

MULTI-BLADE SMOKE CONTROL DAMPER



Characteristics:

A multi-blade smoke control damper for fire ventilation and mixed ventilation systems, with an electric actuator without a return spring.



version: 05/03/25

Intended Use

The WKP-P-E-J and WKP-P-E-W smoke control dampers are used in fire ventilation systems to prevent the expansion of fire, heat and smoke.

WKP-P-E-J smoke control damper

It is used in single-compartment fire ventilation systems, in horizontal ventilation ducts. The damper is used for extracting smoke and hot fire gases from rooms or smoke zones located in the same fire zone, at the same time maintaining fire resistance rating and/or smoke leakage criteria for the temperature up to 600°C. In the air supply systems the product is used for supplying fresh (without smoke) makeup air to the smoke zones located in the same fire zone.

WKP-P-E-W smoke control damper

Used in multi-compartment fire ventilation systems. During the normal operation of the system, the isolating blade of the WKP-P-E-W dampers is in the open or closed position. In case of fire, the actuating system opens the dampers that operate in the fire detection zone (dampers in other zones are closed).

The WKP-P-E damper are certified by **CTO Gdańsk**, Certificate of Constancy of Performance **2434-CPR-0015**

The dampers are symmetrical, designed for installation in vertical building partitions (in walls). They may be mounted in rigid or flexible walls.

The dampers are designed, manufactured and tested in accordance with the following standards: **PN-EN 12101-8** "Smoke and heat control systems – Part 8: Smoke control dampers" and PN-EN 13501-4 "Fire classification of construction products and building elements – Part 4: Classification using data from fire resistance tests on components of smoke control systems."

The effectiveness of the dampers is confirmed by tests according to **PN-EN 1366-2 and PN-EN 1366-10** "Fire resistance tests for service installations – Part 2: Fire dampers, Part 10: Smoke control dampers."

The WKP-P-E-W smoke control dampers are classified as **tightness class C** (Case leakage class of the damper installed in accordance with the Technical Documentation) devices on the basis of tests carried out according to **EN 1751** "Ventilation for

buildings. Air terminal devices. Aerodynamic testing of dampers and valves."

Classification of the WKP-P-E-J dampers

The WKP-P-E-J dampers are classified as indicated below and may be mounted in fire ventilation ducts.

E₆₀₀ 120 (v_{ed}-i↔o)S1000C₃₀₀AAsingle

Classification of the WKP-P-E-W dampers

The WKP-P-E-W dampers are classified as indicated below and may be mounted in the following building partitions:

EI 90 (v_{ew}-i↔o)S1500C₁₀₀₀₀AAmulti

EI 120 (v_{ew}-i↔o)S1000C₁₀₀₀₀AAmulti

It means that the automatically controlled damper installed in building partition or in a duct outside the building partition keeps integrity, insulating and smoke leakage properties for at least 120 minutes; the class above also means that the damper may be operated remotely for at least 2 minutes from the moment of receiving the signal from the fire detector.

The WKP-P-E-W fire dampers may be installed in vertical building partitions with both horizontal and vertical blade rotation axis.

Description

The WKP-P-E-J and WKP-P-E-W smoke control dampers are made up of a rectangular housing, movable blades and a drive system.

The dampers' housing is made of fire-rated boards and steel structural members. Both sides of the housing are equipped with steel connection spigots, which enable easy connection of a duct.

Movable blades, made of mineral silicate composite, are fastened to the housing by means of metal pins.

There are intumescent seals mounted on the inner side of the housing and on the blades. Their characteristic feature is the volume increase at high temperatures, tightly filling all leaks

between the blade and the body. A bubble seal ensures the leak tightness at ambient temperature.

The WKP damper is provided with an innovative actuating mechanism, which ensures the counter rotation of the blades. The mechanism is made up of, among other things, gears made of fire-rated materials, blades and an electric actuator.

The permissible air velocity for the WKP-P-E damper in a BxH connection duct is 12 m/s.

Manufacturing versions

The BEN, BEE or BE electric actuator by BELIMO is used as the drive system. Switching between open and closed position of the damper (and vice versa) can be done after the power supply has been connected to the actuator. There are microswitches permanently installed in the actuator for indicating the open/closed position of the damper. The WKP-J and WKP-W dampers do not have return springs (voltage loss will not cause the movement of the damper isolating baffle).

The range of dampers covers the following dimensions: a clear damper width from 200 to 1200 mm (10 mm intervals) and a clear damper height from 200 to 800 mm (100 mm intervals). The basic range of damper sizes along with the actuators used is presented in the table below.

Dimensions

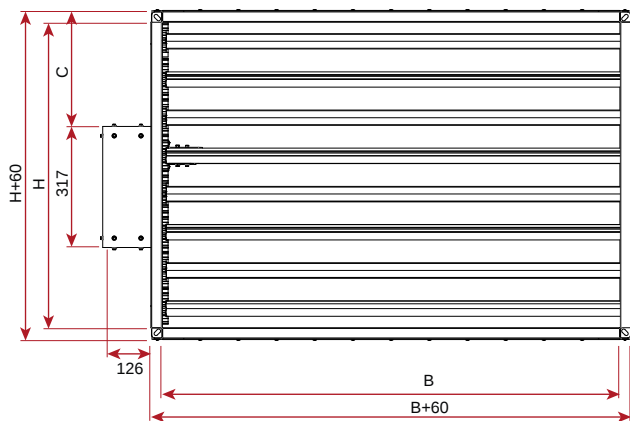


Figure 1. WKP-P damper dimensions

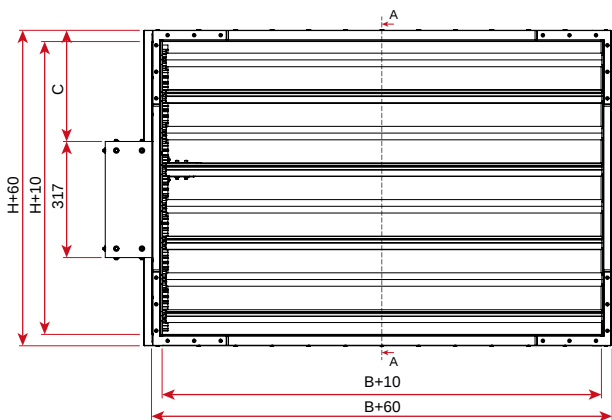


Figure 2. WKP-P-T damper dimensions (without connection frames).

Table 1. C parameter value.

N	H [mm]	C [mm]
2	200	0
3	300	100
4	400	100
5	500	200
6	600	200
7	700	300
8	800	300

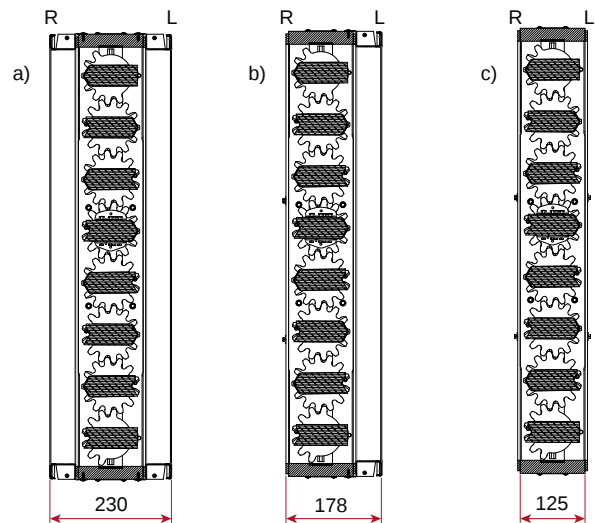
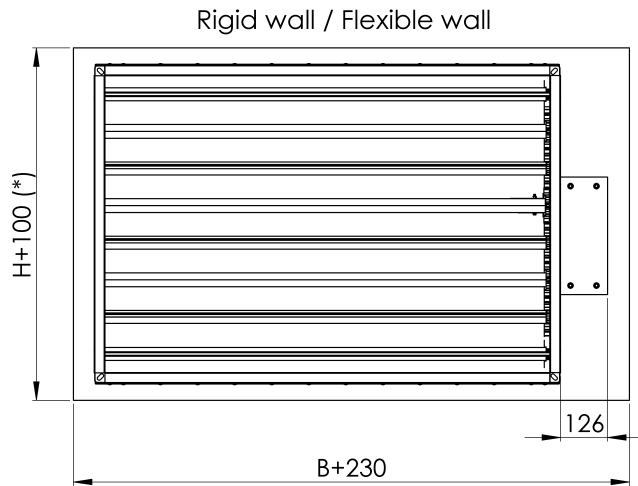


Figure 3. The length of the dampers: a) WKP-P-E-W and WKP-P-E-J dampers b) WKP-P-E-W-KL damper (version with a connection frame on the L side) c) WKP-P-E-W-T damper (without connection frames).

Installation



Permissible range:
 $B+(210 : 280) \text{ mm} / H+(80 : 150) \text{ mm} (*)$
 (*) For dampers with a height of
 $H=200 \text{ mm}$ and $H=300 \text{ mm}$ the installation
 opening height should be increased by 60 mm.

Figure 4. Openings required for the WKP-P damper.

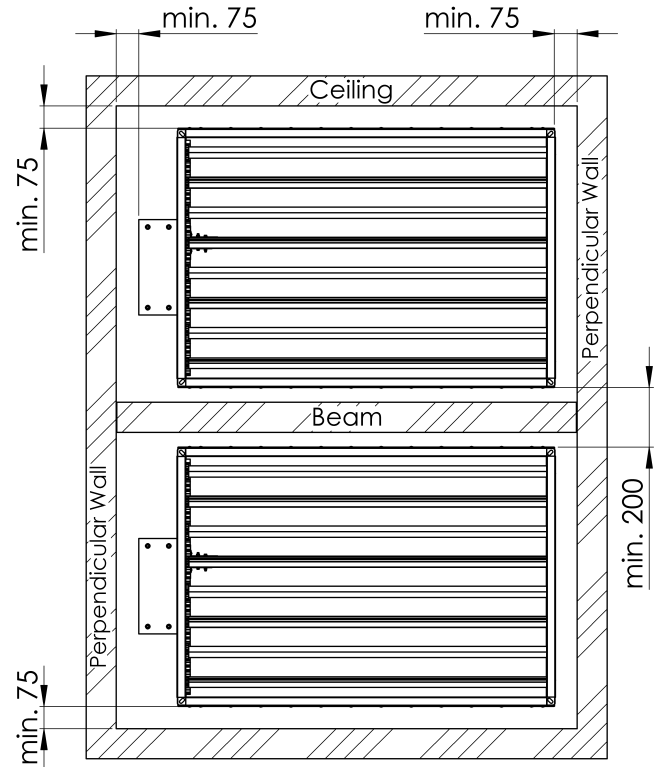


Figure 5. Spacing required between the dampers.

Technical data

Table 2. The net surface area and the range of actuators used for the WKP-P-E-J damper.

WKP-P-E-J	Width B [mm]																					
	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	
Height H [mm]	200	0,026	0,033	0,039	0,046	0,052	0,059	0,065	0,072	0,078	0,085	0,091	0,098	0,104	0,111	0,117	0,124	0,130	0,137	0,143	0,150	0,156
	300	0,039	0,049	0,059	0,068	0,078	0,088	0,098	0,107	0,117	0,127	0,137	0,146	0,156	0,166	0,176	0,185	0,195	0,205	0,215	0,224	0,234
	400	0,052	0,065	0,078	0,091	0,104	0,117	0,130	0,143	0,156	0,169	0,182	0,195	0,208	0,221	0,234	0,247	0,260	0,273	0,286	0,299	0,312
	500	0,065	0,081	0,098	0,114	0,130	0,146	0,163	0,179	0,195	0,211	0,228	0,244	0,260	0,276	0,293	0,309	0,325	0,341	0,358	0,374	0,390
	600	0,078	0,098	0,117	0,137	0,156	0,176	0,195	0,215	0,234	0,254	0,273	0,293	0,312	0,332	0,351	0,371	0,390	0,410	0,429	0,449	0,468
	700	0,091	0,114	0,137	0,159	0,182	0,205	0,228	0,250	0,273	0,296	0,319	0,341	0,364	0,387	0,410	0,432	0,455	0,478	0,501	0,523	0,546
	800	0,104	0,130	0,156	0,182	0,208	0,234	0,260	0,286	0,312	0,338	0,364	0,390	0,416	0,442	0,468	0,494	0,520	0,546	0,572	0,598	0,624

Table 3. The net surface area and the range of actuators used for the WKP-P-E-W damper.

WKP-P-E-W		Width B [mm]																				
		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
Height H [mm]	200	0,024	0,030	0,036	0,042	0,048	0,054	0,060	0,066	0,072	0,078	0,084	0,090	0,096	0,102	0,108	0,114	0,120	0,126	0,132	0,138	0,144
	300	0,036	0,045	0,054	0,063	0,072	0,081	0,090	0,099	0,108	0,117	0,126	0,135	0,144	0,153	0,162	0,171	0,180	0,189	0,198	0,207	0,216
	400	0,048	0,060	0,072	0,084	0,096	0,108	0,120	0,132	0,144	0,156	0,168	0,180	0,192	0,204	0,216	0,228	0,240	0,252	0,264	0,276	0,288
	500	0,060	0,075	0,090	0,105	0,120	0,135	0,150	0,165	0,180	0,195	0,210	0,225	0,240	0,255	0,270	0,285	0,300	0,315	0,330	0,345	0,360
	600	0,072	0,090	0,108	0,126	0,144	0,162	0,180	0,198	0,216	0,234	0,252	0,270	0,288	0,306	0,324	0,342	0,360	0,378	0,396	0,414	0,432
	700	0,084	0,105	0,126	0,147	0,168	0,189	0,210	0,231	0,252	0,273	0,294	0,315	0,336	0,357	0,378	0,399	0,420	0,441	0,462	0,483	0,504
	800	0,096	0,120	0,144	0,168	0,192	0,216	0,240	0,264	0,288	0,312	0,336	0,360	0,384	0,408	0,432	0,456	0,480	0,504	0,528	0,552	0,576

0,360 - siłownik **BEN** ($B \times H \leq 0,60 \text{ m}^2$)

0,528 - siłownik **BEE** ($0,60 \text{ m}^2 < B \times H \leq 0,90 \text{ m}^2$)

0,578 - siłownik **BE** ($B \times H > 0,90 \text{ m}^2$)

Table 4. Pressure loss through the WKP-P-E-J damper, Δp [Pa].

WKP-P-E-J		v [m/s]	Width B [mm]																			
			200	300	400	500	600	700	800	900	1000	1100	1200									
Height H [mm]	200	4	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		6	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
		8	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
		10	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
	300	4	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		6	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
		8	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
		10	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
	400	4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		6	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
		8	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
		10	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
	500	4	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
		6	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
		8	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
		10	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
	600	4	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
		6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
		8	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
		10	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
	700	4	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
		6	22	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
		8	38	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
		10	62	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
	800	4	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
		6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
		8	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
		10	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

v [m/s] – air flow velocity in the BxH connection duct

Table 5. Pressure loss through the WKP-P-E-W damper, Δp [Pa].

WKP-P-E-W		v [m/s]	Width B [mm]											
			200	300	400	500	600	700	800	900	1000	1100	1200	
Height H [mm]	200	4	14	14	14	14	14	14	14	14	14	14	14	14
		6	30	30	30	30	30	30	30	30	30	30	30	30
		8	51	51	51	51	51	51	51	51	51	51	51	51
		10	80	80	80	80	80	80	80	80	80	80	80	80
	300	4	14	14	14	14	14	14	14	14	14	14	14	14
		6	29	29	29	29	29	29	29	29	29	29	29	29
		8	52	52	52	52	52	52	52	52	52	52	52	52
		10	83	83	83	83	83	83	83	83	83	83	83	83
	400	4	12	12	12	12	12	12	12	12	12	12	12	12
		6	28	28	28	28	28	28	28	28	28	28	28	28
		8	50	50	50	50	50	50	50	50	50	50	50	50
		10	79	79	79	79	79	79	79	79	79	79	79	79
	500	4	11	11	11	11	11	11	11	11	11	11	11	11
		6	25	25	25	25	25	25	25	25	25	25	25	25
		8	44	44	44	44	44	44	44	44	44	44	44	44
		10	70	70	70	70	70	70	70	70	70	70	70	70
	600	4	11	11	11	11	11	11	11	11	11	11	11	11
		6	24	24	24	24	24	24	24	24	24	24	24	24
		8	42	42	42	42	42	42	42	42	42	42	42	42
		10	69	69	69	69	69	69	69	69	69	69	69	69
	700	4	10	10	10	10	10	10	10	10	10	10	10	10
		6	23	23	23	23	23	23	23	23	23	23	23	23
		8	40	40	40	40	40	40	40	40	40	40	40	40
		10	63	63	63	63	63	63	63	63	63	63	63	63
	800	4	10	10	10	10	10	10	10	10	10	10	10	10
		6	21	21	21	21	21	21	21	21	21	21	21	21
		8	39	39	39	39	39	39	39	39	39	39	39	39
		10	61	61	61	61	61	61	61	61	61	61	61	61

v [m/s] – air flow velocity in the BxH connection duct

Table 6. Sound power level emitted by the WKP-P damper to the duct, L_{WA} [dB(A)].

WKP-P		v [m/s]	Width B [mm]										
			200	300	400	500	600	700	800	900	1000	1100	1200
Height H [mm]	200	4	25	25	26	27	27	28	30	31	31	32	32
		6	36	36	37	38	39	40	41	41	42	43	44
		8	45	46	47	47	48	49	49	50	50	51	51
		10	49	50	53	54	55	55	55	55	55	55	56
	300	4	26	26	27	27	27	28	32	32	33	33	33
		6	37	37	38	39	40	41	43	43	43	44	45
		8	46	46	47	47	47	48	50	50	52	52	52
		10	51	52	54	55	56	56	56	56	57	57	57
	400	4	27	27	27	27	27	28	33	33	34	34	34
		6	37	38	38	39	40	42	44	44	44	44	45
		8	46	45	45	45	45	47	51	52	53	53	52
		10	52	53	55	55	56	57	57	57	58	57	57
	500	4	27	28	29	30	30	32	34	35	35	35	34
		6	38	38	39	40	42	43	45	45	45	45	45
		8	46	47	48	48	49	50	52	52	53	53	53
		10	53	54	55	56	57	57	57	58	58	58	58
	600	4	27	30	31	32	33	34	34	34	35	35	34
		6	38	40	43	43	43	44	45	45	45	45	45
		8	46	47	48	50	52	52	52	53	53	53	53
		10	53	54	55	55	56	57	57	57	58	58	58
	700	4	28	29	31	32	33	34	35	35	35	35	35
		6	40	42	43	44	44	44	45	45	45	46	46
		8	47	48	50	52	53	53	52	52	53	54	54
		10	54	55	55	57	59	58	58	58	59	59	59
	800	4	29	30	31	32	33	34	35	35	35	36	36
		6	41	42	43	44	45	45	45	45	45	45	46
		8	47	48	51	52	53	52	52	52	53	53	54
		10	54	55	55	56	59	59	59	59	59	59	59

v [m/s] – air flow velocity in the BxH connection duct

Table 7. WKP-P-E-J damper weight, m [kg].

WKP-P-E-J		Width B [mm]										
		200	300	400	500	600	700	800	900	1000	1100	1200
Height H [mm]	200	12	14	16	17	19	20	22	24	26	28	29
	300	13	15	17	19	20	22	25	26	28	30	32
	400	14	16	18	20	22	25	27	29	31	32	34
	500	15	18	20	22	25	27	29	31	33	35	37
	600	17	19	21	24	27	29	31	33	35	38	40
	700	18	20	23	26	28	31	33	36	38	40	43
	800	19	22	25	27	30	33	35	38	40	43	46

Table 8. WKP-P-E-W damper weight, m [kg].

WKP-P-E-W		Width B [mm]										
		200	300	400	500	600	700	800	900	1000	1100	1200
Height H [mm]	200	12	14	16	17	19	20	22	25	27	29	30
	300	14	15	17	19	21	23	25	27	29	31	32
	400	15	17	19	21	23	26	27	29	31	33	35
	500	16	18	20	22	25	28	30	32	34	36	39
	600	17	19	22	25	27	30	32	35	37	39	42
	700	18	21	24	27	29	32	34	37	40	42	45
	800	19	23	26	28	31	34	37	40	42	45	48

Table 9. The list of WKP-P-E-J and WKP-P-E-W dampers.

Name	WKP-P-E-J	WKP-P-E-W
Intended use	For single-compartment fire ventilation systems	For multi-compartment fire ventilation systems
Classification	E600 120 (v _{ed} i→o)S1000C ₃₀₀ AAsingle	EI 90 (v _{ew} i→o)S1500C ₁₀₀₀ AAmulti
		EI 120 (v _{ew} i→o)S1000C ₁₀₀₀ AAmulti
Installation	In horizontal fire ducts	In rigid vertical building partitions, of min.120 mm thickness or more, both with horizontal and vertical blade rotation axis.
Drive	BEN, BEE or BE Belimo actuators	BEN, BEE or BE Belimo actuators



Grilles and covers dedicated for multi-blade cut-off dampers can be found in the WKP-O damper data sheet.

Description of the product for projects WKP-P-E-J

Product: smoke control damper type WKP-P-E-J, manufacturer: Smay

The smoke control damper type WKP-P-E-J is designed for installation in single-zone fire ventilation systems activated automatically.

The smoke control damper type WKP-P-E-J has a fire resistance class E₆₀₀120 (v_{ed} .i→o)S1000C₃₀₀AAsingle. It can be installed in horizontal single-zone fire ventilation ducts.

The smoke control damper type WKP-P-E-J is CE marked and is placed on the market based on the Certificate of Constancy of Performance No. 2434-CPR-0285, issued by the Maritime Advanced Research Centre for compliance with the standard PN-EN 12101-8 harmonized standard. The declared fire resistance parameters of the damper are determined during fire tests performed according to the PN-EN 1366-2 and PN-EN 1366-10 standards.

The smoke control damper type WKP-P-E-J has a number of key features such as:

- rigid damper construction with a thickness of 125 mm, made of fireproof board, facilitating assembly,
- damper closing is performed by a reliable gear system located inside the damper body,
- damper blades movement is performed entirely within the damper body,
- possibility of a connector for ducts on one or both sides of the damper,
- possibility of two-sided access to the actuator
- possibility of painting the interior of the damper for aesthetic purposes.

Description of the product for projects WKP-P-E-W

Product: smoke control damper type WKP-P-E-W, manufacturer: Smay

The smoke control damper type WKP-P-E-W is designed for installation in multi-zone or single-zone fire ventilation systems activated automatically and in mixed fire and general ventilation systems.

The smoke control damper type WKP-P-E-W has a fire resistance class from EI90(vew -i→o)S1500C10000AAmulti to EI120(vew -i→o)S1000C10000AAmulti depending on the type and thickness of the building partition (smoke control duct) in which it is installed and the method of its installation. It can be installed in rigid walls or flexible walls.

The smoke control damper type WKP-P-E-W is CE marked and is placed on the market based on the Certificate of Constancy of Performance No. 2434-CPR-0285, issued by the Maritime Advanced Research Centre for compliance with the standard PN-EN 12101-8 harmonized standard. The declared fire resistance parameters of the damper are determined during fire tests performed according to the PN-EN 1366-2 and PN-EN 1366-10 standards.

The smoke control damper type WKP-P-E-W has a number of key features such as:

- rigid damper construction with a thickness of 125 mm, made of fireproof board, facilitating assembly,
- damper closing is performed by a reliable gear system located inside the damper body,
- damper blades movement is performed entirely within the damper body,
- possibility of a connector for ducts on one or both sides of the damper,
- possibility of two-sided access to the actuator
- possibility of painting the interior of the damper for aesthetic purposes.

WKP-P - Multi-blade smoke control damper

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

WKP-P - <F> - <R> - <W> - x <H> - <A> - <P> - <RAL>

Where:

F	type of the actuation system used	E- electric actuator without return spring
R	intended use*	J- for single-compartment fire ventilation systems W- for multi-compartment fire ventilation systems
W	manufacturing version	K- with connection frames (spigots) - default T- no connection frames (transfer version) KL- with one connection frame on L-side KR- with one connection frame on R-side
B	damper clear width [mm]	
H	damper clear height [mm]	
A	type of the actuator	Product marking: BEN- for $B \times H \leq 0,60 \text{ m}^2$ BEE- for $0,60 \text{ m}^2 < B \times H \leq 0,90 \text{ m}^2$ BE- for $B \times H > 0,90 \text{ m}^2$ 24/230 – supply voltage ST – connection socket
P	finishing	none- galvanized steel + fireproof panels
RAL	color of the cover or grille from the RAL palette (only for <P>=SL and AL finish, standard RAL9010)	

* optional items – if not indicated, default values will be used

** painting in RAL 9005 color to conceal the damper in the opening

Sample product marking: **WKP-P-E-W-K-1200x800-BE24**