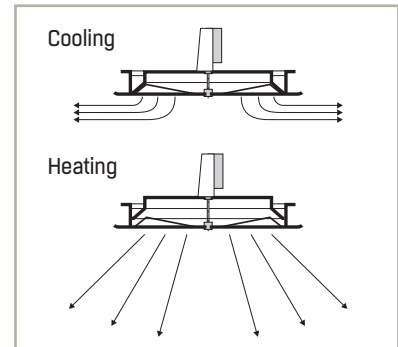
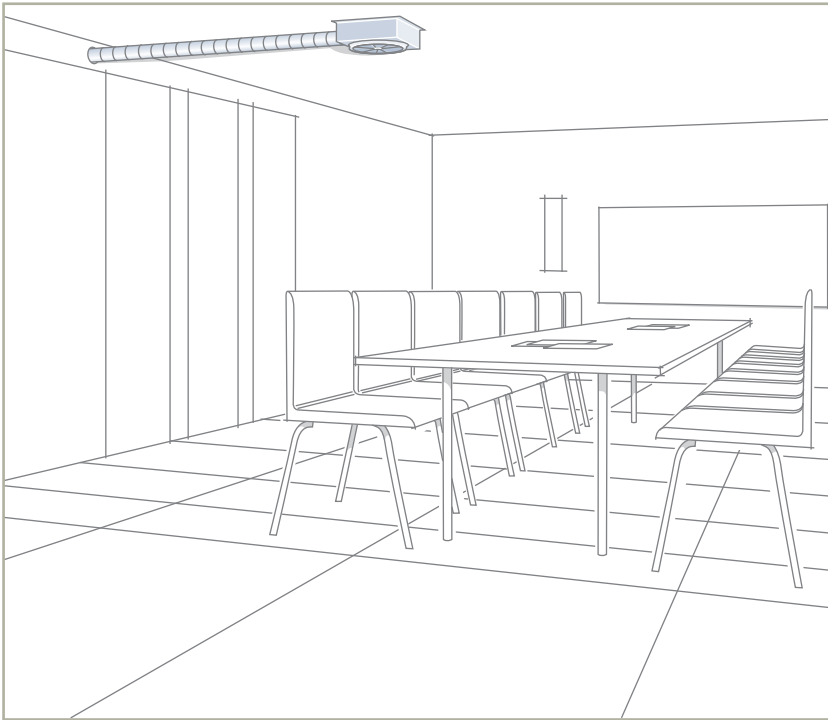


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# Adjustable swirl diffuser NWPP

TECHNICAL DATA





Supply swirl diffuser NWPP is recommended to be used in commercial application buildings such as offices, conference rooms, shops, etc. Terminal can be either mounted in false ceiling or installed as a freely hanging.

The function of the diffuser can be adapted to both summer and winter conditions by changing the position of internal movable ring. It can be adjusted manually or with the help of an electric actuator or thermal element. The air direction is adjustable and can be either horizontal or vertical.

Full spread of air flow at relatively short distance from device allows using this type of diffusers in premises from 2,4 to 9,4 m high.

NWPP is available in round or square shape and is recommended to be installed via SKKA connection box. Plenum box is only available in version without damper.

### QUICK SELECTION

Size	Air flow		Installation height above the floor, m	Sound pressure level $L_{p10A}$ dB(A)
	l/s	m <sup>3</sup> /h		
NWPP-16	17-61	60-220	2,4-4,7	20-40
NWPP-18	21-83	75-300	2,4-5,4	20-42
NWPP-20	28-100	100-360	2,4-5,2	20-44
NWPP-25	39-133	140-480	2,7-6,0	20-42
NWPP-31	56-194	200-700	2,7-6,7	20-44
NWPP-35	111-267	400-960	2,9-7,9	20-45
NWPP-40	139-342	500-1230	2,9-8,7	20-44
NWPP-50	220-560	800-2000	3,0-9,4	20-50

### SPECIFICATIONS

- Available in 8 sizes, from 16 to 50
- Supplied with SKKA connection box
- Manual or automatic control of diffusion pattern
- Horizontal or vertical air direction
- Circular or square shape of face panel

### PRODUCT CODE EXAMPLE

#### Swirl diffuser NWPP-25-2-3-1

Terminal of size 25, in square panel, adjustable by thermal element, painted in RAL 9010 colour.

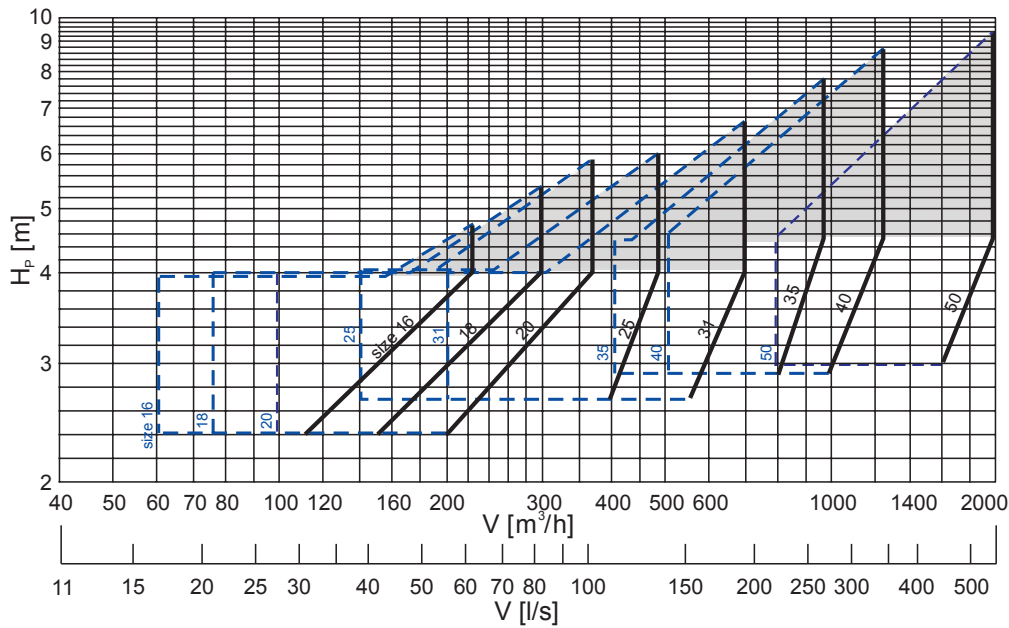
#### Connection box SKKA-25-31-4-0

Duct connection diameter of 250 mm, diffuser size 31, without sound attenuation material, without damper.

## INSTALLATION HEIGHT, DISTANCE BETWEEN TWO TERMINALS

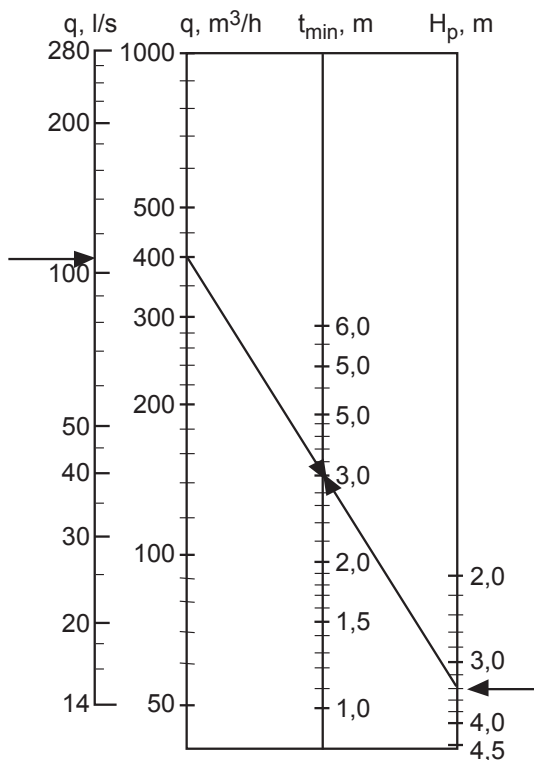
### INSTALLATION HEIGHT - SELECTION DIAGRAM

$H_p$  = diffuser installation height above the floor



Above graph shows operating range of diffuser working in cooling mode with  $\Delta T = -10K$  with the assumption of velocity in the occupied zone to be less than  $0,2 m/s$ . Vertical dotted line indicates minimum airflow at which stable horizontal diffusion pattern is obtained. Grey triangles denote vertical throw length for isothermal supply air.

### MINIMUM DISTANCE BETWEEN TWO DIFFUSERS

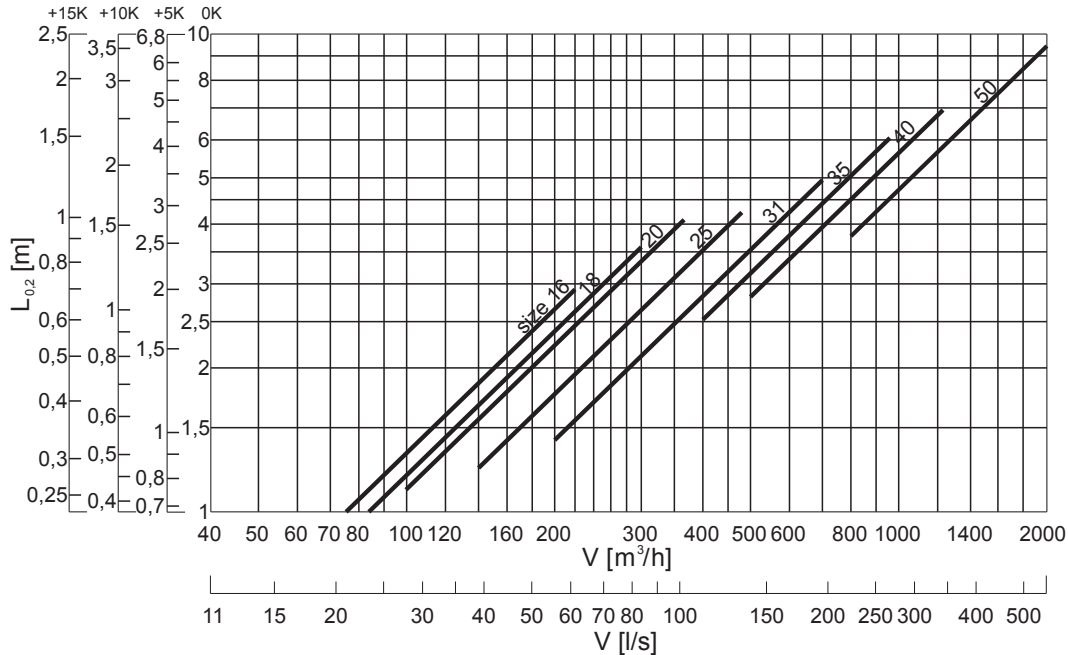


### EXAMPLE

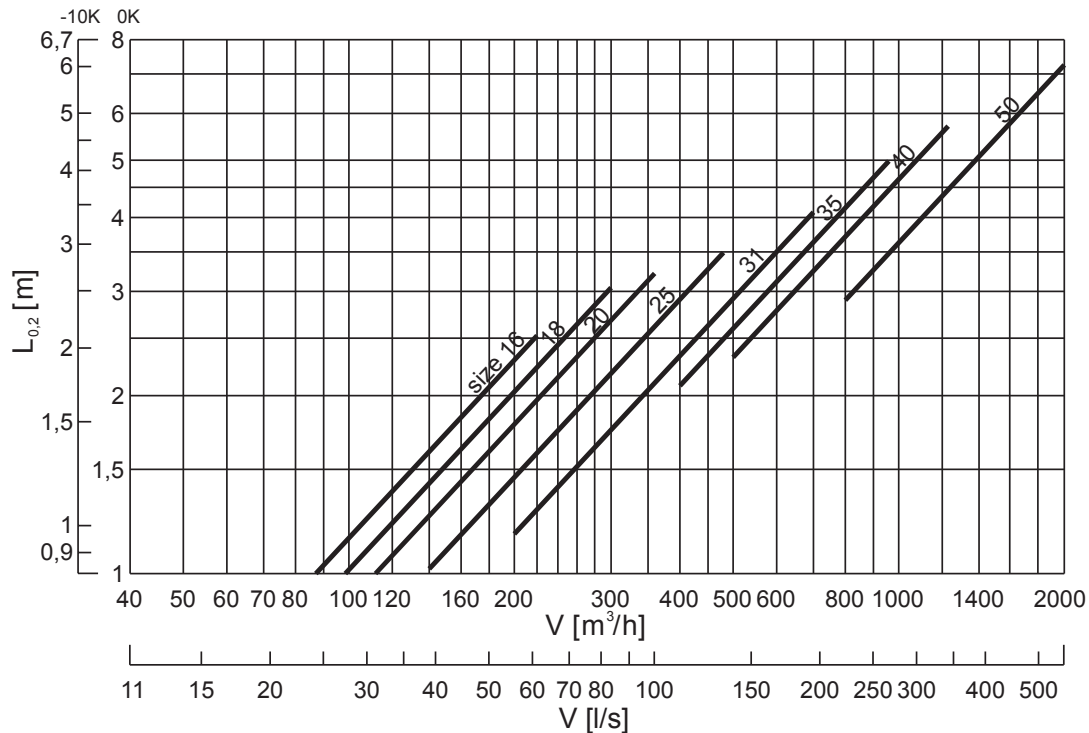
Total air flow, $q_{tot}$	24000 $m^3/h$
Height above the floor, $H_p$	3.4 m
Nominal diameter, DN	250 mm
Number of diffusers, n	60 pcs.
Air flow per diffuser	400 $m^3/h$
Minimum distance between diffusers, $t_{min}$	3.0 m
Recommended max temperature difference for heating (vertical flow), $\Delta t_v$	+9K

## THROW LENGTH

### VERTICAL AIR DIFFUSION – HEATING FUNCTION



### HORIZONTAL AIR DIFFUSION – COOLING FUNCTION



Horizontal throw  $L_{0.2}$  has been measured for diffuser installed flush to the ceiling.

Max temperature difference for cooling:  $\Delta t = -12 \text{ K}$

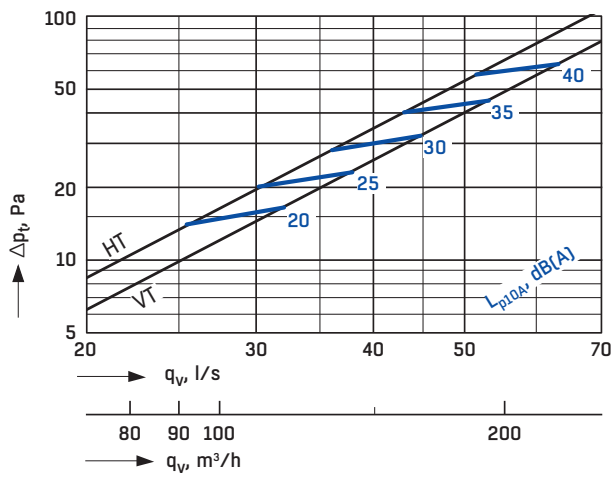
Max temperature difference for heating (horizontal flow):  $\Delta t = +5 \text{ K}$

Max temperature difference for heating (vertical flow):  $\Delta t = +15 \text{ K}$

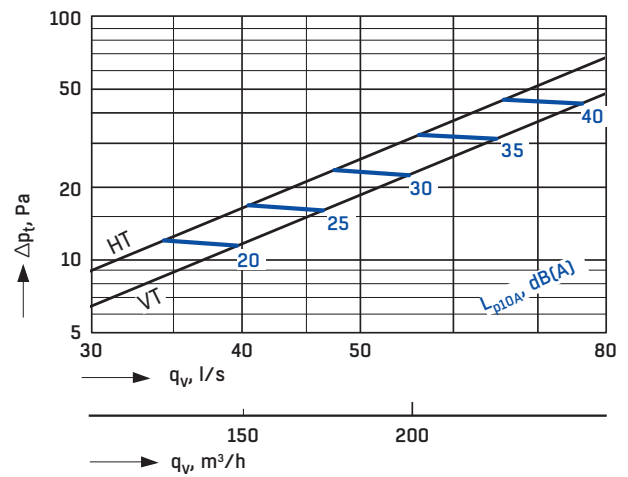
## AIR FLOW, PRESSURE DROP, SOUND LEVEL

### DIFFUSER WITH ACOUSTICALLY UNINSULATED CONNECTION BOX - SUPPLY AIR

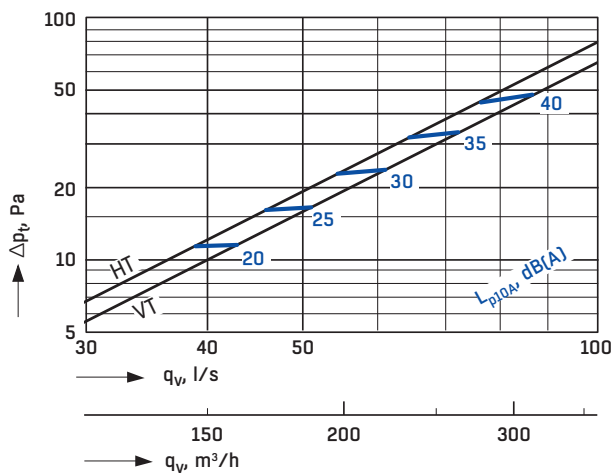
NWPP-16+SKKA-12-16-4-0



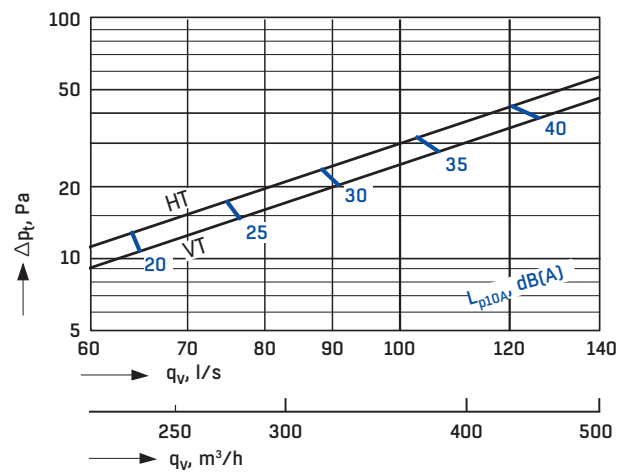
NWPP-18+SKKA-16-18-4-0



NWPP-20+SKKA-16-20-4-0



NWPP-25+SKKA-20-25-4-0

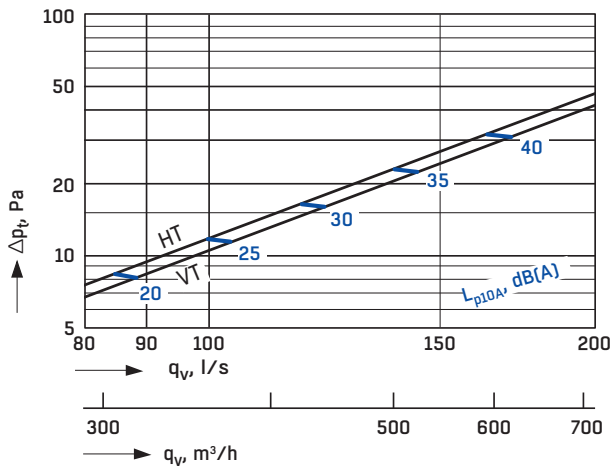


HT = horizontal air supply  
VT = vertical air supply

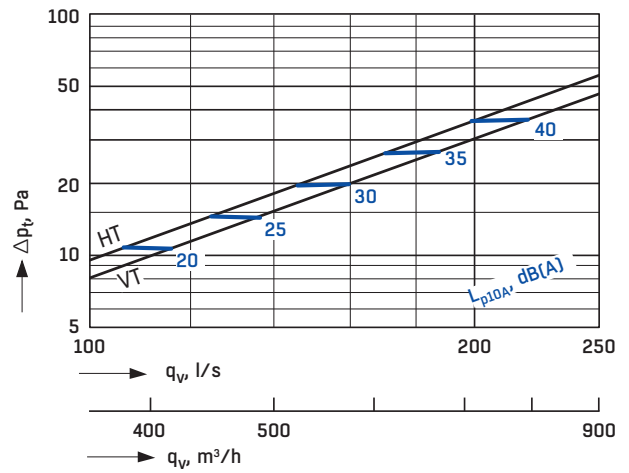
### AIR FLOW, PRESSURE DROP, SOUND LEVEL

#### DIFFUSER WITH ACOUSTICALLY UNINSULATED CONNECTION BOX - SUPPLY AIR

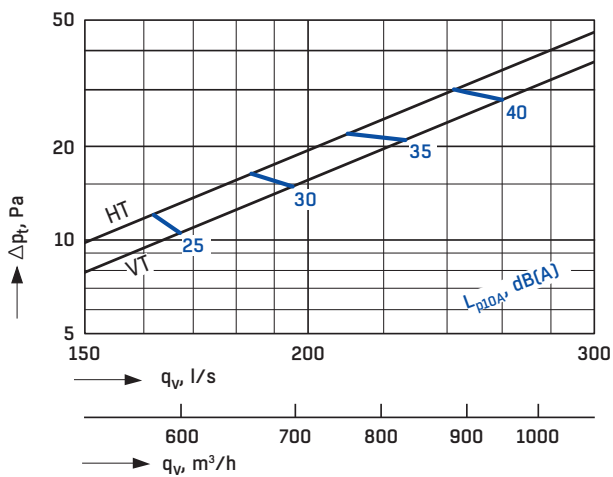
NWPP-31+SKKA-25-31-4-0



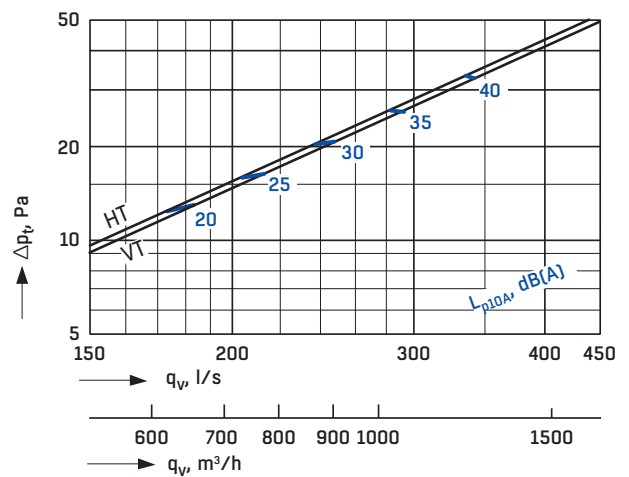
NWPP-35+SKKA-25-35-4-0



NWPP-40+SKKA-31-40-4-0



NWPP-50+SKKA-31-50-4-0

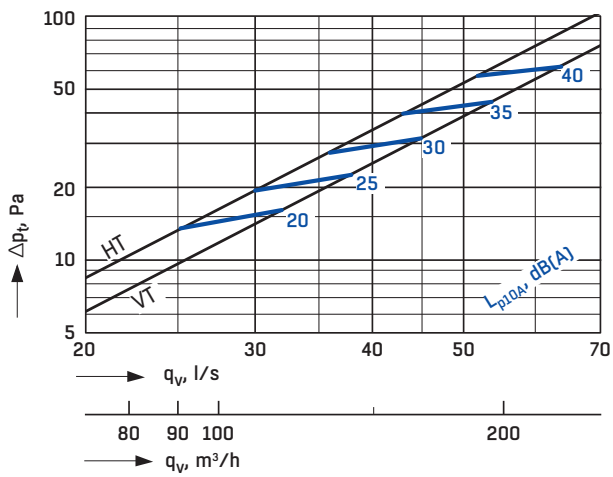


HT = horizontal air supply  
VT = vertical air supply

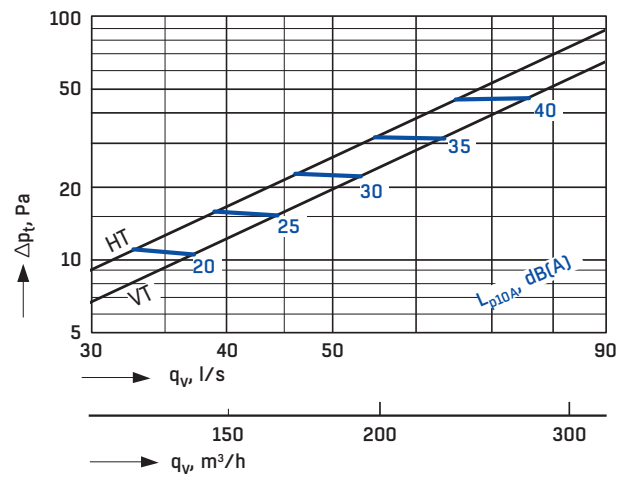
## AIR FLOW, PRESSURE DROP, SOUND LEVEL

### DIFFUSER WITH ACOUSTICALLY INSULATED CONNECTION BOX - SUPPLY AIR

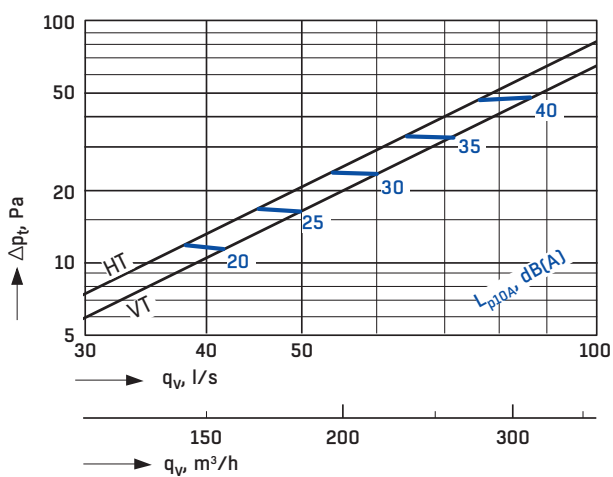
NWPP-16+SKKA-12-16-5-0



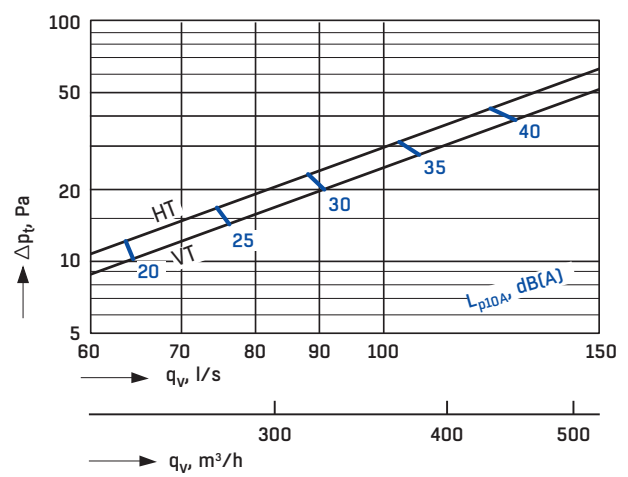
NWPP-18+SKKA-16-18-5-0



NWPP-20+SKKA-16-20-5-0



NWPP-25+SKKA-20-25-5-0

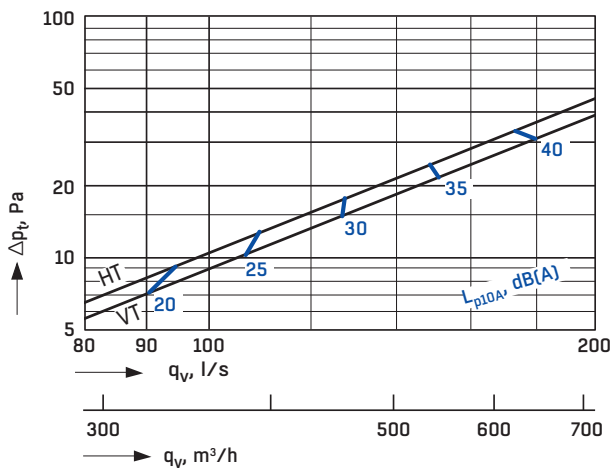


HT = horizontal air supply  
VT = vertical air supply

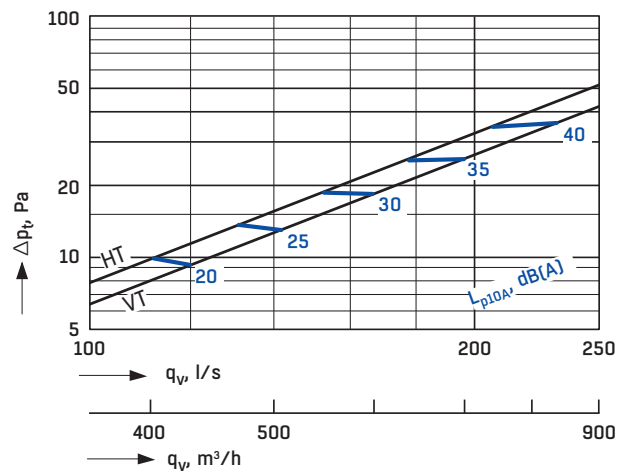
### AIR FLOW, PRESSURE DROP, SOUND LEVEL

#### DIFFUSER WITH ACOUSTICALLY INSULATED CONNECTION BOX - SUPPLY AIR

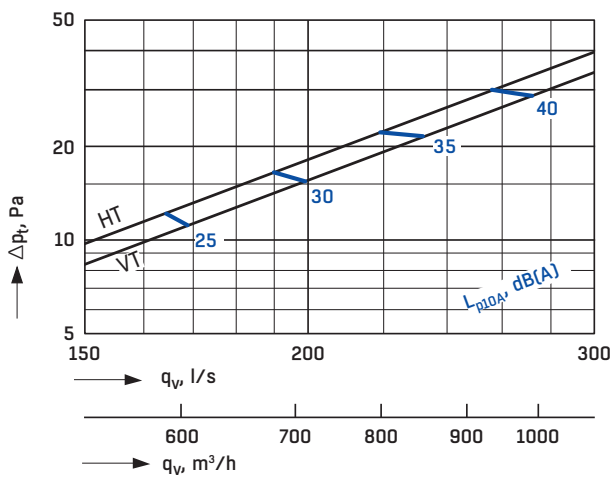
NWPP-31+SKKA-25-31-5-0



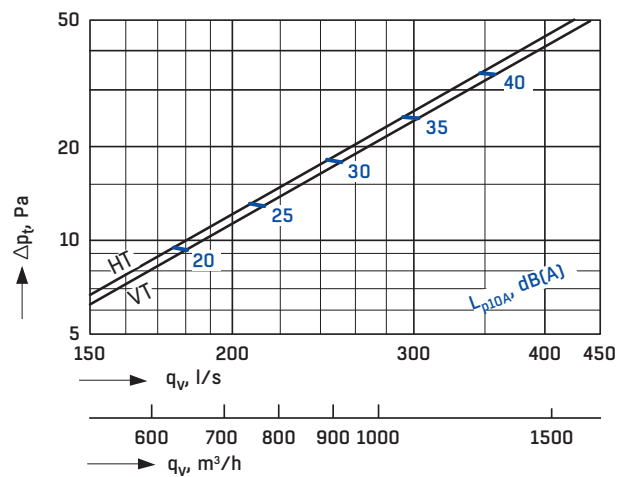
NWPP-35+SKKA-25-35-5-0



NWPP-40+SKKA-31-40-5-0



NWPP-50+SKKA-31-50-5-0



HT = horizontal air supply  
VT = vertical air supply



## ACOUSTICAL DATA, DEFINITIONS

### SOUND POWER LEVEL

Connection box SKKA (without attenuation material) - Supply air

Size	Correction of sound level $K_{oct}$ in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
16	11	11	7	1	-2	-9	-16	-16
18	10	12	7	1	-2	-9	-17	-16
20	12	13	7	1	-2	-10	-18	-16
25	4	10	6	0	-1	-5	-17	-21
31	8	11	6	1	-1	-8	-20	-21
35	8	11	5	1	-1	-6	-18	-21
40	10	11	6	2	-1	-9	-20	-17
50	10	11	6	2	-1	-9	-20	-21

Connection box SKKA (with attenuation material) - Supply air

Size	Correction of sound level $K_{oct}$ in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
16	8	10	7	1	-1	-9	-16	-16
18	10	11	7	1	-1	-10	-16	-16
20	11	12	7	1	-2	-10	-17	-16
25	4	9	7	1	-2	-6	-16	-21
31	7	11	7	1	-2	-7	-19	-21
35	10	11	6	1	-1	-7	-19	-18
40	11	12	6	2	-2	-10	-21	-17
50	7	11	6	2	-1	-8	-21	-22

The sound power levels for different octave bands are obtained by adding together the sound pressure level  $L_{p10A}$  in dB(A), and the corrections  $K_{oct}$  for the octave bands in the table with the help of the following formula:

$$L_W = L_{p10A} + K_{oct}$$

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

### SOUND ATTENUATION

Connection box SKKA (without attenuation material) - Supply air

Size	Sound attenuation in $\Delta L$ dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
16	17	10	11	21	9	6	7	8
18	12	9	11	17	7	7	7	7
20	11	9	8	8	5	5	5	4
25	11	4	6	7	5	5	6	8
31	10	3	6	7	5	4	5	5
35	10	2	7	7	4	4	6	9
40	9	2	6	6	4	4	4	5
50	8	2	7	4	3	3	3	3

Connection box SKKA (with attenuation material) - Supply air

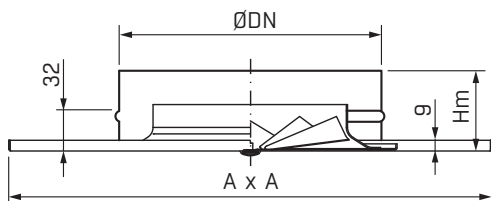
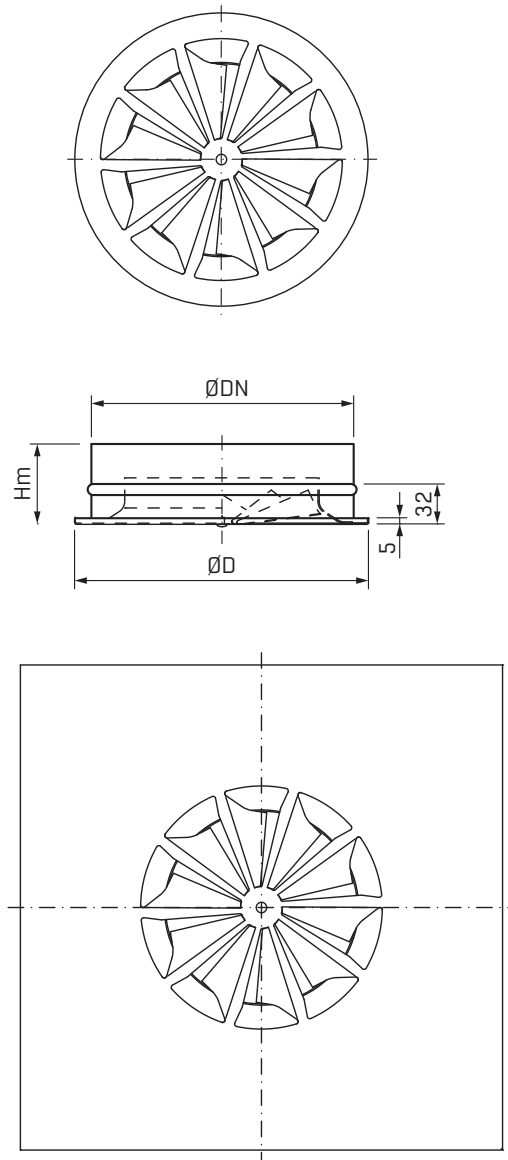
Size	Sound attenuation $\Delta L$ in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
16	19	10	10	21	12	14	16	13
18	18	10	9	17	10	11	15	12
20	20	11	11	18	9	10	14	11
25	10	6	6	8	10	13	14	13
31	11	3	5	9	8	11	10	9
35	11	5	8	10	8	11	14	13
40	8	3	5	8	6	9	8	7
50	7	1	5	5	4	7	8	8

### DEFINITIONS

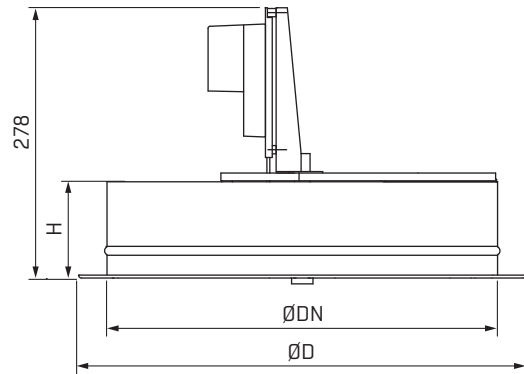
$q$	air flow	l/s, m <sup>3</sup> /h
$\Delta p_t$	total pressure drop	Pa
$L_{02}$	throw	m
$L_{p10A}$	sound pressure level with a room attenuation of 4 dB (10 m <sup>2</sup> room absorption area)	dB(A)
$L_W$	sound power level	dB
$K_{oct}$	octave band correction	dB
$\Delta L$	sound attenuation from the duct to the room	dB

## DIMENSIONS

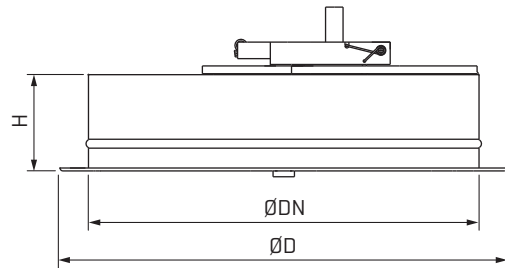
### NWPP SUPPLY AIR DIFFUSER, MANUAL VERSION



### DIFFUSER NWPP ADJUSTABLE BY ELECTRIC ACTUATOR



### DIFFUSER NWPP ADJUSTABLE BY THERMAL ELEMENT

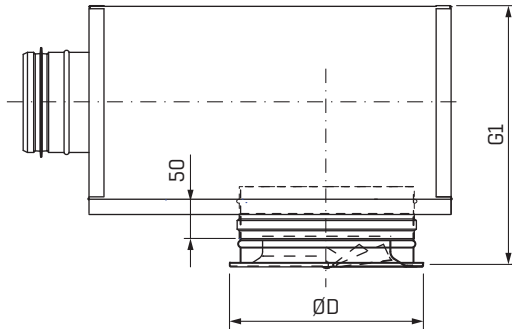


Size	ØDN (mm)	ØD (mm)	H (mm)	Hm (mm)	A (mm)	Weight* (kg)
16	214	240	99	65	595	1,1/3,6
18	238	270	99	70	595	1,3/3,7
20	265	300	99	75	595	1,6/3,9
25	322	375	99	80	595	2,1/4,1
31	402	463	99	80	595	3,0/4,6
35	450	520	99	85	595	3,5/4,7
40	504	598	99	85	595	4,4/5,0
50	639	748	120	120	-	6,8

\* Given weights refer to manual version (circular/square).

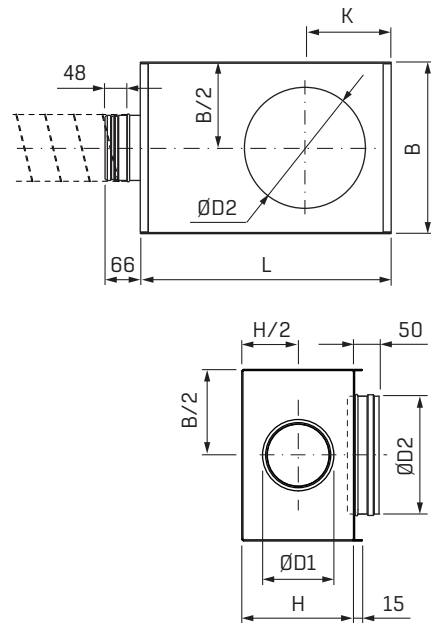
## DIMENSIONS

### NWPP DIFFUSER + SKKA PLENUM BOX



Size	ØD (mm)	G1 (mm)
12-16	240	332
16-18	270	332
16-20	300	332
20-25	375	332
25-31	463	377
25-35	520	377
31-40	598	442
31-50	748	442

### SKKA PLENUM BOX



Size	ØD1 (mm)	ØD2 (mm)	H (mm)	L (mm)	B (mm)	K (mm)
12-16	125	214	250	470	320	167
16-18	160	238	250	500	440	185
16-20	160	265	250	500	440	185
20-25	200	322	250	650	480	218
25-31	250	402	295	700	570	260
25-35	250	450	295	700	570	285
31-40	315	504	360	700	570	310
31-50	315	639	360	800	800	380

## GENERAL, PRODUCT CODE, ACCESSORIES

### CONSTRUCTION AND FUNCTION

NWPP is a swirl ceiling supply air terminal that is recommended to be mounted with SKKA connection box. Design of blades ensures highly effective mixing of the supply air with the air in the premises (high induction rate). Diffuser is available in either circular or square shape. Square panel fits 600x600mm false ceiling grid. Its diffusion pattern can be either horizontal or vertical in order to adapt to summer or winter conditions. Position of movable inner part can be controlled manually or automatically. In latter case, it is available with regulation via thermal element or electric actuator.

Plenum box is available with or without sound attenuation material. In each plenum box, there are lugs attached to the walls for hanging purposes. NWPP is fixed to the box by screws. More information about plenum box may be found in separate technical brochure.

### MATERIAL AND SURFACE FINISH

Both diffuser and the plenum box are made from steel sheet. NWPP is powder-coated for a high surface finish. The standard colour is RAL 9010, 70% of gloss. Sound attenuation lining is made of elastomeric foam based on synthetic rubber.

### INSTALLATION, ADJUSTMENT AND MAINTENANCE

The instructions for installation, adjustment and maintenance are available at [www.flaktgroup.com](http://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](http://www.flaktgroup.com).

### SPECIFICATIONS TEXT EXAMPLE

The NWPP 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 automatically via thermal elements or electric actuator.

### PRODUCT CODE

**Adjustable swirl diffuser**

**NWPP-aa-b-c-d**

#### Size (aa)

16, 18, 20, 25, 31, 35, 40, 50

#### Diffuser design (b)

1 = circular

2 = square (except size 50)

#### Flow pattern regulation (c)

1 = manual

2 = electric actuator

3 = thermal element

#### Colour (d)

1 = standard RAL 9010

X = any other colour from RAL palette

### Connection box

**SKKA-aa-bb-c-d**

#### Size (aa-bb)

12-16, 16-18, 16-20, 20-25, 25-31, 25-35, 31-40, 31-50

(duct connection size - diffuser size)

#### Sound attenuation material (c)

4 = without

5 = with

#### Damper (d)

0 = without

### ACCESSORIES

**Damper**

**BDEP-1-bbb-c**

#### Size (bbb)

012-031

#### Model (c)

1 = standard



## **EXCELLENCE IN SOLUTIONS**

FläktGroup is the European market leader for smart and energy efficient Indoor Air and Critical Air solutions to support every application area. We offer our customers innovative technologies, high quality and outstanding performance supported by more than a century of accumulated industry experience. The widest product range in the market, and strong market presence in 65 countries worldwide, guarantee that we are always by your side, ready to deliver Excellence in Solutions.

### **PRODUCT FUNCTIONS BY FLÄKTGROUP**

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