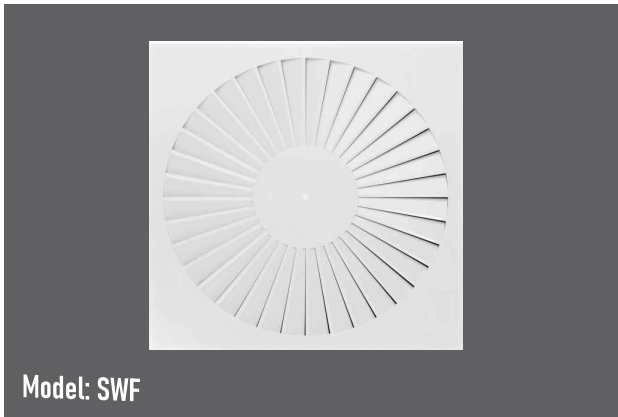


CEILING SWIRL DIFFUSER



Model:
SWF
SWS

CEILING SWIRL DIFFUSER WITH FIXED BLADES



DESCRIPTION

The SWF swirl diffuser with fixed blades is a comfortable air distribution element. The diffuser face is supplied with a radially aligned set of variously shaped blades, which guarantee an even distribution of swirl supply air into the occupied zone. The SWF swirl diffuser can be installed onto an air duct using a plenum box with a horizontal or a vertical connection by a flexible circular ducts. SWF can be used for both, supply or extract air. It can be used for ventilation, as well as supplying cold or warm air. SWF has low sound power level for comfort zones with fixed blades.

MATERIAL

Powder coated galvanized iron sheet or aluminum

SIZES

300-400-500-600-625 (mm)

APPLICATION

For supply air or exhaust air
For constant or variable airflow
For all types of ceiling system
For room height up to 4m

FINISH

Standard: white powder coated
RAL9010 (optional other RAL codes)

For supply air to room air temp. difference from -12 to +10 K
Very high room air change rate due to row arrangement with minimum pitch distance of 0.9m

STANDARD

Sound power level of the air-generated noise measured according to EN-ISO 5135

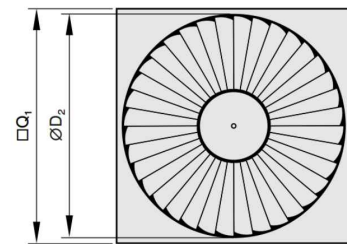
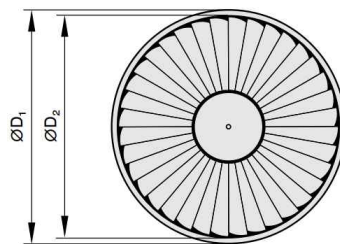
FLOW RATE

9 ~ 235 l/s (31 ~ 846 m³/h)

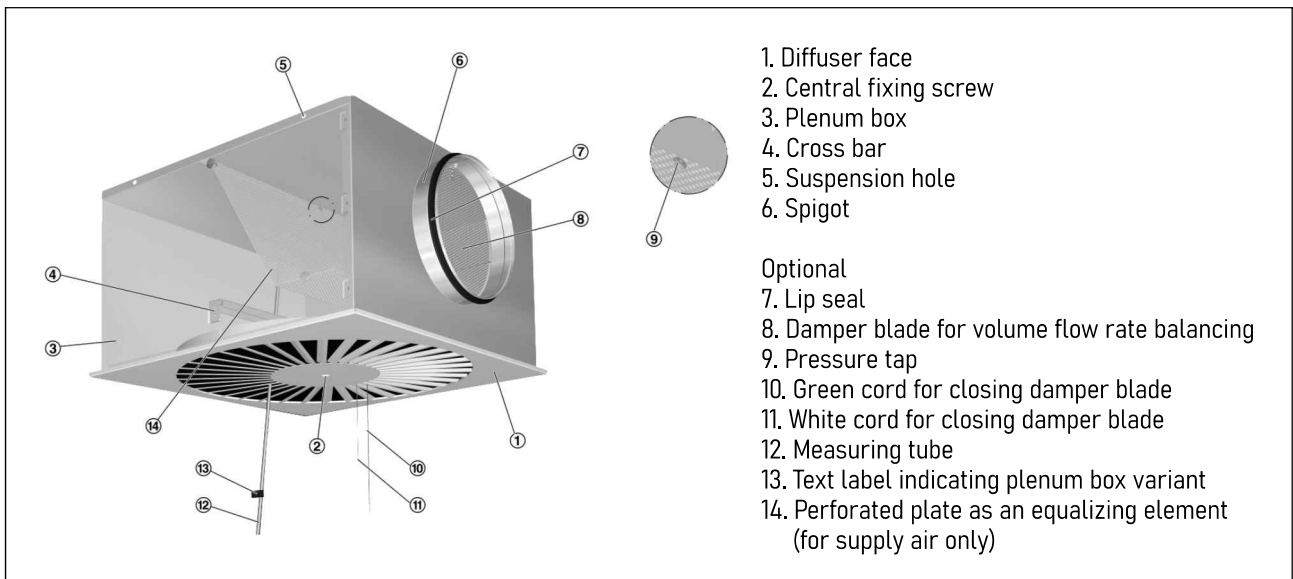
OPTION

Square/round face
Square/circular plenum box

CONSTRUCTION



| Size | Round | | Square | | Effective area (m ²) | |
|------|-----------------|-----------------|----------------|-----------------|----------------------------------|--------|
| | ØD ₁ | ØD ₂ | Q ₁ | ØD ₂ | Round | Square |
| 300 | 300 | 250 | 298 | 250 | 0.0088 | 0.0088 |
| 400 | 400 | 350 | 398 | 350 | 0.0180 | 0.0180 |
| 500 | 500 | 450 | 498 | 450 | 0.0251 | 0.0251 |
| 600 | 600 | 538 | 598 | 538 | 0.0295 | 0.0295 |
| 625 | 625 | 538 | 623 | 538 | 0.0295 | 0.0295 |

CONSTRUCTION OF MODULE

PRODUCT DATA SHEET
Supply air: sound power level and total differential pressure of horizontal duct connection

| Size | q _v l/s - m ³ /h | Damper blade : 0° | | Damper blade : 45° | | Damper blade : 90° | |
|----------|---|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|
| | | Δp _t (Pa) | L _{WA} [dB(A)] | Δp _t (Pa) | L _{WA} [dB(A)] | Δp _t (Pa) | L _{WA} [dB(A)] |
| 300 | 9 (31) | 1 | <15 | 1 | <15 | 2 | <15 |
| | 35 (126) | 13 | 28 | 17 | 27 | 27 | 27 |
| | 55 (198) | 31 | 39 | 41 | 40 | 67 | 39 |
| | 80 (288) | 67 | 50 | 87 | 54 | 142 | 54 |
| 400 | 16 (59) | 1 | <15 | 1 | <15 | 2 | <15 |
| | 60 (216) | 10 | 24 | 14 | 25 | 27 | 26 |
| | 105 (378) | 32 | 39 | 42 | 40 | 83 | 44 |
| | 145 (522) | 60 | 50 | 81 | 53 | 158 | 57 |
| 500 | 24 (85) | 1 | <15 | 2 | <15 | 4 | <15 |
| | 80 (288) | 12 | 24 | 19 | 26 | 43 | 29 |
| | 135 (468) | 33 | 39 | 53 | 41 | 123 | 45 |
| | 185 (666) | 62 | 50 | 99 | 54 | 231 | 58 |
| 600, 625 | 28 (102) | 1 | <15 | 1 | <15 | 3 | <15 |
| | 95 (342) | 10 | 25 | 15 | 25 | 29 | 24 |
| | 160 (576) | 28 | 39 | 41 | 40 | 81 | 39 |
| | 225 (810) | 55 | 50 | 81 | 52 | 160 | 53 |

Supply air: sound power level and total differential pressure of vertical duct connection

| Size | q _v l/s - m ³ /h | Damper blade : 0° | | Damper blade : 45° | | Damper blade : 90° | |
|----------|---|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|
| | | Δp _t (Pa) | L _{WA} [dB(A)] | Δp _t (Pa) | L _{WA} [dB(A)] | Δp _t (Pa) | L _{WA} [dB(A)] |
| 300 | 9 (31) | 1 | <15 | 1 | <15 | 2 | <15 |
| | 30 (108) | 9 | 25 | 11 | 25 | 19 | 25 |
| | 50 (180) | 26 | 38 | 32 | 38 | 54 | 38 |
| | 70 (252) | 51 | 49 | 62 | 49 | 106 | 49 |
| 400 | 16 (59) | 1 | <15 | 1 | <15 | 2 | <15 |
| | 60 (216) | 10 | 24 | 13 | 23 | 23 | 24 |
| | 105 (378) | 31 | 39 | 40 | 39 | 72 | 42 |
| | 145 (522) | 60 | 50 | 77 | 51 | 138 | 55 |
| 500 | 24 (85) | 1 | <15 | 1 | <15 | 4 | <15 |
| | 80 (288) | 11 | 24 | 14 | 23 | 44 | 29 |
| | 130 (468) | 28 | 38 | 36 | 39 | 117 | 44 |
| | 180 (648) | 54 | 50 | 70 | 53 | 223 | 56 |
| 600, 625 | 28 (102) | 1 | <15 | 1 | <15 | 2 | <15 |
| | 95 (342) | 9 | 25 | 12 | 24 | 28 | 27 |
| | 160 (576) | 26 | 40 | 35 | 41 | 78 | 44 |
| | 220 (792) | 50 | 51 | 67 | 55 | 148 | 57 |

ORDERING CODE

SWF - R/S - Z/A - H/V - M - G - I - D - P - Ral xxx

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

1. Type

SWF = Starduct swirl diffuser

2. Construction

R = Round

S = Square

3. System

Z = Supply air

A = Extract air

4. Connection

H = Horizontal

V = Vertical (plenum box is always circular)

5. Damper blade

M = With damper blade

6. Accessories

G = With lip seal

I = With insulation

7. Nominal size

D = 300/400/500/600/625 (mm)

8. Finish

P = white RAL 9010

RALxxx = color per RAL codes

For example: **SWF-S-Z-H-I-M-500-P**

Type of diffuser

Square

System

Supply air

Connection

Horizontal

Damper blade

with cords and pressure tap

Size

500mm

Finish

White powder coated

CEILING SWIRL DIFFUSER WITH ADJUSTABLE BLADES



DESCRIPTION

The SWS swirl diffuser with individually manually adjustable blades is a comfortable air distribution element. The diffuser is for high room air change rate. The product can be installed onto an air duct using a plenum box with a horizontal or a vertical connection by a flexible circular ducts. It can be used for ventilation, as well as supplying cold or warm air. SWS has low sound power level for comfort zones with adjustable air control blades.

MATERIAL

Powder coated galvanized iron sheet or aluminum

FINISH

Powder coated (optional RAL codes)

APPLICATION

For supply air or exhaust air
For constant or variable airflow
For all types of ceiling system
For room height up to 4m

SIZES

300mm x 8 slots - 300mm x 10 slots
400mm x 12 slots - 500mm x 16 slots
500mm x 24 slots - 500mm x 28 slots
600mm x 24 slots - 600mm x 48 slots

STANDARD

Sound power level of the air-generated noise measured according to EN-ISO 5135

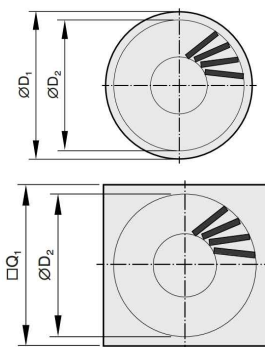
FLOW RATE

7 ~ 470 l/s (25 ~ 1692 m³/h)

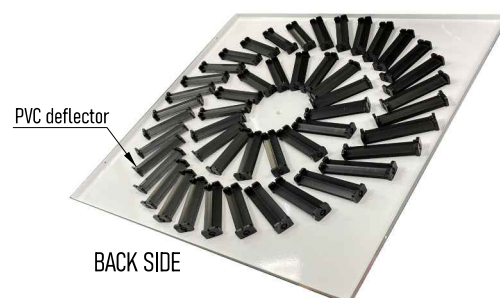
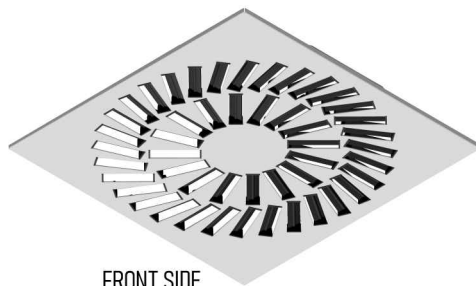
OPTION

Square/round face
Square/circular plenum box

CONSTRUCTION

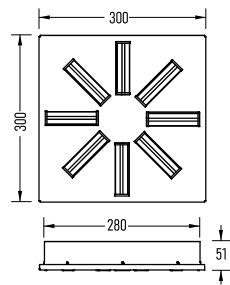


| Size x Slot | Round | | Square | | No. of slot | Effective area (m ²) | |
|-------------|-----------------|-----------------|----------------|-----------------|-------------|----------------------------------|--------|
| | ØD ₁ | ØD ₂ | Q ₁ | ØD ₂ | | Round | Square |
| 300 x 8 | 280 | 280 | 300 | 280 | 8 | 0.007 | 0.007 |
| 300 x 10 | 280 | 280 | 300 | 280 | 10 | 0.008 | 0.008 |
| 400 x 12 | 370 | 370 | 400 | 370 | 12 | 0.010 | 0.010 |
| 500 x 16 | 460 | 460 | 500 | 460 | 16 | 0.014 | 0.014 |
| 500 x 24 | 460 | 460 | 500 | 460 | 24 | 0.021 | 0.021 |
| 500 x 28 | 460 | 460 | 500 | 460 | 28 | 0.025 | 0.025 |
| 600 x 24 | 550 | 550 | 600 | 550 | 24 | 0.021 | 0.021 |
| 600 x 48 | 550 | 550 | 600 | 550 | 48 | 0.042 | 0.042 |

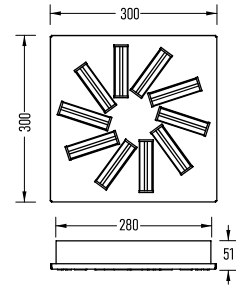


SIZES AND SLOTS

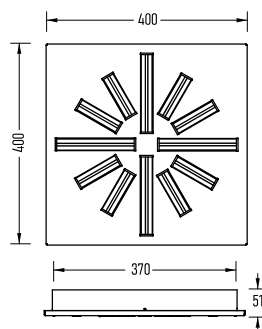
300mm x 8 slots



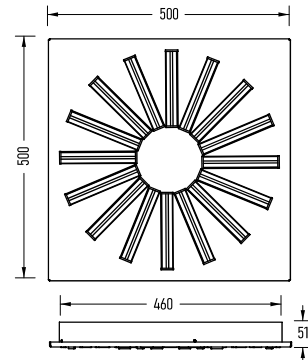
300mm x 10 slots



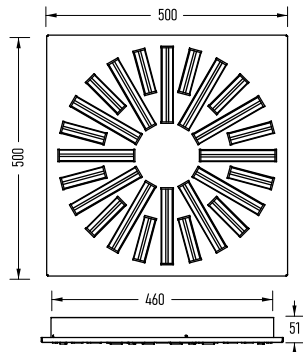
400mm x 12 slots



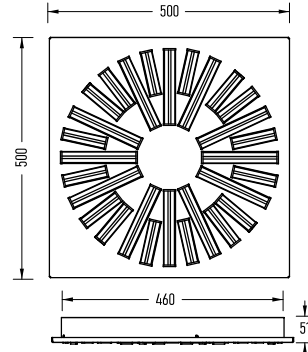
500mm x 16 slots



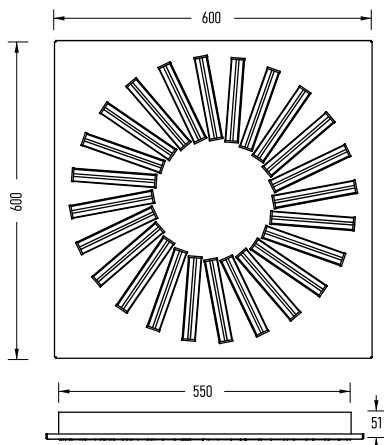
500mm x 24 slots



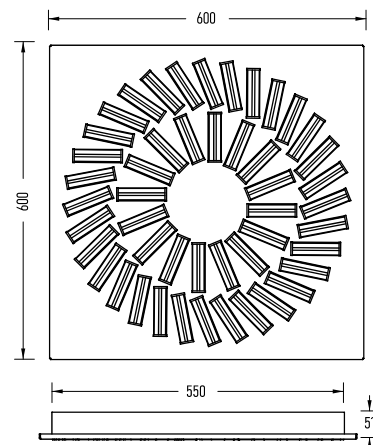
500mm x 28 slots



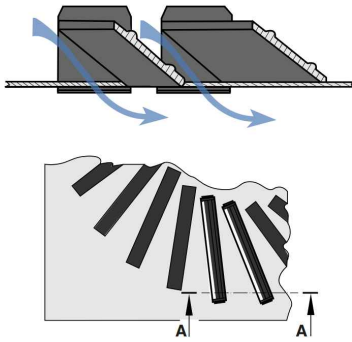
600mm x 24 slots



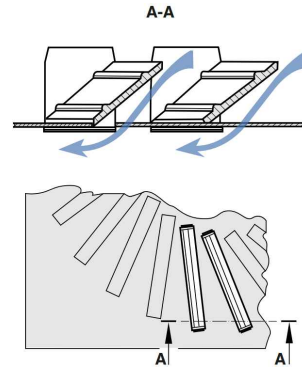
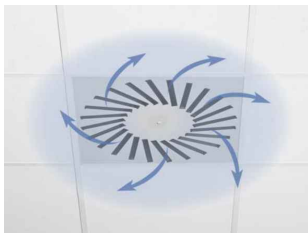
600mm x 48 slots



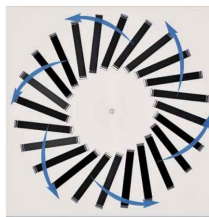
Air control blades to external swirl



Air control blades to internal swirl

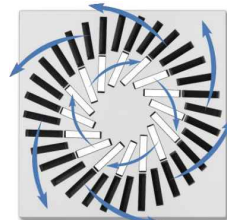
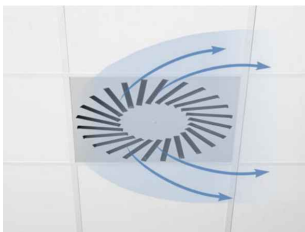

AIR PATTERNS


Horizontal omni directional air discharge

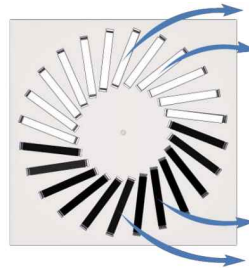
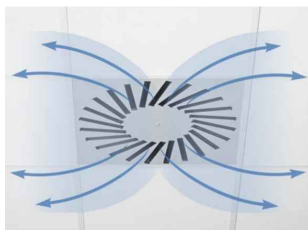


Blade set to external swirl

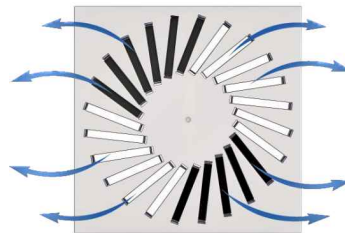
OR

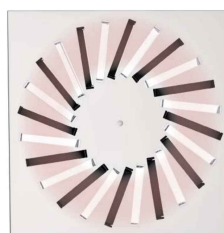
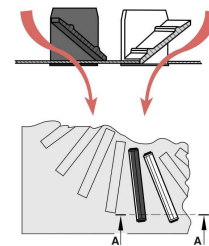

 Outer blade set to external swirl
Inner blades set to internal swirl


Horizontal one-way air discharge


 Blade set to external
and external swirl
per half circle


Horizontal two-way air discharge


 Blade set to external
and external swirl
per quadrant

 Vertical air discharge
(heat air supply)

 blade set alternatively
to external and external swirl


Supply air: sound power level and total differential pressure of horizontal duct connection

| Size x slot | q _v l/s (m ³ /h) | Damper blade : 0° | | Damper blade : 45° | | Damper blade : 90° | |
|-------------|---|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|
| | | Δp _t (Pa) | L _{WA} [dB(A)] | Δp _t (Pa) | L _{WA} [dB(A)] | Δp _t (Pa) | L _{WA} [dB(A)] |
| 300 x 8 | 7 (26) | 1 | <15 | 1 | <15 | 1 | <15 |
| | 35 (108) | 12 | 20 | 14 | 20 | 22 | 21 |
| | 60 (198) | 41 | 38 | 46 | 38 | 74 | 39 |
| | 85 (288) | 87 | 50 | 98 | 51 | 157 | 52 |
| 400 x 12 | 13 (46) | 1 | <15 | 1 | <15 | 1 | <15 |
| | 60 (198) | 11 | 21 | 13 | 20 | 26 | 20 |
| | 100 (360) | 38 | 39 | 44 | 40 | 85 | 40 |
| 500 x 24 | 70 (252) | 10 | 18 | 14 | 21 | 35 | 24 |
| | 125 (450) | 31 | 36 | 45 | 40 | 112 | 43 |
| | 175 (648) | 65 | 50 | 94 | 54 | 233 | 59 |
| 600 x 24 | 28 (102) | 1 | <15 | 1 | <15 | 2 | <15 |
| | 105 (360) | 10 | 22 | 13 | 23 | 30 | 26 |
| | 165 (612) | 28 | 38 | 38 | 40 | 87 | 43 |
| | 260 (864) | 56 | 50 | 75 | 54 | 174 | 57 |
| 600 x 48 | 40 (145) | 1 | <15 | 2 | <15 | 4 | <15 |
| | 130 (432) | 10 | 22 | 16 | 26 | 39 | 31 |
| | 210 (720) | 27 | 38 | 43 | 44 | 109 | 48 |
| | 305 (1008) | 53 | 50 | 85 | 58 | 214 | 63 |

Supply air: sound power level and total differential pressure of horizontal duct connection

| Size x slot | q _v l/s (m ³ /h) | Damper blade : 0° | | Damper blade : 45° | | Damper blade : 90° | |
|-------------|---|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|
| | | Δp _t (Pa) | L _{WA} [dB(A)] | Δp _t (Pa) | L _{WA} [dB(A)] | Δp _t (Pa) | L _{WA} [dB(A)] |
| 300 x 8 | 7 (26) | 1 | <15 | 1 | <15 | 1 | <15 |
| | 30 (108) | 12 | 20 | 14 | 20 | 22 | 21 |
| | 55 (198) | 41 | 38 | 46 | 38 | 74 | 39 |
| | 80 (288) | 87 | 50 | 98 | 51 | 157 | 52 |
| 400 x 12 | 13 (46) | 1 | <15 | 1 | <15 | 1 | <15 |
| | 55 (198) | 11 | 21 | 13 | 20 | 26 | 20 |
| | 100 (360) | 38 | 39 | 44 | 40 | 85 | 40 |
| 500 x 24 | 19 (70) | 1 | <15 | 1 | <15 | 3 | <15 |
| | 70 (252) | 10 | 18 | 14 | 21 | 35 | 24 |
| | 125 (450) | 31 | 36 | 45 | 40 | 112 | 43 |
| 600 x 24 | 28 (102) | 1 | <15 | 1 | <15 | 2 | <15 |
| | 100 (360) | 10 | 22 | 13 | 23 | 30 | 26 |
| | 170 (612) | 28 | 38 | 38 | 40 | 85 | 43 |
| | 240 (864) | 56 | 50 | 75 | 54 | 174 | 57 |
| 600 x 48 | 40 (145) | 1 | <15 | 2 | <15 | 4 | <15 |
| | 120 (432) | 10 | 22 | 16 | 26 | 39 | 31 |
| | 200 (720) | 27 | 38 | 43 | 44 | 109 | 48 |
| | 280 (1008) | 53 | 50 | 85 | 58 | 214 | 63 |



ORDERING CODE

SWS - R/S - Z/A - H/V - M - G - I - D - P - Ral xxx

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

1. Type

SWS = Starduct slot swirl diffuser with adjustable blade

2. Construction

R = Round

S = Square

3. System

Z = Supply air

A = Extract air

4. Connection

H = Horizontal

V = Vertical (plenum box is always circular)

5. Damper blade

M = With damper blade

6. Accessories

G = With lip seal

I = With insulation

7. Norminal size and number of blade

D = 300 x 8 / 400 x 16 / 500 x 24

600 x 24 / 625 x 24 / 600 x 48 / 625 x 54

8. Finish

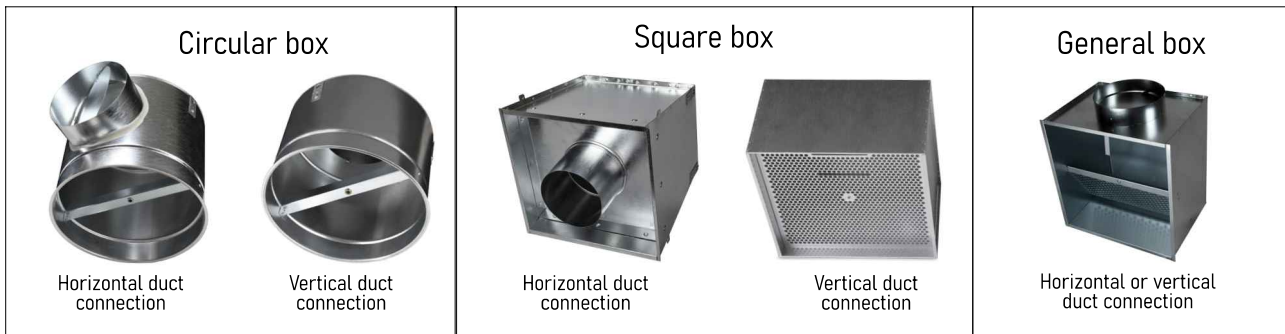
P = white RAL 9010

RALxxx = color per RAL codes

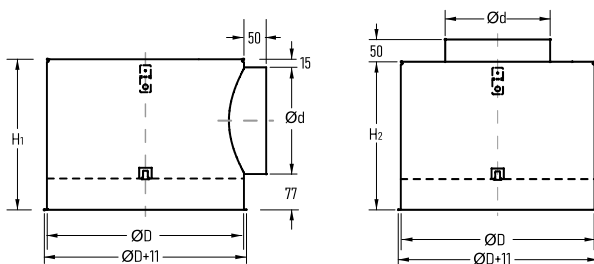
For example: **SWF-S-Z-H-I-M-500x24-P**

| | |
|------------------|-----------------------------|
| Type of diffuser | Square |
| System | Supply air |
| Connection | Horizontal |
| Damper blade | with cords and pressure tap |
| Size & slot | 500mm x 24 slots |
| Finish | White powder coated |

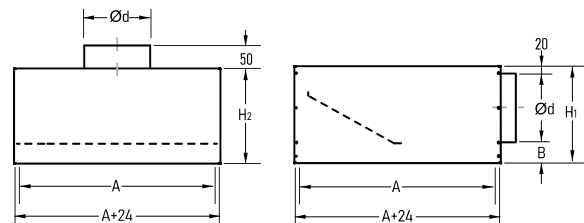
PLENUM BOX



Circular box: applicable for round and square diffuser face



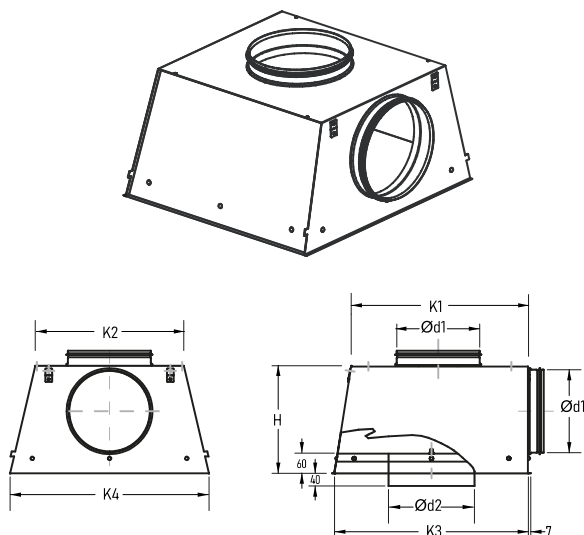
Square box: applicable for square diffuser face only



| Size | ØD | H _{hor} | H _{ver} | Ød | m _{hor} | m _{ver} |
|---------|-----|------------------|------------------|-----|------------------|------------------|
| | mm | | | | kg | |
| 300-160 | 275 | 250 | 200 | 158 | 2.3 | 2.0 |
| 400-200 | 364 | 290 | 200 | 198 | 3.3 | 2.8 |
| 500-200 | 470 | 290 | 200 | 198 | 4.7 | 3.9 |
| 600-200 | 575 | 290 | 300 | 198 | 6.2 | 6.3 |
| 600-250 | 575 | 340 | 300 | 248 | 6.7 | 6.2 |
| 625-200 | 595 | 290 | 300 | 198 | 6.5 | 6.9 |
| 625-250 | 595 | 340 | 300 | 248 | 7.0 | 6.6 |

| Size | A | H _{hor} | H _{ver} | Ød | B | m _{hor} | m _{ver} |
|---------|-----|------------------|------------------|-----|----|------------------|------------------|
| | mm | | | | | kg | |
| 300-160 | 266 | 240 | 200 | 158 | 62 | 2.6 | 2.4 |
| 400-160 | 366 | 240 | 200 | 158 | | 3.6 | 3.4 |
| 400-200 | 366 | 280 | 200 | 198 | | 4.0 | 3.6 |
| 500-200 | 466 | 280 | 200 | 198 | | 5.3 | 4.7 |
| 600-200 | 566 | 280 | 300 | 198 | | 6.7 | 7.2 |
| 600-250 | 566 | 330 | 300 | 248 | | 7.4 | 7.3 |
| 625-200 | 591 | 280 | 300 | 198 | | 7.1 | 7.6 |
| 625-250 | 591 | 330 | 300 | 248 | | 7.8 | 7.7 |

General box: applicable for both horizontal and vertical duct connection

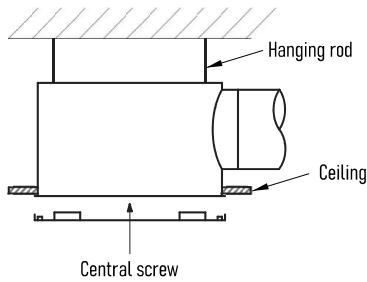


| Size | K ₁ | K ₂ | K ₃ | K ₄ | H | Ød | m |
|---------|----------------|----------------|----------------|----------------|-----|-----|------|
| | mm | | | | | | kg |
| 300-100 | 250 | 200 | 278 | 292 | 190 | 98 | 1.95 |
| 300-125 | 247 | 200 | 278 | 292 | 215 | 123 | 2.20 |
| 300-160 | 242 | 185 | 278 | 292 | 250 | 158 | 2.50 |
| 400-160 | 340 | 279 | 378 | 392 | 240 | 158 | 4.10 |
| 400-200 | 334 | 260 | 378 | 392 | 280 | 198 | 4.50 |
| 500-160 | 438 | 375 | 478 | 492 | 250 | 158 | 5.90 |
| 500-200 | 432 | 356 | 478 | 492 | 290 | 198 | 6.10 |
| 500-250 | 432 | 336 | 478 | 492 | 320 | 248 | 6.50 |
| 600-200 | 535 | 465 | 578 | 592 | 270 | 198 | 6.70 |
| 600-250 | 528 | 442 | 578 | 592 | 320 | 248 | 7.70 |
| 600-315 | 500 | 400 | 578 | 592 | 385 | 313 | 8.90 |
| 625-200 | 560 | 490 | 603 | 617 | 270 | 198 | 8.70 |
| 625-250 | 553 | 467 | 603 | 617 | 320 | 248 | 9.10 |
| 625-315 | 540 | 440 | 603 | 617 | 385 | 313 | 9.70 |

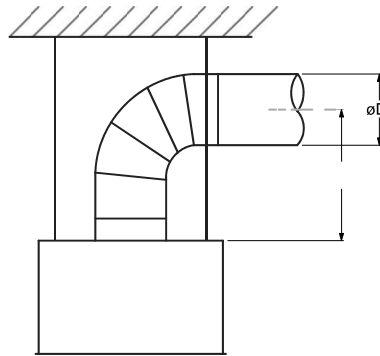
MOUNTING

The ceiling swirl diffuser is most commonly installed onto a ventilation duct as illustrated below. The mounting consists of installing the plenum box to the ceiling using draw-bars and mounting the diffuser face onto the plenum box using a centric screw which is included in the delivery.

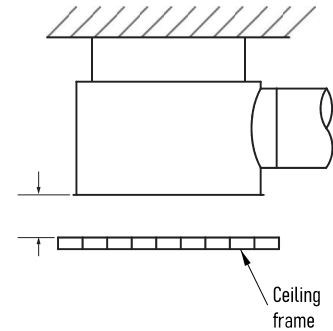
The below pictures depicts various methods of installing the diffuser onto the ceiling. When mounted into a suspended grid ceiling the supply air swirl is expected to be partially reduced. It is therefore needed to respect the minimum distance of the diffuser - at least 150 mm from the grid ceiling.



1. Flush mounted for continuous suspended ceiling



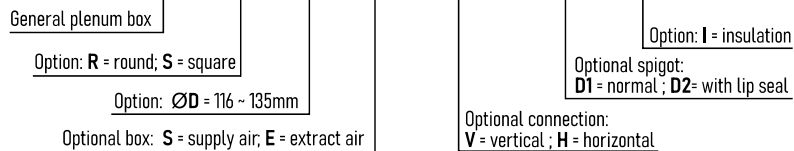
2. Free hanging installation onto ceiling - $h_{min} > (3-5)D$



3. Installation between the ceiling and the suspended grid ceiling

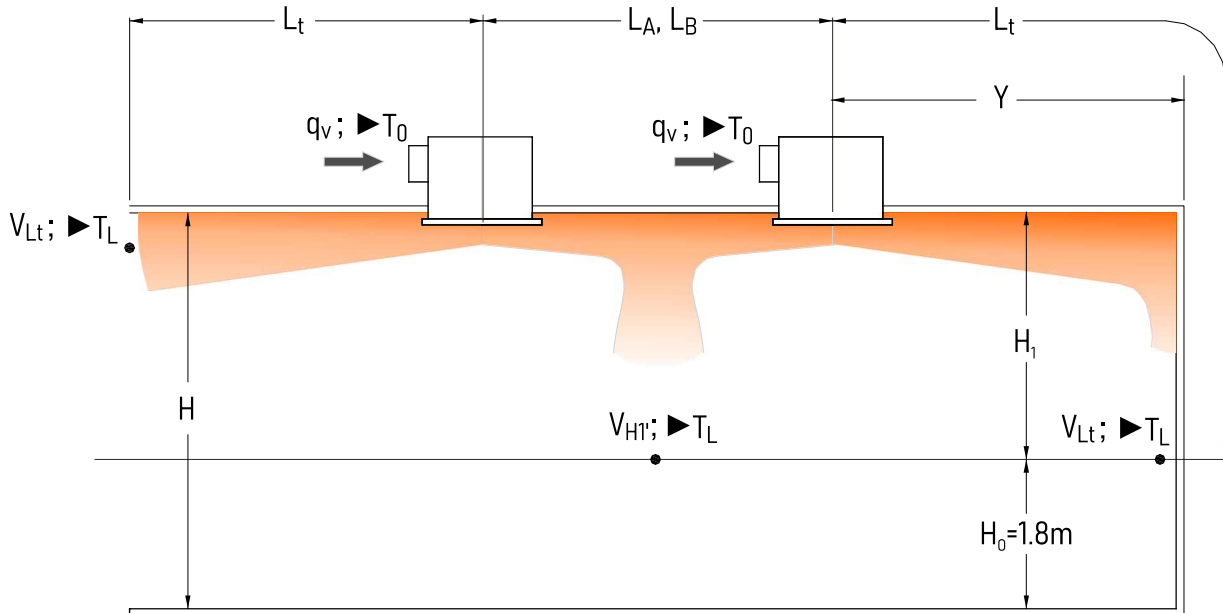
ORDERING CODE

PB-R/S-D-S/E-V/H-D1/D2-I



Note: Round plenum is applicable for both round and square diffuser face, square plenum is applicable for square diffuser face only. General box is pre-fabricated for quick delivery or low price, please contact us for more information.

Arrangement of diffuser and basic terminologies



AIRFLOW INSIDE THE ROOM

| Legend | Unit | |
|--------------------|---------------------|--|
| q_v | (m ³ /h) | - Airflow volume per 1 diffuser |
| Y | (m) | - Horizontal distance to the wall |
| H | (m) | - Room height |
| H_1 | (m) | - Distance from the ceiling to the occupied zone |
| H_0 | (m) | - Occupied zone |
| L_t | (m) | - Throw distance: by the wall - $L_t = H_1 + Y$ between the diffusers - $L_t = H_1 + A/2$ |
| V_{L_t}, V_{H_1} | (m/s) | - Air velocity @ throw distance L_t , @ distance H_1 |
| T_0 | (K) | - Temp. difference btw. the supply & room air temp. |
| T_L | (K) | - Difference btw. the airflow core and room air temp. |
| P_t | (Pa) | - Pressure drop |
| L_{WA} | (dB) | - Sound power level |
| L_A, L_B | (m) | - Distance between diffusers by length and by width of the room (A = distance between columns, B = distance between rows) |