

WKP-P

MULTI-BLADE FIRE VENTILATION DAMPER



Characteristics:

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

Intended Use

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

WKP-P-E-J- fire 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- fire damper

Used in multi-compartment fire ventilation systems. During the normal operation of the system, the isolating baffle 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 fire dampers are classified as tightness class C (housing tightness) 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)S1000C₃₀₀ AAsingle

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)S1500C₁₀₀₀₀ AAmulti

EI 120 (v_{ew} -i ↔ o)S1000C₁₀₀₀₀ AAmulti

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 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.

FIRE VENTILATION ZONE

Certificate of Constancy of Performance: 2434-CPR-0015



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 baffle 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

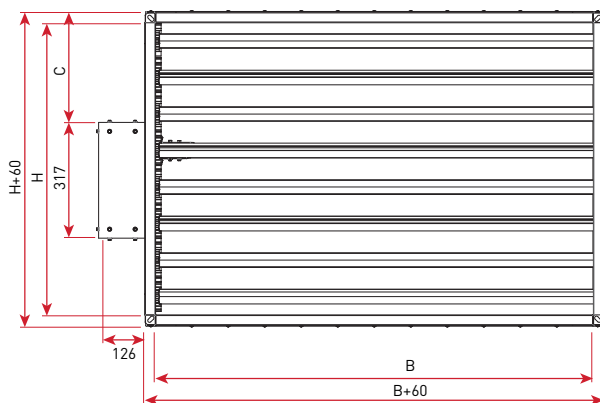


Figure 1. WKP-P damper dimensions.

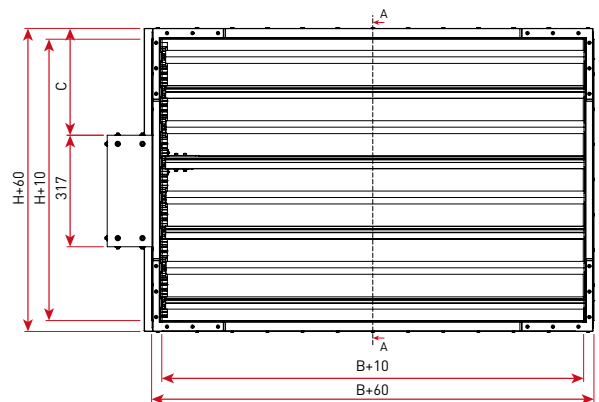


Figure 2. WKP-P-T damper dimensions (without connection frames).

Table 1. C parameter value.

H [mm]	C [mm]
200	0
300	100
400	100
500	200
600	200
700	300
800	300

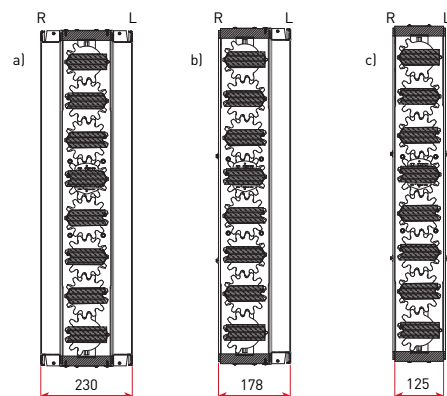
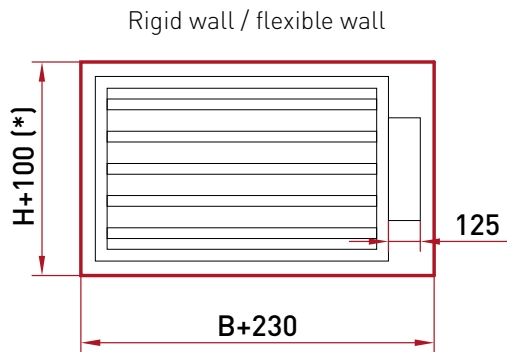


Figure 3. The length of the dampers: a) WKP-P-E-W and WKP-P-E-J dampers b) WKP-P-E-W-KL damper (version with a connection frame on the L side) c) WKP-P-E-W-T damper (without connection frames).

Installation



Permissible range: $B + (210 \div 250)$ mm / $H + (80 \div 120)$ mm(*)

(*) For dampers with a height of $H = 200$ mm and $H = 300$ mm, the installation opening should be $H + 160$ mm high (permissible range $H + (140 \div 180)$ mm)

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

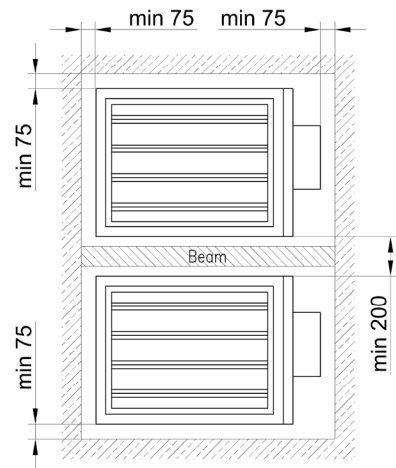


Figure 5. Spacing required between the dampers.

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

- **BEN** actuator ($B \times H \leq 0,60$ m²)

- **BEE** actuator ($0,60$ m² < $B \times H \leq 0,90$ m²)

- **BE** actuator ($B \times H > 0,90$ m²)

Table 4. 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 5. 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
		6	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
		10	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
		6	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
		10	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
		6	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
		10	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
		6	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
		10	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
		6	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
		10	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
		6	22	23	23	23	23	23	23	23	23	23	23	23
		8	38	40	40	40	40	40	40	40	40	40	40	40
		10	62	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
		6	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
		10	60	60	60	60	60	60	60	60	60	60	60	60

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	53	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.

WKP-P - Multi-blade fire ventilation damper

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

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

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	
	BEN	- for BxH ≤ 0,60 m ²
	BEE	- for 0,60 m ² < BxH ≤ 0,90 m ²
	BE	- for BxH > 0,90 m ²
	Product marking:	
	24/230	- supply voltage
	ST	- connection socket

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

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