

## Swirl diffuser NWP



Swirl diffuser NWP can be used in public premises such as offices, hotels, hospitals, restaurants, conference halls etc. The diffusers are suitable for industrial multi-floor buildings, where good thermal comfort is required.

Diffusers are mounted in false ceiling or under the ceiling. Full spread of air flow at relatively short distance from diffuser allows using this type of diffusers in premises from 2.2 to 4.5 m high. Swirl diffuser NWP has an air flow range of between 11 and 342 l/s (40 - 1 230 m<sup>3</sup>/h) and it is also possible to use NWP as an exhaust device.

Swirl diffuser NWP is easy to install together with connection devices such as connection box or duct socket.

The connection box is provided as standard with a measurement socket for measurement of the air flow. It can be equipped with a control damper or a blade damper regulated manually. The connection box can be insulated on request with sound attenuating material.

The NWP diffuser can be provided as an accessory with a front panel of 594 x 594 mm or a panel which is adapted for installation in a false ceiling.

### Quick-selection

Size	Air flow		Installation height above the floor, m	Sound level L <sub>A10</sub> , dB(A)
	l/s	m <sup>3</sup> /h		
NWP-125	11 - 36	40 - 130	2.2 - 3.4	29 - 52
NWP-160	17 - 61	60 - 220	2.4 - 4.0	22 - 44
NWP-180	21 - 83	75 - 300	2.4 - 4.0	20 - 45
NWP-250	39 - 133	140 - 480	2.7 - 4.0	26 - 47
NWP-315	56 - 194	200 - 700	2.7 - 4.0	20 - 46
NWP-355	111 - 267	400 - 960	2.9 - 4.5	25 - 42
NWP-400	139 - 342	500 - 1230	2.9 - 8.7	25 - 46

### Product facts

#### Swirl diffuser NWP

Intended for ceiling installation

Two connection alternatives, with connection box or with duct socket

Suitable for rapid heating of premises

Broad flow range

Can be supplied in many RAL colours on request

#### Product code example:

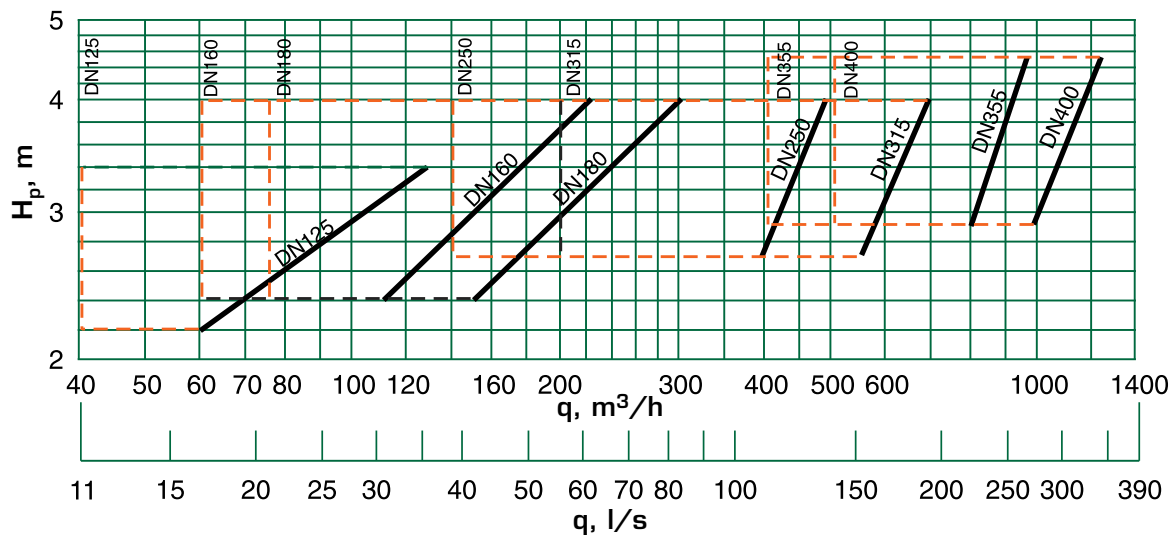
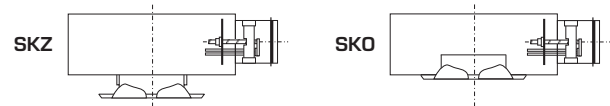
Swirl diffuser NWP-180-1-1. Terminal of size 180 in round design, with an acoustically insulated connection box which has a built-in measurement function.

The diffuser is painted in colour RAL 9010.

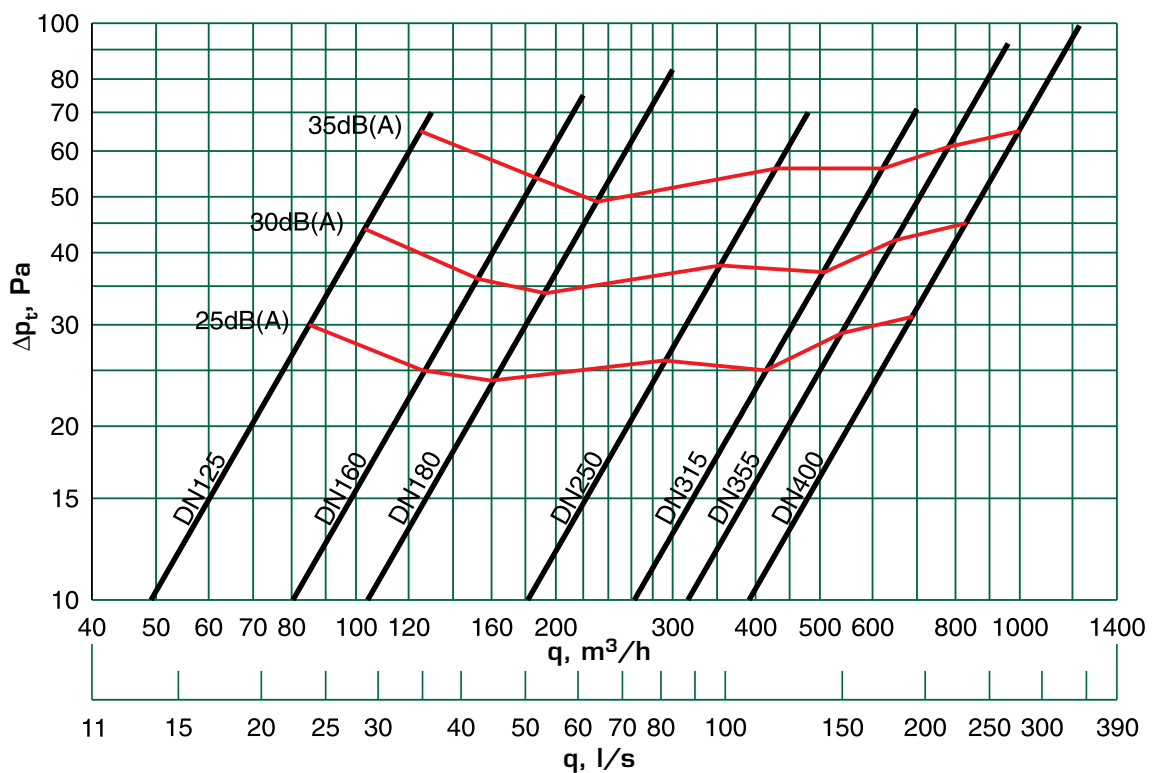
# Operating range, air flow, pressure drop, sound level

Installation alternative SKZ and SKO – operating range and installation height

$H_p$  = diffuser installation height (height above the floor from diffusers face).



Installation alternative SKZ and SKO – pressure drop and sound level



In the above graph the sound levels are indicated in dB(A) for a reference room with  $10 \text{ m}^2$  room absorption, equivalent to 4 dB room attenuation.

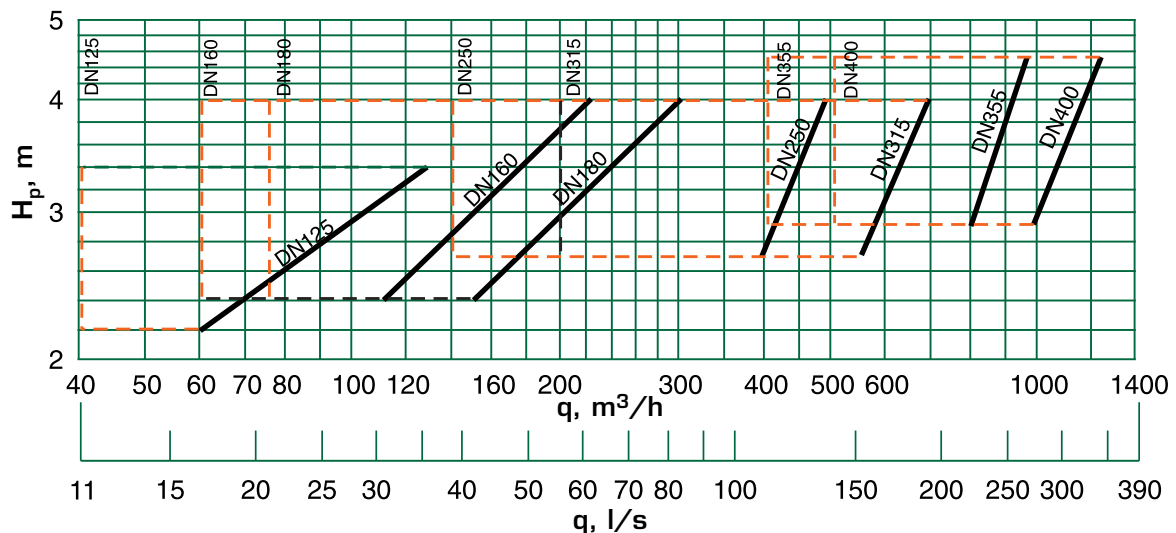
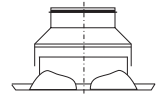
Maximum temperature difference at heating  $\Delta t_v \leq 5\text{K}$   
Maximum temperature difference at cooling  $\Delta t_k \geq 12\text{K}$

# Operating range, air flow, pressure drop, sound level

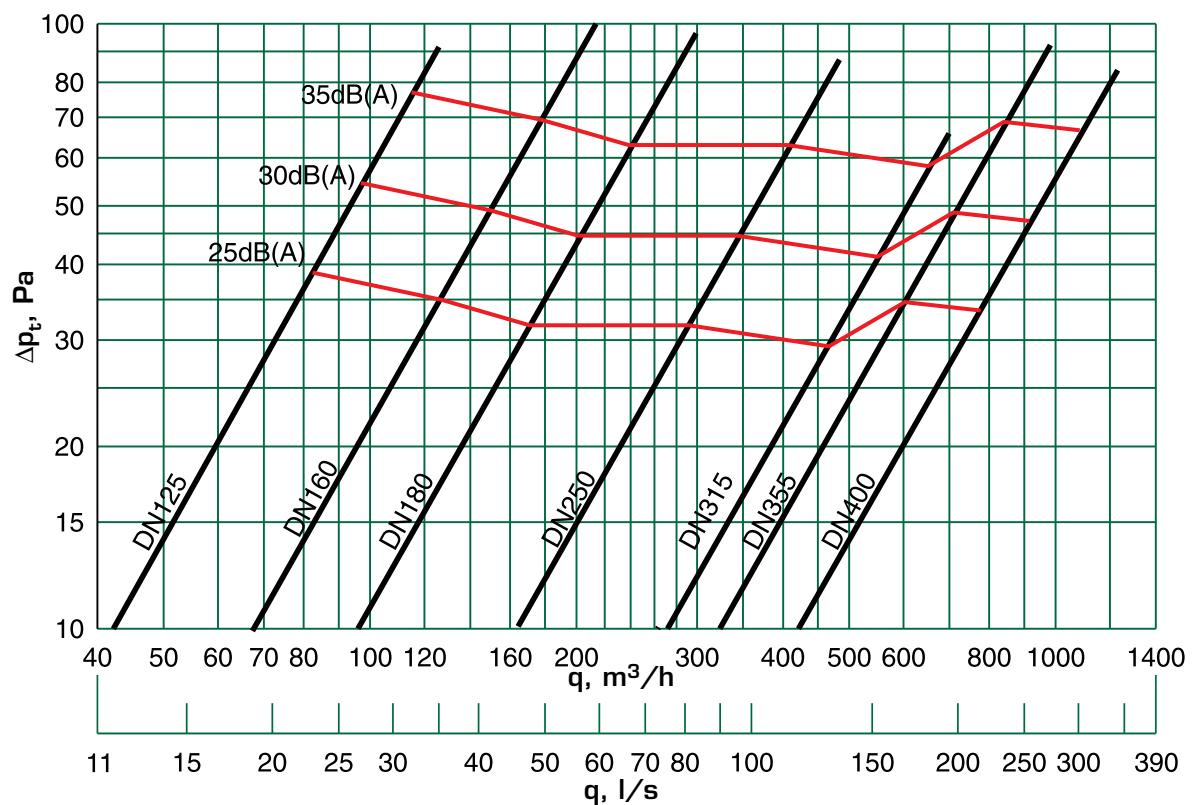
Installation alternative KP– operating range and installation height

$H_p$  = diffuser installation height (height above the floor from diffusers face).

PK



Installation alternative PK – pressure drop and sound level

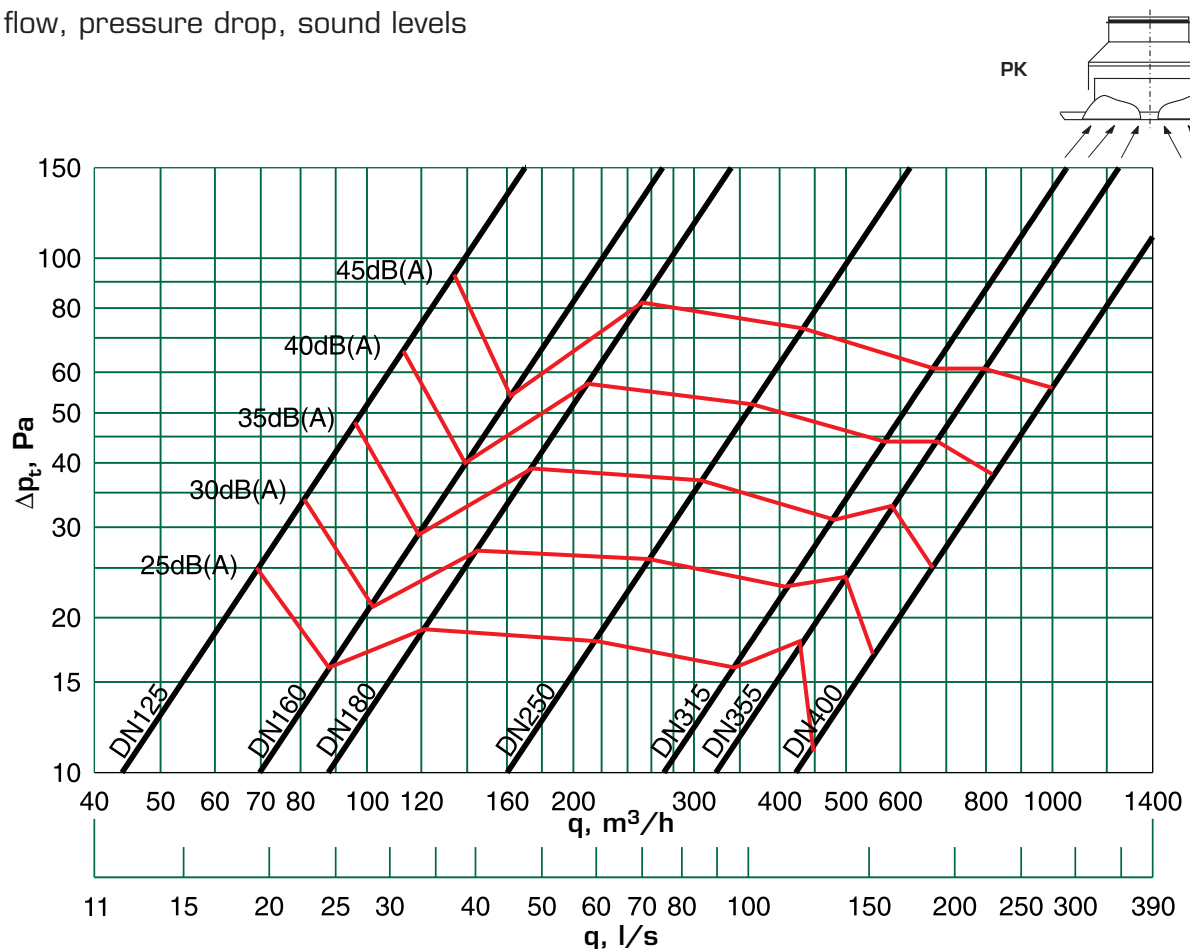


In the above graph the sound levels are indicated in dB(A) for a reference room with 10 m<sup>2</sup> room absorption, equivalent to 4 dB room attenuation.

Maximum temperature difference at heating  $\Delta t_v \leq 5K$   
Maximum temperature difference at cooling  $\Delta t_k \geq 12K$

# Exhaust air device, installation alternatives

Air flow, pressure drop, sound levels

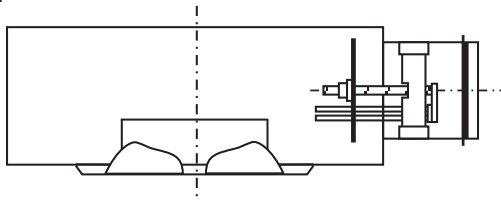


In the above graph the sound levels are indicated in dB(A) for a reference room with 10 m<sup>2</sup> room absorption, equivalent to 4 dB room attenuation.

## Installation alternatives

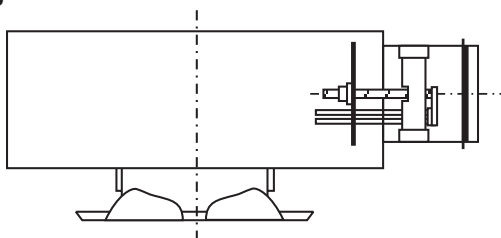
"Please note that the connection box can be equipped either with a blade damper or a DTTZ damper"

### SKZ



Free-mounting installation.

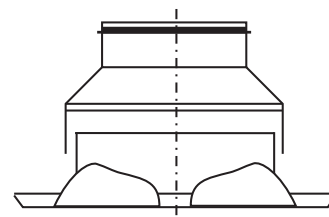
### SKO



Installation in false ceiling.

The damper is regulated manually by a string placed inside the connection box.

### PK



Installation with duct socket. Also available as exhaust air device.

# Sound data, definitions

## Sound power level

### Installation alternatives SKZ and SKO

Size	Correction of sound level $K_{ok}$ in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
125	11	10	6	1	-3	-5	-11	-21
160	14	13	8	2	-2	13	-19	-21
180	14	13	5	2	-6	-9	-15	-22
250	13	12	8	1	-5	-10	-16	-25
315	13	12	7	2	-3	-11	-17	-24
355	14	13	6	0	-3	-7	-13	-22
400	13	12	8	2	-6	-10	-16	-24

## Sound attenuation

### Diffuser with uninsulated connection box

Size	Sound attenuation in dB for octave band, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
125	0	4	5	10	8	5	2	3
160	0	4	2	9	6	4	3	3
180	1	1	4	6	7	3	1	0
250	2	4	4	9	5	4	4	1
315	1	4	4	11	7	2	3	0
355	3	2	3	7	4	4	3	1
400	3	2	2	6	8	4	3	2

### Installation alternative PK

Size	Correction of sound level $K_{ok}$ in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
125	5	4	3	4	-3	-10	-16	-25
160	7	6	4	4	-1	-10	-16	-24
180	6	5	4	4	-1	-10	-16	-25
250	10	9	5	3	-5	-11	-17	-25
315	10	9	6	2	-4	-8	-15	-25
355	11	10	5	2	-2	-8	-14	-21
400	9	8	6	3	-4	-7	-13	-25

### Diffuser with insulated connection box

Size	Sound attenuation in dB for octave band, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
125	0	4	8	13	12	9	8	9
160	0	5	4	13	8	8	9	9
180	1	1	7	10	11	7	7	8
250	2	5	5	13	10	10	9	9
315	1	5	7	15	12	6	9	8
355	3	3	6	8	6	9	9	7
400	3	2	4	7	10	9	10	7

The sound power levels for different octave bands are obtained by adding together the sound pressure level  $L_{A10}$ , in dB(A), and the corrections  $K_{ok}$  for the octave bands in the table with the help of the following formula:

$$L_W = L_{A10} + K_{ok}$$

Correction  $K_{ok}$  is the mean value for the range of application of NWP.

### Diffuser without connection box

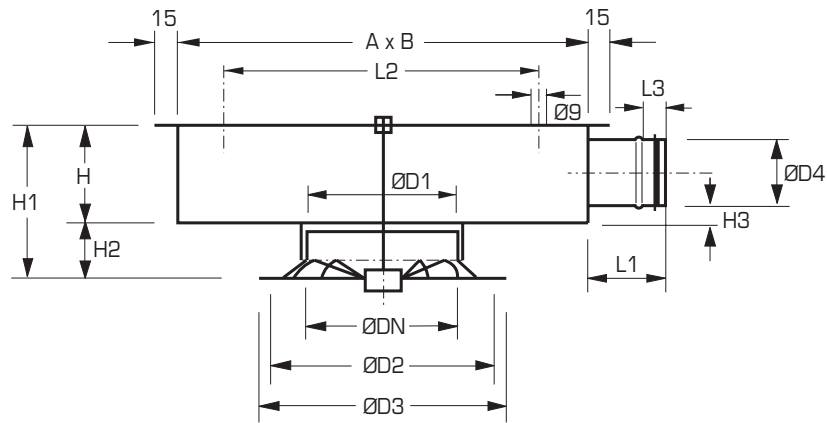
Size	Sound attenuation in dB for octave band, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
125	1	3	4	8	6	3	1	2
160	1	3	1	7	4	3	2	2
180	2	0	3	5	5	2	0	-1
250	3	4	3	7	4	2	3	1
315	2	3	2	10	5	1	2	0
355	4	1	2	5	3	3	2	0
400	4	1	0	4	6	3	3	2

## Definitions

q	air flow	l/s, m <sup>3</sup> /h
$\Delta p_t$	total pressure drop	Pa
$L_{02}$	throw	m
$L_{A10}$	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
$K_{ok}$	octave band correction	dB
$\Delta L$	sound attenuation from the duct to the room	dB

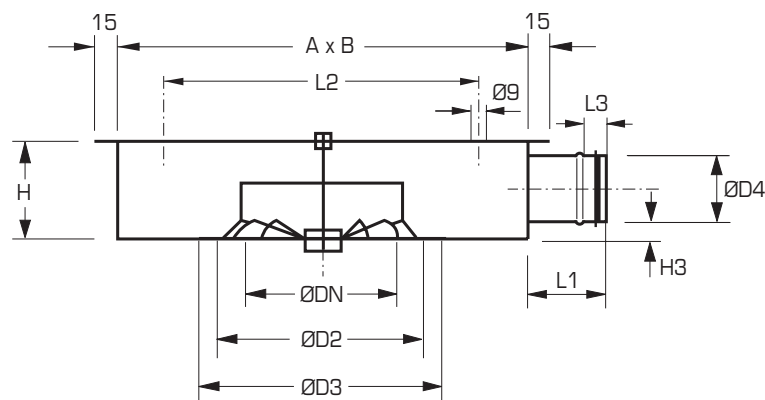
# Dimensions

Installation alternative SKZ with connection box for free mounting



Size	A	B	ØD1	ØD2	ØD3	ØD4	L1	L2	L3	H	H1	H2	H3
125	310	310	124	158	185	100	90	170	30	160	193	33	30
160	390	390	159	190	235	125	90	146	30	220	255	35	47
180	390	390	179	215	265	160	90	246	30	220	258	38	30
250	490	490	249	300	376	200	90	368	40	260	310	50	30
315	580	580	314	374	465	250	100	466	40	310	363	53	30
355	640	640	354	420	515	250	100	518	40	310	365	65	30
400	720	720	399	470	598	315	100	610	40	375	440	65	30

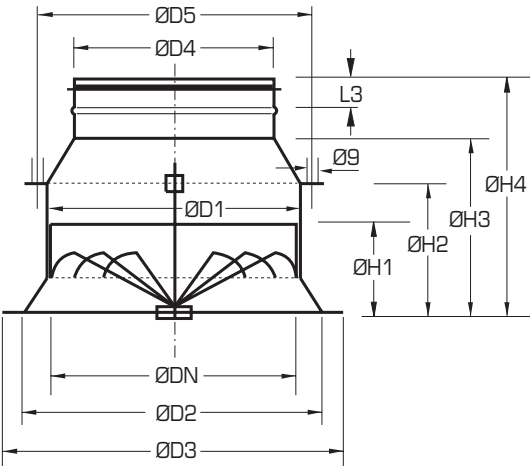
Installation alternative SKO with connection box for mounting in false ceiling



Size	A	B	ØD2	ØD3	ØD4	L1	L2	L3	H	H3
125	310	310	158	185	100	90	170	30	160	30
160	390	390	190	235	125	90	146	30	220	47
180	390	390	215	265	160	90	246	30	220	30
250	490	490	300	376	200	90	368	40	260	30
315	580	580	374	465	250	100	466	40	310	30
355	640	640	420	515	250	100	518	40	310	30
400	720	720	470	598	315	100	610	40	375	30

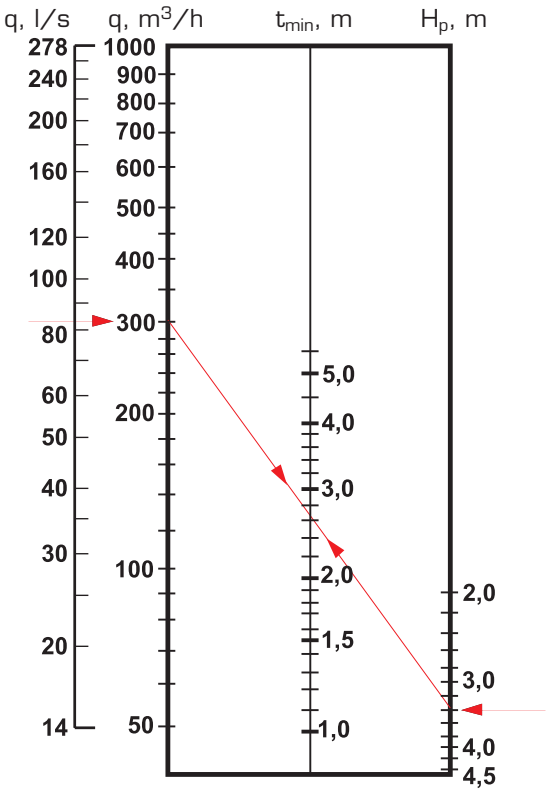
Dimensions, distance between two diffusers

Installation alternative PK for duct connection with duct socket



Size	$\varnothing D1$	$\varnothing D2$	$\varnothing D3$	$\varnothing D4$	$\varnothing D5$	L3	H1	K2	H3	H4
125	124	158	185	100	153	30	33	54	69	152
160	159	190	235	125	188	30	35	55	76	158
180	179	215	265	160	208	30	38	62	76	160
250	249	300	376	200	278	30	50	73	113	198
315	314	374	465	250	343	40	53	81	131	233
355	354	420	515	250	283	40	65	90	145	254
400	399	470	598	315	428	40	62	92	144	254

Distance between two terminals



Example

Total air flow,  $q_{tot}$

Nominal diameter, DN

Height above the floor,  $H_p$

Number of diffusers, n

Air flow per diffuser

Distance between diffusers,  $t_{min}$

24 000  $m^3/h$

250 mm

3.4 m

80 pcs.

300  $m^3/h$

2.6 m

Adjustment. descriptive text, product code, accessories

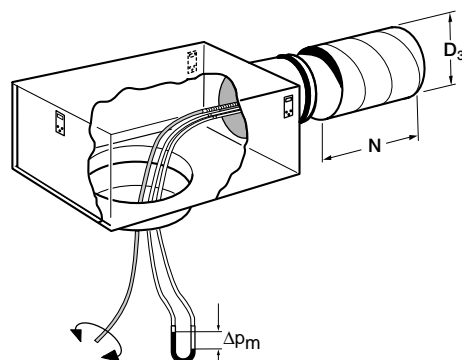
Adjustment DTTZ damper

$$q = k \sqrt{\Delta p_m}$$

(l/s) (Pa)

$$q = 3,6k \sqrt{\Delta p_m}$$

(m³/h) (Pa)



ØD3, mm	k	Nmin, mm
100	7.4	500
125	13.0	500
160	25.3	500
200	38.0	500
250	63.5	750
315	97.0	750

Descriptive text

Swirl diffuser NWP for ceiling installation manufactured by Fläkt Woods in size, e.g. 180, with sound insulated connection box with integral flow measurement function.

Product code

Swirl diffuser

NWP-aaa-b-c

Size

125, 160, 180, 250, 315, 355, 400

Diffuser design

1 = circular  
2 = rectangular

Diffuser colour (shown as a RAL colour)

1 = standard color 9010 (if any other colour is wanted this is indicated with X in the code and the proper RAL-code)

Connection box

SKZ/SKO-aaa-b-c-d

Size

100, 125, 160, 180, 250, 315, 355

Connection box type

0 = uninsulated  
1 = insulated

Damper

0 = without  
1 = blade damper  
2 = measurement and adjustment damper DTTZ

Duct connection type

0 = duct connection without rubber gasket  
1 = duct connection with rubber gasket

Duct socket

PK-aaa-bbb-c

Diffuser size - duct connection size

125 -100, 160-125, 180-160, 250-200, 315-250, 355-250, 400-315

Duct connection type

0 = without rubber gasket