Swirl diffuser NWC

Swirl diffuser with connection box

Swirl diffuser

Swirl diffuser NWC is suitable for public premises such as offices, hotels, hospitals, restaurants, conference halls etc. The diffusers are preferbly being used in industrial buildings, where good heat 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 NWC has an air flow range of between 11 and 264 l/s (40 - 950 m^3/h) and it is also possible to use NWC as an exhaust device.

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

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

Quick-selection

Size	Air flow l/s	Air flow m^3/h	Installation height above the flooor, m	Sound level L_{A10}, dB(A)
NWC-100	11 - 32	40 - 115	2,2 - 3,5	29 - 52
NWC-125	11 - 36	40 - 130	2.2 - 3.4	29 - 52
NWC-160	17 - 61	60 - 220	2.4 - 4.0	22 - 44
NWC-180	21 - 83	75 - 300	2.4 - 4.0	20 - 45
NWC-250	39 - 133	140 - 480	2.7 - 4.0	26 - 47
NWC-315	56 - 194	200 - 700	2.7 - 4.0	20 - 46
NWC-355	111 - 267	400 - 960	2.9 - 4.5	25 - 42

Product facts

Swirl diffuser NWC

Intended for ceiling installation

Two connection alternatives, with connection box or with duct socket

Suitable for rapid heating of premises

Broad flow range

Product code example:

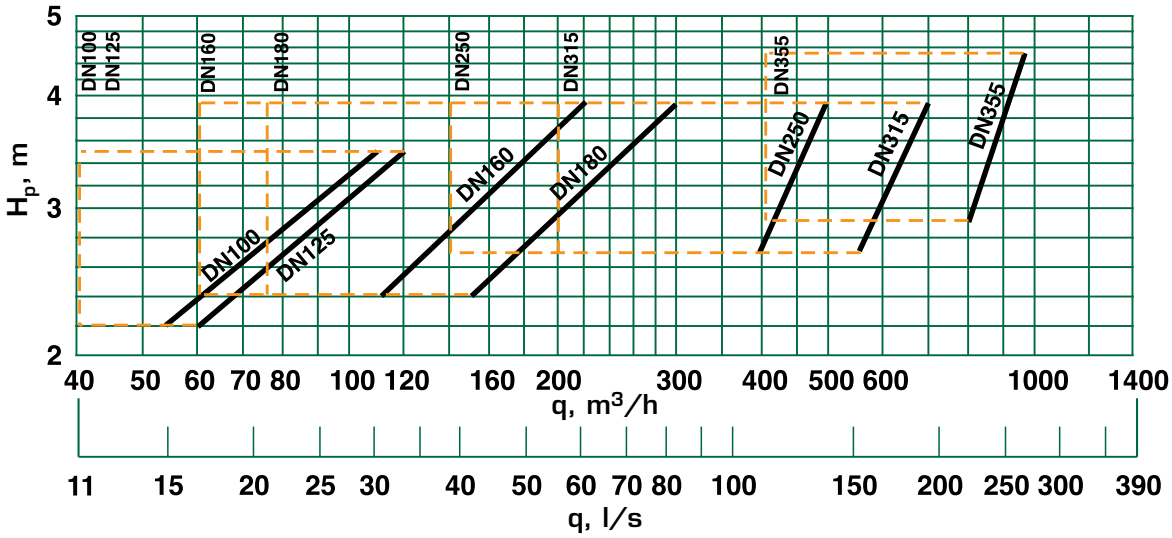
Swirl diffuser NWC-180-SKZ-125-1-D-9010. Diffuser of size 180 with an acoustically insulated connection box which has a built-in measurement function.

The diffuser is painted in colour RAL 9010.

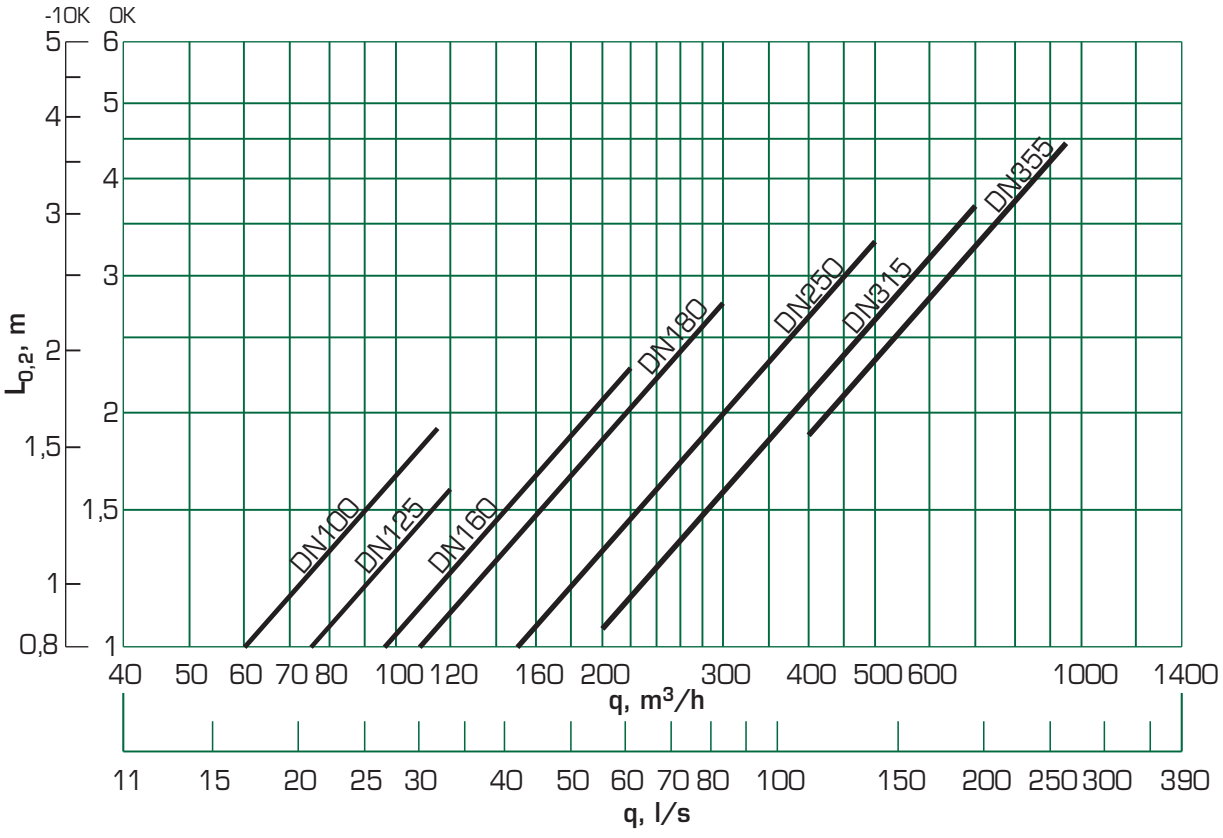
Installation height, throw length

Installation height – selection diagram

Hp = diffuser`s installation height (height above the floor from diffusers face).

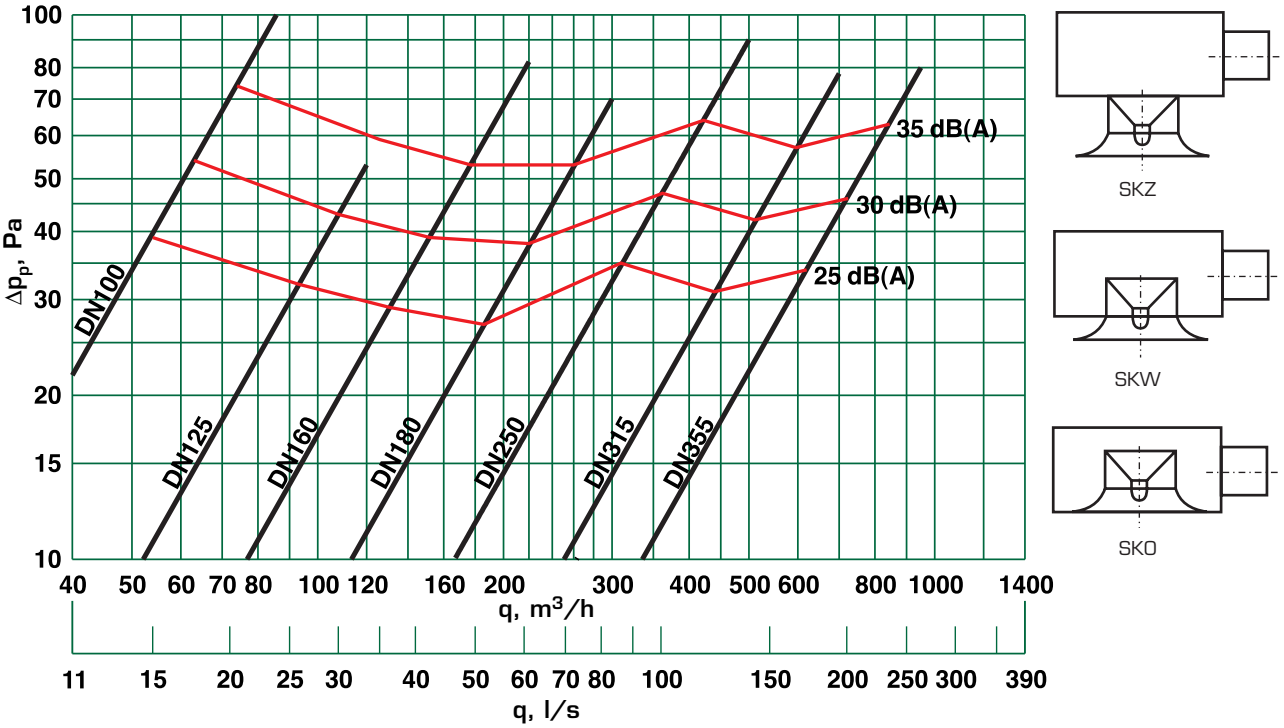


Throw length

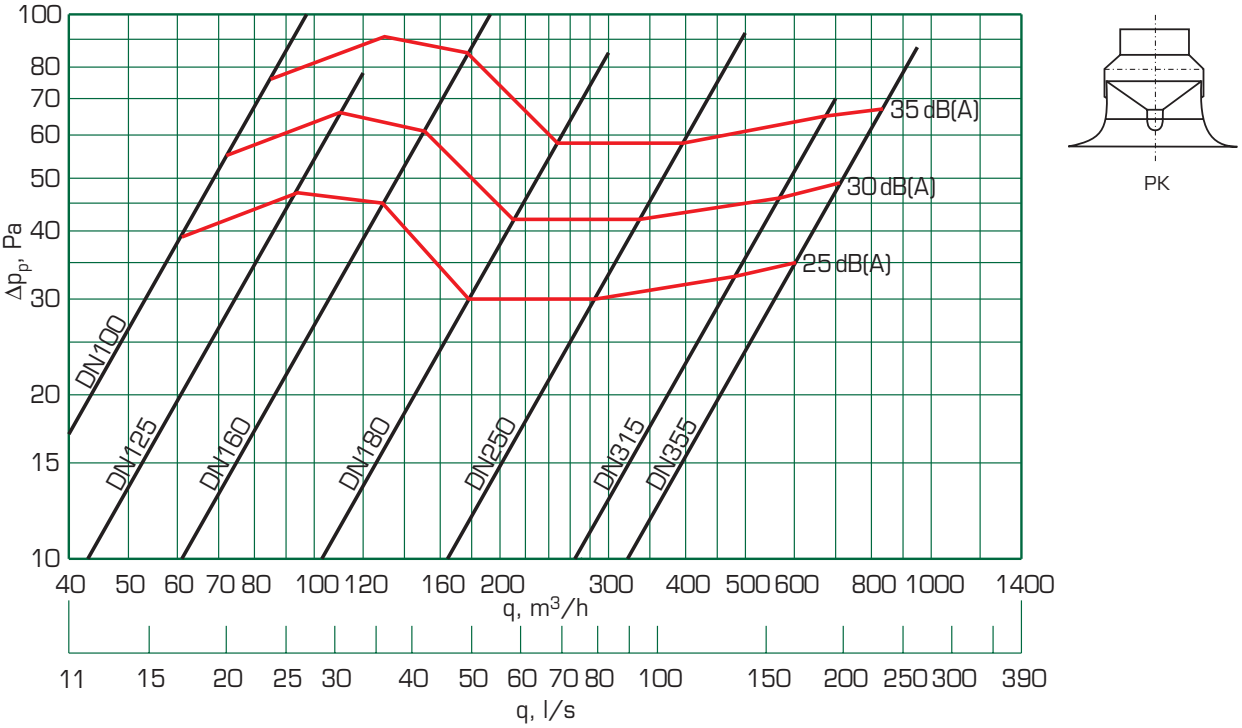


Air flow, pressure drop, sound level

Installation alternative SKZ, SKW, SKO – pressure drop and sound level



Installation alternative PK – pressure drop and sound level



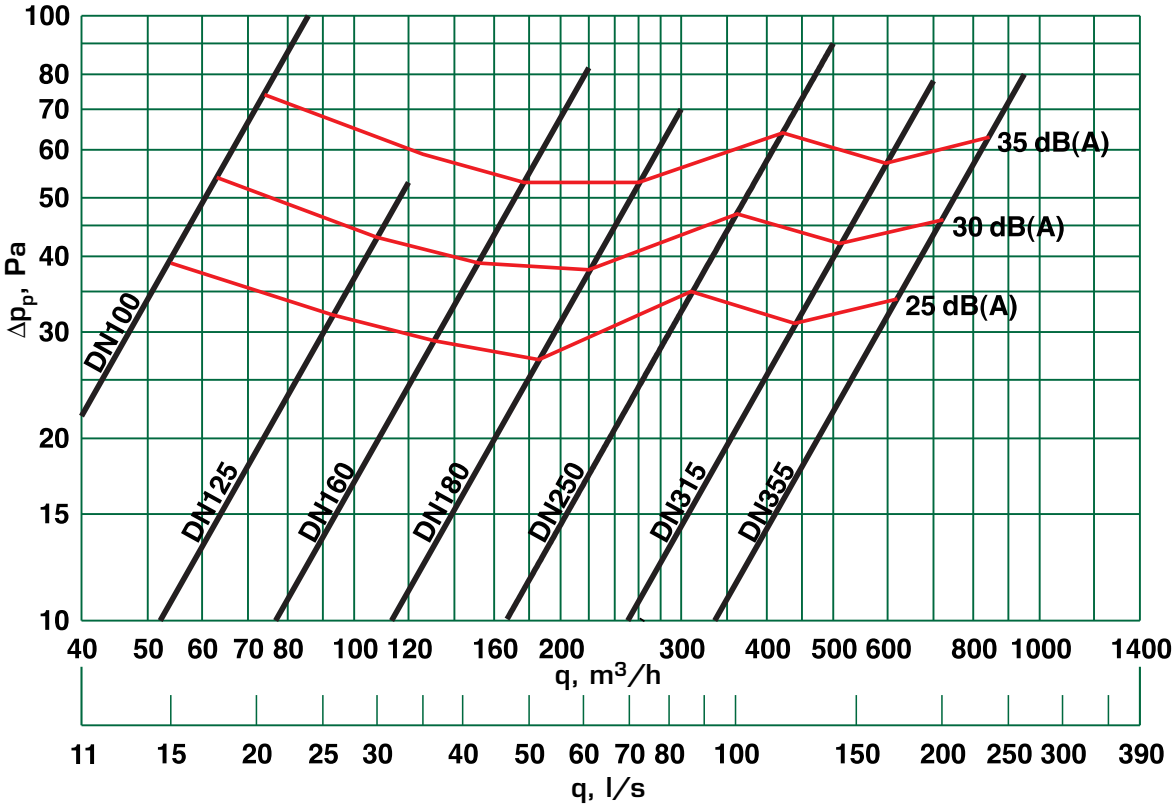
In the above graphs the sound levels are indicated in dB(A) for a reference room with 10 m^2 room absorption, equivalent to 4 dB room attenuation.

Maximum temperature difference at heating Δt_v ≤5K
Maximum temperature difference at cooling Δt_k ≥12K

Exhaust air device, installation alternatives

Air flow, pressure drop, sound levels

PK

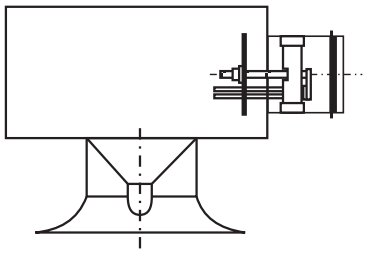


In the above graph the sound levels are indicated in dB(A) for a reference room with 10 m² room absorption, equivalent to 4 dB room attenuation.

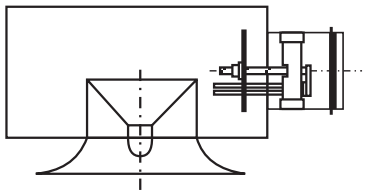
Installation alternatives

Connection box can be equipped either with a blade damper or a measurement and adjustment damper DTTZ

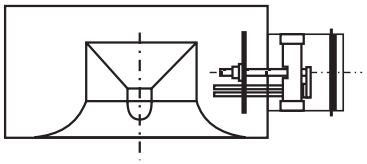
SKZ



SKW

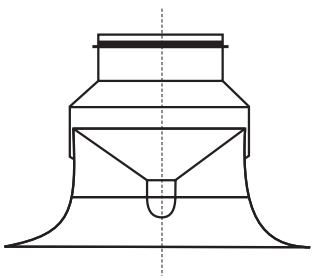


SKO



The damper is regulated manually by a handle placed on the side of the premise.

PK



Also available as exhaust air device.

Sound data, definitions

Sound power level

Installation alternatives SKZ, SKO and SKW

Size	Correction of sound level K_{ok} in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
100	11	10	2	2	–4	–15	–20	–25
125	8	7	5	–1	–5	–8	–8	–18
160	12	11	8	0	–3	–11	–16	–25
180	10	9	5	3	–4	–7	–12	–19
250	10	9	5	3	–3	–10	–15	–22
315	11	10	5	1	0	–9	–14	–23
355	8	7	4	4	0	–11	–16	–21

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
100	9	8	7	4	–7	–10	–15	–25
125	6	5	6	4	–3	–10	–15	–25
160	8	7	6	1	–1	–4	–9	–19
180	9	8	3	4	–3	–6	–11	–21
250	7	6	2	4	–1	–9	–15	–25
315	7	6	2	4	–3	–5	–10	–20
355	10	9	6	1	–1	–6	–11	–19

Exhaust air device (PK)

Size	Correction of sound level K_{ok} in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
100	5	4	5	5	–14	–15	–19	–25
125	7	5	7	4	–5	–11	–16	–25
160	4	3	4	4	–4	–6	–12	–22
180	10	9	4	2	0	–9	–15	–25
250	10	8	1	4	–1	–11	–17	–25
315	9	7	4	3	–2	–4	–13	–23
355	8	7	1	4	–1	–11	–15	–24

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.

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
100	0	2	2	8	10	5	3	3
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

Diffuser with insulated connection box

Size	Sound attenuation in dB for octave band, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
100	0	3	4	10	12	7	5	5
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

Diffuser without connection box

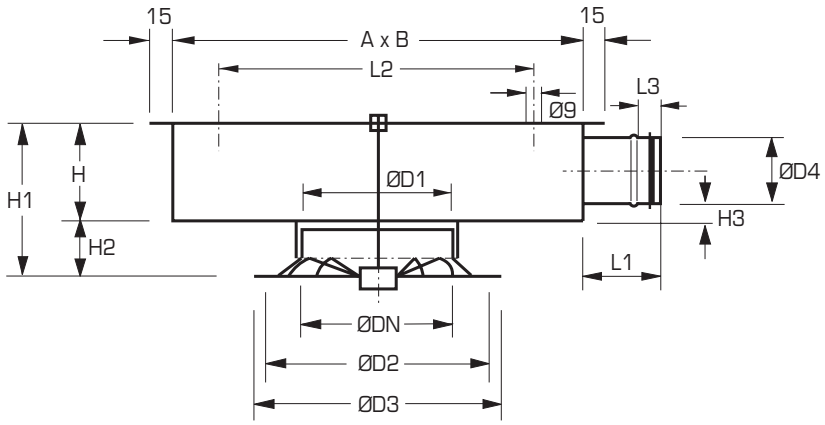
Size	Sound attenuation in dB for octave band, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
100	0	1	1	7	9	4	2	2
125	1	3	4	8	6	3	1	2
160	1	3	1	7	4	3	2	2
180	2	0	3	5	5	2	0	–1
250	3	4	3	7	4	2	3	1
315	2	3	2	10	5	1	2	0
355	4	1	2	5	3	3	2	0

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_{A10}	sound pressure level with a room attenuation of 4 dB (10 m^2 room absorption area)	dB(A)
L_W	sound power level	dB
K_{ok}	octave band correction	dB
ΔL	sound attenuation from the duct to the room	dB

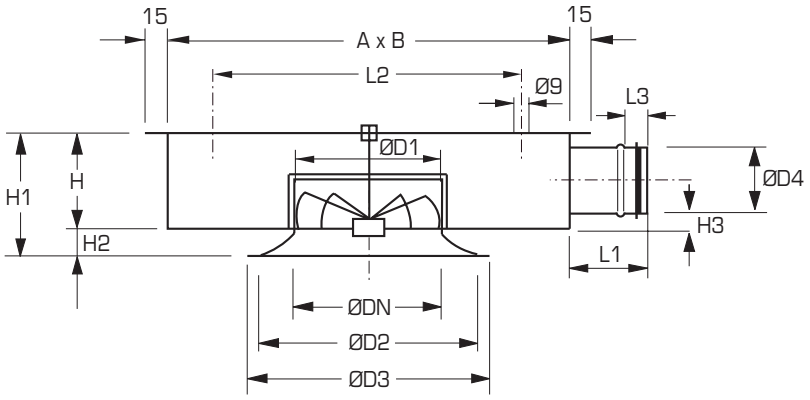
Dimensions

Installation alternative SKZ with connection box



Size	A	B	ØD1	ØD2	ØD3	ØD4	L1	L2	L3	H	H1	H2	H3
100	310	310	99	138	168	100	90	170	30	160	208	48	30
125	310	310	124	165	202	100	90	170	30	160	208	48	30
160	390	390	159	208	254	125	90	146	30	220	284	64	47
180	390	390	179	240	283	160	90	246	30	220	284	64	30
250	490	490	249	314	383	200	90	368	40	260	346	86	30
315	580	580	314	420	494	250	100	466	40	310	396	86	30
355	640	640	354	441	558	250	100	518	40	310	412	102	30

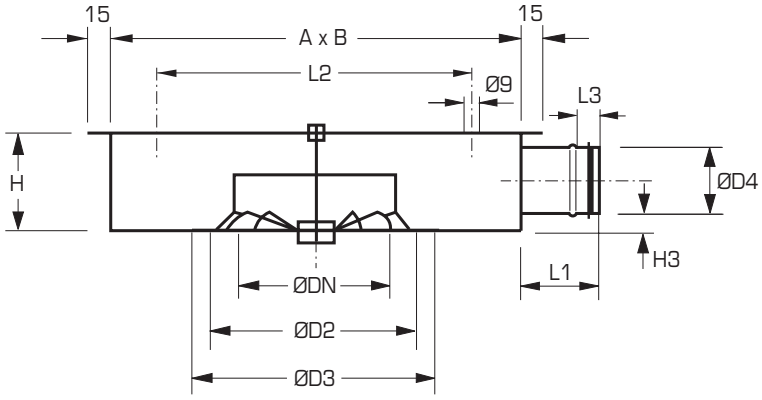
Installation alternative SKW with connection box



Size	A	B	ØD1	ØD2	ØD3	ØD4	L1	L2	L3	H	H1	H2	H3
100	310	310	99	138	168	100	90	170	30	160	170 - 195	10 - 35	30
125	310	310	124	165	202	100	90	170	30	160	180 - 225	20 - 65	30
160	390	390	159	208	254	125	90	146	30	220	240 - 285	20 - 65	47
180	390	390	179	240	283	160	90	246	30	220	255 - 310	35 - 90	30
250	490	490	249	314	383	200	90	368	40	260	305 - 380	45 - 120	30
315	580	580	314	420	494	250	100	466	40	310	370 - 470	60 - 160	30
355	640	640	354	441	558	250	100	518	40	310	375 - 475	65 - 165	30

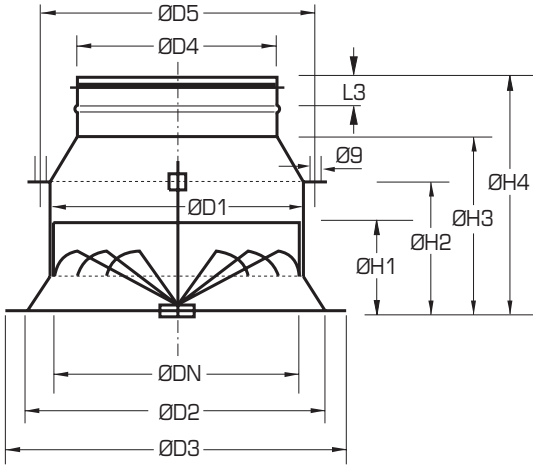
Dimensions

Installation alternative SKO with connection box



Size	A	B	ØD2	ØD3	ØD4	L1	L2	L3	H	H3
100	310	310	138	168	100	90	170	30	160	30
125	310	310	165	202	100	90	170	30	160	30
160	390	390	208	254	125	90	146	30	220	47
180	390	390	240	283	160	90	246	30	220	30
250	490	490	314	383	200	90	368	40	260	30
315	580	580	420	494	250	100	466	40	310	30
355	640	640	441	558	250	100	518	40	310	30

Installation alternative PK for duct connection with duct socket



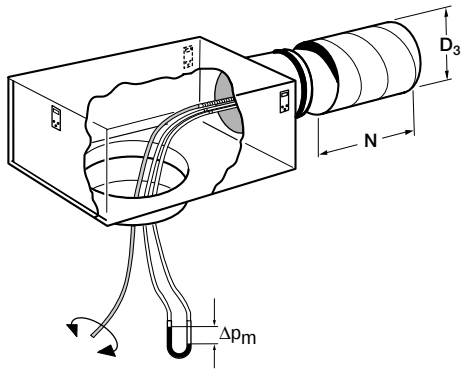
Size	ØD1	ØD2	ØD3	ØD4	ØD5	L3	H1	K2	H3	H4
100	99	138	168	100	128	30	52	62	88	176
125	124	165	202	100	153	30	84	103	114	197
160	159	208	254	125	188	30	84	121	138	220
180	179	240	283	160	208	30	110	130	148	232
250	249	314	383	200	278	30	250	145	175	260
315	314	420	494	250	343	40	140	165	206	308
355	354	441	558	250	383	40	163	178	230	340

Adjustment, distance between two terminals descriptive text, product code

Adjustment DTTZ damper

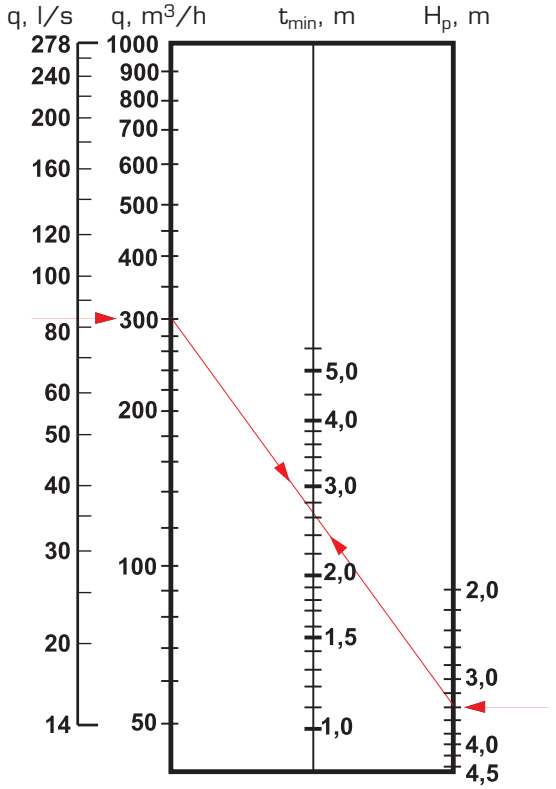
$q = k \sqrt{\Delta p_m}$ (l/s) (Pa)

$q = 3{,}6k \sqrt{\Delta p_m}$ (m^3/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

Distance between two diffusers



Example

Total air flow, q_{tot}	24 000 m^3/h
Nominal diameter, DN	250 mm
Height above the floor, H_p	3.4 m
Number of diffusers, n	80 pcs.
Air flow per diffuser	300 m^3/h
Distance between diffusers, t_{min}	2.6 m

Descriptive text

Swirl diffuser NWC for ceiling installation manufactured by Fläkt Woods in size, e.g. 160, with sound insulated connection box with integral flow measurement function.

Product code

Swirl diffuser **NWC-aaa-b**

Size
125, 160, 180, 250, 315, 355

Colour
1= standard colour 9010 (if some other colour is wanted this is indicated with x and the 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 = mesurement and adjustment damper DTTZ

Duct connection type
0 = without rubber gasket
1 = 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