WKP-O
FIRE DAMPERS

Intended use:
Shut-off dampers for ventilation systems. These dampers are intended for stopping the spread of fire.

Intended use

The multi-blade, shut-off fire damper WKP-O type is designed for installation at the border of fire zones to maintain the separation and protection of means for emergency evacuation in case of fire. This damper is intended for stopping the spread of fire, temperature and smoke.

The damper closes automatically in case of fire or increased temperature. In addition, the fire damper can be closed by an external signal (cutting off the power supply). The WKP-O damper may operate also as a transfer damper.

WKP-O dampers are designed, manufactured and tested in accordance with the requirements of EN 15650 „Ventilation for buildings – Fire dampers" and

EN 13501-3 „Fire classification of construction products and building elements – Part 3: Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers".

The WKP-O damper is classified to integrity class C (integrity of casing) on the basis of tests carried out in accordance with EN 1751 " Ventilation for buildings. Air terminal devices. Aerodynamic testing of damper and valves"

Dampers WKP-O type fire resistance classification

Shut-off dampers WKP-O type are classified in the following fire resistance classes and may be installed in the following compartments:

- EI 120 (ve i→o) S -horizontal blade arrangement,
- EI 90 (ve i↔o) S - vertical blade arrangement.

Key:

E – integrity,

I – insulation,

S – smoke leakage,

90/120 – Classification time in which criteria E and I are met, expressed in minutes,

ve – damper installed in vertical compartment (wall),

i↔o – The fire performance criteria are met on both sides.

- Rigid walls with low-density of 650 ± 200 kg/m3 or greater, with a thickness of 120 mm or greater, with fire resistance class EI90 or greater (for dampers with vertical blade arrangement), EI120 or greater (for dampers with horizontal blade arrangement) (eg concrete walls , constructed from solid bricks, cellular concrete blocks or hollow blocks, and plates).

Technical description

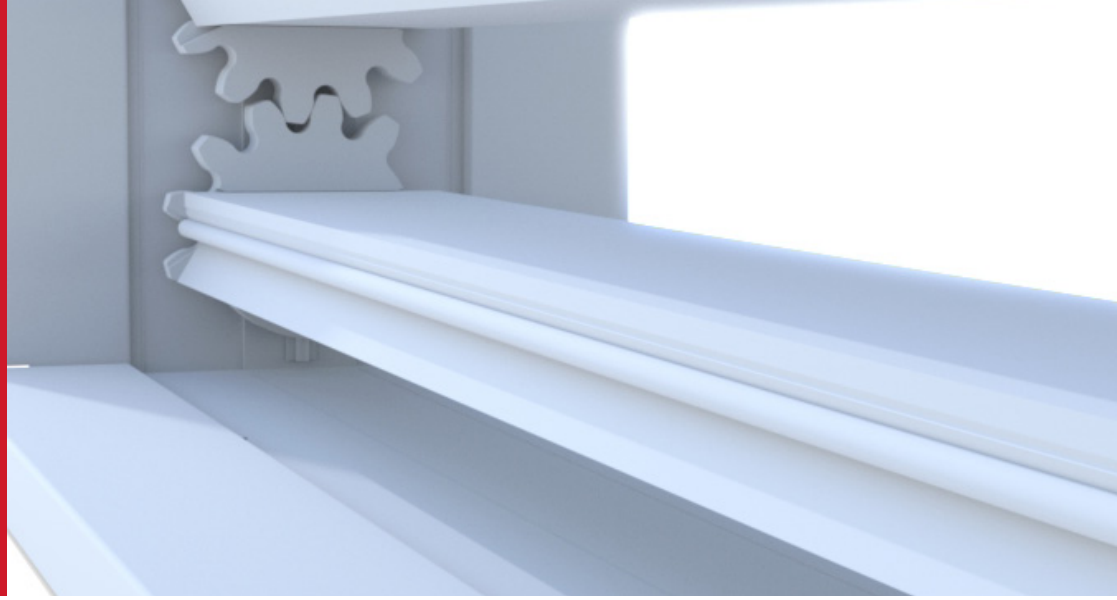
The dampers WKP-O consist of rectangular casing, movable blades and drive system.

The casing of the damper is made of fire retardant plates and steel construction components. Both ends of the casing are equipped with steel connectors allowing easy connection of the ductwork elements with the damper.

The movable blades made of the mineral silicate composite were fixed to the housing with use of steel bolts.

The intumescent gasket was attached both on the inside of the housing and on the blades. The feature of this gasket is that, under the influence of high temperatures, it increases it's volume and fills thoroughly all the leaks and between the blade and the body. Air tightness at ambient temperature is ensured by a bubble seal.

The damper WKP-O is equipped with an innovative drive mechanism providing the blade rotation in opposed arrangement. The mechanism includes, among others gears made of fire retardant material, blades and electric actuator.



During normal operation, the damper blades are in the open position.

The damper WKP-O is equipped with the electric actuator with BELIMO BF or BFN spring return and BAT or BAE (72 °C optional) thermal release (optionally 95 °C), which forms the drive mechanism of the damper with power supply of AC 230V or AC/DC 24V.

Versions of dampers WKP-O

The series of types of the damper includes the following dimensions: inner width from 200 to 1200mm (intermediate dimensions each every 50mm) and inner height from 200 to 800mm (intermediate dimensions each every 100mm). The basic dimensional series of types of dampers along with actuators used is shown in the table below:

Table 1. Dimensional series of types of dampers along with actuators used is shown in the table below.

H [mm] \ B [mm]	200	300	400	500	600	700	800	900	1000	1200
200										
300										
400				BFN						
500										
600										
700								BF		
800										

Weight of dampers WKP-O

Table 2. Weight of dampers WKP-O.

H [mm] \ B	200	300	400	500	600	700	800	900	1000	1100	1200
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

Dimensions of dampers WKP-O

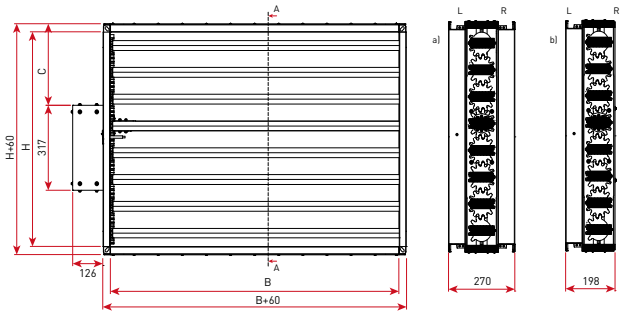


Figure 1. Dimensions of dampers WKP-O: a) WKP-O-K b) WKP-O-KL (with one connection frame by L side).

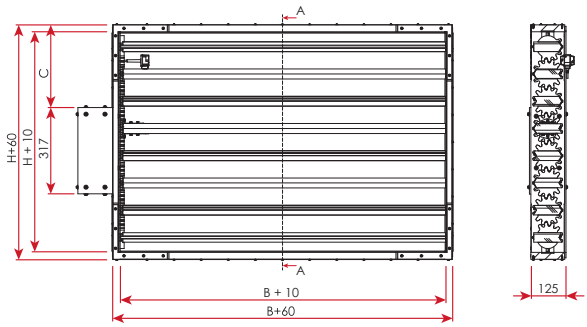


Figure 2. Dimensions of dampers WKP-O-T.

Key:

B – inner width of damper (min. 200 max. 1200);

H – inner height of damper (min. 200 max. 800);

N – number of damper blades;

C – parameter, select from the table.

Table 3. Dimensions of dampers WKP-O.

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

Net area

Table 4. Net area of dampers WKP-O.

H\B [mm]	200	300	400	500	600	700	800	900	1000	1100	1200
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

Characteristics of the noise level emitted by the damper

Table 5. Noise level emitted by the damper

			Width B [mm]																					
		v[m/s]	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
Heihgt H [mm]	200	L_w[dB]	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

Charcteristics of the air flow resistance of the damper WKP-O

The influence of air flow velocity v [m/s] to pressure drop Δp [P] of dampers WKP-O.

H=200 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	14	13	12	12	12	12
V [m/s] 6	30	29	28	27	27	26
V [m/s] 8	54	51	50	48	48	47
V [m/s] 10	84	80	77	76	74	73

H=300 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	13	12	12	11	11	11
V [m/s] 6	30	28	27	26	25	25
V [m/s] 8	53	49	47	46	45	44
V [m/s] 10	83	77	74	71	70	68

H=400 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	13	12	11	11	10	10
V [m/s] 6	29	27	25	24	23	23
V [m/s] 8	52	47	45	43	42	40
V [m/s] 10	81	74	70	67	65	63

H=500 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	13	11	11	10	10	9
V [m/s] 6	29	26	24	23	22	21
V [m/s] 8	51	45	42	40	38	37
V [m/s] 10	80	71	66	63	60	58

H=600 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	13	11	10	9	9	9
V [m/s] 6	29	24	22	21	20	19
V [m/s] 8	51	43	40	37	35	34
V [m/s] 10	79	68	62	58	55	53

H=700 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	12	11	10	9	8	8
V [m/s] 6	28	24	21	20	19	18
V [m/s] 8	50	42	38	35	34	32
V [m/s] 10	78	66	59	55	52	50

H=800 [mm]	Width B [mm]					
	200	400	600	800	1000	1200
V [m/s] 4	12	10	9	8	8	8
V [m/s] 6	28	23	20	19	18	17
V [m/s] 8	49	41	36	34	32	30
V [m/s] 10	77	64	57	53	49	47

WKP-O - multi-blade fire damper

While ordering, please provide the information using the following method:

WKP-O - <F> - <W> - <B> - <H> - <A>

Where:

F	Version	
	E	- shut-off fire damper
W	Variant of the fire damper	
	K	**- with connection frames (default)**
	T	- without connection frames (transfer)
	KL	- with one connection frame by L side
	KR	- with one connection frame by R side
B	Inner width of the damper – min. 200 max. 1200 [mm]	
H	Inner height of the damper – min. 200 max. 800 [mm]	
A	Actuator type	
	BF24-T	Designation:
	BF230-T	24/230 – nominal voltage
	BFN24-T	T – thermoelectrical tripping device
	BFN230-T	

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

Order example: **WKP-O-E-1200x600-BF24-T**