

DKIR1, DKIS1

Systemair smoke dampers

Resistance class $E_{600} 120 (v_{ed} i \leftrightarrow o)$ S500C₁₀₀₀₀ AA single or $E_{600} 120 (v_{ed} i \leftrightarrow o)$ S1500C₁₀₀₀₀ AA single



Ordering codes

DKIR1-		
Nominal diameter	DN	
Type of activation	DV7, DV9, DV9-ST	
DKIS1-		
Nominal width × height	W × H	
Type of activation	DV7, DV9, DV9-ST	

NOTES:

Type of activation:

- DV7: servomotor 230 V AC with auxiliary switches
- DV9: servomotor 24 V AC/DC with auxiliary switches
- DV9-ST: servomotor 24 V AC/DC with auxiliary switches and with supply and communication unit BKNE230-24

Examples of the ordering codes:

DKIR1-630-DV9

Round smoke damper for one fire compartment with nominal diameter $DN = 630$ mm, with servomotor 24 V AC/DC with auxiliary switches

DKIS1-1200x800-DV9-ST

Rectangular smoke damper for one fire compartment width $W = 1200$ mm, height $H = 800$ mm, with servomotor 24 V AC/DC with auxiliary switches and with supply and communication unit BKNE230-24.

Description

Smoke damper (hereafter referred to as damper) is a component of SHEVS (smoke and heat exhaust ventilation systems) and has two safety positions:

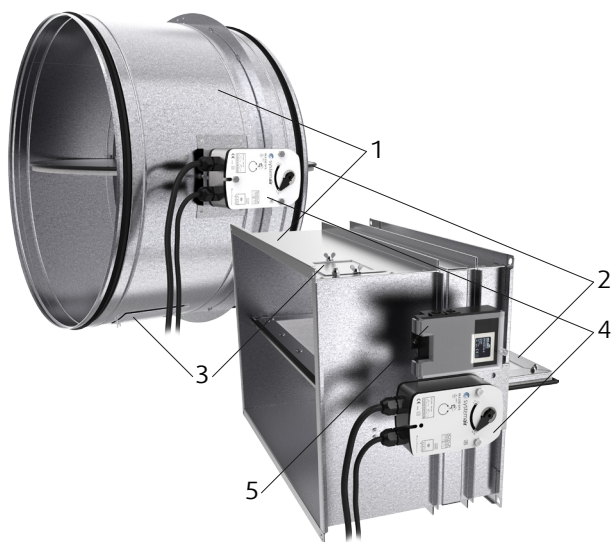
1. open - to enable exhaust of heat and smoke via special fan from fire compartment in which occur fire accident or
2. closed - to stop the spread of heat and smoke to the fire compartment without fire.

Design

DKIS1 has rectangular casing made of a zinc coated sheetmetal. Damper blade is made of calcium-silicate boards. Closed damper is sealed by an active intumescent sealing to avoid the spread of the heat and smoke. Flanges are used for connection of the damper DKIS1 to a duct.

DKIR1 has round casing made of a zincplated sheetmetal. Metal covered blade has fire resistant board inside. Spiro safe sealing is used for connection of the damper DKIR1 to a duct.

The closing and opening of all smoke dampers is performed by a servomotor 230 or 24V. The 24 V servomotor can be connected through supply and communication unit to various control systems.



Damper Parts Description:

1. Casing
2. Damper Blade
3. Inspection opening
4. Servomotor
5. Communication unit
(only DV9-ST); position of this unit depends on H size
- above or on the side of the servomotor

Fig. 1: Components of the smoke damper

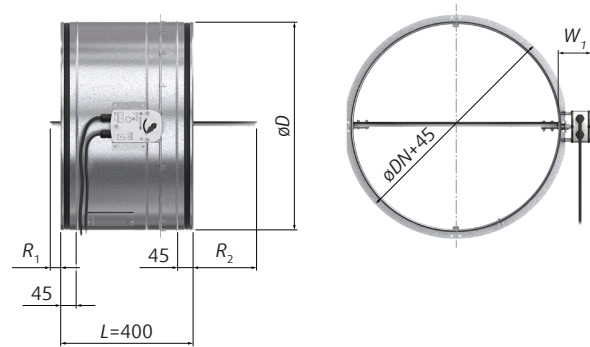


Fig. 2: Dimensions of the circular smoke damper

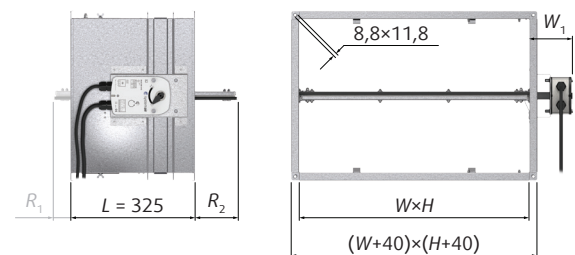


Fig. 3: Dimensions of the rectangular smoke damper for nominal dimensions $W \times H = 200 \times 200$ up to 1200×800 mm

NOTE: These smoke dampers have flanges width 20 mm.

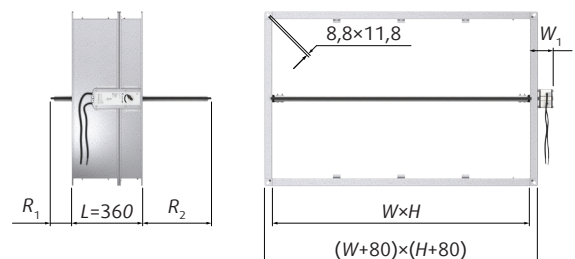


Fig. 4: Dimensions of the rectangular smoke damper with $W > 1200$ mm up to 1500×800 mm

NOTE: These smoke dampers have flanges width 40 mm.

Fire resistances, dimension ranges and allowed installations

Round and rectangular smoke dampers for one fire compartment are CE certified in accordance with the EN 12101-8, tested according to EN 1366-10 and classified in accordance with EN13501-4:

Name	Certificate No.	Dimension range (mm)	Installation	Fire resistivity	Tested by underpressure (Pa)
DKIR1	 1396 - CPD - 0058	ø 100 - 630	In or on a duct runnig throug the wall	$E_{600} 120 (v_{ed} i \leftrightarrow o) S500 C_{10000}$ AA single	500
DKIS1		$W > 1200$ up to 1500×800		$E_{600} 120 (v_{ed} i \leftrightarrow o) S1500 C_{10000}$ AA single	1500
		200×200 up to 1200×800			

Tab. 1: Fire resistances, allowed installation methods and dimension ranges

Dimensions, weights and overhangs

DN (mm)	100	125	160	180	200	225	250	280	315	355	400	450	500	560	630
R_1 (mm)	-	-	-	-	-	-	-	17	34	54	77	102	127	157	192
R_2 (mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32
m^* (kg $\pm 10\%$)	3,69	4,05	4,62	4,96	5,32	5,80	6,33	7,49	8,32	9,31	11,13	12,61	14,16	16,12	18,03

Tab. 2: Dimensions, weights and blade overhangs in fully open position of the round smoke dampers DKIR1

* NOTE: This table is valid for DV7 a DV9. For DV9-ST + 0,8 kg.

DN (mm)	DV7/DV9	DV9-ST
	W_1 (mm)	
100 ÷ 225	96	163
250 ÷ 630	96	

Tab. 3: Overhang of the servomotor (DV7 and DV9) or servomotor with supply and communication unit (DV9-ST) – round smoke damper DKIR1

m^* (kg $\pm 10\%$)	W (mm)																
	200	250	300	350	400	450	500	600	700	800	900	1000	1100	1200	1300	1400	1500
H (mm)	200	7,32	7,96	8,62	9,26	9,92	10,57	11,24	12,53	13,86	-	-	-	-	-	-	-
	250	7,96	8,65	9,36	10,05	10,76	11,45	12,17	13,55	14,98	16,36	-	-	-	-	-	-
	300	8,61	9,34	10,10	10,84	11,59	12,33	13,10	14,58	16,10	17,58	19,07	-	-	-	-	-
	350	9,25	10,04	10,84	11,62	12,42	13,21	14,03	15,60	17,22	18,79	20,38	21,95	-	-	-	-
	400	9,89	10,73	11,58	12,41	13,26	14,09	14,96	16,63	18,34	20,01	21,69	23,36	25,05	26,72	-	-
	450	-	11,42	12,31	13,20	14,09	14,97	15,89	17,65	19,46	21,22	23,00	24,76	26,55	28,31	43,21	-
	500	-	12,14	13,08	14,01	14,95	15,88	16,85	18,70	20,60	22,46	24,33	26,19	28,08	29,94	45,66	48,29
	600	-	-	14,56	15,58	16,62	17,65	18,70	20,75	22,84	24,89	26,95	29,00	32,10	34,14	50,57	53,47
	700	-	-	-	17,18	18,32	19,44	20,59	22,83	25,11	27,35	30,62	32,86	35,12	37,36	55,47	58,66
	800	-	-	-	-	19,99	21,20	22,45	24,87	27,35	30,79	33,24	35,66	38,12	40,55	30,38	63,86

Tab. 4: Dimensions and weights of the rectangular smoke dampers DKIS1

* NOTE: This table is valid for DV7 a DV9. For DV9-ST + 0,8 kg.

H	W ≤ 1200		W > 1200	
	R ₁	R ₂	R ₁	R ₂
(mm)				
200	-	14	-	43
250	-	39	-	68
300	-	64	-	93
350	-	89	-	118
400	-	114	-	143
450	-	139	-	168
500	19	164	-	193
600	69	214	8	243
700	119	264	53	293
800	169	314	103	343

Tab. 5: Blade overhangs of the rectangular smoke dampers DKIS1 in fully open position

W ₁ (mm)		W (mm)																
		200	250	300	350	400	450	500	600	700	800	900	1000	1100	1200	1300	1400	1500
H (mm)	200				DV7 / DV9; W ₁ = 119 mm													
	250				DV9-ST; W ₁ = 186 mm													
	300																	
	350																	
	400																	
	450																	
	500																	
	600																	
	700																	
	800																	

Tab. 6: Overhang of the servomotor (DV7 and DV9) or servomotor with supply and communication unit (DV9-ST) – rectangular smoke damper

Free areas

DN (mm)	100	125	160	180	200	225	250	280	315	355	400	450	500	560	630
A_v (m ²)	0,005	0,009	0,016	0,021	0,026	0,034	0,042	0,054	0,069	0,089	0,114	0,146	0,182	0,230	0,293

Tab. 7: Free areas of round smoke dampers DKIR1

A _v (m²)		W (mm)																
		200	250	300	350	400	450	500	600	700	800	900	1000	1100	1200	1300	1400	1500
H (mm)	200	0,036	0,045	0,054	0,063	0,072	0,081	0,090	0,108	0,126								
	250	0,046	0,058	0,069	0,081	0,092	0,104	0,115	0,138	0,161	0,184							
	300	0,056	0,070	0,084	0,098	0,112	0,126	0,140	0,168	0,196	0,224	0,252						
	350	0,066	0,083	0,099	0,116	0,132	0,149	0,165	0,198	0,231	0,264	0,297	0,330					
	400	0,076	0,095	0,114	0,133	0,152	0,171	0,190	0,228	0,266	0,304	0,342	0,380	0,418	0,456			
	450		0,108	0,129	0,151	0,172	0,194	0,215	0,258	0,301	0,344	0,387	0,430	0,473	0,516	0,546		
	500		0,120	0,144	0,168	0,192	0,216	0,240	0,288	0,336	0,384	0,432	0,480	0,528	0,576	0,611	0,658	
	600			0,174	0,203	0,232	0,261	0,290	0,348	0,406	0,464	0,522	0,580	0,638	0,696	0,741	0,798	
	700				0,238	0,272	0,306	0,340	0,408	0,476	0,544	0,612	0,680	0,748	0,816	0,871	0,938	1,005
	800					0,312	0,351	0,390	0,468	0,546	0,624	0,702	0,780	0,858	0,936	1,001	1,078	1,155

Tab. 8: Free areas of rectangular smoke dampers DKIS1

Technical parameters

Utilisation	in SHEVS in single fire compartment
Test temperature	600 °C
Durability test	10 000 + 100 + 100 cycles without a change to the required attributes
Testing pressure	-500 Pa / -1500 Pa (see Tab. 1)
Safe position	closed / open according to situation in the fire compartment
Airflow direction	given by SHEVS design
Allowed air velocity	max. 12 m/s
Closure/opening	servomotor driven
Closed/open indication	microswitches included in servo
Environment suitability	only indoor environment (3K5 according to EN 60721-3-3)
Ambient temperature	-20 °C up to +50 °C
Inspection possibility	after opening of the inspection lid
Maintenance	not needed

Damper installation

The dampers' installation is always designated by the particular ventilation project, which must comply with valid standards. Damper distances from building constructions, technological distributors and ventilation devices must be such that the authorized mounting people will be able to do the installation, functional tests, revisions and services. There must be at least 200 mm space between two dampers or between the damper and the wall or ceiling.

Usage and operation

The DKIR1 / DKIS1 is a part of a heat exhaust ventilation system (SHEVS). The system helps to keep the exits smoke-free, facilitates the job for fire brigades, slows down the spread of fire. This system is created in larger buildings, where the size and shape of the building do not enable natural smoke exhaust when fire occurs. The damper is controlled by a servo-drive which, triggered by an electric impulse from a smoke alarm or remote-controlled by electric fire signalization center, opens or closes the damper blade according to the needs of the SHEVS and according to the situation in relevant fire compartment. Servomotor closes or opens the damper within 60 seconds.

Transportation, storage and operation conditions

It is essential to transport the dampers by such means of transport that provide a cover and secured on pallets. If manipulation occurs during the transportation or storage, dampers must be protected against damage and weather conditions. Damper blades must be in the closed position. It is recommended to store these products in a closed and dry area with a temperature range from -10°C to 50°C.

Materials used and disposal

This product contains iron, brass, zinc, calciumsilicate non-asbestos boards, passive and active anti-fire sealing. They are disposed of according to valid legal regulations. The product does not contain any dangerous materials.

Warranty conditions

The producer provides a 24-month warranty starting on the date of expedition.

Appendix

Any demands regarding deviations from the above mentioned technical specifications and conditions shall be discussed with the manufacturer. The manufacturer reserves the right to perform any technical modifications of the product without prior notice, provided that such changes have no effect on the quality and performance of the product.