

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: 13/05/24

Intended Use

Smoke control dampers type WKS-P-E are dedicated to fire ventilation systems. In the case of installation at the end of a multi-zone fire ventilation system (smoke exhaust or compensating for smoke exhaust) during normal operation of the installation, the cut-off blade of the WKS-P-E type dampers is in the open or closed position. In the event of a fire, the applied drive system opens the dampers in the fire detected zone, while the dampers in the other zones move to or remain in the closed position. When installed as a transfer function or as part of a pressure differentiation system, the WKS-P-E type dampers operate according to the fire scenario.

The WKS-P type dampers are designed for quick, one-sided installation in walls. They can be installed in rigid or flexible building partitions. Optionally, ventilation ducts can be connected to the flap.

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."

Fire Classification

Smoke control dampers type WKS-P are classified in the following fire resistance range and can be installed in the building partitions listed below:

dampers installed in a rigid or flexible partition with a thickness of at least 125 mm and nominal dimensions up to 750x1400 mm:

EI 120 (vev i ↔ o) S1000 C10000 AA multi

dampers installed in a rigid or flexible partition with a thickness of at least 160 mm and nominal dimensions up to 900x1850 mm:

EI 120 (vev i ↔ o) S500 C10000 AA multi

This class means that the automatically controlled damper, built into the separating partition, has a tightness, insulation and fire resistance of smoke for not less than 120 minutes. The above class also means that the damper can be remotely controlled for at least 2 minutes from the moment of receiving the signal from the fire detector.

The two-way index i ↔ o means that the damper has been tested both for its ability to maintain the cross-section during a fire in the open position (i->o) and for its ability to maintain the expected fire resistance class of the partition in the closed position (o->i). A smoke control damper with index i ↔ o may constitute a fire separation.

Smoke control damper type WKS-P can only be installed with a vertical axis of blade rotation, with an actuator located at the bottom or top of the damper.

Description

WKS-P dampers are made up of a casing with a rectangular cross-section, movable blades and a drive system. The damper casing is made of fireproof boards and steel structural elements. Movable blades made of mineral silicate composite are attached to the housing using metal pins. On one side, the housing is finished with a steel flange which can be equipped with a tilting grille or fixed perforated cover. The other end of the casing is finished with a steel connector enabling easy, optional connection of the duct elements with the damper.

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 WKS-P 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 WKS-P damper in a BxH connection duct is 12 m/s.

Dimensions

The range of dampers covers the following dimensions: a clear damper width C from 300 to 900 mm (150 mm intervals) and a clear damper height D from 400 to 1850 mm (50 mm intervals). The basic range of damper sizes along with the actuators used is presented in the table below.

Dimensions of the WKS-P dampers

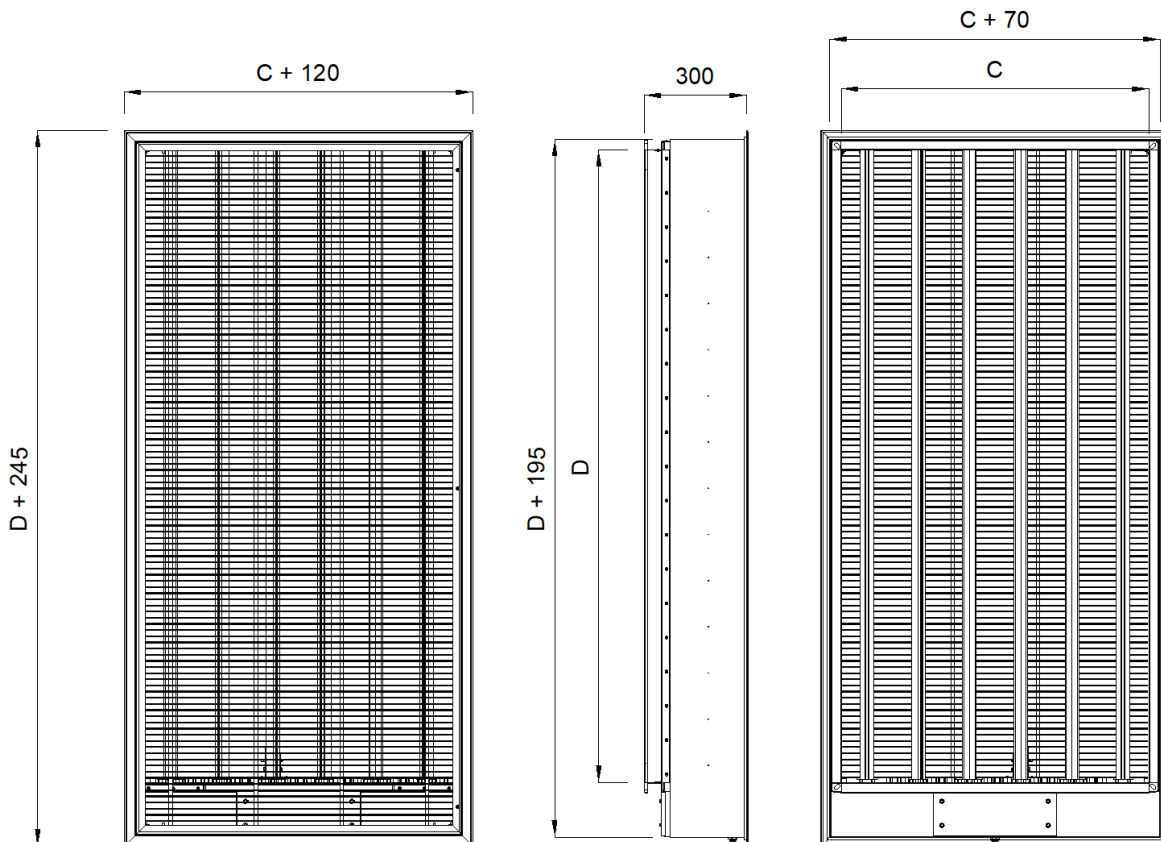


Figure 1. Dimensions of the WKS-P damper

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 WKS-P dampers do not have return springs (voltage loss will not cause the movement of the damper isolating blades).

The WKS-P dampers can be equipped with a dedicated ALWT-P aluminum lamella grille painted in any RAL color. It is mounted inside the damper flange and equipped with a hinge enabling quick access to the interior of the damper. Alternatively, the damper should be equipped with a MKW-S cover mounted to the wall. On the flange side, damper elements visible through the grille can be painted with matte black paint for aesthetic purposes.

Installation

The WKS-P type dampers are designed for quick, one-sided installation in walls. They can be installed in rigid, vertical building partitions (e.g. concrete walls, brick walls, aerated concrete blocks, hollow bricks or made of boards) or flexible, vertical building partitions (walls made of plasterboards on a steel studs). Optionally, ventilation ducts can be connected to the damper. The minimum wall thickness X is 125mm for dampers with dimensions no larger than 750x1400mm and 160mm for the remaining size range.

The accuracy of the opening dimensions is shown on drawing 3. The opening can be finish using cement-lime or putty mortar, plasterboards or fireproof boards. Detailed assembly drawings can be found in the installation manual.

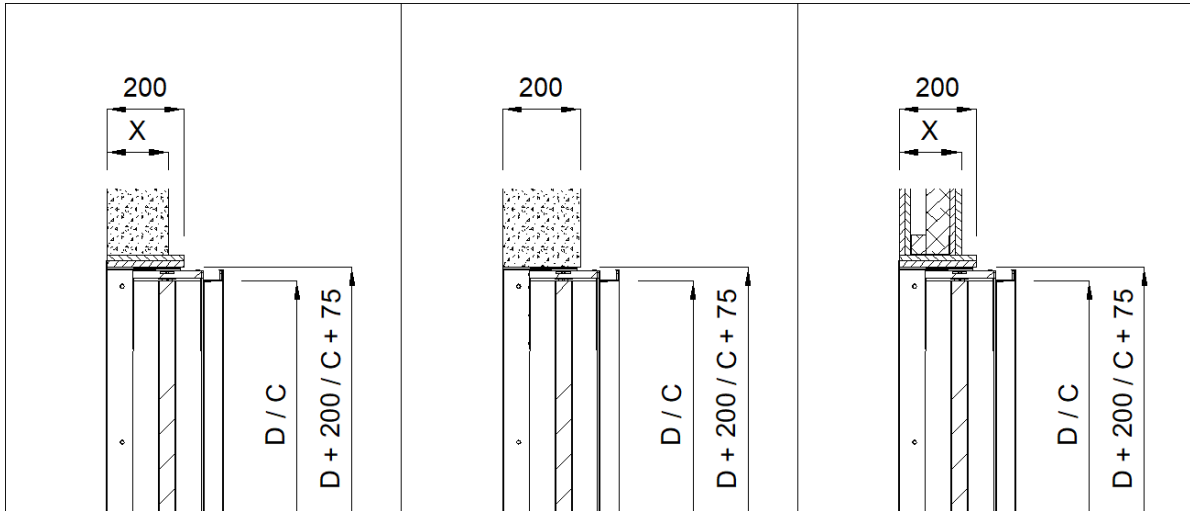


Figure 2. Wall finish and thickness required for the WKS-P damper

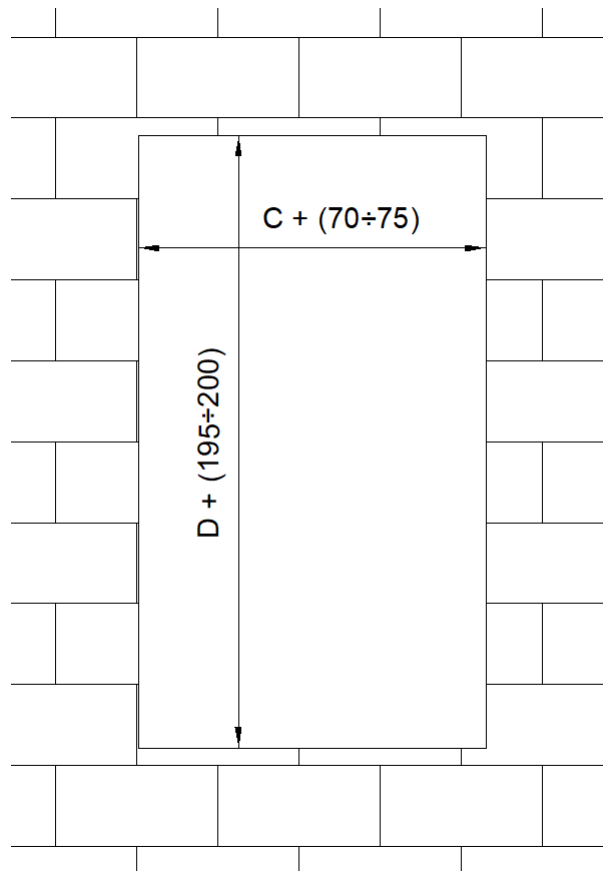


Figure 3. Opening dimensions required for the WKS-P damper

Technical data

Table 1. The net surface area of WKS-P-E dampers [m²]

WKS-P		Width C [mm]				
		300	450	600	750	900
Height D [mm]	400	0,088	0,132	0,176	0,220	0,264
	500	0,110	0,165	0,220	0,275	0,330
	600	0,132	0,198	0,264	0,330	0,396
	700	0,154	0,231	0,308	0,385	0,462
	800	0,176	0,264	0,352	0,440	0,528
	900	0,198	0,297	0,396	0,495	0,594
	1000	0,220	0,330	0,440	0,550	0,660
	1100	0,242	0,363	0,484	0,605	0,726
	1200	0,264	0,396	0,528	0,660	0,792
	1300	0,286	0,429	0,572	0,715	0,858
	1400	0,308	0,462	0,616	0,770	0,924
	1500	0,330	0,495	0,660	0,825	0,990
	1600	0,352	0,528	0,704	0,880	1,056
	1700	0,374	0,561	0,748	0,935	1,122
	1800	0,396	0,594	0,792	0,990	1,188
1850	0,407	0,611	0,814	1,018	1,221	

0,123 - actuator **BEN** (possible variants: BEN230, BEN24, BEN24-ST)

0,123 - actuator **BEE** (possible variants: BEE230, BEE24, BEE24-ST)

0,123 - actuator **BE** (possible variants: BE230-12, BE24-12, BE24-12-ST)

Table 2. Weight of WKS-P dampers [kg]

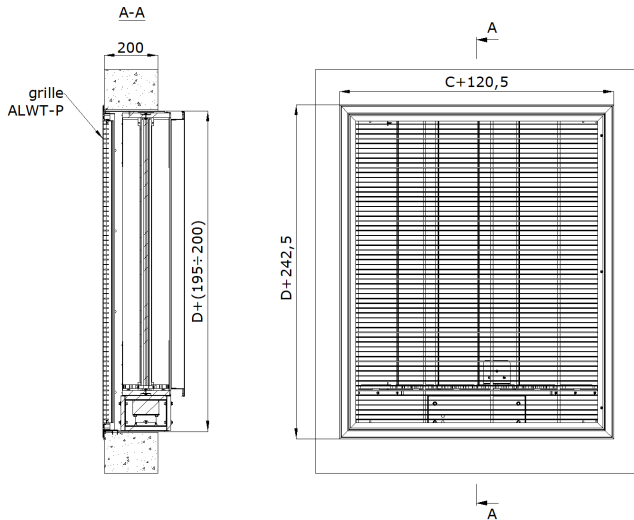
WKS-P		Width C [mm]				
		300	450	600	750	900
Height D [mm]	400	18,5	24,0	32,0	37,5	42,9
	500	21,0	27,0	35,0	40,5	46,6
	600	23,5	30,0	37,5	43,5	50,3
	700	25,5	32,5	40,5	47,0	54,0
	800	28,0	35,0	43,5	50,0	58,0
	900	30,5	38,0	46,5	43,0	61,5
	1000	33,0	41,0	49,5	56,5	65,5
	1100	35,5	43,5	52,5	60,0	69,0
	1200	38,0	46,5	55,5	62,5	72,5
	1300	40,0	49,0	58,5	65,5	76,5
	1400	42,5	52,0	61,5	69,0	80,0
	1500	45,0	54,5	64,5	72,0	84,0
	1600	47,5	57,5	67,5	75,0	87,5
	1700	50,0	60,0	70,5	78,5	91,0
	1800	52,5	63,0	73,5	82,0	95,0
1850	53,5	64,5	75,0	85,0	97,0	

Equipment

To limit access to the inside of the flap, two aesthetic accessories have been provided:

ALWT-P grille

The first of them is a dedicated aluminum slatted grille type ALWT-P, painted in any RAL color. It is mounted directly inside the WKS-P flap, so that the grille blends in with the wall surface. The grille can be tilted with the selected side chosen during installation, allowing quick access to the inside of the flap for servicing.



4. ALWT-P grille dimensions.

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

ALWT-P - <C> x <D> - <P><RAL>

Where:

- C** WKS-P fire damper clear width [mm]
- D** WKS-P fire damper clear height [mm]
- P** finishing of grille*

AL - powder coated aluminium

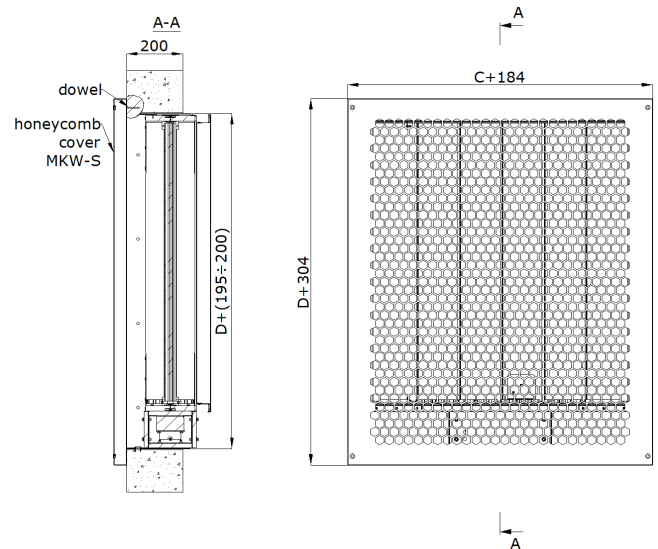
RAL color of the grille from the RAL palette (only for <P>=AL finish, standard **RAL9010**)

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

Sample product marking: **ALWT-P-900x1800-SL9010**

MKW-S mesh cover

Alternatively, the WKS-P flap can be covered using the MKW-S concealment mask, painted in any RAL color, and mounted to the wall surface. The concealment mask includes masking plugs for mounting screws. To remove the concealment mask, it is necessary to remove the plugs and unscrew the screws used for mounting.



5. The dimensions of the MKW-S mesh cover

When ordering honeycomb mesh cover only, please provide information in accordance with the following pattern:

MKW-S - <C> x <D> - <P><RAL>

Where:

- C** WKS-P damper clear width [mm]
- D** WKS-P damper clear height [mm]
- P** finishing of cover*

SL - powder coated

SO - galvanised steel

RAL color of the cover from the RAL palette (only for <P>=SL finish, standard **RAL9010**)

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

Sample product marking: **MKW-S-900x1800-SL9010**



Both ALWT-P grilles and MKW-S covers have net surface area larger than WKS-P dampers.

WKS-P - Multi-blade smoke control damper

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

WKS-P - <F> - <C> x <D> - <A> - <R> - <RAL> // <ADD>

Where:

F	type of actuation system used	
	E- electric actuator without return spring	
C	WKS-P damper clear width [mm]	
D	WKS-P damper clear height [mm]	
A	type of the actuator (according to the table 1)	
	BEN	Product marking:
	BEE	24/230 - supply voltage
	BE	ST - connection socket
R*	finishing	
	none- galvanized steel + fireproof panels	
	SL- painted steel + impregnated fireproof panels	
	SV- painted steel + fireproof panels painted with dispersion paint (on visible side)**	
RAL	color of the cover of the damper from the RAL palette (only for <R>=SL or <R>=SCL finish, standard RAL9010)	
ADD*	accessories	
	none- standard	
	MKW-S- honeycomb mesh cover	
	ALWT-P- tilting grille	
P*	finishing of cover or grille	
	SL- powder coated (only for cover)	
	SO- galvanized steel (only for cover)	
	AL- powder coated aluminium (only for grille)	
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: **WKS-P-E-900x1800-BE24-12/MKW-S-SL9010**