

SCD

SMOKE AND HEAT VENT



Intended Use:

Smoke and heat vent designed to perform three functions:

1. Extraction of smoke, heat and toxic gases during a fire;
2. Daylight for the room below;
3. Periodic room ventilation.



Certificate of Constancy of Performance No. 1438-CPR-0503, according to PN-EN 12101-2:2005, is a legal basis for using SCD smoke and heat vents.

Intended Use

SCD smoke and heat vents are used in public buildings, warehouses, production facilities, etc. They are designed for installation on flat roofs with a slope up to 15°.

SCD vents' main function is extraction of smoke and hot toxic gases occurring during fire in under-ceiling space.

SCD vents openable flaps are filled with translucent materials. Therefore the vents are roof skylights in the same time.

Another SCD function is a periodic room ventilation, which requires use of additional gear.

The priority function of SCD vents is in each case the smoke exhaust function.

The use of SCD vents allows, among other things, to lower the fire resistance class of the building, enlarge the permissible fire zones, extend escape routes.

Classification

SCD smoke and heat vents are classified according to EN 12101-2, with regard to the following parameters:

- Reliability: double action, **Re 1000**,
- Snow load: **SL250 - SL1000**
(depending on the drive size and type),
- Low temperature: **T(00) - T(-25)**
(depending on the drive size and type),
- Wind load: **WL 1500**,
- Resistance to high temperature: **B 300**.

The single flap vent aerodynamic free area is provided in Table 5, and double flap vent aerodynamic free area in Table 7.

It is also possible to manufacture the vents in a version which meets the requirements of the BROOF (t1) classification.

The characteristic properties of the skylight function are declared according to requirements of EN-1873:2014+A1:2016.

Design

SCD vents have rectangular cross section, available as single- or double flap vents.

The opening angle of a single flap vent is not smaller than 140°. The opening angle of a double flap vent is not smaller than 90°.

The SCD leaves are connected with a roof base (straight or sloping) by means of a linear hinge. The roof base is made of galvanized steel sheet. The hinge is protected by means of an aluminium cover. The polycarbonate plate is sealed in the cover profile with a EPDM gasket.

The roof base is designed for the placing of the thermal insulation on the entire perimeter. It is recommended to use mineral wool of the thickness of 50 mm. The insulation material has to meet A1 reaction on fire class requirements, min. density of 150 kg/m³ and min. thermal resistance $R_i = 1,25$ m²·K/W. The heat transfer coefficient for an insulated roof base, as described above, is $U = 0,80$ [W/m²K].

Water tightness is achieved by making appropriate insulation, depending on the roofing used, with bituminous materials or sheet-metal flashings.

The flap frame is made of originally designed aluminium profile, can be filled with multi-cell polycarbonate panel of the thickness of 10, 16, 20 or 25 mm.

In a standard version polycarbonate Lexan LT2UV169X, Opal White, 16 mm is used.

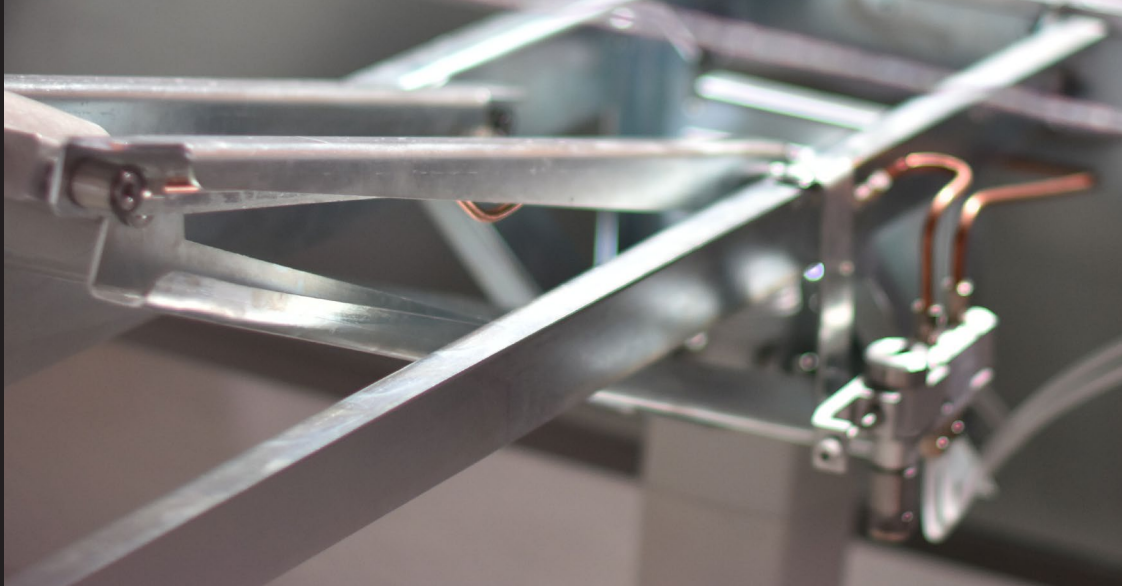
All possible variants of execution and standard dimensions of SCD vents are given in tables 1-4.



The shapes and dimensions of the aluminium profiles are patent protected.

FIRE VENTILATION ZONE

Certificate of Constancy of Performance
1438-CPR-0503/W,
acc to PN-EN 12101- 2: 2005.



Execution Versions

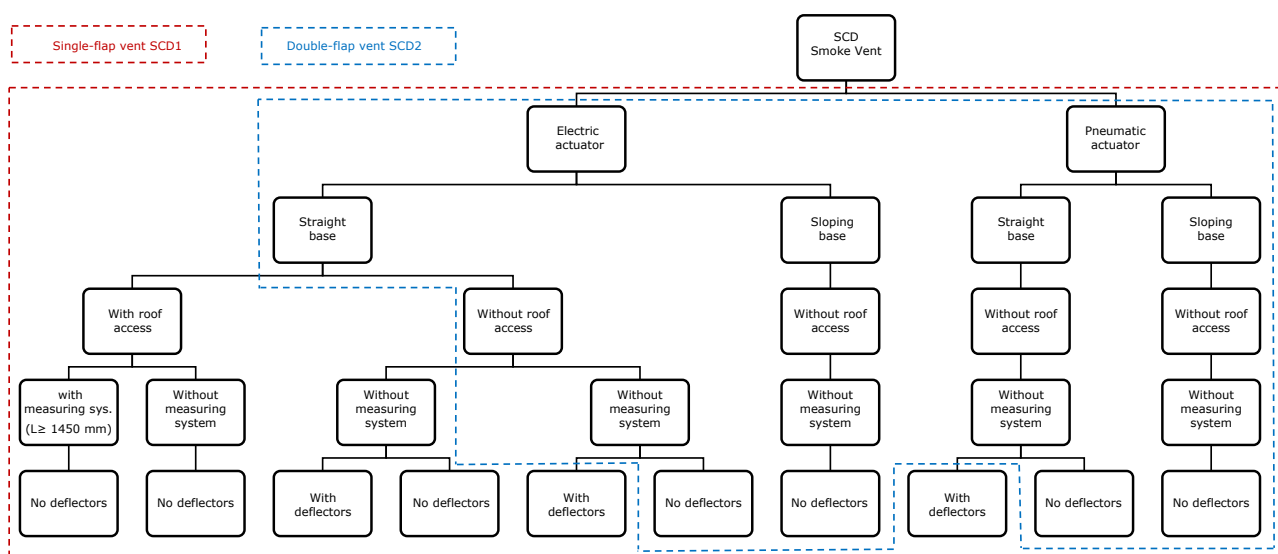


Diagram 1. Execution versions of SCD smoke vents.

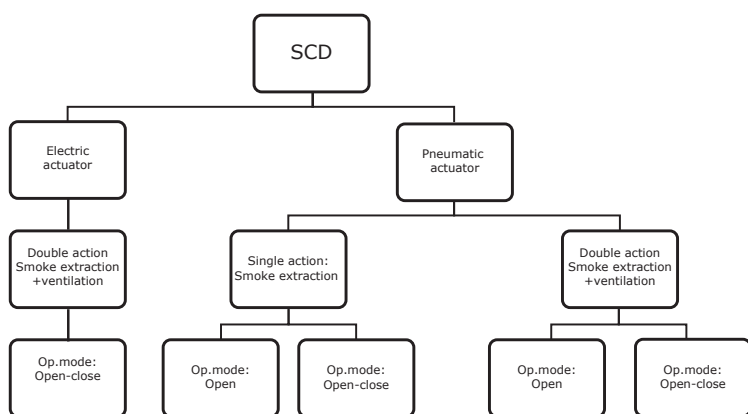


Diagram 2. SCD smoke vents functions and operating modes.

SCD1-W vents with roof access function

SCD1-W roof access hatch performs an additional function, in addition to the other standard ones of the smoke vent. They are available only with a straight base, with an electric drive, in two variants:

- With 1 actuator – roof hatches with the length: $L \leq 1200\text{mm}$ or $L \geq 1700\text{mm}$
- With 2 actuators – roof hatches with the length: $1200\text{mm} < L < 1700\text{mm}$.

Available variants of the execution and standard dimensions of SCD1-W hatches are given in table 1.



The roof hatches can be delivered only without deflectors. The measuring system can be installed for ZODIC-M) only when the length of the roof hatch $L \geq 1450\text{mm}$.



All SCD versions can be delivered with or without the deflectors.

Dimensions

Single-flap SCD1 vents

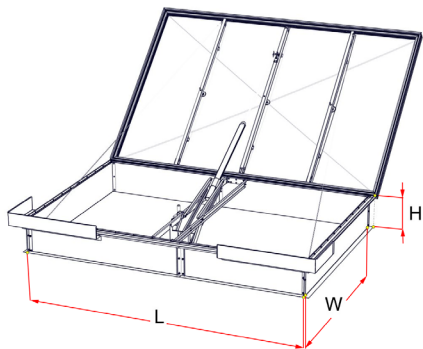


Figure 1. Single-flap SCD1-P vent with a straight roof base.

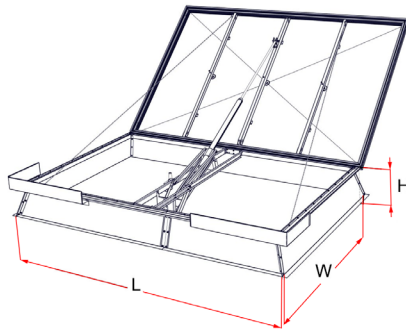


Figure 2. Single-flap SCD1-S vent with a sloping roof base.



Figure 3. Single-flap SCD1-P vent in the open position.

Double-flap SCD2 vents

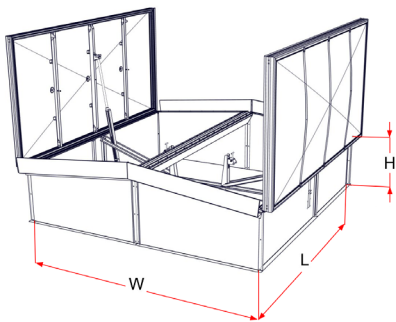


Figure 4. Double-flap SCD2-P vent with a straight roof base.

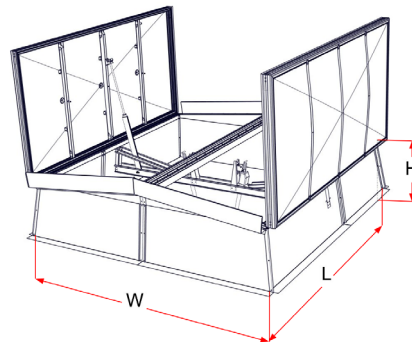


Figure 5. Double-flap SCD2-S vent with a sloping roof base.



Figure 6. Double-flap SCD2-P vent with a straight roof base in the open position.

Single-flap SCD1-W vents with roof access function



Figure 7. Roof access hatch – variant 1. Single actuator on the side (for $L \leq 1200\text{mm}$).



Figure 8. Roof access hatch – variant 2. 2 actuators (for $1200\text{mm} < L < 1700\text{mm}$).



Figure 9. Roof access hatch – variant 3. Single actuator in the middle (for $L \geq 1700\text{mm}$).

Nominal size		Geometric area	straight roof base SCD2-P						Sloping roof base SCD2-S					
			no guide vanes						no guide vanes					
			roof base height H [mm]						roof base height H [mm]					
			350		500		700		350		500		700	
W [mm]	L [mm] (hinge side)	A _v [m ²]	wind deflectors						wind deflectors					
			no	yes*	no	yes*	no	yes*	no	yes*	no	yes*	no	yes*
1600	2800	4,48	2,82		2,91		3,00		2,78	2,96	2,91	3,05	3,00	3,09
1600	3000	4,80	3,02		3,12		3,22		3,02	3,17	3,17	3,26	3,31	
1800	1600	2,88	1,81		1,90		1,90	1,96	1,61	1,93	1,73	1,96	1,81	1,99
1800	1800	3,24	1,98	2,04	2,04	2,14	2,14	2,20	1,85	2,17	1,94	2,20	2,04	2,24
1800	2500	4,50	2,75	2,84	2,84	2,93	2,97	3,02	2,66	2,97	2,79	3,06	2,93	3,11
1800	2800	5,04	3,07	3,18	3,18	3,28	3,33	3,38	3,02	3,33	3,18	3,43	3,33	3,48
1800	3000	5,40	3,29	3,40	3,40	3,51	3,56	3,62	3,24	3,56	3,40	3,67	3,56	3,73
2000	2000	4,00	2,40	2,52	2,48	2,64	2,60	2,72	2,16	2,68	2,36	2,72	2,52	2,76
2000	2400	4,80	2,88	3,02	2,98	3,12	3,12	3,26	2,69	3,22	2,88	3,26	3,02	3,31
2000	2500	5,00	3,00	3,15	3,10	3,25	3,25	3,35	2,80	3,30	3,00	3,40	3,15	3,45
2000	2800	5,60	3,36	3,53	3,47	3,64	3,64	3,75	3,19	3,70	3,42	3,81	3,58	3,86
2000	3000	6,00	3,60	3,78	3,72	3,90	3,90	4,02	3,48	3,96	3,66	4,08	3,84	4,14
2200	2200	4,84	2,86	3,05	2,95	3,19	3,10	3,29	2,52	3,24	2,76	3,29	3,00	3,34
2200	2400	5,28	3,12	3,33	3,22	3,43	3,38	3,59	2,80	3,54	3,06	3,59	3,27	3,64
2200	2500	5,50	3,25	3,47	3,36	3,58	3,52	3,69	2,97	3,63	3,19	3,74	3,41	3,80
2400	2400	5,76	3,34	3,63	3,46	3,80	3,63	3,92	2,94	3,86	3,23	3,92	3,46	3,97
2400	2500	6,00	3,42	3,78	3,60	3,90	3,78	4,08	3,06	4,02	3,36	4,08	3,60	4,14
2500	2500	6,25	3,56	4,00	3,75	4,13	3,94	4,25	3,13	4,19	3,44	4,25	3,69	4,31
2500	3000	7,50	4,20	4,80	4,50	4,88	4,73	5,03	3,83	4,95	4,20	5,10	4,50	5,18
3000	3000	9,00	4,77	5,85	5,13	5,94	5,49	6,03	4,05	5,94	4,50	6,12	4,95	6,21



* – empty field means no need to use a deflector (the same aerodynamic free area with or without a wind deflector)

Table 7. Electric current consumption of single-flap vent with an electric actuator, I [A]

Nominal size		roof access hatch SCD1-W		straight roof base SCD1-P			Sloping roof base SCD1-S	
		standard	for Zodiac-M	standard		for Zodiac-M	standard	
W [mm]	L [mm] (hinge side)	Snow load classification SL		Snow load classification SL			Snow load classification SL	
		SL550	SL550	SL250	SL550	SL550	SL250	SL550
1000	1000	-	-	2	4	4	1,3	2
1000	1200	4	-	2	4	4	1,3	2,6
1000	1300	-	-	2,6	4	4	1,3	2,6
1000	1400	2x 2,6	-	2,6	4	4	1,3	2,6
1000	1500	2x 2,6	2x 2,6	2,6	6	6	2	4
1000	1600	2x 2,6	2x 2,6	4	6	6	2	4
1000	1700	6	2x 2,6	4	6	6	2	4
1000	1800	6	2x 2,6	4	6	6	2	4
1000	1900	6	2x 4	4	6	6	2	4
1000	2000	6	2x 4	4	6	6	2,6	4
1000	2200	6	2x 4	4	6	6	2,6	4
1000	2300	6	2x 4	4	6	6	2,6	4
1000	2400	6	2x 4	4	6	6	2,6	6
1000	2500	8	2x 4	4	8	8	2,6	6
1100	1100	4	-	2,6	4	4	1,3	2,6
1100	2000	6	2x 4	4	6	6	2,6	6
1150	1150	6	-	4	6	6	1,3	2,6
1150	2000	8	2x 4	4	8	8	2,6	6
1200	1200	-	-	4	6	6	2	4
1200	1500	2x 4	2x 4	4	6	6	2,6	4
1200	1700	6	2x 4	4	6	6	2,6	6
1200	1800	8	2x 4	4	8	8	4	6
1200	2000	8	2x 4	6	8	8	4	6
1200	2200	-	-	6	-	-	4	6
1200	2300	-	-	6	-	-	4	6

Nominal size		roof access hatch SCD1-W		straight roof base SCD1-P			Sloping roof base SCD1-S	
		standard	for Zodiac-M	standard		for Zodiac-M	standard	
W [mm]	L [mm] (hinge side)	Snow load classification SL		Snow load classification SL			Snow load classification SL	
		SL550	SL550	SL250	SL550	SL550	SL250	SL550
1200	2500	-	-	6	-	-	4	6
1250	1250	-	-	4	6	6	2,6	4
1250	2500	-	-	6	-	-	4	6
1300	1300	-	-	4	6	6	2,6	4
1300	1500	2x 4	2x 4	4	8	8	2,6	6
1300	1600	2x 4	2x 4	4	8	8	2,6	6
1300	1800	8	2x 6	6	8	8	4	6
1300	1900	10	2x 6	6	10	10	4	6
1300	2000	10	2x 6	6	10	10	4	6
1300	2200	10	2x 6	6	10	10	4	6
1300	2500	10	2x 6	6	10	10	4	8
1400	1400	2x 4	-	6	8	8	4	6
1400	1500	2x 4	2x 4	6	8	8	4	6
1400	1800	10	2x 6	6	10	10	4	6
1400	2000	10	2x 6	6	10	10	4	8
1400	2500	12	-	8	12	12	6	-
1450	1450	2x 6	2x 6	6	8	8	4	6
1500	1500	2x 6	2x 6	6	10	10	4	6
1500	1700	10	2x 6	6	10	10	4	8
1500	1800	10	2x 6	6	10	10	4	8
1500	2000	12	2x 6	8	12	12	6	8
1500	2200	12	-	8	12	12	6	10
1500	2300	12	-	8	12	12	6	10
1500	2500	-	-	8	-	-	6	10
1500	2700	-	-	8	-	-	6	10
1500	3000	-	-	-	-	-	-	-
1600	1600	2x 6	2x 6	6	10	10	6	8
1600	1700	12	2x 6	6	12	10	6	8
1600	1800	12	2x 6	6	12	10	6	10
1600	2000	12	2x 6	8	12	10	6	10
1600	2200	12	-	8	12	12	6	10
1600	2300	12	-	8	12	12	6	10
1600	2500	12	-	8	12	12	6	10
1600	2700	-	-	-	-	-	8	12
1600	3000	-	-	-	-	-	-	-
1700	1700	12	2x 6	8	12	10	6	10
1700	1800	12	2x 6	8	12	10	6	10
1700	2000	12	-	8	12	12	6	10
1700	2200	12	-	8	12	12	8	12
1700	2300	-	-	-	-	-	8	12
1700	2500	-	-	-	-	-	8	12
1700	2700	-	-	-	-	-	8	-
1700	3000	-	-	-	-	-	-	-
1800	1800	12	-	8	12	12	6	10
1800	2000	-	-	-	-	-	6	12
1800	2200	-	-	-	-	-	8	12
1800	2300	-	-	-	-	-	8	12
1800	2500	-	-	-	-	-	8	12
1800	2700	-	-	-	-	-	8	12
1800	3000	-	-	-	-	-	-	-
1920	1900	-	-	-	-	-	8	12
1920	2000	-	-	-	-	-	8	12
1920	2200	-	-	-	-	-	8	12
1920	2300	-	-	-	-	-	8	12
1920	2500	-	-	-	-	-	-	-
1920	2700	-	-	-	-	-	-	-
1920	3000	-	-	-	-	-	-	-

Table 11. Weight of double-flap vents with electric actuator, m [kg]

Nominal size		Dimension after opening		ELECTRIC actuator					
				straight roof base SCD2-P			Sloping roof base SCD2-S		
				roof base height H [mm]			roof base height H [mm]		
W [mm]	L [mm] (hinge side)	Wotw [mm]	Hotw [mm]	350	500	700	350	500	700
1250	2500	1710	630+H	168	185	207	159	175	197
1500	1500	1960	830+H	131	145	164	122	135	154
1500	2500	1960	830+H	178	196	220	167	185	208
1500	3000	1960	830+H	205	225	251	196	215	240
1600	1600	2060	880+H	139	154	174	130	144	163
1600	2500	2060	880+H	182	201	225	171	189	212
1600	2800	2060	880+H	203	223	249	192	211	236
1600	3000	2060	880+H	209	229	256	200	219	245
1800	1600	2260	880+H	144	160	181	135	150	171
1800	1800	2260	980+H	152	168	190	143	159	180
1800	2500	2260	980+H	190	209	235	179	197	222
1800	2800	2260	980+H	211	231	258	200	220	245
1800	3000	2260	980+H	233	254	282	222	242	269
2000	2000	2460	1080+H	177	195	219	168	185	208
2000	2400	2460	1080+H	194	214	239	185	204	229
2000	2500	2460	1080+H	208	228	254	197	216	241
2000	2800	2460	1080+H	233	254	282	222	243	269
2000	3000	2460	1080+H	241	262	291	230	251	279
2200	2200	2660	1180+H	197	216	242	186	204	229
2200	2400	2660	1180+H	202	222	249	193	212	238
2200	2500	2660	1180+H	216	236	263	205	224	251
2400	2400	2860	1280+H	234	255	283	225	245	272
2400	2500	2860	1280+H	238	259	287	229	249	277
2500	2500	2960	1330+H	242	263	292	233	254	281
2500	3000	2960	1330+H	262	285	317	251	274	304
3000	3000	3460	1580+H	280	303	333	269	291	320

Table 12. Weight of double-flap vents with pneumatic actuator, m [kg]

Nominal size		Dimension after opening		PNEUMATIC actuator					
				straight roof base SCD2-P			Sloping roof base SCD2-S		
				roof base height H [mm]			roof base height H [mm]		
W [mm]	L [mm] (hinge side)	Wotw [mm]	Hotw [mm]	350	500	700	350	500	700
1250	2500	1710	630+H	163	180	202	154	170	192
1500	1500	1960	830+H	126	140	160	117	131	149
1500	2500	1960	830+H	174	191	215	163	180	203
1500	3000	1960	830+H	200	220	247	191	210	236
1600	1600	2060	880+H	134	149	169	125	139	158
1600	2500	2060	880+H	177	196	220	166	184	208
1600	2800	2060	880+H	199	218	244	188	207	231
1600	3000	2060	880+H	204	224	251	195	215	241
1800	1600	2260	880+H	140	155	176	131	146	166
1800	1800	2260	980+H	147	164	186	138	154	175
1800	2500	2260	980+H	185	204	230	174	193	217
1800	2800	2260	980+H	207	227	254	196	215	241
1800	3000	2260	980+H	218	239	267	207	227	254
2000	2000	2460	1080+H	172	190	214	163	181	204
2000	2400	2460	1080+H	189	209	235	180	199	224
2000	2500	2460	1080+H	203	223	249	192	211	237
2000	2800	2460	1080+H	219	239	267	208	228	255
2000	3000	2460	1080+H	226	248	276	215	236	264
2200	2200	2660	1180+H	192	211	237	181	199	224
2200	2400	2660	1180+H	197	217	244	188	208	234
2200	2500	2660	1180+H	211	232	259	200	220	246
2400	2400	2860	1280+H	219	240	268	210	230	257
2400	2500	2860	1280+H	223	244	273	214	235	262
2500	2500	2960	1330+H	227	249	277	218	239	267
2500	3000	2960	1330+H	254	278	309	243	266	296
3000	3000	3460	1580+H	272	295	325	261	283	313



The given weights apply to dampers with 16mm polycarbonate filling and SL550 class, without insulation, without wind deflectors and without guide vanes.



In exceptional cases it is possible to manufacture vents with different opening dimensions, but within the limits set by the max dimensions in Tables 2 and 3. The values calculated by linear interpolation are to be regarded as binding information on the aerodynamic free area Aa. The height of the vent roof bases are 350, 500, 700 mm. Smoke and heat vents should protrude at least 300 mm above the roof level. Therefore, when choosing the base height, the roof structure and the insulation layer should be taken into account. It is possible to make dampers with other dimensions of the base, but not less than 350 mm. For vents with a different roof base height than the standard one, declarations of the aerodynamic free area Aa of the vent with a lower roof base should be taken as valid.

Optional Accessories

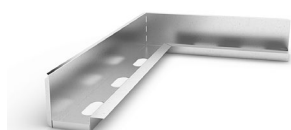


Figure 10. Wind deflector.



Figure 11. Guide vanes

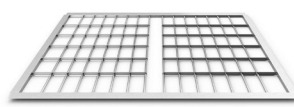


Figure 12. KA anti-burglar bars.



Figure 13. KZU anti-fall net.

Wind deflectors

Wind deflectors and guide vanes are intended to maximize the aerodynamic free area of the smoke vents. They are used when the expected wind influence would reduce the aerodynamic free area area of the vent.

They are made of galvanized steel sheet with dimensions optimized by aerodynamic tests.

The deflectors are connected to the roof base of the vent by means of screws.

KA anti-burglar bars

Anti-burglar bars are to protect a facility against unauthorized persons' entry through a smoke vent. The bars are made for the full dimension range of single and double flap vents. The anti-burglar bars are made with the use of standard and custom galvanised steel profiles and 1/2" pipes. They may be painted to any colour from the RAL palette.

They are mounted inside the opening under the roof base. To avoid any collision with the drive elements they can be split into two parts.

Drives and Control

In SCD smoke vents, a basic function of opening in order to extract smoke is carried out by a pneumatic or electric 24 V actuator.

The function of opening for daily ventilation for the vents with a pneumatic drive is carried out by a 230 V or 24 V electric actuator.

The power transmission from the actuator to the vent flap is carried out by a mechanism, the flap position is set by a MHV spring lock.

In the case of control system failure, what makes the closing of the vent flap impossible, please contact Smay Service Department.

For the emergency closing of the flap, when the control system does not operate, it is necessary to disconnect the immobilised actuator from the flap (by disconnecting the eye bolt from the MHV lock or by unscrewing the eye bolt from the actuator, or by disconnecting the E actuator from the fixing console), close the flap and protect it against opening.

Pneumatic Drives

Possible Configurations

For emergency opening, vents with a pneumatic drive use pneumatic actuators powered by the energy of CO₂ gas compressed in special dedicated containers. The containers are equipped with safety valves.

The release of compressed gas energy can take place:

- Automatically – when a thermal tripping device operates. If the trigger temperature is reached, the detector in the TAVE or TAVZ thermal tripping is destroyed, a pin is triggered, which – in turn – triggers a cartridge with compressed CO₂. The gas fills up pneumatic actuators and the smoke vent opens.
- Manually – if fire has been noticed, a member of staff pushes the manual start button in the AK alarm box of the given fire zone. The AK box is connected with the smoke vent by means of a Ø6 mm copper tube. In the AK box there are cylinders with compressed CO₂; the gas fills up the system and opens smoke vents in the given zone.
- From the Fire Alarm System (SAP) – the system is ready for receiving an 24V electric signal from SAP.

It is possible to control dampers by means of an "open only" function – "A" type vent. At that time, after test opening, it is necessary to close the damper manually, from the roof level.

In the case the double pipe system and a special actuator type is used, there is the possibility of carrying out control by means of "open-close" function – "B" type vent. This type of control by means of a compressor and a PLZ ventilation box, can also carry out the service function.

The compressed air supply system of the actuator shall be appropriate for pressure of 30 bar. Most often it is made of stainless steel or copper pipes.

KZU anti-fall net

The purpose of the anti-fall net is to protect people staying on the roof near a smoke vent against falling through the opening. They are made for the full dimension range of single and double flap vents. To avoid any collision with drive elements they can be split into two parts.



Figure 14. MHV spring lock.



Photo 1. Pneumatic actuators.

Examples of Vent Opening Control Schemes

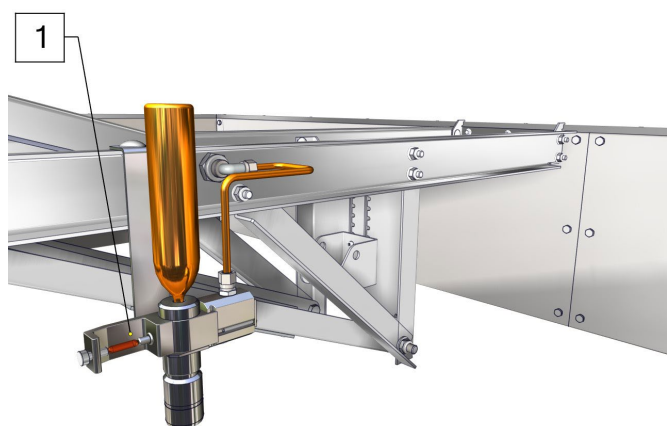


Figure 15. „A” type vent, with a pneumatic actuator and thermal tripping, without ventilation function. Automatic opening after the limit temperature has been reached.

1. TAVZ thermal tripping device

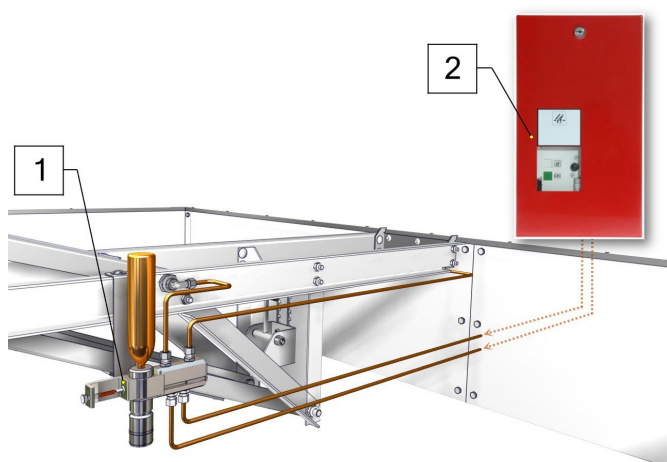


Figure 16. „A” or „B” type vent, with a pneumatic actuator, thermal tripping and AK alarm box. Manual or automatic opening after the limit temperature has been reached or opening with a SAP signal (with an electric module in the AK box). Without ventilation function.

1. TAVZ thermal tripping device
2. AK alarm box

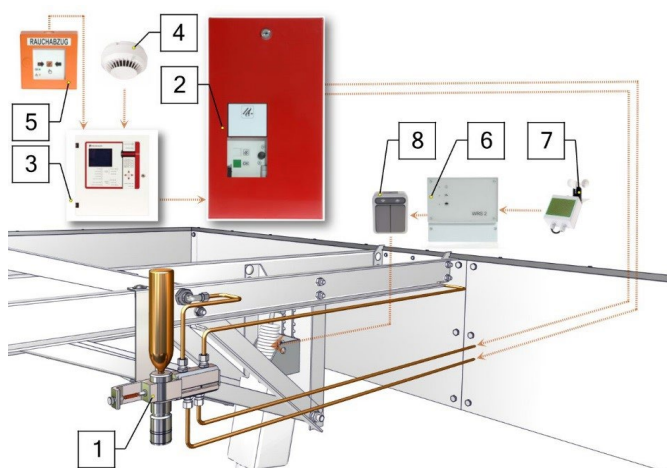


Figure 17. „A” or „B” type vent, with a pneumatic actuator, thermal tripping and AK alarm box and weather station. Manual or automatic opening after the limit temperature has been reached or opening with a SAP signal (with an electric module in the AK box). Ventilation with an electric actuator.

1. TAVZ thermal tripping device
2. AK alarm box
3. SAP control panel
4. OSD 63 smoke detector
5. RT-2 smoke extraction push button
6. WRS 2b weather station control panel
7. RS 2d-WM1 weather station
8. LT-AP ventilation push button

Pneumatic Actuators

Depending on a damper size and required SL... parameter, the following types of actuators are dedicated: PxxV-32, PxxV-40, PxxV-50 PxxV- 63 or DxxV-32.



Photo 2. PxxV actuator

In respect of functionality, the following devices may be used:

- actuators with a stroke:
 - single (PxxV),
- actuators with a following fastening:
 - bottom (PUxV),
 - middle (PMxV),
 - top (POxV),
- actuators with the following position lock:
 - extended to its full length (PxAV),
 - in both extreme positions (PxDV).

Basic Features:

- Piston actuator, single- or double-acting, with the body diameter of 32-63 mm,
- Body made of anodised aluminium,
- 12, 16, 20 or 25 mm diameter piston rod, depending on the actuator size,
- Eye bolt with M8 thread, gasket being also a wiper for the piston,
- M8 x 40 – Ø8 – Ø12 eye bolt holes, depending on the actuator size,
- Recommend operating pressure 6-10 bar,
- Maximum static operating pressure 60 bar,
- Theoretical lifting force, depending on size, at 6 bar pressure: 480-1870 N, depending on the actuator size (when selecting, take into account approximately 15% loss due to friction),
- Installation and gas inflow through rotatable screw couplers,
- Ambient temperature range from -20 to +60 °C (within the range of VdS 2159 Certificate, for 2 hours, up to +110 °C),
- Maximum locking force 6500 N,

PxxV series pneumatic actuators are maintenance-free, because their design ensures constant lubrication. However, the piston rod and actuator locks should be cleaned regularly and lubricated with widely available silicone-free greases.

In the case of actuators operating in such an environment as the land farm, food industry, galvanising plants, chemical industry, swimming pools, SPA etc., it is recommended to use water separators, preferably just before control valves, and the condensate drain in a compressed air tank. Alternatively an air dehumidifier can be used.

Thermal Tripping Device

In the thermal tripping device, when the thermal fuse has been triggered at the given limit temperature, CO₂ is released from its cylinder and flows to the actuator, causing the vent to open. The thermal fuse reacts at the specific nominal temperature, with -3 °C / +8 °C tolerance.

Components:

- Thermal fuse (ampoule)
- CO₂ cylinder
- Pin
- Other triggering elements (electric, pneumatic) - optional

Technical Data:

Max static operating pressure	80 bar
Max dynamic operating pressure	80 bar
Valve nominal diameter	2 mm
Pin nominal diameter	2 mm
Operating temperature range	-250C - +1100C

In the systems carrying out the "A" "open only" operating mode, TAVE thermal tripping devices are used.



Figure 18. TAVE thermal tripping device

Channels marking:
VA - „open“ input
CA - „open“ output

TAVE types:

Type	Venting valve	„A“ cylinder thread
TAVE 3.01	no	1/2" UNF (standard)
TAVE 3.01-M	no	M18x1,5
TAVE 3.01-F	no	W21,8x1/14"
TAVE 3.11	yes	1/2" UNF (standard)
TAVE 3.11-M	yes	M18x1,5
TAVE 3.11-F	yes	W21,8x1/14"

The VA input in standby mode (the valve armed-locked) is connected with the CA output, which makes it possible to carry out the ventilation function without any interruption.

Input venting option:

The CA output in standby mode is vented by means of an integrated valve. After pressurising VA input (from the alarm or ventilation box), connection between VA input and CA output is set up.

In the systems carrying out the "B" "open-close" operating mode, TAVZ thermal tripping devices are used.

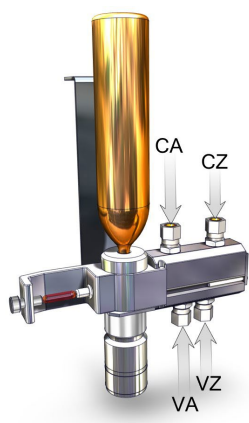


Figure 19. TAVZ thermal tripping device

Channels marking:
 VA - „open” input
 VZ - „close” input
 CA - „open” output
 CZ - „close” output

TAVZ types:

Type	Venting valve	„A” cylinder thread
TAVZ 3.01	no	1/2" UNF (standard)
TAVZ 3.01-M	no	M18x1,5
TAVZ 3.01-F	no	W21,8x1/14"
TAVZ 3.11	yes	1/2" UNF (standard)
TAVZ 3.11-M	yes	M18x1,5
TAVZ 3.11-F	yes	W21,8x1/14"

VA and VZ inputs in standby mode (the valve armed-locked) are connected with CA and CZ outputs, which makes it possible, to carry out the damper ventilation function without any interruption.

Venting option:

CA and CZ outputs in standby mode are vented by means of an integrated drain (vent) valves. After pressurising the VA or VZ input (from the alarm or ventilation box), a connection between the VA input and CA output or between VZ input and CZ output is set up.

Thermal fuses

Only G5-RWA-xx thermal fuses, tested with TAVE and TAVZ thermal tripping devices can be used.



Colour of the fuse defines the limit temperature:

G5-RWA-68, G8-RWA-68	Red	68°C
G5-RWA-93	Green	93°C
G5-RWA-141, G8-RWA-141	Blue	141°C

Thermal fuses

There are thermal fuses **182°C, 260°C activation**



The nominal temperature of a thermal fuse ampoule shall always be lower (or equal to) than the nominal temperature of the CO₂

CO₂ cylinders (cartridges)

Cylinders with compressed CO₂ are the source of energy for the basic function of the smoke dampers with a pneumatic drive.

They are equipped with safety valves. The connection thread is 1/2" UNF (extra-fine).

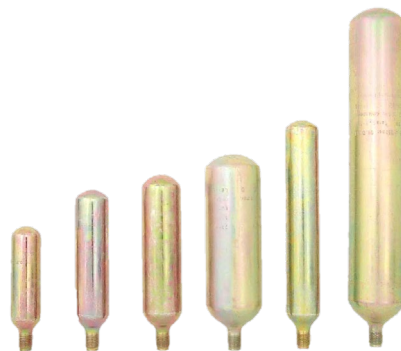
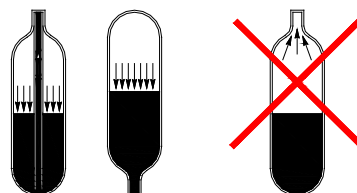


Photo 3. CO₂ cartridges

When a cylinder with CO₂ has been punctured, the gas rapidly expands and stays cool at the same time. It may result in liquid CO₂ freezing inside the cylinder. In this state the gas cannot go out of the tank, so there will be not enough gas in the pneumatic system.

To prevent this phenomenon cylinders with CO₂ are mounted with the outlet at the bottom. Then, when the cylinder has been perforated, the gas pressure forces liquid gas through the valve to the pneumatic system made of tubes. In the system the liquid gas phase is quickly heated by the environmental heat and it becomes gas, without the risk of freezing.



Available sizes of CO₂ cylinders:

Size (CO ₂ [g])	Dimensions [mm]	Nominal temperature [0C]	Charging efficiency (density) [g/ml]
20	26x115	93	0,54
24	26x115	68	0,65
38	30x144	93	0,58
40	30x144	68	0,62
55	35x159	93	0,58
75	30x205	50	0,74
80	35x217	93	0,57
120	50x178	93	0,56
150	50x178	68	0,70
300	50x315	50	0,71
500	60x342	50	0,75
750	60x490	50	0,71
1000	80x382	50	0,71
1500	80x525	50	0,75

AK Alarm Boxes

AK boxes are one of the main elements of the smoke exhaust vent control system. They enable the release of gas energy to open the flap in the following scenarios:

- Manual activation – by pressing the black button,
- Electric activation – by applying nominal voltage to the solenoid (only with HEA and HEPA option).
- Pneumatic activation – by supplying a pneumatic release medium [e.g. CO₂] to the PA connection (only with HEA/HEPA option).



Photo 4. AK alarm boxes

There are four types of AK boxes, due to the way of activation:

HA - manual activation

HEA - manual and electric activation

HPA - manual and pneumatic activation

HEPA - manual, electric and pneumatic activation

Technical Data:

- Max operating pressure: 80 bar,
- Nominal NW valve size: 4 mm,
- Nominal NW pin size: 2 mm,
- Operating temperature range: -25°C to +50°C,
- Solenoid nominal voltage: 24 VDC,
- Solenoid nominal current: 0,29 ADC,
- Solenoid operating time: 100%,
- Minimum activation pressure for HPA/HEPA versions: 5 bar.

The full marking of the AK box also includes following information: number of CO₂ cylinders to be opened and closed, colour of the casing, the height of the box and the holder for the reserve cartridge.

AK box marking:

AK 1 0. x – yy – – R

Where:

AK	- alarm box
1	- number of CO₂ cylinders for opening
0	- number of CO₂ cylinders for closing
X	- height of the AK box
yy	- casing colour (RT- red, OR- orange)
....	- way of activation (HA, HEA, HPA, HEPA)
R	- reserve cartridge holder



Photo 5. AK alarm box for an „A” type vent



Photo 6. AK alarm box for a „B” type vent

Dimensions of AK alarm boxes (single CO₂ cylinder)

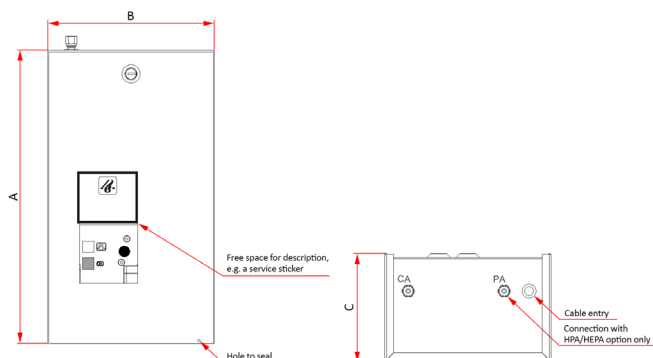


Figure 20. Dimensions of AK alarm boxes (single CO₂ cylinder).

Dimensions of AK alarm boxes..

Type	A [mm]	B [mm]	C [mm]	Max cylinder size [g]
AK10.3	350	200	130	150
AK10.5	500	200	130	500
AK10.7	650	200	130	750
AK10.9	700	220	170	1500
AK11.3	350	300	130	150
AK11.5	500	300	130	500
AK11.7	650	300	130	750
AK11.9	700	320	170	1500

Installation of the AK box:

- Connect the outputs of the box properly
- The cartridge must be mounted with the thread facing down in the box.
- It is recommended to use CO₂ cylinders purchased from Smay Sp. z o.o.

Connections:

CA ... „opening” of the actuators

CZ ... „closing” of the actuators

PA ... pneumatic activation (with HPA / HEPA options only)

PLZ Ventilation Boxes

PLZ ventilation boxes are important elements of smoke vent control systems with a ventilation function. They make it possible to carry out the ventilation function, and – at the same time – to keep the priority of the smoke exhaust function.

The ventilation function is activated by means of a manual lever valve. It is possible to carry out the remote control function with an electric or pneumatic setup, in the A (opening), Z (closing) or AZ (opening-closing) operating mode.

In the alarm function, when gas appears on the alarm box input, the emergency power output is vented, and the ventilation function is disabled. After the emergency release, the standby should be restored by means of a returnable push button.



Photo 7. PLZ ventilation box.

Technical Data:

- Max. operating pressure: 10 bar,
- Operating temperature range: -20°C to +60°C,
- Pipe connection: Ø6/4

PLZ types:

For ventilation only:

- PLZ 20.1.1: section for A mode (“open only”), 1 ventilation section with a lever externally accessible and a pressure regulator with a filter; dimensions: 300 x 200 x 80 mm.;
- PLZ 20.1.2: 1 section for A mode (“open only”), 2 ventilation sections with two levers externally accessible and a pressure regulator with a filter; dimensions: 300 x 270 x 100 mm

For „A” mode („open only”) + ventilation:

- PLZ 20.1.1: section for A mode (“open only”), 1 ventilation section with a lever externally accessible and a pressure regulator with a filter; dimensions: 300 x 200 x 80 mm.;
- PLZ 20.1.2: 1 section for A mode (“open only”), 2 ventilation sections with two levers externally accessible and a pressure regulator with a filter; dimensions: 300 x 270 x 100 mm.

For „AZ” mode („open-close”) + ventilation:

- PLZ 30.1.1: section for AZ mode (“open-close”), 1 ventilation section with a lever externally accessible and a pressure regulator with a filter; dimensions: 300 x 200 x 80 mm
- PLZ 30.1.2: section for AZ mode (“open-close”), 2 ventilation sections with two levers externally accessible and a pressure regulator with a filter; dimensions: 300 x 270 x 100 mm
- PLZ 30.2.2: 2 sections for AZ mode (“open-close”), 2 ventilation sections with two levers externally accessible and a pressure regulator with a filter; dimensions: 300 x 270 x 100 mm

In the marking of PLZ with a ventilation lever which is not accessible for the outside of the box, a digit “1” is put as a second digit: e.g. PLZ 11.x.x, PLZ 21.x.x, PLZ 31.x.x]



Other versions, including remote control (electric or pneumatic) are available on request.

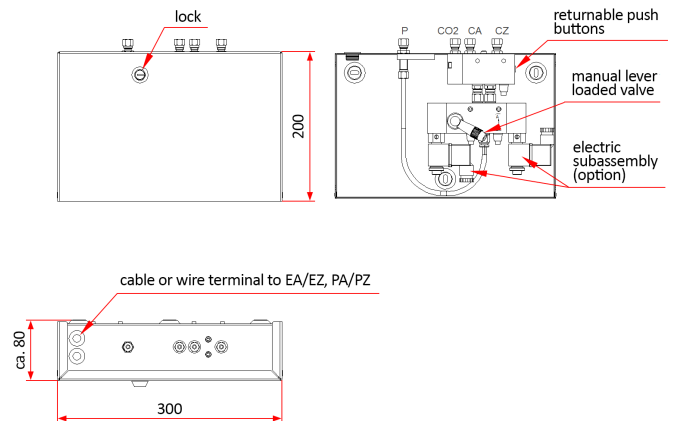


Figure 21. PLZ dimensions.

Electric Ventilation Actuators

E-300-24, E-500-24, E-300-230, E-500-230 electric actuators made by Grasl Pneumatik-Mechanik and K+G Pneumatik are the drive in ventilation function.

E-xxx-24 actuator



Photo 8. E300-24 actuator.

Technical Data:

- Supply voltage: 24V,
- Current consumption: 650 mA,
- In order to ensure correct operation of the actuator in the end and overload position, power supply unit of each actuator should provide current higher than the nominal value by 20%.
- Feed force: by feeding 500 N, by pulling 250 N,
- Feed speed: ca. 8 mm/s,
- Operating mode (EN 60034) S3 25% (control voltage can be supplied continuously),
- Direct switching of the feed direction is forbidden (about 1s break is required),
- Ingress Protection (EN 60529): IP 54 (line feed of 300 mm), IP 33 (line feed of 500 mm),
- Ambient temperature: -10°C to +60°C
- Power connection cable: 2 x 0,75 mm²,
- Load capacity: 24V/1A

The actuator is equipped with an overload circuit breaker. After the circuit breaker has been triggered, it is necessary to move the actuator back (start it in the opposite direction) before it can

be restarted in the same direction as the limit switch triggered.

E-xxx-230 actuator



Zdjęcie 9. E300-230 actuator

Technical Data:

- Supply voltage: 230V~, 50Hz,
- Current consumption: 100 mA,
- Feed force: by feeding 500 N, by pulling 250 N,
- Feed speed: ca.10 mm/s,
- Operating mode (EN 60034) S3 25%,
- Ingress Protection (EN 60529): IP 54 (line feed of 300 mm),
- IP 33 (line feed of 500 mm),
- Ambient temperature: -10°C to +60°C
- Power connection cable: 3 x 1,5 mm²,
- Load capacity: 230V~/1A

The actuator is equipped with an overload circuit breaker. After the circuit breaker has been triggered, it is necessary to move the actuator back (start it in the opposite direction) before it can be restarted in the same direction as the limit switch triggered.

Pneumatic System

The gas pressure in the system after emergency release, may exceed 30 bar. For that reason it is very important to connect individual elements of the pneumatic system very carefully. For this level of pressure it is recommended to make the installation of certified elements:

Ø6/4 copper tubes, 10000-series screw connectors. Screw joints should be sealed with a Teflon tape or Loctite 243 glue for bolts.

To protect actuator fixing screws against loosening caused by vibrations, also use Loctite 243 glue.

Electric Drives

Configuration

The smoke vents with an electric drive are equipped with 24 V actuators. The same actuator supports emergency operation and ventilation functions.

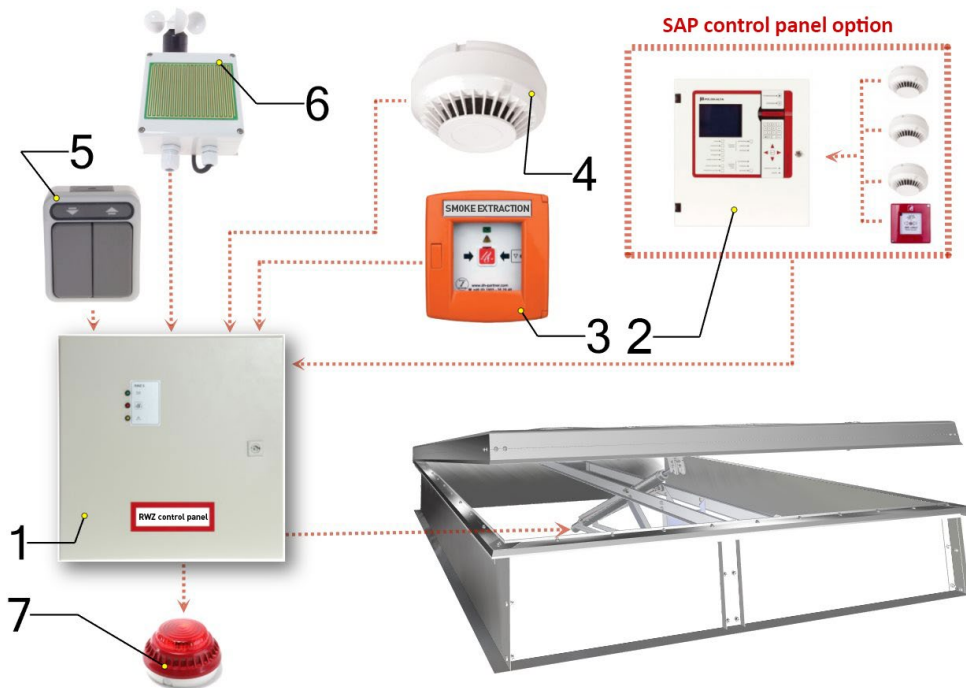
The control system consists of: control panel, 24VDC, manual emergency push button.

Activation in emergency mode may take place:

- Automatically – by means of an electric signal, sent by smoke or temperature detectors.
- Automatically – from the Fire Alarm System(SAP).
- Manually – if fire has been noticed, a member of staff pushes the manual emergency push button.

The continuity of power supply is imperative for this. Non-combustible cables are used to connect elements of the system.

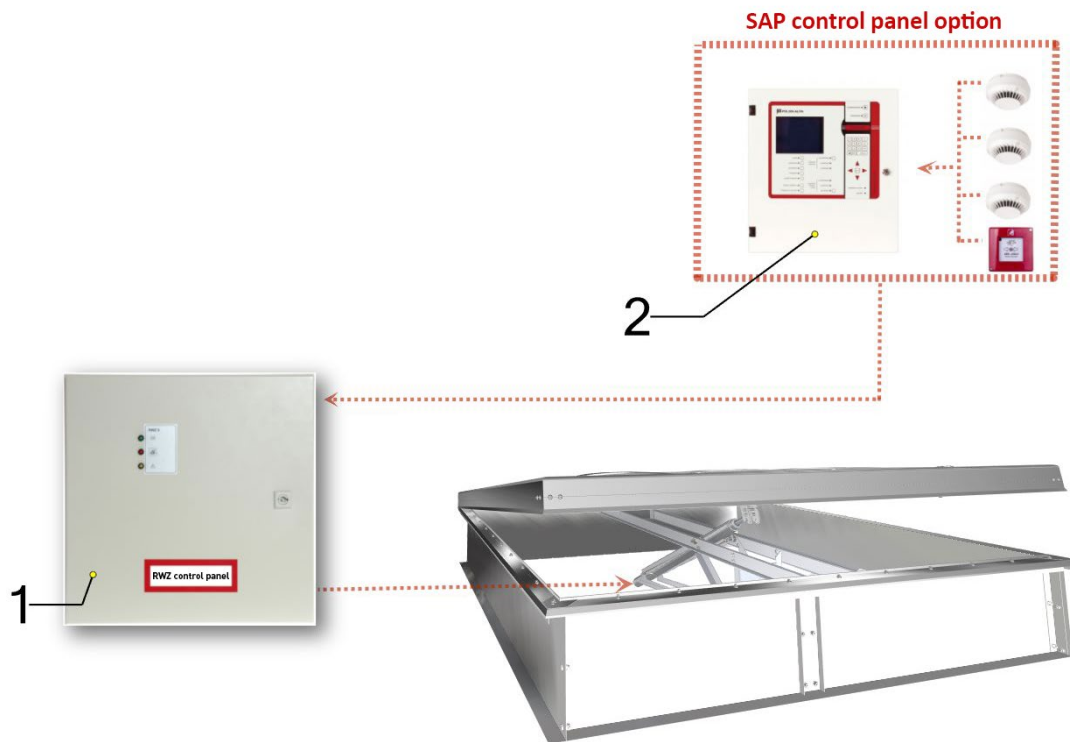
Exemplary scheme of a vent opening control in the function of smoke extraction and ventilation



1. Control panel of the smoke extraction system
2. SAP control panel
3. Emergency push button
4. Smoke detector
5. Ventilation push button
6. Weather station
7. Alarm signalling device

Figure 22. KThe „B” type vent with an electric actuator, control panel and weather station. Manual or automatic opening after the limit temperature has been

reached or opening after receiving SAP signal (with an electric module). Ventilation function with an electric actuator



1. Control panel of the smoke extraction system
2. SAP control panel

Figure 23. The „B” type vent with an electric actuator and control panel. Manual or automatic opening after the limit temperature has been reached or opening after receiving SAP signal (with an electric module). Ventilation function with an electric actuator.

Electric actuators

Depending on the damper size and required SL... parameter, the following types of actuators are dedicated: SG16..., SG20..., SG26..., SG40..., SG60..., SG80..., SG100..., SG120..



Photo 10. SG electric actuator.

The bodies of the actuators are made of anodised aluminium, and piston rod is made of aluminium, 1.4301 stainless steel or St52 galvanised steel. The actuators meet requirements for acceptable interference emission defined by EN 55011.

Internal limit switches ensure turning off at end positions, and an electronic switch protects the device against overload. Parallel electric connection is also possible (without the speed synchronization). The standard size of the piston rod eye bolt is Ø8 (possible variants: Ø6, Ø10).

Every actuator has a cable in light grey silicon insulation, 2.5 m long:

- standard version: 2 x 2.5 mm² / OD ~ Ø9 mm
- for “E” option: 2 x 2.5 mm² / 3 x 1.5 mm² / OD ~Ø11 mm
- Options on request:
 - Actuator with a lower centre of suspension,
 - Other versions of the piston rod finishing,
 - Actuator housing painted to RAL colour.

“E” option – additional limit switches for both end positions, potential-free contact, closed for the end position. Load capacity 1 A / 24 V- (e.g. for the position indication).

The specific data of SG actuators are shown in Table 13.

Table 13. Technical data of SG actuators.

Parameter	Actuator type							
	SG16..	SG20..	SG26..	SG40..	SG60..	SG80..	SG100..	SG120..
Supply voltage	24VDC							
Current consumption during no-load operation	0,8 A							
Ambient temperature range	-25°C to + 60°C							
Max acceptable temperature acc. to EN 12101-2 Appendix G	300°C -30 min							
Ingress Protection acc. to DIN EN 60529	IP 54							
Current consumption during full-load operation [A]	1,6	2,0	2,6	4,0	6,0	8,0	10,0	12,0
Speed with no load [mm/s]	6,2-20,8	6,2-20,8	6,2-20,8	6,7-36,7	21,9-36,8	30,3-36,8	17,1-25,6	17,1-25,6
Speed with full load [mm/s]	5,1-17,2	4,8-16,3	4,4-14,9	5,3-29,2	15,2-25,6	18,1-22,0	12,7-19,0	11,7-17,6
Operating mode at peak load, at 25°C	S2 4	S2 2,5	S2 1,5	S2 4	S2 2	S2 1	S2 2	S2 2
Operating mode at continuous load, at 40°C	S3 21%	S3 13%	S3 8%	S3 20%	S3 10%	S3 5%		
Max activation time of the actuator in one direction [min]	4	2,5	1,5	4	2	1		



Other important technical data concerning actuators are available on request.

Control Panel

Intended use

SR-300 RYS smoke exhaust system control panel is designed to control, power supply and monitor devices in smoke exhaust systems. It also provides ventilation functions using the weather station.



Figure 24. SR-300 RYS control panel.

Area of the application

SR-300 RYS control panel can be used in:

- residential buildings
- public buildings
- production facilities
- warehouses

The SR-RYS control panel allows to connect inspection lines with smoke detectors for automatic smoke (smoke and heat) detection, and inspection lines with manual smoke exhaust buttons to start the appropriate procedure for controlling and monitoring of fire protection devices manually by a person who notices a fire.

Technical Data

Table 14. Technical data of SR-300 RYS control panel.

Supply voltage	230 VAC +10% -15%
Nominal power	Depending on type: 150 W- 1375 W
Acceptable current output	Depending on type: 5,5A - 50 A
Ingress Protection (IP)	IP30 (standard) or IP40 (depending on type) or IP54 optional
Operating temperature	-5°C to +40°C
Environment class	I
Max battery capacity	45 Ah
Dimensions	Depending on the configuration: - 410 x 400 x 140 [mm] - 480 x 480 x 160 [mm] - 550 x 480 x 200 [mm]
Design	Compact casing
Configuration of the zones	- Up to 4 smoke extraction zones; - Up to 4 ventilation zones;
Electric actuator outputs	Up to 4 outputs for 24 VDC actuators, up to 12 A
Inspection lines / smoke detectors inputs	- Conventional parametric (open); - Max 4 lines; - Up to 32 smoke detectors in a line; - Short-circuit/break line monitoring;
Lines of smoke extraction manual push buttons	- Max 6 lines of RPO; - Up to 10 RPO in a line;
Electro-catch outputs	- 2x 24 VDC outputs; - Standard or reversible electro-catches;
Digital outputs	- Up to 6 supervised outputs and up to 7 unsupervised; - Short-circuit/break line monitoring;
Relay inputs	Up to 7 unsupervised outputs;

Functionality	<ul style="list-style-type: none"> - Execution of different control algorithms; - Optical signalling of operating conditions; - Expansion possibility of additional options; - Optical and acoustic fire alarm signalling; - ventilation of the staircase; - Communication with other systems: fire detection and signalling, BMS, access control system.
Other information	<ul style="list-style-type: none"> - 12x SR-RYS control panels in the series; - Meets the requirements of prEN 12101 part 9 „Control panels“; - Meets the requirements of KOT – National Technical Assessment;

Principle of Operation

SR-300 RYS control panel can receive initiating signals from the Fire Alarm System and other fire safety systems, or perform control and monitoring functions based on its own fire hazard detection through smoke and heat detectors and manual smoke exhaust buttons located on the SR 300 RYS Smoke Control Panel inspection lines.

SR-300 RYS control panel is used to control, power supply and monitor of:

- fire dampers, smoke control dampers, smoke and heat vents, ventilation flaps;;
- different actuator types;
- electro-catches of fire doors and gates, solenoids;
- Smoke curtains;
- Natural smoke and heat extraction devices;

SR-300 RYS Series

There are 12 different SR-300 RYS types, differing in the available maximum output current, the number of input and output signals supported by the control panel and the overall size of the control panel.

Table 15. SR-300 RYS Series.

SR-300 Type	1.4	1.8	1.8P	1.20P	2.8	2.20	2.29P	4.8	4.20	4.29	4.39	4.48
Number of firezones	1	1	1	1	2	2	2	4	4	4	4	4
Number of ventilation zones	1	1	2	2	2	2	3	4	4	4	4	4
Number of outputs for 24VDC actuators	1	1	2	2	2	2	3	4	4	4	4	4
Total output current [A]	5,5	10	10	23,4	10	23,4	31	10	23,4	31	41,3	50
Number of smokedetector lines inputs	1	1	1	1	2	2	2	2	2	2	2	2
Number of RPO manual push button complete inputs/ outputs	1	1	1	1	1	1	1	1	1	1	1	1
Number of RPO manual push buttons simple inputs/outputs	0	0	0	0	1	1	1	1	1	1	1	1
Number of potential free outputs	4	4	4	5	5	5	5	4	5	5	5	5
Number of supervised inputs	2	2	2	2	3	3	3	4	4	4	4	4
Number of unsupervised inputs	2	2	2	3	2	3	3	3	3	3	3	3

* All inputs and outputs can be defined by use of an application.



More parameters characterizing individual types of control panels units can be found in the Operation and Maintenance Documentation on the manufacturer's website.

Additional boards - optional

Optional additional boards can be attached to the SR-300 RYS control panel. They ensure an increase in the number of supported input and output signals of the control panel and add optional functionalities, such as optical and acoustic signalling devices and a weather station.

Table 16. Additional boards.

Additional board	Add. Board 1 - Digital Inputs/Outputs	Add. Board 2 Manual Smoke Extraction Push Buttons	Add. Board 3 - Smoke Detectors	Add. Board 4 Signalling Devices	Add. Board 5 - Weather Station
Functionality of SR-300 with additional board	+ 2 supervised digital inputs; + 2 potential free digital outputs;	+ 1 complete RPO input (fire, reset, full signalling); + 1 simple RPO input (fire, signalling of fire);	+ 2 smoke detector lines	+ 2 acoustic signalling devices outputs; + 2 optical signalling devices outputs;	+ 1 wind-rain detector;

Examples of the devices controlled by SR-3000 RYS control panel

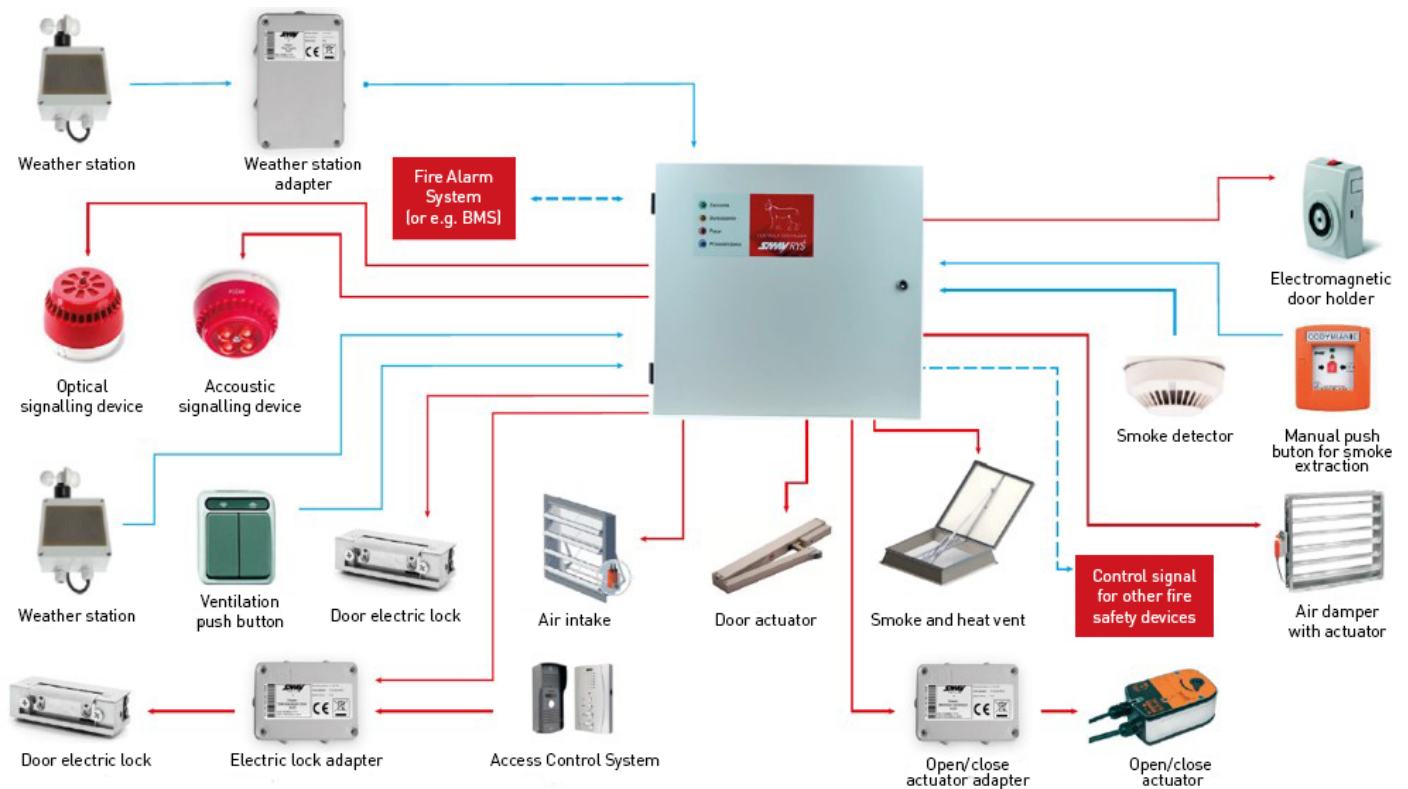


Figure 25. Devices controlled by SR-300 RYS.

WRS 2B Weather Control Panel

The required signal is sent by four separate potential-free changeover contacts (output contacts). The contacts remain active as long as the detector is operating, with the minimum contact time of 6 minutes. WM wind detector and/or RS rain detector is connected to the WRS 2b control panel.

The detection threshold for the signal from the wind/rain detector can be adjusted.

Functional possibilities of the control panel (to be set):

- Limited sensitivity to wind - (closure only possible when wind is sustained at constant force for a long time).
- Continuous heating - (the rain detector is constantly heated).
- Contact programming - (contacts 3 and 4 switch optionally in rain and / or wind).
- Inactive output - (disconnection of relays from the voltage for the time of service / maintenance).
- Reduction of the closing time - (the minimum delay of closing the actuators reduced from 6 to 3 minutes).
- Failure - (contact 2 will switch in the event of failure of the rain detector).
- Test - (function that allows you to test the operation of detectors and actuators).

The active status of the control panel is indicated by LED: ready I, wind W and rain R.



Photo 11. WRS Weather Control Panel

Options / Accessories:

- WM 1: wind detector (anemometer with vane) for measuring wind speed
- RS 2: heated rain detector
- SK: stand bracket (40 cm high mast) for mounting WM and RS detectors on a flat roof
- MB: mast fastening for WM and RS detectors (for pipes up to Ø 60 mm)
- KE: Extension with additional potential-free contacts
- SG: enclosure with a transparent plastic door that opens to the left, IP54

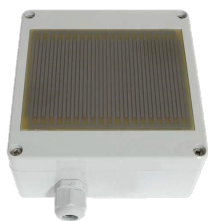


The control panel is not suitable for outdoor use. Protect against direct sunlight and humidity and excessive dust! Recommended installation in dry and heated rooms.

Technical data:

- Supply voltage: 230 V~ / 50-60 Hz
- Current consumption: 0,09 A
- Dimensions [mm] (width x height x depth) 165 x 155 x 75, 200 x 155 x 95 (for SG option)
- Operating temperature: -50°C to +400°C
- Relative air humidity 20% to 80%, non-condensing
- Ingress Protection: IP 40; IP54 (for SG option)

Weather Station Accessories



RS 2d

PA heated rain detector (the heater is activated after the detector's response, and deactivated after drying), about 80 cm² area of the sensor with a fixing console.



WM 1

Wind detector (anemometer with vane) for measuring wind speed.



RS 2d-WM 1

A combination of RS 2d and WM 1 detectors, installed to a mounting angle profile



MB

Mast fastening for WM and RS detectors (for pipes up to Ø 60 mm)



SK

standing bracket (40 cm high mast) for mounting WM and RS detectors on a flat roof

The right conditions for the storage:

- Relative humidity $\varnothing < 80\%$ by $t = 20^{\circ}\text{C}$
- Ambient temperature $-20^{\circ}\text{C} < t < +60^{\circ}\text{C}$
- Without contact with dust, gases and aggressive vapors and other substances that could be corrosive.

Installation

SCD vents are designed for mounting onto flat roofs slanted at not more than 15°. They are delivered as sets of matched elements, which makes the trouble-free mounting possible.

In exceptional cases the dampers may be delivered ready assembled. In such a case, due to the comfort and safety of transport, the deflectors are delivered separately. The thermal tripping device and, possibly, E ventilation actuator are delivered separately, too.



Before putting the device into service all delivered elements shall be mounted definitely, according to the Installation Manual.



SCD vents are intended for installation in climatic conditions with corrosivity classification not higher than class C3.

When unloading it is necessary to check the compliance of delivery with element specifications. Unloading should be done manually or by means of standard warehouse equipment, observing all valid safety rules.

Before mounting in a system check the elements of SCD vents for mechanical damage. Send any defective elements back to the Manufacturer in order to have them assessed in terms of any repair options and repaired if possible.



It is forbidden to repair damaged elements of SCD smoke vents by unauthorised person.

Every supply includes: Element specification, Operating and Maintenance Manual and Installation Manual.

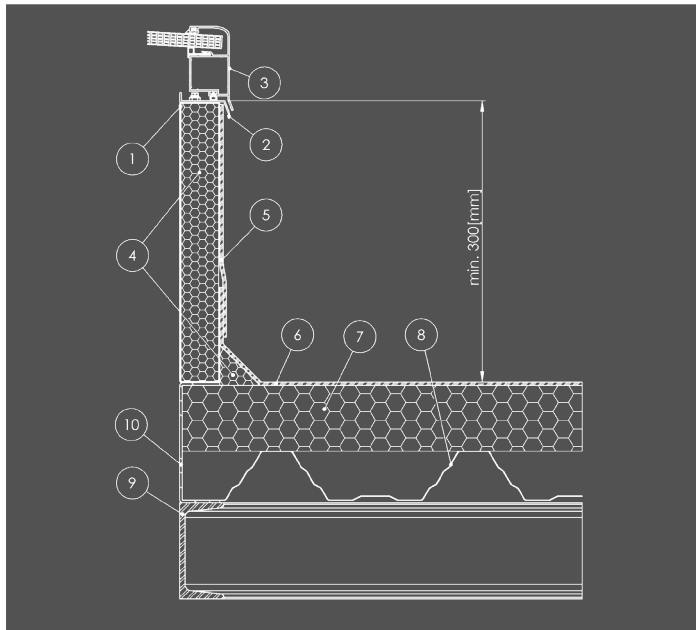
Delivery / Transportation

All elements of SCD smoke vents are shipped in factory packages and on pallets. Cardboard or stretch foil spacers are placed between the contacting elements. The individual packages are placed in wooden packages or on pallets. Small elements and pre-assembled fasteners are delivered in foil packaging or in cardboard boxes. During transport, all elements should be secured against displacement and the effects of weather conditions.

After each transport, a visual inspection of the individual elements of the set should be carried out. They must not be exposed to mechanical damage.

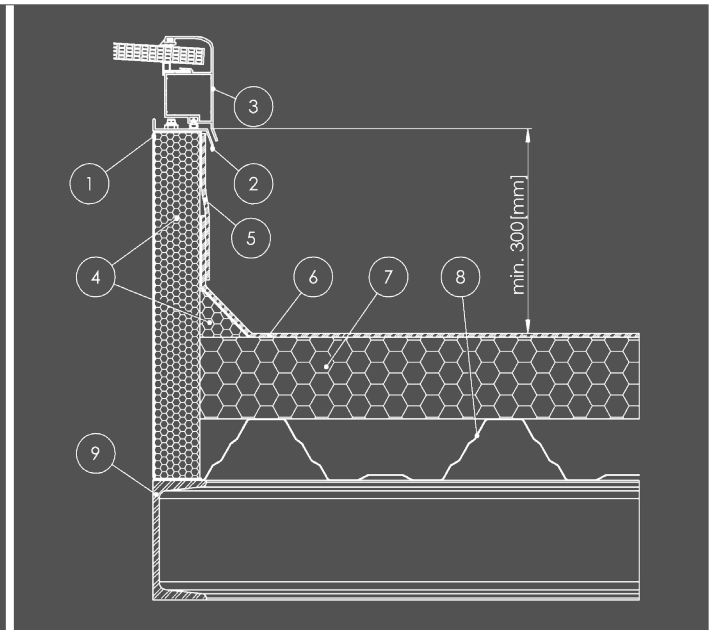
Elements of SDS smoke vents should be stored in closed rooms ensuring protection against weather conditions.

Examples of installation methods of SCD smoke vents on standard roof structures



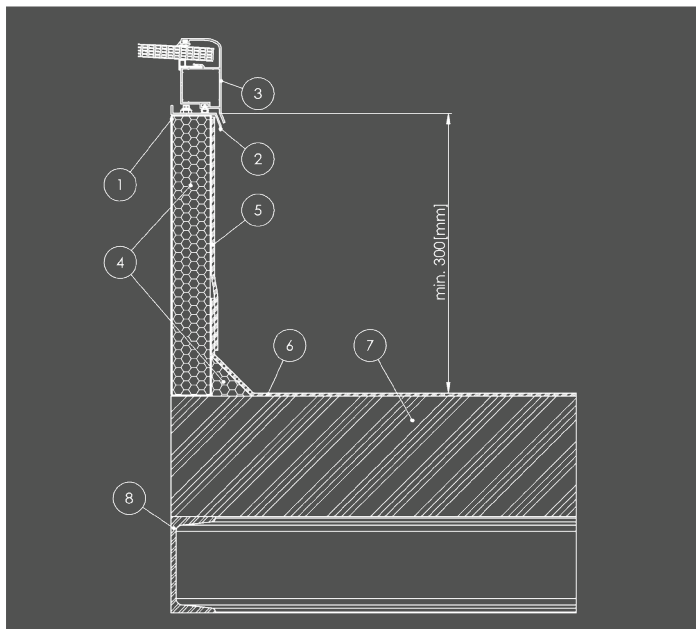
1. Smoke vent roof base made of galvanised steel sheet.
2. Smoke vent drain pipe.
3. Smoke vent flap profile.
4. Thermal insulation.
5. Smoke vent waterproofing.
6. Roofing.
7. Thermal insulation.
8. Steel decking.
9. Roof structure.
10. Supporting structure.

Figure 26. SCD installation on a roof with thermal insulation, with a supporting structure, under steel decking, under insulation.



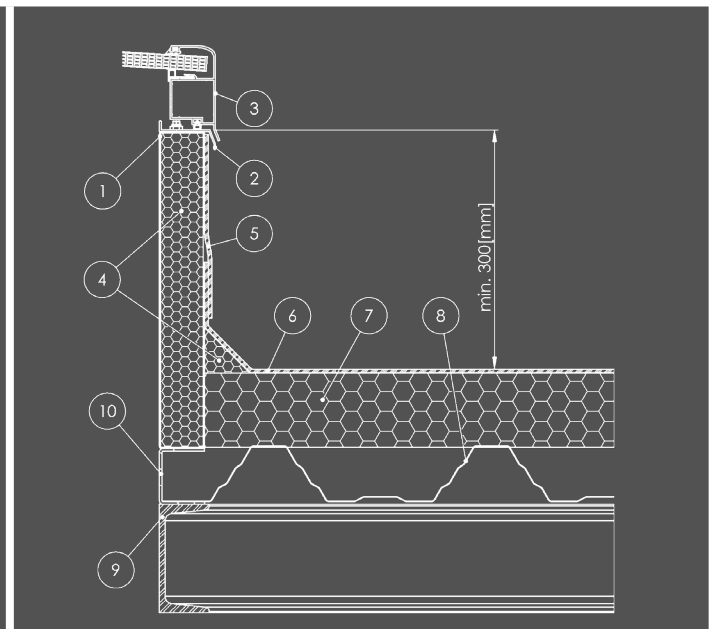
1. Smoke vent roof base made of galvanised steel sheet.
2. Smoke vent drain pipe.
3. Smoke vent flap profile.
4. Thermal insulation.
5. Smoke vent waterproofing.
6. Roofing.
7. Thermal insulation.
8. Steel decking.
9. Roof structure.

Figure 27. SCD installation on a roof with thermal insulation, without supporting structure.



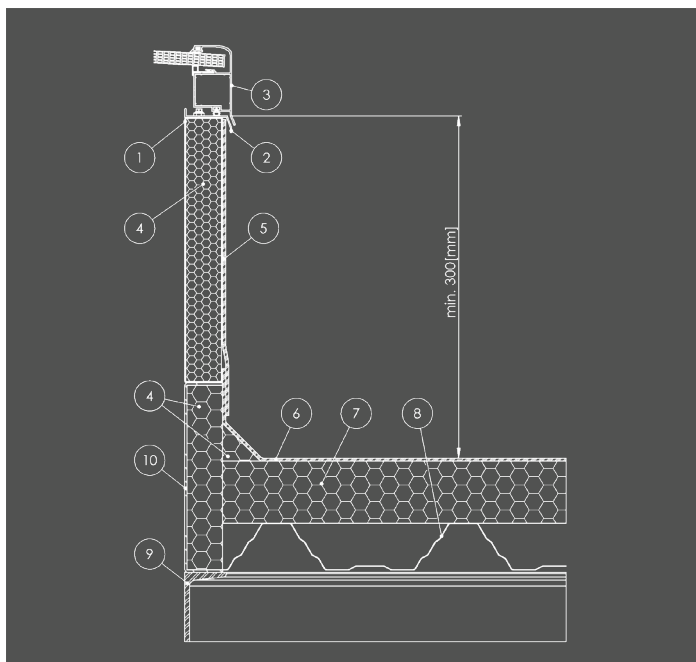
1. Smoke vent roof base made of galvanised steel sheet.
2. Smoke vent drain pipe.
3. Smoke vent flap profile.
4. Thermal insulation.
5. Smoke vent waterproofing.
6. Roofing.
7. Concrete floor slab.
8. Roof structure.

Figure 28. SCD installation on a concrete roof.



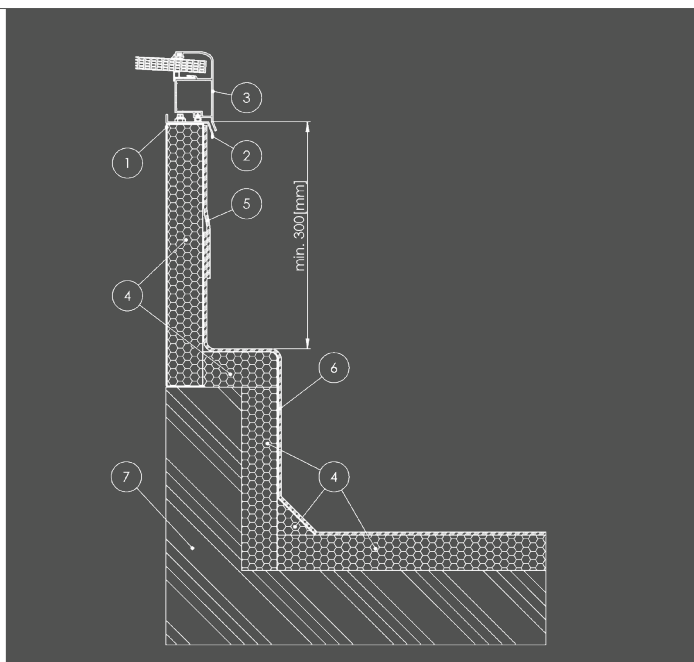
1. Smoke vent roof base made of galvanised steel sheet.
2. Smoke vent drain pipe.
3. Smoke vent flap profile.
4. Thermal insulation.
5. Smoke vent waterproofing.
6. Roofing.
7. Thermal insulation.
8. Steel decking.
9. Roof structure.
10. Supporting structure.

Figure 29. SCD installation on a roof with thermal insulation, with a supporting structure, above the insulation.



1. Smoke vent roof base made of galvanised steel sheet.
2. Smoke vent drain pipe.
3. Smoke vent flap profile.
4. Thermal insulation.
5. Smoke vent waterproofing.
6. Roofing.
7. Thermal insulation.
8. Steel decking.
9. Roof structure.
10. Supporting structure

Figure 30. SCD installation on a roof with thermal insulation, on an insulated base, with a supporting structure, above the insulation.



1. Smoke vent roof base made of galvanised steel sheet.
2. Smoke vent drain pipe.
3. Smoke vent flap profile.
4. Thermal insulation.
5. Smoke vent waterproofing.
6. Roofing.
7. Concrete floor.

Figure 31. SCD installation on a concrete roof base.

The information about the installed SCD smoke vent should be placed on the device or recorded in the Construction Site Log. This information must include the following data:

- Vent manufacturer's name,
- Smoke vent name according to the certificate – type and model,
- Year of production,
- Technical properties of the external energy source,
- Trigger temperature of the thermal tripping device (if mounted),
- Aerodynamic free area,
- Classes of: snow load, wind load, efficiency at low temperatures, reliability and resistance to high temperatures,
- Number and year of issue of the European Standard connected with the given certificate,
- Name of the company, which has mounted the vent,
- Vent installation date.
- After the device and the control system have been mounted, before commissioning of the smoke damper, it is recommended to carry out and note the following actions:
 - Check the electric and pneumatic system for mechanical damages,
 - Check the state of electric/pneumatic connections between individual elements,
 - Check the thermal insulation and joint seals,
 - Check the movement abilities for all control variants,
 - Check the device, particularly the polycarbonate cover and drive mechanical members, for cleanness,
 - Check all labels and stickers for readability

During operation, SCD smoke vents shall be inspected at least every 12 months, with the inspection recorded in an inspection report. Otherwise it will be impossible to accept and authorise the vent. During the periodic inspection all actions recommended by the Operating and Maintenance Manual should be conducted.



Smoke and heat vents may only be installed by the installers trained by Smay Sp. z o.o., in terms of technical properties of the product, conditions for the performance of works and control of the works performed.



Workers should have personal certificates issued by Smay Sp. z o.o., with the authorization for mounting of SCD vents. The certificate is valid for 3 years after training. Moreover, they should have certified expert qualifications, appropriate for the given scope of work, as well as certificates for carrying out operations under specific environmental conditions. Mounting of the vents should be carried out precisely in accordance with the Installation Manual, with the use of materials specified in this document only.



SCD - Smoke and Heat Vents and Accessories

When ordering, please provide information in accordance with the following pattern:

**SCD<X> - <U> - <E> - <W>x<L>-<H> - <K> - <D> - <N> - <F> - <TP> - <GW> - <SL> - <T> -
 - <ADD>**

Where:

X	Vent type
	1 - single-flap 2 - double-flap
U	ZODIC function*
	none - basic vent, without ZODIC function L - suitable for ZODIC-M (with measuring system)
E	Base type
	P - straight roof base S - sloping roof base
W	Width of the vent
L	Length of the vent
H	Height of the roof base
	350,500,700
K	Guide vanes*
	none - no guide vanes K1 - with 1 guide vane (only for SCD1-P single-flap vents with a straight roof base) K2 - with 2 guide vanes (only for SCD1-P single-flap vents with a straight roof base)
D	Wind deflectors*
	none - no wind deflectors 0 - with wind deflectors
N	Emergency drive (for smoke extraction)
	Pn - one pneumatic actuator El - one electric actuator
F	Function
	FD - single function: smoke extraction (pneumatic actuator) (only when <N>=Pn) FDW - double function: smoke extraction + ventilation (electric double-function actuator or pneumatic actuator for smoke extraction and electric one for ventilation)
TP	Operating mode
	A - open only (only for pneumatic actuators) B - open-close
GW	Thickness of PC filling
	10, 16, 20, 25
SL	Snow load classification
	SL3 - SL250 SL2 - SL550 SL1 - SL1000
T	Temperature classification
	T0 - T(00) T1 - T(-05) T2 - T(-15) T3 - T(-25)
BR	Declaration of $B_{ROOF}(t_1)$ classification*
	none - no declaration R - declaration of B_{ROOF} classification

Accessories

ADD	Accessories
	AK - alarm box (for pneumatic systems) PLZ - alarm-ventilation box (for pneumatic systems) WRS 2b - weather control panel

RS 2d	- rain detector
WM 1	- winddetector
RS 2d-WM1	- set of detectors (rain and wind detector)
MB	- mast fastening
SK	- stand bracket
KE	- Extension with additional potential-free contacts for WRS 2b control panel
SG	- enclosure with a transparent plastic door
RYS	- RYS control panel
	RYŚ 1.4, RYŚ 1.8, RYŚ 1.8P, RYŚ 1.20P, RYŚ 2.8, RYŚ 2.20, RYŚ 2.29P, RYŚ 4.8, RYŚ 4.20, RYŚ 4.29, RYŚ 4.39, RYŚ 4.48
G5-RWA-xx	- thermal fuse (xx – activation temperature)
BT-xxx	- CO ₂ cylinder (xxx – required volume)
KA	- anti-burglar bars
KZU	- anti-fall mash

Order example: **SCD1-P-1500x1500-350-El-FDW-B-16-SL2-T3-KA**

SCD1W - Smoke and Heat Vent with Roof Access Function

When ordering, please provide information in accordance with the following pattern:

**SCD1W - <U> - <E> - <W>x<L> - <H> - <K> - <D> - <N> - <F> - <GW> - <SL> - <T> -
 - <ADD>**

Where:

U	ZODIC function*
	none - basic vent, without ZODIC function L - suitable for ZODIC-M (with measuring system)
E	Base type
	P - straight roof base
W	Width of the vent
L	Length of the vent
H	Height of the roof base: 350, 500, 700
K	Guide vanes*
	none - no guide vanes
D	Wind deflectors*
	brak - no wind deflectors O - with wind deflectors
N	Emergency drive (for smoke extraction)
	El - electric actuator
F	Function
	FDW - double function: smoke extraction + ventilation with electric actuator
GW	Thickness of PC filling: 10, 16, 20, 25
SL	Snow load classification SL2 - SL550
T	Temperature classification T3 - T(-25)
BR	Declaration of $B_{ROOF}(t_1)$ classification*
	none - no declaration R - declaration of B ROOF classification
ADD	Accessories
	WRS 2b - weather control panel RS 2d - rain detector WM 1 - wind detector RS 2d-WM1 - set of detectors (rain and wind detector) MB - mast fastening SK - stand bracket KE - Extension with additional potential-free contacts for WRS 2b control panel SG - enclosure with a transparent plastic door RYS - RYS control panel - RYS 1.4, RYS 1.8, RYS 1.8P, RYS 1.20P, RYS 2.8, RYS 2.20, RYS 2.29P, RYS 4.8, RYS 4.20, v 4.29, RYS 4.39, RYS 4.48

Order example: **SCD1W-P-1500x1500-350-El-FDW-16-SL2-T3**