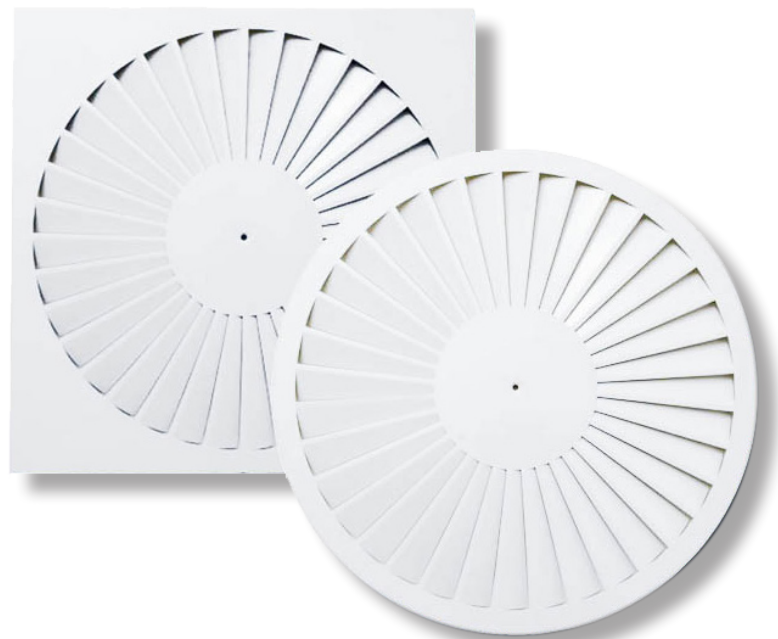


2/S6
v 2.4 (en)



CEILING SWIRL DIFFUSER

DVS

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Ceiling swirl diffuser DVS..... 3
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Definition of symbols:

V [m ³ /h]	- Air flow	v_h [m/s]	- Average core velocity at distance h (m) from diffuser
V_{uk} [m ³ /h]	- Total air volume in motion	Δp [Pa]	- Total pressure drop
h [m]	- Distance from the ceiling to the occupied zone	t_p [°C]	- Air temperature in the room
H [m]	- Room height	t_z [°C]	- Supply air temperature
A, B [m]	- Distance between diffusers	t_m [°C]	- Core air temperature
x [m]	- Distance from wall	Δt_z [°C]	- ($t_z - t_p$)
L [m]	- Throw distance ($x+h$)	Δt_L [°C]	- ($t_m - t_p$)
A_{ef} [m ²]	- Effective discharge area	i	- Induction V_{uk}/V
v_{ef} [m/s]	- Effective jet velocity	L_{WA} [dB(A)]	- Sound power level
v_L [m/s]	- Average core velocity at distance L (m) from diffuser		

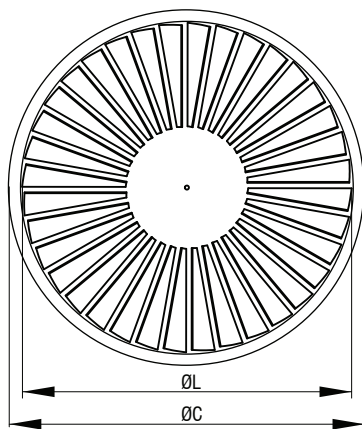

DVS

- Ceiling swirl diffuser for room heights from 2,6 to 4m.
- Made out of steel sheet, standard RAL 9010
- Plenum box made out of galvanized steel sheet

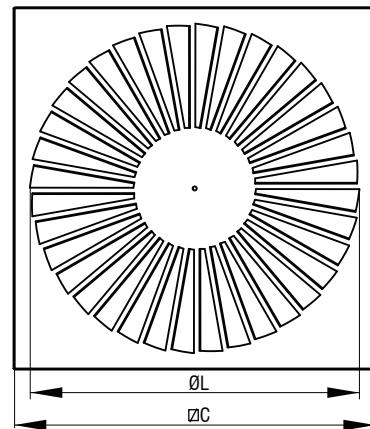
Options

- Plenum box
- RAL...

Diffuser DVS-O



Diffuser DVS-K


Dimensions

Size	C [mm]	L [mm]	A _{ef} [m ²]
400	398	350	0,0180
500	498		
600	595	538	0,0295
625	623		

Ordering key

Type	DVS - K - 600 - A - H - ød - Z
K - rectangular plate	
O - round plate	
Size	
A - supply air	
B - exhaust air	
H - horizontal connection	
V - vertical connection	
Connection diameter	
Insulation	

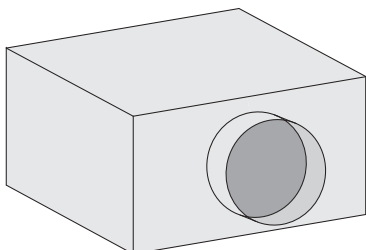
*Screws are not delivered

CEILING SWIRL DIFFUSER

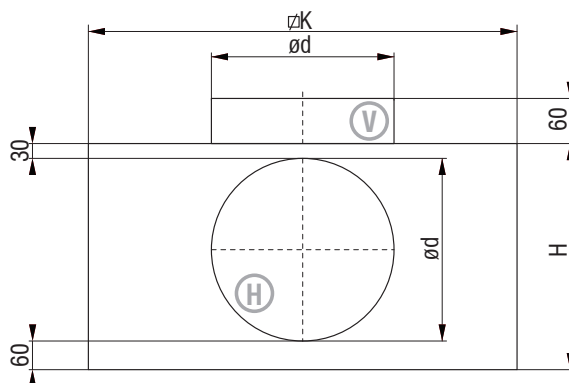
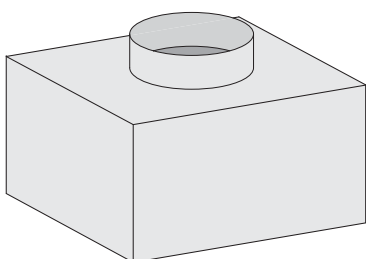
PLENUM BOX

Plenum box UPK1

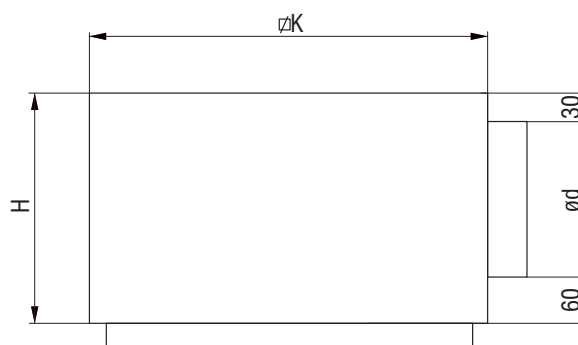
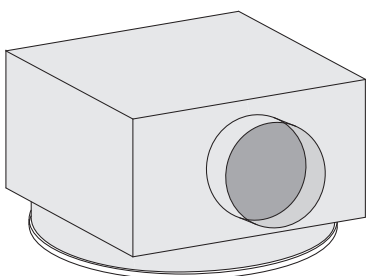
-horizontal connection UPK1 - H



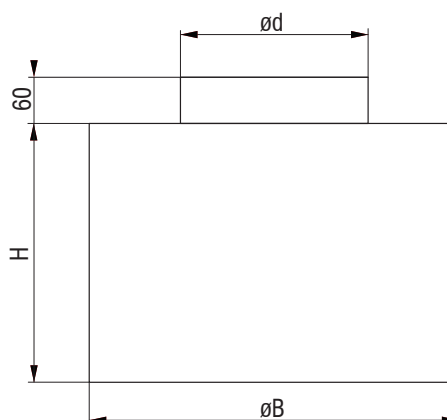
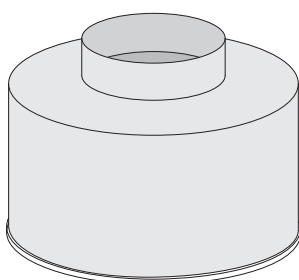
-vertical connection UPK1 - V



Plenum box for round diffuser UPK2



Plenum box for round diffuser UPK3



Plenum box dimensions

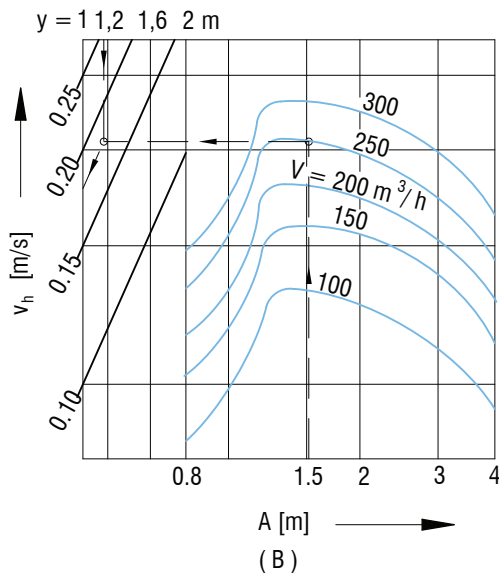
UPK1	$\varnothing K$ [mm]	H [mm]	$\varnothing d$ [mm]
400	384	290	198
500	484	290	198
600	590	340	248
625	615	340	248

UPK2	$\varnothing K$ [mm]	H [mm]	$\varnothing d$ [mm]
400	384	290	198
500	484	290	198
600	590	340	248
625	615	340	248

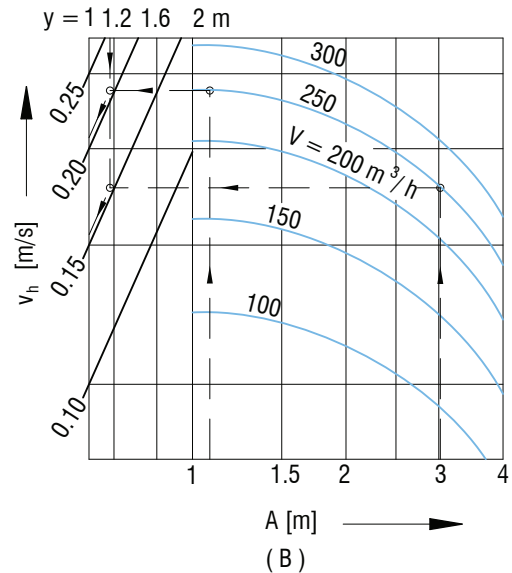
UPK3	$\varnothing B$ [mm]	H [mm]	$\varnothing d$ [mm]
400	384	200	198
500	484	200	198
600	590	200	248
625	615	200	248

SELECTION DIAGRAMS

1. Air velocity between two diffusers by single-or multiple-row arrangement, if spacing $B \geq 4$ m.



2. Air velocity between two diffusers by multiple-row arrangement, if spacing $B = 2,8 \dots 3,5$ m.


Example 1
Given:

DVS-O/400-A/H 1 diffuser row
 $A = 1.5$ m
 $h = 1.16$ m
 $x = 1.5$ m
 $H = 2.96$ m
 $V = 250$ m³/h
 $\Delta t_z = -7^\circ\text{C}$

Solution:
Diagram 1

Velocity between two diffusers

$$v_h = 0.18 \text{ m/s}$$

Diagram 4

between wall and diffuser

$$L = x + h = 1.5 + 1.16 = 2.66 \text{ m}$$

$$v_L = 0.16 \text{ m/s}$$

$$\Delta t_L / \Delta t_z = 0,055$$

$$\Delta t_L = -7 \times 0,055 = -0,385$$

Diagram 9

$$L_{WA} = 33 \text{ dB (A)}$$

$$\Delta p_t = 14 \text{ Pa}$$

Example 2
Given:

DVS-O/400-A/H 2 diffuser rows
 $A = 1.2$ m
 $B = 3.0$ m
 $h = 1.16$ m
 $x = 1.5$ m
 $H = 2.96$ m
 $V = 250$ m³/h
 $\Delta t_z = -7^\circ\text{C}$

Solution:
Diagram 2

Velocity between two diffusers, direction A

$$v_h = 0.22 \text{ m/s}$$

Velocity between two diffusers, direction B

$$v_h = 0.16 \text{ m/s}$$

Diagram 4

between wall and diffuser

$$L = x + h = 1.5 + 1.16 = 2.66 \text{ m}$$

$$v_L = 0.16 \text{ m/s}$$

$$\Delta t_L / \Delta t_z = 0,055$$

$$\Delta t_L = -7 \times 0,055 = -0,385$$

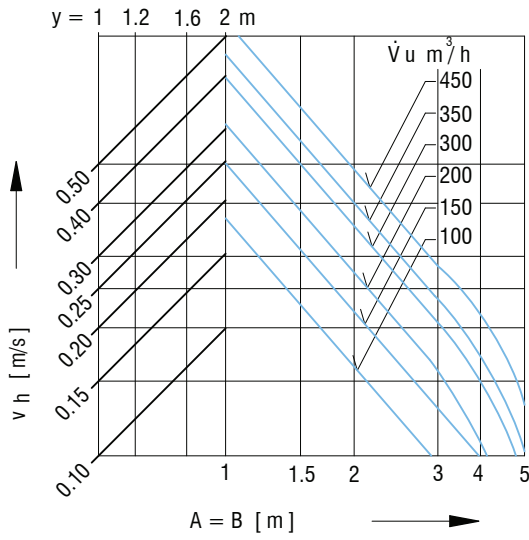
Diagram 7

$$L_{WA} = 33 \text{ dB (A)}$$

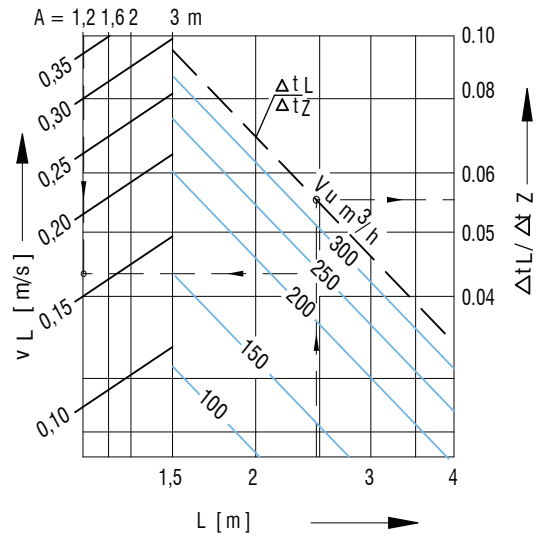
$$\Delta p_t = 14 \text{ Pa}$$

CEILING SWIRL DIFFUSER

3. Air velocity between two diffusers - square arrangement (A = B).

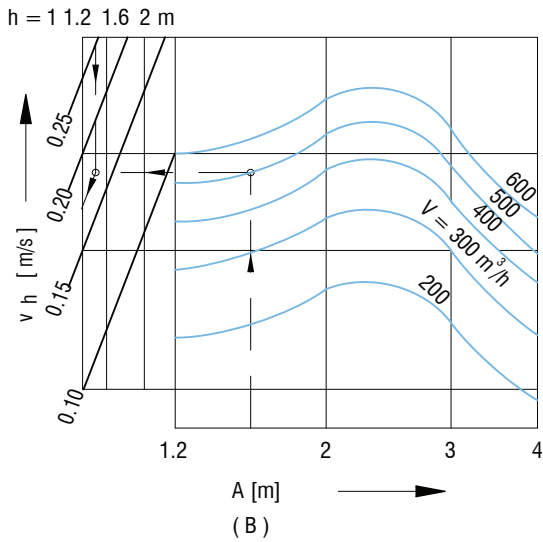


4. Air velocity at the wall and temperature ratio

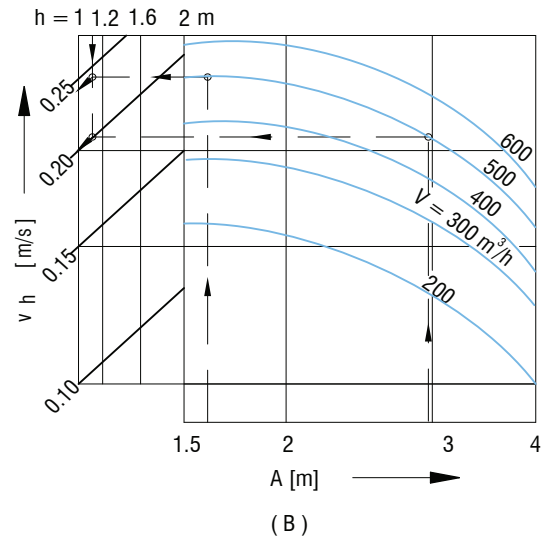


DVS 600 and 625

5. Air velocity between two diffusers by single- or multiple-row arrangement, if spacing $B \geq 4$ m.



6. Air velocity between two diffusers by multiple-row arrangement, if spacing $B = 2,8 \dots 3,5$ m.



Example 3
Given: DVS-O/600-A/H 1 diffuser row

$A = 1.5 \text{ m}$
 $h = 1.16 \text{ m}$
 $x = 1.8 \text{ m}$
 $H = 2.96 \text{ m}$
 $V = 500 \text{ m}^3/\text{h}$
 $\Delta t_z = -7^\circ\text{C}$

Solution:
Diagram 5

Velocity between two diffusers

 $v_h = 0.18 \text{ m/s}$
Diagram 8

between wall and diffuser

 $L = x + h = 1.8 + 1.16 = 2.96 \text{ m}$
 $v_L = 0.22 \text{ m/s}$
 $\Delta t_L / \Delta t_z = 0,061$
 $\Delta t_L = -7 \times 0,061 = -0,4^\circ\text{C}$
Diagram 11
 $L_{WA} = 38 \text{ dB (A)}$
 $\Delta p_t = 23 \text{ Pa}$
Example 4
Given: DVS-O/600-A/H 2 diffuser rows

$A = 1.6 \text{ m}$
 $B = 3 \text{ m}$
 $h = 1.16 \text{ m}$
 $x = 1.5 \text{ m}$
 $V = 500 \text{ m}^3/\text{h}$
 $\Delta t_z = -7^\circ\text{C}$

Solution:
Diagram 6

Velocity between two diffusers, direction A

 $v_h = 0.24 \text{ m/s}$

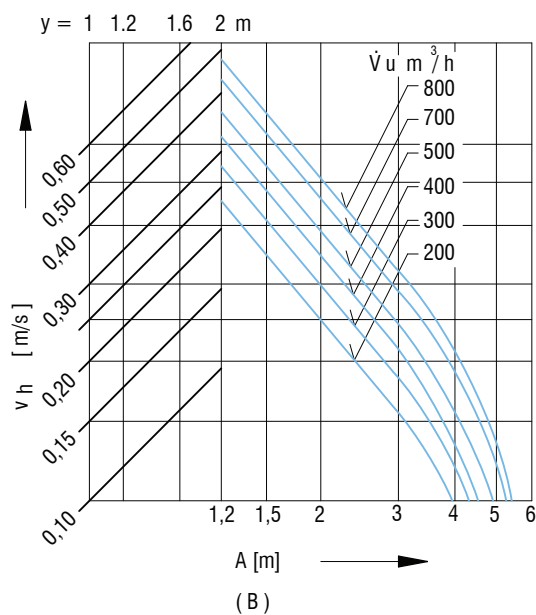
Velocity between two diffusers, direction B

 $v_h = 0.20 \text{ m/s}$
Diagram 8

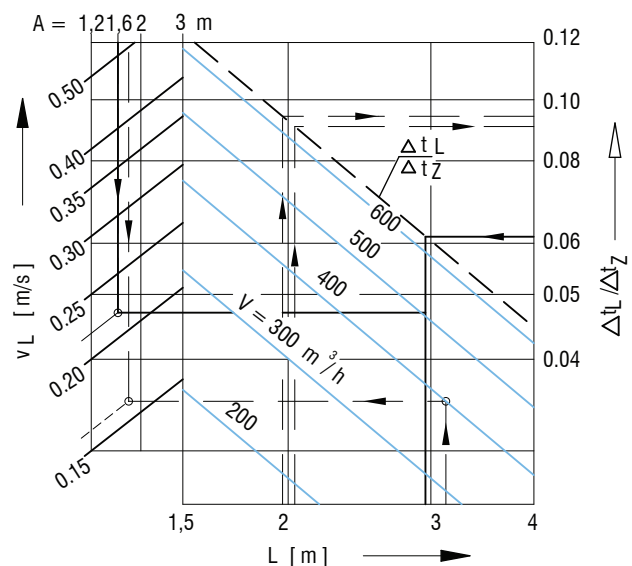
between wall and diffuser

 $L = x + h = 1.5 + 1.16 = 2.66 \text{ m}$
 $v_L = 0.22 \text{ m/s}$
 $\Delta t_L / \Delta t_z = 0,065$
 $\Delta t_L = -7 \times 0,065 = -0,46^\circ\text{C}$
Diagram 11
 $L_{WA} = 23 \text{ dB (A)}$
 $\Delta p_t = 23 \text{ Pa}$

7. Air velocity between two diffusers - square arrangement (A = B).



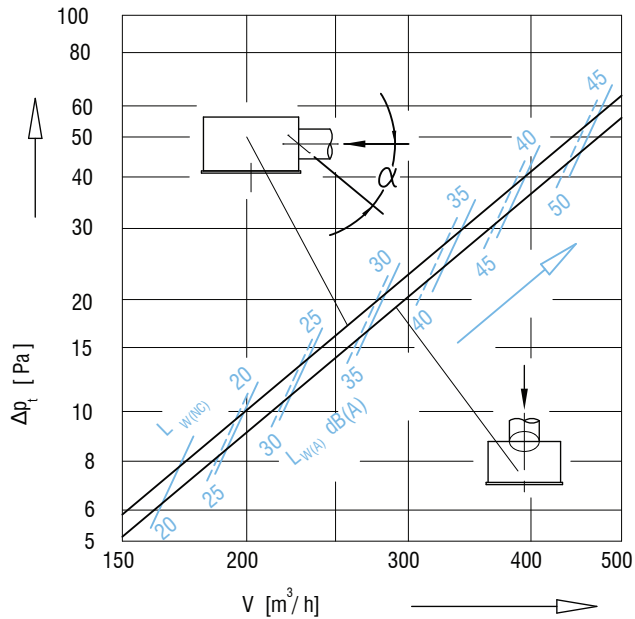
8. Air velocity at the wall and temperature ratio



CEILING SWIRL DIFFUSER

Sound power level and pressure drop

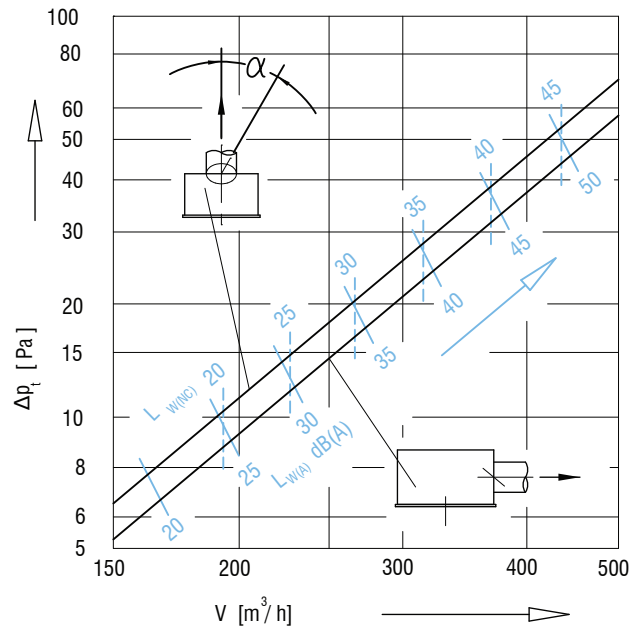
Diagram 9: Type DVS 400 and 500-A



Sound power level corrections and pressure drop from diagram 9

Damper angle α	0°	45°	90°
Δp_t	x 1,0	x 1,2	x 2,1
L_{WA}	-	+1	+3
L_{WNC}	-	+1	+3

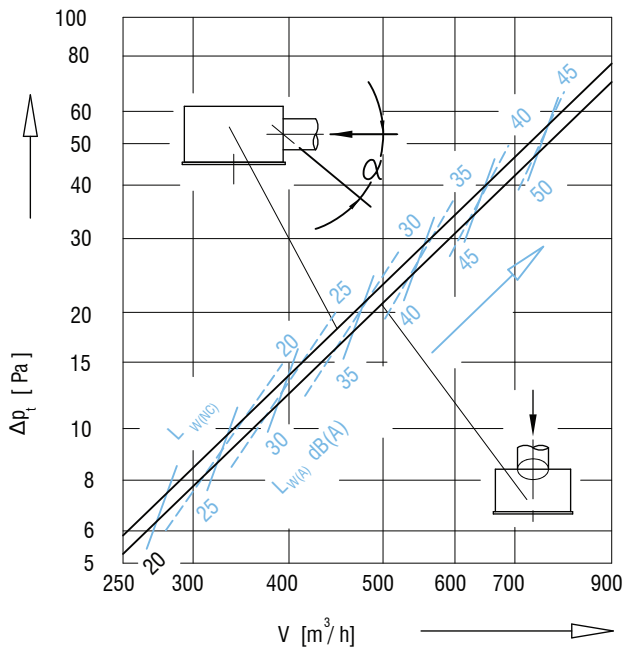
Diagram 10: Type DVS 400 and 500-B



Sound power level corrections and pressure drop from diagram 10

Damper angle α	0°	45°	90°
Δp_t	x 1,0	x 1,1	x 2,1
L_{WA}	-	+1	+2
L_{WNC}	-	+1	+2

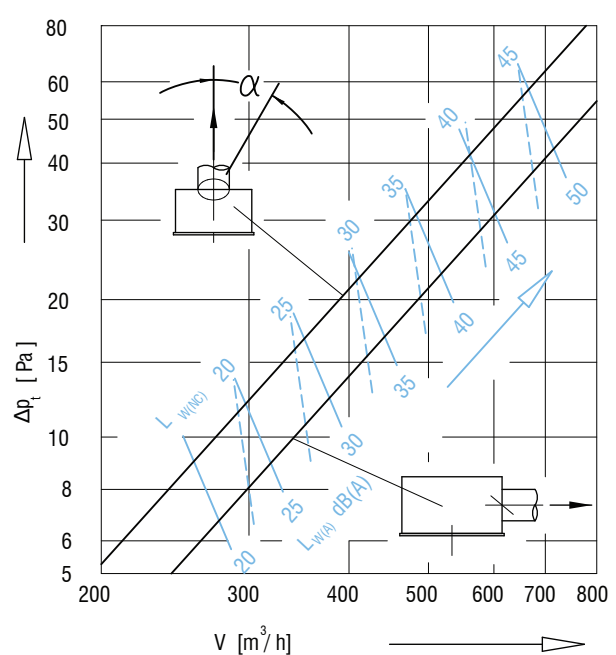
Diagram 11: Type DVS 600 and 625-A



Sound power level corrections and pressure drop from diagram 11

Damper angle α	0°	45°	90°
Δp_t	x 1,0	x 1,2	x 2,5
L_{WA}	-	+1	+2
L_{WNC}	-	+1	+2

Diagram 12: Type DVS 600 and 625-B



Sound power level corrections and pressure drop from diagram 12

Damper angle α	0°	45°	90°
Δp_t	x 1,0	x 1,1	x 2,2
L_{WA}	-	+1	+4
L_{WNC}	-	+1	+4

DISCHARGE DIAGRAM

