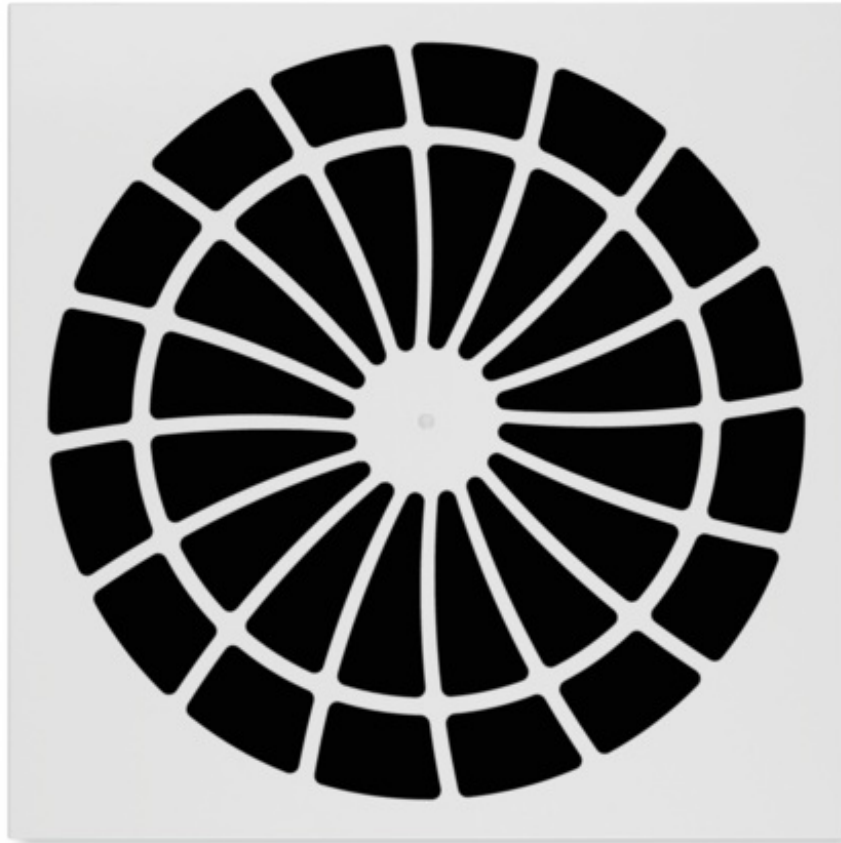


Type ADD



FOR THE CREATIVE DESIGN OF CEILINGS IN COMFORT ZONES, WITH FIXED AIR CONTROL BLADES

Circular and square ceiling swirl diffusers

- Nominal sizes 250, 300, 400, 450, 500, 600, 625
- Volume flow rate range 20 – 465 l/s or 72 – 1674 m³/h
- Diffuser face made of galvanised sheet steel, powder-coated
- For supply and extract air
- For variable and constant volume flows
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- Swirl unit inside for the best swirl effect and high induction levels
- Ideal for comfort zones

Optional equipment and accessories

- Exposed diffuser face available in RAL CLASSIC colours
- Horizontal or vertical duct connection
- Plenum box with cord-operated damper blade and pressure tap



APPLICATION

Application

- Type ADD ceiling swirl diffusers are used as supply air or extract air diffusers for comfort zones
- Attractive design element for building owners and architects with demanding aesthetic requirements
- Horizontal swirling supply air discharge for mixed flow ventilation
- The efficient swirl creates high induction levels, thereby rapidly reducing the temperature difference and airflow velocity (supply air variant)
- For variable and constant volume flows
- For supply air to room air temperature differences from -12 to $+10$ K
- For room heights up to 4 m (lower edge of suspended ceiling)
- For all types of ceiling systems

Special characteristics

- For the creative design of ceilings in comfort zones
- Diffuser faces in many different designs
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- Horizontal or vertical duct connection

Nominal sizes

- 250, 300, 400, 450, 500, 600, 625

DESCRIPTION

Variants

- ADD-Q: Square diffuser face
- ADD-R: Circular diffuser face
- ADD-* -Z: Supply air
- ADD-* -A: Extract air

Connection

- H: Horizontal duct connection
- V: Vertical duct connection

Parts and characteristics

- Circular or square design diffuser face
- Swirl unit and discharge nozzle for ideal horizontal supply air discharge
- Plenum box with suspension holes and equalising element that ensures a uniform airflow through the diffuser face
- Simple installation of the diffuser face due to central fixing screw with decorative cap

Attachments

- M: Damper blade for volume flow rate balancing
- MN: Pressure tap and cord-operated damper blade for volume flow rate balancing with the diffuser face in place

Accessories

- Lip seal

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal (if accessory lip seal has been ordered)

Materials and surfaces

- Diffuser face, swirl unit, plenum box and cross bar made of galvanised sheet steel
- Discharge nozzle made of aluminium

- Lip seal made of rubber
- Swirl unit and discharge nozzle dip coated RAL 9005, jet black
- Diffuser face powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

Standards and guidelines

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

Maintenance

- Maintenance-free as construction and materials are not subject to wear
- Inspection and cleaning to VDI 6022

TECHNICAL INFORMATION

Function, Technical data, Quick sizing, Specification text, Order code

FUNCTION

Functional description

Ceiling swirl diffusers in air conditioning systems create a swirl to supply air to rooms. The resulting airflow induces high levels of room air, thereby rapidly reducing the airflow velocity and the temperature difference between supply air and room air. Ceiling swirl diffusers allow for large volume flow rates. The result is a mixed flow ventilation in comfort zones, with good overall room ventilation, creating only very little turbulence in the occupied zone.

Design ceiling swirl diffusers are characterised by a diffuser face plate with a particular pattern. The swirl unit required for the swirling air discharge is situated inside the plenum box and hence not visible from the room.

Type ADD ceiling swirl diffusers have fixed blades. Air discharge is horizontal omni directional. The supply air to room air temperature difference may range from -12 to $+10$ K.

A damper blade (optional) simplifies volume flow rate balancing for commissioning. Pressure tap and cord-operated damper blade (optional) allow for volume flow rate balancing with the diffuser face in place.

To give rooms an aesthetic, uniform look, Type ADD diffusers may also be used for extract air.

A ADD-R

B ADD-Q

- ① Diffuser face
- ② Central fixing screw
- ③ Swirl unit (for supply air only)
- ④ Plenum box
- ⑤ Cross bar
- ⑥ Suspension hole
- ⑦ Spigot

Optional

- ⑧ Lip seal
- ⑨ Damper blade for volume flow rate balancing
- ⑩ Pressure tap

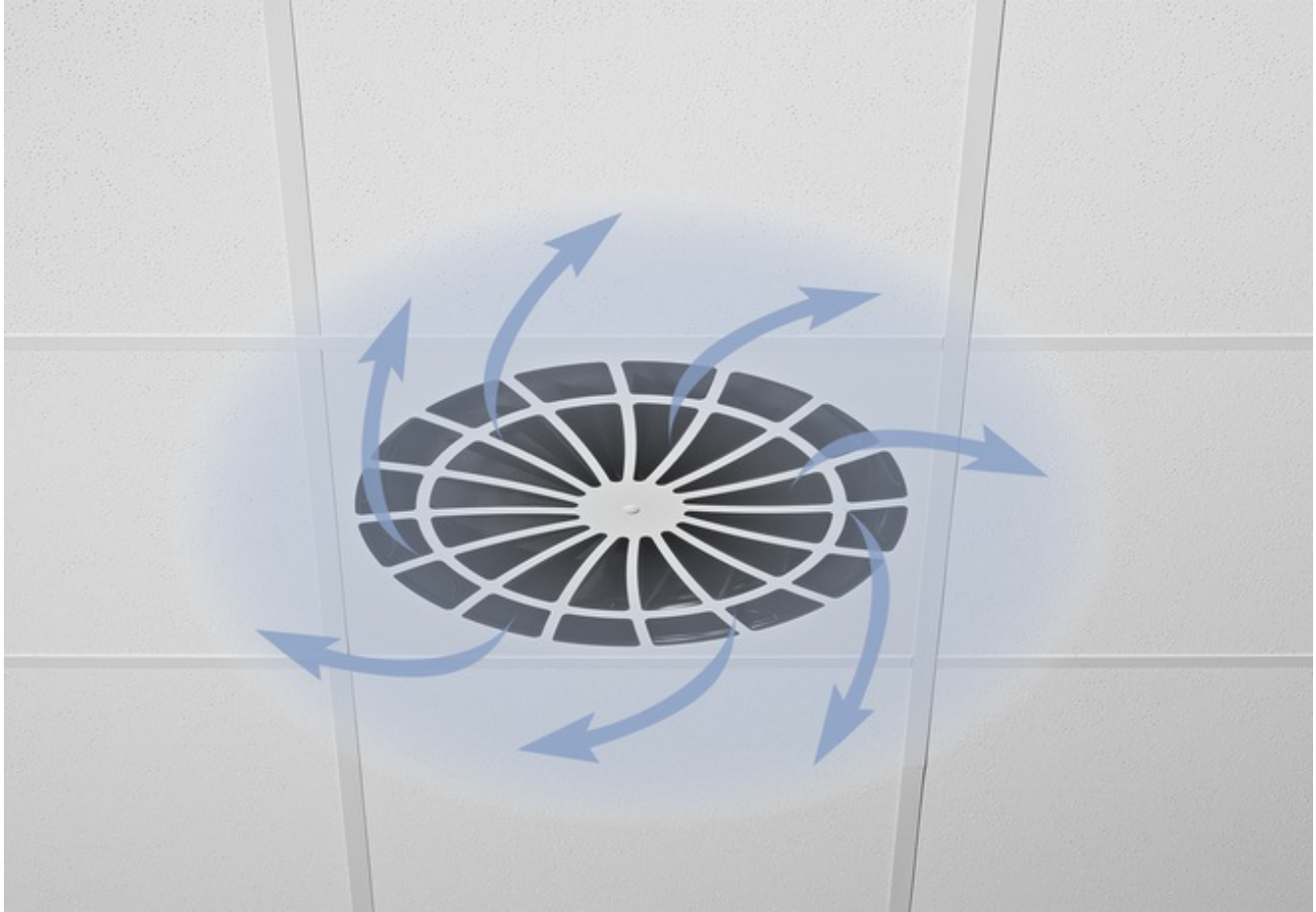
Green cord for closing the damper blade

White cord for opening the damper blade

Measuring tube

Text label indicating plenum box variant

Horizontal omni directional air discharge



TECHNICAL DATA

| | |
|--|--|
| Nominal sizes | 250, 300, 400, 450, 500, 600, 625 mm |
| Minimum volume flow rate, with $\Delta t_z = -6$ K | 20 – 200 l/s or 72 – 720 m ³ /h |
| Maximum volume flow rate, with $L_{WA} \cong 50$ dB(A) | 70 – 465 l/s or 256 – 1674 m ³ /h |
| Supply air to room air temperature difference | -12 to +10 K |

QUICK SIZING

Quick sizing tables provide a good overview of the volume flow rates and corresponding sound power levels and differential

pressures.

The maximum volume flow rates apply to a sound power level of approx. 50 dB (A) with damper blade position 0°.

Exact values for all parameters can be determined with our Easy Product Finder design programme.

ADD*-ZH (supply air), sound power level and total differential pressure

| Nominal size | V | | Damper blade position | | | | | |
|--------------|-----|------|-----------------------|-------|--------------|-------|--------------|-------|
| | | | 0° | | 45° | | 90° | |
| Nominal size | V | | Δp_t | LWA | Δp_t | LWA | Δp_t | LWA |
| | l/s | m³/h | Pa | dB(A) | Pa | dB(A) | Pa | dB(A) |
| 250 | 20 | 72 | 7 | 16 | 9 | 17 | 19 | 17 |
| | 35 | 126 | 21 | 29 | 29 | 31 | 58 | 31 |
| 250 | 50 | 180 | 43 | 38 | 58 | 41 | 119 | 41 |
| | 70 | 256 | 87 | 50 | 118 | 52 | 240 | 53 |
| 300 | 30 | 108 | 5 | <15 | 8 | <15 | 16 | 15 |
| | 60 | 216 | 22 | 29 | 32 | 31 | 64 | 33 |
| 300 | 90 | 324 | 49 | 40 | 72 | 44 | 144 | 46 |
| | 120 | 432 | 88 | 50 | 127 | 53 | 255 | 56 |
| 400 | 55 | 198 | 7 | 16 | 9 | 16 | 19 | 20 |
| | 100 | 360 | 23 | 31 | 31 | 32 | 64 | 37 |
| 400 | 145 | 522 | 49 | 42 | 66 | 44 | 134 | 49 |
| | 185 | 666 | 80 | 50 | 107 | 54 | 219 | 58 |
| 450 | 70 | 252 | 5 | <15 | 7 | <15 | 14 | 16 |
| | 140 | 504 | 21 | 29 | 29 | 31 | 57 | 35 |
| | 200 | 720 | 42 | 40 | 59 | 42 | 115 | 46 |

| | | | | | | | | |
|---------|-----|------|----|-----|-----|----|-----|----|
| 450 | 275 | 990 | 80 | 50 | 112 | 53 | 218 | 60 |
| | | | | | | | | |
| 500 | 85 | 306 | 6 | <15 | 9 | 17 | 19 | 22 |
| | 155 | 558 | 21 | 29 | 31 | 33 | 64 | 38 |
| 500 | 225 | 810 | 44 | 40 | 65 | 44 | 135 | 50 |
| | 300 | 1080 | 79 | 50 | 116 | 55 | 240 | 62 |
| 600 625 | 200 | 720 | 14 | 23 | 18 | 24 | 38 | 34 |
| | 290 | 1044 | 29 | 34 | 38 | 36 | 80 | 44 |
| 600 625 | 380 | 1368 | 50 | 43 | 65 | 45 | 138 | 53 |
| | 465 | 1674 | 75 | 50 | 97 | 53 | 206 | 61 |

ADD-*-ZV (supply air), sound power level and total differential pressure

| Nominal size | V | | Damper blade position | | | | | |
|--------------|-----|------|-----------------------|-----------------|--------------|-----------------|--------------|-----------------|
| | | | 0° | | 45° | | 90° | |
| Nominal size | V | | Δp_t | L _{WA} | Δp_t | L _{WA} | Δp_t | L _{WA} |
| | l/s | m³/h | Pa | dB(A) | Pa | dB(A) | Pa | dB(A) |
| 250 | 20 | 72 | 5 | <15 | 8 | 16 | 15 | 17 |
| | 40 | 144 | 20 | 31 | 31 | 35 | 58 | 36 |
| 250 | 60 | 216 | 44 | 43 | 70 | 48 | 131 | 50 |
| | 75 | 270 | 69 | 50 | 109 | 57 | 205 | 60 |
| 300 | 30 | 108 | 3 | <15 | 5 | <15 | 13 | <15 |
| | 60 | 216 | 12 | 27 | 22 | 31 | 51 | 36 |
| 300 | 95 | 342 | 31 | 40 | 55 | 45 | 129 | 52 |

| | | | | | | | | |
|---------|-----|------|----|-----|-----|-----|-----|----|
| | 130 | 468 | 58 | 50 | 103 | 56 | 241 | 71 |
| 400 | 55 | 198 | 4 | <15 | 7 | 16 | 17 | 23 |
| | 105 | 378 | 14 | 29 | 24 | 33 | 62 | 41 |
| 400 | 155 | 558 | 32 | 41 | 52 | 45 | 134 | 56 |
| | 205 | 738 | 55 | 50 | 91 | 55 | 235 | 70 |
| 450 | 70 | 252 | 3 | <15 | 4 | <15 | 11 | 17 |
| | 145 | 522 | 11 | 28 | 19 | 31 | 48 | 37 |
| 450 | 220 | 792 | 26 | 40 | 43 | 45 | 110 | 51 |
| | 295 | 1062 | 47 | 50 | 78 | 56 | 198 | 63 |
| 500 | 85 | 306 | 4 | <15 | 5 | <15 | 17 | 23 |
| | 155 | 558 | 12 | 29 | 18 | 33 | 56 | 42 |
| 500 | 225 | 810 | 26 | 41 | 38 | 45 | 118 | 55 |
| | 295 | 1062 | 45 | 50 | 66 | 54 | 203 | 72 |
| 600 625 | 200 | 720 | 9 | 27 | 14 | 30 | 34 | 35 |
| | 280 | 1008 | 17 | 36 | 27 | 40 | 66 | 45 |
| 600 625 | 355 | 1278 | 28 | 43 | 43 | 47 | 106 | 53 |
| | 435 | 1566 | 41 | 50 | 65 | 54 | 159 | 61 |

SPECIFICATION TEXT

Design ceiling swirl diffusers with square or circular diffuser face, for comfort zones with particularly demanding requirements of aesthetics and design. For supply air or extract air. Excellent aerodynamic and acoustic function due to swirl unit for horizontal swirling air discharge, creating high levels of induction. For installation into all types of suspended ceilings.

Ready-to-install component which consists of the diffuser face, swirl unit, plenum box with equalising element, side entry or top

entry spigot, and suspension holes or suspension lugs.

The diffuser face is fixed to the cross bar with a central screw.

Spigot suitable for ducts to EN 1506 or EN 13180.

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

Special characteristics

- For the creative design of ceilings in comfort zones
- Diffuser faces in many different designs
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- Horizontal or vertical duct connection

Materials and surfaces

- Diffuser face, swirl unit, plenum box and cross bar made of galvanised sheet steel
- Discharge nozzle made of aluminium
- Lip seal made of rubber
- Swirl unit and discharge nozzle dip coated RAL 9005, jet black
- Diffuser face powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

Technical data

- Nominal sizes: 250, 300, 400, 450, 500, 600, 625 mm
- Minimum volume flow rate, with $\Delta t_z = -6$ K: 20 – 200 l/s or 72 – 720 m³/h
- Maximum volume flow rate, with $L_{WA} \cong 50$ dB(A): 70 – 465 l/s or 256 – 1674 m³/h
- Supply air to room air temperature difference: -12 to +10 K

Sizing data

- V _____ [m³/h]
- Δp_t _____ [Pa]

Air-regenerated noise

- L_{WA} _____ [dB(A)]

ORDER CODE

Order example: ADD-Q-ZH-M-L/625

| | |
|---|--|
| Construction style | Square |
| System | Supply air |
| Connection | Horizontal |
| Damper blade for volume flow rate balancing | With damper blade |
| Accessories | With lip seal |
| Nominal size | 625 |
| Exposed surface | RAL 9010, pure white, gloss level 50 % |

ADD – Q – ZH – M – L / 600 / P1 – RAL ...

1

2

3

4

5

6

7

1 Type

ADD Ceiling swirl diffuser

2 Construction style

R Circular (not with nominal size 625)

Q Square

3 Connection

ZH Horizontal, supply air

ZV Vertical, supply air

AH Horizontal, extract air

AV Vertical, extract air

4 Damper blade for volume flow rate balancing

No entry: none

M With

Only for connections ZH and AH

MN With cords and pressure tap

5 Accessories

No entry: none

L With lip seal

6 Nominal size [mm]

250

300

400

450

500

600

625 (nur ADD-Q)

7 Exposed surface

No entry: powder-coated RAL 9010, pure white

P1 Powder-coated, specify RAL CLASSIC colour

Gloss level

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %

Variants, Dimensions and weight, Product details

VARIANTS

ADD-Q*-H

Designed for high comfort

Together with renowned designers and architects we have developed ceiling, wall, staircase and floor diffusers and grilles that are not only aesthetic design elements, but also meet demanding ventilation and acoustic requirements.

Variant

- Ceiling swirl diffuser with square diffuser face
- With plenum box for horizontal duct connection

Nominal sizes

- 250, 300, 400, 450, 500, 600, 625

Parts and characteristics

- Square diffuser face
- Plenum box for horizontal duct connection
- Circular opening to accommodate the diffuser face
- Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Simple installation of the diffuser face due to central fixing screw with decorative cap
- Damper blade for volume flow rate balancing (optional)
- Pressure tap and cord-operated damper blade for volume flow rate balancing (optional)
- Lip seal (optional)

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal (if accessory lip seal has been ordered)

ADD-Q*-V

Designed for high comfort

Together with renowned designers and architects we have developed ceiling, wall, staircase and floor diffusers and grilles that are not only aesthetic design elements, but also meet demanding ventilation and acoustic requirements.

Variant

- Ceiling swirl diffuser with square diffuser face
- With plenum box for vertical duct connection

Nominal sizes

- 250, 300, 400, 450, 500, 600, 625

Parts and characteristics

- Square diffuser face

- Plenum box for vertical duct connection
- Circular opening to accommodate the diffuser face
- Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Simple installation of the diffuser face due to central fixing screw with decorative cap
- Damper blade for volume flow rate balancing (optional)
- Lip seal (optional)

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal (if accessory lip seal has been ordered)

ADD-R-*-H

Designed for high comfort

Together with renowned designers and architects we have developed ceiling, wall, staircase and floor diffusers and grilles that are not only aesthetic design elements, but also meet demanding ventilation and acoustic requirements.

Variant

- Ceiling swirl diffuser with circular diffuser face
- With plenum box for horizontal duct connection

Nominal sizes

- 250, 300, 400, 450, 500, 600, 625

Parts and characteristics

- Circular diffuser face
- Plenum box for horizontal duct connection
- Circular opening to accommodate the diffuser face
- Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Simple installation of the diffuser face due to central fixing screw with decorative cap
- Damper blade for volume flow rate balancing (optional)
- Pressure tap and cord-operated damper blade for volume flow rate balancing (optional)
- Lip seal (optional)

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal (if accessory lip seal has been ordered)

ADD-R*-V

Designed for high comfort

Together with renowned designers and architects we have developed ceiling, wall, staircase and floor diffusers and grilles that are not only aesthetic design elements, but also meet demanding ventilation and acoustic requirements.

Variant

- Ceiling swirl diffuser with circular diffuser face
- With plenum box for vertical duct connection

Nominal sizes

- 250, 300, 400, 450, 500, 600, 625

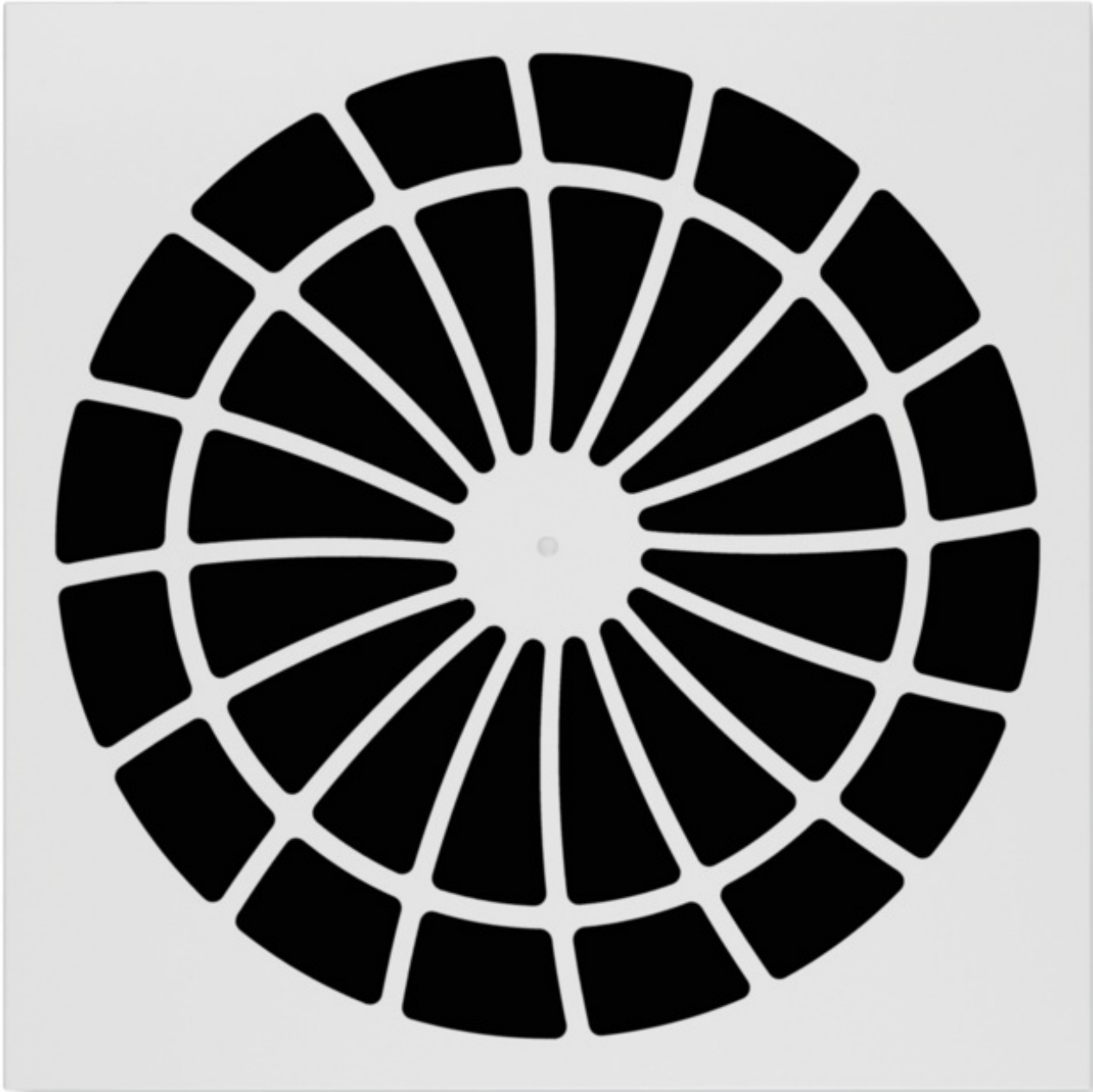
Parts and characteristics

- Circular diffuser face
- Plenum box for vertical duct connection
- Circular opening to accommodate the diffuser face
- Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Simple installation of the diffuser face due to central fixing screw with decorative cap
- Damper blade for volume flow rate balancing (optional)
- Lip seal (optional)

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal (if accessory lip seal has been ordered)

ADD-Q



ADD-R

DIMENSIONS AND WEIGHT

ADD-Q*-H

| Nominal size | □Q ₁ mm | H ₁ mm | □Q ₃ mm | H ₃ mm | ØD ₄ mm | H ₄ mm | ØD mm | A mm | C mm | Plenum box | m kg |
|--------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|----------|---------|---------|------------|---------|
| 250 | 248 | 8 | 266 | 255 | 202 | 220 | 123 | 161 | 48 | AK-Uni-019 | 3.6 |
| 300 | 298 | 8 | 290 | 285 | 258 | 250 | 158 | 174 | 50 | AK-Uni-020 | 4.4 |
| 400 | 398 | 8 | 372 | 330 | 314 | 295 | 198 | 199 | 50 | AK-Uni-021 | 6.7 |
| 450 | 448 | 8 | 476 | 380 | 362 | 345 | 248 | 224 | 48 | AK-Uni-022 | 9.0 |
| 500 | 498 | 8 | 476 | 380 | 426 | 345 | 248 | 224 | 48 | AK-Uni-023 | 10.2 |
| 600 | 598 | 8 | 590 | 445 | 578 | 410 | 313 | 257 | 50 | AK-Uni-025 | 14.2 |
| 625 | 623 | 8 | 590 | 445 | 578 | 410 | 313 | 257 | 50 | AK-Uni-025 | 14.5 |

ADD-Q*-V

| Nominal size | □Q ₁ mm | H ₁ mm | ØD ₃ mm | H ₃ mm | ØD mm | C mm | m kg |
|--------------|-----------------------|----------------------|-----------------------|----------------------|----------|---------|---------|
| 250 | 248 | 8 | 143 | 192 | 123 | 50 | 2.0 |
| 300 | 298 | 8 | 199 | 192 | 158 | 50 | 2.4 |
| 400 | 398 | 8 | 255 | 192 | 198 | 50 | 3.3 |
| 450 | 448 | 8 | 311 | 222 | 248 | 50 | 4.5 |
| 500 | 498 | 8 | 367 | 222 | 248 | 50 | 5.8 |
| 600 | 598 | 8 | 479 | 252 | 313 | 50 | 8.4 |
| 625 | 623 | 8 | 479 | 252 | 313 | 50 | 8.7 |

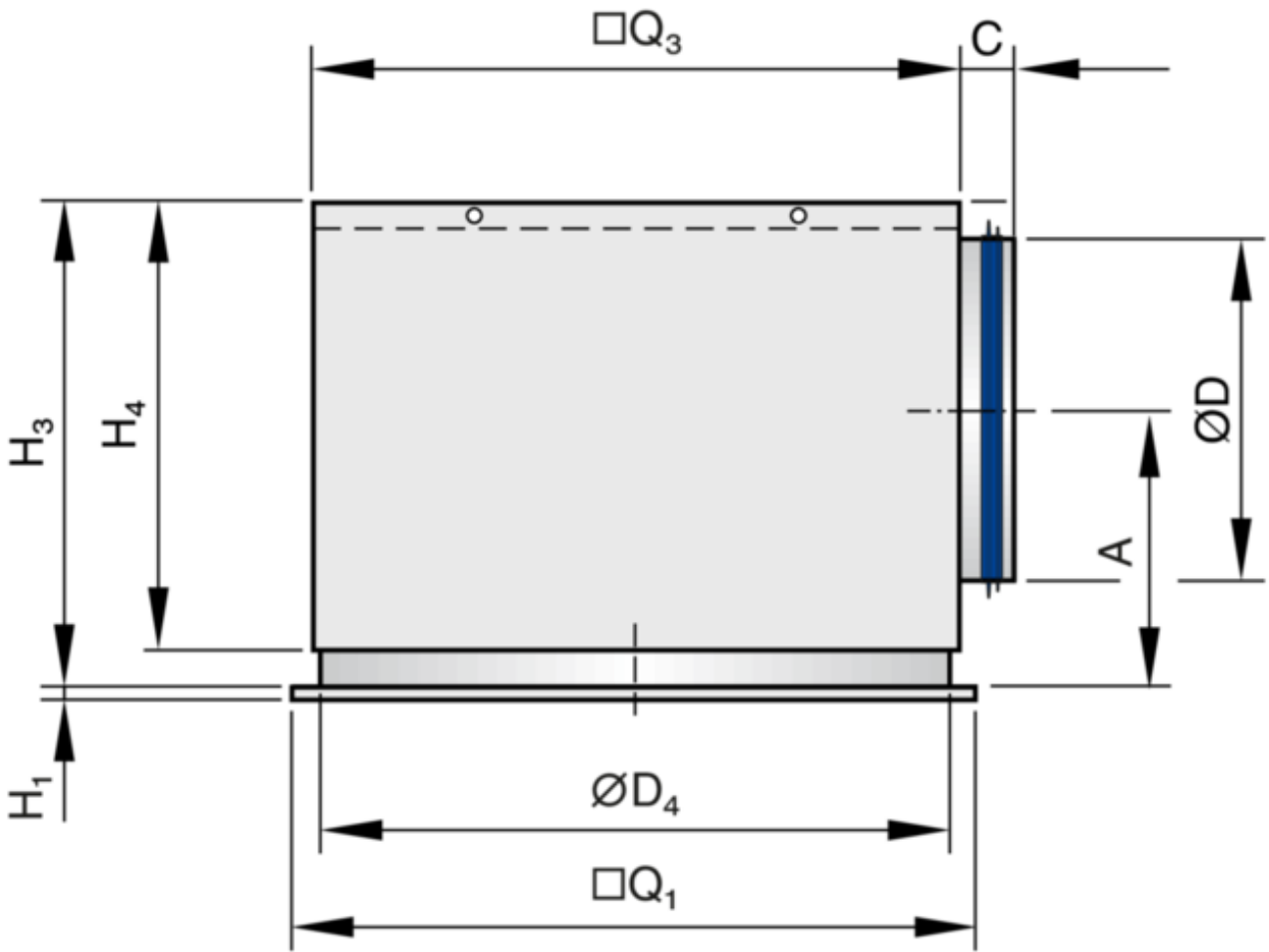
ADD-R*-H

| Nominal size | ØD ₁ mm | H ₁ mm | □Q ₃ mm | H ₃ mm | ØD ₄ mm | H ₄ mm | ØD mm | A mm | C mm | Plenum box | m kg |
|--------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|----------|---------|---------|------------|---------|
| 250 | 250 | 8 | 266 | 255 | 202 | 220 | 123 | 161 | 48 | AK-Uni-019 | 3.5 |
| 300 | 300 | 8 | 290 | 285 | 258 | 250 | 158 | 174 | 50 | AK-Uni-020 | 4.2 |
| 400 | 400 | 8 | 372 | 330 | 314 | 295 | 198 | 199 | 50 | AK-Uni-021 | 6.4 |
| 450 | 450 | 8 | 476 | 380 | 362 | 345 | 248 | 224 | 48 | AK-Uni-022 | 8.6 |
| 500 | 500 | 8 | 476 | 380 | 426 | 345 | 248 | 224 | 48 | AK-Uni-023 | 9.7 |
| 600 | 600 | 8 | 590 | 445 | 578 | 410 | 313 | 257 | 50 | AK-Uni-025 | 13.6 |

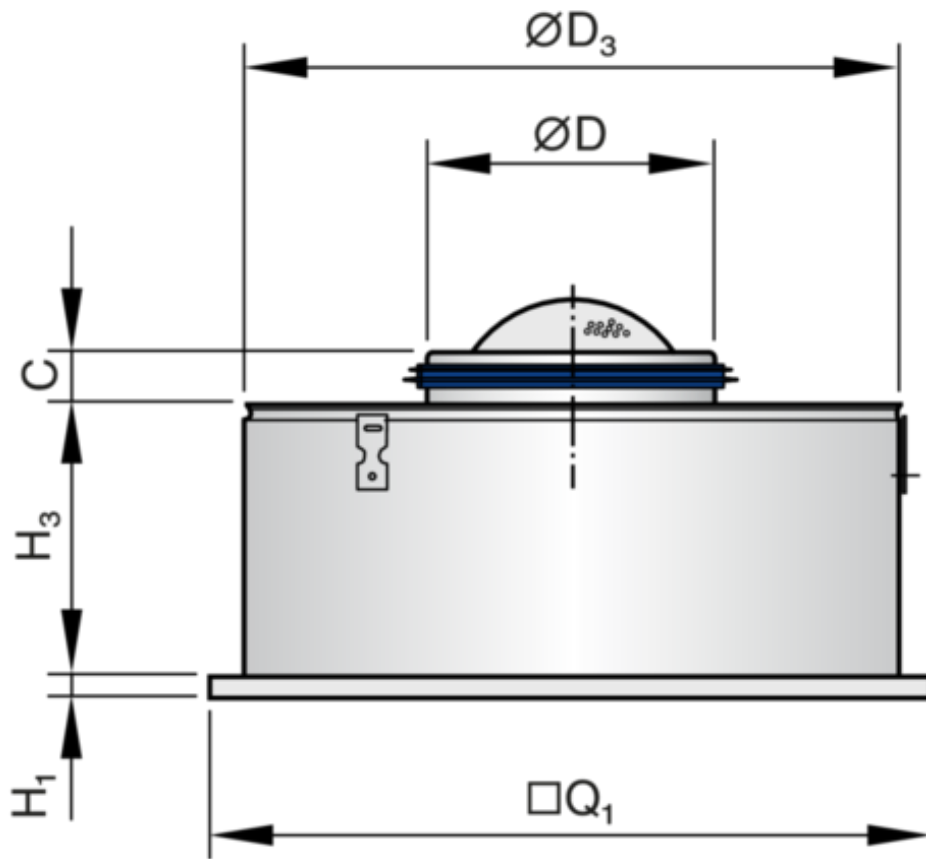
ADD-R*-V

| Nominal size | ØD ₁ mm | H ₁ mm | ØD ₃ mm | H ₃ mm | ØD mm | C mm | m kg |
|--------------|-----------------------|----------------------|-----------------------|----------------------|----------|---------|---------|
| 250 | 250 | 8 | 143 | 192 | 123 | 50 | 1.6 |
| 300 | 300 | 8 | 199 | 192 | 158 | 50 | 2.2 |
| 400 | 400 | 8 | 255 | 192 | 198 | 50 | 3.0 |
| 450 | 450 | 8 | 311 | 222 | 248 | 50 | 4.1 |
| 500 | 500 | 8 | 367 | 222 | 248 | 50 | 5.3 |
| 600 | 600 | 8 | 479 | 252 | 313 | 50 | 7.8 |

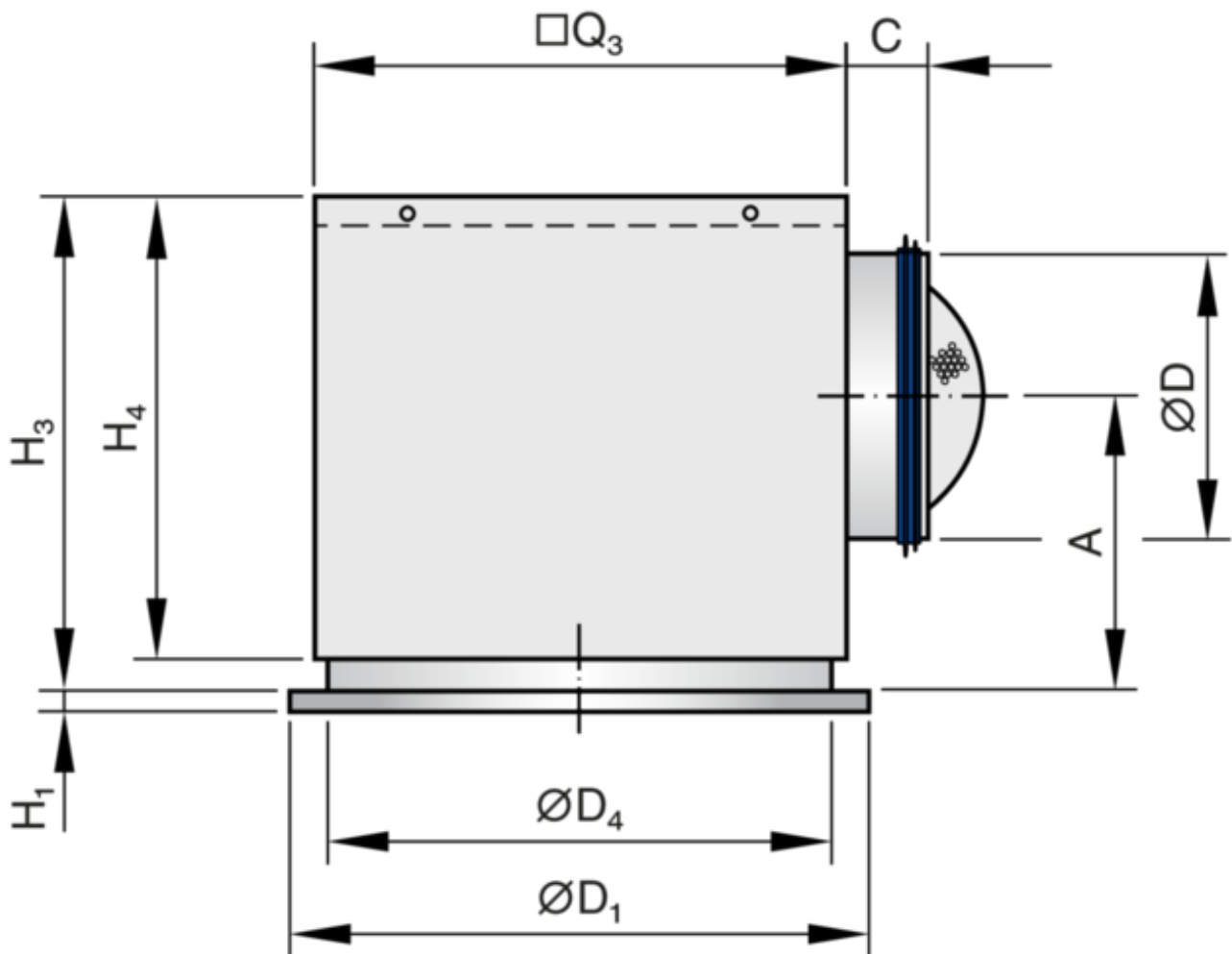
Square diffuser face with plenum box for horizontal duct connection



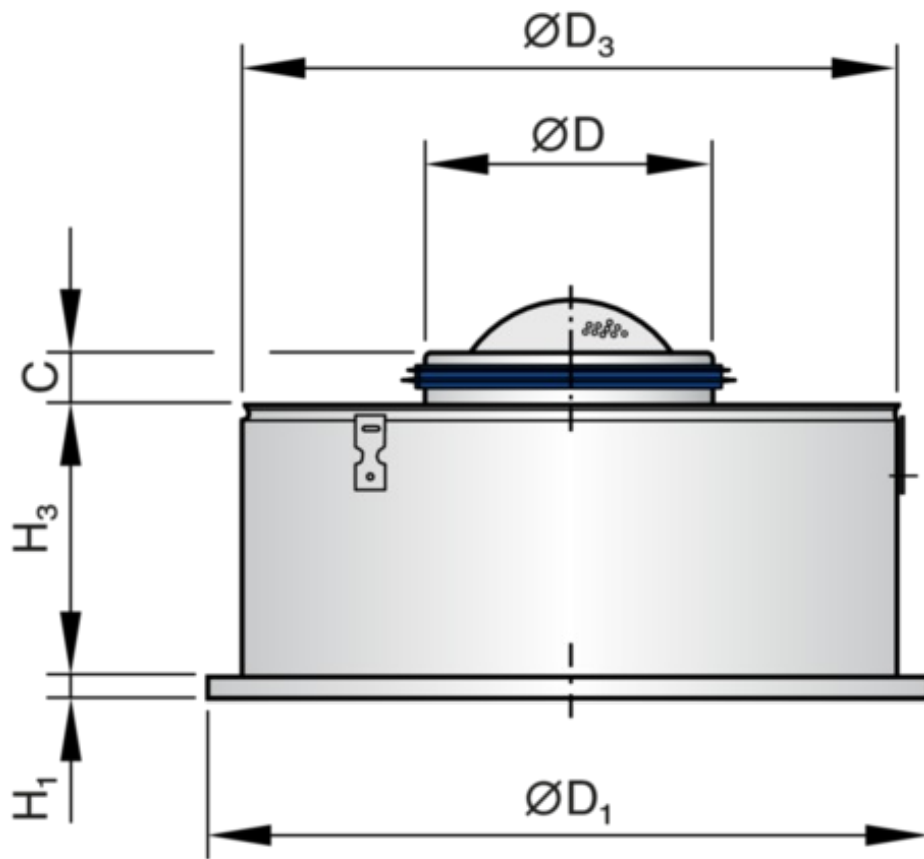
Square diffuser face with plenum box for vertical duct connection



Circular diffuser face with plenum box for horizontal duct connection



Circular diffuser face with plenum box for vertical duct connection



PRODUCT DETAILS

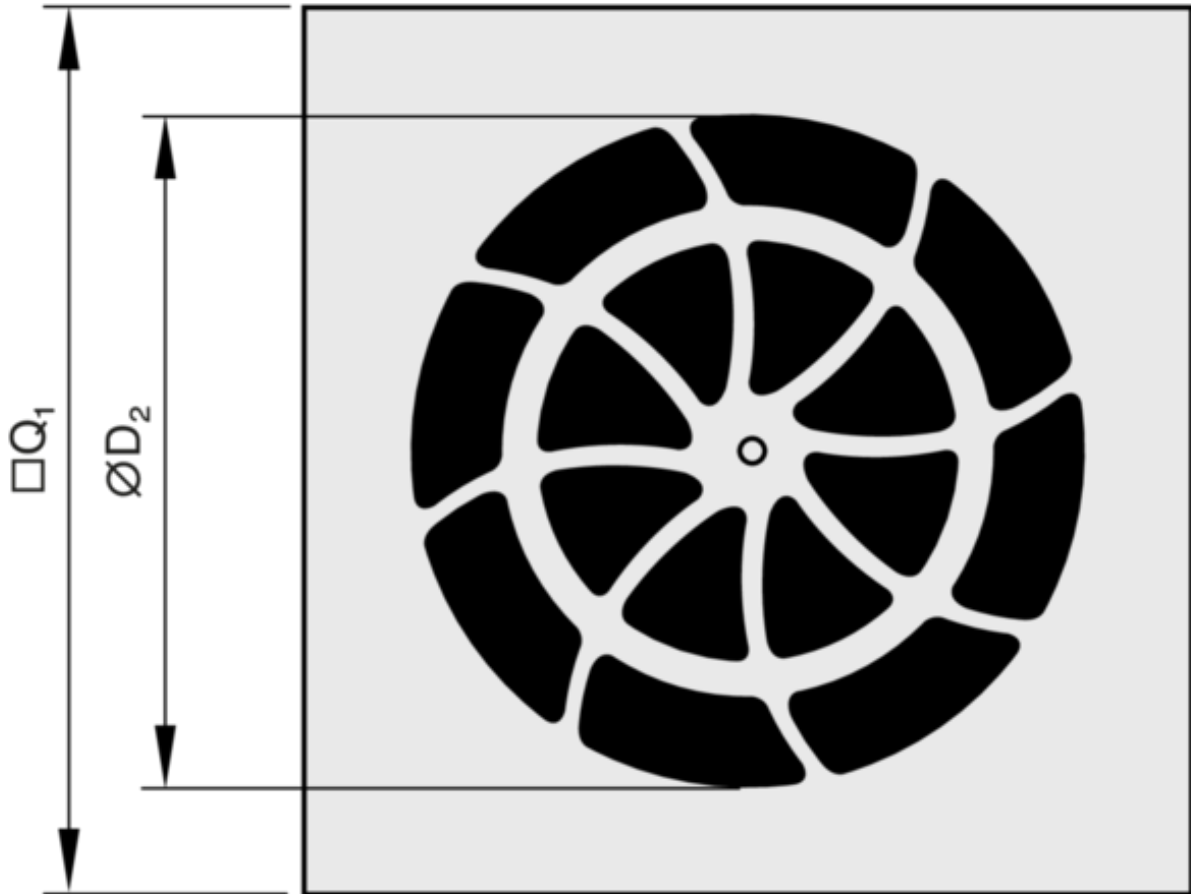
ADD-Q

| Nominal size | □Q ₁ mm | ∅D ₂ mm | A _{eff} m ² |
|--------------|-----------------------|-----------------------|------------------------------------|
| 250 | 248 | 192 | 0.0092 |
| 300 | 298 | 248 | 0.0137 |
| 400 | 398 | 304 | 0.0259 |
| 450 | 448 | 360 | 0.0336 |
| 500 | 498 | 416 | 0.0424 |
| 600 | 598 | 528 | 0.0635 |
| 625 | 623 | 528 | 0.0635 |

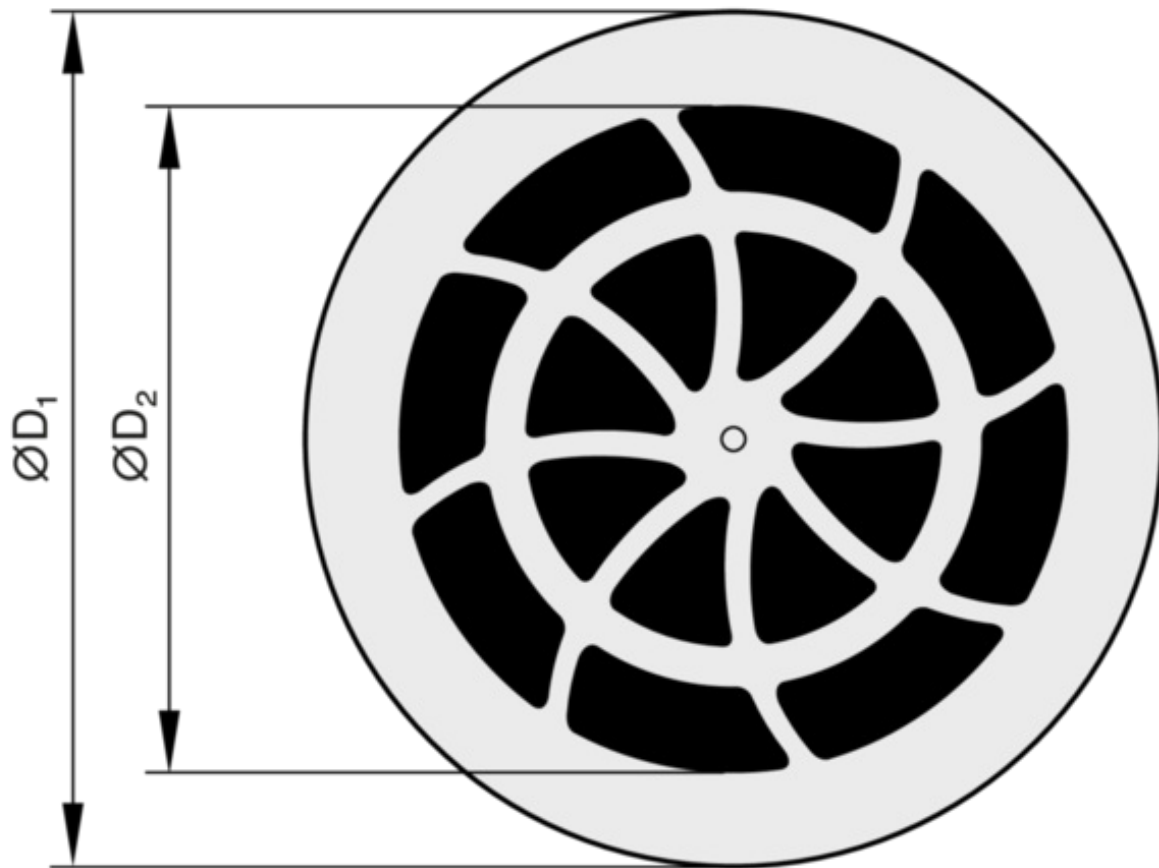
ADD-R

| Nominal size | ∅D ₁ mm | ∅D ₂ mm | A _{eff} m ² |
|--------------|-----------------------|-----------------------|------------------------------------|
| 250 | 250 | 192 | 0.0092 |
| 300 | 300 | 248 | 0.0137 |
| 400 | 400 | 304 | 0.0259 |
| 450 | 450 | 360 | 0.0336 |
| 500 | 500 | 416 | 0.0424 |
| 600 | 600 | 528 | 0.0635 |

Diffuser face ADD-Q



Diffuser face ADD-R



Installation examples, Installation details, Commissioning, Basic information and nomenclature

INSTALLATION EXAMPLES

Installation in T-bar ceilings



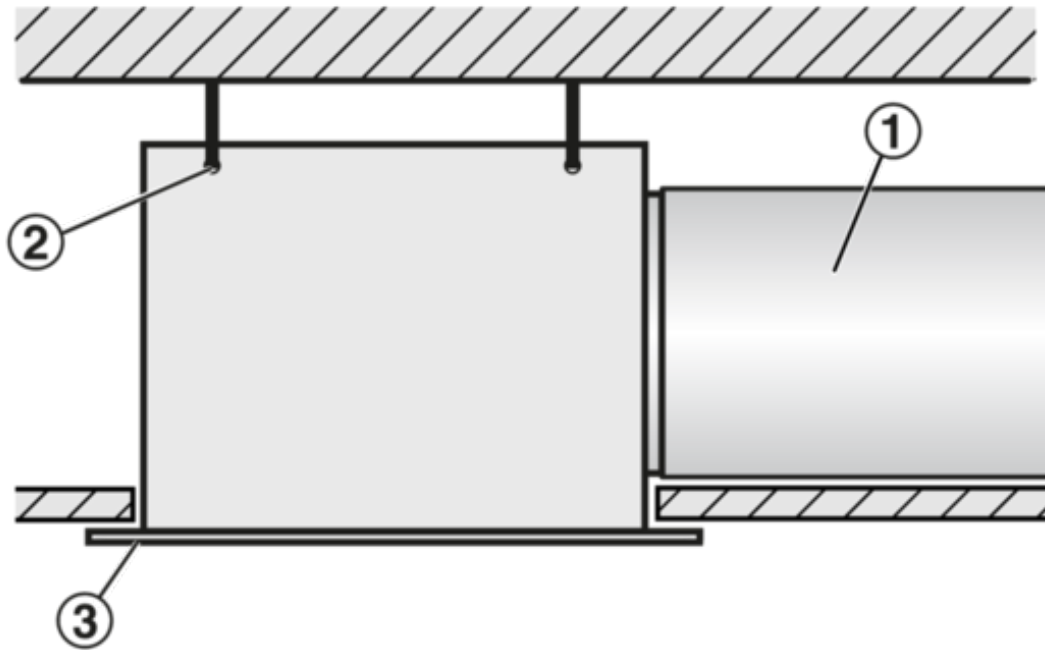
INSTALLATION DETAILS

Installation and commissioning

- Preferably for rooms with a clear height up to 4.0 m
- Flush ceiling installation
- Freely suspended installation only with an extended border (supply air variant)
- Horizontal or vertical duct connection
- If necessary, carry out volume flow rate balancing with the damper blade

These are only schematic diagrams to illustrate installation details.

Flush ceiling installation with square plenum box



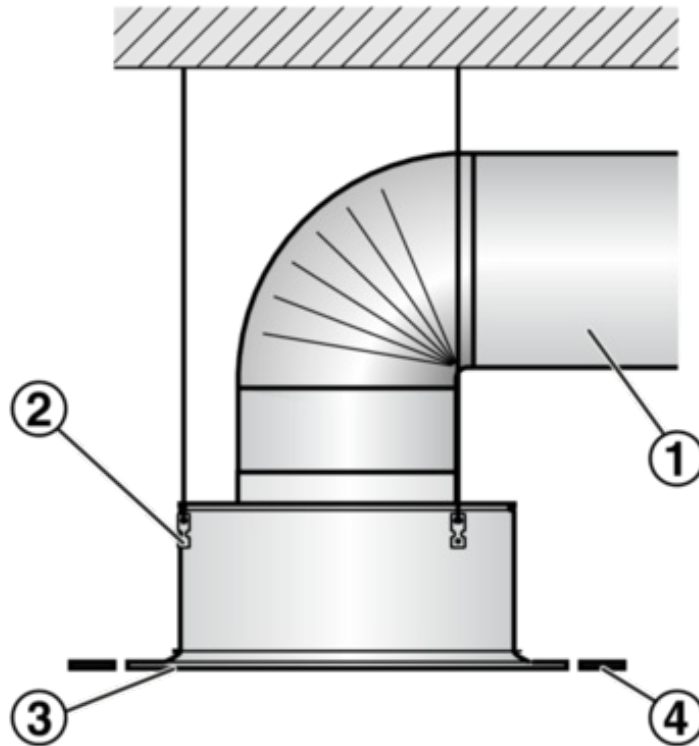
① Duct

② Suspension hole

③ Diffuser face

- Horizontal duct connection
- Four suspension holes
- Suspension with cords, wires or hangers, to be provided by others

Freely suspended installation



- ① Duct
- ② Suspension lug
- ③ Diffuser face
- ④ Extended border

- Vertical duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Diffuser face – sealing

- ① Plenum box
- ② Diffuser face
- ③ Seal
- ④ Ceiling tile

- The self-adhesive sealing tape (supplied) has to be applied to the return edges of the plenum box by others

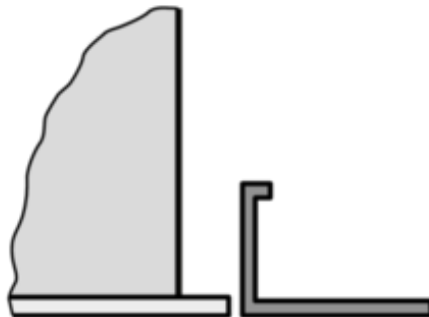
Diffuser face – central screw fixing



- ① Diffuser face
- ② Cross bar
- ③ Central fixing screw
- ④ Decorative cap

- Using the central fixing screw, fix the diffuser face to the cross bar of the plenum box
- Attach the decorative cap

Installation into grid ceilings



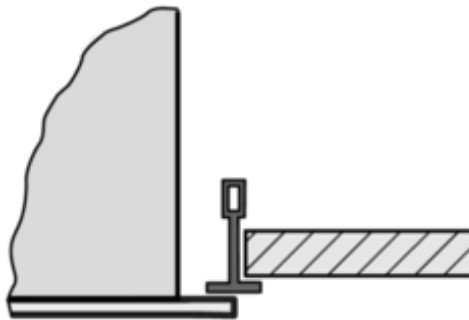
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

Installation in continuous ceilings



- Fix plenum box (including diffuser face, if necessary) to the ceiling
- Adjust plasterboard ceiling tile as required
- If necessary, fix the diffuser face after the ceiling has been completed

Installation in T-bar ceilings



- Fix the plenum box to the ceiling
- The T-bar ceiling is independent of the ceiling diffuser
- Fix the diffuser face below the T-bars after the ceiling has been completed

COMMISSIONING

Volume flow rate balancing

When several diffusers are connected to just one volume flow controller, it may be necessary to balance the volume flow rates.

- Ceiling diffusers with universal plenum box and damper blade (variant -M): The diffuser face can be removed to access the damper blade; the damper blade can then be set to any position between 0 and 90°
- Ceiling diffusers with universal plenum box, damper blade and pressure tap (variant -MN): The diffuser face need not be removed since the damper blade can be set with two cords (white and green).

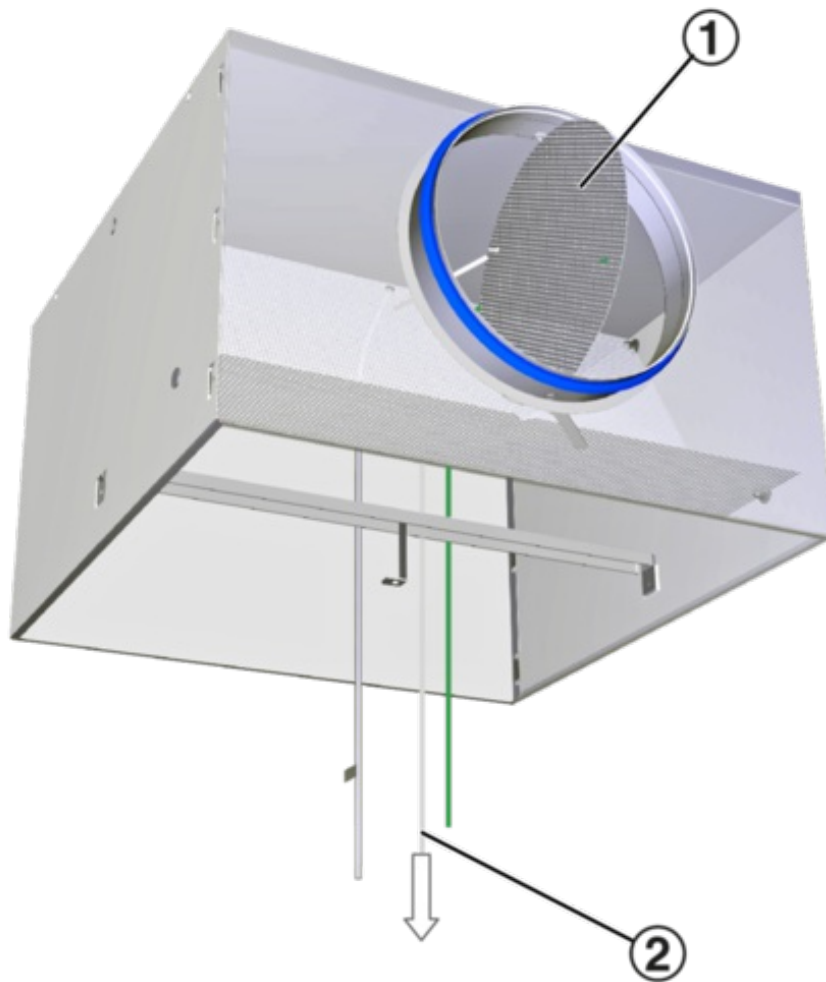
Volume flow rate measurement

Ceiling diffusers with universal plenum box, damper blade and pressure tap (variant -MN) allow for volume flow rate balancing even with the diffuser face in place.

- Connect the measuring tube to the digital manometer
- Read the effective pressure
- Read the volume flow rate off the characteristic or calculate it
- If necessary, adjust the damper blade position with the cords

A characteristic is included with each AK-Uni plenum box.

AK-Uni-...-MN Volume flow rate balancing



- ① Damper blade
- ② White cord for opening the damper blade

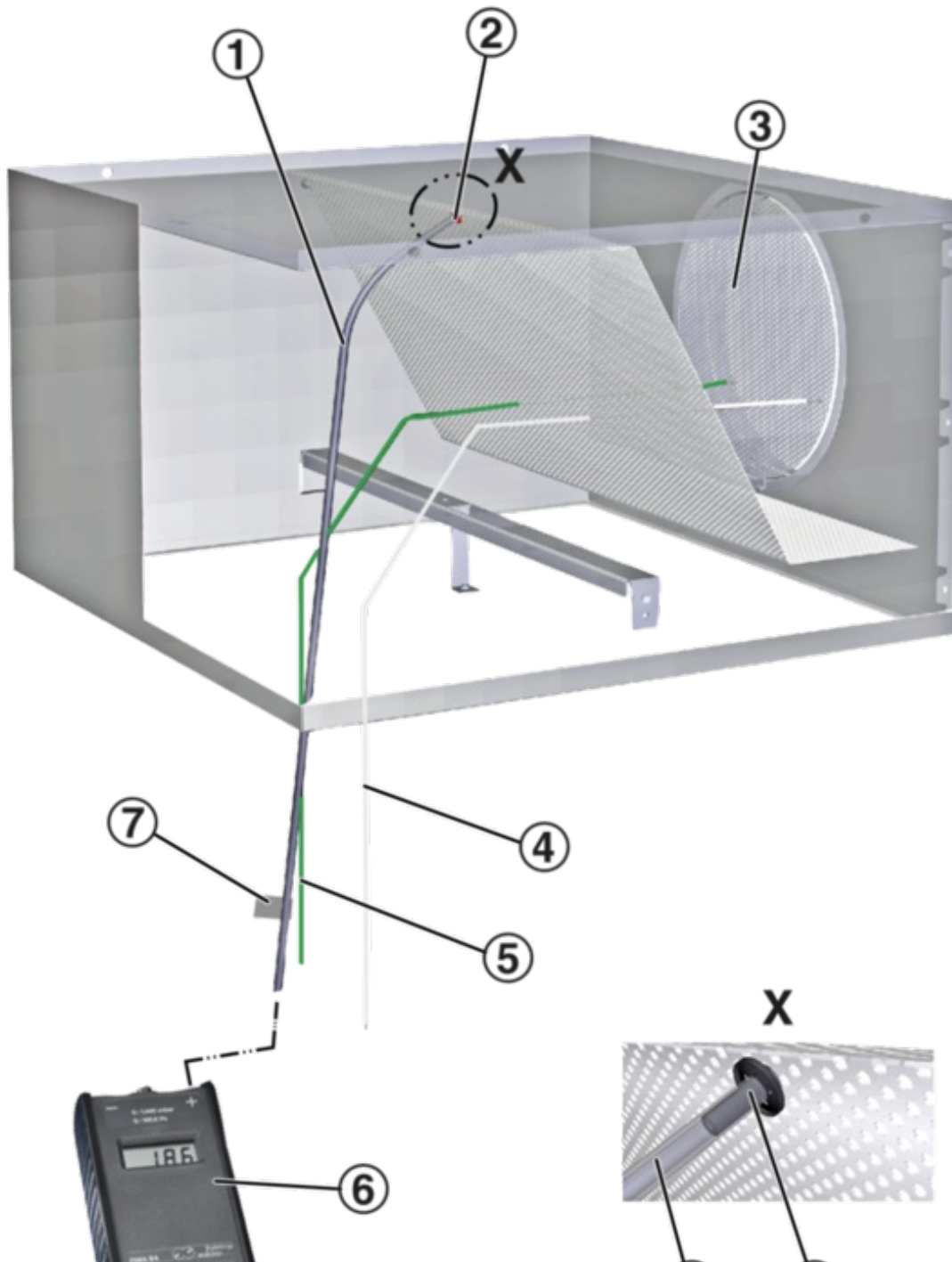
Open, 0°

AK-Uni-...-MN Volume flow rate balancing

- ① Damper blade
- ② Green cord for closing the damper blade

Closed, 90°

AK-Uni-...-MN volume flow rate measurement





①

②

- ① Measuring tube
- ② Pressure tap
- ③ Damper blade for volume flow rate balancing
- ④ White cord for opening the damper blade
- ⑤ Green cord for closing the damper blade
- ⑥ Digital manometer
- ⑦ Text label indicating plenum box variant

Volume flow rate calculation for air density 1.2 kg/m³

$$\dot{V} = C \times \sqrt{\Delta p_w}$$

Volume flow rate calculation for other air densities

$$\dot{V} = C \times \sqrt{\Delta p_w} \times \sqrt{\frac{1.2}{\rho}}$$

BASIC INFORMATION AND NOMENCLATURE

Principal dimensions

$\varnothing D$ [mm]

Outer diameter of the spigot

$\varnothing D_1$ [mm]

Outer diameter of a circular diffuser face

$\varnothing D_2$ [mm]

Diameter of a circular diffuser face style

$\varnothing D_3$ [mm]

Diameter of a circular plenum box

$\square Q_1$ [mm]

Outer diameter of a square diffuser face

$\square Q_2$ [mm]

Dimensions of a square diffuser face style

$\square Q_3$ [mm]

Dimensions of a square plenum box

H_1 [mm]

Distance (height) from the lower edge of the suspended ceiling to the lower edge of the diffuser face

H_2 [mm]

Height of a ceiling diffuser, from the lower edge of the suspended ceiling to the upper edge of the spigot

H_3 [mm]

Height of a ceiling diffuser with plenum box, from the lower edge of the suspended ceiling to the upper edge of the plenum box or of the spigot

A [mm]

Position of the spigot, defined by the distance of the spigot centre line to the lower edge of the suspended ceiling

C [mm]

Length of the spigot

m [kg]

Weight

Nomenclature

L_{WA} [dB(A)]

A-weighted sound power level of air-regenerated noise

V [m³/h] and [l/s]

Volume flow rate

Δt_z [K]

Supply air to room air temperature difference, i.e. supply air temperature minus room temperature

Δp_t [Pa]

Total differential pressure

A_{eff} [m²]

Effective air discharge area

All sound power levels are based on 1 pW.

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