

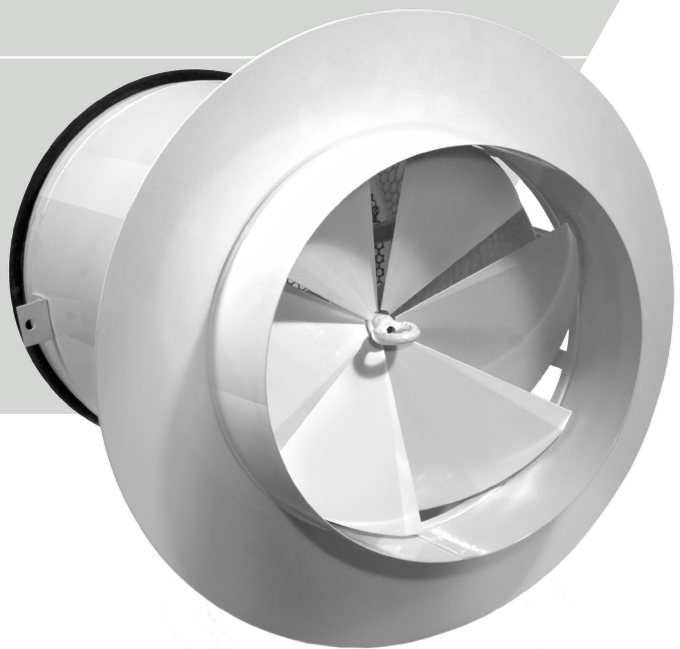
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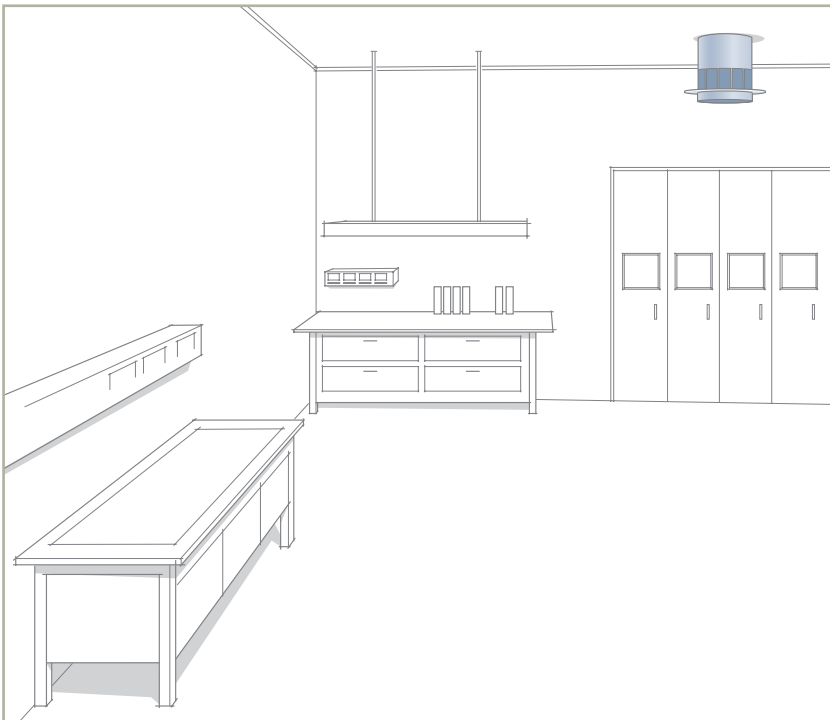
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Adjustable swirl diffuser

PDZA

TECHNICAL DATA





Adjustable ceiling swirl diffuser PDZA is intended for commercial and industrial buildings with a large room volume and high ceiling interiors, for example market halls, warehouses, factories etc.

The function of the diffuser can be adapted to both summer and winter conditions. The air diffusion pattern is controlled by moving internal core outlet with blades. The maximum vertical throw length of 22 m is achieved when the core is in the bottom position.

PDZA has an air flow range of between 56 and 1306 l/s (200 - 4700 m³/h) with a maximal vertical throw length of 22 m. It is only recommended for freely hanging installation. PDZA can be adjusted manually or with the help of an electric actuator.

QUICK SELECTION

Size	Air flow		Installation height H _p , m	Pressure drop Pa
	l/s	m ³ /h		
PDZA-25	56-333	200-1200	3-15	5-315
PDZA-31	97-527	350-1900	3-18	6-310
PDZA-35	111-667	400-2400	3-18	5-310
PDZA-40	152-833	550-3000	4-18	6-300
PDZA-50	250-1306	900-4700	4-22	6-300

SPECIFICATIONS

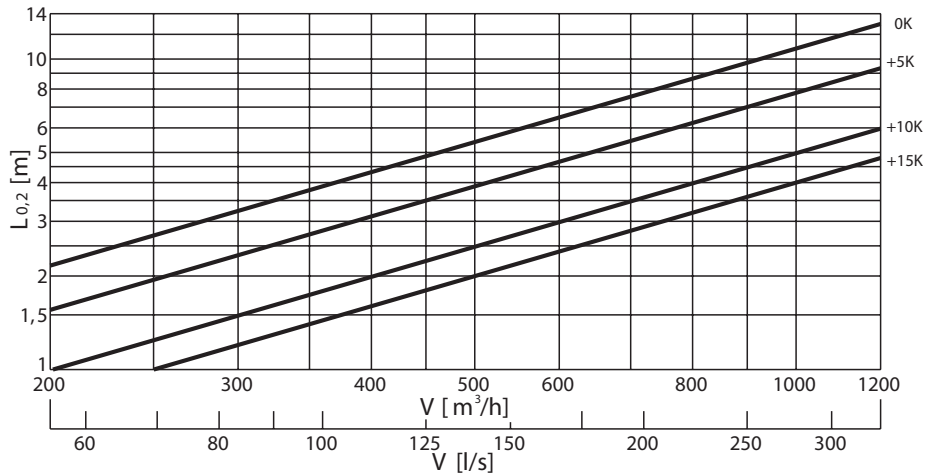
- Available in 5 sizes, connections from 250 to 500 mm
- For freely hanging installation
- Adjustable air diffusion pattern
- Controlled manually or via electric actuator

PRODUCT CODE EXAMPLE

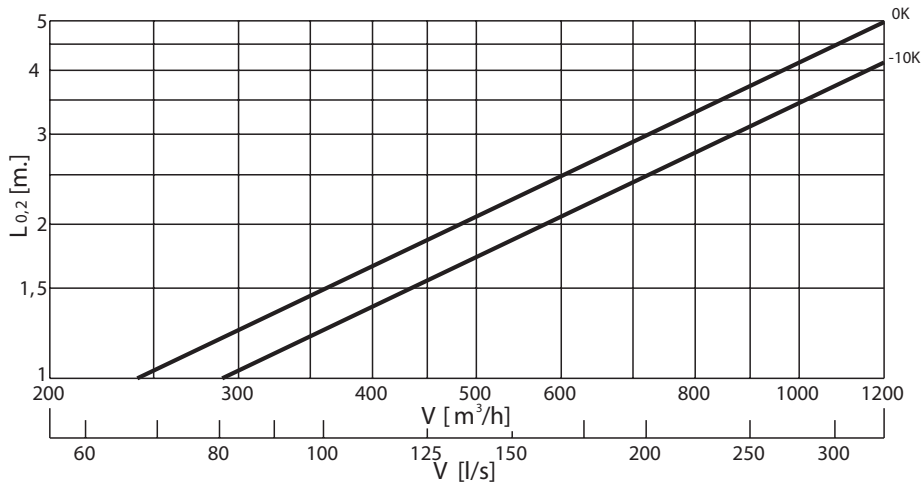
Adjustable swirl diffuser PDZA-50-1-1
Terminal of size 50, adjustable manually, painted in RAL 9010 colour.

THROW LENGTH, AIR FLOW, PRESSURE DROP, SOUND LEVEL

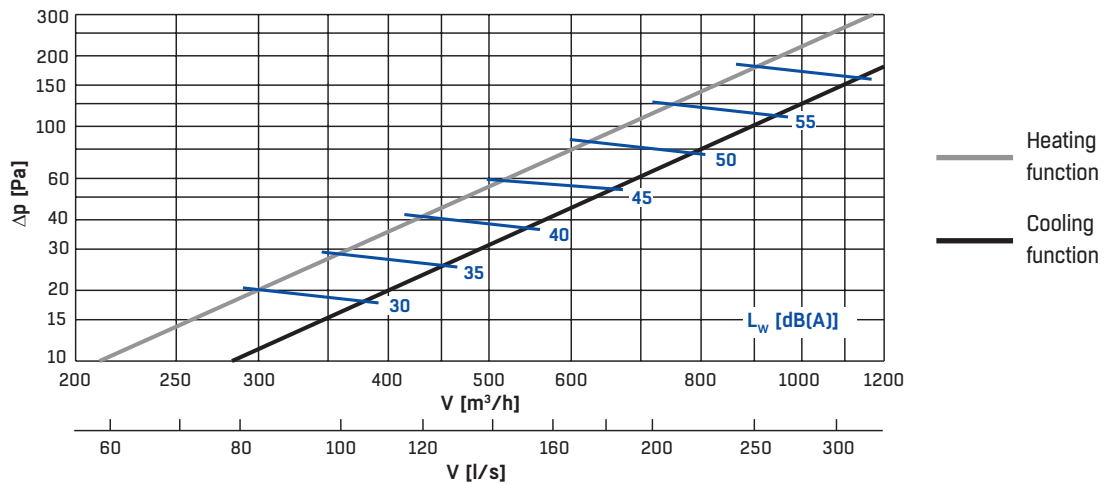
PDZA-25 – THROW LENGTH FOR HEATING FUNCTION (VERTICAL DIFFUSION PATTERN)



PDZA-25 – THROW LENGTH FOR COOLING FUNCTION (HORIZONTAL DIFFUSION PATTERN)

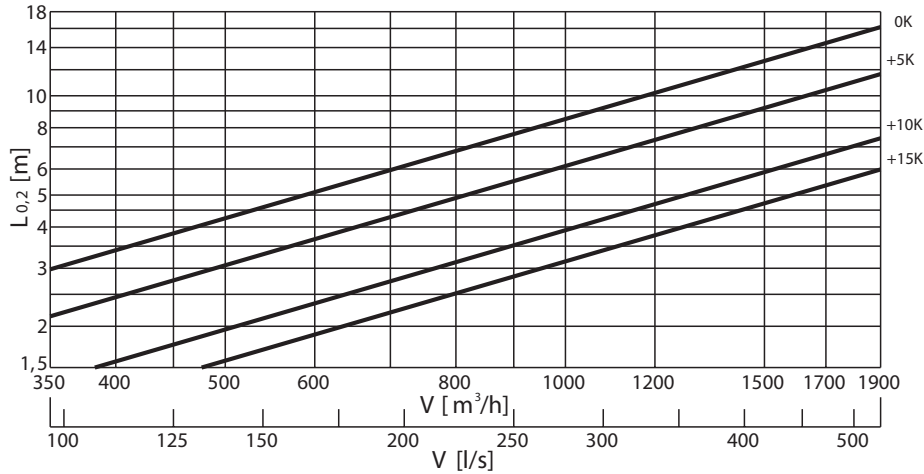


PDZA-25 – PRESSURE DROP AND SOUND POWER LEVEL L_w

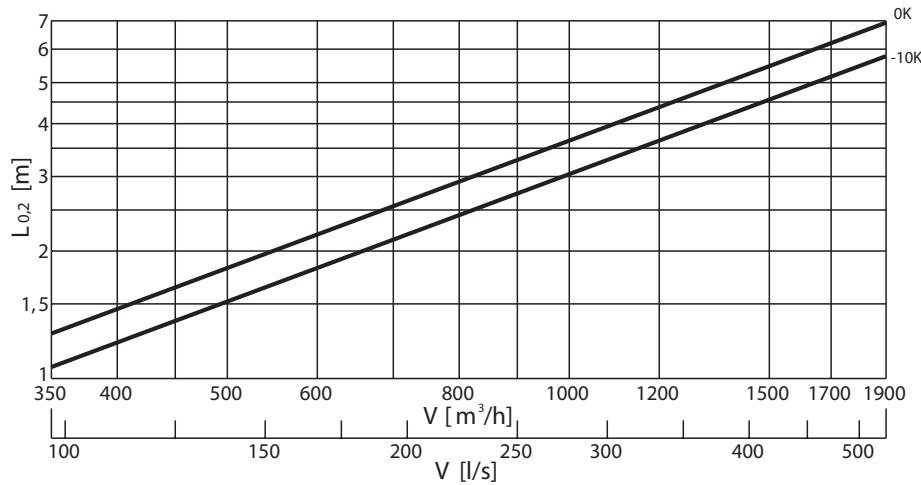


THROW LENGTH, AIR FLOW, PRESSURE DROP, SOUND LEVEL

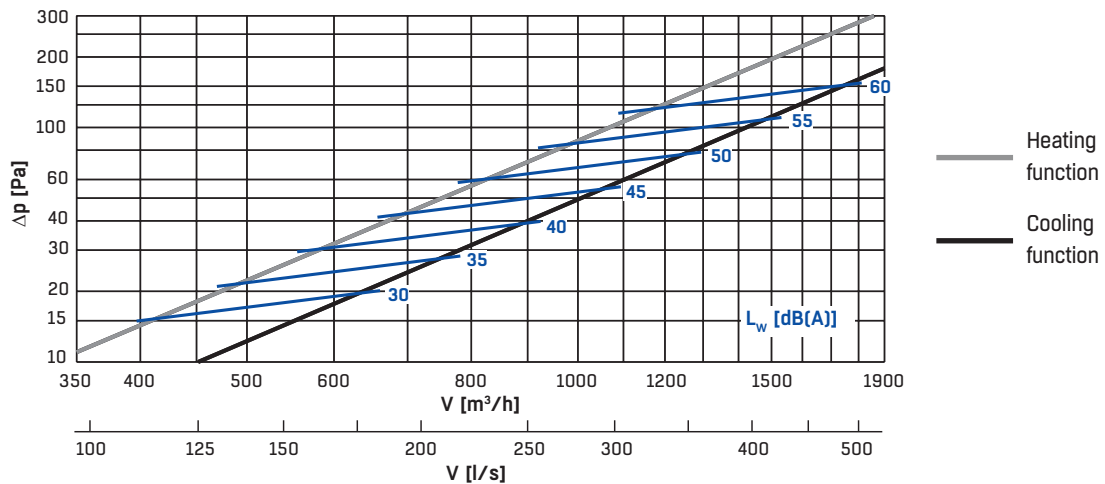
PDZA-31 – THROW LENGTH FOR HEATING FUNCTION (VERTICAL DIFFUSION PATTERN)



PDZA-31 – THROW LENGTH FOR COOLING FUNCTION (HORIZONTAL DIFFUSION PATTERN)

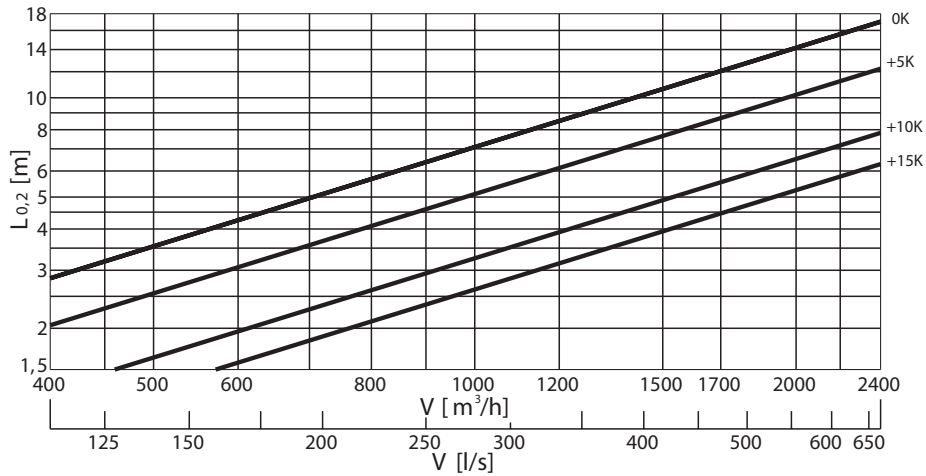


PDZA-31 – PRESSURE DROP AND SOUND POWER LEVEL L_w

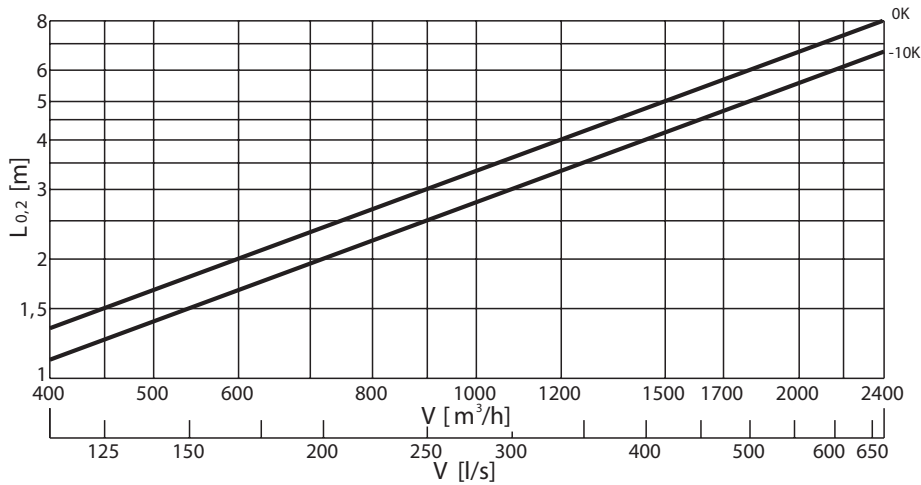


THROW LENGTH, AIR FLOW, PRESSURE DROP, SOUND LEVEL

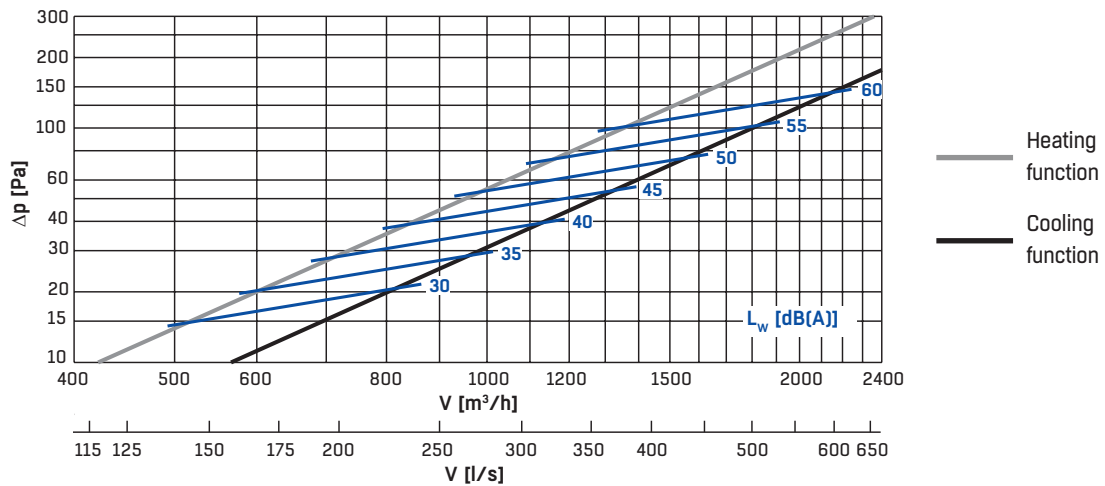
PDZA-35 – THROW LENGTH FOR HEATING FUNCTION (VERTICAL DIFFUSION PATTERN)



PDZA-35 – THROW LENGTH FOR COOLING FUNCTION (HORIZONTAL DIFFUSION PATTERN)

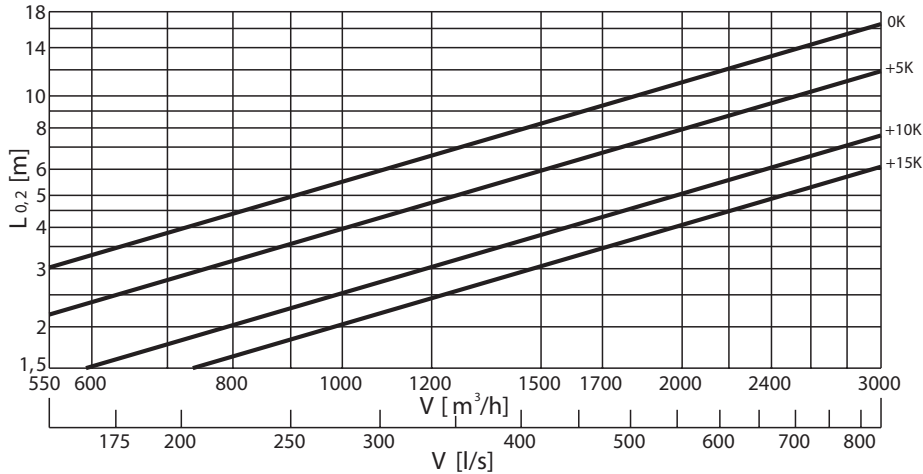


PDZA-35 – PRESSURE DROP AND SOUND POWER LEVEL L_w

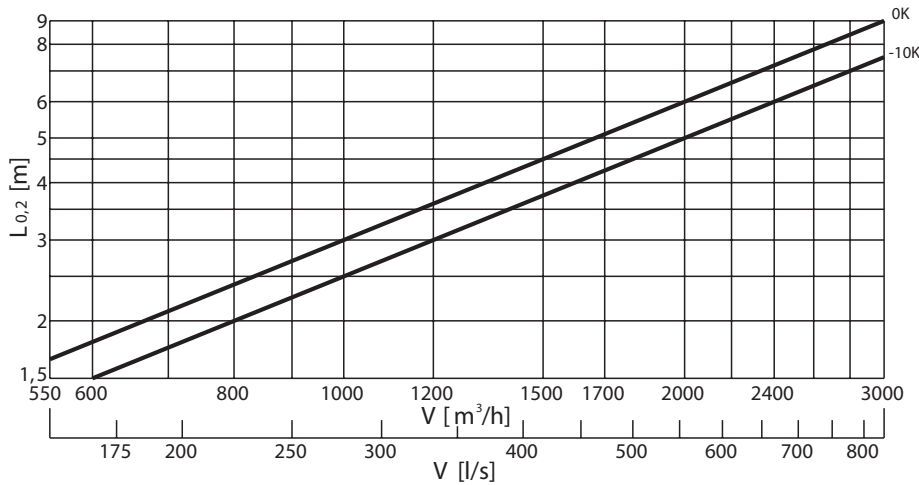


THROW LENGTH, AIR FLOW, PRESSURE DROP, SOUND LEVEL

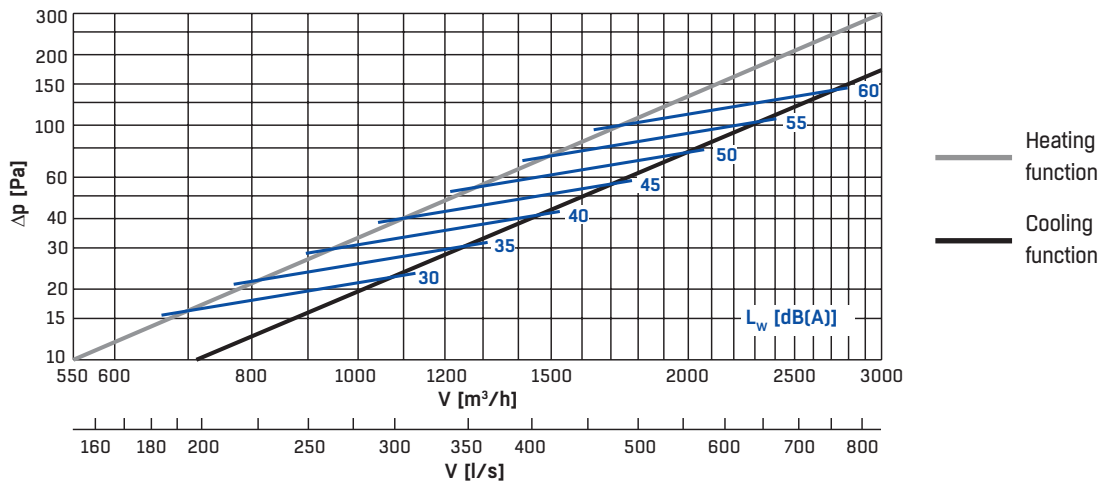
PDZA-40 – THROW LENGTH FOR HEATING FUNCTION (VERTICAL DIFFUSION PATTERN)



PDZA-40 – THROW LENGTH FOR COOLING FUNCTION (HORIZONTAL DIFFUSION PATTERN)

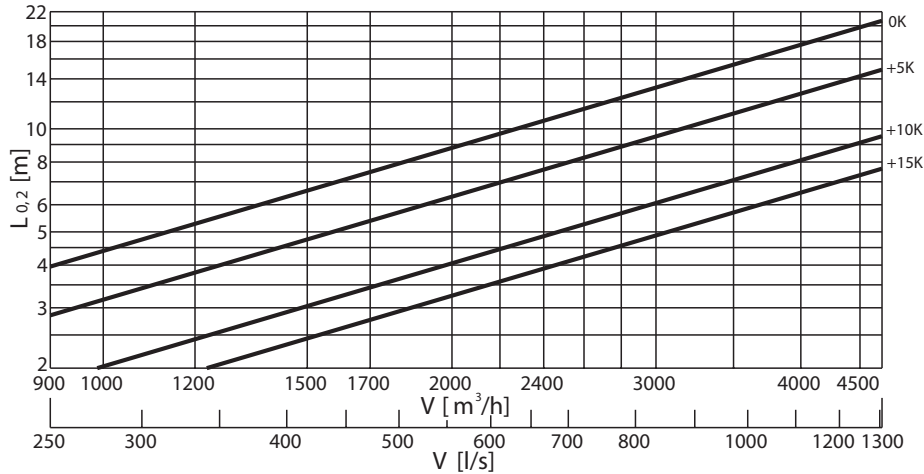


PDZA-40 – PRESSURE DROP AND SOUND POWER LEVEL L_w

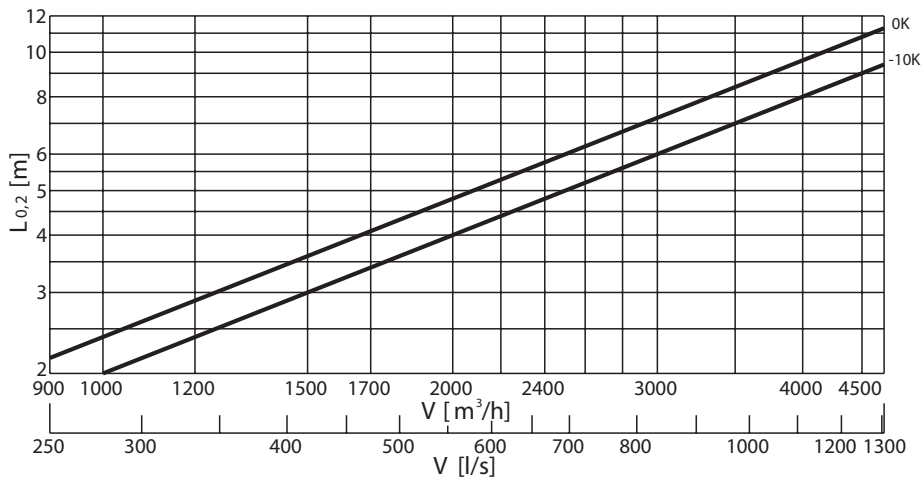


THROW LENGTH, AIR FLOW, PRESSURE DROP, SOUND LEVEL

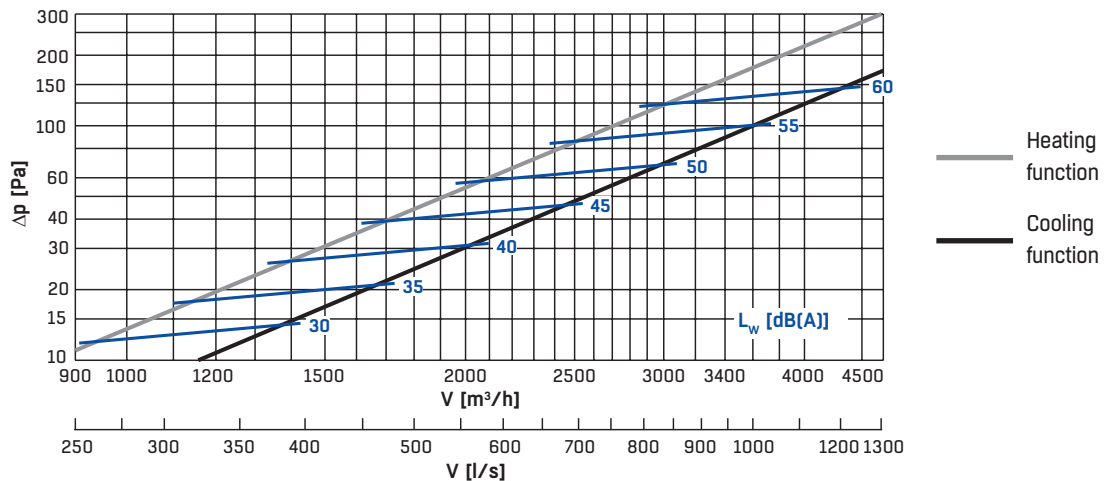
PDZA-50 – THROW LENGTH FOR HEATING FUNCTION (VERTICAL DIFFUSION PATTERN)



PDZA-50 – THROW LENGTH FOR COOLING FUNCTION (HORIZONTAL DIFFUSION PATTERN)

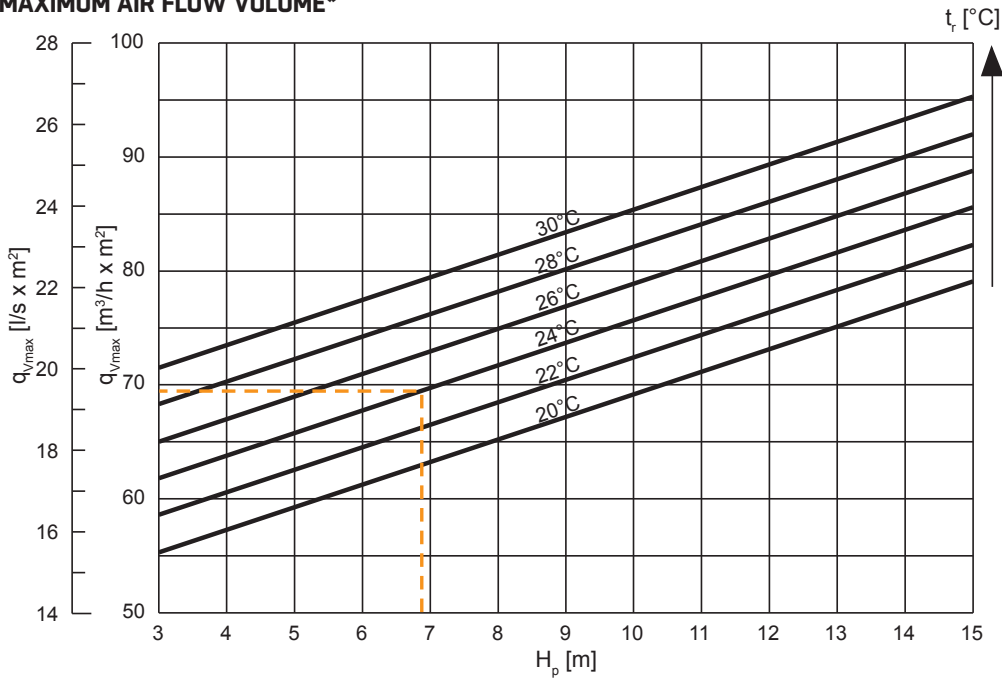


PDZA-50 – PRESSURE DROP AND SOUND POWER LEVEL L_w



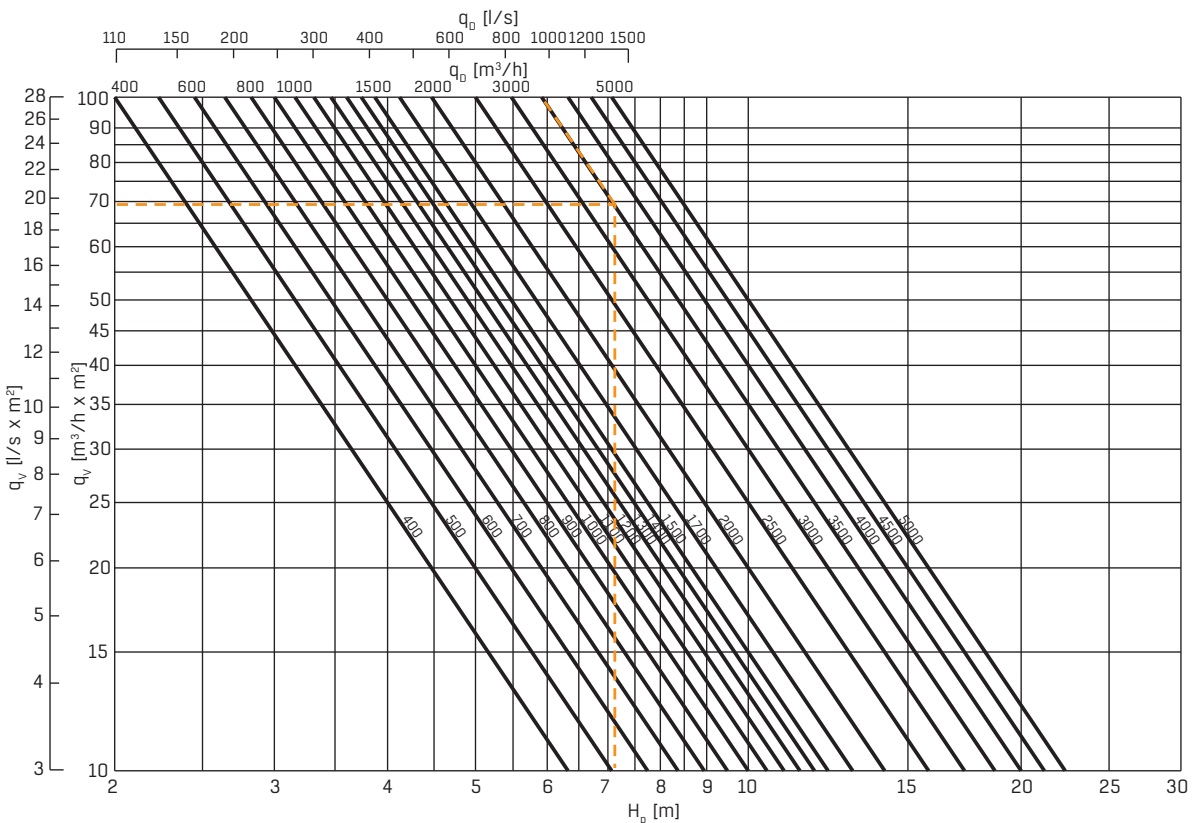
AIR FLOW VOLUME, DISTANCE BETWEEN DIFFUSERS

MAXIMUM AIR FLOW VOLUME*



*Assuming that average metabolic activity level is 2.0 met and clothing insulation is 0.5 – 0.6 clo. Premises which meet these conditions are e.g. sport halls, warehouses and light industry halls.

MINIMUM DISTANCE BETWEEN DIFFUSERS



PROJECT DESIGN EXAMPLE

PROJECT DESIGN EXAMPLE

Definitions

q_{tot}	total air flow	m^3/h
q_D	diffuser air flow	m^3/h
q_v	volume air flow per square meter	$m^3/h \times m^2$
A	served floor area	m^2
H_p	installation height above the floor	m
t	distance between diffuser	m
t_{min}	minimum distance between diffusers	m
t_r	room temperature	$^{\circ}C$
Δt_v	temperature difference between the supply air and the room air	K
$L_{0,2}$	throw equivalent to 0.2 m/s in final velocity	m
H_w	height of occupied zone	m

Assumptions

Total air flow $q_{tot} = 29\ 000\ m^3/h$
 Served floor area $A = 2000\ m^2$
 Room temperature $t_r = 24^{\circ}C$
 Installation height above the floor $H_p = L_{0,2} + H_w$
 Height of occupied zone $H_w = 1.8\ m$

1. Selection of diffuser, size PDZA-40

Assumed number of diffusers, n	18 pcs.
Diffuser air flow, q_D	1 610 m^3/h
Throw, $L_{0,2}$ (read from graph)	4.2 m
Installation height above the floor, H_p	4.2 + 1.8 = 6.0 m
Assumed Δt_v for heating	+10 K
Min air flow taken from the graph for the diffuser heating function	1610 m^3/h
Assumed distance between diffusers, t	10.0 m
Volume air flow, q_v (from graph)	16.1 $m^3/h \times m^2$
Max volume air flow per square meter, for $H_p = 6.0\ m$ and $t_r = 24^{\circ}C$	68 $m^3/h \times m^2$
Min distance between diffusers, t_{min} where $q_{vmax} = 68\ m^3/h \times m^2$ is not exceeded	4.9 m

2. Selection of diffuser, size PDZA-31

Assumed number of diffusers, n	27 pcs.
Diffuser air flow, q_D	1 070 m^3/h
Throw, $L_{0,2}$ (read from graph)	4.2 m
Installation height above the floor, H_p	4.2 + 1.8 = 6.0 m
Assumed Δt_v for heating	+10 K
Min air flow taken from the graph for the diffuser heating function	1 070 m^3/h
Assumed distance between diffusers, t	8.0 m
Volume air flow, q_v (from graph)	16.7 $m^3/h \times m^2$
Max volume air flow per square meter, for $H_p = 6.0\ m$ and $t_r = 24^{\circ}C$	68 $m^3/h \times m^2$
Min distance between diffusers, t_{min} where $q_{vmax} = 68\ m^3/h \times m^2$ is not exceeded	4.0 m

SOUND DATA, DIMENSIONS AND WEIGHT, DIFFUSION PATTERNS

SOUND POWER LEVEL

Size	Correction of sound level K_{oct} in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
25	7	1	1	-5	-4	-6	-14	-26
31	6	0	0	-4	-6	-8	-15	-24
35	5	1	-1	-2	-6	-10	-15	-25
40	3	0	-1	-2	-5	-12	-16	-25
50	3	-1	-1	-2	-5	-12	-14	-25

The sound power levels for different octave bands are obtained by adding together the sound power level L_{wp} in dB(A), and the corrections K_{oct} for the octave bands in the table with the help of the following formula:

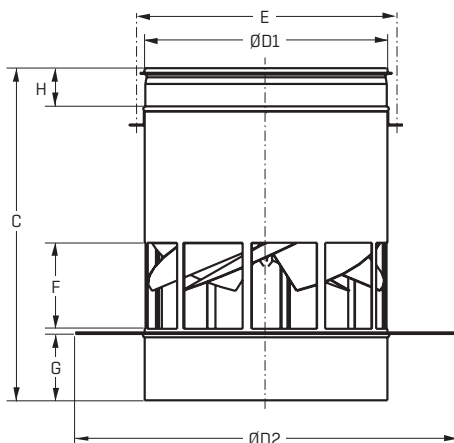
$$L_{w_{oct}} = L_w + K_{oct}$$

Correction K_{oct} is the mean value for the range of application of PDZA.

SOUND ATTENUATION

Size	Sound attenuation in ΔL dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
25	3	5	4	8	7	3	4	2
31	3	5	3	9	7	3	4	2
35	4	3	2	7	7	4	4	3
40	5	2	1	6	7	5	5	3
50	7	4	3	6	8	6	4	5

DIMENSIONS AND WEIGHT

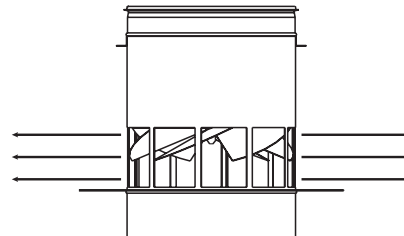


Size	ØD1 (mm)	ØD2 (mm)	C (mm)	E (mm)	F (mm)	G (mm)	H (mm)	Weight (kg)
25	250	396	383	282	93	79	40	6.0
31	315	498	445	347	116	89	40	8.0
35	355	556	461	387	130	99	40	9.0
40	400	632	517	432	142	109	40	10.0
50	500	783	595	532	181	131	40	12.0

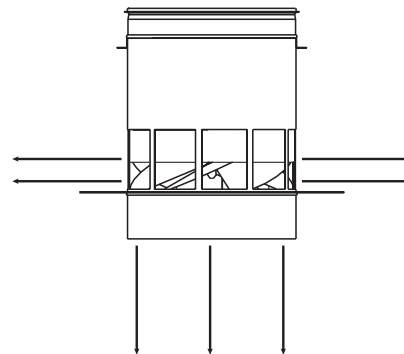
DEFINITIONS

q	air flow	l/s, m ³ /h
Δp_t	total pressure drop	Pa
H_p	installation height	m
L_{02}	throw	m
L_w	sound power level	dB(A)
$L_{w_{oct}}$	sound power level per octave	dB(A)
K_{oct}	octave band correction	dB
ΔL	sound attenuation from the duct to the room	dB

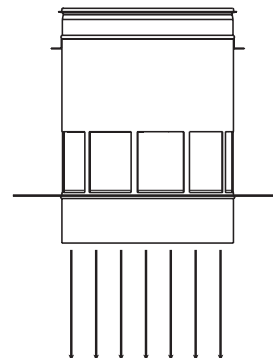
DIFFUSION PATTERNS



Horizontal air diffusion - cooling function.
Internal core outlet with blades is moved up.



Combined air diffusion.
Internal core outlet with blades in the middle position



Vertical air diffusion - heating function.
Internal core outlet with blades is moved down.

GENERAL, PRODUCT CODE

CONSTRUCTION AND FUNCTION

PDZA is an adjustable ceiling swirl diffuser that is recommended to be mounted directly to the duct. Its diffusion pattern can be changed from horizontal to vertical in order to adapt summer or winter conditions. Position of internal core outlet with blades can be controlled manually or automatically via electric actuator. PDZA is only recommended for freely hanging installation

MATERIAL AND SURFACE FINISH

Diffuser is made of black steel sheet. PDZA is powder-coated for a high surface finish. The standard colour is RAL 9010, 70% of gloss.

Electric actuators used in automatic version comply with RoHS directive.

INSTALLATION, ADJUSTMENT AND MAINTENANCE

The instructions for installation, adjustment and maintenance are available at www.flaktgroup.com

TECHNICAL DATA AND DIMENSIONING

For complete design details, please see the Fläktgroup product selection program SELECT. The program can be found on the Internet at www.flaktgroup.com.

SPECIFICATIONS TEXT EXAMPLE

The PDZA is a ceiling supply swirl diffuser that consists of external casing and internal movable parts, which position can be set due to actual demand in terms of diffusion pattern shape. Unit can be controlled manually or via electric actuators.

PRODUCT CODE

Adjustable swirl diffuser

PDZA-aa-b-c

Size (aa)

25, 31, 35, 40, 50

Flow pattern regulation (b)

1 = manual

2 = by electric actuator

Colour (c)

1 = standard RAL 9010

X = any other colour from RAL palette

Note: Duct connections with a rubber gasket except sizes 35 and 50.

EXCELLENCE IN SOLUTIONS

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