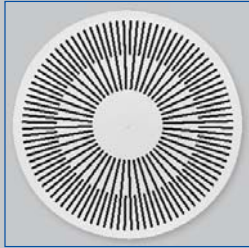
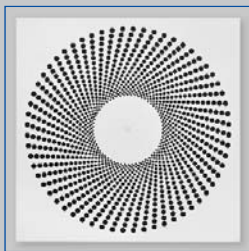


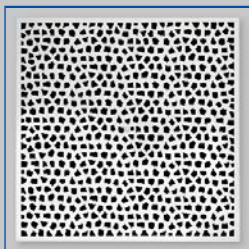
Horizontal swirling air discharge



Circular diffuser face



Square diffuser face with circular face style



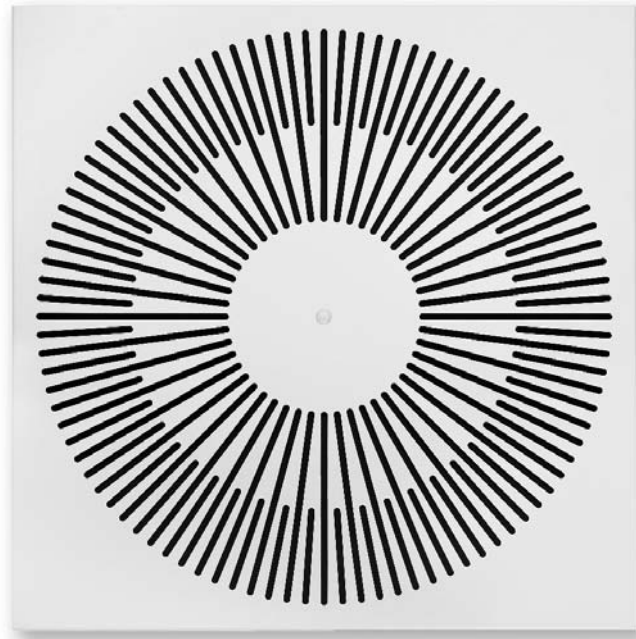
Square face style (variant)



Square diffuser face with square face style

Design ceiling swirl diffusers 1

Type XARTO



For more refined comfort zones with special demands on architecture and design, with fixed air control blades

Circular and square ceiling swirl diffusers for high volume flow rates at low sound power levels and low differential pressure

- Nominal sizes 600, 625
- Volume flow rate range 31 – 265 l/s or 110 – 954 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
- 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

Type

XARTO

Page

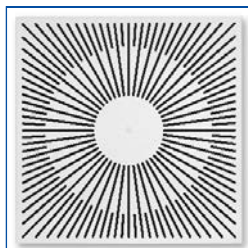
| | |
|------------------------------------|----------|
| General information | 1.2 – 2 |
| Order code | 1.2 – 8 |
| Quick sizing | 1.2 – 9 |
| Dimensions and weight – XARTO-Q | 1.2 – 10 |
| Dimensions and weight – XARTO-R | 1.2 – 12 |
| Dimensions and weight – XARTO-C | 1.2 – 14 |
| Installation details | 1.2 – 16 |
| Specification text | 1.2 – 17 |
| Basic information and nomenclature | 1.6 – 1 |

Variants

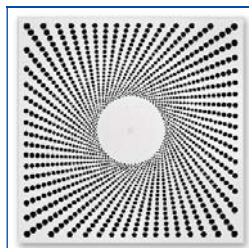
Square diffuser face
with square face style

Product examples

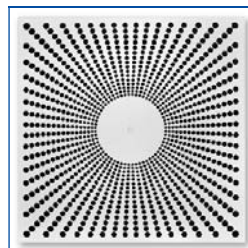
XARTO-Q1



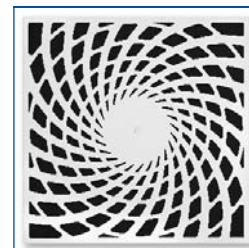
XARTO-Q2



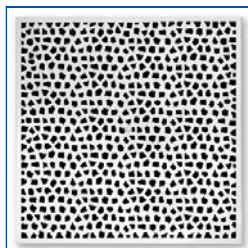
XARTO-Q3



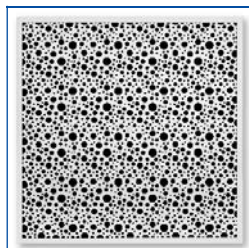
XARTO-Q4



XARTO-Q5

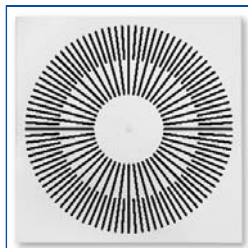


XARTO-Q6

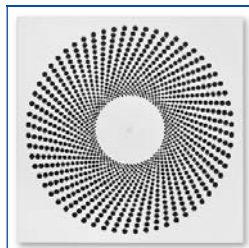


Square diffuser face
with circular face style

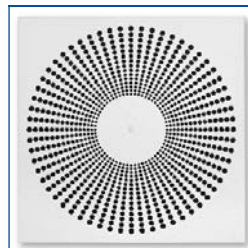
XARTO-R1



XARTO-R2



XARTO-R3

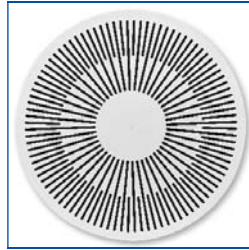


XARTO-R4

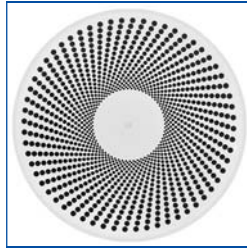


Circular diffuser face with circular face style

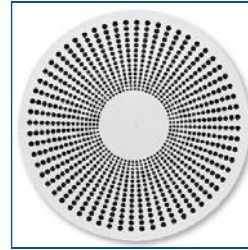
XARTO-C1



XARTO-C2



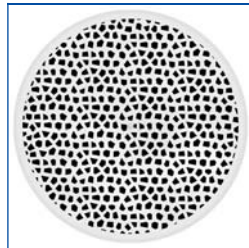
XARTO-C3



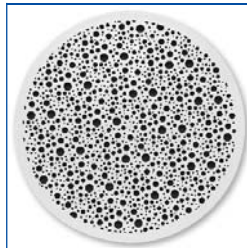
XARTO-C4



XARTO-C5



XARTO-C6



Innovation

Type XARTO swirl diffusers meet the most demanding requirements of technical function, comfort, and design. Diffuser faces come in classic, modern and flamboyant styles and can be creatively integrated with all types of ceilings. They form in fact an attractive design element for building owners and architects.

The combination of swirl unit, newly developed equalising element and innovative plenum box provides high volume flow rates, a low sound power level and low differential pressure.

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

Installation examples

1

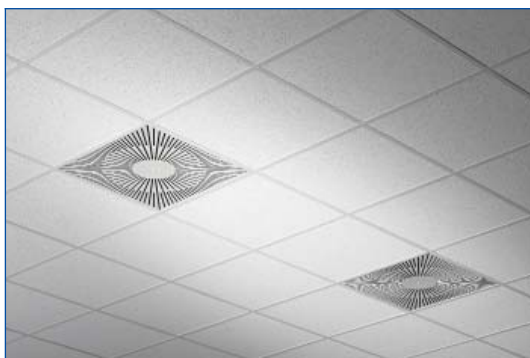
Installation in T-bar ceilings



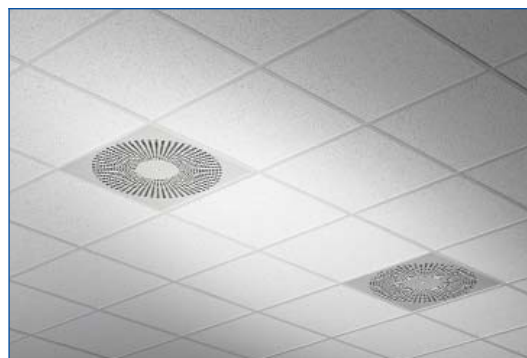
Installation in T-bar ceilings



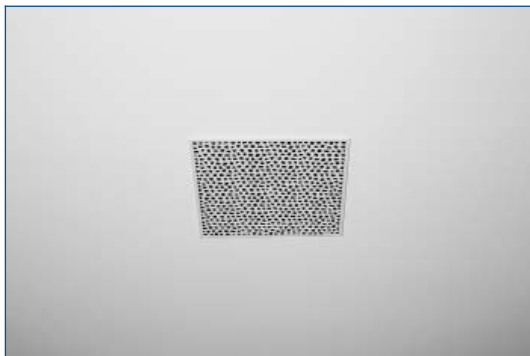
Installation in T-bar ceilings, arrangement in a row



Installation in T-bar ceilings, arrangement in a row



Installation in continuous ceilings



Installation in continuous ceilings



Description

Application

- Type XARTO 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

- XARTO-Q*: Square diffuser face, square face style
- XARTO-R*: Square diffuser face, circular face style
- XARTO-C*: Circular diffuser face, circular face style
- XARTO-**-Z: Supply air
- XARTO-**-A: Extract air

Nominal sizes

- 600, 625

Special characteristics

- For the most demanding requirements of technical function, comfort, and design
- Diffuser face in many different designs
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- Horizontal duct connection

Parts and characteristics

- Square or circular diffuser face with square or circular face style
- Swirl unit with fixed air control blades
- Plenum box with an optimised equalising element that ensures a uniform airflow through the diffuser face
- 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, plenum box and cross bar made of galvanised sheet steel
- Swirl unit, spigot and damper blade made of ABS plastic, UL 94, V-0, flame retardant
- Equalising element made of synthetic fibre
- Double lip seal made of rubber
- Diffuser face powder-coated RAL 9010, pure white
- P1: Powder-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

Technical data

| | |
|--|---------------------------------|
| Nominal sizes | 600, 625 mm |
| Minimum volume flow rate, with $\Delta t_z = -6 \text{ K}$ | 31 – 43 l/s or 110 – 155 m³/h |
| Maximum volume flow rate, with $L_{WA} \cong 50 \text{ dB(A)}$ | 220 – 265 l/s or 792 – 954 m³/h |
| Supply air to room air temperature difference | –12 to +10 K |

Function

Functional description

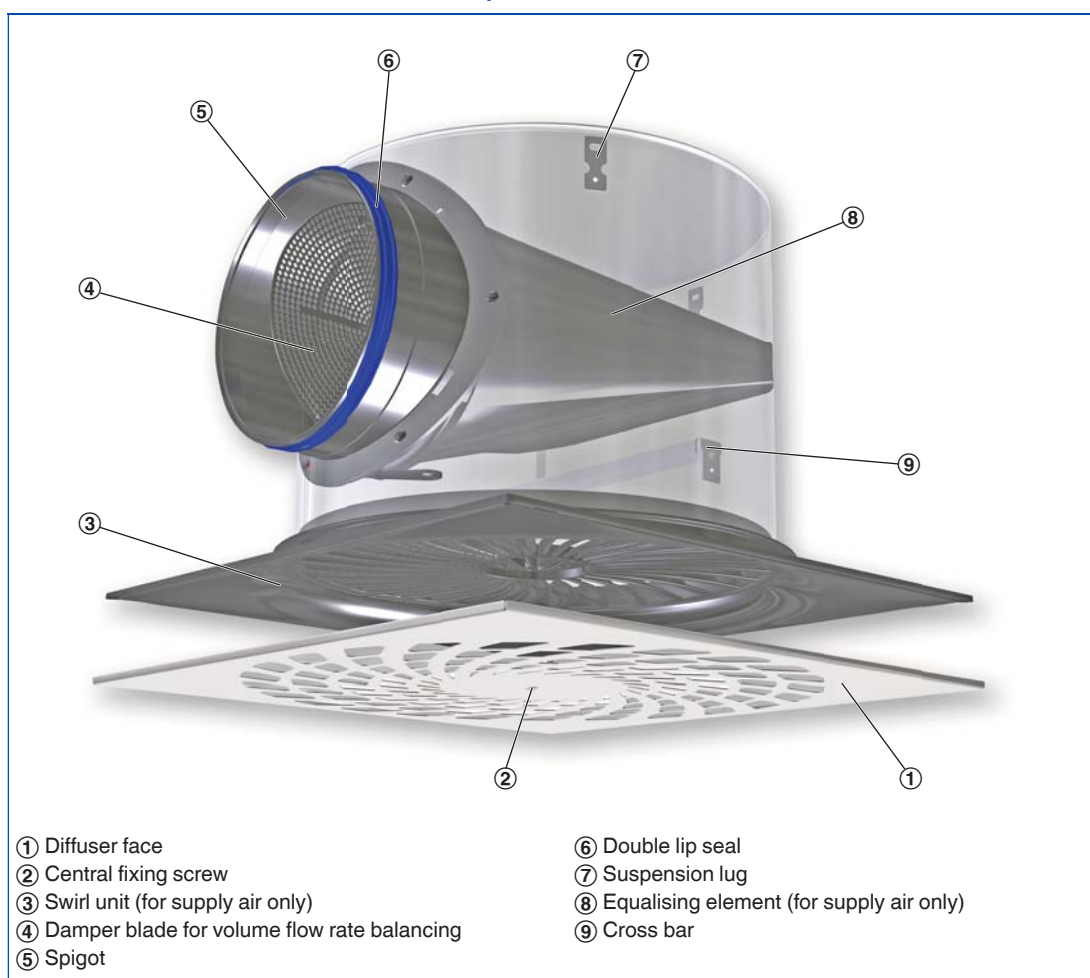
Ceiling swirl diffusers in air conditioning systems create a swirl to supply air to rooms. The resulting airflow induces high levels of room air, thereby rapidly reducing the airflow velocity and the temperature difference between supply air and room air. Ceiling swirl diffusers allow for large volume 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.

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 XARTO 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 simplifies volume flow rate balancing for commissioning.

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

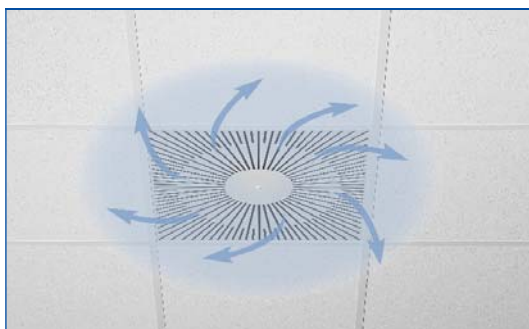
Schematic illustration of the XARTO, with plenum box for horizontal duct connection



Air patterns

Horizontal air discharge

Horizontal omni directional air discharge



Order code

XARTO

XARTO – R1 – Z / 625 / P1 – RAL ...

1 2 3 4 5

1 Type

XARTO Swirl unit

2 Construction style

Square diffuser face

Circular face style

R1

R2

R3

R4

Square face style

Q1

Q2

Q3

Q4

Q5

Q6

Circular diffuser face

Circular face style

C1

C2

C3

C4

C5

C6

3 System

Z Supply air

A Extract air

4 Nominal size [mm]

600 □Q, ØD

625 □Q only

5 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 %

Order example

XARTO-Q6-Z/600/P1-RAL 9006

Construction style

Square diffuser face, square face style

System

Supply air

Nominal size

600

Surface

RAL 9006, white aluminium, gloss level 30%

XARTO-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

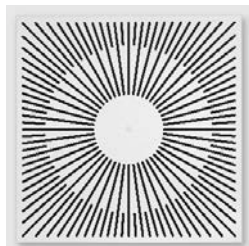
| Diffuser face | \dot{V} | | Damper blade position | | | | | |
|---------------|-----------|------|-----------------------|----------|--------------|----------|--------------|----------|
| | | | 0° | | 45° | | 90° | |
| | | | Δp_t | L_{WA} | Δp_t | L_{WA} | Δp_t | L_{WA} |
| | l/s | m³/h | Pa | dB(A) | Pa | dB(A) | Pa | dB(A) |
| Q1 | 39 | 142 | 2 | <15 | 3 | <15 | 5 | <15 |
| | 100 | 360 | 11 | 19 | 18 | 20 | 33 | 33 |
| | 160 | 576 | 29 | 32 | 46 | 33 | 85 | 47 |
| | 260 | 936 | 77 | 50 | 122 | 52 | 224 | 77 |
| Q2 | 38 | 137 | 2 | <15 | 3 | <15 | 5 | 16 |
| | 105 | 378 | 13 | 21 | 20 | 24 | 36 | 36 |
| | 175 | 630 | 36 | 35 | 56 | 37 | 101 | 50 |
| | 255 | 918 | 76 | 50 | 118 | 51 | 215 | 68 |
| Q3 | 42 | 151 | 2 | <15 | 3 | <15 | 6 | <15 |
| | 115 | 414 | 14 | 22 | 23 | 24 | 42 | 37 |
| | 185 | 666 | 37 | 37 | 59 | 38 | 108 | 52 |
| | 258 | 930 | 72 | 50 | 115 | 50 | 211 | 65 |
| Q4 | 34 | 124 | 1 | <15 | 2 | <15 | 4 | <15 |
| | 105 | 378 | 13 | 22 | 20 | 22 | 34 | 32 |
| | 175 | 630 | 37 | 37 | 56 | 37 | 96 | 50 |
| | 245 | 882 | 73 | 50 | 110 | 51 | 187 | 62 |
| Q5 | 42 | 150 | 2 | <15 | 3 | <15 | 5 | <15 |
| | 115 | 414 | 14 | 22 | 23 | 24 | 41 | 36 |
| | 190 | 684 | 38 | 37 | 62 | 39 | 112 | 56 |
| | 265 | 954 | 75 | 50 | 120 | 52 | 217 | 76 |
| Q6 | 43 | 155 | 2 | <15 | 3 | <15 | 6 | <15 |
| | 120 | 432 | 16 | 23 | 25 | 25 | 46 | 38 |
| | 190 | 684 | 39 | 37 | 63 | 38 | 116 | 54 |
| | 260 | 936 | 73 | 50 | 117 | 51 | 217 | 73 |

XARTO-R*-Z, XARTO-C*-Z (supply air)

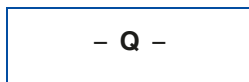
Quick sizing – sound power level and total differential pressure

| Diffuser face | \dot{V} | | Damper blade position | | | | | |
|---------------|-----------|------|-----------------------|----------|--------------|----------|--------------|----------|
| | | | 0° | | 45° | | 90° | |
| | | | 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) |
| C1 R1 | 38 | 138 | 2 | <15 | 3 | <15 | 5 | <15 |
| | 105 | 378 | 13 | 24 | 19 | 24 | 34 | 34 |
| | 170 | 612 | 33 | 38 | 50 | 38 | 89 | 50 |
| | 240 | 864 | 66 | 50 | 99 | 51 | 178 | 64 |
| C2 R2 | 38 | 138 | 2 | <15 | 2 | <15 | 4 | <15 |
| | 105 | 378 | 12 | 23 | 19 | 23 | 33 | 32 |
| | 170 | 612 | 32 | 36 | 49 | 37 | 86 | 49 |
| | 240 | 864 | 65 | 50 | 97 | 50 | 172 | 66 |
| C3 R3 | 38 | 136 | 2 | <15 | 2 | <15 | 4 | <15 |
| | 105 | 378 | 13 | 23 | 19 | 23 | 33 | 33 |
| | 170 | 612 | 33 | 37 | 49 | 37 | 85 | 50 |
| | 240 | 864 | 65 | 50 | 98 | 51 | 170 | 67 |
| C4 R4 | 31 | 110 | 1 | <15 | 2 | <15 | 3 | <15 |
| | 95 | 342 | 12 | 23 | 17 | 22 | 27 | 28 |
| | 155 | 558 | 31 | 37 | 44 | 37 | 73 | 46 |
| | 220 | 792 | 63 | 50 | 89 | 51 | 147 | 62 |
| C5 | 38 | 138 | 2 | <15 | 3 | <15 | 4 | <15 |
| | 110 | 396 | 14 | 26 | 25 | 25 | 37 | 31 |
| | 180 | 648 | 37 | 39 | 66 | 40 | 98 | 48 |
| | 250 | 900 | 72 | 51 | 128 | 52 | 189 | 62 |
| C6 | 38 | 138 | 2 | <15 | 2 | <15 | 4 | <15 |
| | 110 | 396 | 14 | 26 | 18 | 26 | 35 | 31 |
| | 180 | 648 | 36 | 39 | 48 | 39 | 95 | 48 |
| | 250 | 900 | 70 | 50 | 93 | 51 | 182 | 61 |

1



XARTO-Q1



Order code detail

Diffuser face XARTO

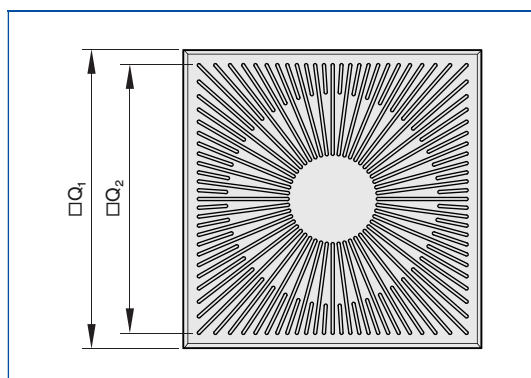


Illustration shows XARTO-Q1

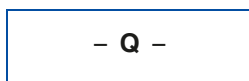
Dimensions

| Variant | $\square Q_2$ | A_{eff} |
|---------|---------------|----------------|
| | mm | m ² |
| Q1 | 566 | 0.0384 |
| Q2 | 566 | 0.0374 |
| Q3 | 566 | 0.0403 |
| Q4 | 566 | 0.0344 |
| Q5 | 566 | 0.0401 |
| Q6 | 566 | 0.0411 |

Nominal size 600: $\square Q_1 = 598$

Nominal size 625: $\square Q_1 = 623$

XARTO-Q



Order code detail

Variant

- Square diffuser face, square face style

Nominal sizes

- 600, 625

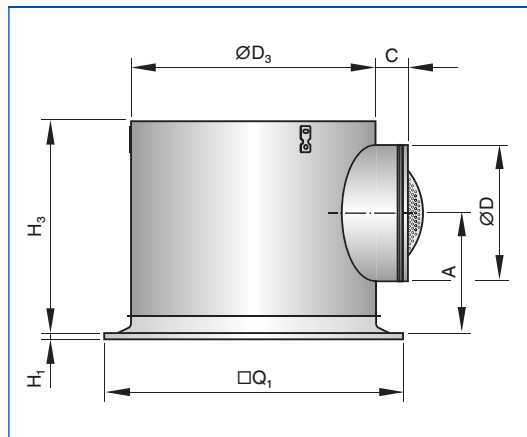
Parts and characteristics

- Square 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

XARTO-Q



Dimensions [mm] and weight [kg]

| Nominal size | XARTO-Q*-Z | XARTO-Q*-A | □Q ₁ | H ₁ | ØD ₃ | H ₃ | ØD | A | C |
|--------------|------------|------------|-----------------|----------------|-----------------|----------------|-----|-----|----|
| | m | | | | | | | | |
| | kg | | | | | | | | |
| 600 | 9.5 | 9.0 | 598 | 8 | 462 | 371 | 248 | 220 | 60 |
| 625 | 9.5 | 9.0 | 623 | 8 | 462 | 371 | 248 | 220 | 60 |

1



XARTO-R1

– R –

Order code detail

Diffuser face XARTO-R

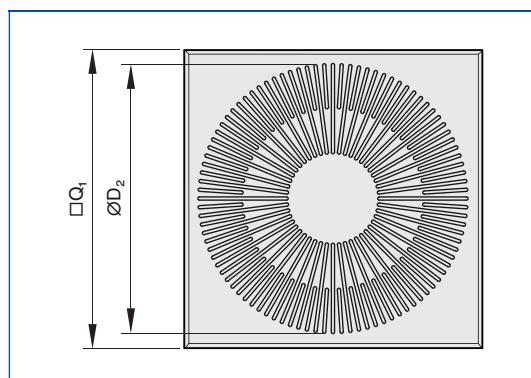


Illustration shows XARTO-R1

Dimensions

| Variant | $\varnothing D_2$ | A_{eff} |
|---------|-------------------|----------------|
| | mm | m ² |
| R1 | 550 | 0.03760 |
| R2 | 550 | 0.03750 |
| R3 | 550 | 0.03720 |
| R4 | 550 | 0.03130 |

Nominal size 600: $\square Q_1 = 598$

Nominal size 625: $\square Q_1 = 623$

XARTO-R

– R –

Order code detail

Variants

- Square diffuser face, circular face style

Nominal sizes

- 600, 625

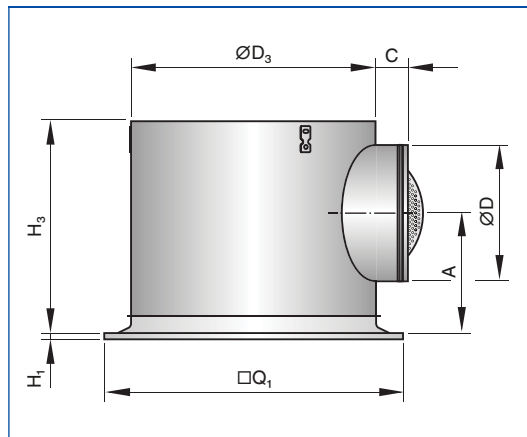
Parts and characteristics

- Square 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

XARTO-R



Dimensions [mm] and weight [kg]

| Nominal size | XARTO-R*-Z | XARTO-R*-A | □Q ₁ | H ₁ | ØD ₃ | H ₃ | ØD | A | C |
|--------------|------------|------------|-----------------|----------------|-----------------|----------------|-----|-----|----|
| | m | | | | | | | | |
| | kg | | | | | | | | |
| 600 | 9.0 | 8.5 | 598 | 8 | 462 | 356 | 248 | 205 | 60 |
| 625 | 9.0 | 8.5 | 623 | 8 | 462 | 356 | 248 | 205 | 60 |

1



XARTO-C1

– C –

Order code detail

Diffuser face XARTO-C

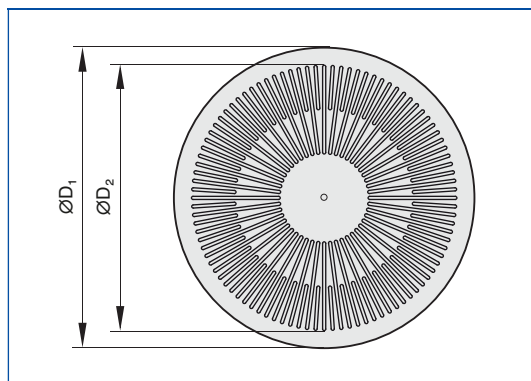


Illustration shows XARTO-C1

Dimensions

| Variant | ØD ₁ | ØD ₂ | A _{eff} |
|---------|-----------------|-----------------|------------------|
| | mm | | m ² |
| C1 | 600 | 550 | 0.03760 |
| C2 | 600 | 550 | 0.03750 |
| C3 | 600 | 550 | 0.03720 |
| C4 | 600 | 550 | 0.03130 |
| C5 | 600 | 550 | 0.03764 |
| C6 | 600 | 550 | 0.03764 |

XARTO-C

– C –

Order code detail

Variants

- Circular diffuser face, circular face style

Nominal sizes

- 600

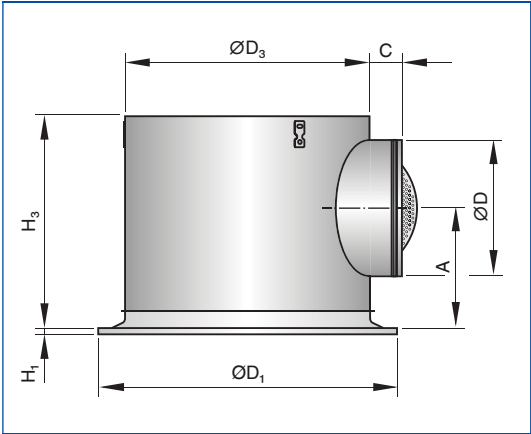
Parts and characteristics

- 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

XARTO-C



Dimensions [mm] and weight [kg]

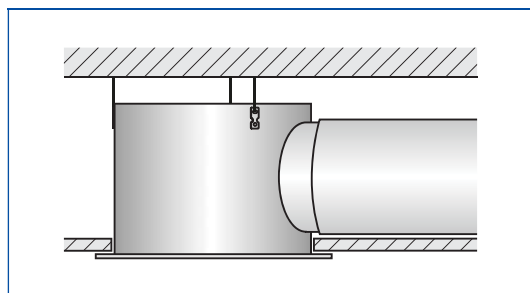
| Nominal size | XARTO-C*-Z | XARTO-C*-A | ØD ₁ | H ₁ | ØD ₃ | H ₃ | ØD | A | C |
|--------------|------------|------------|-----------------|----------------|-----------------|----------------|-----|-----|----|
| | m | | | | | | | | |
| | kg | | | | | | | | |
| 600 | 8.5 | 8.0 | 600 | 8 | 462 | 356 | 248 | 205 | 60 |

1 Installation types

For more installation details see Chapter K1 – 1.6.

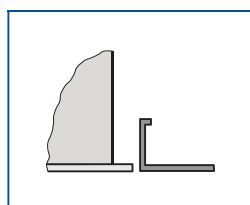
These are only schematic diagrams to illustrate installation details.

Flush ceiling installation with circular plenum box

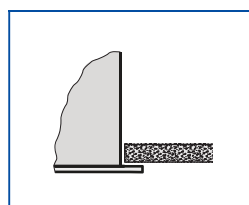


Ceiling systems

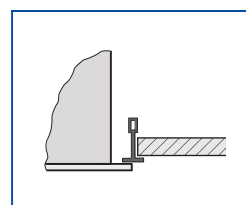
Grid ceiling



Continuous ceiling

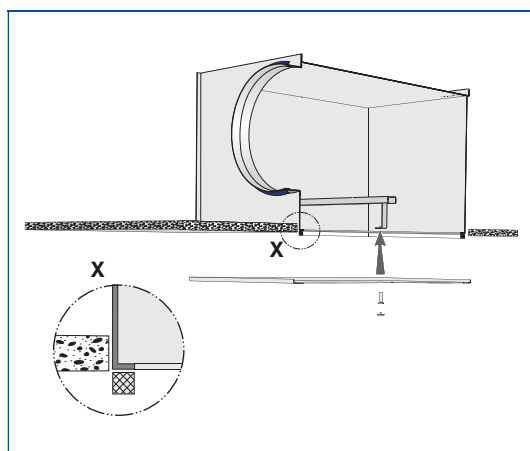


T-bar ceiling

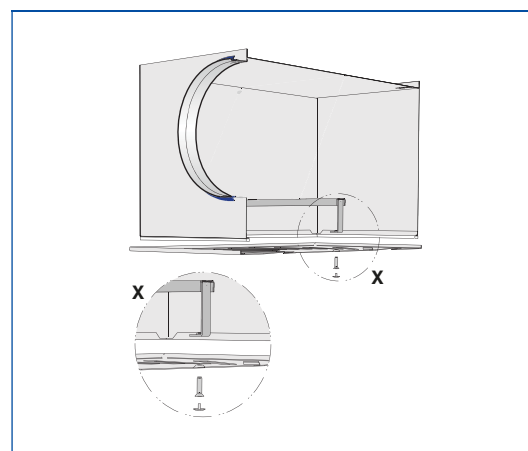


Diffuser face sealing and fixing

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.

Design 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 swirl unit 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 casing, diffuser face, swirl unit, spigot, and a cross bar to which the diffuser face is fixed.

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 most demanding requirements of technical function, comfort, and design
- Diffuser face in many different designs
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- Horizontal duct connection

Materials and surfaces

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

Technical data

- Nominal sizes: 600, 625 mm
- Minimum volume flow rate, with $\Delta t_z = -6$ K: 31 – 43 l/s or 110 – 155 m³/h
- Maximum volume flow rate, with $L_{WA} \approx 50$ dB(A): 220 – 265 l/s or 792 – 954 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

XARTO Swirl unit

2 Construction style

Square diffuser face

Circular face style

- ☐ R1
- ☐ R2
- ☐ R3
- ☐ R4

Square face style

- ☐ Q1
- ☐ Q2
- ☐ Q3
- ☐ Q4
- ☐ Q5
- ☐ Q6

Circular diffuser face

Circular face style

- ☐ C1
- ☐ C2
- ☐ C3
- ☐ C4
- ☐ C5
- ☐ C6

3 System

- ☐ Z Supply air
- ☐ A Extract air

4 Nominal size [mm]

- ☐ 600 ☐ Q, ØD
- ☐ 625 ☐ Q only

5 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 %

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 [m³/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

| | 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.

Basic information and nomenclature

1

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

$\dot{V} = 300 \text{ l/s (1280 m}^3\text{/h)}$
 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

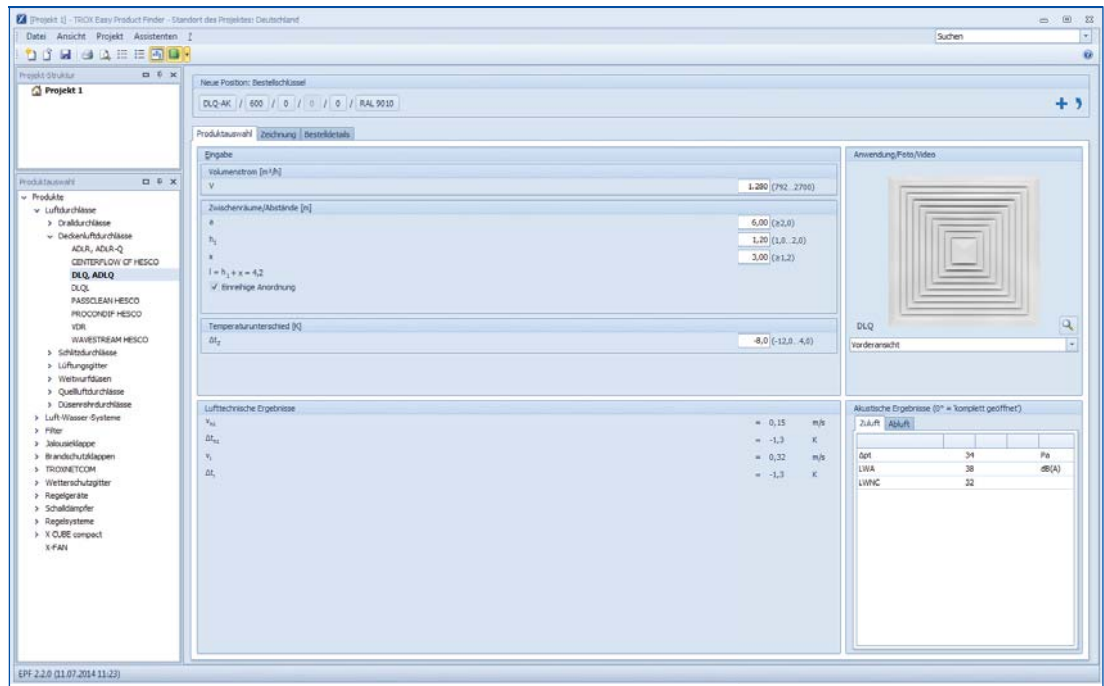
Type DLQ
Nominal sizes: 600, 625
Selected: DLQ/600

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.



Ceiling diffusers

Basic information and nomenclature

Description

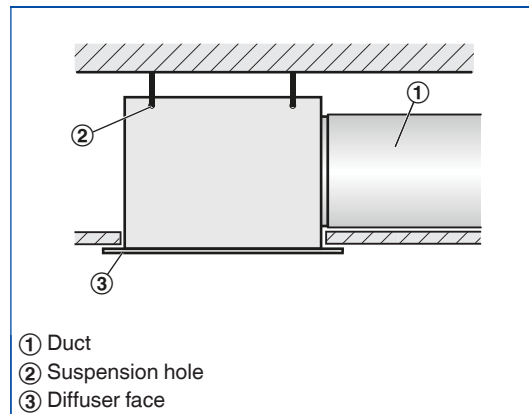
Installation information

- 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

1

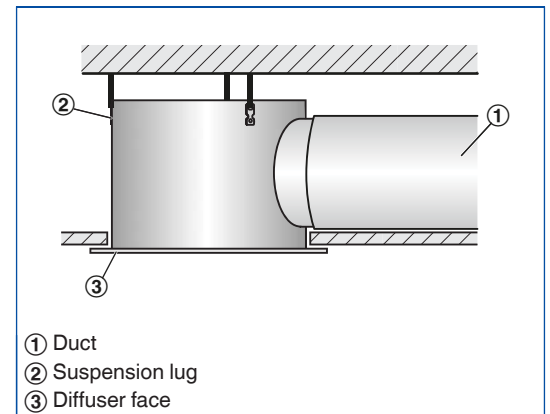
Installation types

Flush ceiling installation with square plenum box



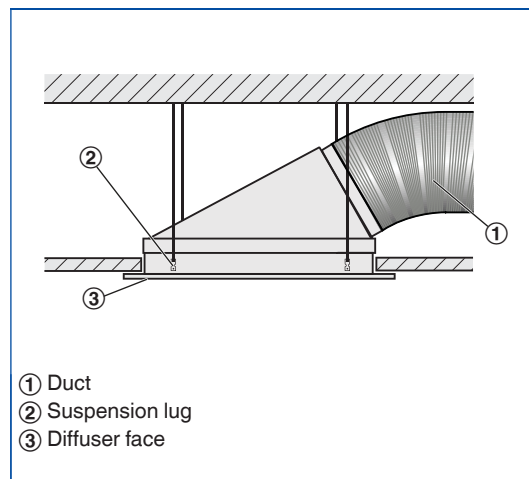
- Horizontal duct connection
- Four suspension holes
- Suspension with cords, wires or hangers, to be provided by others

Flush ceiling installation with circular plenum box



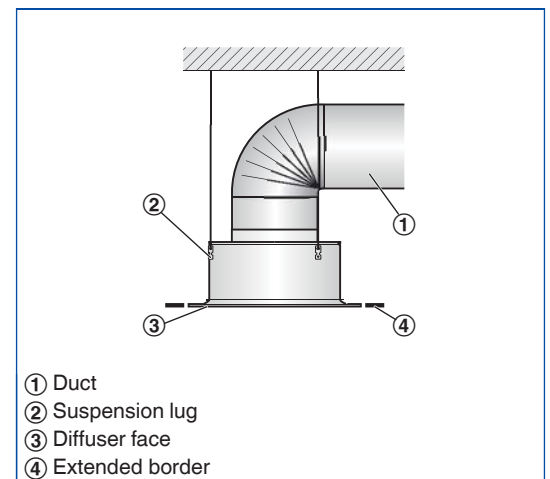
- Horizontal duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

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

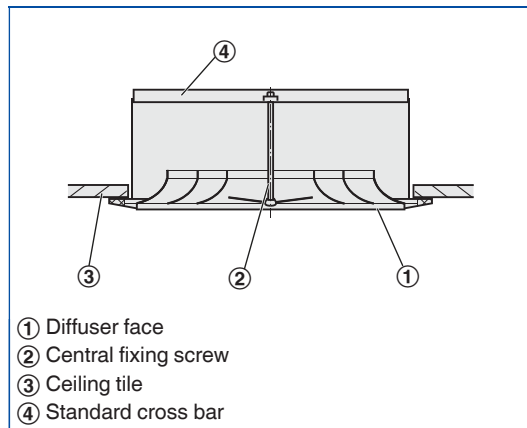
Ceiling diffusers

Basic information and nomenclature

1

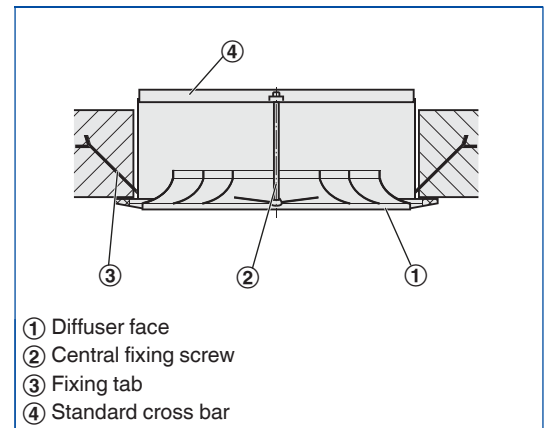
Installation without plenum box

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



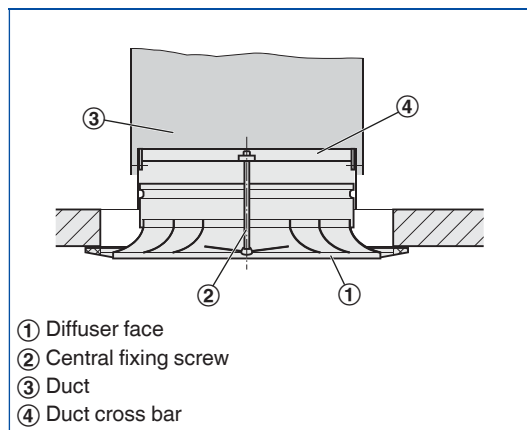
- No spigot
- Fixing of the standard cross bar to the ceiling is to be performed by others

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

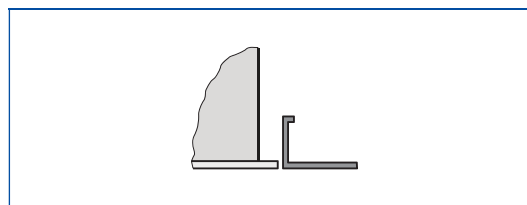
Flush ceiling installation with duct cross bar E1



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

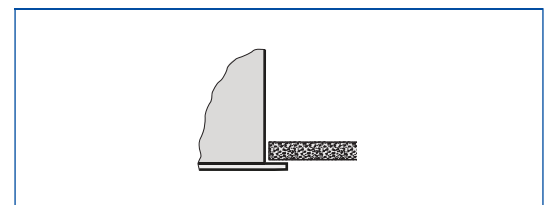
Ceiling systems

Installation into grid ceilings



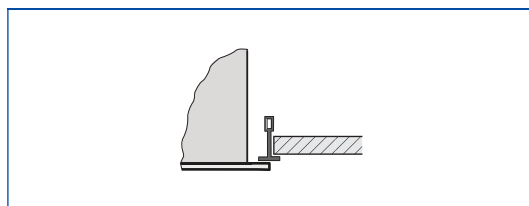
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

Installation in continuous ceilings



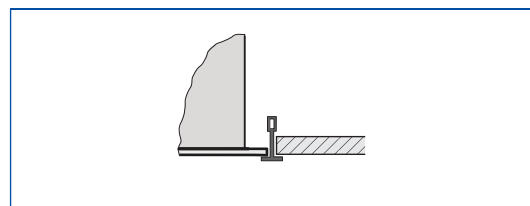
- Fix plenum box (including diffuser face, if necessary) to the ceiling
- Adjust plasterboard ceiling tile as required
- If necessary, fix the diffuser face after the ceiling has been completed

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

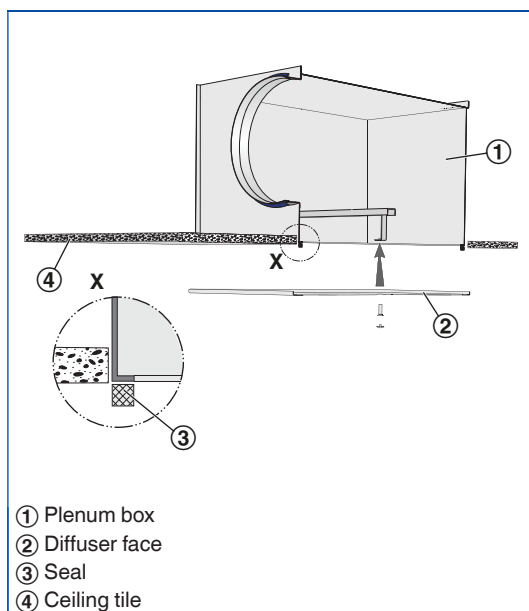
Installation in T-bar ceilings, diffuser face rests on T-bars



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

Diffuser face sealing and fixing

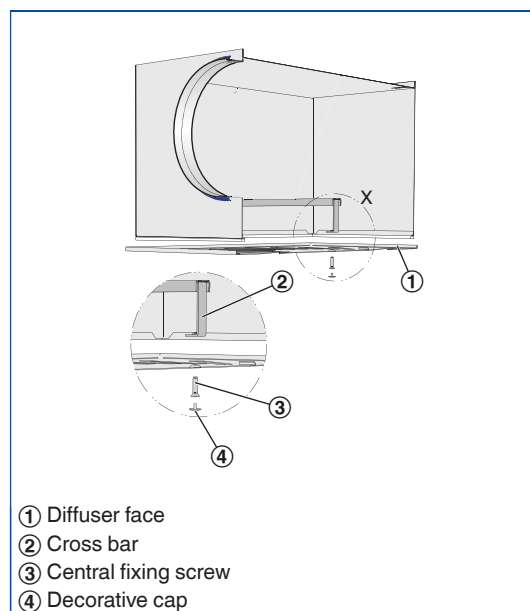
Diffuser face – sealing



- 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

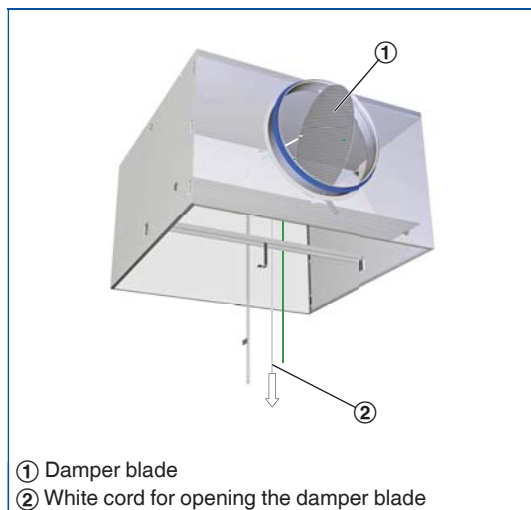
Commissioning

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.

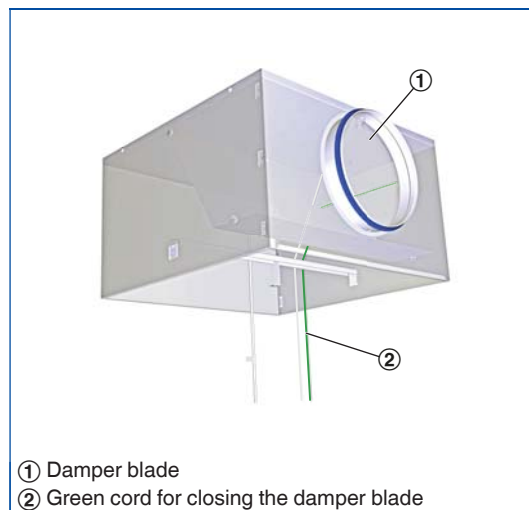
- AIRNAMIC, XARTO, FLEXTRO:
The diffuser face can be removed to access the damper blade; the damper blade can then be set in 15° intervals between 0 and 90°
- Ceiling diffusers with universal plenum box and damper blade (variant -M):
The diffuser face can be removed to access the damper blade; the damper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



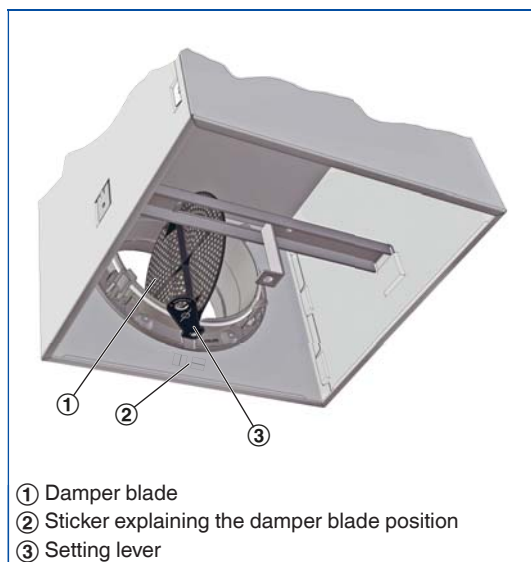
Open, 0°

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



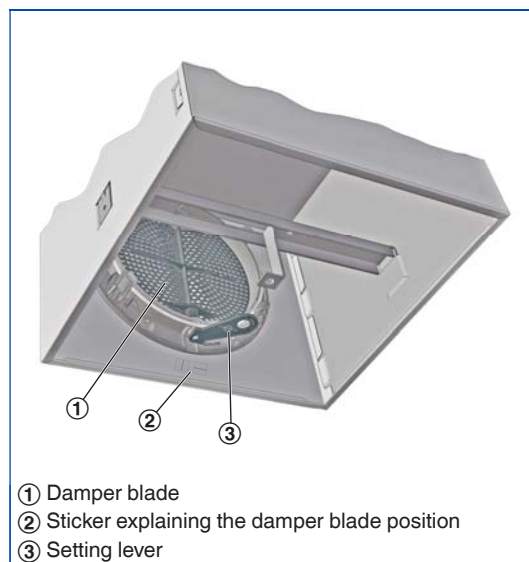
Closed, 90°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Open, 0°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Closed, 90°

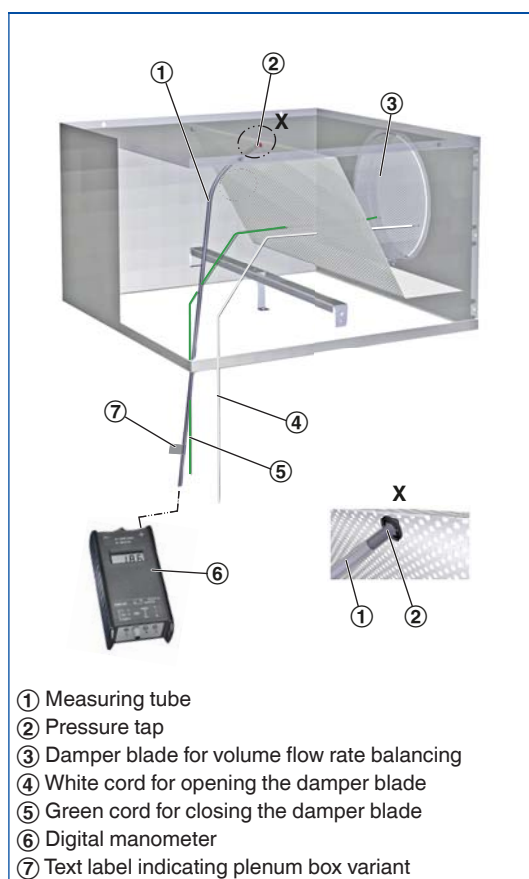
Volume flow rate measurement

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

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