

# PWS

## SPECIAL MULTI-BLADE DAMPERS



### Intended use:

The PWS multi-blade dampers with parallel or opposed blade action are intended for controlling or shutting off the air flow in rectangular ventilation ductwork. It may be installed in air handling units or walls.

### Intended use

The design of the damper provides 3÷4 damper leakage class in accordance with EN-1751. Damper blades with thickness of 165 [mm] are designed to withstand the pressure of 2500 [Pa] with damper size up to 2000 x 2000 [mm]. Special sealing inserts, placed at the tips of the blades provide high level of air tightness.

**Operating temperature: -20°C to +90°C, (+50°C in version with actuator).**

### Material

The damper casing is made of galvanized steel sheet, and the blades are made of aluminum profiles. There are special inserts with slide seals placed at the tips of the blades. The blades are mounted in ball bearings mounted in the damper casing.

### Finish

The damper blades are installed in covered from both sides roller bearings, high provide defect-free operation. The damper may operate in harsh environmental conditions (dust, humidity). The drive mechanism of the damper blades consists of the system of levers and tendons operating in parallel PWSw or in opposed PWSp. These features make the damper particularly recommended for air handling units, which diagonal dimension in horizontal direction exceeds 1400 [mm] and in vertical direction exceeds 1000 [mm].

The maximum dimensions of the damper:

- A = 3000 [mm]; B = 2850 for the non-pressurized systems
- A = 2400 [mm]; B = 2000 at a pressure up to 1000 [Pa]
- A = 2000 [mm]; B = 2000 at a pressure up to 2500 [Pa]

The maximum dimension B of the damper with parallel action blades is B=1820 [mm].

The maximum permissible operating temperature: -20° to + 90 °C (50° in the version with the actuator)

**The damper PWS has Hygienic Certificate no. HK/K/0841/03/2017.**

The dampers PWS are normally manufactured in 3 leakage class. Manufacturing of the damper in 4 leakage class is possible on special request.

### Drive type

1. damper with actuator
2. damper with manual mechanism
3. damper with extended axle



Note!

The shape of the aluminum profiles is protected as an utility model and it is registered in The Polish Patent Office (UPRP).

### Dimensions

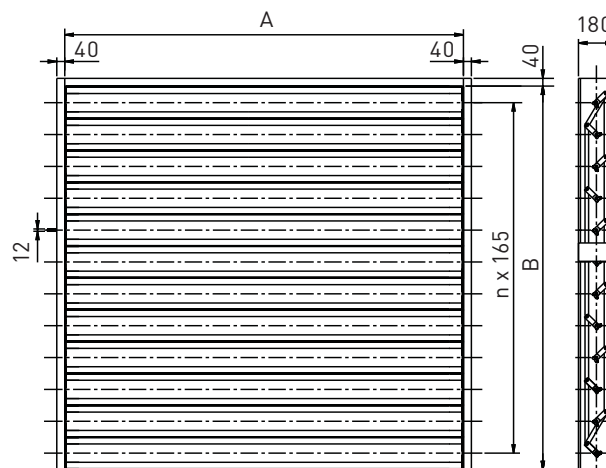


Figure 1. The PWS dimensions.

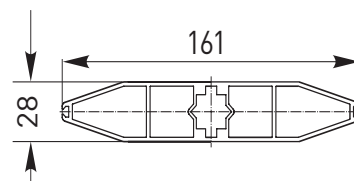


Figure 2. Blade of the damper.



## Typical dimensions

Table 1. PWS typical dimensions.

B height [mm]	A width [mm]										
	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
	Effective area [m <sup>2</sup> ] weight [kg]										
995	0,82	0,90	0,99	1,07	1,15	1,23	1,32	1,40	1,48	1,56	1,64
	30,6	32,8	35,0	37,1	39,3	41,5	43,7	45,9	48,1	50,2	52,4
1160	0,96	1,05	1,15	1,25	1,34	1,44	1,53	1,63	1,73	1,82	1,92
	34,6	37,0	39,5	41,9	44,3	46,8	49,2	51,6	54,1	56,5	59,0
1325	1,10	1,21	1,32	1,43	1,54	1,65	1,76	1,87	1,98	2,09	2,20
	38,6	41,3	44,0	46,7	49,4	52,1	54,8	57,5	60,1	62,8	65,5
1490	1,23	1,36	1,48	1,60	1,73	1,85	1,97	2,10	2,20	2,34	2,47
	42,6	45,5	48,5	51,4	54,4	57,3	60,2	63,2	66,1	69,1	72,0
1655	1,37	1,51	1,64	1,78	1,92	2,06	2,19	2,33	2,47	2,60	2,74
	46,6	49,8	53,0	56,2	59,4	62,6	65,8	69,0	72,2	75,4	78,6
1820	1,51	1,66	1,81	1,96	2,11	2,26	2,41	2,56	2,71	2,86	3,01
	50,6	54,0	57,5	60,9	64,4	67,8	71,3	74,7	78,2	81,7	85,1
1985	1,64	1,81	1,97	2,14	2,30	2,47	2,63	2,79	2,96	3,12	3,29
	54,6	58,3	62,0	65,7	69,4	73,1	76,8	80,5	84,2	87,9	91,6

We may manufacture every dimension B within the range 330÷2000[mm].

Due to the width of the blade 165 [mm] the suggested dimension **B = n × 165 + 5 [mm]**.

In case of ordering the damper outside the series of types please provide the information about actuation and mechanism according to order code.



Note:

In cooperation with the actuators GM220; GM24 please take into account that the maximum total surface area of the damper at the pressure 1000 [Pa] may be 4 [m<sup>2</sup>]. 2 actuators should be installed for larger damper areas.

## General information

Key:

- V [m/s]** – air flow velocity
- $\Delta p$  [Pa]** – total pressure drop
- $\alpha$  [°]** – angle of the damper blades
- A [m<sup>2</sup>]** – cross-section of the damper
- L<sub>WA</sub> [dB<sub>(A)</sub>]** – sound power level
- q<sub>VLBA</sub> (l/s m<sup>2</sup>)** – air leakage

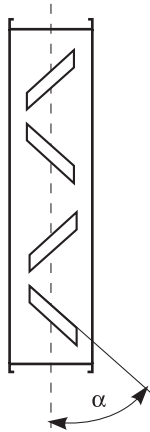


Figure 3. Angle of lamella setting.

## Nomogram I

The effect of velocity V and degree of damper opening to pressure drop  $\Delta p$ .

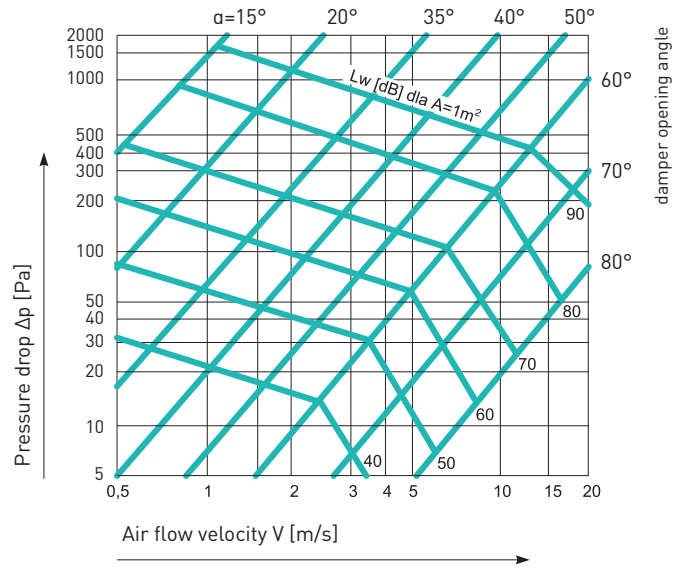


Chart 1. Nomogram I.

## Nomogram II

Dependency of q<sub>VLBA</sub> on  $\Delta p$  for damper design B<A

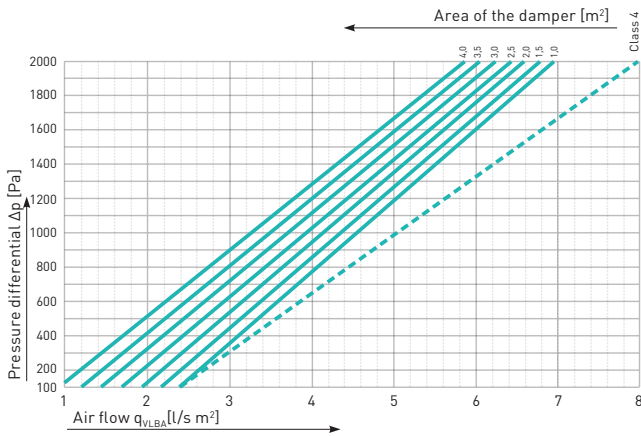


Chart 2. Nomogram II.

## Nomogram III

Dependency of q<sub>VLBA</sub> on  $\Delta p$  for damper design B>A

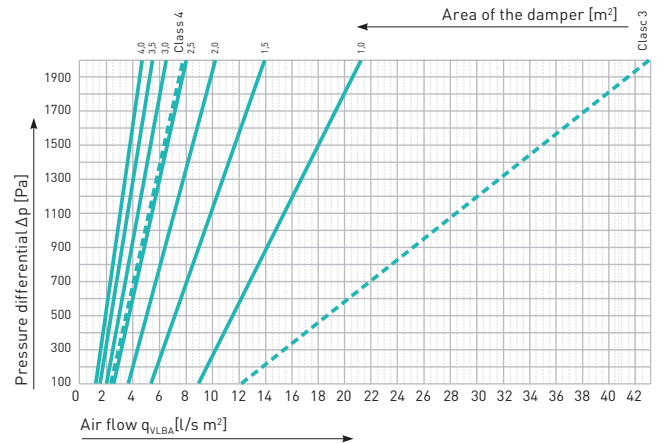


Chart 3. Nomogram III.

# PWS – Special multi-blade dampers

Please provide the following information when ordering:

**PWS <K> <I> - <A> X <B> - W<W> - T<N> - <KL>**

Where:

<b>K</b>	kinematics*
	<b>p - opposed action blades</b> w - parallel action blades
<b>I</b>	insulation*
	<b>- - not insulated</b> t - insulated
<b>A</b>	inner width of the damper [mm]
<b>B</b>	inner height of the damper [mm]
<b>W</b>	number of divisions of the damper (width) (0=none)
<b>N</b>	driving mechanism*
	1 - with actuator <b>2 - manual mechanism</b> 3 - fitting for actuator
<b>KL</b>	air leakage class in accordance with EN 1751*
	<b>B3 - casing: B, blades: 3</b> B4 - casing: B, blades: 4

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

Order example: **PWSpt-2000x2000-W0-T2-B4**