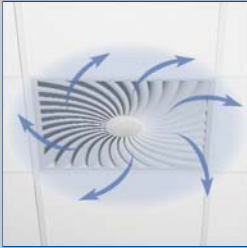


Ceiling swirl diffusers

Type AIRNAMIC



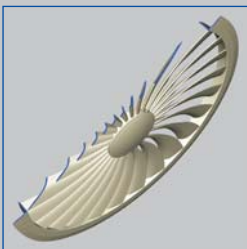
Horizontal
omni directional air discharge



Square diffuser face



Gently sloped,
flat border
(shown in a continuous ceiling)



Three-dimensionally
profiled blades



For the most demanding requirements of technical function, comfort, and design

Circular and square ceiling swirl diffusers with fixed air control blades, for high volume flow rates at low sound power levels and low differential pressure due to innovative polymer technology

- Nominal sizes 300, 400, 600, 625
- Volume flow rate range 13 – 385 l/s or 47 – 1386 m³/h
- Plastic diffuser face with overlapping, three-dimensionally profiled blades, for the most efficient swirl and high induction
- 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
- Diffuser face with gently sloped, flat border – only 3 mm high
- Plenum box with acoustically optimised and lockable damper blade
- Ideal for comfort zones

Optional equipment and accessories

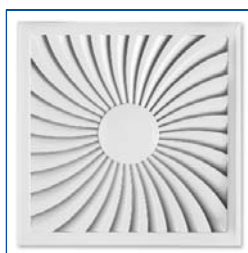
- Exposed diffuser face available in RAL CLASSIC colours
- Acoustically optimised plenum box FLEXTRO

| Type | | Page |
|----------|------------------------------------|----------|
| AIRNAMIC | General information | 1.1 – 2 |
| | Order code | 1.1 – 6 |
| | Quick sizing | 1.1 – 7 |
| | Dimensions and weight – AIRNAMIC-Q | 1.1 – 9 |
| | Dimensions and weight – AIRNAMIC-R | 1.1 – 12 |
| | Installation details | 1.1 – 15 |
| | Specification text | 1.1 – 16 |
| | Basic information and nomenclature | 1.6 – 1 |

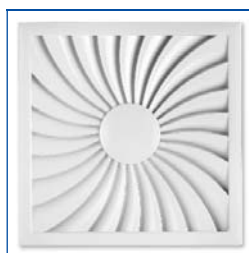
Diffuser faces

Product examples

AIRNAMIC-Q/300L



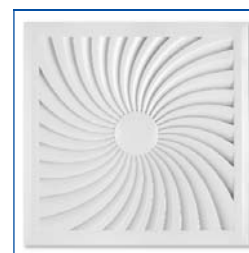
AIRNAMIC-Q/300H



AIRNAMIC-Q/600



AIRNAMIC-Q/625



AIRNAMIC-R/400L



AIRNAMIC-R/400H



AIRNAMIC-R/600



Innovation

Type AIRNAMIC swirl diffusers meet the most demanding requirements of technical function, comfort, and design.

The unique design of the air control blades, a specially developed equalising element, and the innovative plenum box result in high volume flow rates, a low so^* power level and low differential pressure.

The air control blades have three-dimensionally profiled contours to create an efficient swirl.

As a consequence, the air velocities and temperature differences in the occupied zone are very low, and the level of comfort is excellent.

The production of these unusually contoured blades is only possible by the use of high-quality plastics and by applying innovative production technology.

The exceptionally aesthetic air control blades allow for perfect architectural integration of the circular or square swirl diffuser and therefore make for an important design element for building owners and architects.

A spigot with double lip seal provides a low-leakage connection of the plenum box to the ducting, and a lockable damper blade for volume flow rate balancing simplifies commissioning.

Installation examples

Installation in T-bar ceilings



Installation in continuous ceilings



Description

For detailed information on plenum boxes see Chapter K1 – 1.5.

Application

- Type AIRNAMIC 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 temperature differences and airflow velocities (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
- With an extended border also suitable for freely suspended installation (supply air variant)

Variants

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

Connection

- Horizontal duct connection
- X: Flexible plenum box FLEXTRO

Nominal sizes

- Q: 300L, 300H, 600, 625
- R: 400L, 400H, 600

Special characteristics

- Plastic diffuser face with overlapping, three-dimensionally profiled blades, for the most efficient swirl and high induction
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- Diffuser face with gently sloped, flat border – only 3 mm high
- Plenum box for supply air, with an optimised equalising element that ensures a uniform airflow through the diffuser face

Parts and characteristics

- Square or circular diffuser face, made of plastic, with three-dimensionally profiled blades
- Damper blade for volume flow rate balancing, can be set in 15° intervals between 0 and 90°
- Spigot with double lip seal
- Simple installation of the diffuser face due to central fixing screw with decorative cap

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with double lip seal

Materials and surfaces

- Diffuser face, spigot and damper blade made of ABS plastic, UL 94, V-0, flame retardant
- Plenum box and cross bar made of galvanised sheet steel
- X: Plenum box made of plastic and galvanised sheet steel
- Equalising element made of synthetic fibre
- Double lip seal made of rubber
- Diffuser face coated RAL 9010, pure white
- P1: Coated, RAL CLASSIC colour

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 duct connection
- If necessary, carry out volume flow rate balancing with damper blade

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

1 Technical data

| | |
|--|--|
| Nominal sizes | 300, 400, 600, 625 mm |
| Minimum volume flow rate, with $\Delta t_z = -6 \text{ K}$ | 13 – 76 l/s or 47 – 274 m ³ /h |
| Maximum volume flow rate, with $L_{WA} \cong 50 \text{ dB(A)}$ | 95 – 385 l/s or 342 – 1386 m ³ /h |
| Supply air to room air temperature difference | -12 to +10 K |

Function

Functional description

Ceiling swirl diffusers in air conditioning systems create a swirl to supply air to rooms.

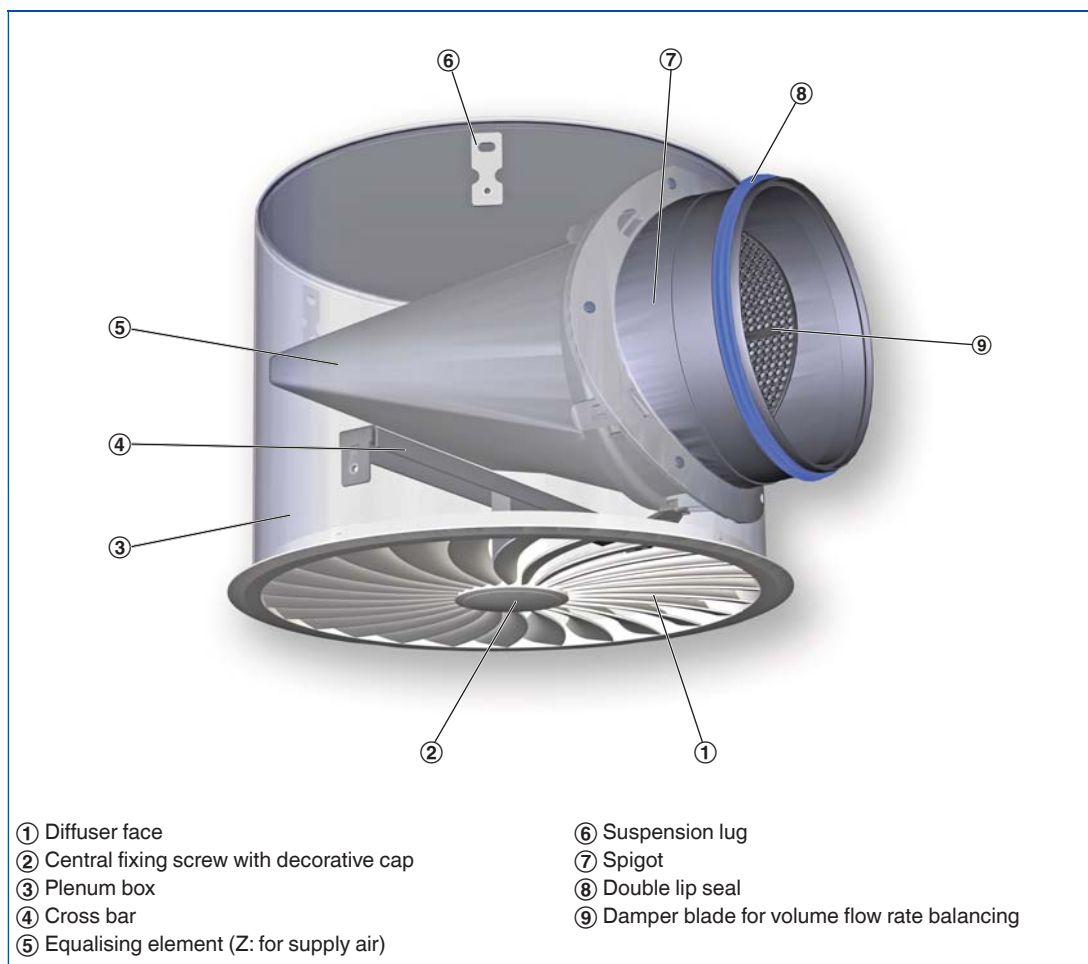
The resulting airflow induces high levels of room air, thereby rapidly reducing the airflow velocity and the temperature difference between supply air and room air. Ceiling swirl diffusers allow for large volume flow rates. The result is a mixed flow ventilation in comfort zones, with good overall room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

Type AIRNAMIC ceiling swirl diffusers have fixed blades with three-dimensionally profiled contours. This allows for high volume flow rates and low sound power levels. The supply air to room air temperature difference may range from -12 to +10 K.

A damper blade simplifies volume flow rate balancing for commissioning.

To give rooms an aesthetic, uniform look, Type AIRNAMIC diffusers may also be used for extract air. There is then no equalising element.

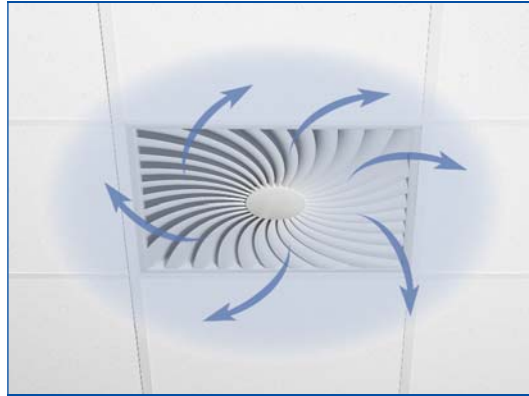
Schematic illustration of the AIRNAMIC, with plenum box for horizontal duct connection



Air patterns

Horizontal air discharge

Horizontal omni directional air discharge



Order code

AIRNAMIC

AIRNAMIC – R – Z – X / 400H / S1 – RAL ...



1 Type

AIRNAMIC Swirl diffuser

2 Construction style

R Circular

Q Square

3 System

Z Supply air

A Extract air

4 Connection

No entry: horizontal
(with standard plenum box)

X With flexible plenum box FLEXTRO
(Not for nominal sizes 300L and 300H)

5 Nominal size [mm]

Construction style R

400L

400H

600

Construction style Q

300L

300H

600

625

L Low volume flow rate

H High volume flow rate

6 Surface

No entry: coated RAL 9010, pure white

S1 Coated, specify RAL CLASSIC colour

Order example

AIRNAMIC–R–Z/400H

| | |
|---------------------------|----------------------|
| Construction style | Circular |
| System | Supply air |
| Connection | Standard plenum box |
| Nominal size | 400H |
| Surface | RAL 9010, pure white |

**AIRNAMIC-Q-Z
(supply air)**

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

The minimum volume flow rates apply to a supply air to room air temperature difference of -6 K.

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.

Quick sizing – sound power level and total differential pressure

| Nominal size | \dot{V} | | Damper blade position | | | | | |
|--------------|-----------|-------------------|-----------------------|----------|--------------|----------|--------------|----------|
| | | | 0° | | 45° | | 90° | |
| | | | Δp_t | L_{WA} | Δp_t | L_{WA} | Δp_t | L_{WA} |
| | l/s | m ³ /h | Pa | dB(A) | Pa | dB(A) | Pa | dB(A) |
| 300L | 13 | 47 | 1 | <15 | 2 | <15 | 2 | <15 |
| | 40 | 144 | 9 | 24 | 16 | 24 | 23 | 24 |
| | 68 | 245 | 27 | 37 | 45 | 38 | 65 | 39 |
| | 95 | 342 | 53 | 50 | 89 | 51 | 127 | 51 |
| 300H | 16 | 58 | 1 | <15 | 2 | <15 | 4 | <15 |
| | 55 | 198 | 15 | 22 | 27 | 24 | 41 | 27 |
| | 90 | 324 | 41 | 37 | 72 | 39 | 111 | 42 |
| | 130 | 468 | 86 | 50 | 150 | 51 | 232 | 54 |
| 600, 625 | 76 | 274 | 3 | <15 | 7 | <15 | 13 | 18 |
| | 180 | 648 | 18 | 24 | 41 | 31 | 72 | 41 |
| | 285 | 1026 | 44 | 40 | 102 | 47 | 180 | 58 |
| | 385 | 1386 | 80 | 50 | 185 | 59 | 329 | 71 |

**AIRNAMIC-Q-Z-X
(supply air)**

Quick sizing – sound power level and total differential pressure

| Nominal size | \dot{V} | | Damper blade position | | | | | |
|--------------|-----------|-------------------|-----------------------|----------|--------------|----------|--------------|----------|
| | | | 0° | | 45° | | 90° | |
| | | | Δp_t | L_{WA} | Δp_t | L_{WA} | Δp_t | L_{WA} |
| | l/s | m ³ /h | Pa | dB(A) | Pa | dB(A) | Pa | dB(A) |
| 600, 625 | 76 | 274 | 4 | <15 | 7 | <15 | 17 | 20 |
| | 175 | 630 | 21 | 24 | 39 | 32 | 89 | 41 |
| | 280 | 1008 | 53 | 40 | 100 | 48 | 228 | 58 |
| | 380 | 1368 | 98 | 50 | 184 | 60 | 419 | 71 |

1 AIRNAMIC-R-Z
(supply air)

Quick sizing – sound power level and total differential pressure

| Nominal size | \dot{V} | | Damper blade position | | | | | |
|--------------|-----------|-------------------|-----------------------|----------|--------------|----------|--------------|----------|
| | | | 0° | | 45° | | 90° | |
| | | | Δp_t | L_{WA} | Δp_t | L_{WA} | Δp_t | L_{WA} |
| | l/s | m ³ /h | Pa | dB(A) | Pa | dB(A) | Pa | dB(A) |
| 400L | 17 | 61 | 1 | <15 | 1 | <15 | 2 | <15 |
| | 55 | 198 | 9 | 25 | 14 | 25 | 20 | 29 |
| | 95 | 342 | 27 | 38 | 41 | 39 | 59 | 41 |
| | 135 | 486 | 55 | 50 | 82 | 51 | 118 | 52 |
| 400H | 24 | 86 | 1 | <15 | 2 | <15 | 4 | <15 |
| | 75 | 270 | 14 | 26 | 21 | 28 | 34 | 28 |
| | 130 | 468 | 41 | 40 | 64 | 40 | 101 | 44 |
| | 180 | 648 | 79 | 50 | 123 | 50 | 193 | 54 |
| 600, 625 | 57 | 205 | 2 | <15 | 4 | <15 | 8 | <15 |
| | 160 | 576 | 17 | 27 | 35 | 28 | 60 | 36 |
| | 265 | 954 | 47 | 40 | 97 | 45 | 163 | 54 |
| | 365 | 1314 | 89 | 50 | 185 | 58 | 310 | 66 |

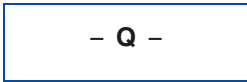
AIRNAMIC-R-Z-X
(supply air)

Quick sizing – sound power level and total differential pressure

| Nominal size | \dot{V} | | Damper blade position | | | | | |
|--------------|-----------|-------------------|-----------------------|----------|--------------|----------|--------------|----------|
| | | | 0° | | 45° | | 90° | |
| | | | Δp_t | L_{WA} | Δp_t | L_{WA} | Δp_t | L_{WA} |
| | l/s | m ³ /h | Pa | dB(A) | Pa | dB(A) | Pa | dB(A) |
| 400L | 17 | 61 | 1 | <15 | 1 | <15 | 1 | <15 |
| | 60 | 216 | 6 | 23 | 8 | 28 | 13 | 25 |
| | 105 | 378 | 19 | 38 | 25 | 39 | 40 | 38 |
| | 145 | 522 | 36 | 50 | 48 | 52 | 76 | 50 |
| 400H | 24 | 86 | 1 | <15 | 1 | <15 | 2 | <15 |
| | 85 | 306 | 10 | 23 | 15 | 23 | 25 | 26 |
| | 145 | 522 | 30 | 38 | 45 | 38 | 73 | 40 |
| | 200 | 720 | 58 | 50 | 85 | 50 | 139 | 50 |
| 600 | 57 | 205 | 2 | <15 | 5 | <15 | 9 | <15 |
| | 155 | 558 | 18 | 25 | 34 | 30 | 63 | 36 |
| | 520 | 900 | 47 | 40 | 89 | 46 | 164 | 51 |
| | 345 | 1242 | 89 | 50 | 170 | 58 | 313 | 63 |

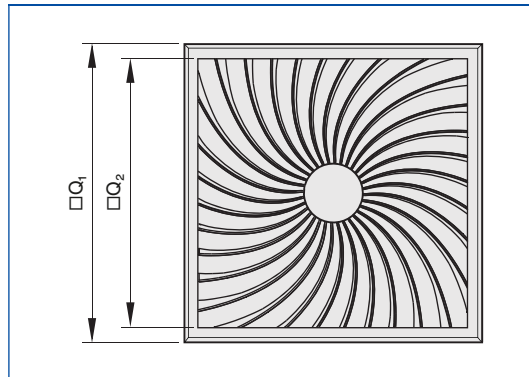


AIRNAMIC-Q/600



Order code detail

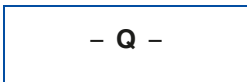
Diffuser face AIRNAMIC-Q



Dimensions

| Nominal size | □Q ₁ | □Q ₂ | A _{eff} |
|--------------|-----------------|-----------------|------------------|
| | mm | | m ² |
| Q/300L | 298 | 262 | 0.0139 |
| Q/300H | 298 | 262 | 0.0175 |
| Q/600 | 598 | 539 | 0.0616 |
| Q/625 | 623 | 539 | 0.0616 |

AIRNAMIC-Q



Order code detail

Variant

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

Nominal sizes

- 300L, 300H, 600, 625

Parts and characteristics

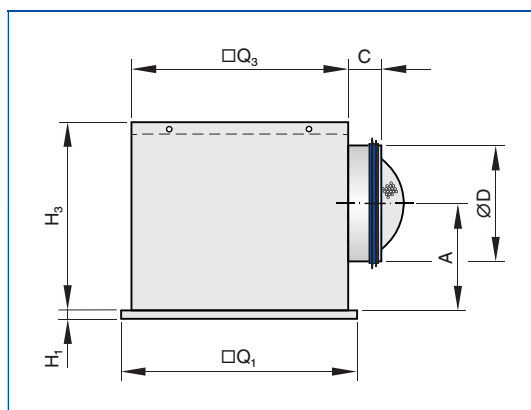
- Square diffuser face
- Plenum box for horizontal duct connection
- Square opening to accommodate the diffuser face
- Optimised equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Damper blade for volume flow rate balancing, can be set in 15° intervals between 0 and 90°
- Spigot with double lip seal
- Simple installation of the diffuser face due to central fixing screw with decorative cap

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with double lip seal

1

Square diffuser face with plenum box
for horizontal duct connection

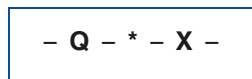


Dimensions [mm] and weight [kg]

| Nominal size | □Q ₁ | H ₁ | □Q ₃ | H ₃ | ØD | A | C | Plenum box | m |
|--------------|-----------------|----------------|-----------------|----------------|-----|-----|----|------------|-----|
| | mm | | | | | | | | kg |
| Q/300L | 298 | 3 | 290 | 250 | 158 | 139 | 60 | AK-H-Q/300 | 3.0 |
| Q/300H | 298 | 3 | 290 | 250 | 158 | 139 | 60 | AK-H-Q/300 | 3.0 |
| Q/600 | 598 | 3 | 567 | 345 | 248 | 194 | 60 | AK-H-Q/600 | 8.7 |
| Q/625 | 623 | 3 | 567 | 345 | 248 | 194 | 60 | AK-H-Q/600 | 8.7 |

Weights apply to the supply air variant

AIRNAMIC-Q-X



Order code detail

Variant

- Ceiling swirl diffuser with square diffuser face
- With flexible plenum box FLEXTRO

Nominal sizes

- 600, 625

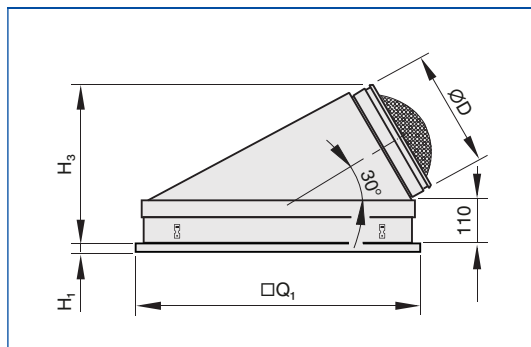
Parts and characteristics

- Square diffuser face
- Flexible plenum box FLEXTRO
- Square opening to accommodate the diffuser face
- Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Damper blade for volume flow rate balancing, can be set in 15° intervals between 0 and 90°
- Spigot with double lip seal
- Simple installation of the diffuser face due to central fixing screw with decorative cap

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with double lip seal

Square diffuser face with flexible plenum box FLEXTRO



Dimensions [mm] and weight [kg]

| Nominal size | □Q ₁ | H ₁ | H ₃ | ØD | Plenum box | m |
|--------------|-----------------|----------------|----------------|-----|-------------|-----|
| | mm | | | | | kg |
| Q/600 | 598 | 3 | 365 | 248 | FLEXTRO-Q-* | 5.5 |
| Q/625 | 623 | 3 | 365 | 248 | FLEXTRO-Q-* | 5.5 |

Weights apply to the supply air variant

1

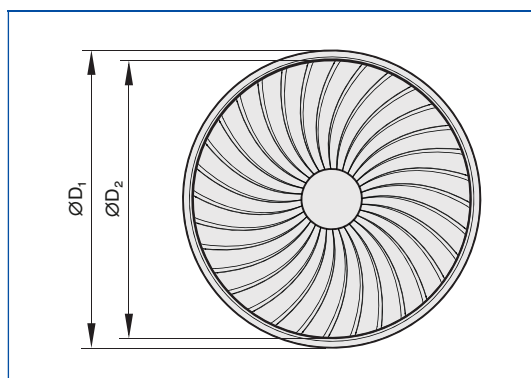


AIRNAMIC-R/600

- R -

Order code detail

Diffuser face AIRNAMIC-R



Dimensions

| Nominal size | ØD ₁ | ØD ₂ | A _{eff} |
|--------------|-----------------|-----------------|------------------|
| | mm | | m ² |
| R/400L | 400 | 352 | 0.0186 |
| R/400H | 400 | 352 | 0.0258 |
| R/600 | 600 | 546 | 0.0504 |

AIRNAMIC-R

- R -

Order code detail

Variant

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

Nominal sizes

- 400L, 400H, 600

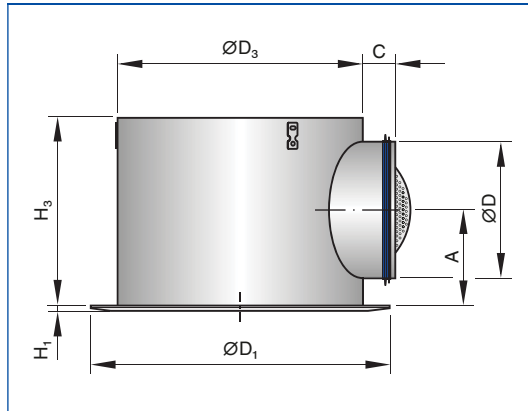
Parts and characteristics

- Circular diffuser face
- Plenum box for horizontal duct connection
- Circular opening to accommodate the diffuser face
- Optimised equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Damper blade for volume flow rate balancing, can be set in 15° intervals between 0 and 90°
- Spigot with double lip seal
- Simple installation of the diffuser face due to central fixing screw with decorative cap

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with double lip seal

**AIRNAMIC-R with plenum box
for horizontal duct connection**



Dimensions [mm] and weight [kg]

| Nominal size | ØD ₁ | H ₁ | ØD ₃ | H ₃ | ØD | A | C | Plenum box | m |
|--------------|-----------------|----------------|-----------------|----------------|-----|-----|----|------------|-----|
| | mm | | | | | | | | kg |
| R/400L | 400 | 3 | 364 | 280 | 198 | 151 | 60 | AK-H-R/400 | 4.0 |
| R/400H | 400 | 3 | 364 | 280 | 198 | 151 | 60 | AK-H-R/400 | 4.0 |
| R/600 | 600 | 3 | 575 | 345 | 248 | 194 | 60 | AK-H-R/600 | 7.5 |

Weights apply to the supply air variant

AIRNAMIC-R-X

- R - * - X -

Order code detail

Variant

- Ceiling swirl diffuser with circular diffuser face
- With flexible plenum box FLEXTRO

Nominal sizes

- 400L, 400H, 600

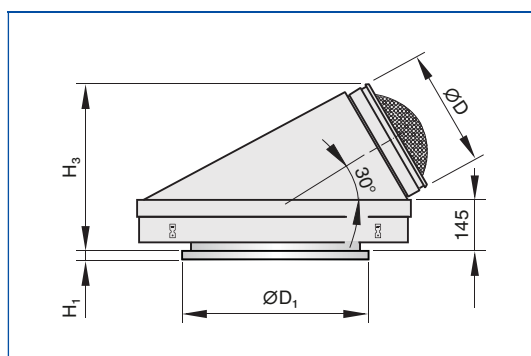
Parts and characteristics

- Circular diffuser face
- Flexible plenum box FLEXTRO
- Circular opening to accommodate the diffuser face
- Damper blade for volume flow rate balancing, can be set in 15° intervals between 0 and 90°
- Simple installation of the diffuser face due to central fixing screw with decorative cap
- Spigot with double lip seal

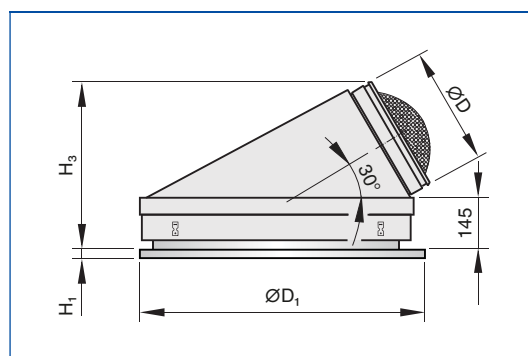
Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with double lip seal

Circular diffuser face with flexible plenum box FLEXTRO/400



Circular diffuser face with flexible plenum box FLEXTRO/600



Dimensions [mm] and weight [kg]

| Nominal size | ØD ₁ | H ₁ | H ₃ | ØD | Plenum box | m |
|--------------|-----------------|----------------|----------------|-----|-----------------|-----|
| | mm | | | | | kg |
| R/400L | 400 | 3 | 400 | 248 | FLEXTRO-R-*/400 | 4.4 |
| R/400H | 400 | 3 | 400 | 248 | FLEXTRO-R-*/400 | 4.4 |
| R/600 | 600 | 3 | 400 | 248 | FLEXTRO-R-*/600 | 5.0 |

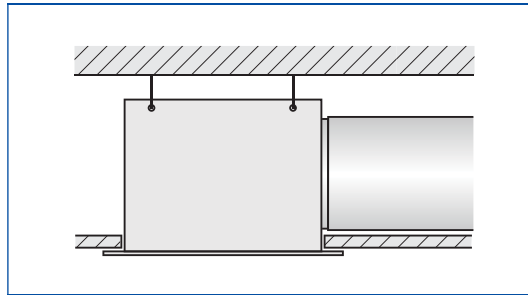
Weights apply to the supply air variant

Installation types

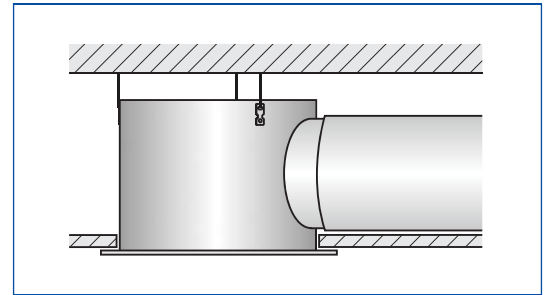
For more installation details see Chapter K1 – 1.6.

These are only schematic diagrams to illustrate installation details.

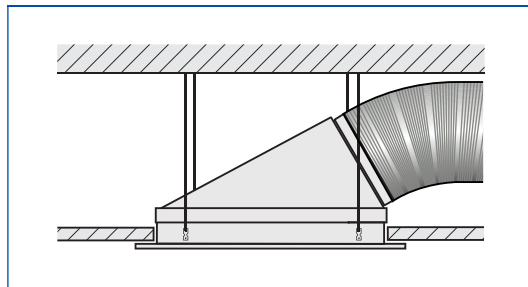
Flush ceiling installation with square plenum box



Flush ceiling installation with circular plenum box

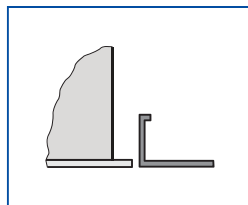


Flush ceiling installation with plenum box FLEXTRO

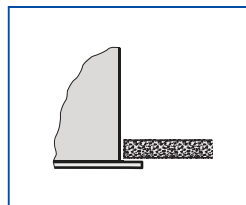


Ceiling systems

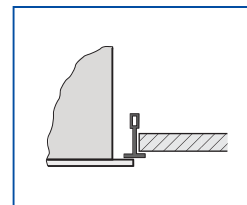
Grid ceiling



Continuous ceiling

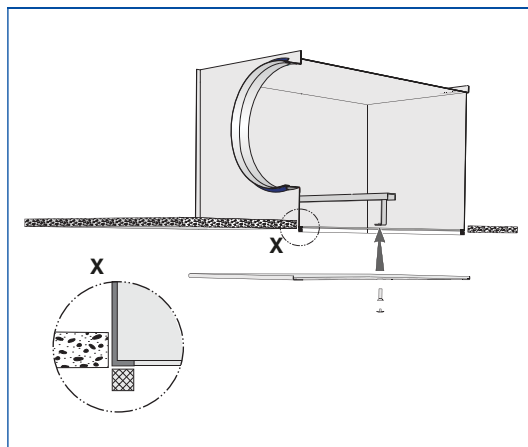


T-bar ceiling

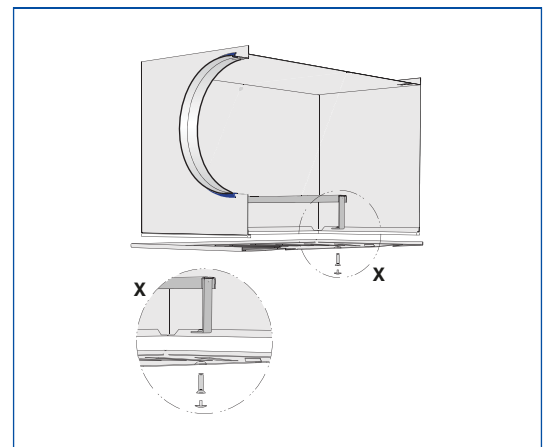


Diffuser face sealing and fixing

Diffuser face – sealing



Diffuser face – central screw fixing



Standard text

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design programme.

Ceiling swirl diffusers with square or circular diffuser face, for comfort zones with particularly demanding requirements of aesthetics and design. Supply air and extract air variants. Excellent aerodynamic and acoustic function due to air control blades with optimised aerofoil contours, 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 and a plenum box, equalising element (only supply air variants), side entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. 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

- Plastic diffuser face with overlapping, three-dimensionally profiled blades, for the most efficient swirl and high induction
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- Diffuser face with gently sloped, flat border – only 3 mm high
- Plenum box for supply air, with an optimised equalising element that ensures a uniform airflow through the diffuser face

Materials and surfaces

- Diffuser face, spigot and damper blade made of ABS plastic, UL 94, V-0, flame retardant
- Plenum box and cross bar made of galvanised sheet steel
- X: Plenum box made of plastic and galvanised sheet steel
- Equalising element made of synthetic fibre
- Double lip seal made of rubber
- Diffuser face coated RAL 9010, pure white
- P1: Coated, RAL CLASSIC colour

Technical data

- Nominal sizes: 300, 400, 600, 625 mm
- Minimum volume flow rate, with $\Delta t_z = -6$ K: 13 – 76 l/s or 47 – 274 m³/h
- Maximum volume flow rate, with $L_{WA} \approx 50$ dB(A): 95 – 385 l/s or 342 – 1386 m³/h
- Supply air to room air temperature difference: -12 to +10 K

Sizing data

- \dot{V} _____ [m³/h]
- Δp_t _____ [Pa]
- L_{WA} Air-regenerated noise _____ [dB(A)]

Order options

1 Type

AIRNAMIC Swirl diffuser

2 Construction style

- R Circular
- Q Square

3 System

- Z Supply air
- A Extract air

4 Connection

- No entry: horizontal (with standard plenum box)
- X With flexible plenum box FLEXTRO (Not for nominal sizes 300L and 300H)

5 Nominal size [mm]

- Construction style R
- 400L
- 400H
- 600
- Construction style Q
- 300L
- 300H
- 600
- 625
- L Low volume flow rate
- H High volume flow rate

6 Surface

- No entry: coated RAL 9010, pure white
- S1 Coated, specify RAL CLASSIC colour

Ceiling diffusers

Basic information and nomenclature



- Product selection
- Principal dimensions
- Nomenclature
- Sizing and sizing example
- Installation information
- Commissioning

Ceiling diffusers

Basic information and nomenclature

Product selection

| | Ceiling swirl diffusers | | | | | | | | |
|---|-------------------------|------------------------------|-------------------------|------------------------------|-------------------------|-------------------------|---------------------|--------------------|-------------|
| | AIRNAMIC | VDW | TDV-SilentAIR | RFD | FD | TDF-SilentAIR | VD | VDL | FDE |
| Diffuser face style | | | | | | | | | |
| Circular | ● | ● | ● | ● | ● | ● | | ● | |
| Square | ● | | | | | | ● | | ● |
| Diffuser face | | | | | | | | | |
| Circular | ● | ● | ● | ● | ● | ● | | ● | |
| Square | ● | ● | ● | ● | ● | ● | ● | | ● |
| Galvanised sheet steel | | ● | ● | ● | ● | ● | | ● | ● |
| Aluminium | | | | ● | | | ● | | |
| Plastic | ● | | | | | | | | |
| Air control blades | | | | | | | | | |
| Fixed | ● | | | ● | ● | ● | | | ● |
| Adjustable | | ● | ● | | | | ● | ● | |
| Plastic, black and white | | ● | ● | | | | | | |
| Duct connection | | | | | | | | | |
| Horizontal | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Vertical | | ● | ● | ● | ● | ● | ● | ● | |
| FLEXTRO | ● | ● | ● | | ● | ● | | | |
| Attachments | | | | | | | | | |
| Damper blade | ● | ● | ● | ● | ● | ● | | | ● |
| Pressure tap | | ● | ● | ● | ● | ● | | | ● |
| Actuator | | | | | | | ● | ● | |
| Accessories | | | | | | | | | |
| Lip seal | ● | ● | ● | ● | ● | ● | | | ● |
| Protective cage | | | | | | | ● | ● | |
| Extended border | | | | | | | ● | ● | |
| Nominal sizes | | | | | | | | | |
| Circular diffuser face | 400, 600 | 300, 400, 500, 600, 625 | 300, 400, 500, 600, 625 | | 300, 400, 500, 600, 625 | 300, 400, 500, 600, 625 | | | |
| Square diffuser face | 300, 600, 625 | 300, 400, 500, 600, 625, 825 | | | | | 425, 600, 775, 1050 | | 600, 625 |
| Spigot* | | | | 125, 160, 200, 250, 315, 400 | | | | 315, 400, 630, 800 | 250, 315 |
| Technical data | | | | | | | | | |
| Volume flow rate range [l/s] | 13 – 385 | 7 – 470 | 11 – 315 | 4 – 330 | 9 – 235 | 10 – 295 | 95 – 1490 | 65 – 1080 | 51 – 365 |
| Volume flow rate range [m³/h] | 47 – 1386 | 25 – 1692 | 40 – 1134 | 14 – 1188 | 31 – 846 | 36 – 1026 | 342 – 5364 | 234 – 3888 | 184 – 1314 |
| Supply air to room air temperature difference | -12 – +10 K | | | | | | -12 – +15 K | | -12 – +10 K |
| ● | Possible | | | | | | | | |
| | Not possible | | | | | | | | |

*Nominal diameter

Ceiling diffusers

Basic information and nomenclature

Product selection

1

| | Design ceiling swirl diffusers | | Ceiling swirl diffusers with perforated face plate |
|---|--------------------------------|------------------------------|--|
| | XARTO | ADD | DCS |
| Diffuser face style | | | |
| Circular | ● | ● | ● |
| Square | ● | | ● |
| Diffuser face | | | |
| Circular | ● | ● | |
| Square | ● | ● | ● |
| Galvanised sheet steel | ● | ● | ● |
| Aluminium | | | |
| Plastic | | | |
| Air control blades | | | |
| Fixed | ● | ● | ● |
| Adjustable | | | |
| Plastic, black and white | | | |
| Duct connection | | | |
| Horizontal | ● | ● | ● |
| Vertical | | ● | ● |
| FLEXTRO | | | |
| Attachments | | | |
| Damper blade | ● | ● | |
| Pressure tap | | ● | |
| Actuator | | | |
| Accessories | | | |
| Lip seal | ● | ● | |
| Protective cage | | | |
| Extended border | | | |
| Nominal sizes | | | |
| Circular diffuser face | 600 | 250, 300, 450, 500, 600 | |
| Square diffuser face | 600, 625 | 250, 300, 450, 500, 600, 625 | 600, 625 |
| Spigot* | | 125, 160, 200, 250, 315 | 125, 160, 200, 250, 315, 400 |
| Technical data | | | |
| Volume flow rate range [l/s] | 31 – 265 | 20 – 465 | 4 – 260 |
| Volume flow rate range [m ³ /h] | 110 – 954 | 72 – 1674 | 16 – 936 |
| Supply air to room air temperature difference | -12 – +10 K | | |
| ● | Possible | | |
| | Not possible | | |

*Nominal diameter

Ceiling diffusers

Basic information and nomenclature

Product selection

1

| | Ceiling diffusers | | | | | | |
|---|--------------------|------------------------------------|------------------------------------|---|-------------------------------|-------------------------------|------------|
| | VDR | ADLQ | DLQ | ADLR | DLQL | DLQ-AK | DLK-Fb |
| Diffuser face style | | | | | | | |
| Circular | ● | | | ● | | | |
| Square | | ● | ● | | ● | ● | ● |
| Diffuser face | | | | | | | |
| Circular | ● | | | ● | | | |
| Square | | ● | ● | ● | ● | ● | ● |
| Galvanised sheet steel | | | ● | | ● | ● | ● |
| Aluminium | ● | ● | | ● | | | |
| Plastic | | | | | | | |
| Air control blades | | | | | | | |
| Fixed | | ● | ● | ● | ● | ● | ● |
| Adjustable | ● | | | | | | |
| Plastic, black and white | | | | | | | |
| Duct connection | | | | | | | |
| Horizontal | ● | ● | ● | ● | ● | ● | ● |
| Vertical | ● | | | ● | ● | | |
| FLEXTRO | | ● | | | | | |
| Attachments | | | | | | | |
| Damper blade | | ● | ● | ● | ● | | |
| Pressure tap | | ● | ● | ● | | | |
| Actuator | ● | | | | | | |
| Accessories | | | | | | | |
| Lip seal | | ● | ● | ● | ● | | |
| Protective cage | | | | | | | |
| Extended border | | | | | | | |
| Nominal sizes | | | | | | | |
| Circular diffuser face | 630, 800 | | | 244, 300, 356, 412, 468, 542, 598, 654 | | | |
| Square diffuser face | | 250, 300, 400, 500, 600, 625 | 250, 300, 400, 500, 600, 625 | 600 625 | 250, 300, 400, 500, 600 | 300, 400, 500, 600, 625 | 600, 625 |
| Spigot* | 315, 400, 630, 800 | | | | | | |
| Technical data | | | | | | | |
| Volume flow rate range [l/s] | 175 – 1495 | 20 – 665 | 20 – 700 | 20 – 650 | 6 – 285 | 40 – 565 | 220 – 460 |
| Volume flow rate range [m³/h] | 630 – 5382 | 72 – 2394 | 72 – 2520 | 72 – 2340 | 22 – 1026 | 144 – 2034 | 792 – 1656 |
| Supply air to room air temperature difference | -10 to +15 K | -10 to +10 K | | | | | |
| ● | Possible | | | | | | |
| ○ | Not possible | | | | | | |

*Nominal diameter

Ceiling diffusers

Basic information and nomenclature

Principal dimensions

 $\varnothing D$ [mm]

Outside 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

 \dot{V} [m³/h] and [l/s]

Volume flow rate

 Δt_z [K]

Supply air temperature difference

 Δp_t [Pa]

Total differential pressure

 A_{eff} [m²]

Effective air discharge area

All sound power levels are based on 1 pW.

Ceiling diffusers

Basic information and nomenclature

1 Sizing with the help of this catalogue

This catalogue provides convenient quick sizing tables for ceiling diffusers. The tables give supply air volume flow rates for all nominal sizes. The maximum volume flow rates are for an open damper blade. A smaller opening of the damper blade results in higher sound power levels and a higher total differential pressure. The tables show values for damper blade positions 45° and 90°.

Sizing data for other volume flow rates and damper blade positions can be determined quickly and precisely using the Easy Product Finder design programme.

Sizing example

Given data

$\dot{V} = 300 \text{ l/s}$ (1280 m³/h)
 Square ceiling diffuser, steel,
 with fixed air control blades
 Maximum sound power level 40 dB(A)
 with damper blade position 45°
 Four-way air discharge

Quick sizing

Type DLQ
 Nominal sizes: 600, 625
 Selected: DLQ/600

Easy Product Finder



The Easy Product Finder allows you to size products using your project-specific data.

You will find the Easy Product Finder on our website.

The screenshot shows the 'Easy Product Finder' software interface. The main window is titled 'Projekt 1 - TROX Easy Product Finder - Standard des Projektes: Deutschland'. The interface is divided into several sections:

- Project Structure:** Shows 'Projekt 1' and 'Neue Position: Bestellkessel'.
- Product Selection:** A tree view on the left lists various product classes such as 'Luftkurkklasse', 'Drallkurkklasse', 'Deckenluftkurkklasse', 'ADLR, ADLR-Q', 'CENTERFLOW OF HESCO', 'DLQ, ADLQ', 'DULQ', 'PASSCLEAN HESCO', 'PROCONDIF HESCO', 'VEM', 'WAVESTREAM HESCO', 'Sichtkurkklasse', 'Lüftungsgitter', 'Weißmuffusen', 'Quellluftkurkklasse', 'Querschnittkurkklasse', 'Luft-Wasser-Systeme', 'Filter', 'Jalousiekappe', 'Brandschutzklappen', 'TROMMETON', 'Witterschutzgitter', 'Regelgeräte', 'Schalldämpfer', 'Regelsysteme', 'X-CURE compact', and 'X-FAN'.
- Input Section:** Contains fields for 'Produktauswahl' (DLQ AK // 600 // 0 // 0 // 0 // RAL 9010), 'Eingabe' (Volumenstrom [m³/s] V = 1.280 [792..2795]), 'Zwischenräume/Abstände [m]' (a = 6.00 [x2.0], b₁ = 1.20 [1.0..2.0], x = 3.00 [x1.2], l = b₁, s x = 4.2, and a checked 'Einseitige Anordnung'), and 'Temperaturunterschied [K]' (ΔTₑ = 8.0 [-12.0..4.4]).
- Technical Results:** A table showing 'Lufttechnische Ergebnisse' with values: vₘ = 0.15 m/s, ΔPₘ = -1.3 K, vₑ = 0.32 m/s, and ΔPₑ = -1.3 K.
- Acoustic Results:** A table showing 'Akustische Ergebnisse (0° = Kompletzt geöffnet)' with values: Lₐ,ₑ = 34 dB, Lₙ,ₑ = 28 dB(A), and LWNC = 22.
- Visualization:** A 3D rendering of a square ceiling diffuser (DLQ) is shown in the 'Anwendung/Foto/Video' section.

Ceiling diffusers

Basic information and nomenclature

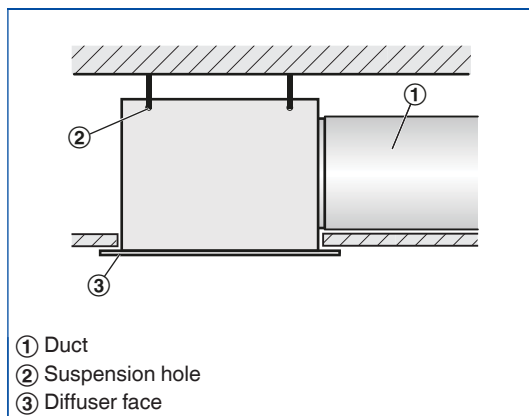
Description

Installation information

- Installation and making connections to be performed by others
- The optimum aerodynamic function is only achieved with flush ceiling installation
- The diffuser face is fixed to the plenum box cross bar using the central fixing screw
- Central fixing screw is concealed by a decorative cap

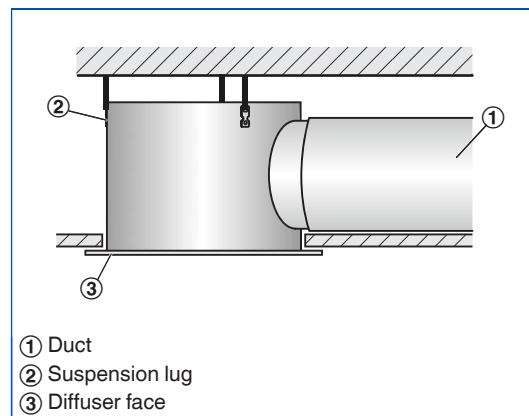
Installation types

Flush ceiling installation with square plenum box



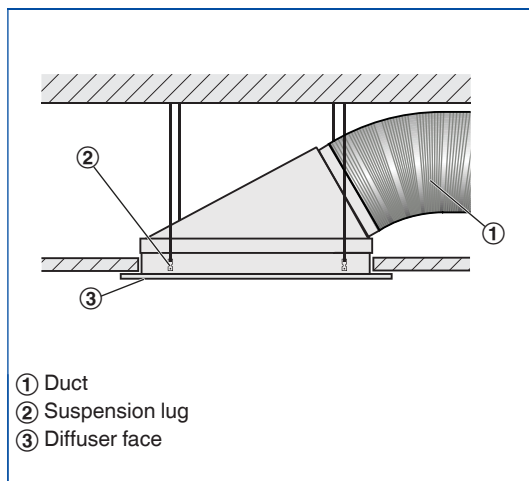
- Horizontal duct connection
- Four suspension holes
- Suspension with cords, wires or hangers, to be provided by others

Flush ceiling installation with circular plenum box



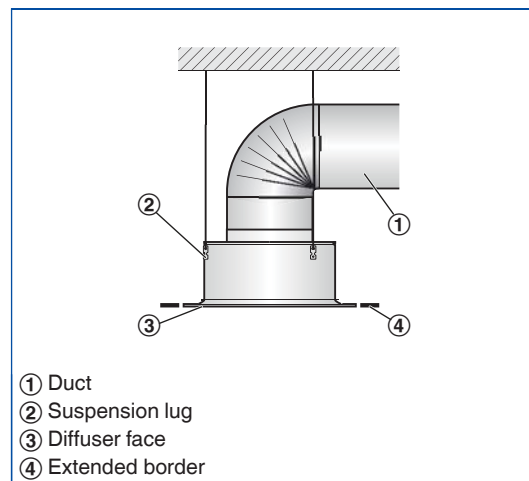
- Horizontal duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Flush ceiling installation with plenum box FLEXTRO



- Spigot at 30° angle
- Four suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Freely suspended installation



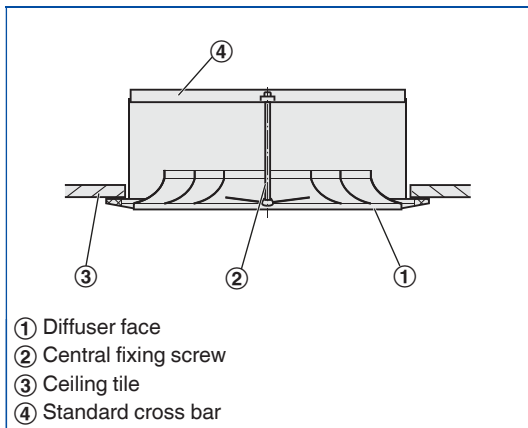
- Vertical duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Ceiling diffusers

Basic information and nomenclature

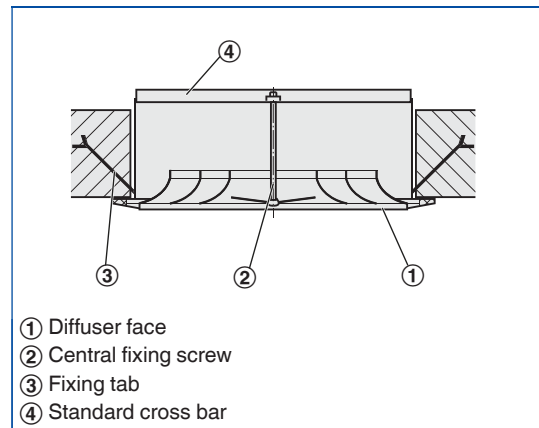
1 Installation without plenum box

Flush ceiling installation with standard cross bar G1, screw-fixed to ceiling



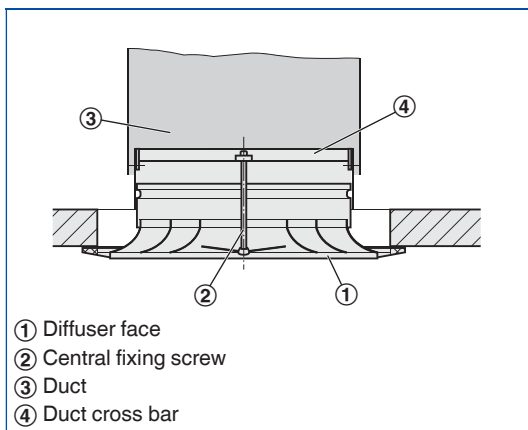
- No spigot
- Fixing of the standard cross bar to the ceiling tile is to be performed by others

Flush ceiling installation with standard cross bar G1, with fixing tabs mortared in



- No spigot
- The standard cross bar has to be mortared into the ceiling by others

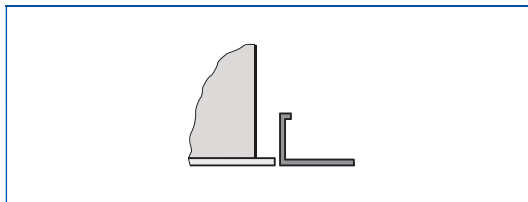
Flush ceiling installation with duct cross bar E1



- Vertical duct connection
- Fixing of the duct cross bar to the duct is to be performed by others

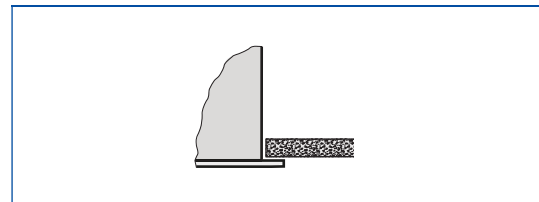
Ceiling systems

Installation into grid ceilings



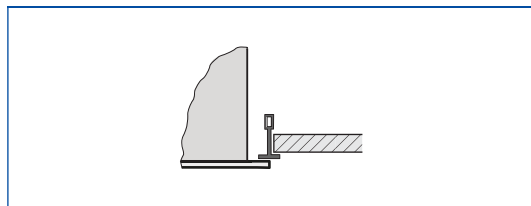
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

Installation in continuous ceilings



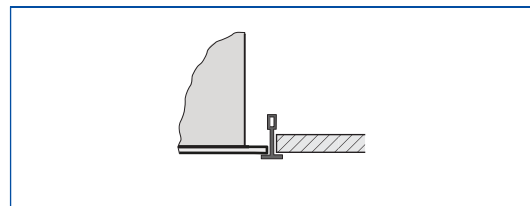
- Fix plenum box (including diffuser face, if necessary) to the ceiling
- Adjust plasterboard ceiling tile as required
- If necessary, fix the diffuser face after the ceiling has been completed

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

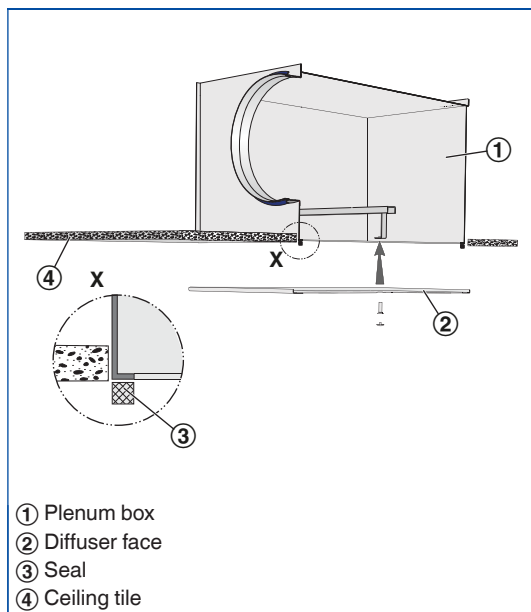
Installation in T-bar ceilings, diffuser face rests on T-bars



- Fix the plenum box to the ceiling, if necessary
- The diffuser rests on the T-bars

Diffuser face sealing and fixing

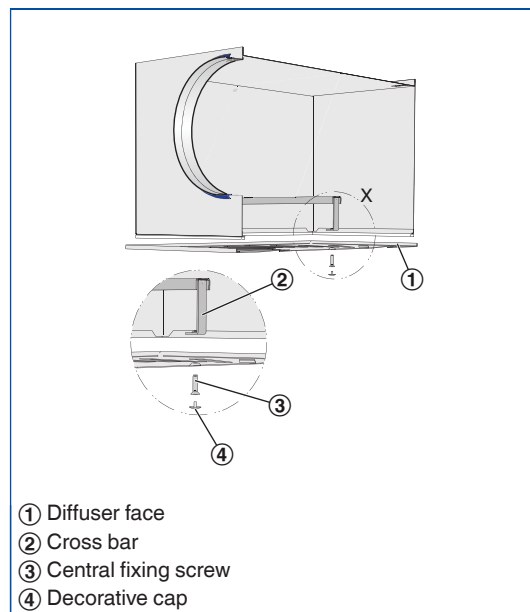
Diffuser face – sealing



- 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

Ceiling diffusers

Basic information and nomenclature

Commissioning

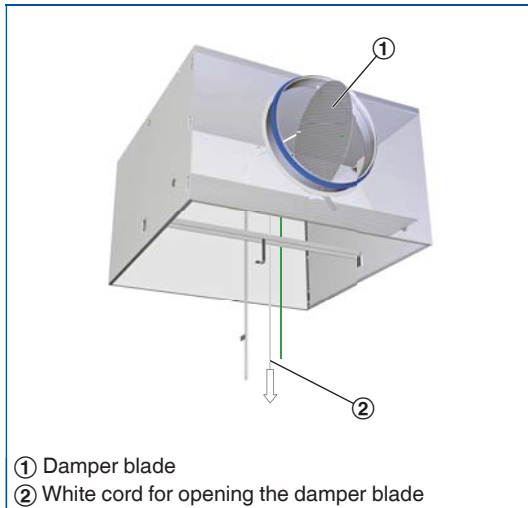
1

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.

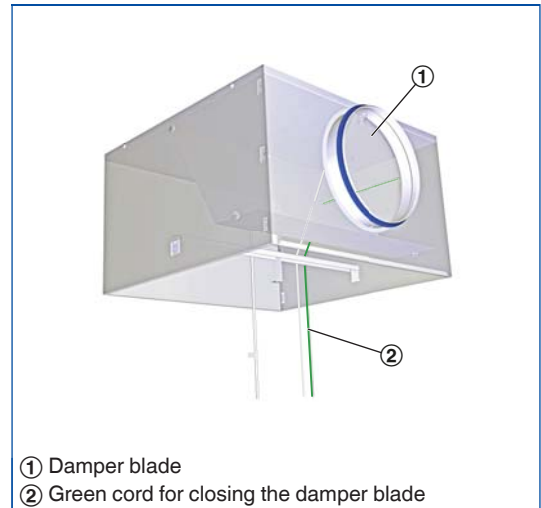
- AIRNAMIC, XARTO, FLEXTRO:
The diffuser face can be removed to access the damper blade; the damper blade can then be set in 15° intervals between 0 and 90°
- Ceiling diffusers with universal plenum box and damper blade (variant -M):
The diffuser face can be removed to access the damper blade; the damper 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).

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



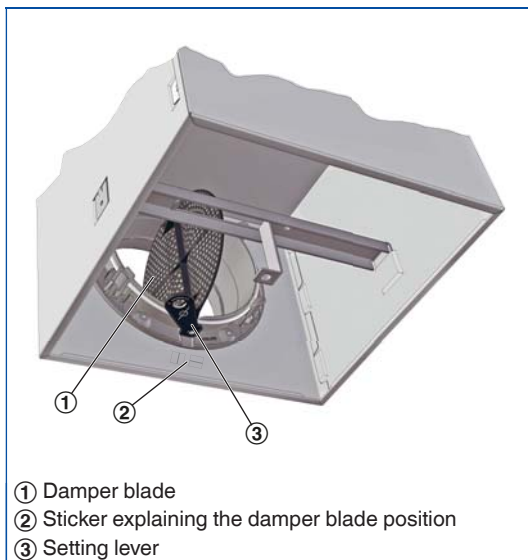
Open, 0°

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



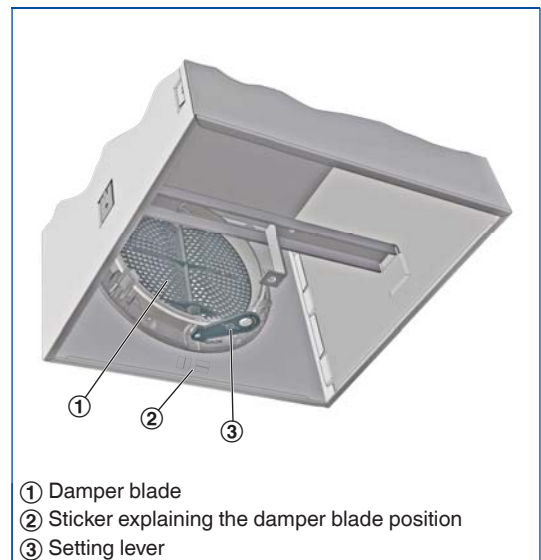
Closed, 90°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Open, 0°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Closed, 90°

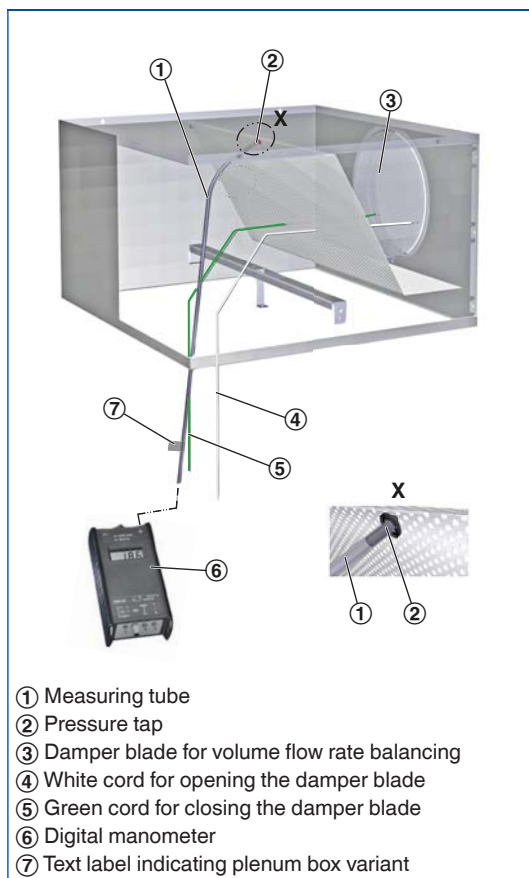
Volume flow rate measurement

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 measurement



For K values for the AK-Uni plenum boxes refer to Chapter K1 – 1.5.

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

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