

Cut-off explosion-proof dampers



PWIS-

The text 'PWIS-' is followed by a hexagonal symbol containing the Greek letter epsilon (ε) and the letter 'x', which is a standard symbol for explosion-proof equipment.

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Multi-layer dampers PWIS-EX with backward- or concurrent blades are designed for air flow adjustment or air flow closure in the ventilation systems used in the explosion hazard zone. Such hazards occur in chemical plants, wood-working shops and varnish manufactures, gas production plants etc. – i.e. wherever the explosion hazard zone is outlined, where the explosive mixtures of gases, mists and dust with air may occur.

The damper PWIS-EX was tested and classified to **II group 2 category according to PN-EN 13463-1:2003; PN-EN 13463-5:2005**, which means that it is proper for using in zones 1 and 2 as well as 21 and 22.

The certificate no. KDB08ATEX218 was issued by Central Mining Institute in Katowice.

The damper construction provides tightness within the range 2 class according to EN-1751, thank to special sealing inserts mounted at the end of blades. The drive of individual blades is realised by means of levers and tendons system, under backward arrangement PWISp-EX or concurrent arrangement PWISw-EX.

The working temperature is within the limits from -20°C to +90°C (+50°C in version with actuator).

Technical description of the device

The casing, blades and driving levers and tendons system of the damper PWIS-EX are made out of galvanised steel sheet.

The blades along their entire length are equipped with the seals of PVC, and the seal between the end and the casing is provided by special inserts made out of polypropylene. At one side of the blade in the inserts there are fastened the steel axles connected with the blade by means of steel rivet. The blades are mounted by means of the slide bearings, also polypropylene ones, embedded in the casing.

One axle is the driving axle, whereas the drive transmission onto the other blades is done by means of the levers and tendons system. The dampers are equipped with additional springy steel slides fastened to the tendons of drive mechanism providing their full electrical connection with the casing as well as the grounding terminals on the casing. Through this solution the occurrence possibility of potential difference between the individual elements of the damper and between the damper and earth while working is avoided.

Special notes

The damper in one of the execution variant enables to use the electric actuator for driving the damper. The actuator is mounted to the shelf located on the side of the damper. In such case, one should remember, however, that such unit as the functional whole is qualified according to the same group of which the device with the poorest parameters is classified. Hence, if e.g. the actuator does not meet the requirements made for the goods classified as the devices of EX type i.e. the devices admitted for work in the explosion hazard zones, then the whole damper-actuator unit does not meet the applicable requirements for this type of devices either. While designing the ventilation system based on such solution, one should always keep in mind to provide the actuator with the same or higher group as the damper PWIS-EX.

The producer does not take any responsibility for using the device against the above-mentioned rules and the actions contrary to the applicable standards concerning the devices admitted for work under the described conditions.

Smay company offers the actuators from the proper EX group, adjusted for cooperation with the damper. While making the order for the damper PWIS-EX in the version with actuator, we issue the testing certificate of EX type for both devices.

B height [mm]	A width [mm]											
	300	400	500	600	700	800	900	1000	1100	1200	1300	1400
	Outflow useful surface [m ²]											
	Approximate weight [kg]											
305	0,07 3,5	0,10 4,1	0,12 4,8	0,15 5,4	0,17 6,1	0,20 6,7	0,22 7,4	0,25 8,0	0,27 8,7	0,30 9,4	0,32 10,0	0,34 10,7
405	0,10 4,3	0,13 5,0	0,16 5,8	0,20 6,6	0,23 7,3	0,26 8,1	0,30 8,9	0,33 9,6	0,36 10,4	0,39 11,2	0,43 11,9	0,46 12,7
505	0,12 5,1	0,16 6,0	0,21 6,9	0,25 7,7	0,29 8,6	0,33 9,5	0,37 10,3	0,41 11,2	0,45 12,1	0,49 13,0	0,53 13,8	0,57 14,7
605	0,15 5,9	0,20 6,9	0,25 7,9	0,30 8,9	0,34 9,9	0,39 10,8	0,44 11,8	0,49 12,8	0,54 13,8	0,59 14,8	0,64 15,8	0,69 16,7
705	0,17 6,8	0,23 7,9	0,29 8,9	0,34 10,0	0,40 11,1	0,46 12,2	0,52 13,3	0,57 14,4	0,63 15,5	0,69 16,6	0,75 17,7	0,80 18,8
805	0,20 7,6	0,26 8,8	0,33 10,0	0,39 11,2	0,46 12,4	0,52 13,6	0,59 14,8	0,66 16,0	0,72 17,2	0,79 18,4	0,85 19,6	0,92 20,8
905	0,22 8,4	0,30 9,7	0,37 11,0	0,44 12,3	0,52 13,6	0,59 15,0	0,66 16,3	0,74 17,6	0,81 18,9	0,89 20,2	0,96 21,5	1,03 22,8
1005	0,25 9,2	0,33 10,7	0,41 12,1	0,49 13,5	0,57 14,9	0,66 16,3	0,74 17,7	0,82 19,2	0,90 20,6	0,98 22,0	1,07 23,4	1,15 24,8
1105	0,27 10,1	0,36 11,6	0,45 13,1	0,54 14,6	0,63 16,2	0,72 17,7	0,81 19,2	0,90 20,7	0,99 22,3	1,08 23,8	1,17 25,3	1,26 26,9
1205	0,30 10,9	0,39 12,5	0,49 14,2	0,59 15,8	0,69 17,4	0,79 19,1	0,89 20,7	0,98 22,3	1,08 24,0	1,18 25,6	1,28 27,2	1,38 28,9
1305	0,32 11,7	0,43 13,5	0,53 15,2	0,64 16,9	0,75 18,7	0,85 20,4	0,96 22,2	1,07 23,9	1,17 25,7	1,28 27,4	1,39 29,2	1,49 30,9
1405	0,34 12,5	0,46 14,4	0,57 16,2	0,69 18,1	0,80 20,0	0,92 21,8	1,03 23,7	1,15 25,5	1,26 27,4	1,38 29,2	1,49 31,1	1,61 32,9

We produce every dimension A within the range of 200 ÷ 1405 [mm].

Standard for dimensions A×B is the damper of dimensions:

A_{max} = 1400 [mm]; B_{max} = 1405 [mm]

Because of the blade width 100 [mm], the recommended dimension B = n × 100 + 5 [mm]

Above the dimension 1400 x 1405 the dampers are produced in the batteries.

In case of making orders for the dampers other than the serial ones, it is necessary to determine the dimensions of the damper A×B and the type of mechanism pursuant to the product designation principle.

Product designation principles

PWISp-EX-400x405-T1

PWIS **K** - EX **A** x **B** - T **N**

- K** kinematics*
- p** backward blades
- W** concurrent blades
- A** width of the damper inside diameter [mm]
- B** height of the damper inside diameter [mm]
- N** type of drive*
 - 1** with actuator
 - 2** manual mechanism

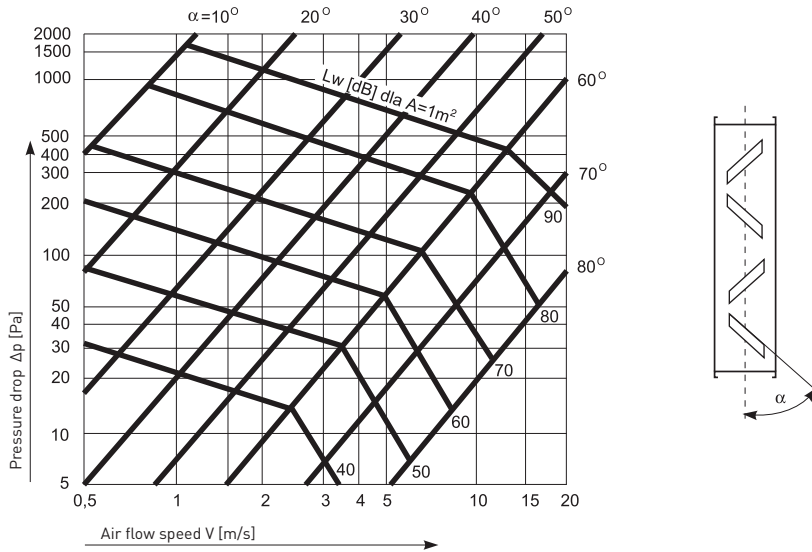
* optional values – if there are none given, the default values shall apply

Designations:

- V [m/s] air flow speed
- Δp [Pa] total pressure loss
- α [°] vane-angle setting

Nomogram I:

Influence of speed V and the opening degree of the damper on the pressure drop Δp



Nomogram II

The air escape amount through closed damper.

