A' = A + 62$ mm, $B' = B + 62$ mm
- A'', B'' – clear upper opening dimension of fixed skylight
- H – fixed skylight base height [mm]

2.4.5. Technical specification

SKYLIGHT TYPE	NOMINAL DIMENSIONS	APPROXIMATE MASS OF SKYLIGHT WITH PVC BASE	APPROXIMATE MASS OF SKYLIGHT A x B WITH STEEL BASE
	A x B		
	[mm]	[kg]	[kg]
NG-A 80/80	800 x 800	31	34
NG-A 80/90	800 x 900	35	38
NG-A 80/100	800 x 1000	39	42
NG-A 80/120	800 x 1200	47	51
NG-A 90/90	900 x 900	38	40
NG-A 90/100	900 x 1000	42	45
NG-A 90/120	900 x 1200	50	54
NG-A 100/100	1000 x 1000	48	50
NG-A 100/120	1000 x 1200	53	57
NG-A 100/150	1000 x 1500	61	66
NG-A 100/160	1000 x 1600	64	69
NG-A 100/180	1000 x 1800	69	76
NG-A 100/200	1000 x 2000	74	82
NG-A 100/220	1000 x 2200	80	88
NG-A 100/240	1000 x 2400	85	95
NG-A 100/250	1000 x 2500	87	98
NG-A 120/120	1200 x 1200	60	62
NG-A 120/150	1200 x 1500	68	72
NG-A 120/160	1200 x 1600	71	76
NG-A 120/180	1200 x 1800	76	82
NG-A 120/200	1200 x 2000	82	89
NG-A 120/240	1200 x 2400	93	102
NG-A 120/250	1200 x 2500	95	105
NG-A 140/140	1400 x 1400	72	75
NG-A 150/150	1500 x 1500	78	82
NG-A 150/180	1500 x 1800	87	92
NG-A 150/200	1500 x 2000	93	99
NG-A 150/220	1500 x 2200	99	106
NG-A 150/240	1500 x 2400	104	113
NG-A 150/250	1500 x 2500	107	116
NG-A 150/280	1500 x 2800	116	127
NG-A 150/300	1500 x 3000	122	134
NG-A 160/160	1600 x 1600	85	88
NG-A 160/180	1600 x 1800	91	95
NG-A 160/200	1600 x 2000	97	102
NG-A 160/220	1600 x 2200	102	109
NG-A 160/250	1600 x 2500	111	120
NG-A 160/280	1600 x 2800	120	131
NG-A 160/300	1600 x 3000	126	138
NG-A 180/180	1800 x 1800	98	102
NG-A 180/200	1800 x 2000	104	109
NG-A 180/220	1800 x 2200	110	116
NG-A 180/240	1800 x 2400	116	124
NG-A 180/250	1800 x 2500	119	127
NG-A 180/280	1800 x 2800	129	138
NG-A 180/300	1800 x 3000	135	146
NG-A 200/200	2000 x 2000	111	116
NG-A 200/250	2000 x 2500	127	135
NG-A 200/280	2000 x 2800	137	146
NG-A 200/300	2000 x 3000	143	154
NG-A 210/210	2100 x 2100	118	123

2.5.| Roof hatches with steel straight base – type C/E

2.5.1.| Technical description of standard

- » roof hatches conforming to EN 1873,
- » roof hatches type C (square) and E (rectangular) designed for flat and pitched roofs (up to 15°), covered with roofing paper, or PVC membrane,
- » dimensional range of roof hatches:
 - roof hatches type C: 800 x 800 mm ÷ 1300 x 1300 mm,
 - rectangular vents type E: 800 x 900 mm ÷ 1200 x 1300 mm,
- » straight base made of 1.25 mm thick galvanized steel sheet with a total height with frame of 300 mm or 500 mm,
- » bottom part of the base fitted with a 50 mm wide circumferential flange for mounting the vent on the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » base adapted for the installation of thermal insulation with a thickness of 50 mm,
- » leaf glazing: multi-chamber polycarbonate panel, acrylic dome, solid polycarbonate dome, multi-chamber polycarbonate panel with a 1- or 2-layer acrylic or solid polycarbonate dome, ALU sandwich panel (see chapter 4 – page 52 for details),
- » leaf frame made of white, multi-chamber, PVC profile system provides rigidity, strength and high thermal parameters,
- » hinges fixing the leaf to the base mounted on the longer side of the vent,
- » mechanical opening system equipped with two gas springs supporting the hatch opening and maintaining the hatch leaf in open position at an angle of 85° ÷ 90°.

2.5.2.| Roof hatch design

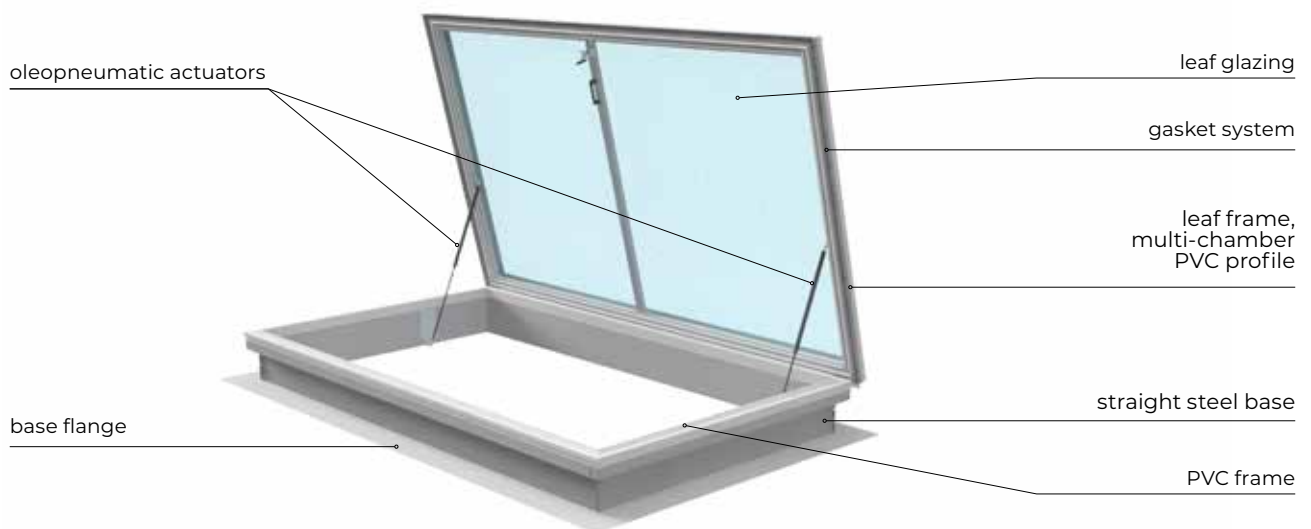


Fig. 28 Design of mcr ULTRA THERM E roof hatch

2.5.3.| Roof hatch options

- » base made of aluminium sheet,
- » custom steel and aluminium base height with frame in the range 250 ÷ 700 mm,
- » painting of hatch elements in any RAL color,
- » change of base sheet thickness,
- » custom width of circumferential base flange in the range of 50 ÷ 100 mm.

2.5.4. | **Technical drawings of roof hatch**

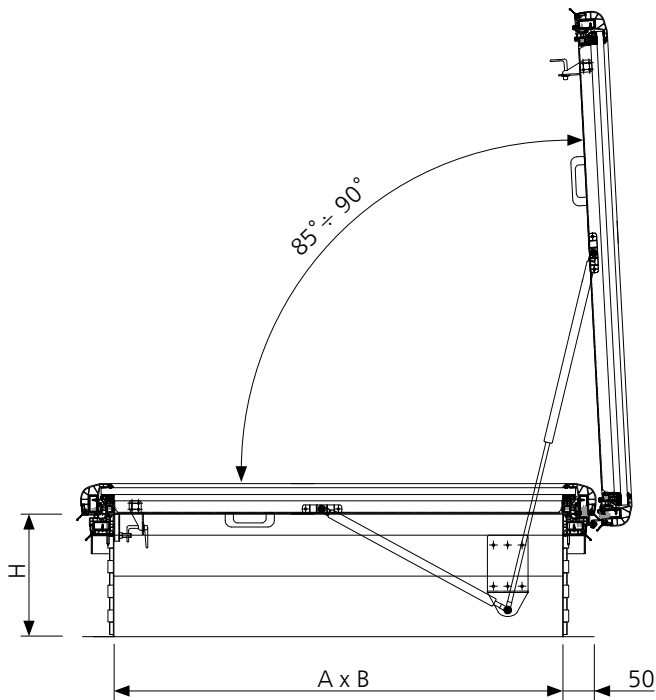


Fig. 29 Section **B-B** through mcr ULTRA THERM C roof hatch in open position, dimensions in mm

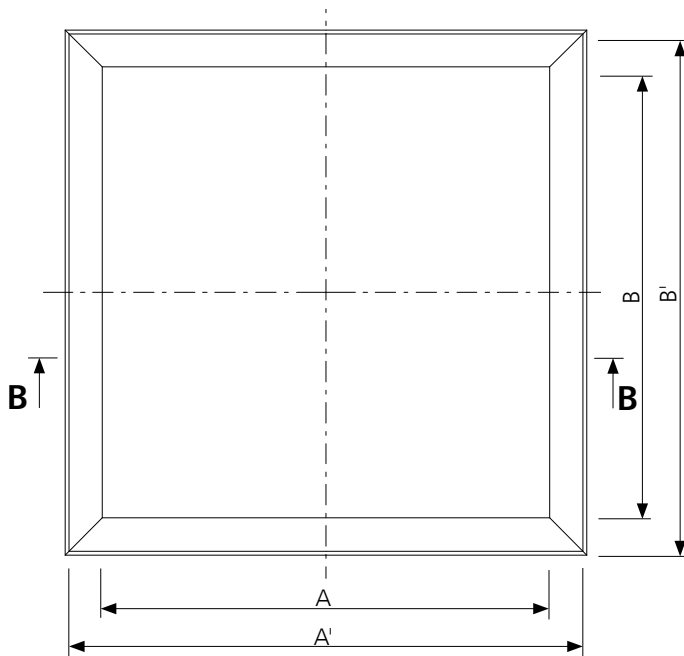


Fig. 30 Top view of mcr ULTRA THERM C roof hatch in closed position

A, B – nominal size [mm], clear opening of roof hatch
 A', B' – total dimension of roof hatch leaf without drip cap [mm] $A'=A+162$ mm, $B'=B+162$ mm
 H – roof hatch base height [mm]

2.5.5. Technical specification

HATCH TYPE	NOMINAL DIMENSIONS		APPROXIMATE MASS
	A x B		
	[mm]		
C 80	800 x 800		52
C 90	900 x 900		58
C 100	1000 x 1000		64
C 110	1100 x 1100		70
C 120	1200 x 1200		77
C 130	1300 x 1300		83
E 80/90	800 x 900		56
E 80/100	800 x 1000		59
E 80/110	800 x 1100		62
E 80/120	800 x 1200		65
E 80/130	800 x 1300		68
E 90/100	900 x 1000		61
E 90/110	900 x 1100		65
E 90/120	900 x 1200		68
E 90/130	900 x 1300		71
E 100/110	1000 x 1100		68
E 100/120	1000 x 1200		71
E 100/130	1000 x 1300		74
E 110/120	1100 x 1200		74
E 110/130	1100 x 1300		77
E 120/130	1200 x 1300		80

2.6.| Roof hatches with PVC skew base – type NG-A

2.6.1.| Technical description of standard

- » roof hatches according to EN 1873,
- » NG-A roof hatches (square and rectangular) designed for flat and pitched roofs (up to 15°), covered with roofing paper or PVC membrane,
- » dimensional range of roof hatches 900 x 900 mm ÷ 1400 x 1400 mm,
- » skew base with total height with frame 300 mm or 500 mm, made of:
 - multi-chamber PVC profiles in white with high thermal insulation properties, not requiring additional insulation or – 1.25 mm thick galvanized steel sheet suitable for mounting thermal insulation of thickness 50 mm,
- » mounting groove in the lower part of the PVC base; a 50 mm wide circumferential flange in the steel base, for mounting the vent on the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » leaf glazing: multi-chamber polycarbonate panel, acrylic dome, solid polycarbonate dome, multi-chamber polycarbonate panel with 1- or 2-layer acrylic or solid polycarbonate dome, ALU sandwich panel (see chapter 4 – page 52 for details),
- » leaf frame made of white, multi-chamber, PVC profile system provides rigidity, strength and high thermal parameters,
- » mechanical opening system equipped with two gas springs supporting the hatch opening and maintaining the hatch leaf in open position at an angle of 85° ÷ 90°.

2.6.2.| Roof hatch design

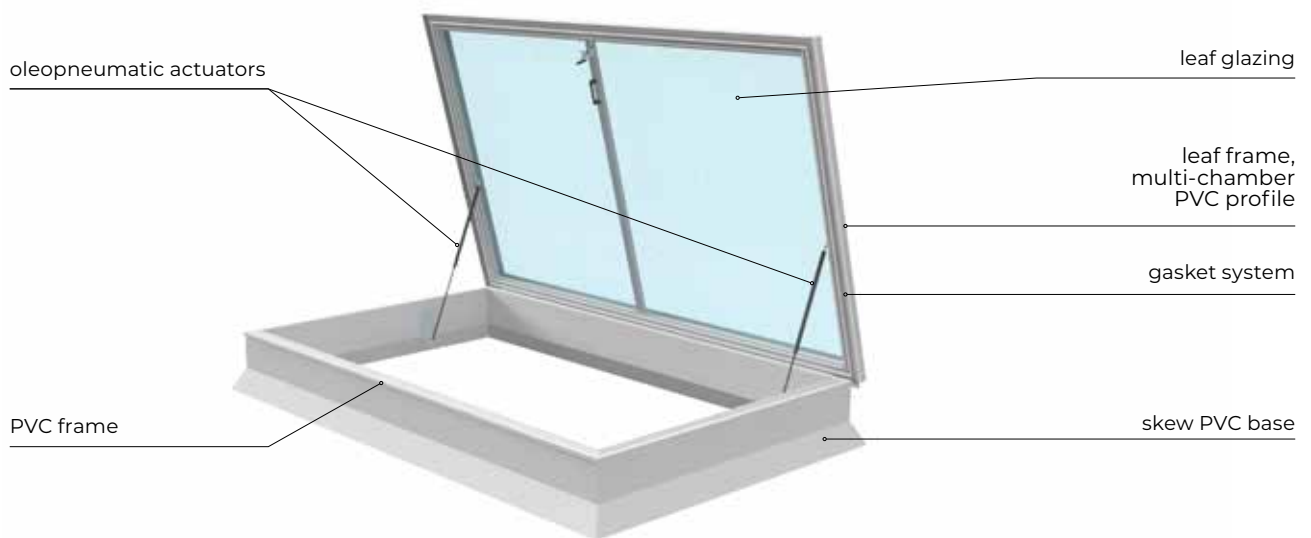


Fig. 31 Design of mcr ULTRA THERM NG-A roof hatch

2.6.3.| Roof hatch options

- » base made of aluminium sheet,
- » custom total height of base with frame in the range of 250 ÷ 700 mm,
- » painting of vent elements (metal base) in any RAL color,
- » change of steel or aluminium base sheet thickness,
- » custom width of circumferential steel base flange in the range of 50 ÷ 100 mm.

2.6.4. | **Technical drawings of roof hatch**

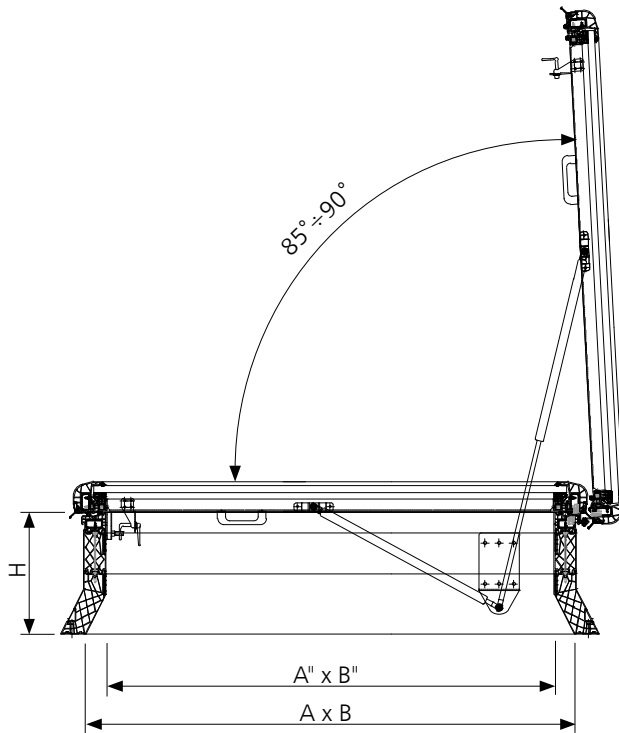


Fig. 32 Section **B-B** through mcr ULTRA THERM NG-A hatch in open position

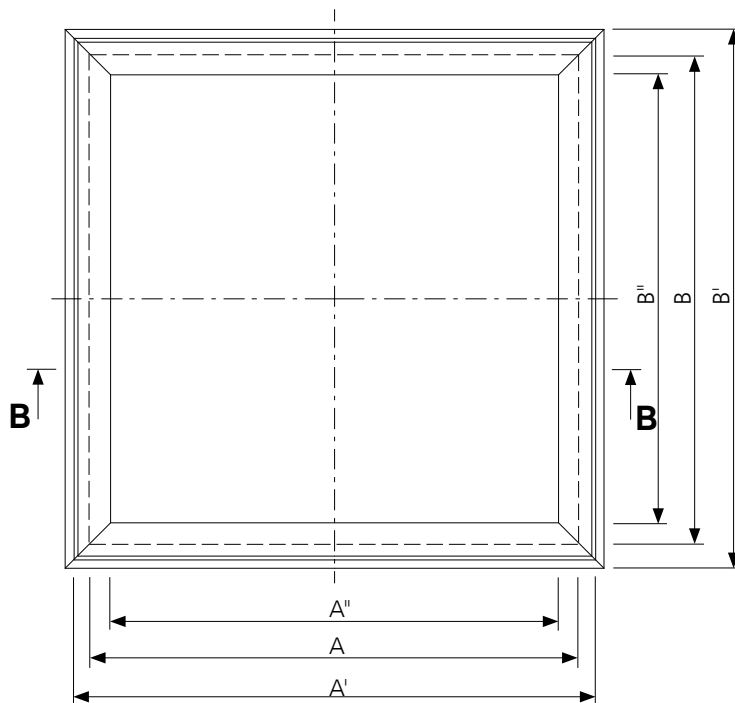


Fig. 33 Top view of mcr ULTRA THERM NG-A hatch in closed position

- A, B – nominal size [mm], clear opening of roof hatch
- A', B' – total dimension of smoke vent leaf [mm] $A' = A'' + 162$ mm, $B' = B'' + 162$ mm
- A'', B'' – clear upper opening dimension of smoke vent [mm] $A'' = A - 100$ mm, $B'' = B - 100$ mm
- H – smoke vent base height [mm]

2.6.5. Technical specification

HATCH TYPE	NOMINAL DIMENSIONS	APPROXIMATE MASS OF SKYLIGHT WITH PVC BASE	APPROXIMATE MASS OF SKYLIGHT WITH STEEL BASE
	A x B		
	[mm]		
NG-A 90/90	900 x 900	50	52
NG-A 90/100	900 x 1000	53	56
NG-A 90/110	900 x 1100	56	59
NG-A 90/120	900 x 1200	58	62
NG-A 90/130	900 x 1300	61	65
NG-A 90/140	900 x 1400	63	68
NG-A 100/100	1000 x 1000	56	58
NG-A 100/110	1000 x 1100	59	61
NG-A 100/120	1000 x 1200	61	65
NG-A 100/130	1000 x 1300	64	68
NG-A 100/140	1000 x 1400	67	71
NG-A 110/110	1100 x 1100	62	64
NG-A 110/120	1100 x 1200	65	68
NG-A 110/130	1100 x 1300	67	71
NG-A 110/140	1100 x 1400	70	74
NG-A 120/120	1200 x 1200	68	70
NG-A 120/130	1200 x 1300	71	74
NG-A 120/140	1200 x 1400	73	77
NG-A 130/130	1300 x 1300	74	77
NG-A 130/140	1300 x 1400	77	80
NG-A 140/140	1400 x 1400	80	83

2.7. | Ventilation vents with straight steel base – type C/E

2.7.1. | Technical description of standard

- » ventilation vents according to EN 1873,
- » ventilation vents type C (square) and E (rectangular) designed for flat and pitched roofs (up to 15°), covered with roofing paper, or PVC membrane,
- » dimensional range of ventilation vents:
 - type C square vents: 800 x 800 mm ÷ 2000 x 2000 mm,
 - type E rectangular vents: 800 x 1200 mm ÷ 2000 x 3000 mm,
- » straight base made of 1.25 mm thick galvanized steel sheet with a total height with frame of 300 mm or 500 mm,
- » bottom part of the base fitted with a 50 mm wide circumferential flange for mounting the vent on the roof structure,
- » white PVC frame in the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » base adapted for the installation of thermal insulation with a thickness of 50 mm,
- » leaf glazing: multi-chamber polycarbonate panel, acrylic dome, solid polycarbonate dome, multi-chamber polycarbonate panel with a 1- or 2-layer acrylic or solid polycarbonate dome, ALU sandwich panel (see chapter 4 – page 52 for details),
- » leaf frame made of white, multi-chamber, PVC profile provides rigidity, strength and high thermal parameters,
- » hinges fixing the leaf to the base mounted on the longer side of the vent,
- » ventilation control: electric 230 V~.

2.7.2. | Ventilation vent design

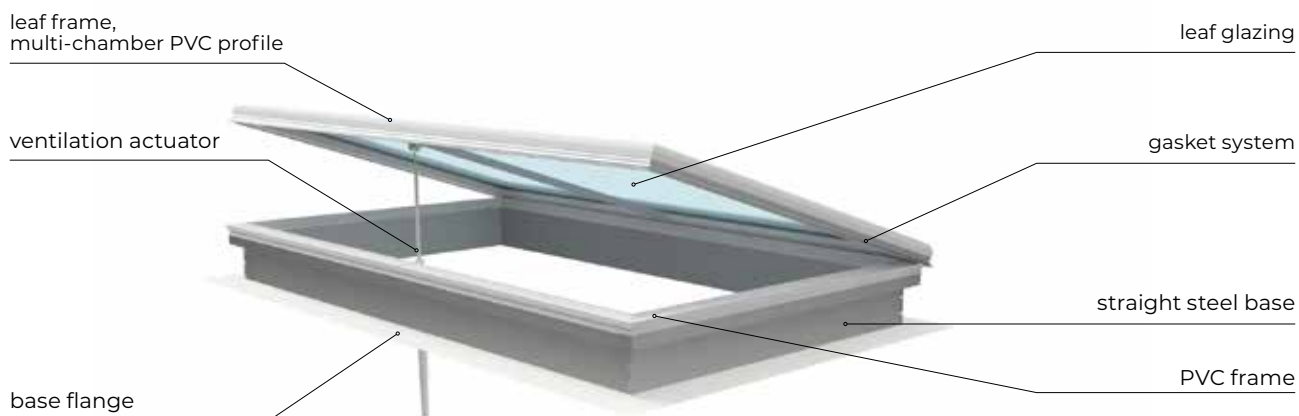


Fig. 34 Design of mcr ULTRA THERM E ventilation vent with electric actuator for ventilation

2.7.3. | Ventilation vent options

- » custom vent base clear opening dimensions,
- » base made of aluminium sheet,
- » custom steel and aluminium base height with frame in the range of 250 ÷ 700 mm,
- » painting the vent elements in any RAL color,
- » change of base sheet thickness,
- » custom width of circumferential base flange in the range of 50 ÷ 100 mm,
- » selection of additional accessories (see chapter 5 – page 58 for details).

2.7.4. | **Technical drawings of ventilation vent**

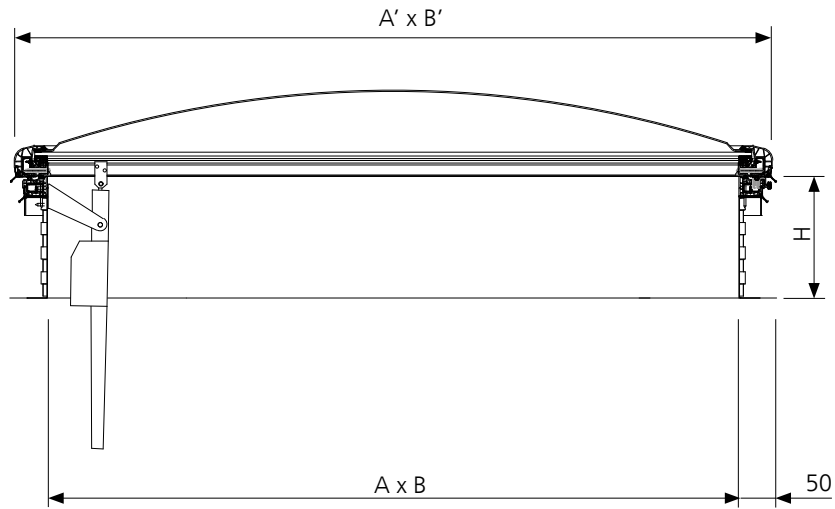


Fig. 36 Section **B-B** through mcr ULTRA THERM E ventilation vent in closed position, dimensions in mm

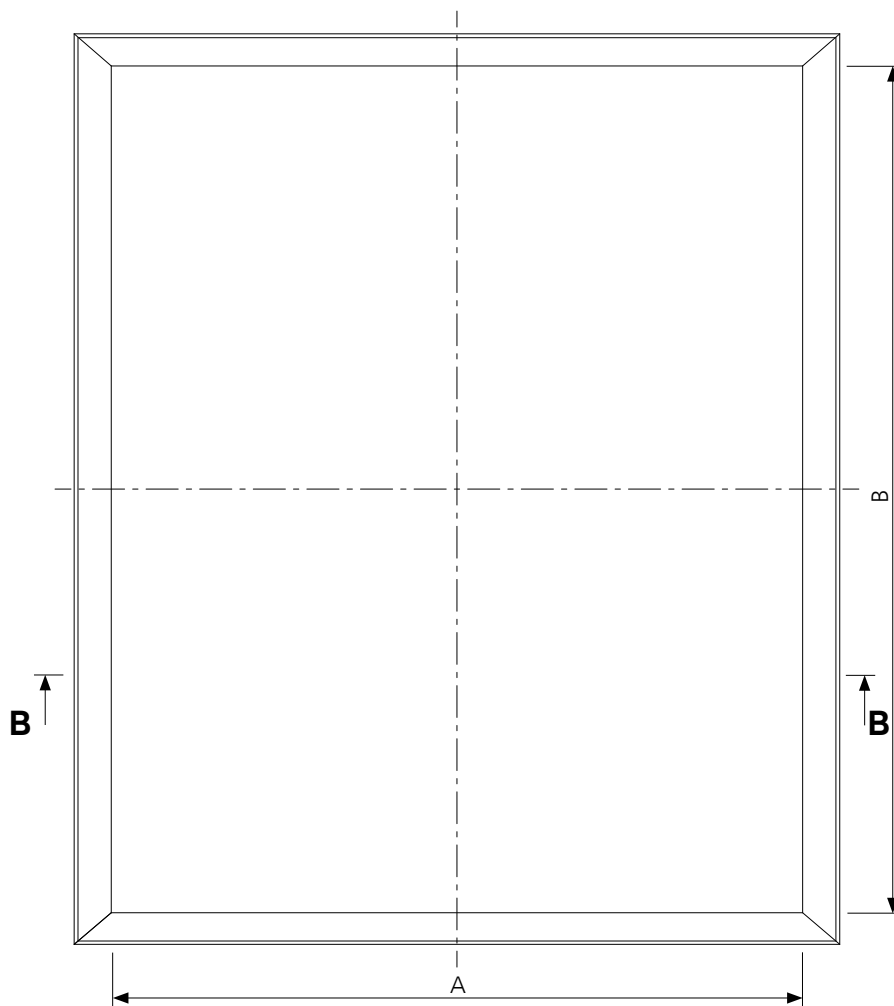


Fig. 35 Top view of mcr ULTRA THERM E ventilation vent in closed position

A, B – nominal size [mm], clear opening of ventilation vent
 A', B' – total dimension of smoke vent leaf without drip cap [mm] $A'=A+162$ mm, $B'=B+162$ mm
 H – smoke vent base height [mm]

2.7.5. | Technical specification

VENT TYPE	NOMINAL DIMENSIONS	GEOMETRIC AREA	APPROXIMATE MASS WITH FOLDED STEEL BASE
	A x B		
	[mm]		
C 80	800 x 800	0.64	41
C 90	900 x 900	0.81	48
C 100	1000 x 1000	1.00	60
C 120	1200 x 1200	1.44	73
C 140	1400 x 1400	1.96	86
C 150	1500 x 1500	2.25	92
C 160	1600 x 1600	2.56	99
C 180	1800 x 1800	3.24	113
C 200	2000 x 2000	4.00	127
E 80/120	800 x 1200	0.96	61
E 90/120	900 x 1200	1.08	64
E 100/120	1000 x 1200	1.20	67
E 100/150	1000 x 1500	1.50	77
E 100/160	1000 x 1600	1.60	80
E 100/180	1000 x 1800	1.80	86
E 100/200	1000 x 2000	2.00	93
E 100/220	1000 x 2200	2.20	99
E 100/240	1000 x 2400	2.40	106
E 100/250	1000 x 2500	2.50	109
E 120/150	1200 x 1500	1.80	83
E 120/160	1200 x 1600	1.92	86
E 120/180	1200 x 1800	2.16	93
E 120/200	1200 x 2000	2.40	100
E 120/240	1200 x 2400	2.88	113
E 120/250	1200 x 2500	3.00	116
E 150/180	1500 x 1800	2.70	103
E 150/200	1500 x 2000	3.00	110
E 150/220	1500 x 2200	3.30	117
E 150/240	1500 x 2400	3.60	124
E 150/250	1500 x 2500	3.75	128
E 150/280	1500 x 2800	4.20	147
E 150/300	1500 x 3000	4.50	154
E 160/180	1600 x 1800	2.88	106
E 160/200	1600 x 2000	3.20	113
E 160/220	1600 x 2200	3.52	121
E 160/250	1600 x 2500	4.00	131
E 160/280	1600 x 2800	4.48	151
E 160/300	1600 x 3000	4.80	158
E 180/200	1800 x 2000	3.60	120
E 180/220	1800 x 2200	3.96	128
E 180/240	1800 x 2400	4.32	135
E 180/250	1800 x 2500	4.50	139
E 180/280	1800 x 2800	5.04	159
E 180/300	1800 x 3000	5.40	167
E 200/250	2000 x 2500	5.00	146
E 200/280	2000 x 2800	5.60	168
E 200/300	2000 x 3000	6.00	175

2.8. | Ventilation vents with PVC skew base – type NG-A

2.8.1. | Technical description of standard

- » ventilation vents according to EN 1873,
- » ventilation vents type NG-A (square and rectangular) designed for flat and pitched roofs (up to 15°), covered with roofing paper or PVC membrane,
- » dimensional range of ventilation vents: 800 x 800 mm ÷ 2000 x 2000 mm,
- » skew base with total height with 300 mm or 500 mm frame, made of:
 - white, multi-chamber, PVC profile system with high thermal insulation properties, not requiring additional insulation or
 - 1.25 mm thick galvanized steel sheet suitable for mounting thermal insulation of thickness 50 mm,
- » mounting groove in the lower part of the PVC base; a 50 mm wide circumferential flange in the steel base, for mounting the vent on the roof structure,
- » white PVC frame of the upper part of the base ensures tightness, thermal insulation and drainage of condensation outside,
- » leaf glazing: multi-chamber polycarbonate panel, acrylic dome, solid polycarbonate dome, multi-chamber polycarbonate panel with a 1- or 2-layer acrylic or solid polycarbonate dome, ALU sandwich panel (see chapter 4 – page 52 for details),
- » leaf frame made of white, multi-chamber, PVC profile system provides rigidity, strength and high thermal parameters,
- » ventilation control: electric 230 V~.

2.8.2. | Ventilation vent design

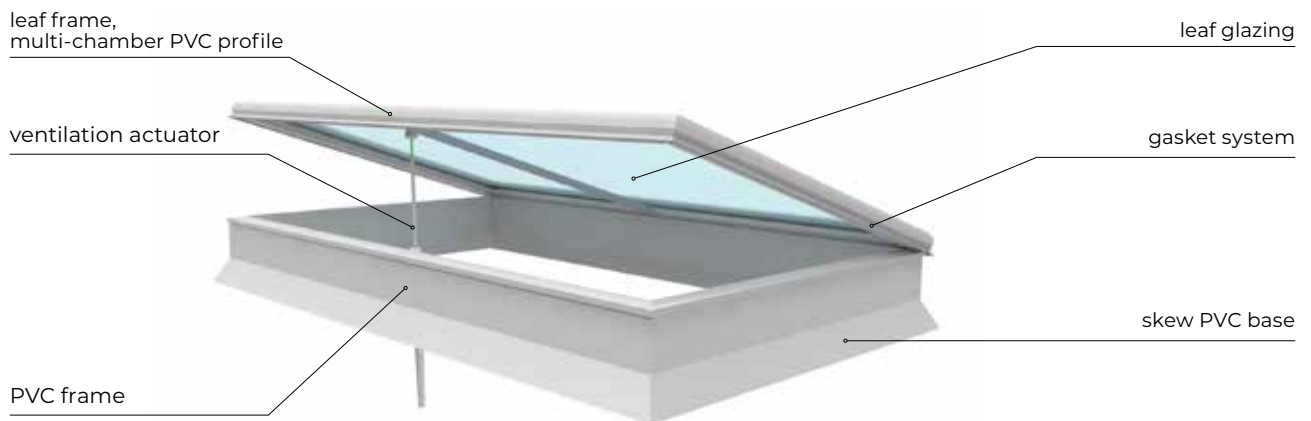


Fig. 37 Design of mcr ULTRA THERM NG-A ventilation vent, with electric actuator for ventilation

2.8.3. | Ventilation vent options

- » custom vent base clear opening dimensions,
- » base made of aluminium sheet,
- » custom total height of base with frame in the range of 250 ÷ 700 mm,
- » painting of vent elements (metal base) in any RAL color,
- » change of steel or aluminium base sheet thickness,
- » custom width of circumferential steel base flange in the range of 50 ÷ 100 mm,
- » selection of additional accessories (see chapter 5 – page 58 for details).

2.8.4. | **Technical drawings of ventilation vent**

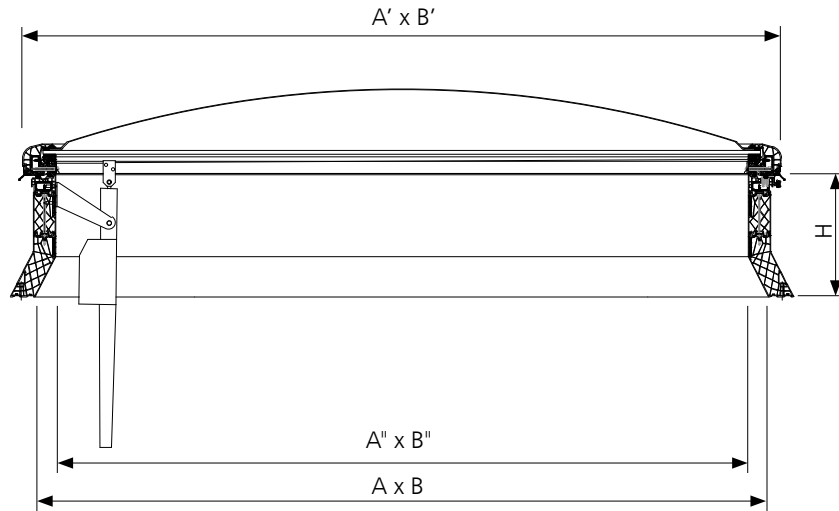


Fig. 38 Section **B-B** through mcr ULTRA THERM NG-A ventilation vent in closed position

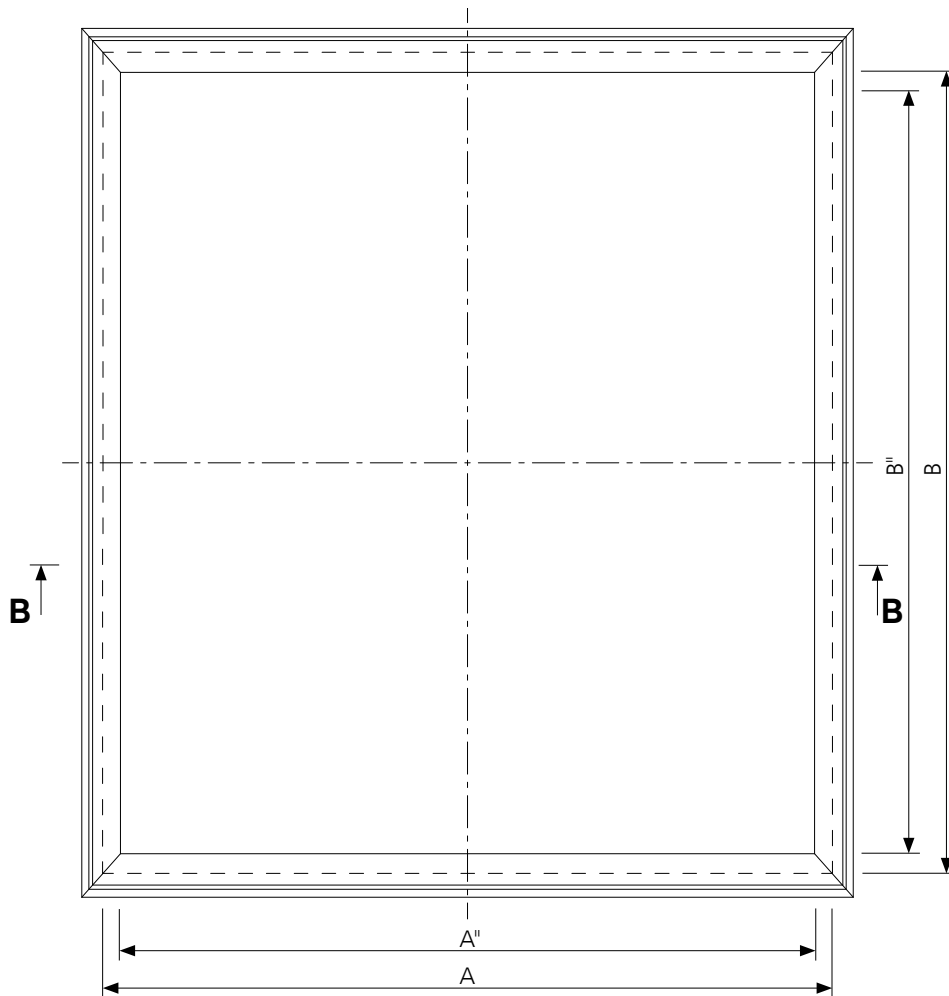


Fig. 39 Top view of mcr ULTRA THERM NG-A ventilation vent in closed position

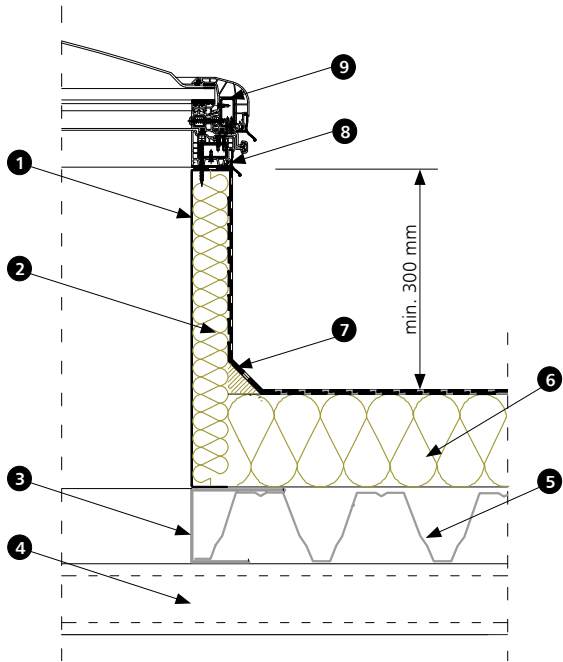
- A, B – nominal dimension [mm], smoke vent clear opening
- A', B' – total dimension of smoke vent leaf [mm] $A' = A'' + 162$ mm, $B' = B'' + 162$ mm
- A'', B'' – clear upper opening dimension of smoke vent [mm] $A'' = A - 100$ mm, $B'' = B - 100$ mm
- H – smoke vent base height [mm]

2.8.5. Technical specification

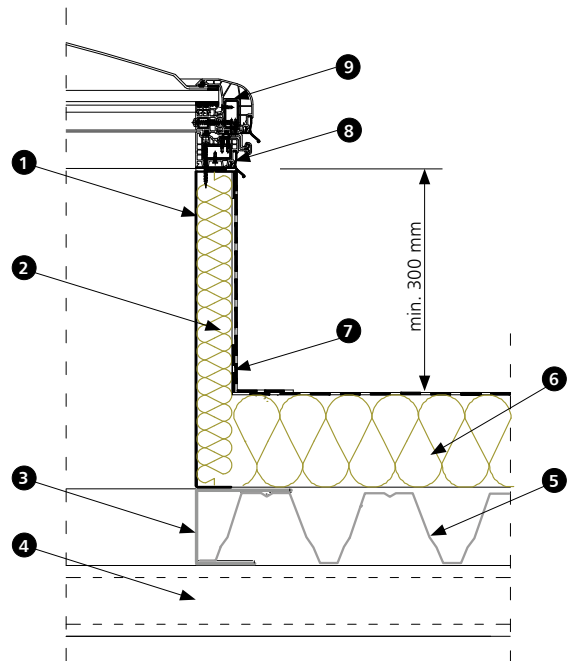
VENT TYPE	NOMINAL DIMENSIONS		GEOMETRIC AREA	APPROXIMATE MASS WITH PVC BASE
	A x B			
	[mm]			
NG-A 80/80	800 x 800		0.49	34
NG-A 80/90	800 x 900		0.56	38
NG-A 80/100	800 x 1000		0.63	42
NG-A 80/120	800 x 1200		0.77	51
NG-A 90/90	900 x 900		0.64	40
NG-A 90/100	900 x 1000		0.72	45
NG-A 90/120	900 x 1200		0.88	54
NG-A 100/100	1000 x 1000		0.81	52
NG-A 100/120	1000 x 1200		0.99	57
NG-A 100/150	1000 x 1500		1.26	65
NG-A 100/160	1000 x 1600		1.35	68
NG-A 100/180	1000 x 1800		1.53	73
NG-A 100/200	1000 x 2000		1.71	78
NG-A 100/220	1000 x 2200		1.89	84
NG-A 100/240	1000 x 2400		2.07	89
NG-A 100/250	1000 x 2500		2.16	91
NG-A 120/120	1200 x 1200		1.21	64
NG-A 120/150	1200 x 1500		1.43	72
NG-A 120/160	1200 x 1600		1.54	75
NG-A 120/180	1200 x 1800		1.87	80
NG-A 120/200	1200 x 2000		2.09	86
NG-A 120/240	1200 x 2400		2.53	97
NG-A 120/250	1200 x 2500		2.64	99
NG-A 140/140	1400 x 1400		1.69	76
NG-A 150/150	1500 x 1500		1.96	82
NG-A 150/180	1500 x 1800		2.38	91
NG-A 150/200	1500 x 2000		2.66	97
NG-A 150/220	1500 x 2200		2.94	103
NG-A 150/240	1500 x 2400		3.22	108
NG-A 150/250	1500 x 2500		3.36	111
NG-A 150/280	1500 x 2800		3.78	128
NG-A 150/300	1500 x 3000		4.06	134
NG-A 160/160	1600 x 1600		2.25	89
NG-A 160/180	1600 x 1800		2.55	95
NG-A 160/200	1600 x 2000		2.85	101
NG-A 160/220	1600 x 2200		3.15	106
NG-A 160/250	1600 x 2500		3.60	115
NG-A 160/280	1600 x 2800		4.05	133
NG-A 160/300	1600 x 3000		4.35	139
NG-A 180/180	1800 x 1800		2.89	102
NG-A 180/200	1800 x 2000		3.23	108
NG-A 180/220	1800 x 2200		3.57	114
NG-A 180/240	1800 x 2400		3.91	120
NG-A 180/250	1800 x 2500		4.08	123
NG-A 180/280	1800 x 2800		4.59	142
NG-A 180/300	1800 x 3000		4.93	148
NG-A 200/200	2000 x 2000		3.61	115
NG-A 200/250	2000 x 2500		4.56	131
NG-A 200/280	2000 x 2800		5.13	151
NG-A 200/300	2000 x 3000		5.51	157
NG-A 210/210	2100 x 2100		4.00	122

3. | Installation of smoke and ventilation vents, fixed skylights and roof hatches

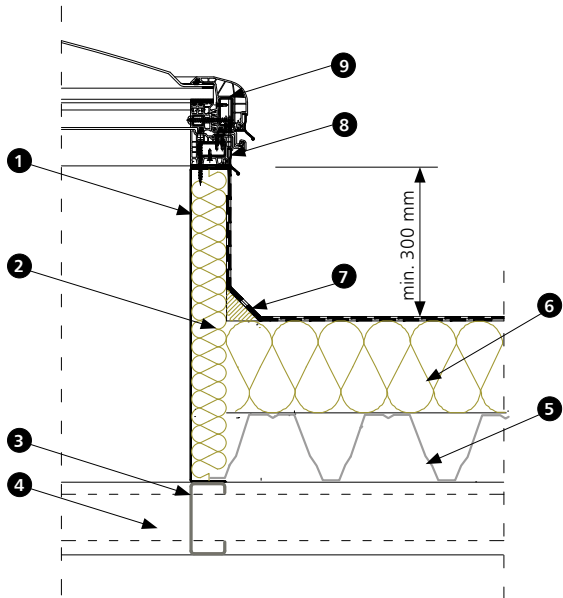
3.1. | Smoke vent with straight steel base mounted on a steel roof structure



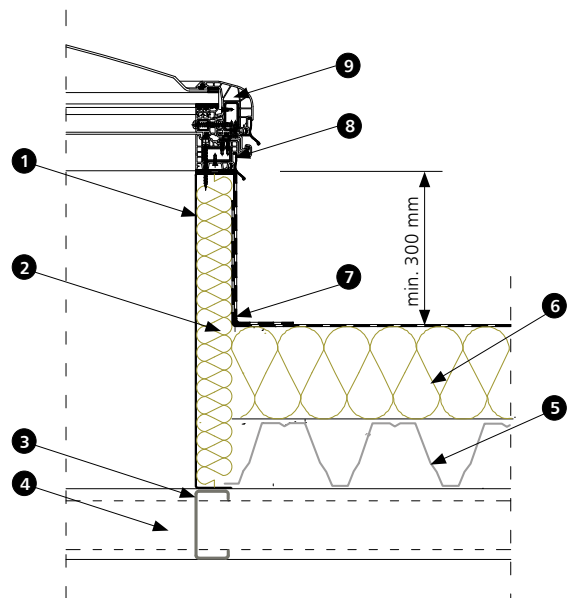
- 1 - smoke vent steel base
- 2 - thermal insulation of base
- 3 - steel support structure for e.g. purlins, trimmers
- 4 - roof purlin
- 5 - trapezoidal sheet
- 6 - roof thermal insulation
- 7 - roofing paper
- 8 - smoke vent PVC frame
- 9 - smoke vent leaf



- 1 - smoke vent steel base
- 2 - thermal insulation of base
- 3 - steel support structure for e.g. purlins, trimmers
- 4 - roof purlin
- 5 - trapezoidal sheet
- 6 - roof thermal insulation
- 7 - PVC membrane
- 8 - smoke vent PVC frame
- 9 - smoke vent leaf

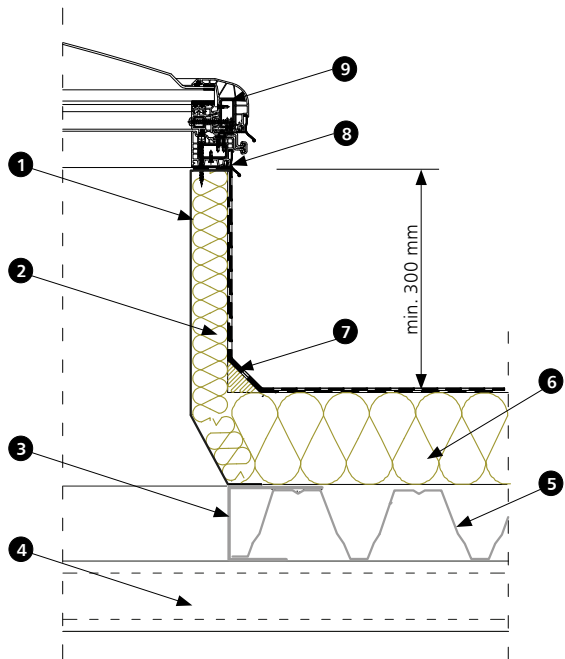


- 1 - smoke vent steel base
- 2 - thermal insulation of base
- 3 - steel support structure for e.g. purlins, trimmers
- 4 - roof purlin
- 5 - trapezoidal sheet
- 6 - roof thermal insulation
- 7 - roofing paper
- 8 - smoke vent PVC frame
- 9 - smoke vent leaf

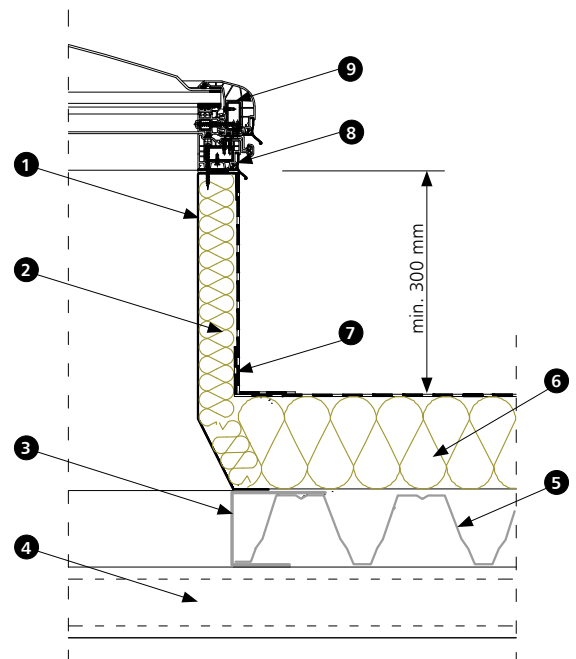


- 1 - smoke vent steel base
- 2 - thermal insulation of base
- 3 - steel support structure for e.g. purlins, trimmers
- 4 - roof purlin
- 5 - trapezoidal sheet
- 6 - roof thermal insulation
- 7 - PVC membrane
- 8 - smoke vent PVC frame
- 9 - smoke vent leaf

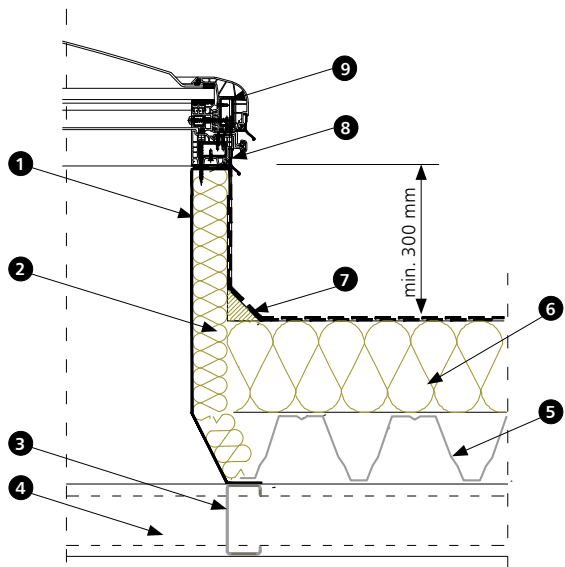
3.2. | Smoke vent with skew steel base mounted on a steel roof structure



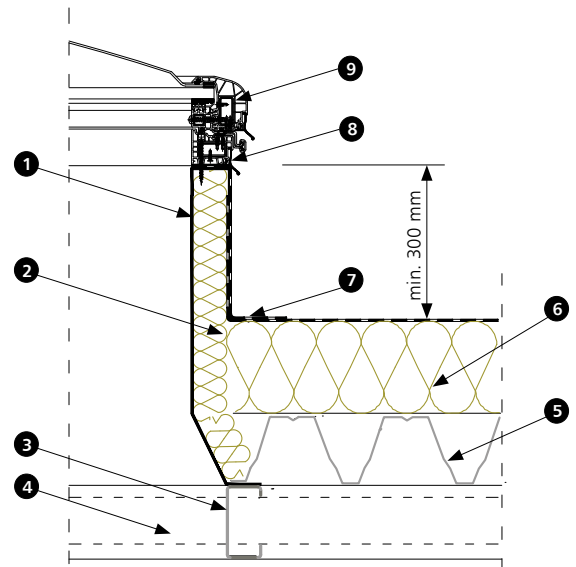
- 1 – smoke vent steel base
- 2 – thermal insulation of base
- 3 – steel support structure for e.g. purlins, trimmers
- 4 – roof purlin
- 5 – trapezoidal sheet
- 6 – roof thermal insulation
- 7 – roofing paper
- 8 – smoke vent PVC frame
- 9 – smoke vent leaf



- 1 – smoke vent steel base
- 2 – thermal insulation of base
- 3 – steel support structure for e.g. purlins, trimmers
- 4 – roof purlin
- 5 – trapezoidal sheet
- 6 – roof thermal insulation
- 7 – PVC membrane
- 8 – smoke vent PVC frame
- 9 – smoke vent leaf

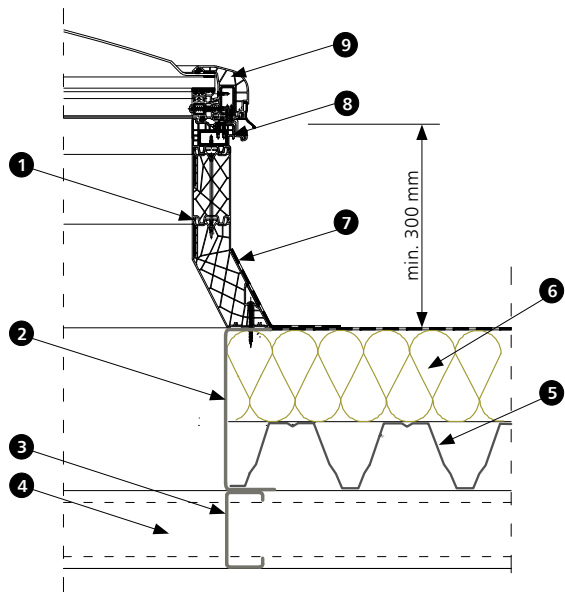


- 1 – smoke vent steel base
- 2 – thermal insulation of base
- 3 – steel support structure for e.g. purlins, trimmers
- 4 – roof purlin
- 5 – trapezoidal sheet
- 6 – roof thermal insulation
- 7 – roofing paper
- 8 – smoke vent PVC frame
- 9 – smoke vent leaf



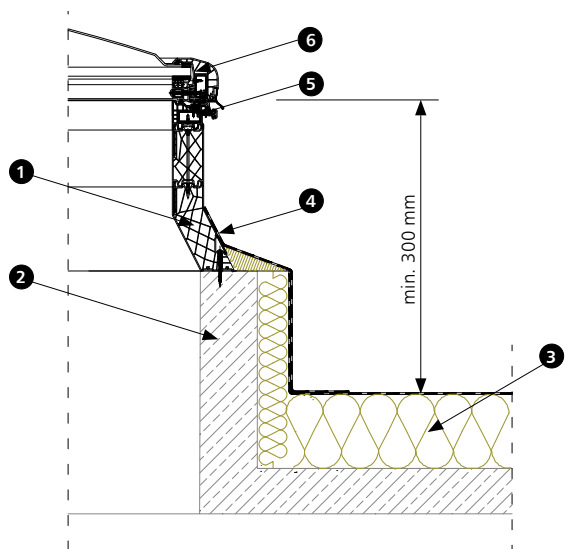
- 1 – smoke vent steel base
- 2 – thermal insulation of base
- 3 – steel support structure for e.g. purlins, trimmers
- 4 – roof purlin
- 5 – trapezoidal sheet
- 6 – roof thermal insulation
- 7 – PVC membrane
- 8 – smoke vent PVC frame
- 9 – smoke vent leaf

3.3. | Smoke vent with skew PVC base mounted on a steel roof structure



- 1 – smoke vent multi-chamber PVC base
- 2 – smoke vent base supporting structure
- 3 – steel support structure for e.g. purlins, trimmers
- 4 – roof purlin
- 5 – trapezoidal sheet
- 6 – roof thermal insulation
- 7 – PVC membrane
- 8 – smoke vent PVC frame
- 9 – smoke vent leaf

3.4. | Smoke vent with skew PVC base mounted on reinforced concrete plinth










- 1 – smoke vent multi-chamber PVC base
- 2 – reinforced concrete plinth
- 3 – roof thermal insulation
- 4 – roofing paper
- 5 – PVC frame
- 6 – smoke vent leaf

4.1 Glazing of smoke and ventilation vents, skylights and roof hatches

Smoke or ventilation vents, fixed skylights and hatches used as roof lighting can come with a broad range of glazings. Choosing the right glazing affects:

- » amount of daylight,
- » thermal insulation of facility,
- » user safety.

		Multi-chamber polycarbonate panel (PCA)	3x PMMA/PC dome panel	ALU sandwich panel*	2x multi-chamber polycarbonate panel (2x PCA)	PCA + B _{ROOF} (t1)	2x PCA + B _{ROOF} (t1)	2x PMMA/PC dome and PCA panel
Type								
Smoke vents	C, E	•	•	•	•	•	•	•
	NG-A	•	•	•	•	•	•	•
Fixed skylights	C, E	•	•	-	•	•	•	•
	NG-A	•	•	-	•	•	•	•
Roof hatches	C, E	•	•	-	•	•	•	•
	NG-A	•	•	-	•	•	•	•
Ventilation vents	C, E	•	•	-	•	•	•	•
	NG-A	•	•	-	•	•	•	•

(*) Applicable to selected dimensions of smoke vents.

4.1. Multi-chamber polycarbonate panel (PCA)



Fig. 40 Vent glazing – multi-chamber polycarbonate panel

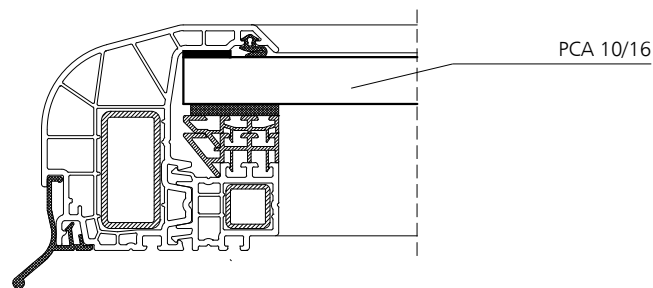


Fig. 41 Section through vent, glazing: multi-chamber polycarbonate panel

SINGLE PANEL PARAMETERS (PCA)	PCA 10		PCA 16	
	CLEAR	OPAL	CLEAR	OPAL
HEAT TRANSFER COEFFICIENT U	2.2 ÷ 2.5 W/(m²K)		1.77 ÷ 2.0 W/(m²K)	
LIGHT TRANSMISSION Lt	64÷75 %	44÷65 %	54÷69 %	32÷54 %
ACOUSTIC INSULATION Rw	17÷19 dB		18÷21 dB	
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	B-s1,d0		B-s1,d0 / B-s2,d0	

4.2. Double multi-chamber polycarbonate panel (PCA + PCA)

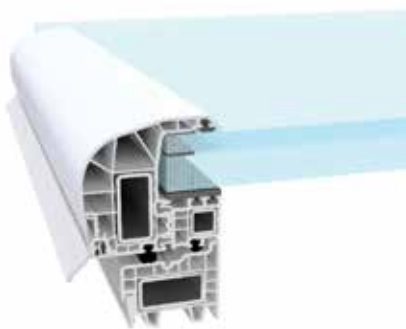


Fig. 42 Vent glazing – double multi-chamber polycarbonate panel

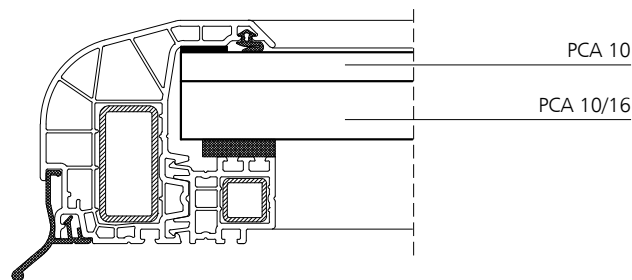


Fig. 43 Section through vent, glazing: multi-chamber polycarbonate panel

PAPARAMETRY ZESTAWU PŁYT (PCA + PCA)	PCA 10 + PCA 10		PCA 10 + PCA 16	
	CLEAR	OPAL	CLEAR	OPAL
HEAT TRANSFER COEFFICIENT U	1.3 ÷ 1.8 W/(m²K)		1.1 ÷ 1.4 W/(m²K)	
LIGHT TRANSMISSION Lt	53÷77%	19 ÷ 58%	39 ÷ 64%	13 ÷ 54%
ACOUSTIC INSULATION Rw	min.19 dB		min. 18 dB	
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	B-s1,d0		B-s1,d0 / B-s2,d0	

4.3. | **B_{ROOF}(t1) multi-chamber polycarbonate (PCA) + polyester panel**

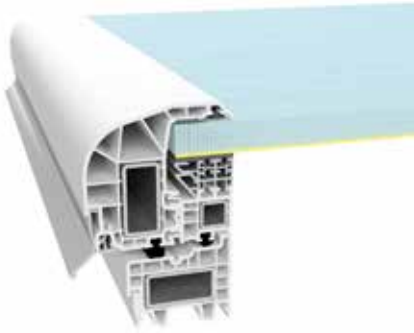


Fig. 44 Vent glazing – multi-chamber polycarbonate chamber + polyester panel

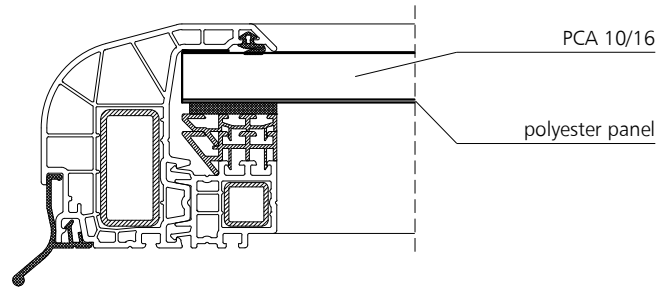


Fig. 45 Vent cross-section, glazing: B_{ROOF}(t1)

SINGLE PANEL PARAMETERS (PCA) + POLYESTER PANEL	PCA 10		PCA 16	
	CLEAR	OPAL	CLEAR	OPAL
HEAT TRANSFER COEFFICIENT U	2.2 ÷ 2.5 W/(m ² K)		1.77 ÷ 2.0 W/(m ² K)	
LIGHT TRANSMISSION Lt	35÷52%	43÷55%	26÷43%	32÷54 %
ACOUSTIC INSULATION Rw	17÷19 dB		18÷21 dB	
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	B _{ROOF} (t1)		B _{ROOF} (t1)	

4.4. | **B_{ROOF}(t1) Double multi-chamber polycarbonate (PCA) + polyester panel**

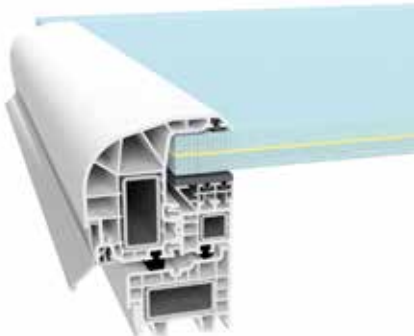


Fig. 46 Vent glazing – double multi-chamber polycarbonate panel + polyester panel

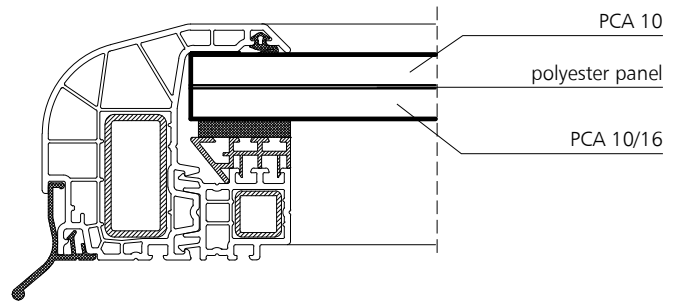


Fig. 47 Vent cross-section, glazing: B_{ROOF}(t1) with double multi-chamber polycarbonate panel PCA 10 mm + PCA 10 mm

PANELS SET PARAMETERS (PCA + PCA) + POLYESTER PANEL	PCA 10 + PCA 10		PCA 10 + PCA 16	
	CLEAR	OPAL	CEAR	OPAL
HEAT TRANSFER COEFFICIENT U	1.44 W/(m ² K)		1.19 W/(m ² K)	
LIGHT TRANSMISSION Lt	33÷45%	15÷34%	28÷42%	11÷28%
ACOUSTIC INSULATION Rw	17÷19 dB		18÷21 dB	
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	B-s1,d0		B-s1,d0 / B-s2,d0	

4.5. | **Solid polycarbonate (PC) dome**

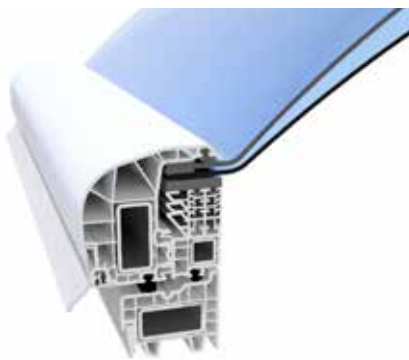


Fig. 48 Vent glazing – 2-layer solid polycarbonate dome

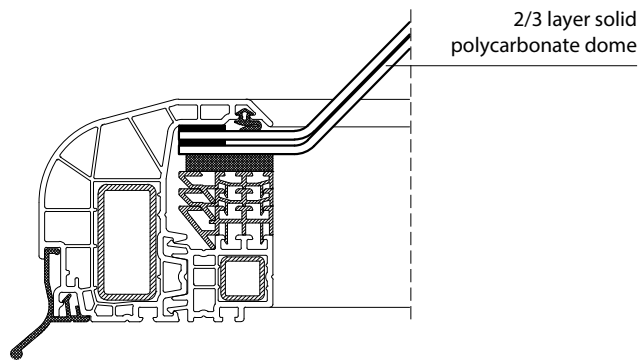


Fig. 49 Vent cross-section, glazing: 2-layer solid polycarbonate dome

PARAMETERS	2-LAYER SOLID PC POLYCARBONATE DOME		3-LAYER SOLID PC POLYCARBONATE DOME	
	CLEAR	OPAL	CLEAR	OPAL
HEAT TRANSFER COEFFICIENT U	2.23 W/(m ² K)	2.23 W/(m ² K)	1.53 W/(m ² K)	1.53 W/(m ² K)
LIGHT TRANSMISSION Lt	76÷79%	26÷36%	66÷70%	23÷32%
ACOUSTIC INSULATION Rw	20 dB	20 dB	22 dB	22 dB
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	- B-s1,d0 - B-s2,d0 - NPD	- B-s1,d0 - B-s2,d0 - NPD	- B-s1,d0 - B-s2,d0 - NPD	- B-s1,d0 - B-s2,d0 - NPD

4.6. | **Acrylic (PMMA) dome**

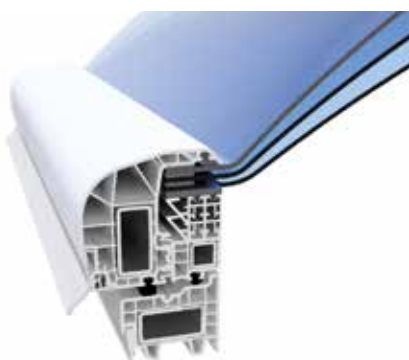


Fig. 50 Vent glazing – 3-layer acrylic dome

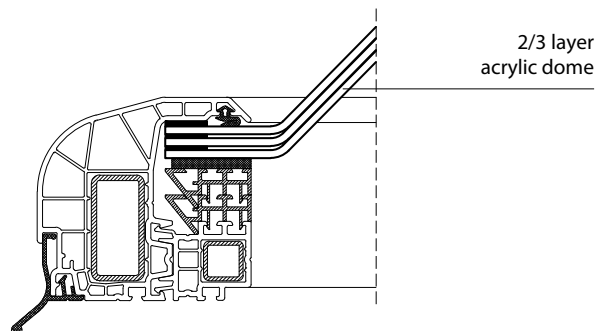


Fig. 51 Vent cross-section, glazing: 3-layer acrylic dome

PARAMETERS	PCA 10 + PCA 10		PCA 10 + PCA 16	
	CLEAR	OPAL	CLEAR	OPAL
HEAT TRANSFER COEFFICIENT U	2.23 W/(m ² K)	2.23 W/(m ² K)	1.53 W/(m ² K)	1.53 W/(m ² K)
LIGHT TRANSMISSION Lt	85%	68 - 75%	78%	64%
ACOUSTIC INSULATION Rw	20 dB	20 dB	22 dB	22 dB
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	NPD	NPD	NPD	NPD

4.7.1 1-layer acrylic (PMMA) / solid polycarbonate (PC) dome and multi-chamber polycarbonate (PCA) panel

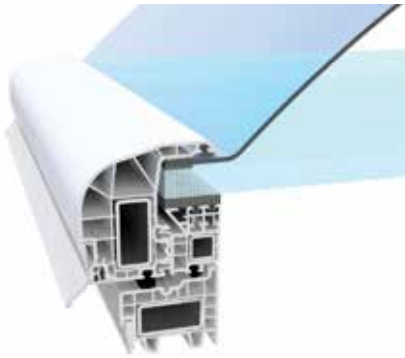


Fig. 52 Vent glazing – acrylic dome and multi-chamber polycarbonate panel

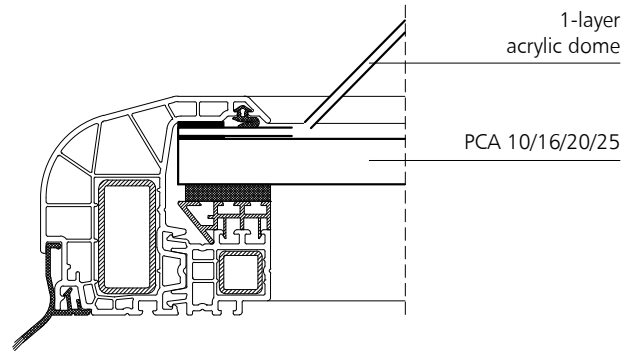


Fig. 53 Vent cross-section, glazing: 1-layer acrylic dome and multi-chamber polycarbonate panel

PARAMETERS	1xPMMA + PCA 10	1xPC + PCA 10	1xPMMA + PCA 16	1xPC + PCA 16
HEAT TRANSFER COEFFICIENT U	1.41 W/(m ² K)		1.15 W/(m ² K)	
LIGHT TRANSMISSION Lt (clear - clear)	59%	56÷57%	50÷59%	47÷57%
LIGHT TRANSMISSION Lt (clear - opal)	51%	48÷49%	41÷43%	39÷42%
LIGHT TRANSMISSION Lt (opal - opal)	45÷48%	35÷39%	37÷41%	29÷33%
ACOUSTIC INSULATION Rw	min. 19 dB		min. 21 dB	
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	- PMMA: NPD - PCA10: B-s1,d0	- PC: B-s1,d0 - B-s2,d0 - NPD PCA10: B-s1, d0	- PMMA: NPD - PCA16: B-s1,d0 - B-s2,d0	- PC: B-s1,d0 - B-s2,d0 - NPD PCA10: B-s1, d0 - B-s2/d0

PARAMETERS	1xPMMA + PCA 20	1xPC + PCA 20	1xPMMA + PCA 25	1xPC + PCA 25
HEAT TRANSFER COEFFICIENT U	1.1 W/(m ² K)		0.98 W/(m ² K)	
LIGHT TRANSMISSION Lt (clear - clear)	49÷57%	46÷55%	47%	44÷45%
LIGHT TRANSMISSION Lt (clear - opal)	41÷43%	39÷42%	40%	38÷39%
LIGHT TRANSMISSION Lt (opal - opal)	37÷41%	29÷33%	36÷38%	28÷31%
ACOUSTIC INSULATION Rw	min. 21 dB		min. 22 dB	
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	- PMMA: NPD - PCA20: B-s1,d0	- PC: B-s1,d0 - B-s2,d0 - NPD PCA20: B-s1, d0	- PMMA: NPD - PCA25: B-s1,d0 - B-s2,d0	- PC: B-s1,d0 - B-s2,d0 - NPD PCA25: B-s1, d0 - B-s2/d0

4.8. | **2-layer acrylic (PMMA) / solid polycarbonate (PC) dome and multi-chamber polycarbonate (PCA) panel**

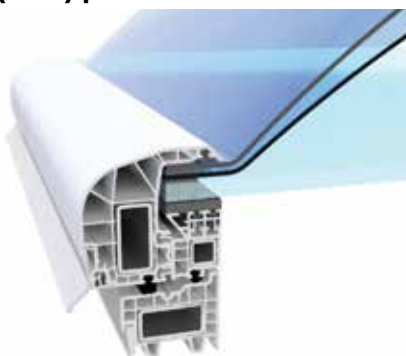


Fig. 54 Vent glazing – 2-layer acrylic dome and multi-chamber polycarbonate panel

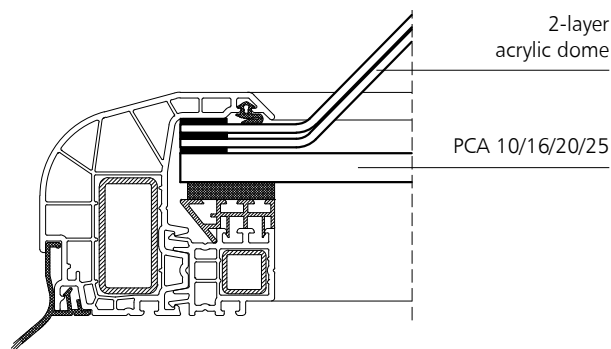


Fig. 55 Cross-section through vent, glazing: 2-layer acrylic dome and multi-chamber polycarbonate panel

PARAMETERS	2xPMMA + PCA 10	2xPC + PCA 10	2xPMMA + PCA 16	2xPC + PCA 16
HEAT TRANSFER COEFFICIENT U	0.99 W/(m ² K)		0.85 W/(m ² K)	
LIGHT TRANSMISSION Lt (clear - clear)	54%	49÷51%	46÷54%	41÷51%
LIGHT TRANSMISSION Lt (clear - opal)	47%	42÷43%	38÷40%	34÷37%
LIGHT TRANSMISSION Lt (opal - opal)	37÷41%	14÷20%	31÷35%	12÷17%
ACOUSTIC INSULATION R _w	min. 19 dB		min. 21 dB	
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	- PMMA: NPD - PCA10: B-s1,d0	- PC: B-s1,d0 - B-s2,d0 - NPD PCA10: B-s1, d0	- PMMA: NPD - PCA16: B-s1,d0 - B-s2,d0	- PC: B-s1,d0 - B-s2,d0 - NPD PCA10: B-s1, d0 - B-s2/d0

PARAMETERS	2xPMMA + PCA 20	2xPC + PCA 20	2xPMMA + PCA 25	2xPC + PCA 25
HEAT TRANSFER COEFFICIENT U	0.83 W/(m ² K)		0.76 W/(m ² K)	
LIGHT TRANSMISSION Lt (clear - clear)	45÷53%	40÷49%	43%	39÷40%
LIGHT TRANSMISSION Lt (clear - opal)	38÷40%	34÷37%	37%	33÷35%
LIGHT TRANSMISSION Lt (opal - opal)	31÷35%	12÷17%	30÷33%	11÷16%
ACOUSTIC INSULATION R _w	min. 21 dB		min. 22 dB	
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	- PMMA: NP - PCA20: B-s1,d0 - B-s2,d0	- PC: B-s1,d0 - B-s2,d0/NPD - PCA20: B-s1,d0 - B-s2,d0	- PMMA: NPD - PCA25: B-s2,d0	- PC: B-s1,d0 - B-s2,d0 - NPD PCA25: B-s2,d0

4.9. | **ALU sandwich panel**

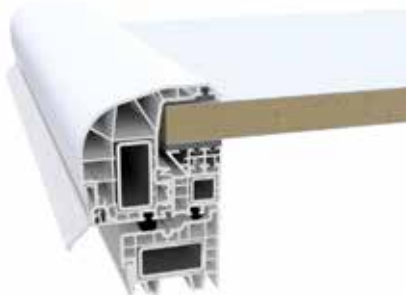


Fig. 56 Vent glazing – ALU sandwich panel

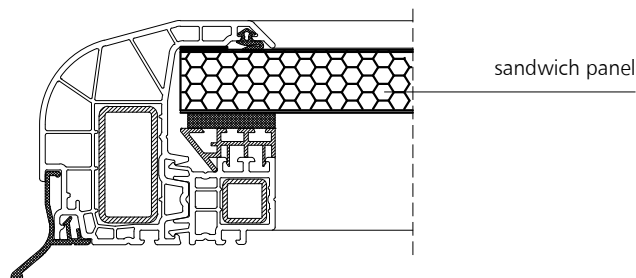






Fig. 57 Cross-section through vent, vent glazing: ALU sandwich panel

PARAMETERS	ALU SANDWICH PANEL TH. 20 mm	ALU SANDWICH PANEL TH. 40 mm
HEAT TRANSFER COEFFICIENT U	1.38 W/(m ² K)	0.97 W/(m ² K)
LIGHT TRANSMISSION Lt	opaque	opaque
FIRE REACTION CLASS (ACCORDING TO EN 13501-1)	E / NPD	E / NPD

5. | **Additional accessories for smoke and ventilation vents, skylights and roof hatches**

	Wind deflectors	Inlet deflector	Safety net	Limit switch
Product type				
Smoke vents	•	•	•	•
Fixed skylights	-	-	•	-
Roof hatches	-	-	•	•
Ventilation vents	-	-	•	•
Vents with roof access option	•	-	•	•

5.1. | **Wind deflectors**

- » smoke vent element increasing its active aerodynamic area
- » **wind deflectors are used in:**
 - mcr ULTRA THERM type C, mcr ULTRA THERM type E, mcr ULTRA THERM type NG-A vents as optional accessories
- » wind shields are made of aluminium sheet,
- » **options:**
 - powder coating.

Wind deflectors in smoke vents are fitted in pairs:
» in the corners of the vent base opposite to the hinges.



Fig. 58 mcr ULTRA THERM smoke vent with wind deflectors

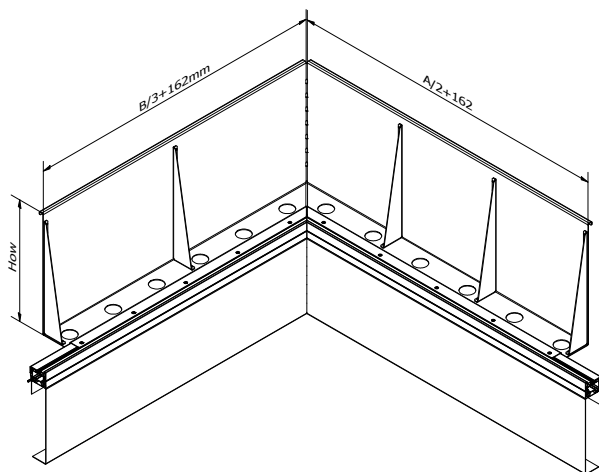


Fig. 59 View of wind deflectors from inside

5.2. Inlet deflector

- » element of smoke vent increasing its active aerodynamic area, always used in conjunction with wind deflectors,
- » **inlet deflectors are used in:**
 - mcr ULTRA THERM type C and mcr ULTRA THERM type E vents as additional accessories,
- » made of galvanized steel sheet,
- » the use of inlet deflector affects the wind deflectors height,
- » the lower edge of inlet deflector is 60 mm below the lower edge of vent base,
- » **where an inlet deflector and, at the same time, safety grids or nets are used, the minimum height of the vent base should be:**
 - 300 mm for mcr PROLIGHT type C and E vents,
- » **options of making:**
 - powder coating,
 - aluminium or stainless-steel sheet.

To avoid damage, the inlet deflector comes in parts for assembly and is mounted in the smoke vent on the roof.



Fig. 60 mcr ULTRA THERM smoke vent with inlet deflector fitted

5.3. limit switch

- » indicates the leaf position in smoke or ventilation vent and presents this state on the synoptic panel or transmits the signal to fire alarm system,
- » three position states can be indicated:
 - complete closure of vent,
 - complete opening of vent,
 - any opening of vent,
- » features two NO and NC contacts,
- » rated voltage range up to 250 V- or up to 500 V~,
- » current capacity of contacts is maximum 5 A (resistive load) and depends on the nature of the load,
- » switching speed of the switch is maximum 30/min.,
- » operating temperature range -5°C ÷ 65°C, maximum humidity 95% RH,
- » switch protection grade IP65.



Fig. 61 Limit switch signaling the position of the vent leaf

5.4. | Safety net

- » resistant to large soft body impact with a maximum energy of 1200 J, which corresponds to grade SB1200 according to EN 1873 standard,
- » mounted in the unit's base,
- » made of galvanized steel rods with a diameter of $4 \div 8$ mm, with mesh size of $150 \times 100 \dots 150 \times 650$ mm,
- » design options:
 - powder coating,
 - openable net for mcr ULTRA THERM smoke vents with roof access.

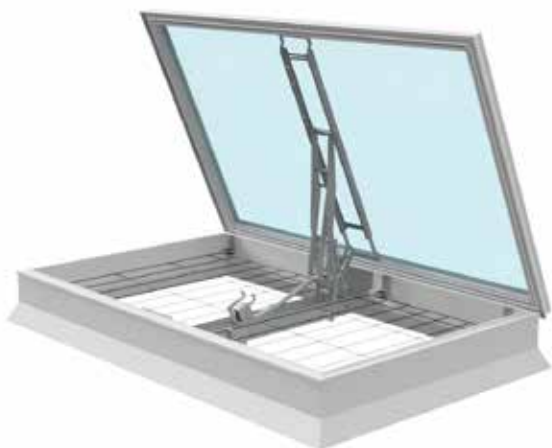


Fig. 62 Safety net mounted in mcr ULTRA THERM type E vent

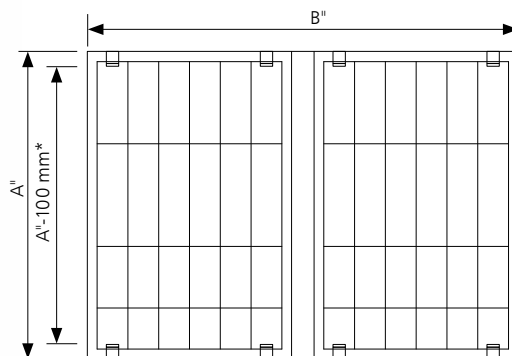


Fig. 63 Top view of vent with safety net

5.5. | Safety net under the base of the vent

- » resistant to large soft body impact with a maximum energy of 1200 J, which corresponds to grade SB1200 according to EN 1873 standard,
- » mounted in the unit's base,
- » made of galvanized steel rods with a diameter $150 \times (480 \div 489)$ mm,
- » design options:
 - powder coating,
 - execution of a tilting net for mcr ULTRA THERM smoke vents with a hatch function, dedicated to NG-A vents with a steel base and PVC 150/250 and 200/300.



Fig. 64 Safety net mouted under the base of the mcr ULTRA THERM vent type NG-A

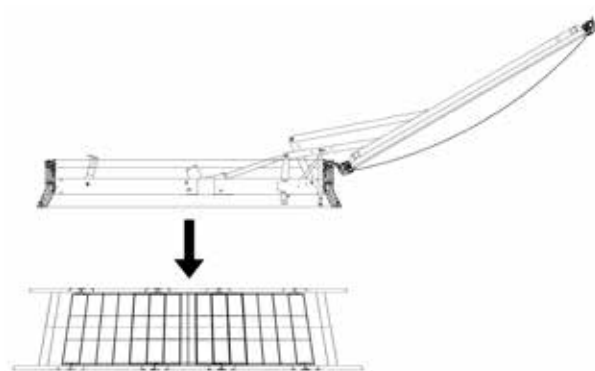
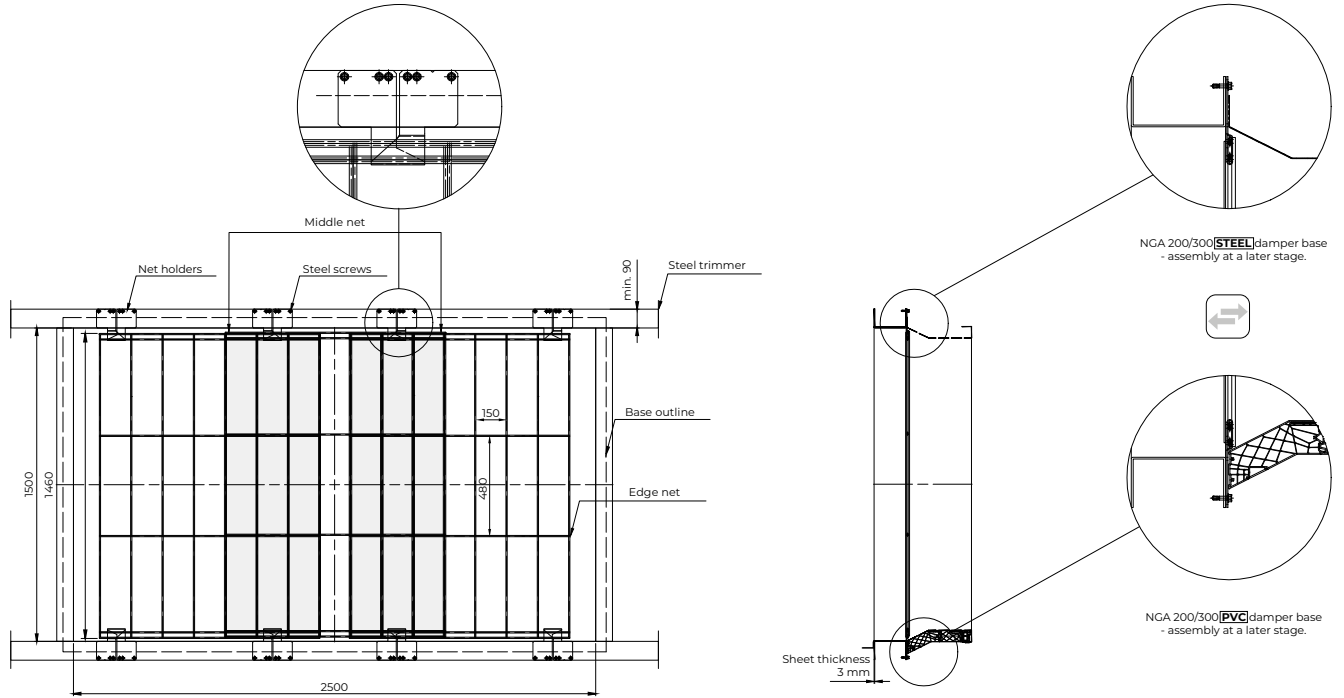


Fig. 65 Installation of the safety net under the vent

5.5.1. | Examples of using nets for vents of the following sizes:

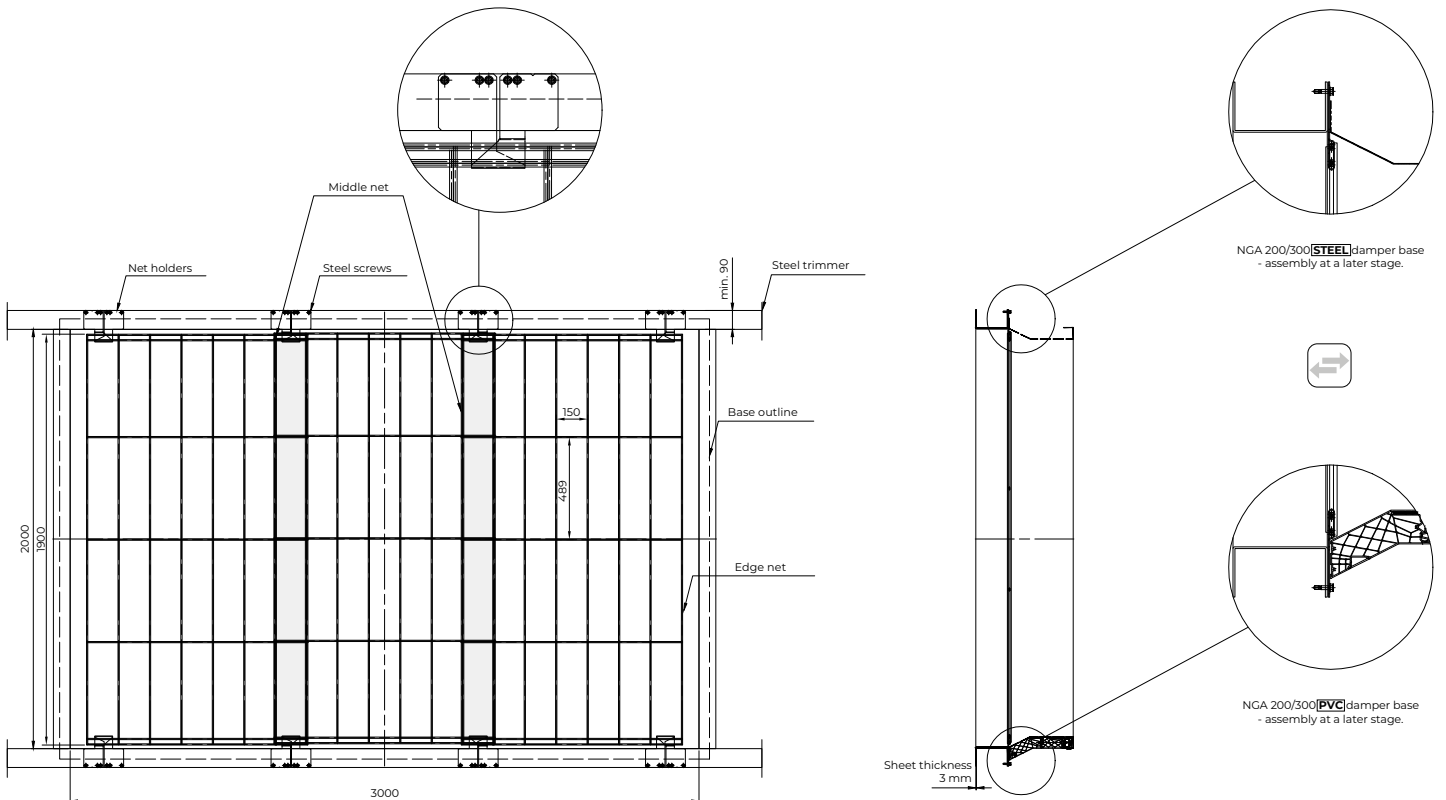
» Dimensions: 1500 x 2500 mm

The middle net overlaps the outer nets 2 times with 3 meshes.



» Dimensions: 2000 x 3000 mm

The middle net overlaps the outer grids 2 times by 1 column of meshes.





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