WKZ-O

MULTI-BLADE FIRE DAMPER WITH INCREASED FIRE RESISTANCE

Characteristics:
A multi-blade fire damper for general ventilation systems, with increased fire resistance and electric spring return actuator.

SO

version: 15/03/24

Intended Use

The WKZ-O multi-blade fire damper is designed for application in general ventilation systems as cut-off partition separating the fire-engulfed zone from the remaining part of the building (normally open). The purpose of this damper is to prevent the spread of fire, heat and smoke.

The WKZ-O dampers are designed, manufactured and tested in accordance with the following standards: PN-EN 15650 "Ventilation for buildings – Fire dampers" and PN-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 effectiveness of the dampers is confirmed by tests performed according to PN-EN 1366-2 "Fire resistance tests for service installations – Part 2: Fire dampers."

The WKZ-O fire damper's tightness is classified as class C (housing tightness) on the basis of tests carried out according to PN-EN 1751 "Ventilation for buildings. Air terminal devices. Aerodynamic testing of dampers and valves."

Classification

The WKZ-O fire dampers are classified according to fire resistance classes and can be installed in building partitions as listed below:

- **EI 240 (v_e i↔o) S** – horizontal blades, rigid walls with low density (650 ± 200 kg/m3) or higher, 180 mm in thickness or more, and EI240 or a higher fire resistance class (e.g. concrete walls, solid brick walls, cellular concrete block walls, hollow masonry unit walls or concrete slab walls).

Where:

E - fire integrity,

I - fire insulation,

S - smoke leakage,

240 - – duration of fulfilment of E, I and S criteria, in minutes,

v_e - damper mounted in vertical partition (wall),

i↔o - operating effectiveness criteria are met from inside to outside (fire inside), and from outside to inside (fire outside).

Description

The WKZ-O 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 baffle and the body. A bubble seal ensures the leak tightness at ambient temperature.

The WKZ-O fire 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.

During normal operation of the system, the blades are in the open position.

The permissible air velocity for the WKZ-O fire damper in a BxH connection duct is 12 m/s.

The WKZ-O damper is equipped with an electric spring return actuator of BF series by BELIMO and a BAT thermal fuse (72 °C), which is the damper's drive system with AC 230 V or AC / DC 24V.

Manufacturing Versions

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 (200 mm intervals). The basic range of damper sizes along with the actuators used is presented in the table below.

Dimensions

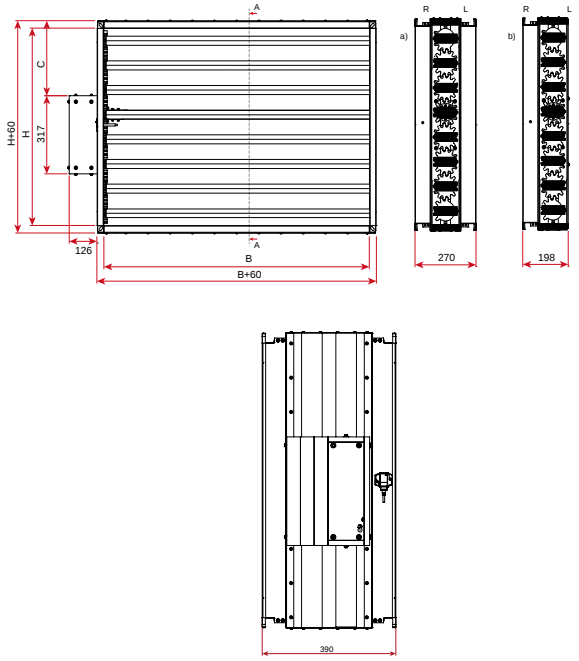


Figure 1. Dimensions of the WKZ-O damper

Where:

B - damper clear width (min.200 max 1200 mm);

H - damper clear height (min. 200 max 800 mm);

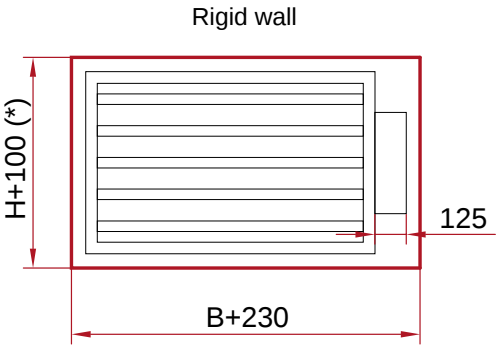
N - number of blades rows;

C - as indicated in the table.

Table 1. Dimensions of the WKZ-O damper.

N	H [mm]	C [mm]
2	200	0
4	400	100
6	600	200
8	800	300

Installation



Permissible range: B+(210÷250)mm / H+(80÷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 ÷ 180) mm)

Figure 2. Openings required for the WKP-O damper.

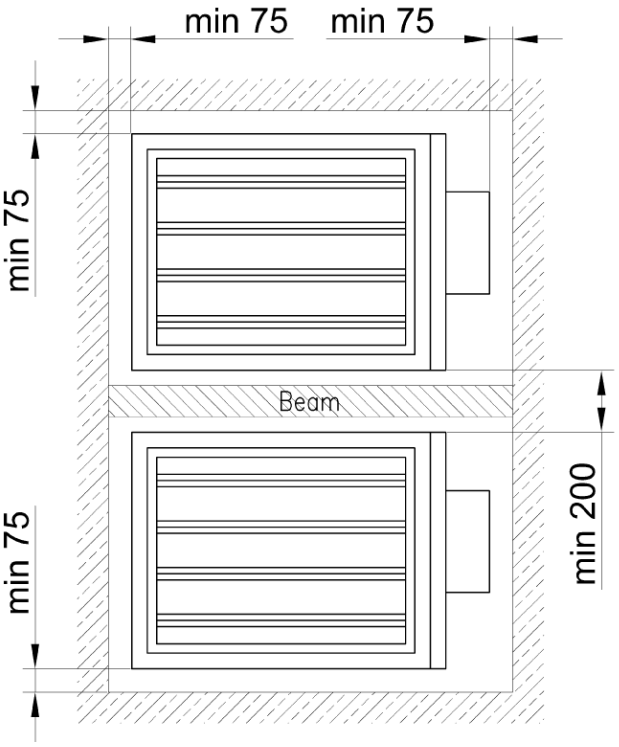


Figure 3. Spacing required between the dampers.

Technical Data

Table 2. The net surface area and the range of actuators used for the WKZ-O dampers.

WKZ-O		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
	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
	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
	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

0.123 - actuator **BE** (BxH > 1,30 m² or H>1200 mm)

Table 3. Pressure drop on WKZ-O damper, Δp [Pa].

WKZ-O		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
		6	29	29	29	29	29	29	29	29	29	29	29
		8	50	50	50	50	50	50	50	50	50	50	50
		10	79	79	79	79	79	79	79	79	79	79	79
	400	4	12	12	12	12	12	12	12	12	12	12	12
		6	26	26	26	26	26	26	26	26	26	26	26
		8	49	49	49	49	49	49	49	49	49	49	49
		10	78	78	78	78	78	78	78	78	78	78	78
	600	4	10	10	10	10	10	10	10	10	10	10	10
		6	23	23	23	23	23	23	23	23	23	23	23
		8	41	41	41	41	41	41	41	41	41	41	41
		10	68	68	68	68	68	68	68	68	68	68	68
	800	4	9	9	9	9	9	9	9	9	9	9	9
		6	21	21	21	21	21	21	21	21	21	21	21
		8	38	38	38	38	38	38	38	38	38	38	38
		10	60	60	60	60	60	60	60	60	60	60	60

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

Table 4. Sound power level emitted by the WKZ-O damper to the duct, L_{WA} [dB(A)].

WKZ-O		v [m/s]	Width B [mm]										
			200	300	400	500	600	700	800	900	1000	1100	1200
Height H [mm]	200	4	25	26	26	27	28	29	30	30	31	31	32
		6	36	37	38	39	39	40	41	42	42	43	44
		8	45	45	47	47	48	48	49	49	50	51	51
		10	49	50	53	54	55	55	55	55	55	55	56
	400	4	27	28	30	31	32	33	33	34	34	35	36
		6	37	38	42	41	41	43	44	44	44	45	45
		8	46	47	49	49	50	50	51	52	53	53	52
		10	52	53	55	55	56	57	57	57	58	58	57
	600	4	27	28	31	32	33	33	34	34	35	35	34
		6	38	39	43	43	43	44	45	45	45	45	46
		8	46	47	48	49	52	52	52	53	53	53	54
		10	53	54	55	56	58	58	57	57	58	58	58
	800	4	29	30	31	32	33	34	35	35	35	36	36
		6	41	41	43	44	45	45	45	45	45	46	46
		8	47	48	51	52	53	53	52	52	53	53	54
		10	54	54	55	56	59	59	59	59	59	60	60

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

Table 5. WKZ-O-E damper weight, m [kg].

WKZ-O		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
	400	14	16	18	20	22	25	27	29	31	32	34
	600	17	19	21	24	27	29	31	33	35	38	40
	800	19	22	25	27	30	33	35	38	40	43	80

WKZ-O - Multi-blade fire damper with increased fire resistance

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

WKZ-O-<F> - <W> - <B> x <H> - <A>

Where:

F	type of the actuation system used	
	E - electric spring return actuator	
W	manufacturing version	
	K - with connection frames (spigots)	
B	damper clear width [mm]	
H	damper clear height [mm]	
A	type of the actuator	
	BF - electric spring return actuator	**Product marking:** **24/230** – supply voltage **TN** – thermoelectric tripping device **ST** – connection socket

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

Order example: **WKZ-O-E-K-600x400-BF24-TN**