

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.

Parameters		Vent C/E	Vent NG-A	Vent with roof access C/E	Vent with roof access NG-A
					
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 and 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 and a thermal conductivity coefficient not exceeding $\lambda=0.039$ W/mK,
- » **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

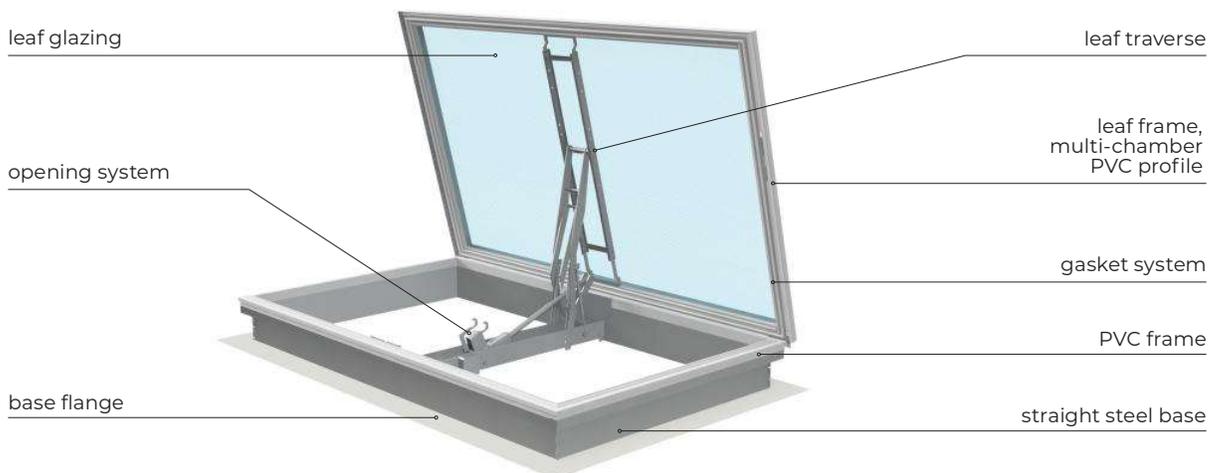


Fig. 1 Design of mcr ULTRA THERM E smoke vent with straight steel base

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),
- » vent with optional roof access, within the dimensional range specified in section 1.3 – page 17.

1.1.4 | **Smoke vent technical drawings**

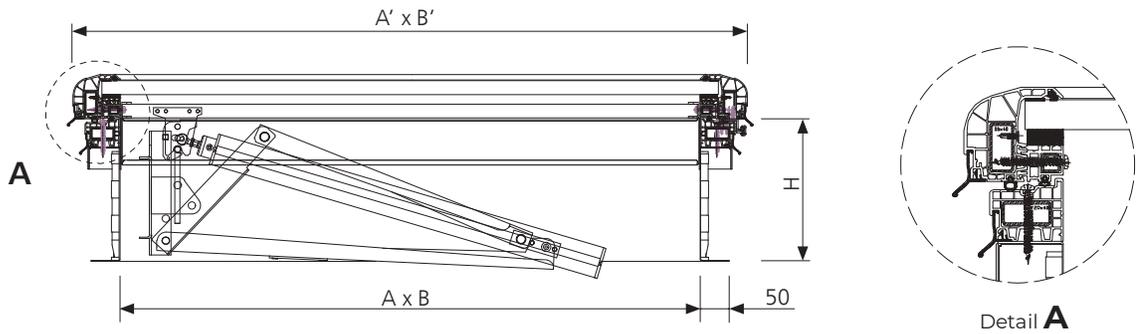


Fig. 2 Section **B-B** of mcr ULTRA THERM smoke vent in closed position, dimensions in mm

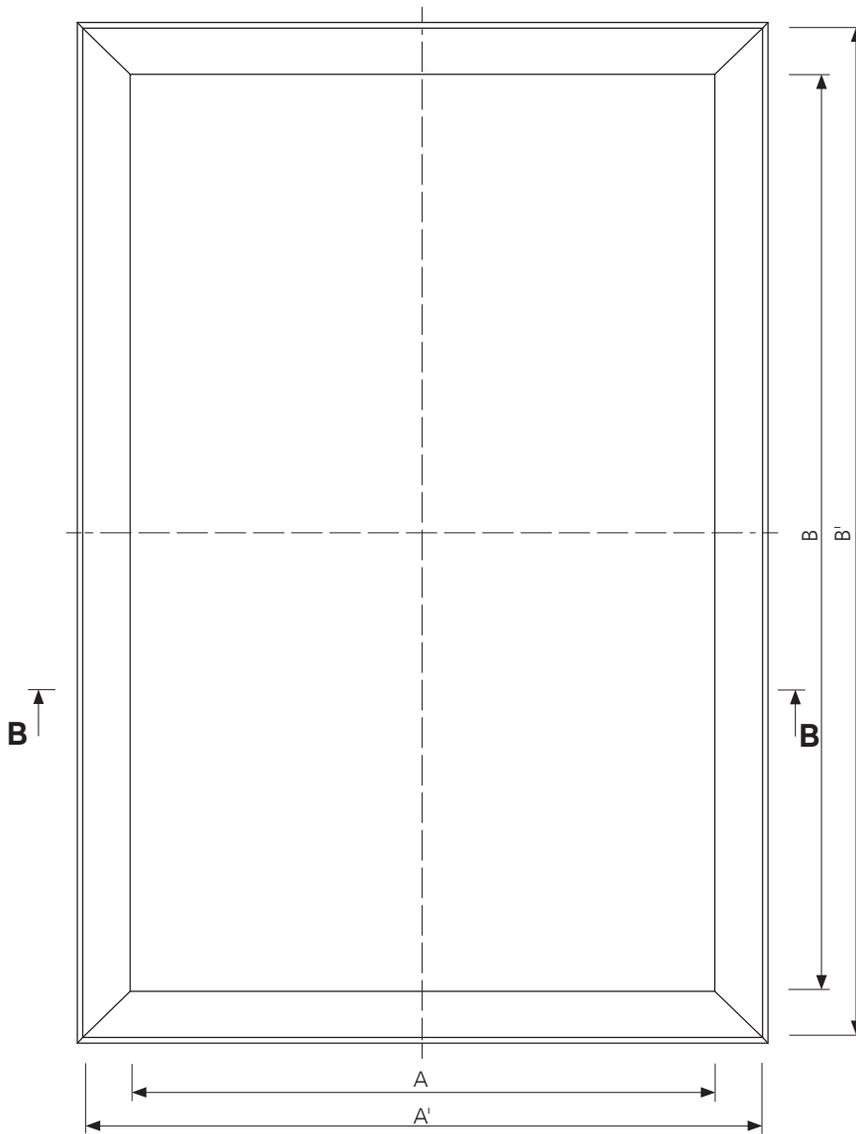


Fig. 3 Top view of mcr ULTRA THERM E smoke vent in closed position

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	2 x 4.0 / 8.0	2 x 4.0 / 8.0
C 180	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
C 200	2 x 4.0 / 8.0	2 x 4.0 / 8.0	- / 2 x 4.0	- / 2 x 8.0
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	2 x 4.0 / 8.0	2 x 4.0 / 8.0
E 150/200	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
E 150/220	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
E 150/240	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 2 x 4.0
E 150/250	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
E 160/180	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
E 160/200	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
E 160/220	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
E 160/250	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
E 180/200	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
E 180/220	4.0 / 4.0	4.0 / 8.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
E 180/240	4.0 / 8.0	4.0 / 8.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
E 180/250	4.0 / 8.0	2 x 4.0 / 8.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 8.0
E 200/250	2 x 4.0 / 8.0	2 x 4.0 / 8.0	- / 2 x 8.0	- / 2 x 8.0

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 and a thermal conductivity coefficient not exceeding $\lambda=0.039$ W/mK,
- » 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

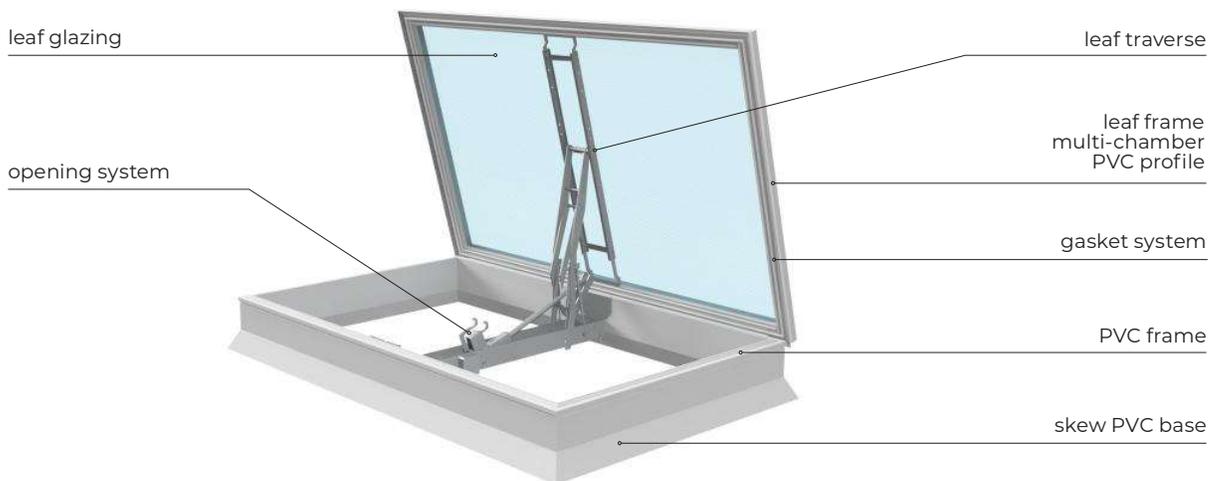


Fig. 4 Design of mcr ULTRA THERM NG-A smoke vent with skew PVC base

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),
- » vent with optional roof access, within the dimensional range specified in section 1.3 – page 17.

1.2.4 | **Smoke vent technical drawings**

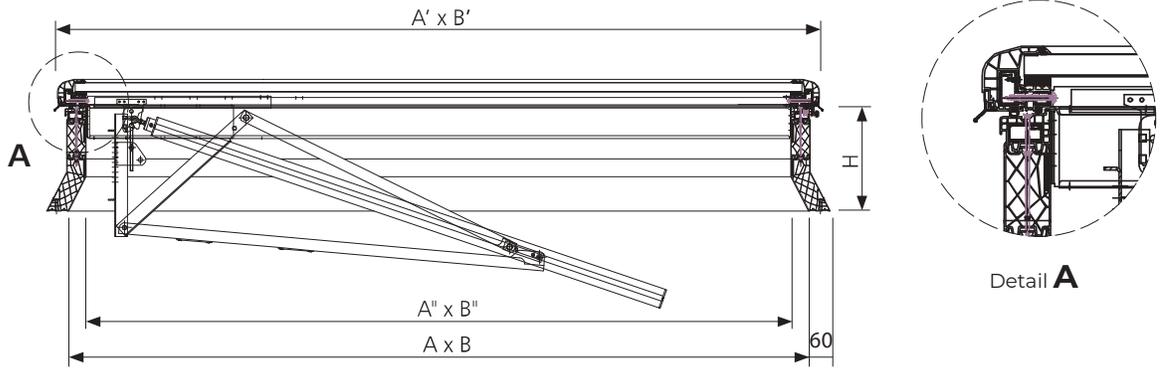


Fig. 5 Section **B-B** of mcr ULTRA THERM smoke vent in closed position

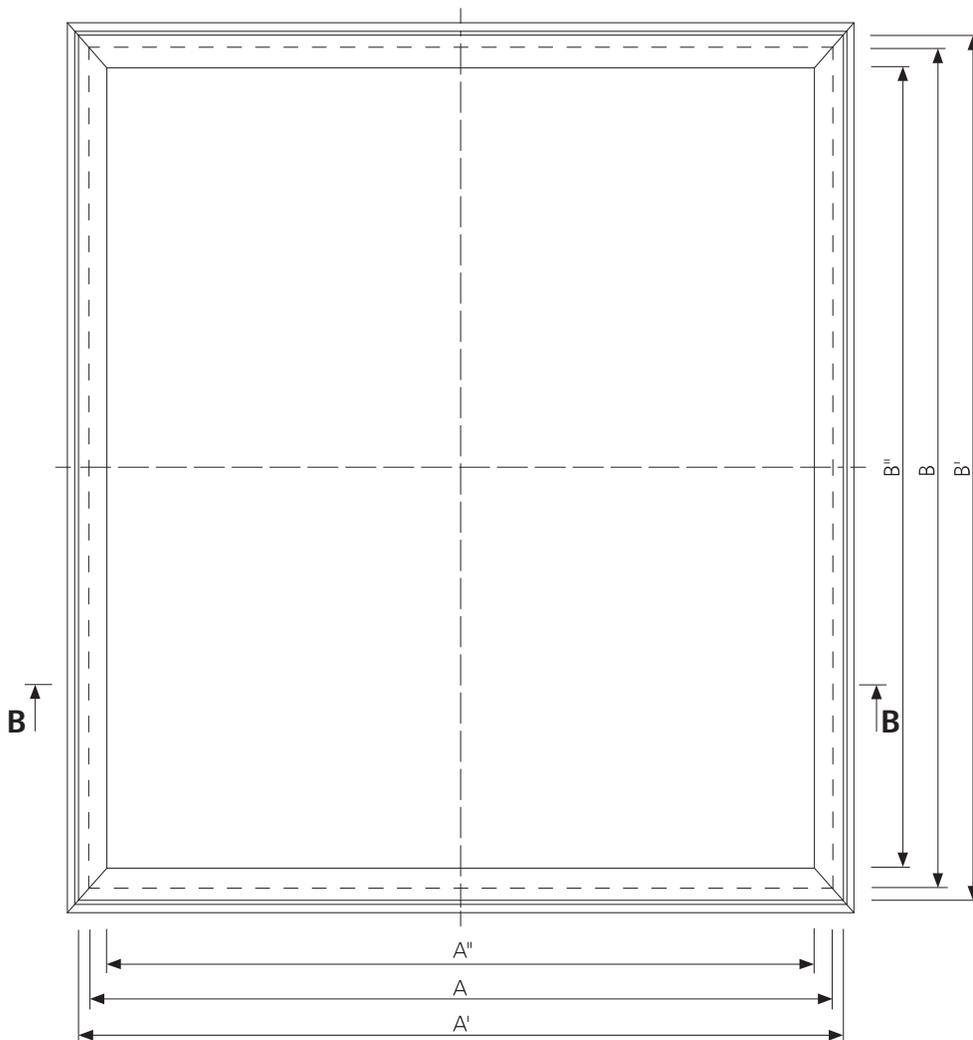


Fig. 6 Top view of mcr ULTRA THERM NG-A vent in closed position

A, B – nominal dimension [mm], smoke vent clear opening
 A', B' – total dimension of smoke vent leaf [mm] $A' = A'' + 162$ 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], (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	2 x 4.0 / 4.0	2 x 4.0 / 4.0
NG-A 150/200	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 4.0	2 x 4.0 / 8.0
NG-A 150/220	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
NG-A 150/240	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
NG-A 150/250	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
NG-A 150/280	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
NG-A 150/300	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
NG-A 160/160	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 4.0	2 x 4.0 / 4.0
NG-A 160/180	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
NG-A 160/200	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
NG-A 160/220	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
NG-A 160/250	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 2 x 4.0
NG-A 160/280	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
NG-A 160/300	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
NG-A 180/180	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 8.0
NG-A 180/200	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 8.0	2 x 4.0 / 2 x 4.0
NG-A 180/220	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
NG-A 180/240	4.0 / 4.0	4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
NG-A 180/250	4.0 / 4.0	2 x 4.0 / 4.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
NG-A 180/280	2 x 4.0 / 8.0	2 x 4.0 / 8.0	2 x 4.0 / 2 x 4.0	2 x 4.0 / 2 x 4.0
NG-A 180/300	2 x 4.0 / 8.0	2 x 4.0 / 8.0	- / 2 x 8.0	- / 2 x 8.0
NG-A 200/200	2 x 4.0 / 4.0	2 x 4.0 / 4.0	- / 2 x 4.0	- / 2 x 4.0
NG-A 200/250	2 x 4.0 / 8.0	2 x 4.0 / 8.0	- / 2 x 8.0	- / 2 x 8.0
NG-A 200/280	2 x 4.0 / 8.0	2 x 4.0 / 8.0	- / 2 x 8.0	- / 2 x 8.0
NG-A 200/300	2 x 4.0 / 8.0	2 x 4.0 / 2 x 4.0	- / 2 x 8.0	- / 2 x 8.0
NG-A 210/210	- / 8.0	- / 8.0	- / 2 x 4.0	- / 2 x 8.0

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 and a thermal conductivity coefficient not exceeding $\lambda=0.039$ W/mK,
- » **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

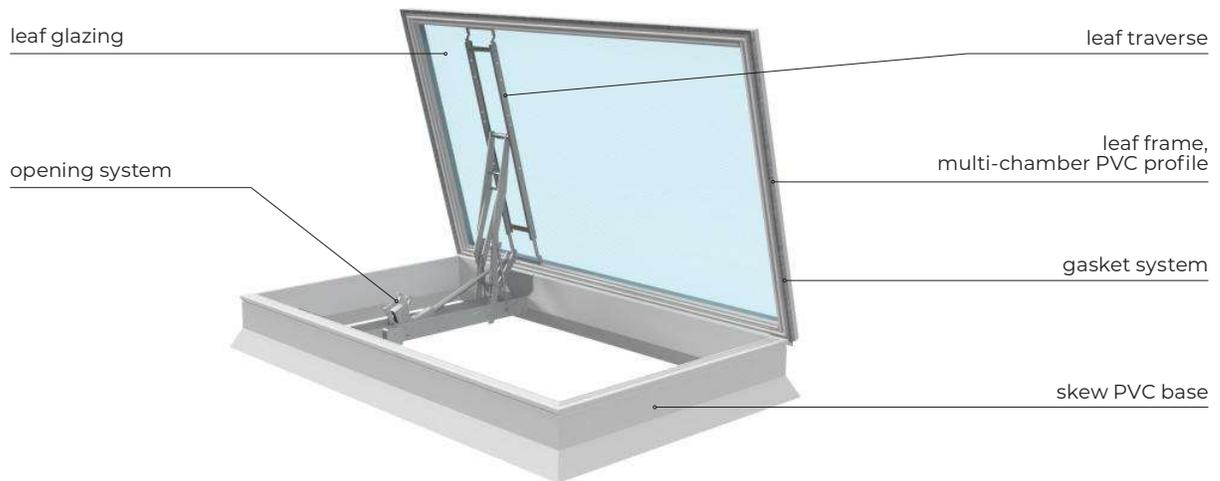


Fig. 7 Design of mcr ULTRA THERM NG-A smoke vent with skew PVC base, roof access option and one asymmetrically fixed electric actuator

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

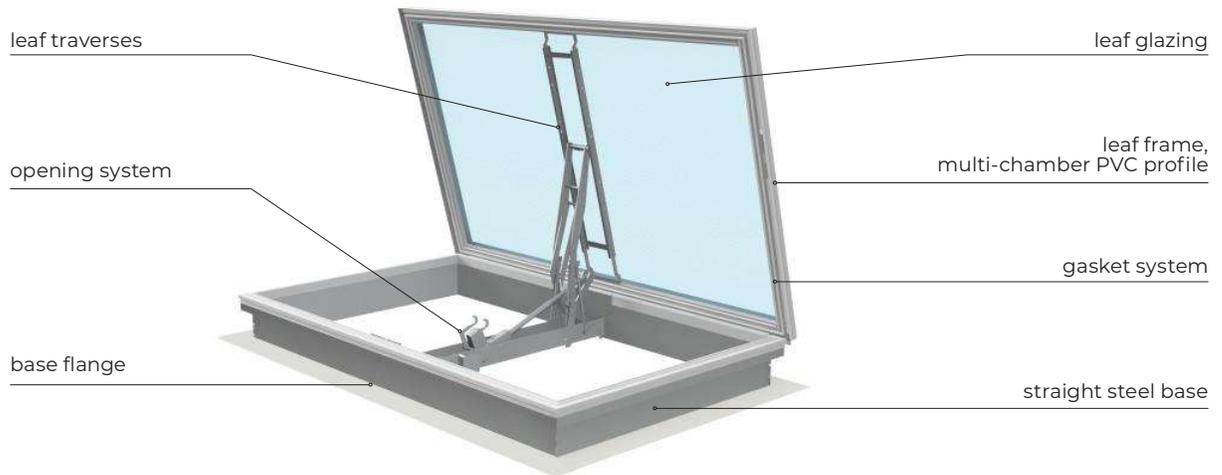


Fig. 8 Design of mcr ULTRA THERM E smoke vent with steel straight base, roof access option and one symmetrically mounted electric actuator, for side length ≥ 180 cm

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

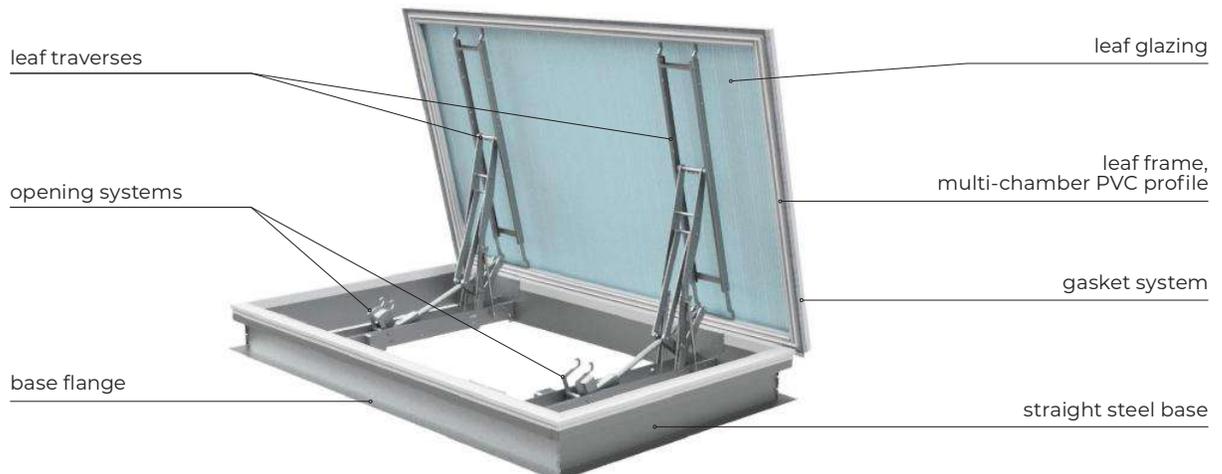


Fig. 9 Design of mcr ULTRA THERM E smoke vent with steel straight base, roof access option with two electric actuators

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 (A_a) through the use of wind deflectors.
- ATTENTION: deflectors reduce the clear passage!**

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**

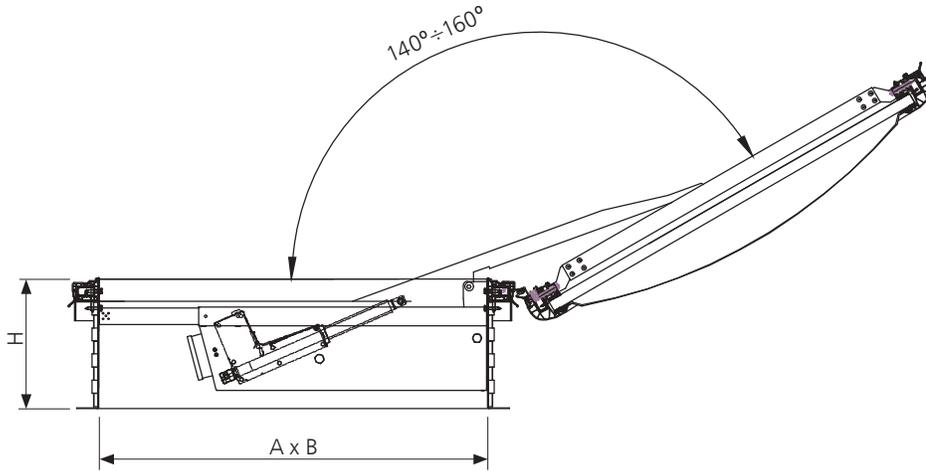


Fig. 10 Section **B-B** through mcr ULTRA THERM E smoke vent with steel straight base and roof access option in open position

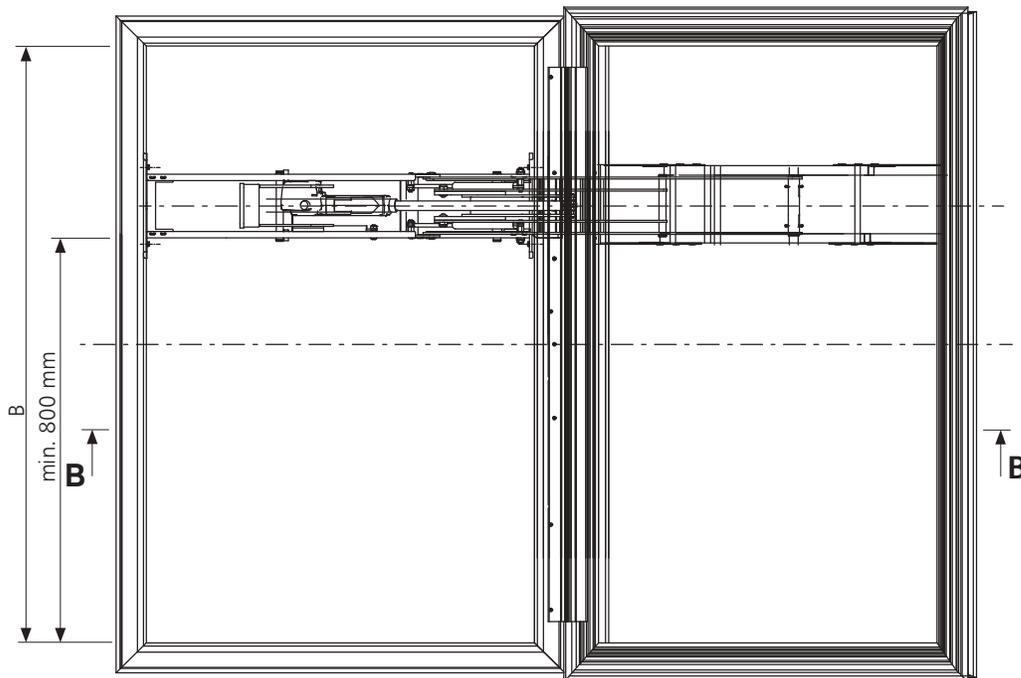


Fig. 11 Top view of mcr ULTRA THERM E smoke vent with straight steel base and roof access option in open position

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**

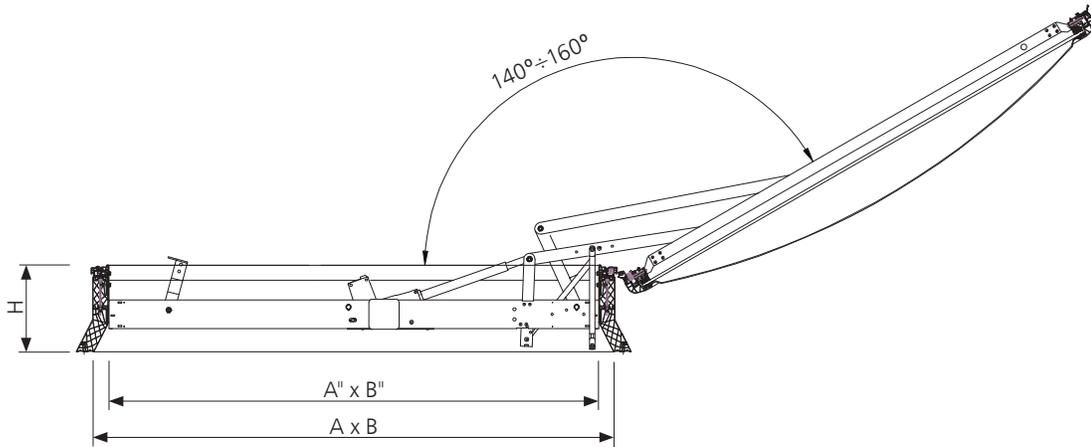


Fig. 12 Section **B-B** through mcr ULTRA THERM NG-A smoke vent with skew PVC base and roof access option in open position

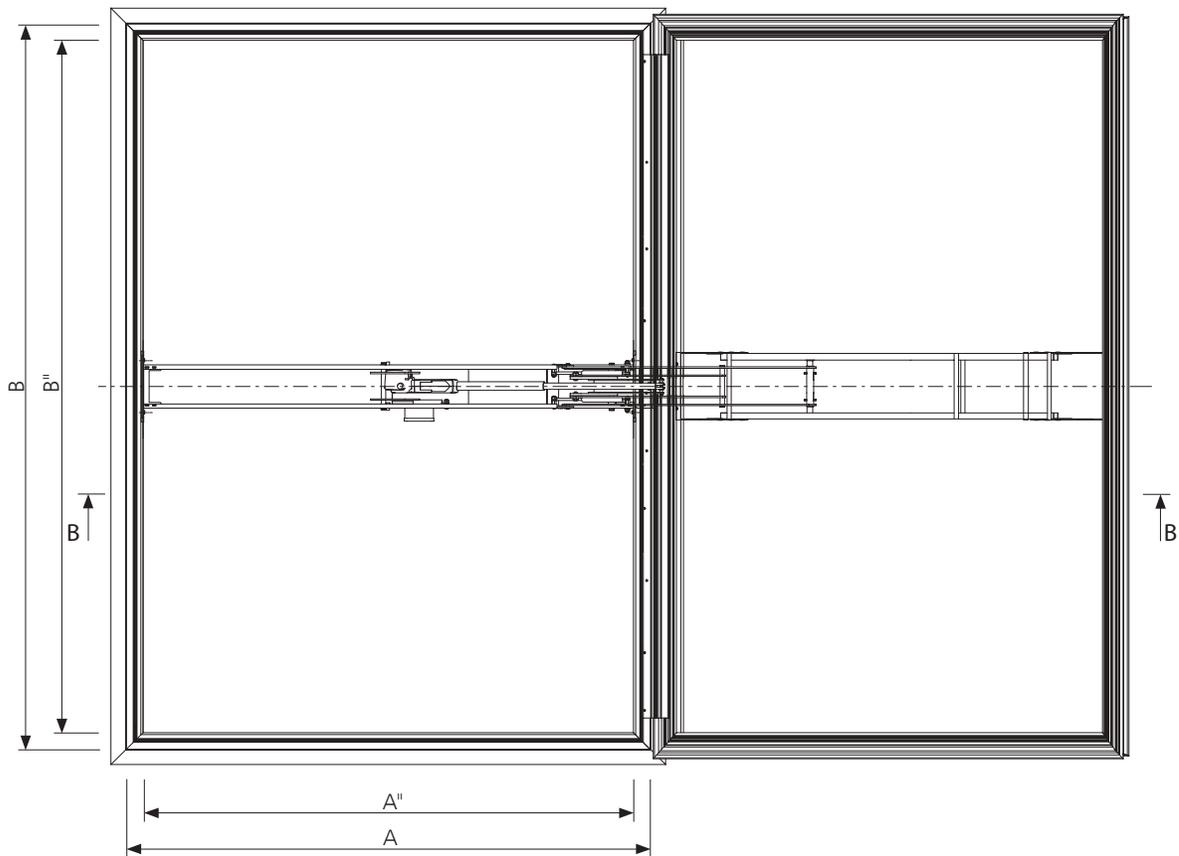


Fig. 13 Top view of mcr ULTRA THERM NG-A vent with skew PVC base and roof access option in open position

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

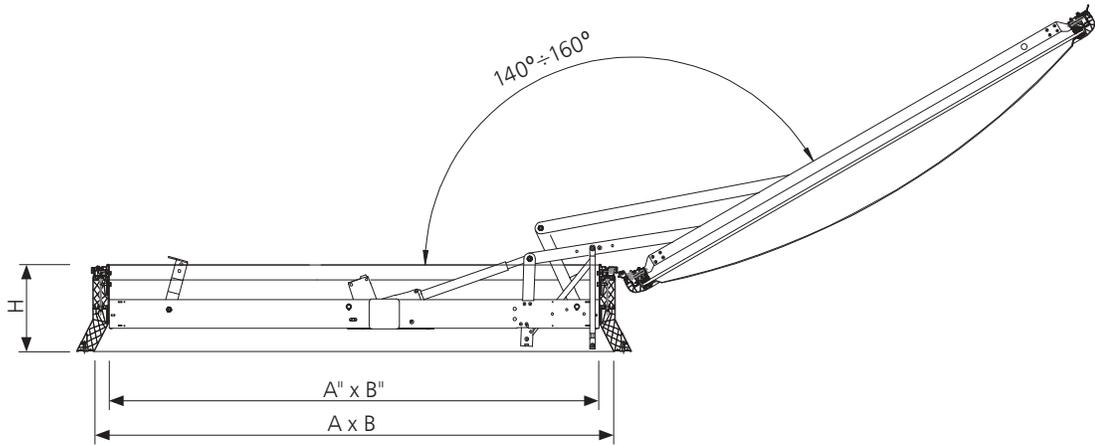


Fig. 14 Section **B-B** through mcr ULTRA THERM NG-A smoke vent with skew PVC base and roof access option in open position

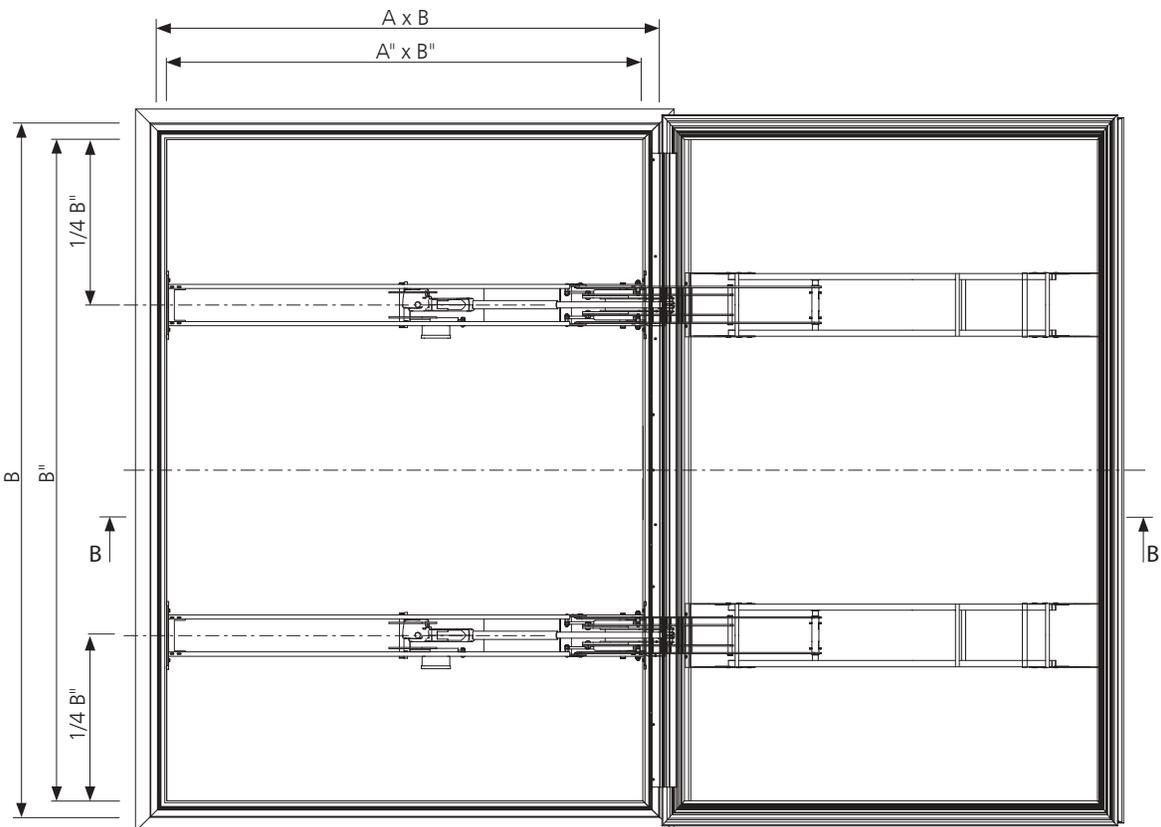


Fig. 15 Top view of mcr ULTRA THERM NG-A vent with roof access option in open position

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 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]
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 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 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	2 x 4.0 / -	142
E 150/220	1500 x 2200	1.32	1.32	1.32	1.32	2 x 4.0 / -	150
E 150/240	1500 x 2400	1.44	1.44	1.44	1.44	2 x 4.0 / 2 x 4.0	157
E 150/250	1500 x 2500	1.50	1.50	1.50	1.50	2 x 4.0 / 2 x 4.0	161
E 160/200	1600 x 2000	1.28	1.28	1.28	1.28	2 x 4.0 / -	147
E 160/220	1600 x 2200	1.41	1.41	1.41	1.41	2 x 4.0 / 2 x 4.0	154
E 160/250	1600 x 2500	1.60	1.60	1.60	1.60	2 x 4.0 / 2 x 4.0	165
E 180/200	1800 x 2000	1.44	1.44	1.44	1.44	2 x 4.0 / -	160
E 180/220	1800 x 2200	1.58	1.58	1.58	1.58	2 x 4.0 / 2 x 4.0	167
E 180/240	1800 x 2400	1.73	1.73	1.73	1.73	2 x 4.0 / 2 x 4.0	175
E 180/250	1800 x 2500	1.80	1.80	1.80	1.80	2 x 4.0 / 2 x 8.0	179
E 200/250	2000 x 2500	2.00	2.00	2.00	2.00	- / 2 x 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 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 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	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 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	2 x 4.0 / -	136
NG-A 150/220	1500 x 2200	1.32	1.32	1.32	1.32	2 x 4.0 / -	143
NG-A 150/240	1500 x 2400	1.44	1.44	1.44	1.44	2 x 4.0 / -	150
NG-A 150/250	1500 x 2500	1.50	1.50	1.50	1.50	2 x 4.0 / -	153
NG-A 160/200	1600 x 2000	1.28	1.28	1.28	1.28	2 x 4.0 / -	140
NG-A 160/220	1600 x 2200	1.41	1.41	1.41	1.41	2 x 4.0 / -	147
NG-A 160/250	1600 x 2500	1.60	1.60	1.60	1.60	2 x 4.0 / 2 x 4.0	158
NG-A 180/200	1800 x 2000	1.44	1.44	1.44	1.44	2 x 4.0 / -	152
NG-A 180/220	1800 x 2200	1.58	1.58	1.58	1.58	2 x 4.0 / 2 x 4.0	160
NG-A 180/240	1800 x 2400	1.73	1.73	1.73	1.73	2 x 4.0 / 2 x 4.0	168
NG-A 180/250	1800 x 2500	1.80	1.80	1.80	1.80	2 x 4.0 / 2 x 4.0	171
NG-A 200/250	2000 x 2500	2.00	2.00	2.00	2.00	- / 2 x 8.0	182