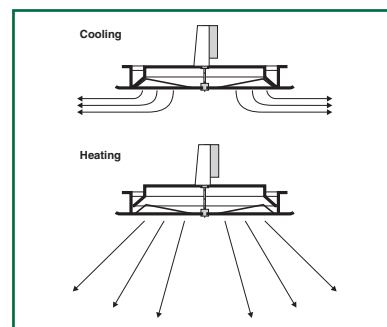
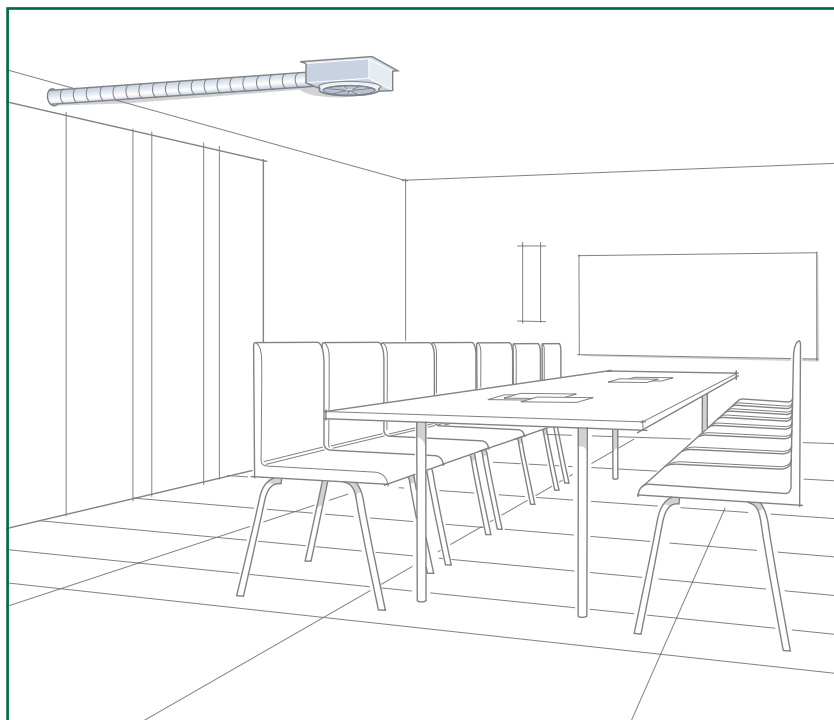


Swirl diffuser NWPP



Swirl diffuser NWPP is a ceiling diffuser with an integrated connection box. It is suitable for premises such as offices, hotels, hospitals, restaurants, conference rooms and other facilities where good thermal comfort is required.

The diffuser NWPP has a unique function, which means that the diffusion pattern can be adjusted from horizontal to vertical.

This characteristic makes the terminal very useful for rapid heating.

When the air flow pattern has been set to vertical, the temperature in the premises will rise about six times more rapidly than normally. This means that good thermal comfort can be restored in a very short period after an interruption.

Changing the air flow pattern from vertical and back to horizontal occurs when a control signal is given to the actuator in the diffuser. We recommend using the automatic diffuser control terminal from Fläkt Woods.

Swirl diffuser NWPP has an air flow range of between 17 and 560 l/s (60 - 2000 m³/h).

The diffuser is supplied with a connection box including an electric actuator. It can be adjusted manually and either by the electric or wax actuator. The connection box is provided as standard with a control damper and measurement socket for measurement of the air flow. The connection box can be insulated on request with sound attenuating material.

The NWPP terminal 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. The automatic control terminal RNP1 for master/slave is available as an accessory.

Quick selection

| Size | Air flow | | Installation height above the floor, m | Sound level L _{A10} , dB(A) |
|---------|-----------|-------------------|--|--------------------------------------|
| | l/s | m ³ /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 - 43 |
| NWPP-25 | 39 - 133 | 140 - 480 | 2.7 - 6.0 | 20 - 40 |
| NWPP-31 | 56 - 194 | 200 - 700 | 2.7 - 6.7 | 20 - 40 |
| NWPP-35 | 111 - 267 | 400 - 960 | 2.9 - 7.9 | 20 - 42 |
| NWPP-40 | 139 - 342 | 500 - 1230 | 2.9 - 8.7 | 20 - 42 |
| NWPP-50 | 220 - 560 | 800 - 2000 | 3.0 - 9.4 | 20 - 43 |

Product facts

Swirl diffuser NWPP

Intended for ceiling installation

Has an integrated connection box

Adjustable diffusion pattern

Suitable for rapid heating of premises

Broad flow range

Product code example:

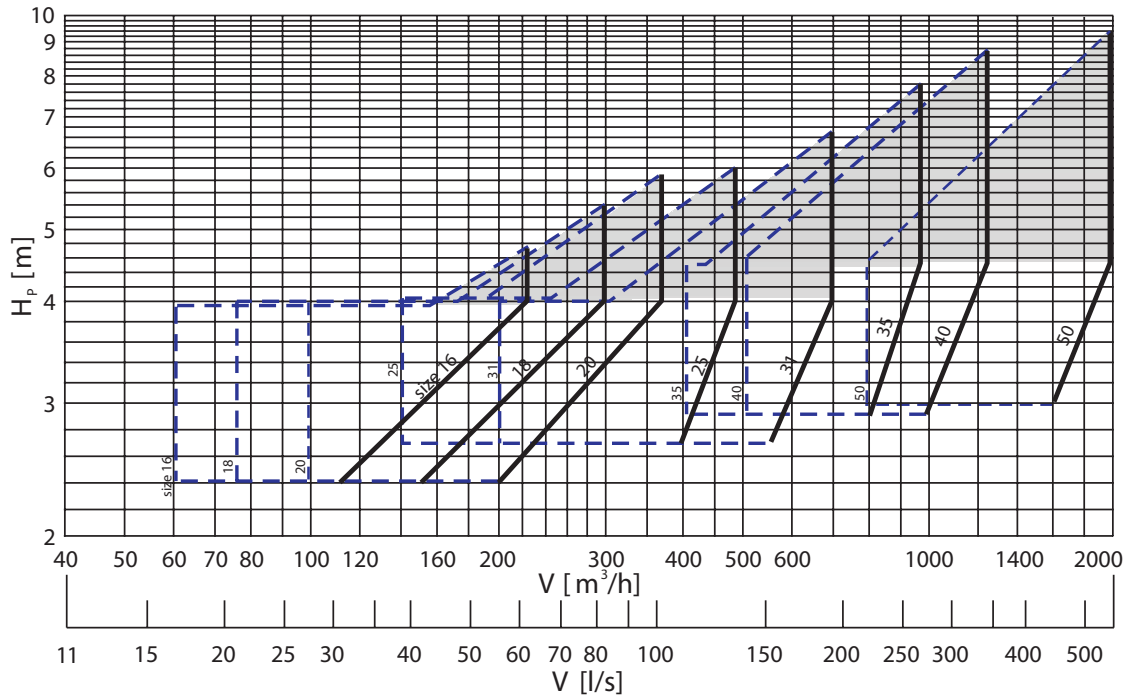
Swirl diffuser NWPP-25-2-3-1

Terminal of size 25 in rectangular design adjustable by wax servomotor, painted in colour RAL 9010.

Connection box SKAA-40-31-1-1
Size 31 to fit diffuser size 40, insulated with blade damper.

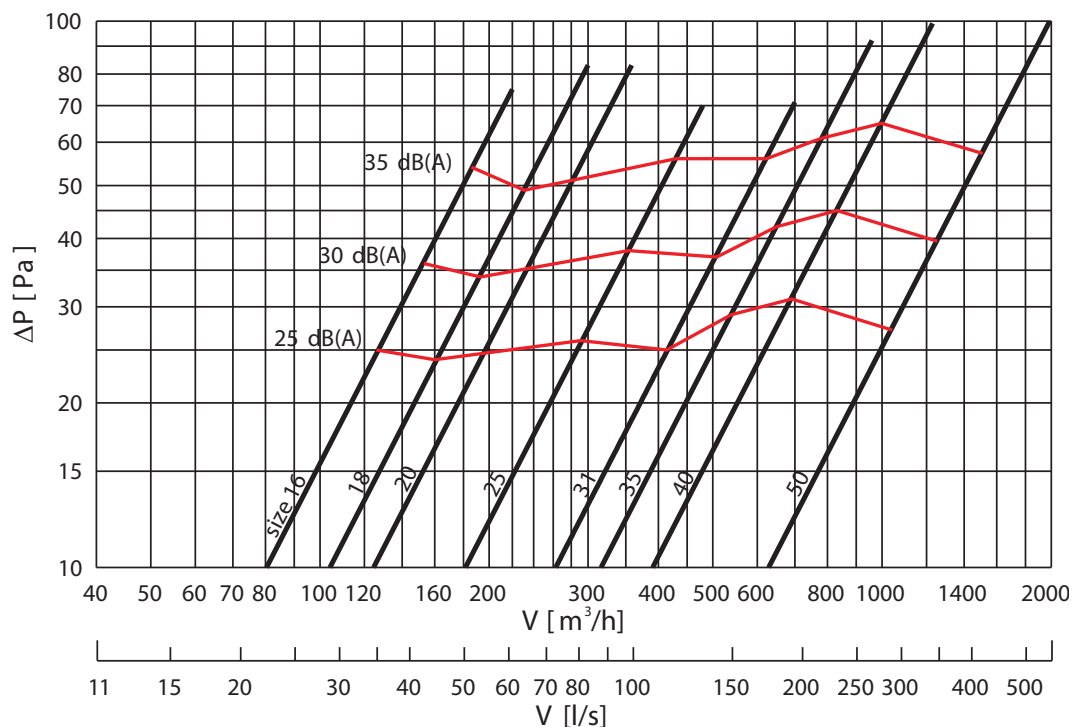
Air flow, pressure drop, sound level

Summary graph - operating range



H_p = diffuser's installation height above the floor.

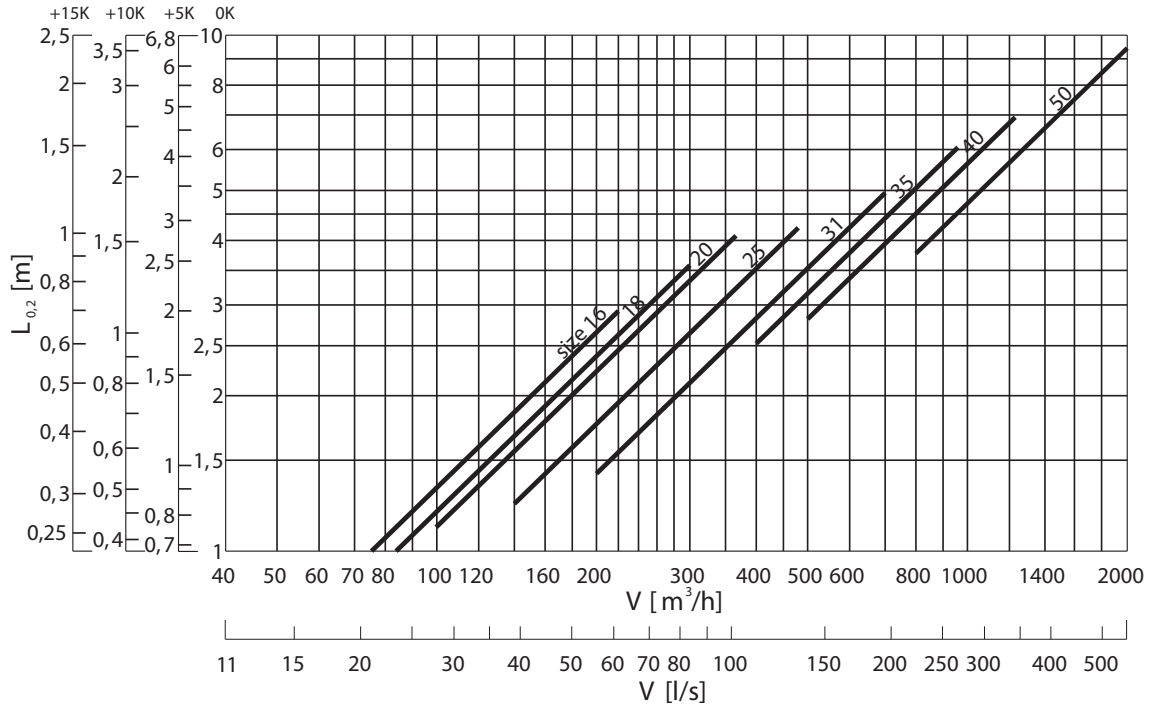
Installation with SKAA connection box - pressure drop and sound level



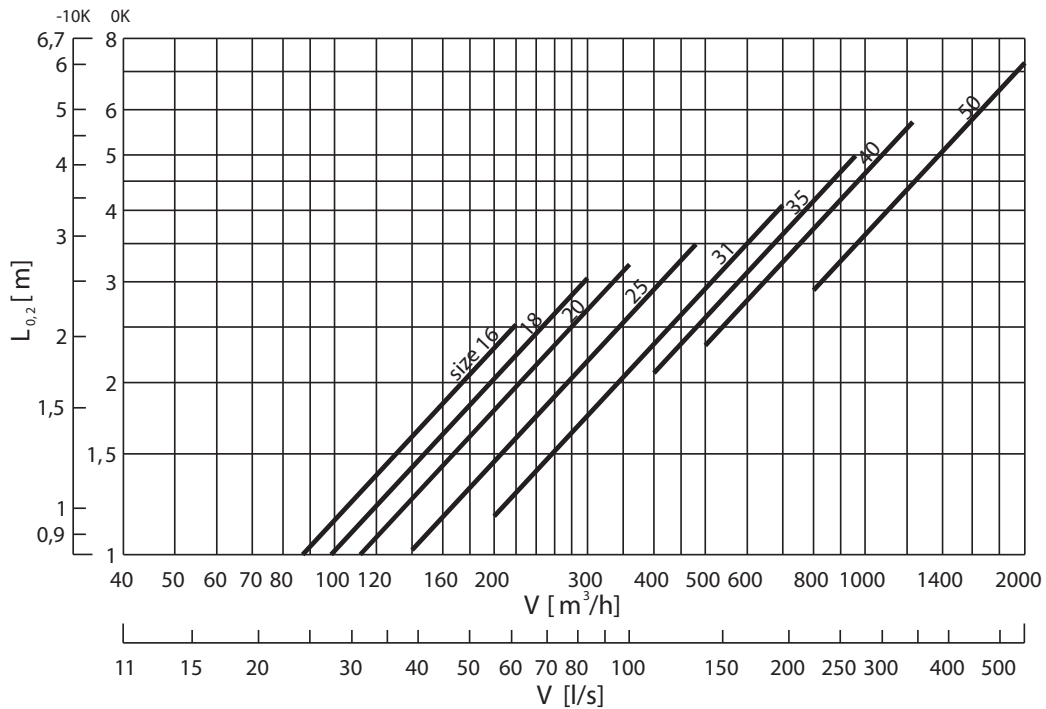
In the above graph the sound levels are indicated in dB(A) for a reference room with 10 m² room absorption, equivalent to 4 dB room attenuation.

Air flow, throw

Throw for vertical air diffusion – Heating function



Throw for horizontal air diffusion – Cooling function



Max temperature difference for cooling: $\Delta t_k = -12$ K
 Max temperature difference for heating (horizontal flow): $\Delta t_v = +5$ K
 Max temperature difference for heating (vertical flow): $\Delta t_v = +15$ K

Sound data, distance between two diffusers

Definitions

| | | |
|------------------|---|-------------------------|
| q | air flow | l /s, m ³ /h |
| Δp_t | total pressure drop | Pa |
| 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 |

Sound power level

| Size | Correction of sound level K _{ok} in dB for octave bands, mean frequency (Hz) | | | | | | | |
|------|---|-----|-----|-----|------|------|------|------|
| | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 16 | 14 | 13 | 8 | 2 | -8 | -13 | -19 | -21 |
| 18 | 14 | 13 | 5 | 2 | -6 | -9 | -15 | -22 |
| 20 | 14 | 13 | 5 | 1 | -4 | -8 | -14 | -21 |
| 25 | 13 | 12 | 8 | 1 | -5 | -10 | -16 | -25 |
| 31 | 13 | 12 | 7 | 2 | -3 | -11 | -17 | -24 |
| 35 | 14 | 13 | 6 | 0 | -3 | -7 | -13 | -22 |
| 40 | 13 | 12 | 8 | 2 | -6 | -10 | -16 | -24 |
| 50 | 10 | 10 | 7 | 3 | -2 | -7 | -16 | -25 |

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 NWPP.

Sound attenuation

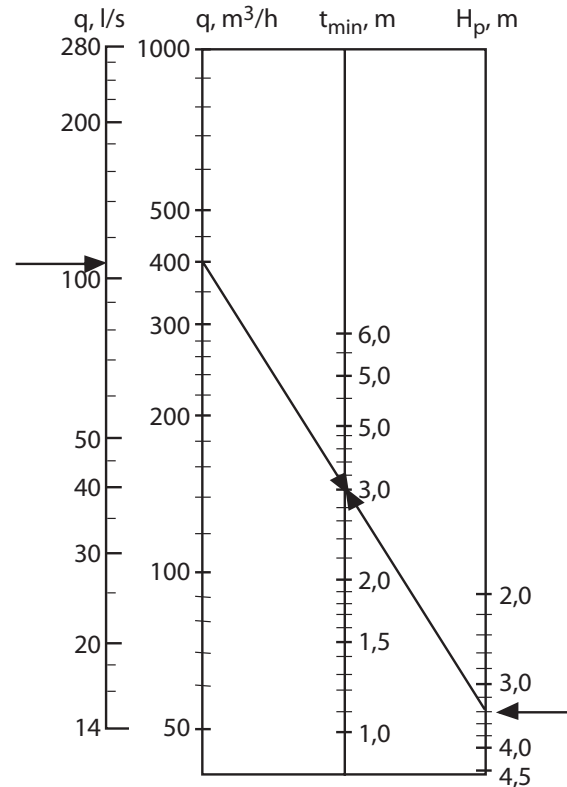
Diffuser with uninsulated connection box

| Size | Sound attenuation in dB for octave band, mean frequency (Hz) | | | | | | | |
|------|--|-----|-----|-----|------|------|------|------|
| | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 16 | 0 | 4 | 2 | 9 | 6 | 4 | 3 | 3 |
| 18 | 1 | 1 | 4 | 6 | 7 | 3 | 1 | 0 |
| 20 | 1 | 1 | 4 | 7 | 7 | 4 | 1 | 1 |
| 25 | 2 | 4 | 4 | 9 | 5 | 4 | 4 | 1 |
| 31 | 1 | 4 | 4 | 11 | 7 | 2 | 3 | 0 |
| 35 | 3 | 2 | 3 | 7 | 4 | 4 | 3 | 1 |
| 40 | 3 | 2 | 2 | 6 | 8 | 4 | 3 | 2 |
| 50 | 3 | 4 | 4 | 9 | 5 | 3 | 2 | 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 |
| 16 | 1 | 6 | 6 | 7 | 2 | 4 | 4 | 4 |
| 18 | 2 | 2 | 9 | 6 | 5 | 3 | 2 | 3 |
| 20 | 3 | 3 | 8 | 7 | 5 | 4 | 3 | 3 |
| 25 | 3 | 6 | 7 | 9 | 4 | 6 | 4 | 4 |
| 31 | 2 | 6 | 9 | 11 | 6 | 2 | 4 | 3 |
| 35 | 4 | 4 | 8 | 4 | 0 | 5 | 4 | 2 |
| 40 | 4 | 3 | 6 | 3 | 4 | 5 | 5 | 2 |
| 50 | 4 | 6 | 7 | 8 | 2 | 4 | 1 | 1 |

Distance between two diffusers

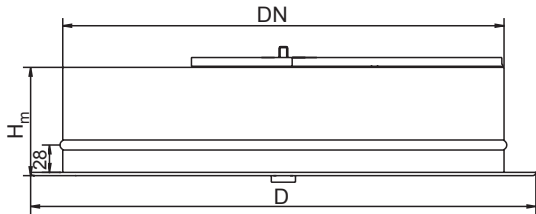


Example

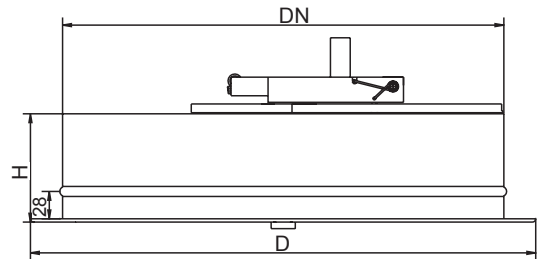
| | |
|--|-------------------------|
| Total air flow, q _{tot} | 24000 m ³ /h |
| Height above the floor, H _p | 3.4 m |
| Nominal diameter, DN | 250 mm |
| Number of diffusers, n | 60 pcs. |
| Air flow per diffuser | 400 m ³ /h |
| Distance between diffusers, t _{min} | 3.0 m |
| Recommended max temperature difference for heating (vertical flow), Δt_v | +9 K |

Dimensions

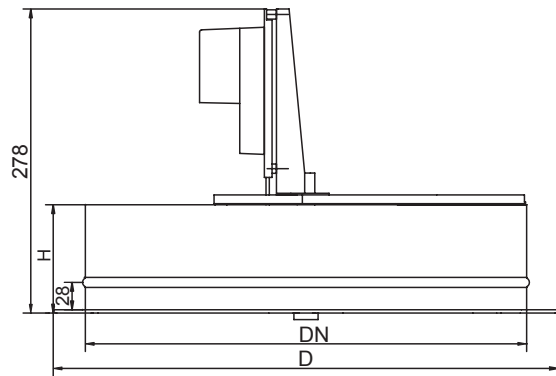
Diffuser NWPP with manual adjustment



Diffuser NWPP adjustable by wax-bulb



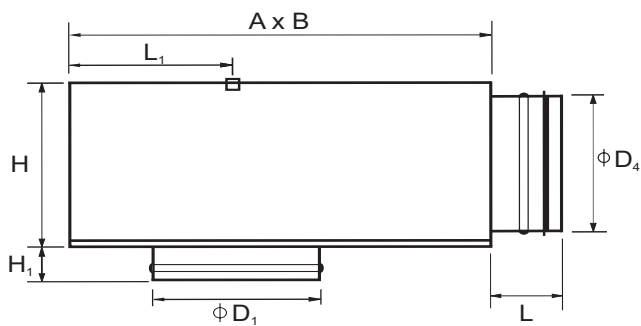
Diffuser NWPP adjustable by electric actuator



| Size | ØDN | ØD | H | H _m |
|------|-----|-----|-----|----------------|
| 16 | 214 | 240 | 99 | 65 |
| 18 | 238 | 270 | 99 | 70 |
| 20 | 265 | 300 | 99 | 75 |
| 25 | 322 | 375 | 99 | 80 |
| 31 | 402 | 470 | 99 | 80 |
| 35 | 450 | 530 | 99 | 85 |
| 40 | 504 | 600 | 99 | 85 |
| 50 | 639 | 750 | 120 | 120 |

All dimensions are indicated in mm.

Connection box SKAA

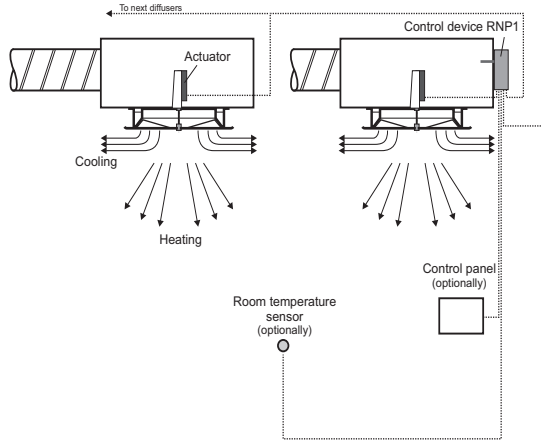


| Size | A | B | ØD ₁ | ØD ₄ | H | H ₁ | L | L ₁ |
|-------|-----|-----|-----------------|-----------------|-----|----------------|----|----------------|
| 16-12 | 390 | 390 | 218 | 125 | 267 | 35 | 80 | 165 |
| 18-16 | 390 | 390 | 242 | 160 | 267 | 35 | 80 | 165 |
| 20-16 | 390 | 390 | 269 | 160 | 267 | 35 | 80 | 165 |
| 25-20 | 490 | 490 | 326 | 200 | 267 | 35 | 80 | 200 |
| 31-25 | 580 | 580 | 406 | 250 | 267 | 35 | 80 | 252 |
| 35-25 | 640 | 640 | 454 | 250 | 317 | 35 | 80 | 292 |
| 40-31 | 720 | 720 | 508 | 315 | 382 | 35 | 80 | 315 |
| 50-31 | 720 | 720 | 643 | 315 | 382 | 35 | 80 | 345 |

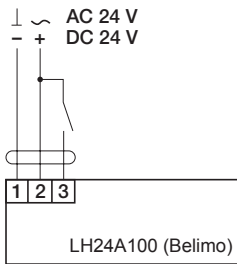
All dimensions are indicated in mm.

Electrical and control equipment, adjustment, product code, accessory

Cooperation with control device RNP1



Connection diagram actuator

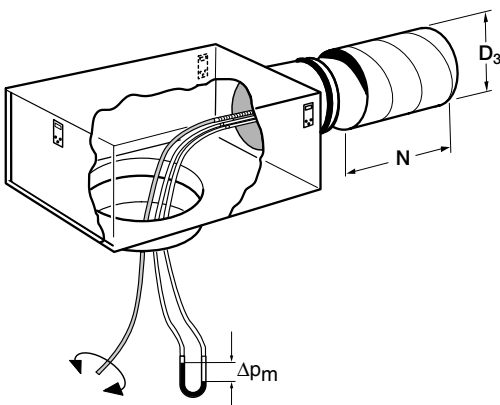


| | |
|-------------------|---|
| Supply voltage | 24 V AC ±20% (50 /60 Hz) 24 V DC ±10% |
| Power consumption | 1.5 W |
| Connection cable | 3 x 0.75 mm ² |

Adjustment ZAED damper

$$q = k \sqrt{\Delta p_m} \quad \left(\frac{l}{s} \right) \quad (Pa)$$

$$q = 3,6k \sqrt{\Delta p_m} \quad \left(\frac{m^3}{h} \right) \quad (Pa)$$



| ØD ₃ , mm | k | N, mm |
|----------------------|------|---------------------|
| 125 | 11.7 | 1-7xØD ₃ |
| 160 | 20.0 | 1-7xØD ₃ |
| 200 | 31.6 | 1-7xØD ₃ |
| 250 | 50.5 | 1-7xØD ₃ |
| 315 | 80 | 1-7xØD ₃ |

N - distance between ZAED damper and the nearest bend.

Descriptive text

Adjustable swirl diffuser NWPP for ceiling installation manufactured by Fläkt Woods.

Product code

Swirl diffuser NWPP-aa-b-c-d

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

Design _____
1 = circular
2 = square

Flow pattern regulation _____
1 = manual regulation damper
2 = motorised regulation
3 = wax servomotor

Colour _____
1 = standard RAL 9010
X = any other colour from RAL palette

Connection box SKAA-aa-bb-c-d

Size _____
16-12, 18-16, 20-16, 25-20,
31-25, 35-25, 40-31, 50-31
(diffuser size - duct connection size)

Type _____
0 = uninsulated box
1 = insulated box

Damper _____
0 = without
1 = blade damper
2 = measurement and adjustment damper ZAED

Accessory

Control device RNP1