

# WKP-P

## SMOKE DAMPERS



### Intended use:

Dampers for fire protection systems; perform a shut-off function and serve for smoke extracting from the area engulfed in fire.

### Intended Use

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

#### WKP-P-E-J Smoke Damper

It is used in single-section 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 Damper

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

The WKP-P-E-W smoke dampers have the Certificate of Constancy of Performance No. 2434-CPR-0015, issued by the CTO Gdansk (The Naval Technology Centre).

The dampers are symmetrical, intended for horizontal installation (in walls). They can be mounted in rigid space dividers.

The dampers are designed, manufactured and tested in accordance with the following standards: EN 12101-8 "Smoke and heat control systems – Part 8: Smoke control dampers" and 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 EN 1366-2 and EN 1366-10 "Fire resistance tests for service installations – Part 2: Fire dampers, Part 10: Smoke control dampers"

The WKP-P-E-W smoke dampers are classified as integrity class C (housing integrity) 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 WKP-P-E-J Dampers in terms of fire resistance

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

**E<sub>600</sub> 120 (v<sub>ed</sub> -i o)S1000C<sub>300</sub> AA single**

### Classification of WKP-P-E-W Dampers in terms of fire resistance

The WKP-W dampers are classified in the fire resistance range indicated below and may be mounted in the following space dividers:

**EI 90 (v<sub>ew</sub> -i ↔ o)S1500C<sub>10000</sub> AA multi**

**EI 120 (v<sub>ew</sub> -i ↔ o)S1000C<sub>10000</sub> AA multi**

This class means that the automatically controlled damper installed in an isolating baffle keeps integrity, insulating and smoke leakage properties for at least 120/90 minutes; the class above also means that the damper can be operated remotely for at least 2 minutes from the moment of receiving the signal from the fire detector.

The WKP-P-E-W smoke dampers may be installed in vertical space dividers with both horizontal and vertical axis of rotation of blades.

### Technical description of the device

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

The housing is made of fire-rated boards and steel structural members. Both ends of the housing are terminated with steel connection pipes, which make it possible to connect the duct and the damper in an easy way.

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

# SMOKE & FIRE ZONE

Certificate of Constasy of Performance: 2434-CPR-0015



On the inner side of the housing and on the blades there is an intumescent seal mounted. Its characteristic feature is the fact that its volume increases 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 dampers are 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.

## Manufacturing versions

BE or BLE electric actuator by BELIMO is used as the actuating 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 type series of the dampers covers the following dimensions: damper inner clear width from 200 to 1,200 mm (5 mm intervals) and damper inner clear height from 200 to 800 mm (100 mm intervals). The primary type series of damper dimensions, including actuators, is provided in the table below.

Table 1. The type series of the damper dimensions with the actuators used.

H [mm]	B [mm]										
	200	300	400	500	600	700	800	900	1000	1200	
200											
300											
400			BLE								
500											
600											
700										BE	
800											

## WKP-P damper dimensions

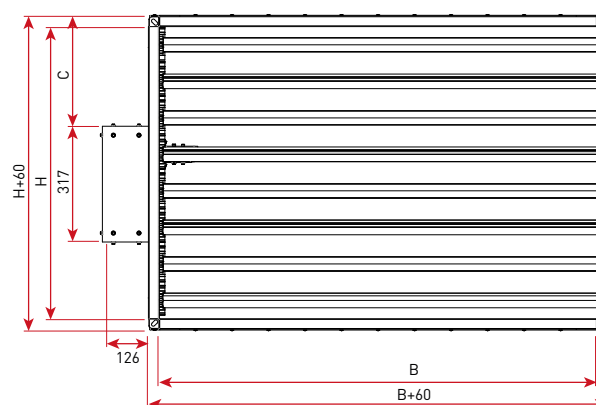


Figure 1. WKP-P damper dimensions.

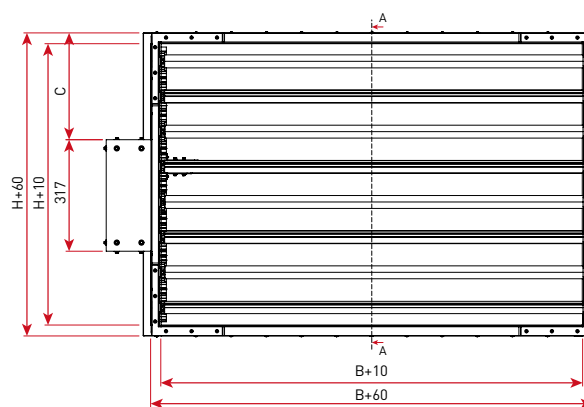


Figure 2. WKP-P damper dimensions.(without junction frames).

Table 2. C parameter dimensions.

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

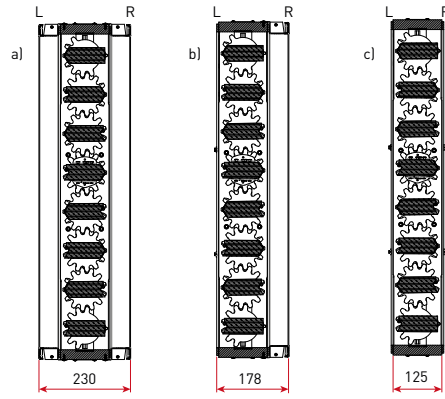


Figure 3. The length of the dampers: a) WKP-P-E-W and WKP-P-E-J dampers b) WKP-P-E-W damper, version without junction frames.

## WKP-P damper weights

Table 3. WKP-P-E-J and WKP-P-E-W damper weights [kg].

		B [mm]										
		200	300	400	500	600	700	800	900	1000	1100	1200
200	WKP-P-E-W	12	14	16	17	19	20	22	25	27	29	30
	WKP-P-E-J	12	14	16	17	19	20	22	24	26	28	29
300	WKP-P-E-W	14	15	17	19	21	23	25	27	29	31	32
	WKP-P-E-J	13	15	17	19	20	22	25	26	28	30	32
400	WKP-P-E-W	15	17	19	21	23	26	27	29	31	33	35
	WKP-P-E-J	14	16	18	20	22	25	27	29	31	32	34
500	WKP-P-E-W	16	18	20	22	25	28	30	32	34	36	39
	WKP-P-E-J	15	18	20	22	25	27	29	31	33	35	37
600	WKP-P-E-W	17	19	22	25	27	30	32	35	37	39	42
	WKP-P-E-J	17	19	21	24	27	29	31	33	35	38	40
700	WKP-P-E-W	18	21	24	27	29	32	34	37	40	42	45
	WKP-P-E-J	18	20	23	26	28	31	33	36	38	40	43
800	WKP-P-E-W	19	23	26	28	31	34	37	40	42	45	48
	WKP-P-E-J	19	22	25	27	30	33	35	38	40	43	46

## Net surface area

Table 4. Net surface area of WKP-P-E-J dampers [m<sup>2</sup>].

		B [mm]										
		200	300	400	500	600	700	800	900	1000	1100	1200
H [mm]	200	0,03	0,04	0,05	0,07	0,08	0,09	0,10	0,12	0,13	0,14	0,16
	300	0,04	0,06	0,08	0,10	0,12	0,14	0,16	0,18	0,20	0,21	0,23
	400	0,05	0,08	0,10	0,13	0,16	0,18	0,21	0,23	0,26	0,29	0,31
	500	0,07	0,10	0,13	0,16	0,20	0,23	0,26	0,29	0,33	0,36	0,39
	600	0,08	0,12	0,16	0,20	0,23	0,27	0,31	0,35	0,39	0,43	0,47
	700	0,09	0,14	0,18	0,23	0,27	0,32	0,36	0,41	0,46	0,50	0,55
	800	0,10	0,16	0,21	0,26	0,31	0,36	0,42	0,47	0,52	0,57	0,62

Table 5. Net surface area of WKP-P-E-W dampers [m<sup>2</sup>].

		B [mm]										
		200	300	400	500	600	700	800	900	1000	1100	1200
H [mm]	200	0,02	0,04	0,05	0,06	0,07	0,08	0,10	0,11	0,12	0,13	0,14
	300	0,04	0,05	0,07	0,09	0,11	0,13	0,14	0,16	0,18	0,20	0,22
	400	0,05	0,07	0,10	0,12	0,14	0,17	0,19	0,22	0,24	0,26	0,29
	500	0,06	0,09	0,12	0,15	0,18	0,21	0,24	0,27	0,30	0,33	0,36
	600	0,07	0,11	0,14	0,18	0,22	0,25	0,29	0,32	0,36	0,40	0,43
	700	0,08	0,13	0,17	0,21	0,25	0,29	0,34	0,38	0,42	0,46	0,50
	800	0,10	0,14	0,19	0,24	0,29	0,34	0,38	0,43	0,48	0,53	0,58

## Noise level emitted by the damper to the duc

Table 6. Noise level emitted by WKP-P dampers [dB].

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

## Flow Resistance Characteristics for WKP-P Dampers

$\Delta p$  [Pa] pressure loss dependency on air flow velocity  $v$  [m/s] for WKP-P-E-J dampers.

H=200 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	13	13	13	13	13	13
6	29	29	29	29	29	29
8	50	50	50	50	50	50
10	79	79	79	79	79	79

H=600 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	10	10	10	10	10	10
6	23	23	23	23	23	23
8	41	41	41	41	41	41
10	68	68	68	68	68	68

H=300 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	13	13	13	13	13	13
6	27	27	27	27	27	27
8	51	51	51	51	51	51
10	81	81	81	81	81	81

H=700 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	9	10	10	10	10	10
6	22	23	23	23	23	23
8	38	40	40	40	40	40
10	62	63	63	63	63	63

H=400 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	12	12	12	12	12	12
6	26	26	26	26	26	26
8	49	49	49	49	49	49
10	78	78	78	78	78	78

H=800 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	9	9	9	9	9	9
6	21	21	21	21	21	21
8	38	38	38	38	38	38
10	60	60	60	60	60	60

H=500 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	11	11	11	11	11	11
6	24	24	24	24	24	24
8	43	43	43	43	43	43
10	69	69	69	69	69	69

$\Delta p$  [Pa] pressure loss dependency on air flow velocity  $v$  [m/s] for WKP-P-E-W dampers.

H=200 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	14	14	14	14	14	14
6	30	30	30	30	30	30
8	51	51	51	51	51	51
10	80	80	80	80	80	80

H=400 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	12	12	12	12	12	12
6	28	28	28	28	28	28
8	50	50	50	50	50	50
10	79	79	79	79	79	79

H=300 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	14	14	14	14	14	14
6	29	29	29	29	29	29
8	52	52	52	52	52	52
10	83	83	83	83	83	83

H=500 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	11	11	11	11	11	11
6	25	25	25	25	25	25
8	44	44	44	44	44	44
10	70	70	70	70	70	70

H=600 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s]	4	11	11	11	11	11
	6	24	24	24	24	24
	8	42	42	42	42	42
	10	69	69	69	69	69

H=800 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s]	4	10	10	10	10	10
	6	21	21	21	21	21
	8	39	39	39	39	39
	10	61	61	61	61	61

H=700 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s]	4	10	10	10	10	10
	6	23	23	23	23	23
	8	40	40	40	40	40
	10	63	63	63	63	63

Table 7. List of WKP-P-E-J and WKP-P-E-W dampers.

Name	WKP-P-E-J	WKP-P-E-W
<b>Intended use</b>	For single-section fire ventilation systems	For multi-section fire ventilation systems
<b>Classification</b>	E600 120 (ved -i ↔ o)S1000C <sub>300</sub> AAsingle	EI 90 (vev i ↔ o)S1500C <sub>10000</sub> AAmulti EI 120 (vev i ↔ o)S1000C <sub>10000</sub> AAmulti
<b>Installation</b>	On horizontal fire ducts	In at least 120 mm thick rigid vertical space dividers, with both horizontal and vertical axis of rotation of blades.
<b>Drive</b>	BLE or BE actuator by Belimo	BLE or BE actuator by Belimo

## WKP-P – Multi-blade smoke damper

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

**WKP-P-E - <F>- <R>- <B>- <H><A>**

Where:

<b>F</b>	Intended use*
	<b>J - for single-section fire ventilation systems</b> W - for multi-section fire ventilation systems
<b>R</b>	Manufacturing version
	<b>K - with junction frames (default value)</b> T - without junction frames (option only available for WKP-P-E-W) KL - with one junction frames by L side KR - with one junction frames by R side
<b>B</b>	Inner width of the damper [mm]
<b>H</b>	Inner height of the damper [mm]
<b>A</b>	Actuator type
	BLE24 BLE230 BE24 BE230

\* optional values - default values will be used if optional values are not specified

Order example: **WKP-P-E-J-K-1200x800-BE230**