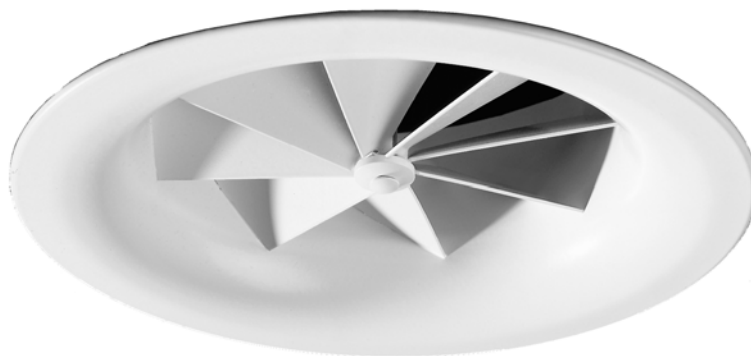




Swirl diffuser

DHV



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Swirl Diffuser DHV

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Swirl Diffuser DHV

Description

The swirl diffuser DHV is suitable for rooms up to 4 m high without causing draughts. A high induction is ensured by a special design of the **fixed swirl impellers**. This increased induction causes the temperature difference and velocity to be rapidly reduced. The supply air enters the room horizontally. This diffuser was designed **especially for cooling and isothermal supply air pattern** and is suitable for constant and variable volumetric flows from 100% to 40%.

A volumetric flow meter (-VME1) can be integrated in the connection spigot of the plenum box at an extra charge. The measurement error of the volumetric flow meter is $\pm 5\%$ at a spigot velocity of 2-5 m/s and a straight flow pattern of at least $1 \times D$. The measurement is carried out with integrated diffuser. By adjusting the damper (-DK1) in the plenum box, the required air volume of each diffuser can be set quickly and correctly.

For plenum boxes type SK-R-..., the ceiling diffuser must be removed, before the damper can be adjusted. Alternatively, a cable-operated adjustment can be ordered at an extra charge, which allows the damper to be adjusted on the room side even with mounted diffuser.

Special model

If, for constructional reasons (e.g. ceiling grid), a particular faceplate size has been defined, it is possible to use a larger faceplate up to a size of max. 623x623 mm. If a plenum box is required, it will be delivered, as a standard feature, in the same size as the DHV and not in the size of the faceplate.

Construction

Swirl diffuser, inlet and swirl impellers

- Aluminium painted to RAL 9010 (white for DHV-Q/R-..., NW 125-400).
- Plastic, similar to the RAL colour 9010 (white) (only DHV-K-..., NW125-250).
- Sheet steel painted to RAL 9010 (white, only NW 100).

Model

- | | |
|------------|---|
| DHV-Q | - with square faceplate and inlet nozzle
NW 100-400 (NW 100 made of galvanised sheet steel / NW 125-400 made of aluminium) |
| DHV-R | - with round faceplate and inlet nozzle
NW 100-400 (NW 100 made of galvanised sheet steel / NW 125-400 made of aluminium) |
| DHV-K | - with round faceplate and inlet nozzle
NW 125-250 (made of plastic) |
| DHV-...-Z- | - supply air |
| DHV-...-A- | - return air |

Accessories

Plenum box (SK-R-09-...)

- Housing made of galvanised sheet steel with integrated perforated straightener and fixing lugs
- VM pole brace made of aluminium and plastic

Damper (-DK1)

- Damper made of galvanised sheet steel
- Damper fastening made of plastic

Damper (-DK2)

- same as -DK1, but with cable-operated adjustment

Rubber lip seal (-GD1)

- Special rubber

Panelled cover plate (-PA...) (not possible for DHV-R)

- Sheet steel painted to RAL 9010 (white)

Volumetric flow meter (-VME1)

(not for use with a damper)

- Holder made of galvanised sheet steel
- Measuring sensor made of plastic
- Aluminium connections

Transition piece (-US)

- Natural aluminium with integrated perforated straightener (not possible for NW 400)

Thermal insulation

- internal (-li), inside the plenum box
- external (-la), at the outside of the plenum box

Fastening

Concealed mounting (-VM, standard)

- Counter pole brace on site (without plenum box or transition piece).
- with pole brace fixing (with plenum box or transition piece).

Attention: The max. torque of the fastening screw is 0.4 Nm

Clamp fastening (-KB)

- only for flexible duct connection (without plenum box)

Screw mounting (-SM)

- Standard for panelled cover and for connection to flexible ducts (without plenum box).
number of countersunk screws
Panelled cover and DHV-Q with 4 screws (on site), DHV-R and DHV-K with 3 screws (on site).
Not possible for transition piece (-US).

Swirl Diffuser DHV

Models and dimensions

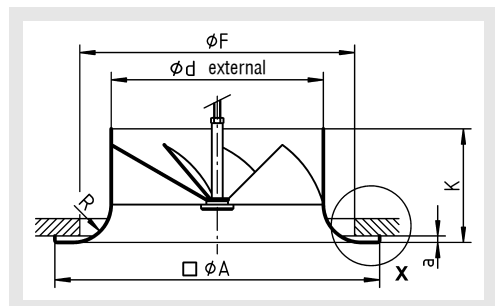
Dimensions

DHV-...-VM (standard, without plenum box)

For flexible duct connection

Available sizes DHV-...-VM

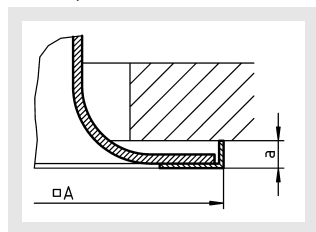
NW	ød	□/øA	øF	K	R	DHV-Q-...	a DHV-R-...	DHV-K-...
100	98	155	128	50	15	6	1	-
125	123	185	144	63	17		5	3
160	158	240	184	80	20			
200	198	300	254	105	35			
250	248	380	324	130	45			-
315	313	490	419	170	60			-
400	398	630	545	220	80	12	8	-



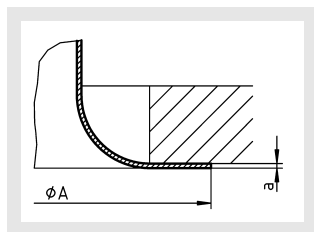
Attention: Counter pole brace on site!

Detail X

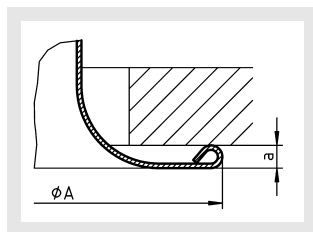
DHV-Q-...-100-400-...



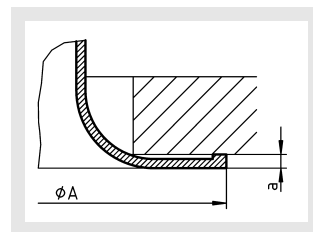
DHV-R-...-100-...



DHV-R-...-125-400-...



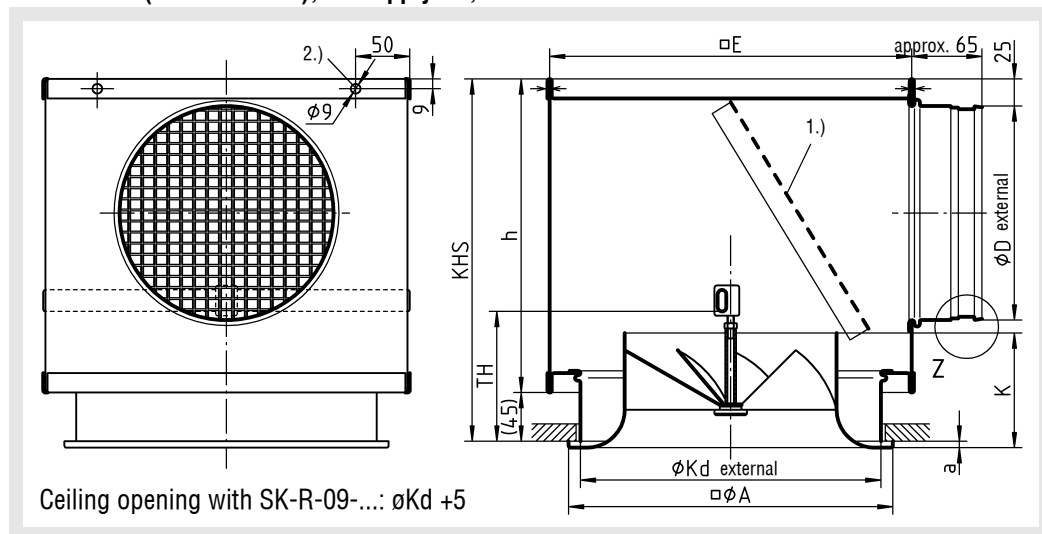
DHV-K-...-125-250-...



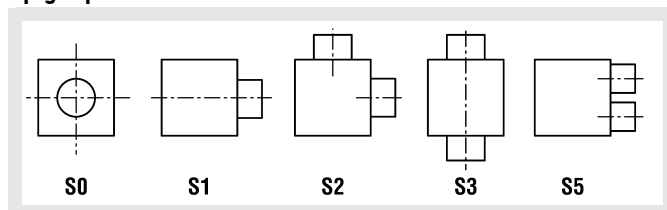
Swirl Diffuser DHV

Accessories - dimensions

Plenum box (SK-R-09-Z-...), for supply air, with VM



Spigot position



Available sizes

NW	$\square/\phi A$	K	ϕKd	$\square E$	ϕD	KHS	h	TH	a			ϕD_{max} for ...S5
									DHV-Q-...	DHV-R-...	DHV-K-...	
100	155	50	123	245	98	235	190	90	6	1	-	78
125	185	63	158	245	123	260	215	90		5	3	78
160	240	80	198	290	158	295	250	100				98
200	300	105	265	335	198	335	290	120				123
250	380	130	335	405	248	385	340	150				158
315	490	170	425	545	248	385	340	190			-	198
400	630	220	570	670	313	555	510	290	12	8	-	298

1.) The air diffuser plate is not included in the model -SK-R-09-A-... .

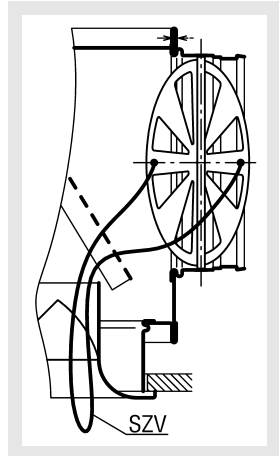
2.) Suspension on site

KHS = KHS = standard height of plenum box, special height of plenum box = $\phi D + 137\text{mm}$ for DHV 100-315, but at least 235mm, special height of plenum box = $\phi D + 242\text{mm}$ for DHV 400, but at least 340mm.

Note: For model SK-R-09-Z-...-DK1/-DK2-...-S0, the height of plenum box changes to h=205 mm and KHS=250 mm for NW100

Swirl Diffuser DHV

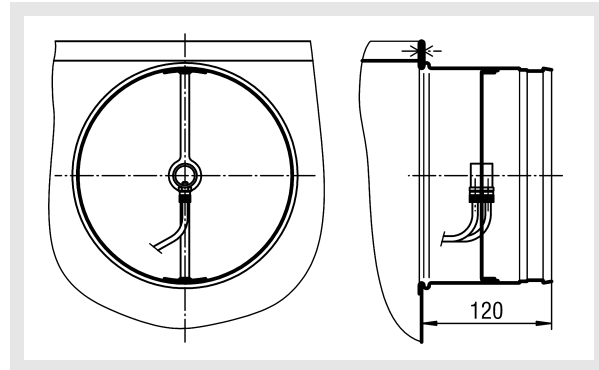
Damper (-DK1/-DK2), for SK-...



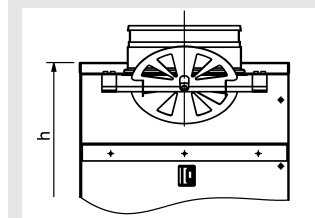
- DK1 = without cable-operated adjustment
- DK2 = with cable-operated adjustment
- SZV = Cable-operated adjustment (only for -DK2)

Volumetric flow meter (-VME1), for SK-...

Not for use with the damper (-DK1/-DK2).



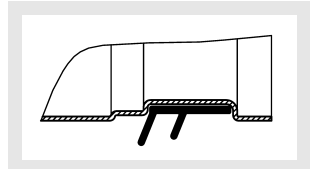
Height of plenum box with spigot from above (-S0)



For the model with spigot from above (-S0) in combination with damper (-DK1 / -DK2), the height of plenum box h (for SK-R-09-Z-...) changes to h=205 mm and KHS=250 mm for NW100.

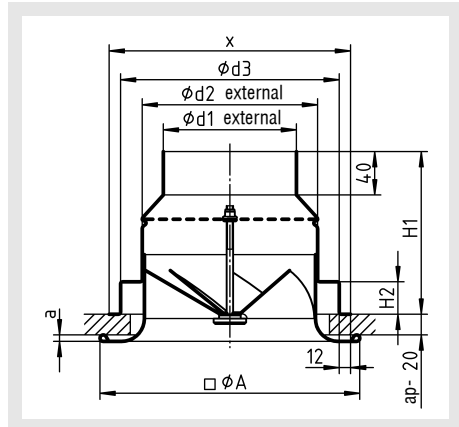
Rubber lip seal (-GD1), for SK-...

Detail Z

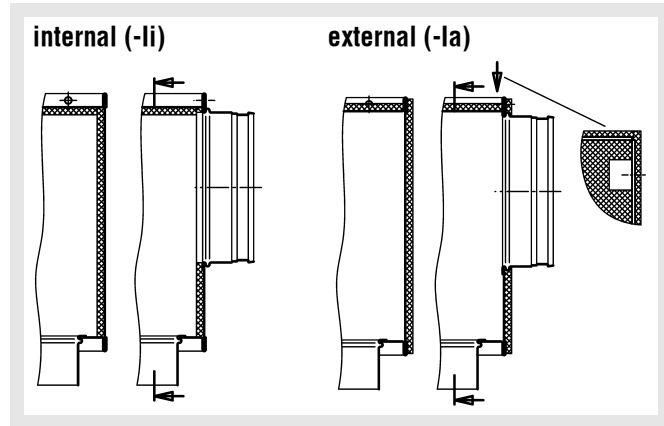


Transition piece (-US) with VM

(not possible for NW 400))



Insulation (-li /-la), for SK-...



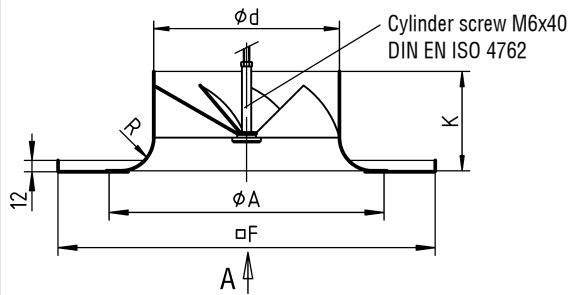
Available sizes (-US)

NW	□/øA	ød1	ød2	ød3	H1	H2	x	a		
								DHV-Q-...	DHV-R-...	DHV-K-...
100	155	78	102	117	120	20	138	6	1	-
125	185	98	127	147	135	25	168		5	3
160	240	123	162	202	150	30	223			
200	300	158	202	262	175	40	283			
250	380	198	252	342	200	50	363			
315	490	248	317	452	253	77	473	12	8	-
400	630	-	-	-	-	-	-			-

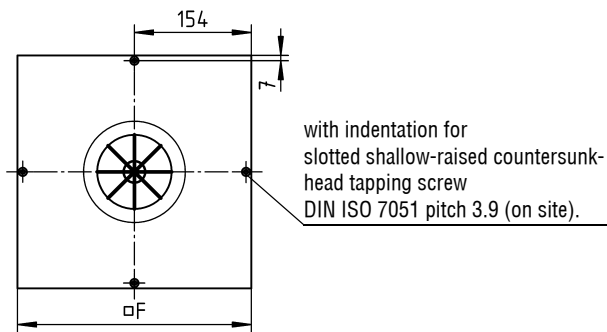
Swirl Diffuser DHV

Panelled cover plate (-PA...)

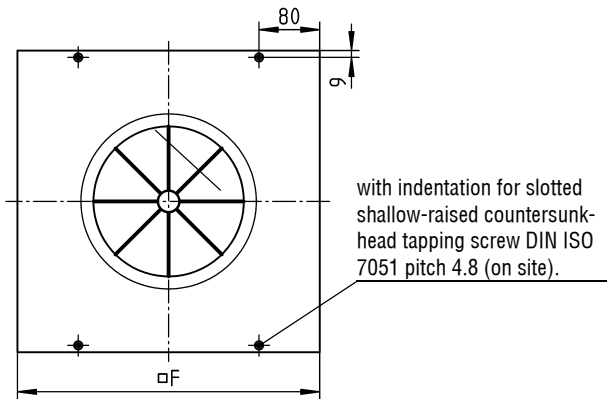
(not possible for DHV-R)



View A
PA310



PA400 / PA500 / PA600 / PA625



Available sizes

NW DHV-...	PA...	ϕF
100 - 200	310	308
100 - 250	400	398
100 - 315	500	498
100 - 400	600	598
	625	623

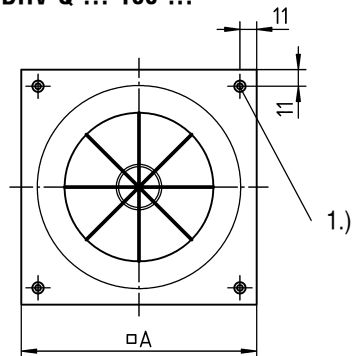
Swirl Diffuser DHV

Fastening methods

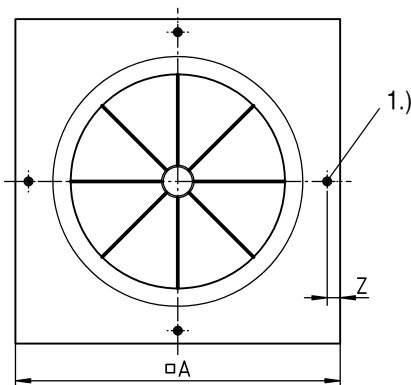
Screw mounting (-SM)
only for connection to flexible ducts

DHV-Q-... (with square faceplate)

DHV-Q-...-100-...



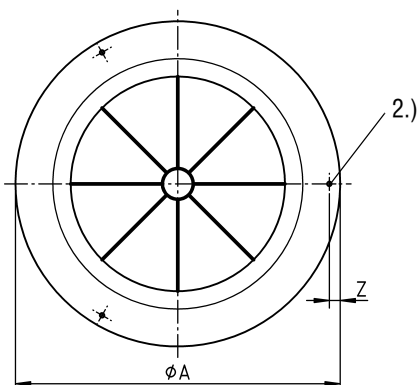
DHV-Q-...-125-400-...



- 1.) NW 100-315:
4 on-site slotted shallow-raised countersunk-head tapping screws DIN ISO 7051 pitch 3.9
NW 400:
4 on-site slotted shallow-raised countersunk-head tapping screws DIN ISO 7051 pitch 4.8

DHV-K-... (with round faceplate)

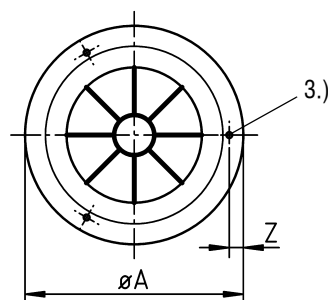
DHV-K-...-125-250-...



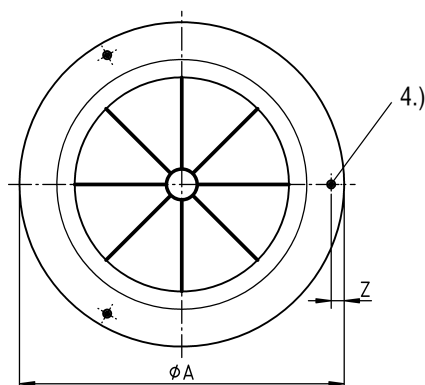
- 2.) NW 125-250:
3 bores, $d = 4.2$ mm for slotted shallow-raised countersunk-head tapping screws DIN ISO 7049 pitch 4.2 (on site)

DHV-R-... (with round faceplate)

DHV-R-...-100-...



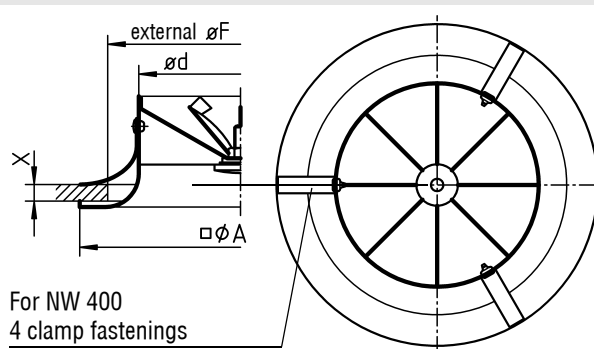
DHV-R-...-125-400-...



- 3.) NW 100: 3x bores, $d = 4.2$ mm for slotted shallow-raised countersunk-head tapping screws DIN ISO 7049 pitch 4.2 (provided by the customer)
4.) NW 125 400: 3 indentations for slotted shallow-raised countersunk-head tapping screw DIN ISO 7051 pitch 3.9 (on site)

Clamp fastening (-KB)

only for connection to flexible ducts



Available sizes

NW	$\varnothing d$	$\square/\varnothing A$	$\varnothing F$	Z	X
100	98	155	128	10	10 - 25
125	123	185	144	10	
160	158	240	184	15	
200	198	300	254	10	
250	248	380	324	15	
315	313	490	419	22,5	
400	398	630	545	20	

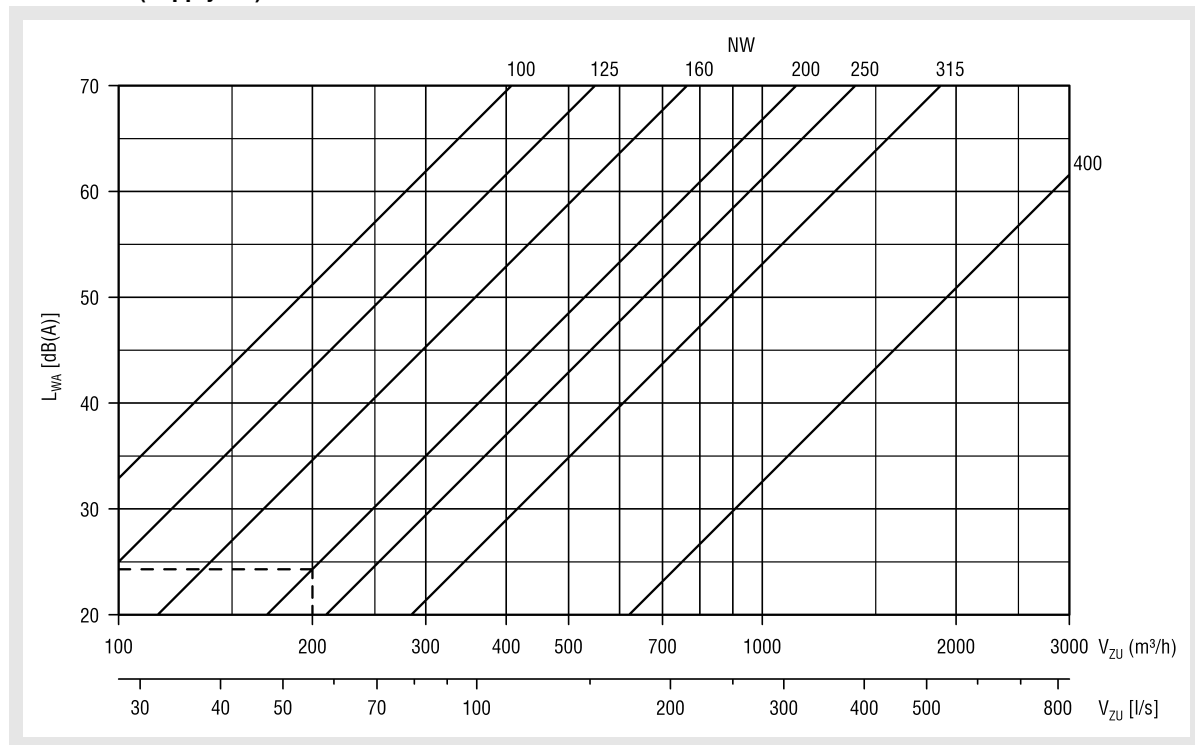
Swirl Diffuser DHV

Technical data

Pressure loss and noise level

DHV-... (for flexible duct connection, without plenum box)

Noise level (supply air)

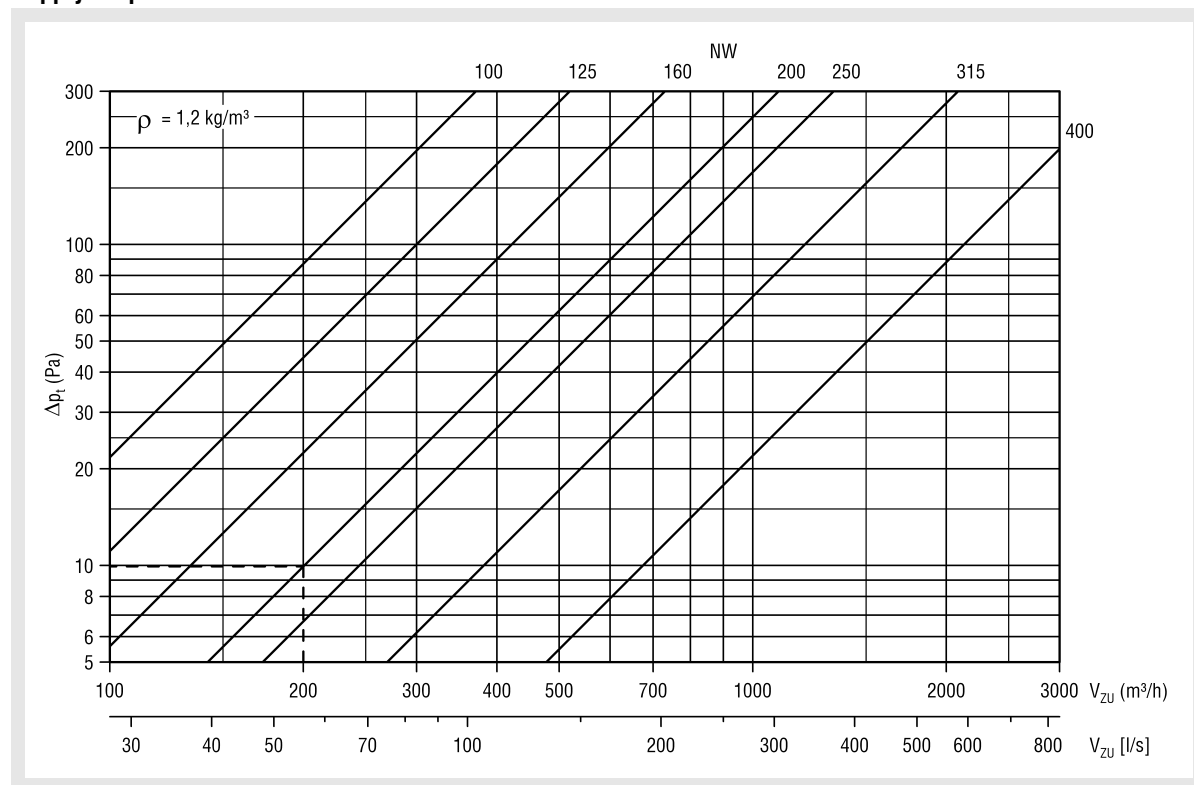


Relative sound power spectrum (dB)							
Frequency Hz	125	250	500	1000	2000	4000	8000
Correction value K_L	8	3	-3	-7	-13	-18	-23

DHV-... (for flexible duct connection, without plenum box)

Swirl Diffuser DHV

Supply air pressure loss



Swirl Diffuser DHV

Pressure loss and noise level
with plenum box for supply air

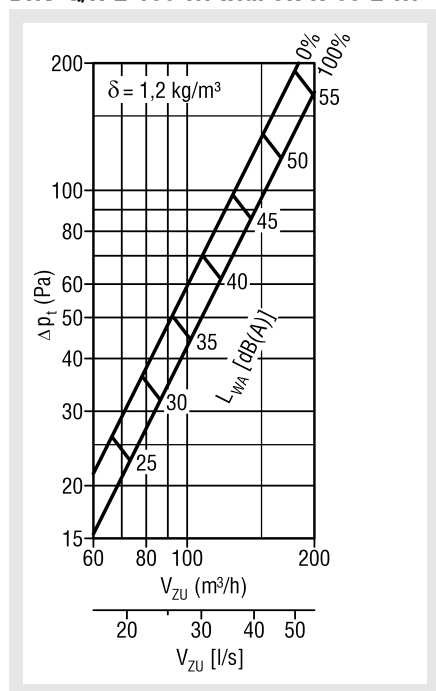
Relative sound power spectrum (dB)							
Frequency Hz	125	250	500	1000	2000	4000	8000
Correction value K_L	8	3	-3	-7	-13	-18	-23

Damper position:

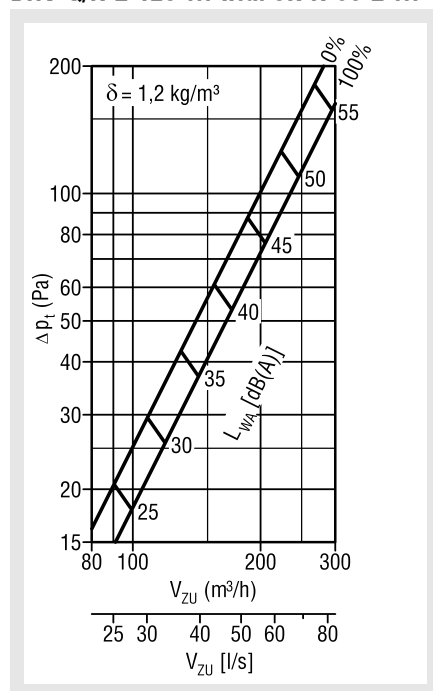
OPEN = 100%

CLOSED = 0%

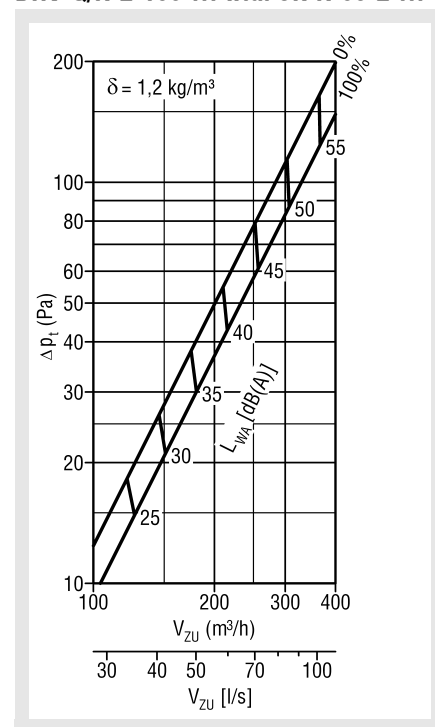
DHV-Q/R-Z-100-... with SK-R-09-Z-...



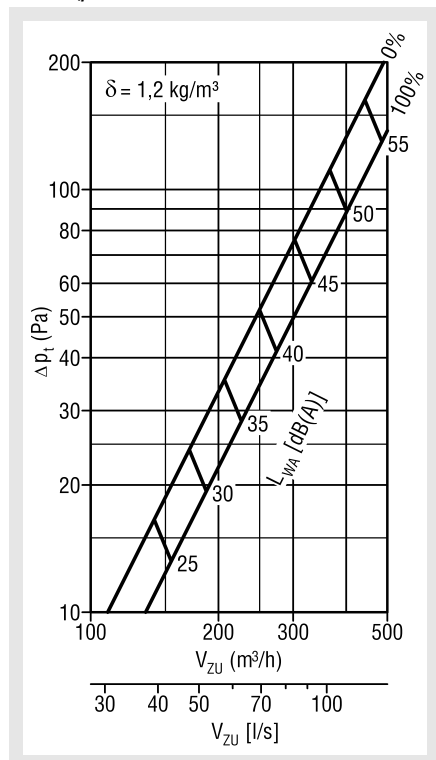
DHV-Q/R-Z-125-... with SK-R-09-Z-...



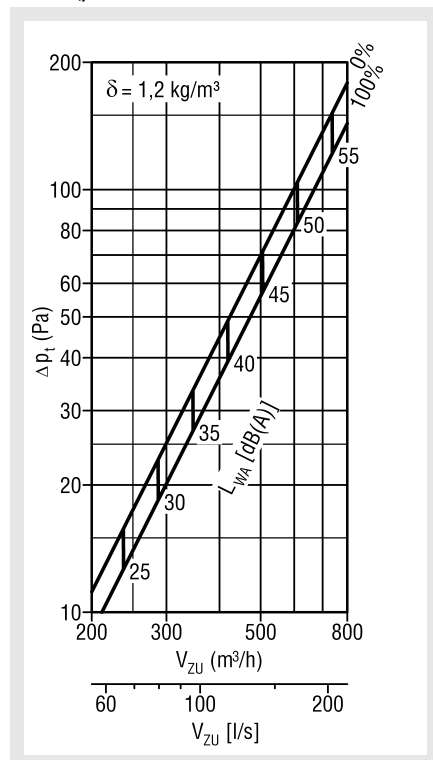
DHV-Q/R-Z-160-... with SK-R-09-Z-...



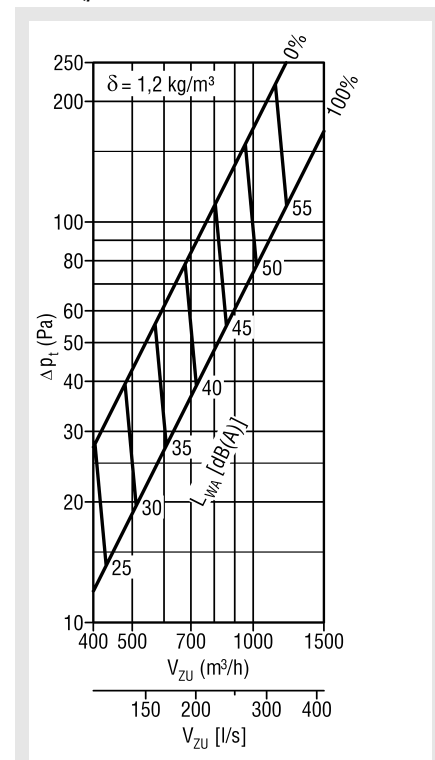
DHV-Q/R-Z-200-... with SK-R-09-Z-...



DHV-Q/R-Z-250-... with SK-R-09-Z-...

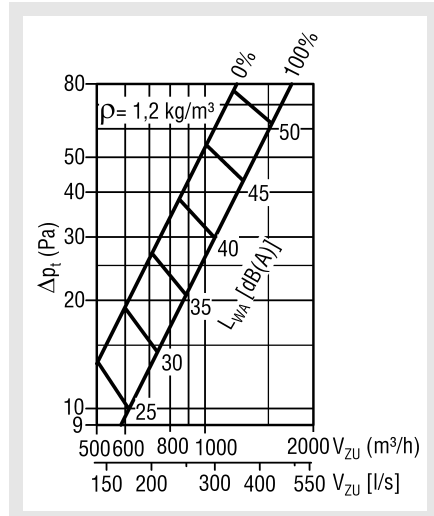


DHV-Q/R-Z-315-... with SK-R-09-Z-...

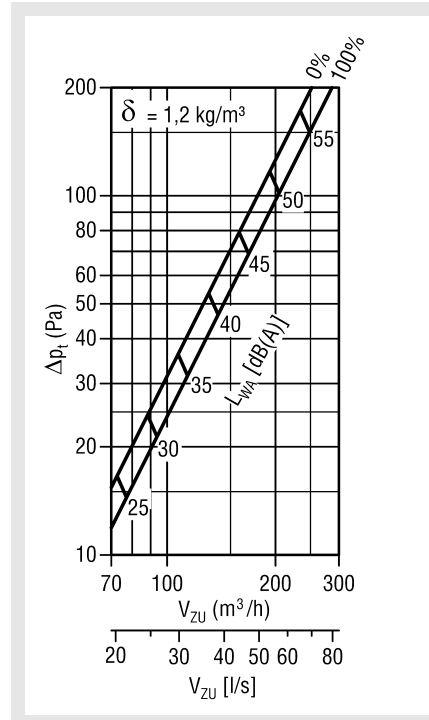


Swirl Diffuser DHV

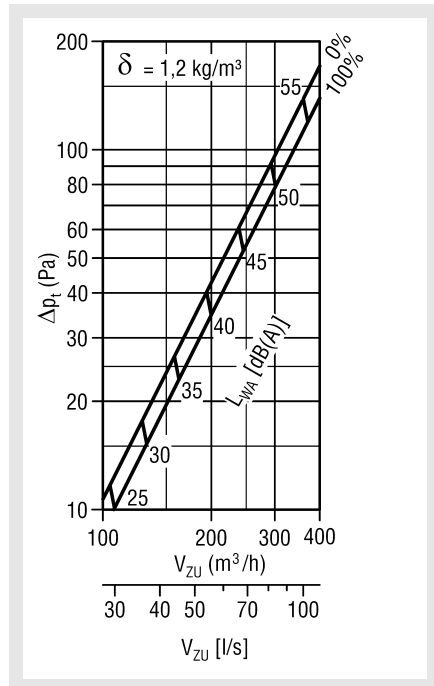
DHV-Q/R-Z-400-... with SK-R-09-Z-...



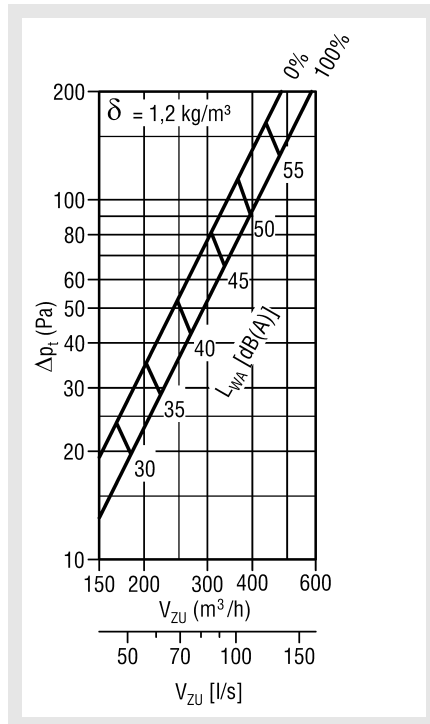
DHV-K-125-... with SK-R-09-Z-...



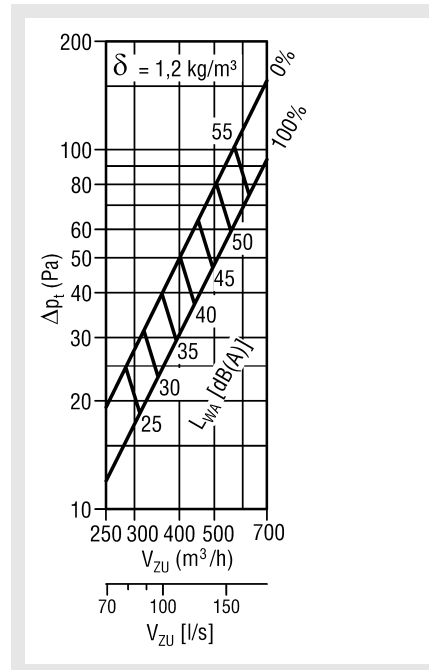
DHV-K-160-... with SK-R-09-Z-...



DHV-K-200-... with SK-R-09-Z-...



DHV-K-250-... with SK-R-09-Z-...



Damper position:

OPEN = 100%

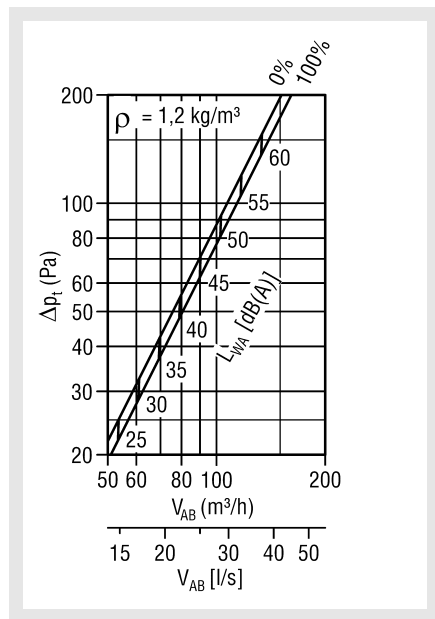
CLOSED = 0%

Swirl Diffuser DHV

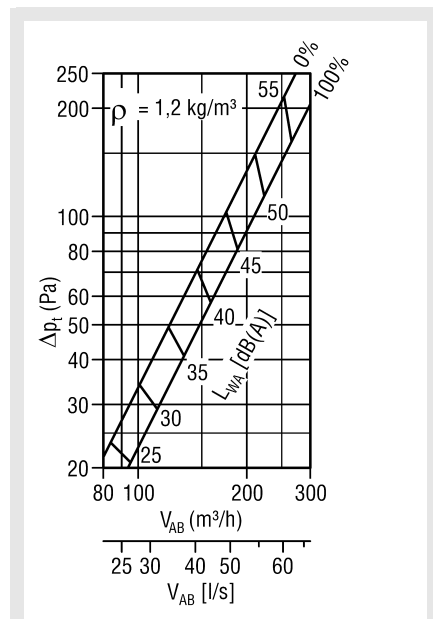
Pressure loss and noise level
with plenum box for return air

Relative sound power spectrum (dB)							
Frequency Hz	125	250	500	1000	2000	4000	8000
Correction value K_L	7	1	-4	-6	-10	-15	-21

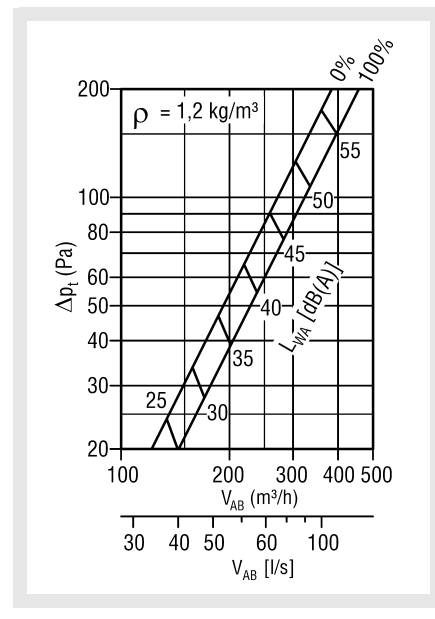
DHV-...-A-100-... with SK-R-09-A-...



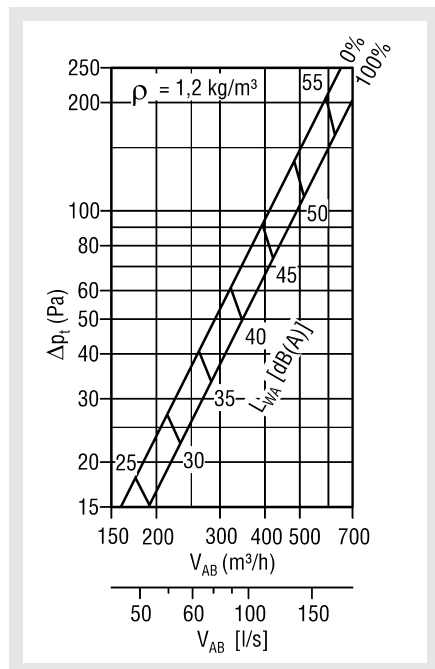
DHV-...-A-125-... with SK-R-09-A-...



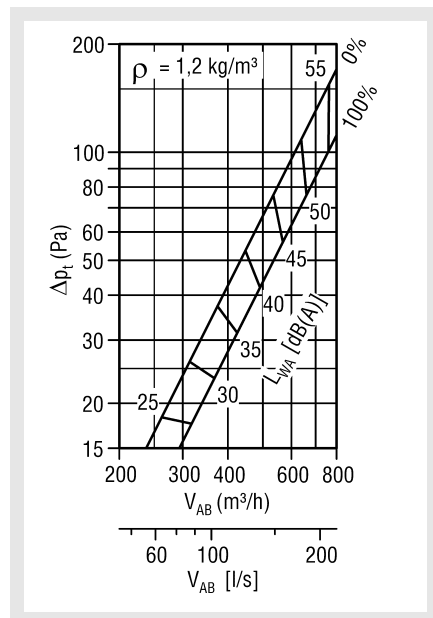
DHV-...-A-160-... with SK-R-09-A-...



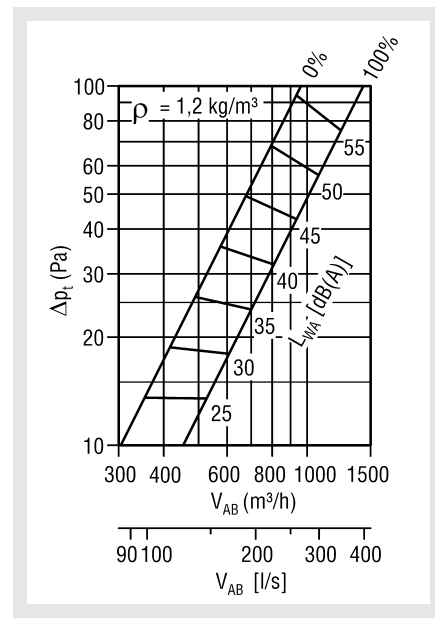
DHV-...-A-200-... with SK-R-09-A-...



DHV-...-A-250-... with SK-R-09-A-...



DHV-...-A-315-... with SK-R-09-A-...



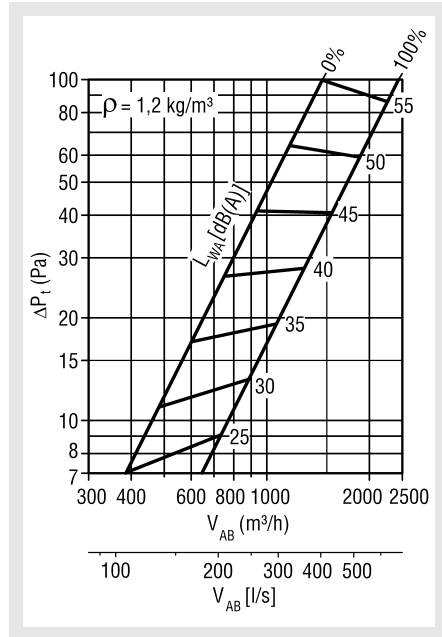
Damper position:

OPEN = 100%

CLOSED = 0%

Swirl Diffuser DHV

DHV-...-A-400-... with SK-R-09-A-...



Damper position:

OPEN = 100%

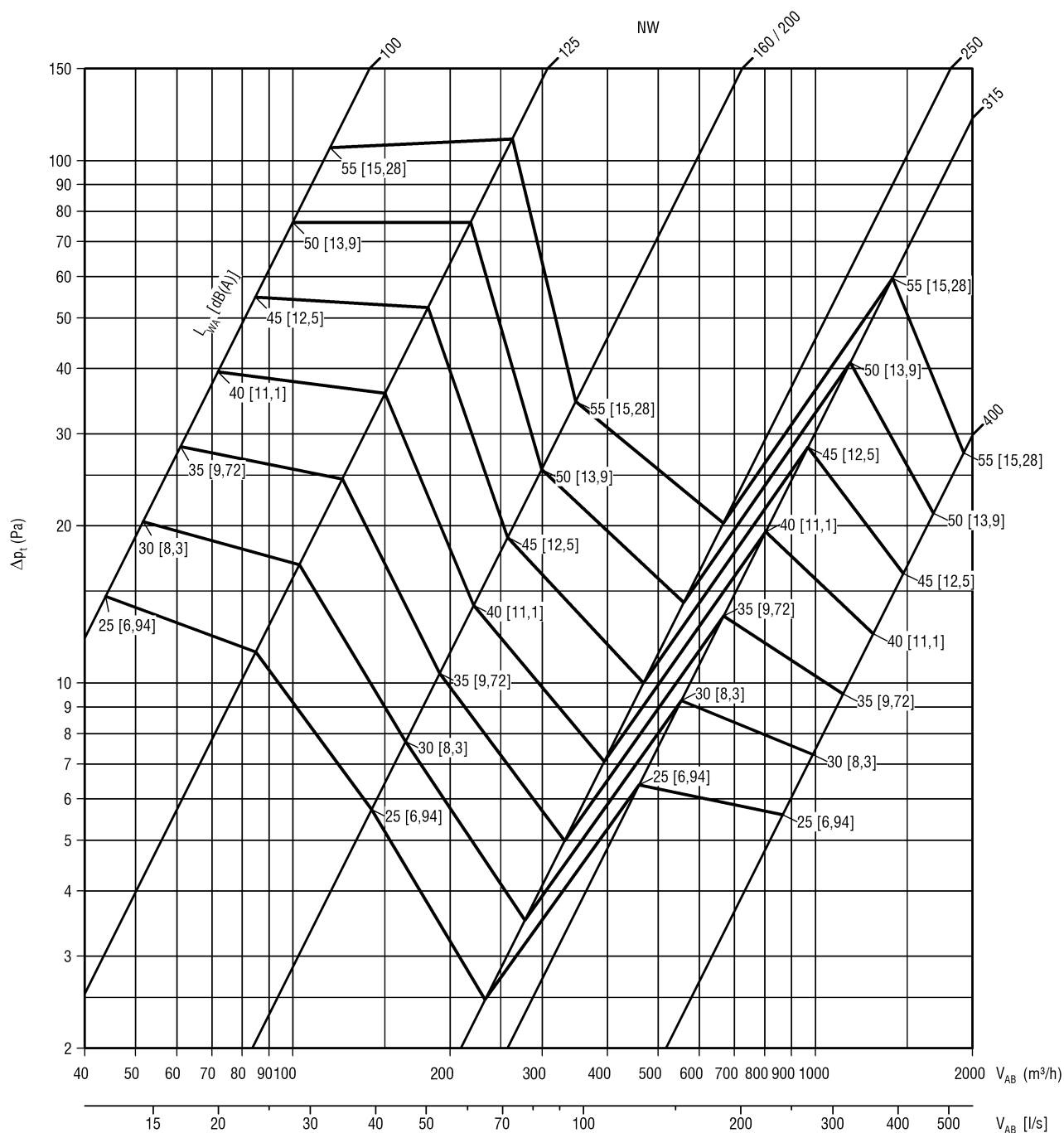
CLOSED = 0%

Swirl Diffuser DHV

Pressure loss and noise level without plenum box for return

air

Direct connection

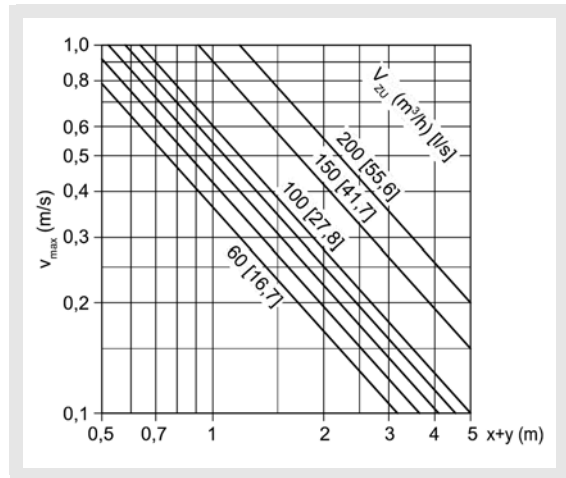


Relative sound power spectrum (dB)							
Frequency Hz	125	250	500	1000	2000	4000	8000
Correction value K_L	-7	-6	-7	-5	-7	-14	-20

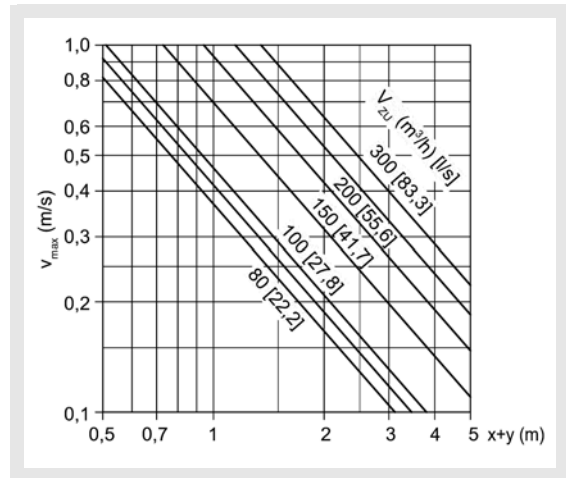
Swirl Diffuser DHV

Maximum end velocity of jet

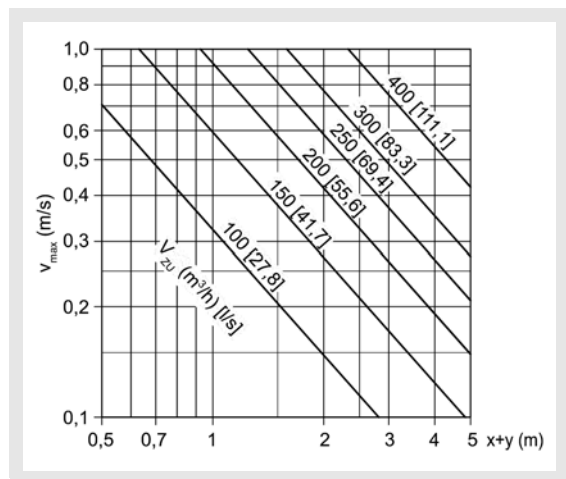
DHV-...-100-...



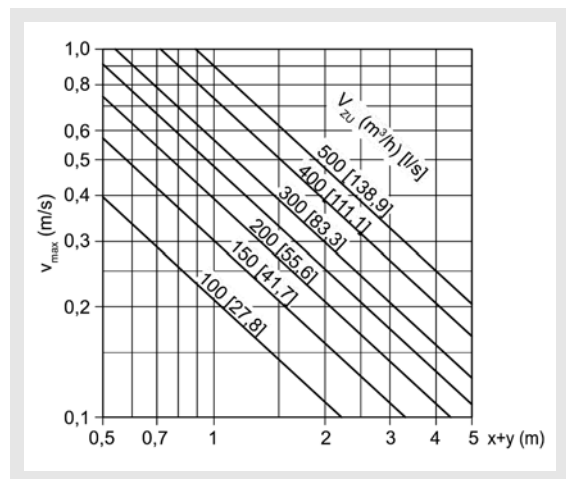
DHV-...-125-...



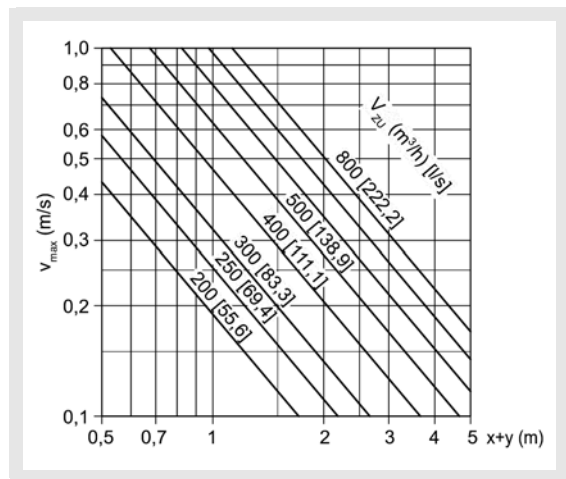
DHV-...-160-...



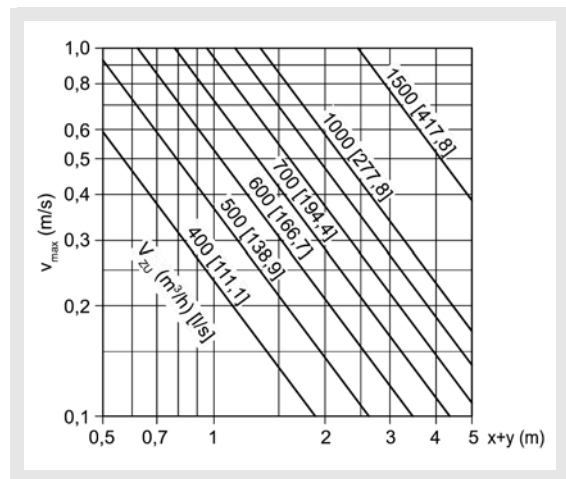
DHV-...-200-...



DHV-...-250-...

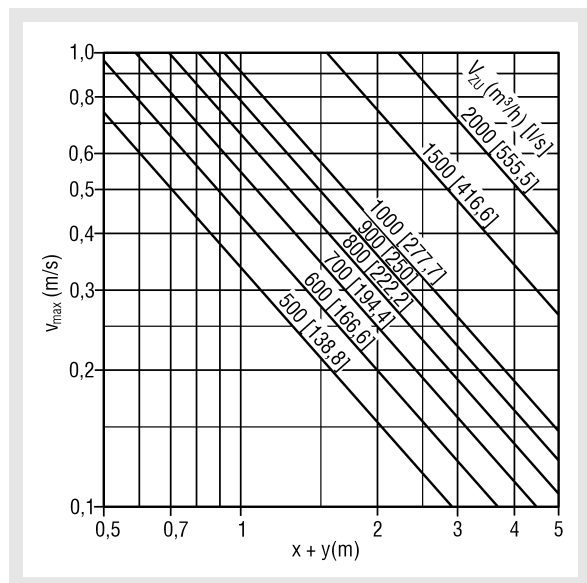


DHV-...-315-...



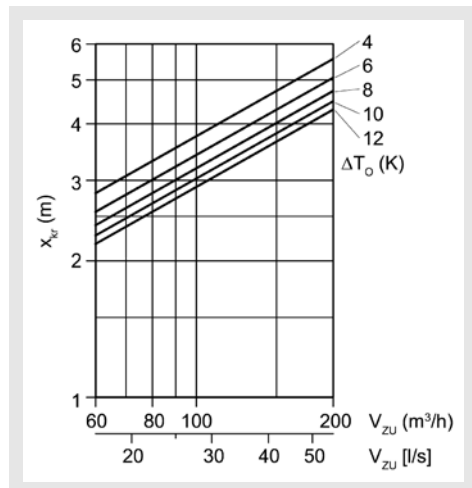
Swirl Diffuser DHV

DHV-...-400-...

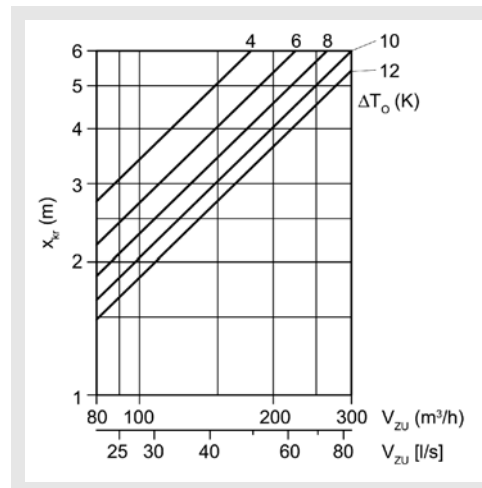


Critical jet path

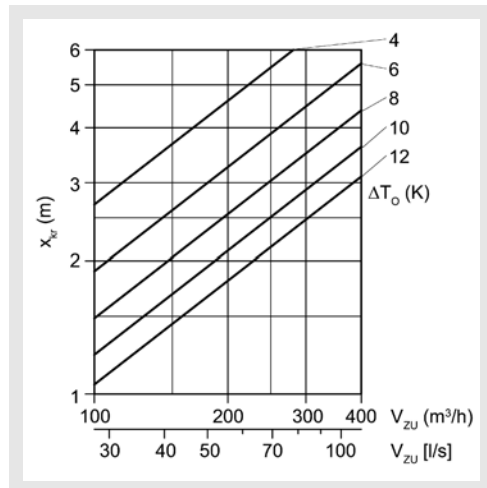
DHV-...-100-...



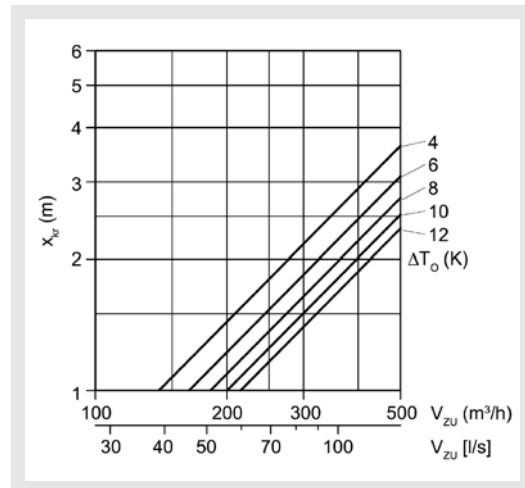
DHV-...-125-...



DHV-...-160-...

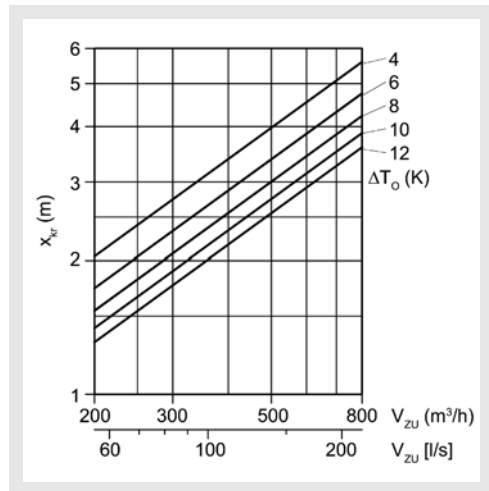


DHV-...-200-...

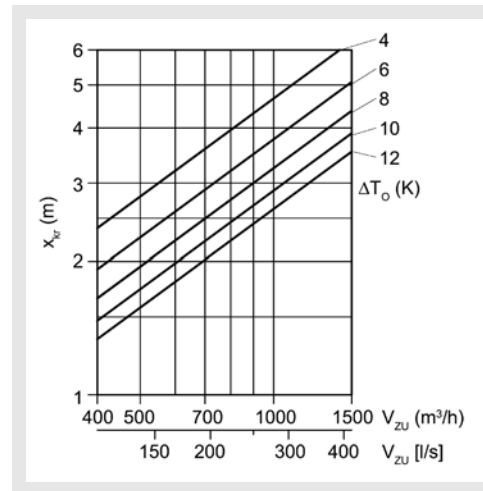


Swirl Diffuser DHV

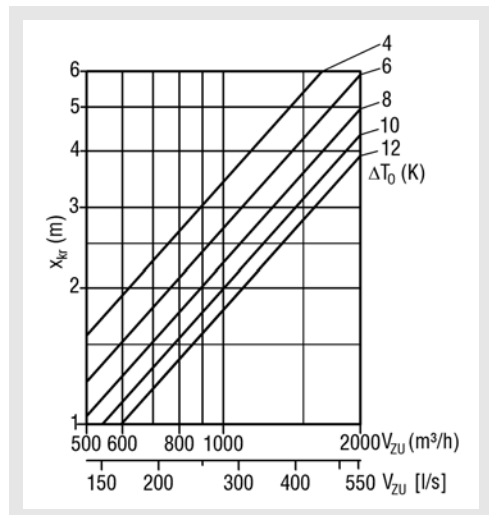
DHV-...-250-...



DHV-...-315-...



DHV-...-400-...



Legend

V_{ZU} (m³/h)	=	Supply air volume
V_{ZU} [l/s]	=	Supply air volume
V_{AB} (m³/h)	=	Return air volume
V_{AB} [l/s]	=	Return air volume
L_{WA} [dB(A)]	=	A-weighted sound power level
Δp_t (Pa)	=	Pressure loss
ρ (kg/m³)	=	Density
v_{max} (m/s)	=	Maximum end velocity of jet
$x+y$ (m)	=	Horizontal + vertical throw
x_{kr} (m)	=	Critical jet path
ΔT_O (K)	=	Temperature difference between supply air temperature and room temperature ($\Delta T_O = t_{ZU} - t_R$)
t_{ZU} (°C)	=	Supply air temperature
t_R (°C)	=	Room temperature
NW (mm)	=	Nominal value

Swirl Diffuser DHV

Order details DHV

01	02	03	04	05	06	07	08	09
Type	Model	Air throw	Nominal size	Material	Paint	Mounting	Panelled cover plate	Transition piece
Example								
DHV	-Q	-Z	-100	-SB	-9010	-VM	-PA000	-U0

Sample

DHV-Q-Z-100-SB-9010-VM-PA000-U0

Swirl diffuser type DHV | square faceplate | supply air | NW100 | faceplate made of sheet steel | faceplate painted to RAL9010 | concealed mounting | without panelled cover plate | without transition piece

Order details

01 - Type

DHV = Swirl diffuser

02 - Model

Q = square faceplate and inlet nozzle,
NW 100-400 (NW 100 made of galvanised sheet steel / NW 125-400 made of aluminium)

R = round faceplate and inlet nozzle,
NW 100-400 (NW 100 made of galvanised sheet steel / NW 125-400 made of aluminium)

K = round faceplate and inlet nozzle,
NW125-250 (made of plastic, colour similar to RAL9010)

03 - Air throw

Z = supply air
A = return air

04 - Nominal size

100 = NW100
125 = NW125
160 = NW160
200 = NW200
250 = NW250
315 = NW315
400 = NW400

05 - Material

SB = sheet steel (only DHV-R-...-100-... and DHV-Q-...-100-...)

KU = plastic (only DHV-K-...-125-250-...)

AL = aluminium (only DHV-R-...-125-400-... and DHV-Q-...-125-400-...)

06 - Paint

9010 = RAL colour white (standard)

xxxx = freely selectable RAL colour (not possible for DHV-K-...)

07 - Mounting

VM = concealed mounting (standard, without SK-R-..., the counter pole brace to be provided by customer)

SM = Screw mounting (standard for panelled cover and for connection to flexible duct without SK-R-... not possible for transition piece -US)

KB = clamp fastening (only for connection to flexible duct without SK-R-...)

08 - Panelled cover plate

PA000 = without panelled cover plate

PA310 = with panelled cover plate 310 (NW100-200), sheet steel painted to the selected colour

PA400 = with panelled cover plate 400 (NW100-250), sheet steel painted to the selected colour

PA500 = with panelled cover plate 500 (NW100-315), sheet steel painted to the selected colour

PA600 = with panelled cover plate 600 (NW100-400), sheet steel painted to the selected colour

PA625 = with panelled cover plate 625 (NW100-400), sheet steel painted to the selected colour

09 - Transition piece

U0 = without transition piece

US = with transition piece (natural aluminium with integrated perforated straightener, not possible for NW 400) (only possible with concealed mounting)

Swirl Diffuser DHV

Order details SK

01	02	03	04	05	06	07	08
Plenum box	Model	Air diffuser	Type of air	Nominal size	Fastening	Material	Damper
Example							
SK	-R	-09	-Z	-200	-VM	-SV	-DK2

09	10	11	12	13	14	15
Rubber lip seal	Volumetric flow meter	ROB version	Insulation	Height of plenum box	Spigot diameter	Spigot position
-GD1	-VME1	-ROB0	-I0	-KHS	-SDS	-S1

Sample

SK-R-09-Z-200-VM-SV-DK2-GD1-VME1-ROB0-I0-KHS-SDS-S1

Plenum box, square design I for round air diffusers I air diffuser DHV I supply air I NW200 I with concealed mounting I galvanised sheet steel I with damper with cable I with rubber lip seal I with volumetric flow meter I without ROB version I without box insulation I standard height of plenum box I standard spigot diameter I 1 lateral spigot

Order details

01 - Plenum box

SK = Plenum box, square design

02 - Model

R = for round air diffusers with round diffuser support

03 - Air diffuser (must be ordered separately)

09 = suitable for DHV-...

04 - Type of air

Z = supply air

A = return air

05 - Nominal size

100 = NW100

125 = NW125

160 = NW160

200 = NW200

250 = NW250

315 = NW315

400 = NW400

06 - Fastening

VM = Concealed mounting (standard)

07 - Material

SV = Galvanised sheet steel (standard)

08 - Damper

DK0 = without damper (standard)

DK1 = with damper

DK2 = with damper + cable

09 - Rubber lip seal

GD0 = without rubber lip seal (standard)

GD1 = with rubber lip seal

10 - Volumetric flow meter

VME0 = without volumetric flow meter (standard)

VME1 = with volumetric flow meter (not for use with a damper)

11 - ROB version

ROB0 = Without ROB version (standard)

12 - Insulation

I0 = without insulation (standard)

Ii = with box insulation inside

Ia = With box insulation outside

13 - Height of plenum box

KHS = Height of plenum box standard

xxx = height of plenum box in mm ($KHS_{min} = \varnothing D + 137$ mm for NW100-315, but at least 235 mm / $\varnothing D + 242$ mm for NW400, but at least 340 mm) (For SK-R-09-Z-...-DK1/-DK2-...-S0, observe special height of plenum box for NW100 (see p. 6))

14 - Spigot diameter

SDS = Standard spigot diameter

xxx = Spigot diameter in mm

15 - Spigot position

S0 = Spigot from above

S1 = 1 lateral spigot on the box (standard)

S2 = 2 spigots offset by 90°

S3 = 2 spigots offset by 180°

S5 = 2 spigots arranged next to each other

Swirl Diffuser DHV

Specification texts

Swirl diffuser **type DHV-Q-...** for flexible duct connection, with square faceplate and inlet nozzle, size 100 made of sheet steel painted to RAL 9010 (white), size 125 - 400 made of aluminium painted to RAL 9010 (white). Inlet comprises fixed nozzle-like swirl impellers

Product: SCHAKO **type DHV-Q-...**

- with larger faceplate (up to max. 623x623 mm)
- with round faceplate and inlet nozzle, size 100 made of sheet steel RAL painted to 9010 (white) size 125 - 400 made of aluminium painted to RAL 9010 (white).
Product: SCHAKO **type DHV-R-...**

- with round faceplate made of plastic painted to RAL 9010 (white, only sizes 125-250 available)
Product: SCHAKO **type DHV-K-...**

Fastening methods:

- with concealed mounting (-VM, standard):
 - Counter pole brace on site (without plenum box or transition piece)
 - with pole brace fixing (with plenum box or transition piece)
- with screw mounting (-SM), standard for panelled cover and for connection to flexible ducts (without plenum box). (not possible for transition piece -US)
- with clamp fastening (-KB) only for flexible duct connection (without plenum box)

Accessories:

- Plenum box (SK-R-09-...) made of galvanised sheet steel and fixing lugs, with connection spigot.
 - Supply air model (-Z), with integrated air diffuser plate.
 - Return air model (-A), without air diffuser plate.
 - with damper (-DK1) in plenum box for easy air volume regulation.
 - with cable-operated adjustment, adjustable from below (-DK2)
 - with volumetric flow meter (-VME1) in connection spigot. (not for use with a damper)
 - with rubber lip seal (-GD1)
 - with thermal insulation:
 - internal (-li)
 - external (-la)
 - Height of plenum box in mm:
 - Standard height (-KHS)
 - freely selectable (-xxx) ($KHS_{min} = \varnothing D + 137 \text{ mm}$ for NW100-315, but at least 235 mm / $\varnothing D + 242 \text{ mm}$ for NW400, but at least 340 mm) (For SK-R-09-Z-...-DK1/-DK2-...-S0, observe special height of plenum box for NW100 (see p. 6))
 - Spigot diameter (in mm):
 - Standard spigot (-SDS)
 - Can be freely selected (-xxx)
 - Spigot position:
 - Spigot from above (-S0)
 - 1 lateral spigot on the box (-S1, standard)
 - 2 spigots offset by 90° (-S2)
 - 2 spigots offset by 180° (-S3)
 - 2 spigots arranged next to each other (-S5)
- Panelled cover plate made of sheet steel, painted to the selected colour (not possible for DHV-R):
 - Panelled cover plate 310 (-PA310), NW 100-200.
 - Panelled cover plate 400 (-PA400), NW 100-250.
 - Panelled cover plate 500 (-PA500), NW 100-315.
 - Panelled cover plate 600 (-PA600), NW 100-400.
 - Panelled cover plate 625 (-PA625), NW 100-315.
- Transition piece (-US), made of natural aluminium, with internal counter pole brace for concealed mounting (VM), for ceiling panels up to 20 mm thick (not possible for NW 400).