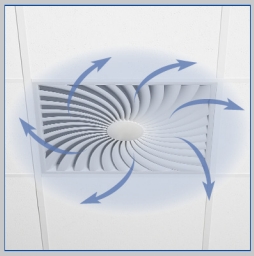
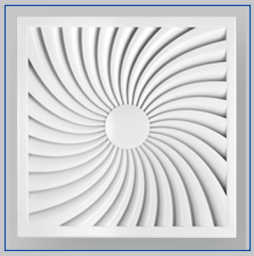
Ceiling swirl diffusers
Type AIRNAMIC

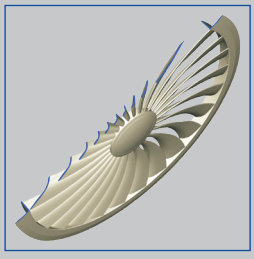


Horizontal omni directional air discharge



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 m^3/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

Application

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 the temperature difference and airflow velocity (supply air variant)
- For variable and constant volume flows
- For supply air to room air temperature differences from –12 to +10 K
- For room heights up to 4 m (lower edge of suspended ceiling)
- For all types of ceiling systems
- With an extended border also suitable for freely suspended installation (supply air variant)

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

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

Description

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

Connection
- Horizontal duct connection

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

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

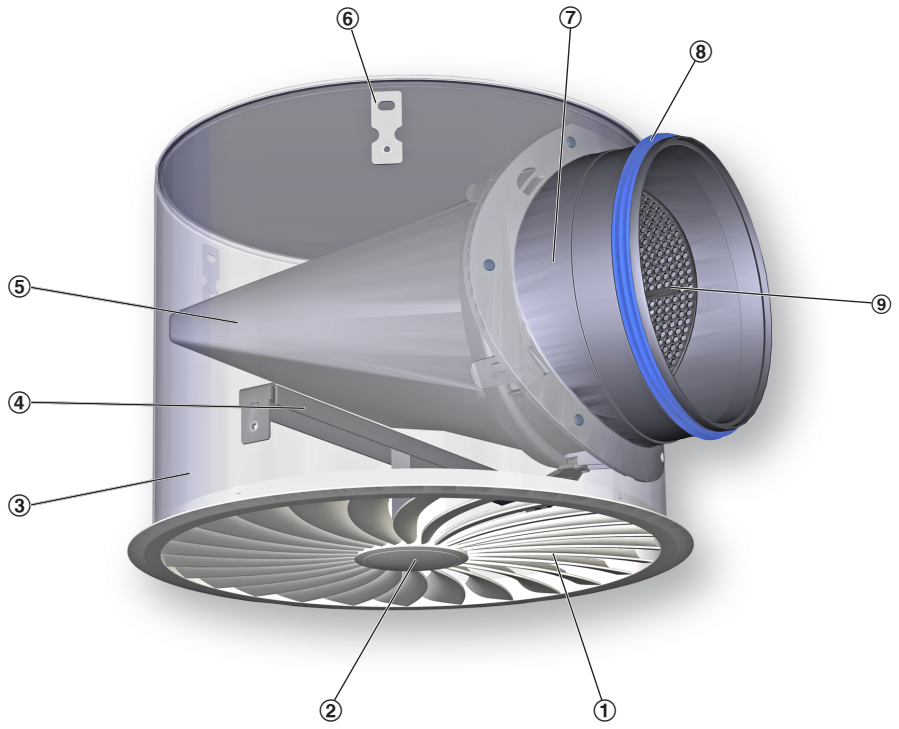
Maintenance
- Maintenance-free as construction and materials are not subject to wear
- Inspection and cleaning to VDI 6022

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.

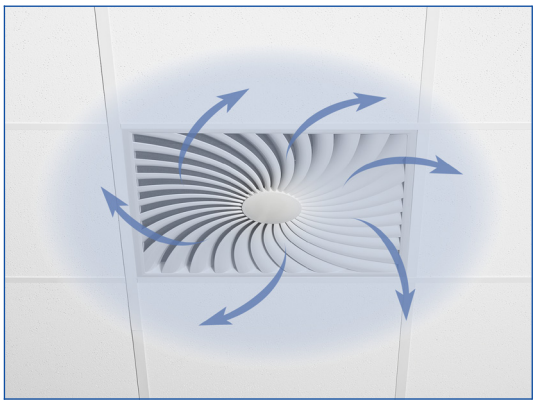
Type AIRNAMIC ceiling swirl diffusers have fixed blades with three-dimensionally profiled contours. This allows for high volume flow rates and low sound power levels. The supply air to room air temperature difference may range from –12 to +10 K.
A damper blade simplifies volume flow rate balancing for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



① Diffuser face
② Central fixing screw with decorative cap
③ Plenum box
④ Cross bar
⑤ Equalising element (Z: for supply air)
⑥ Suspension lug
⑦ Spigot
⑧ Double lip seal
⑨ Damper blade for volume flow rate balancing

Horizontal omni directional air discharge



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

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.

AIRNAMIC-Q-Z (supply air), sound power level and total differential pressure

Nominal size	$\dot{V}$	$\dot{V}$	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)
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-R-Z (supply air), sound power level and total differential pressure

Nominal size	$\dot{V}$	$\dot{V}$	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)
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

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 Δt_Z = –6 K: 13 – 76 l/s or 47 – 274 m^3/h
- Maximum volume flow rate, with L_{WA} ≅ 50 dB(A): 95 – 385 l/s or 342 – 1386 m^3/h
- Supply air to room air temperature difference: –12 to +10 K

Sizing data

- $\dot{V}$ _____ _____ [m^3/h]
- Δp_t _____ _____ [Pa]

Air-regenerated noise

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

AIRNAMIC

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

1 2 3 4 5

1 Type
AIRNAMIC Swirl diffuser

2 Construction style
R Circular
Q Square

3 System
Z Supply air
A Extract air

4 Nominal size [mm]
Construction style R
400L
400H
600

Construction style Q
300L
300H
600
625

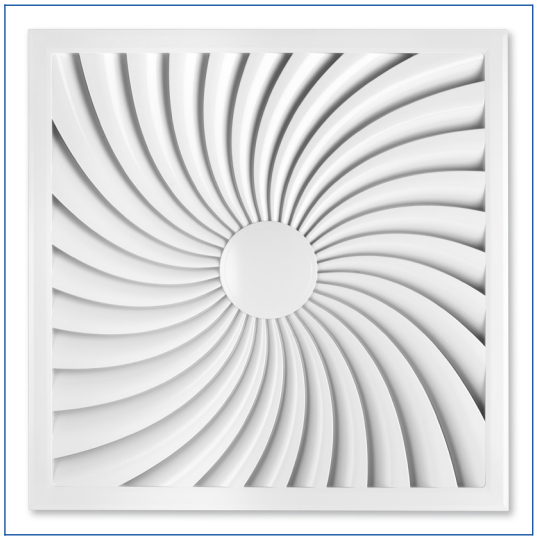
L Low volume flow rate
H High volume flow rate

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

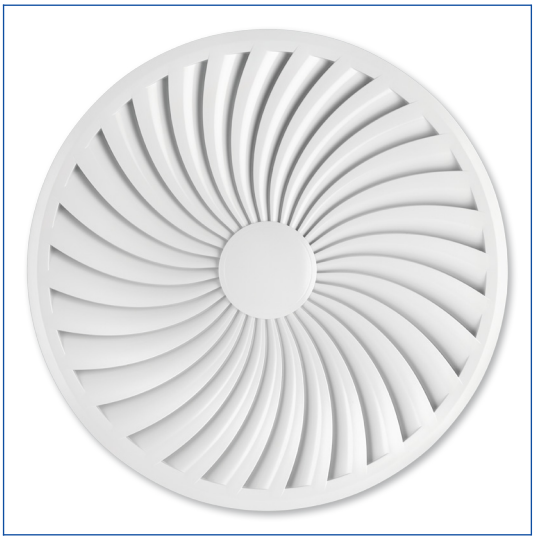
Order example: AIRNAMIC–R–Z/400H

Construction style	Circular
System	Supply air
Nominal size	400H
Surface	RAL 9010, pure white

AIRNAMIC-Q/600



AIRNAMIC-R/600



AIRNAMIC-Q

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

AIRNAMIC-R

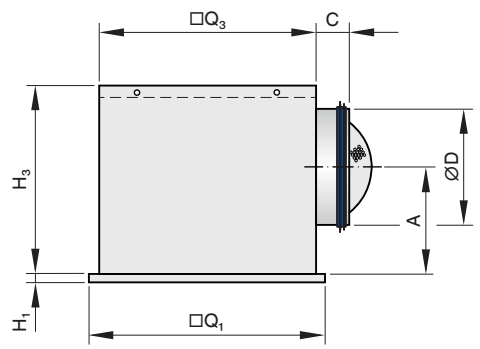
Variant
- Ceiling swirl diffuser with circular diffuser face
- With plenum box for horizontal duct connection

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

Square diffuser face with plenum box for horizontal duct connection

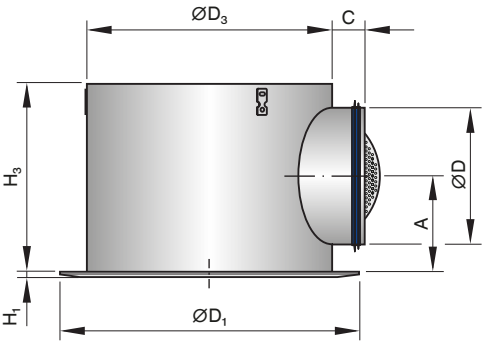


AIRNAMIC-Q

Nominal size	□Q_1	H_1	□Q_3	H_3	ØD	A	C	Plenum box	m
	mm	mm	mm	mm	mm	mm	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-R with plenum box for horizontal duct connection



AIRNAMIC-R

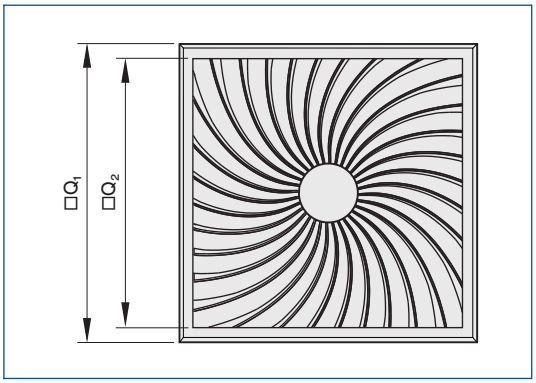
Nominal size	ØD_1	H_1	ØD_3	H_3	ØD	A	C	Plenum box	m
	mm	mm	mm	mm	mm	mm	mm		kg
R/400L	400	3	364	280	198	151	60	AK-H-R/ 400	4.0
R/400H	400	3	364	280	198	151	60	AK-H-R/ 400	4.0
R/600	600	3	575	345	248	194	60	AK-H-R/ 600	7.5

Weights apply to the supply air variant

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 sound 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.

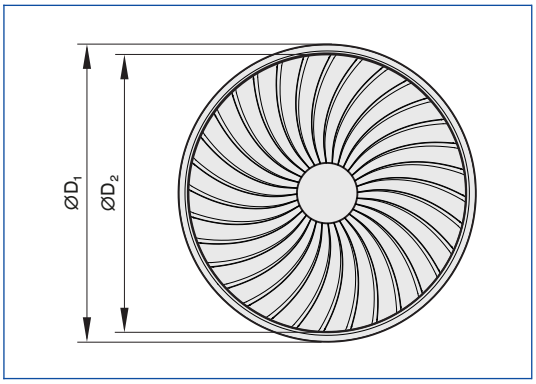
Diffuser face AIRNAMIC-Q



AIRNAMIC-Q

Nominal size	□Q_1	□Q_2	A_{eff}
	mm	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

Diffuser face AIRNAMIC-R

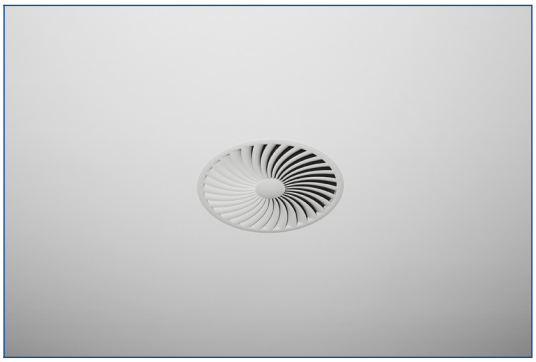


AIRNAMIC-R

Nominal size	ØD_1	ØD_2	A_{eff}
	mm	mm	m^2
R/400L	400	352	0.0186
R/400H	400	352	0.0258
R/600	600	546	0.0504

Installation in T-bar ceilings

Installation in continuous ceilings

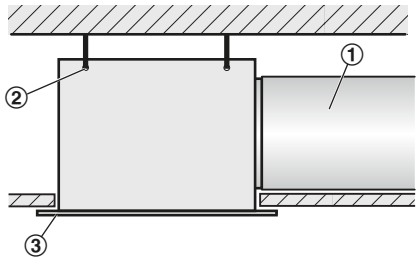


Installation and commissioning

- 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 the damper blade

These are only schematic diagrams to illustrate installation details.

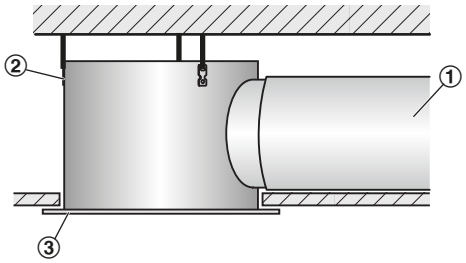
Flush ceiling installation with square plenum box



① Duct
② Suspension hole
③ Diffuser face

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

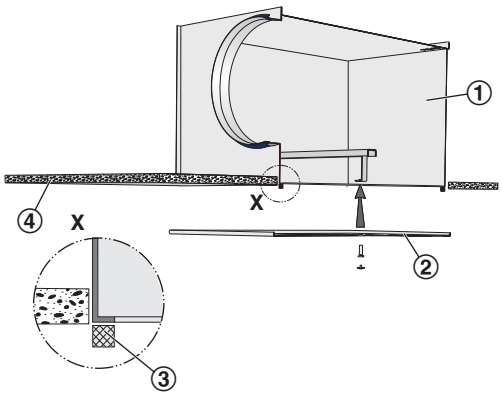
Flush ceiling installation with circular plenum box



① Duct
② Suspension lug
③ Diffuser face

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

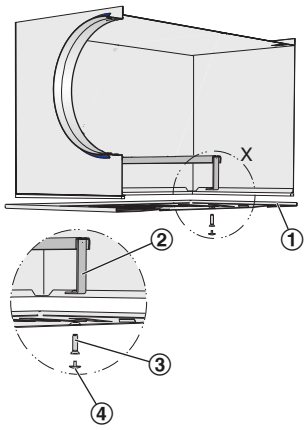
Diffuser face – sealing



① Plenum box
② Diffuser face
③ Seal
④ Ceiling tile

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

Diffuser face – central screw fixing

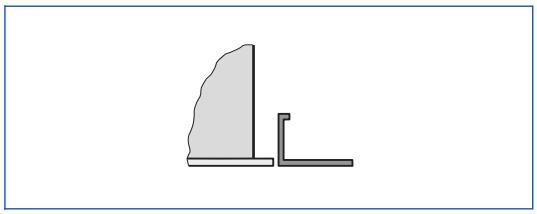


① Diffuser face
② Cross bar
③ Central fixing screw
④ Decorative cap

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

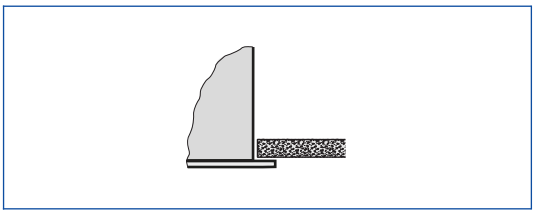
Ceiling systems

Installation into grid ceilings



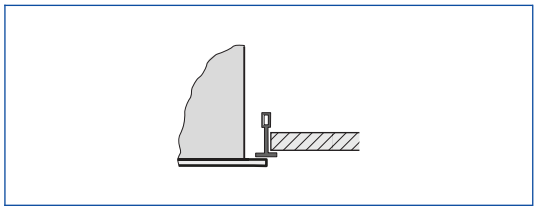
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

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



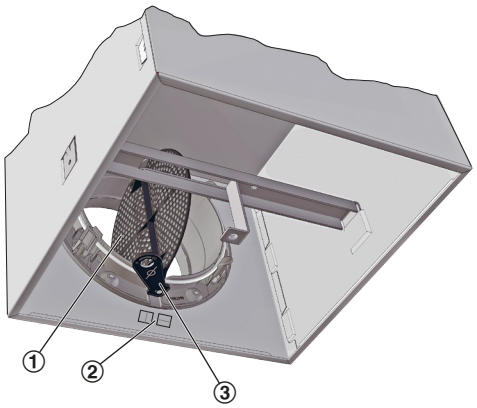
- Fix the plenum box to the ceiling
- The T-bar ceiling is independent of the ceiling diffuser
- Fix the diffuser face below the T-bars after the ceiling has been completed

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.

– 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°

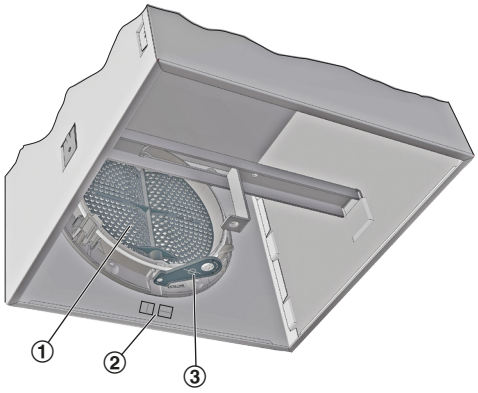
AIRNAMIC, XARTO Volume flow rate balancing



① Damper blade
② Sticker explaining the damper blade position
③ Setting lever

Open, 0°

AIRNAMIC, XARTO Volume flow rate balancing



① Damper blade
② Sticker explaining the damper blade position
③ Setting lever

Closed, 90°

Principal dimensions

ØD [mm]
Outer diameter of the spigot

$ØD_1$ [mm]
Outer diameter of a circular diffuser face

$ØD_2$ [mm]
Diameter of a circular diffuser face style

$ØD_3$ [mm]
Diameter of a circular plenum box

$□Q_1$ [mm]
Outer diameter of a square diffuser face

$□Q_2$ [mm]
Dimensions of a square diffuser face style

$□Q_3$ [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

$\dot{V}$ [m^3/h] and [l/s]
Volume flow rate

Δt_z [K]
Supply air to room air temperature difference, i.e. supply air temperature minus room temperature

Δp_t [Pa]
Total differential pressure

A_{eff} [m^2]
Effective air discharge area

All sound power levels are based on 1 pW.