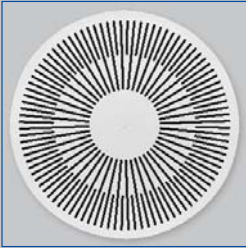
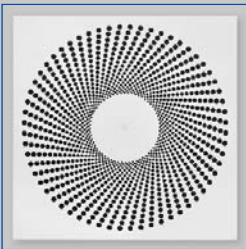


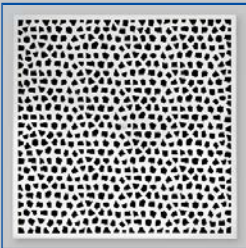
Horizontal
swirling air discharge



Circular diffuser face



Square diffuser face
with circular face style

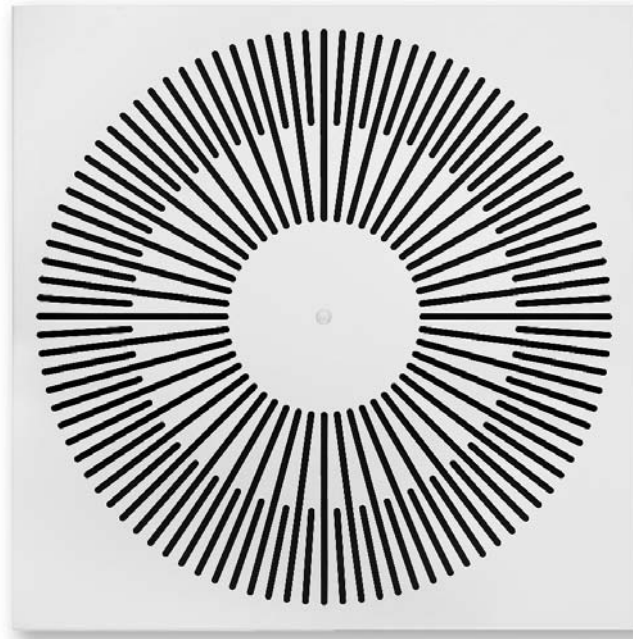


Square face style
(variant)



Square diffuser face
with square face style

Design ceiling swirl diffusers 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

1

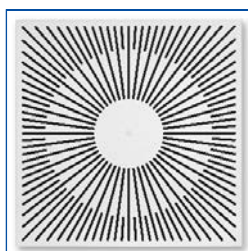
Type		Page
XARTO	General information	1.2 – 2
	Order code	1.2 – 8
	Quick sizing	1.2 – 9
	Dimensions and weight – XARTO-Q	1.2 – 10
	Dimensions and weight – XARTO-R	1.2 – 12
	Dimensions and weight – XARTO-C	1.2 – 14
	Installation details	1.2 – 16
	Specification text	1.2 – 17
	Basic information and nomenclature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

Variants

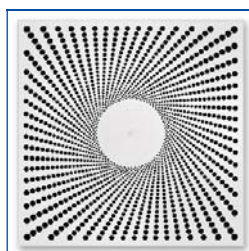
Square diffuser face with square face style

Product examples

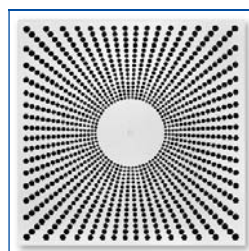
XARTO-Q1



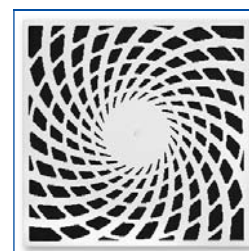
XARTO-Q2



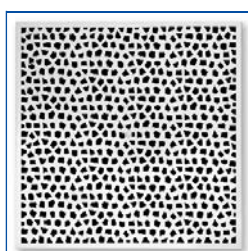
XARTO-Q3



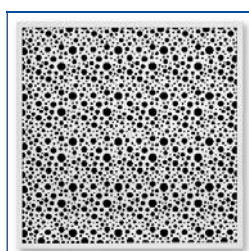
XARTO-Q4



XARTO-Q5

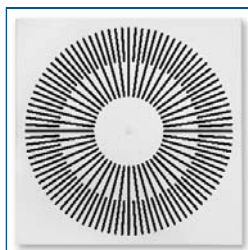


XARTO-Q6

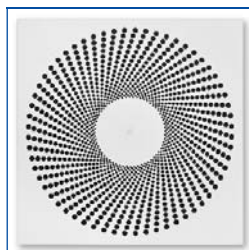


Square diffuser face with circular face style

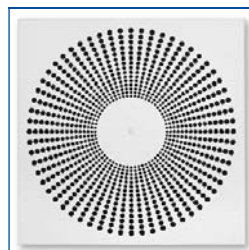
XARTO-R1



XARTO-R2



XARTO-R3

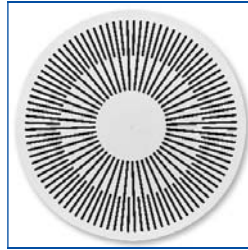


XARTO-R4

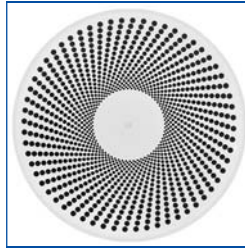


Circular diffuser face with circular face style

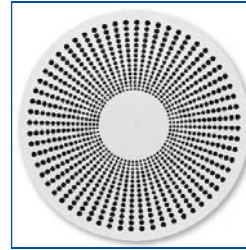
XARTO-C1



XARTO-C2



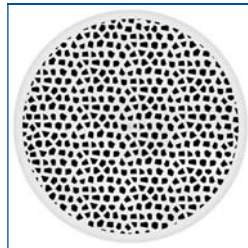
XARTO-C3



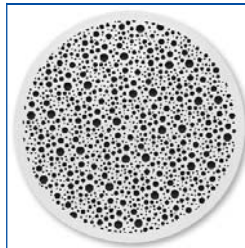
XARTO-C4



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

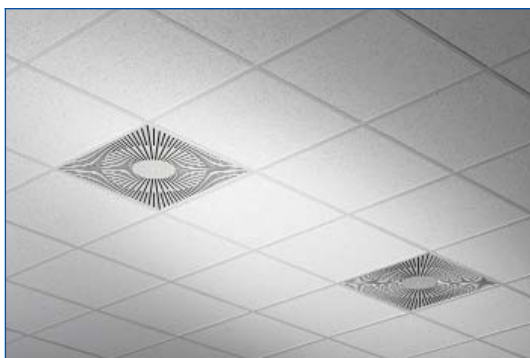
Installation in T-bar ceilings



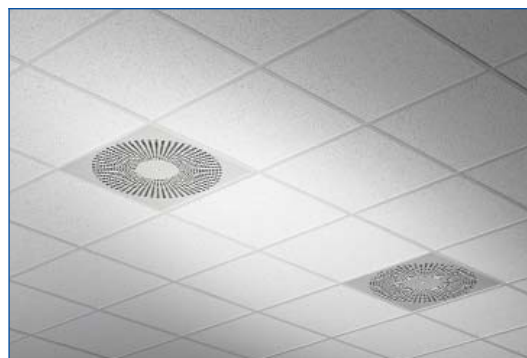
Installation in T-bar ceilings



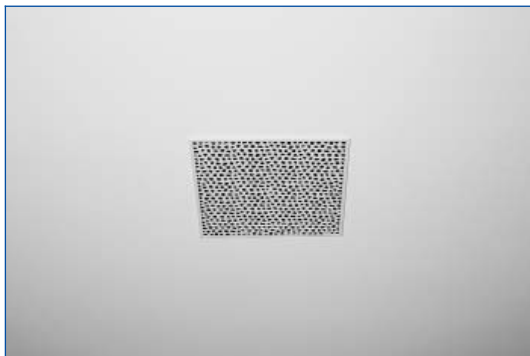
Installation in T-bar ceilings, arrangement in a row



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 m ³ /h
Maximum volume flow rate, with $L_{WA} \cong 50 \text{ dB(A)}$	220 – 265 l/s or 792 – 954 m ³ /h
Supply air to room air temperature difference	-12 to +10 K

Function

Functional description

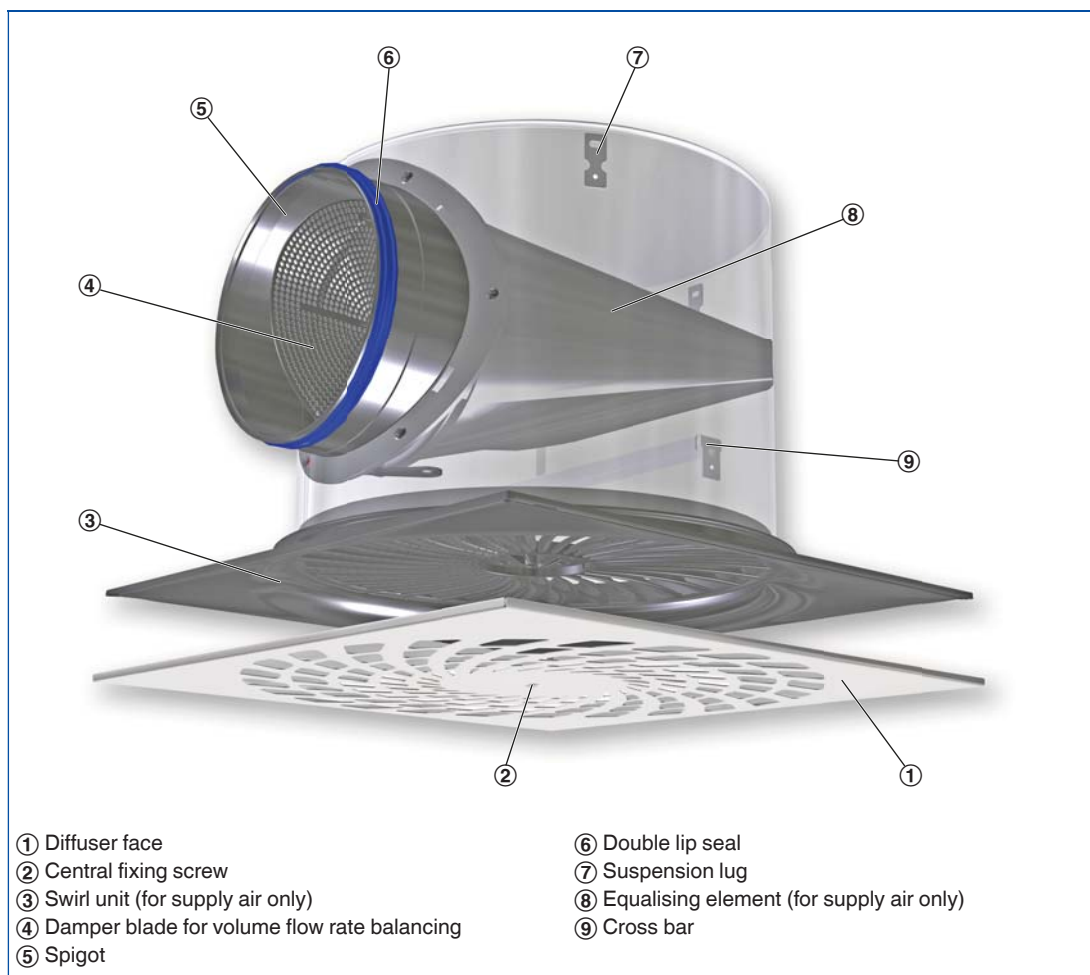
Ceiling swirl diffusers in air conditioning systems create a swirl to supply air to rooms. The resulting airflow induces high levels of room air, thereby rapidly reducing the airflow velocity and the temperature difference between supply air and room air. Ceiling swirl diffusers allow for large volume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

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.

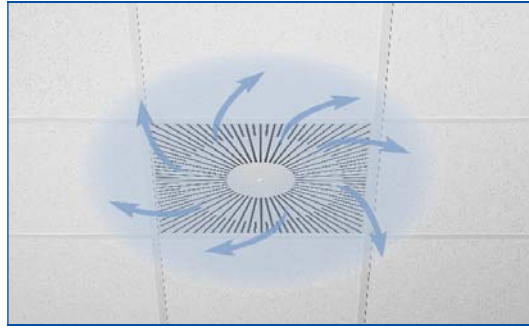
Schematic illustration of the XARTO, with plenum box for horizontal duct connection



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

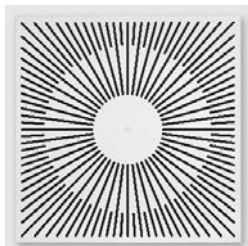
Diffuser face	\dot{V}		Damper blade position					
			0°		45°		90°	
			Δp_t	L_{WA}	Δp_t	L_{WA}	Δp_t	L_{WA}
	l/s	m ³ /h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
Q1	39	142	2	<15	3	<15	5	<15
	100	360	11	19	18	20	33	33
	160	576	29	32	46	33	85	47
	260	936	77	50	122	52	224	77
Q2	38	137	2	<15	3	<15	5	16
	105	378	13	21	20	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)

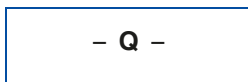
Quick sizing – sound power level and total differential pressure

Diffuser face	\dot{V}		Damper blade position					
			0°		45°		90°	
			Δp_t	L_{WA}	Δp_t	L_{WA}	Δp_t	L_{WA}
	l/s	m ³ /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

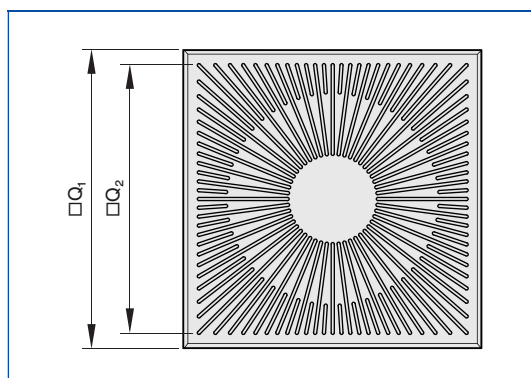


Illustration shows XARTO-Q1

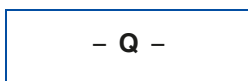
Dimensions

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

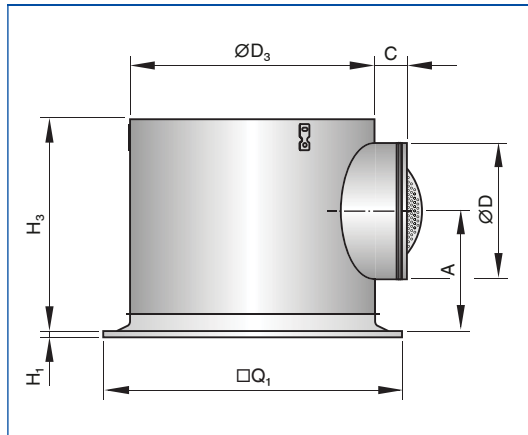
Parts and characteristics

- 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	$\square Q_1$	H_1	$\varnothing D_3$	H_3	$\varnothing D$	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

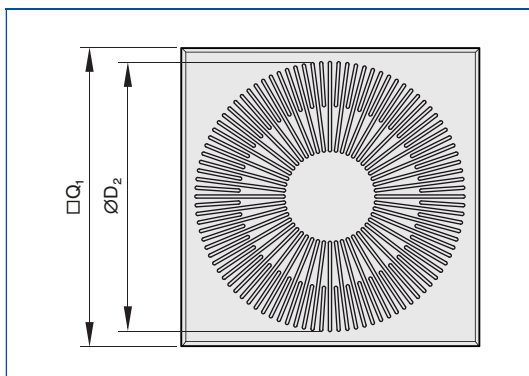


Illustration shows XARTO-R1

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

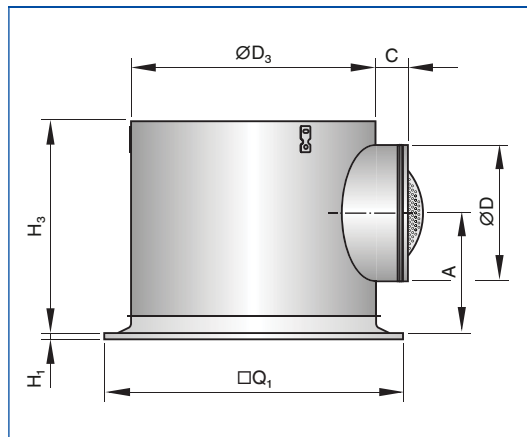
Parts and characteristics

- 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



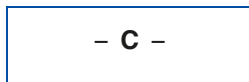
Dimensions [mm] and weight [kg]

Nominal size	XARTO-R*-Z	XARTO-R*-A	$\square Q_1$	H_1	$\varnothing D_3$	H_3	$\varnothing D$	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



Order code detail

Diffuser face XARTO-C

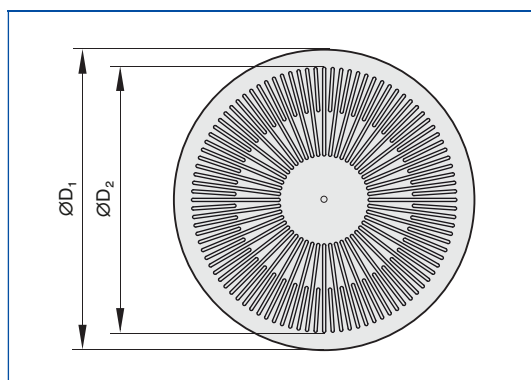
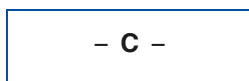


Illustration shows XARTO-C1

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



Order code detail

Variants

- Circular diffuser face, circular face style

Nominal sizes

- 600

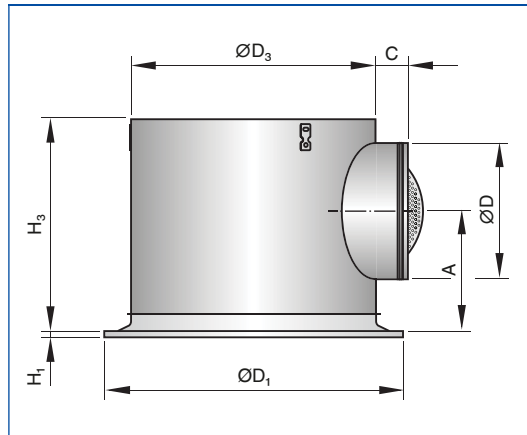
Parts and characteristics

- 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]

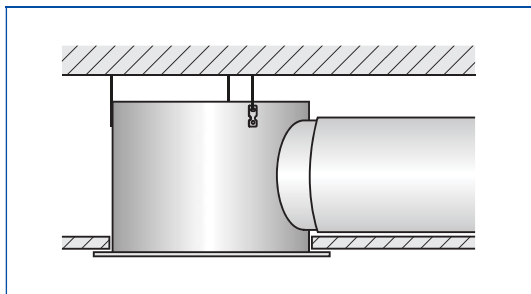
Nominal size	XARTO-C*-Z	XARTO-C*-A	$\varnothing D_1$	H_1	$\varnothing D_3$	H_3	$\varnothing D$	A	C
	m								
	kg								
600	8.5	8.0	600	8	462	356	248	205	60

1 Installation types

For more installation details see Chapter K1 – 1.6.

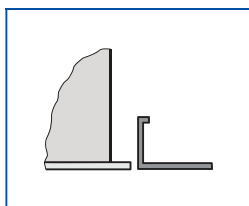
These are only schematic diagrams to illustrate installation details.

Flush ceiling installation with circular plenum box

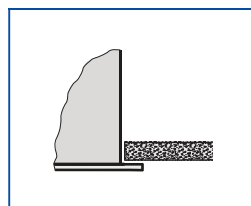


Ceiling systems

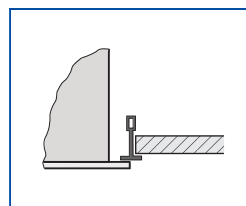
Grid ceiling



Continuous ceiling

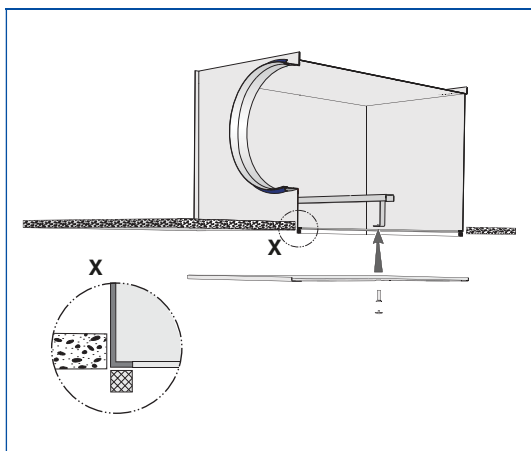


T-bar ceiling

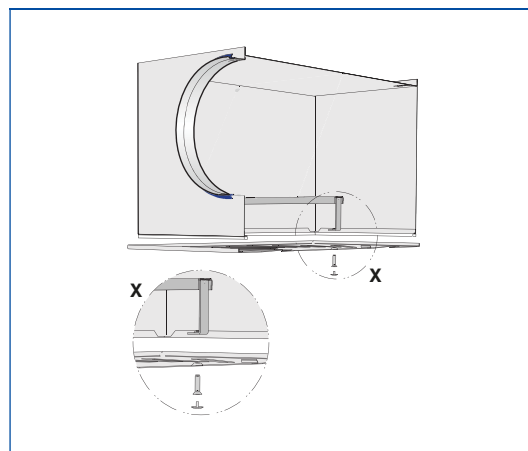


Diffuser face sealing and fixing

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 [m ³ /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

ØD [mm]

Outside diameter of the spigot

ØD₁ [mm]

Outer diameter of a circular diffuser face

ØD₂ [mm]

Diameter of a circular diffuser face style

ØD₃ [mm]

Diameter of a circular plenum box

□Q₁ [mm]

Outer diameter of a square diffuser face

□Q₂ [mm]

Dimensions of a square diffuser face style

□Q₃ [mm]

Dimensions of a square plenum box

H₁ [mm]

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

H₂ [mm]

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

H₃ [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:

- Projektstruktur:** Shows 'Projekt 1' and 'Neue Position: Bestellkennzahl' with the value 'DLQ AK // 600 // 0 // 0 // 0 // RAL 9010'.
- Produktbaum:** A tree view showing product categories like 'Luftkurkklasse', 'Drallkurkklasse', 'Deckenluftkurkklasse', etc., with 'DLQ, ADLQ' selected.
- Eingabe (Input):**
 - Volumenstrom [m³/s]: 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 + x = 4.2
 - Temperaturunterschied [K]: 8.0 (-12.0, 4.0)
- Lufttechnische Ergebnisse (Air Technical Results):**

v ₁₀	= 0,15	m/s
ΔP ₁₀	= -1,3	K
v ₁	= 0,32	m/s
ΔP ₁	= -1,3	K
- Acustische Ergebnisse (Acoustic Results):**

Zielergebnis (0° = Kompletzt geöffnet)		
Zielergebnis	Ergebnis	Einheit
StP	34	dB(A)
LWA	28	dB(A)
LWNC	22	
- Anwendung/Foto/Video:** Shows a 3D rendering of the selected DLQ diffuser.

Ceiling diffusers

Basic information and nomenclature

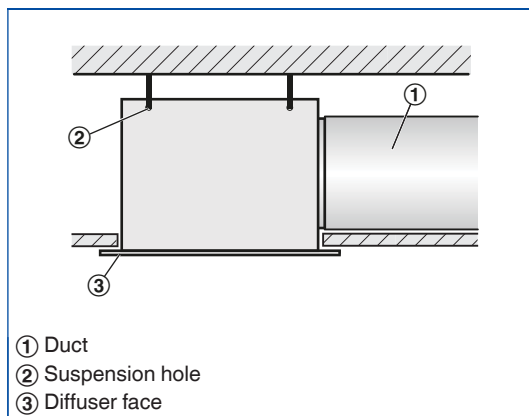
Description

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

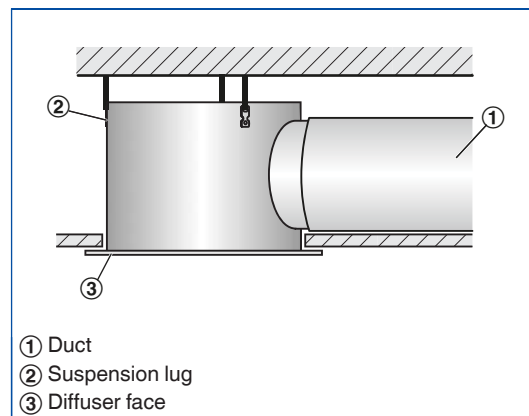
Installation types

Flush ceiling installation with square plenum box



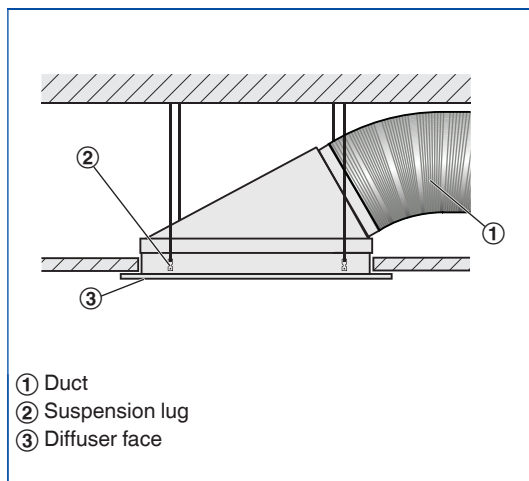
- Horizontal duct connection
- Four suspension holes
- Suspension with cords, wires or hangers, to be provided by others

Flush ceiling installation with circular plenum box



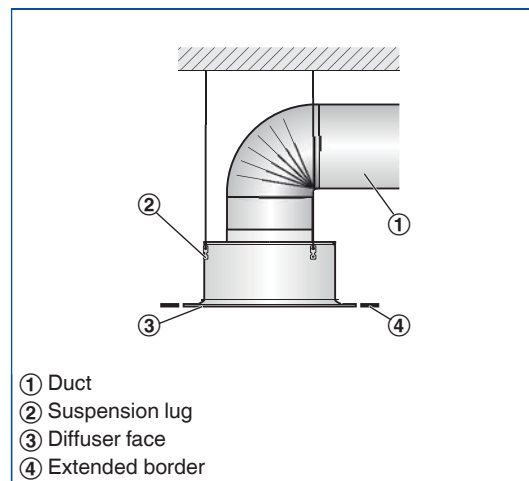
- Horizontal duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

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



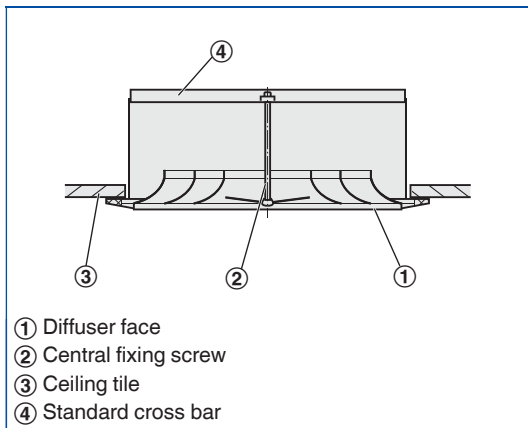
- Vertical duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Ceiling diffusers

Basic information and nomenclature

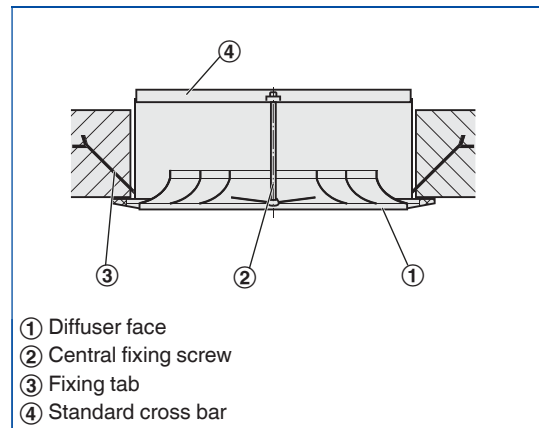
1 Installation without plenum box

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



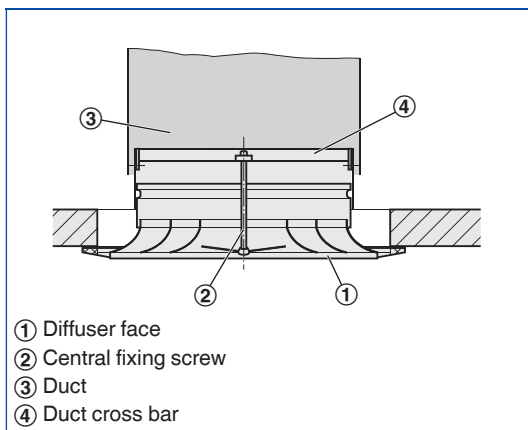
- No spigot
- Fixing of the standard cross bar to the ceiling tile is to be performed by others

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

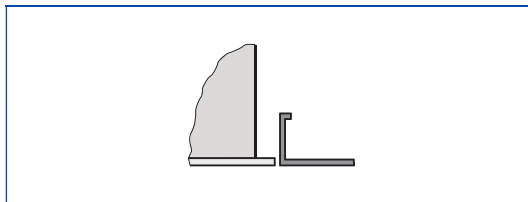
Flush ceiling installation with duct cross bar E1



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

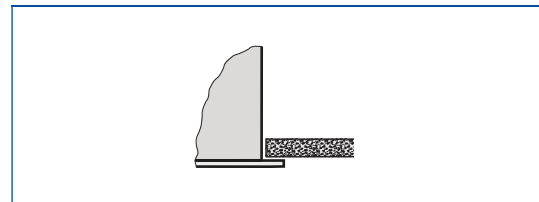
Ceiling systems

Installation into grid ceilings



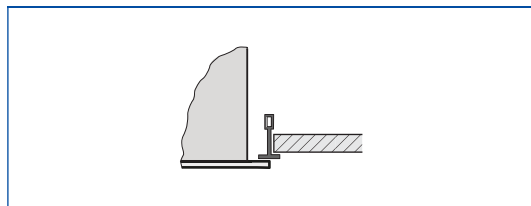
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

Installation in continuous ceilings



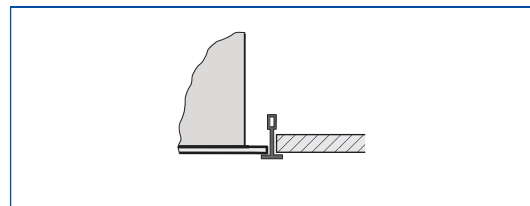
- Fix plenum box (including diffuser face, if necessary) to the ceiling
- Adjust plasterboard ceiling tile as required
- If necessary, fix the diffuser face after the ceiling has been completed

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

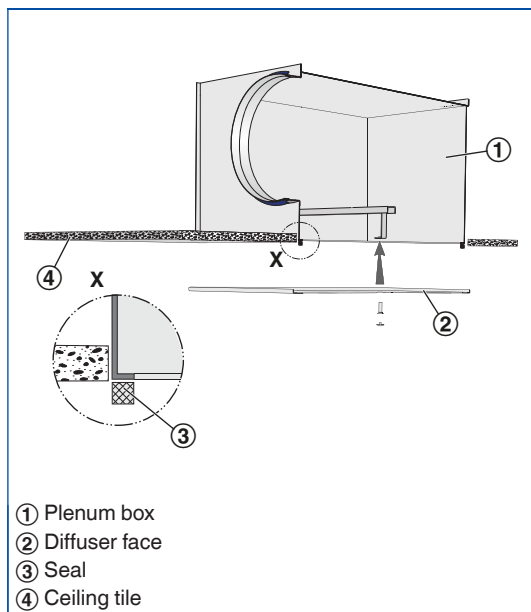
Installation in T-bar ceilings, diffuser face rests on T-bars



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

Diffuser face sealing and fixing

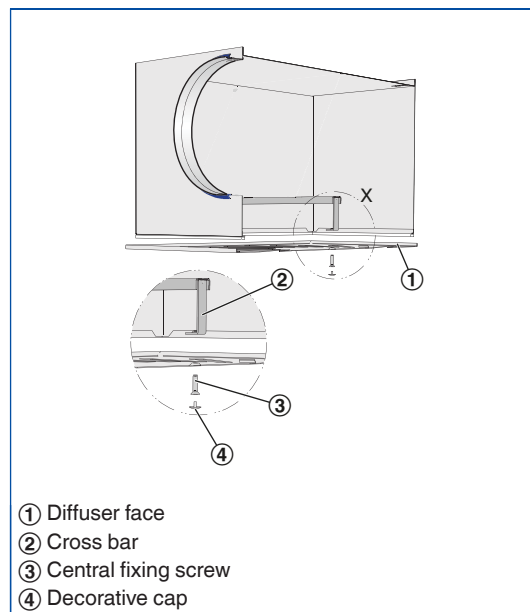
Diffuser face – sealing



- 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

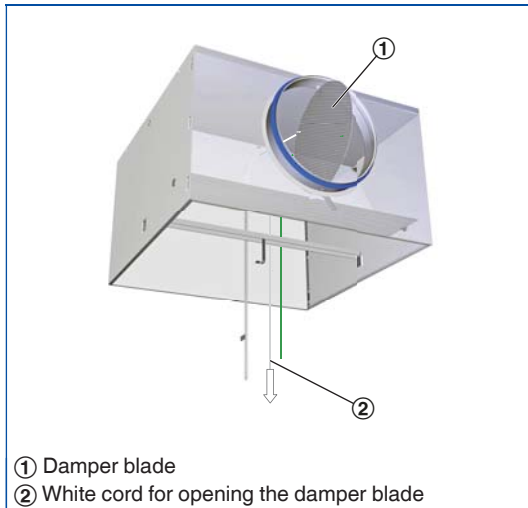
1

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.

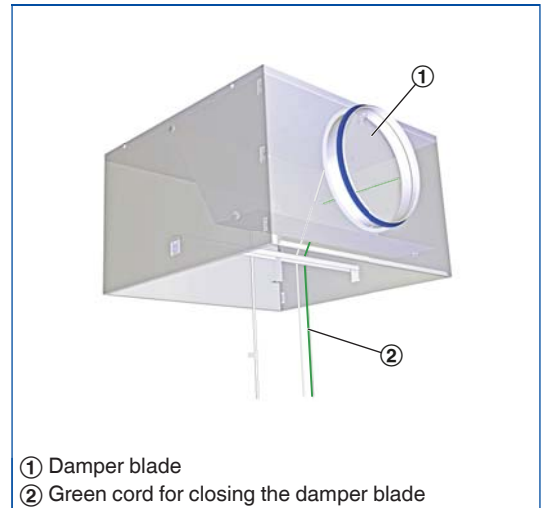
- AIRNAMIC, XARTO, FLEXTRO:
The diffuser face can be removed to access the damper blade; the damper blade can then be set in 15° intervals between 0 and 90°
- Ceiling diffusers with universal plenum box and damper blade (variant -M):
The diffuser face can be removed to access the damper blade; the damper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



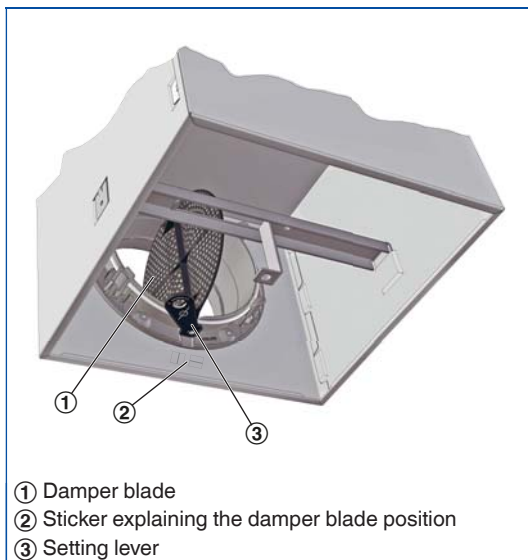
Open, 0°

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



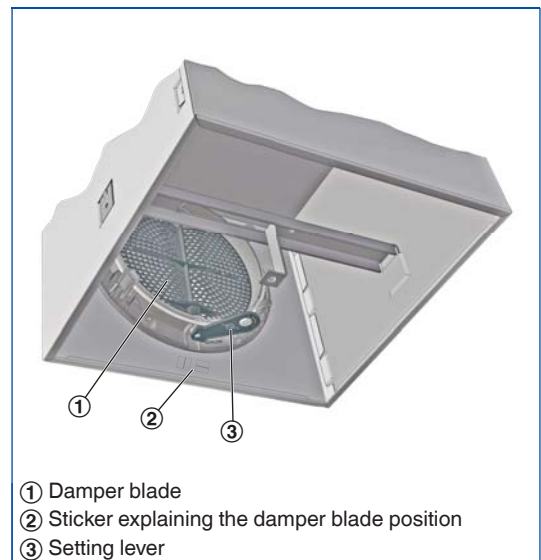
Closed, 90°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Open, 0°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Closed, 90°

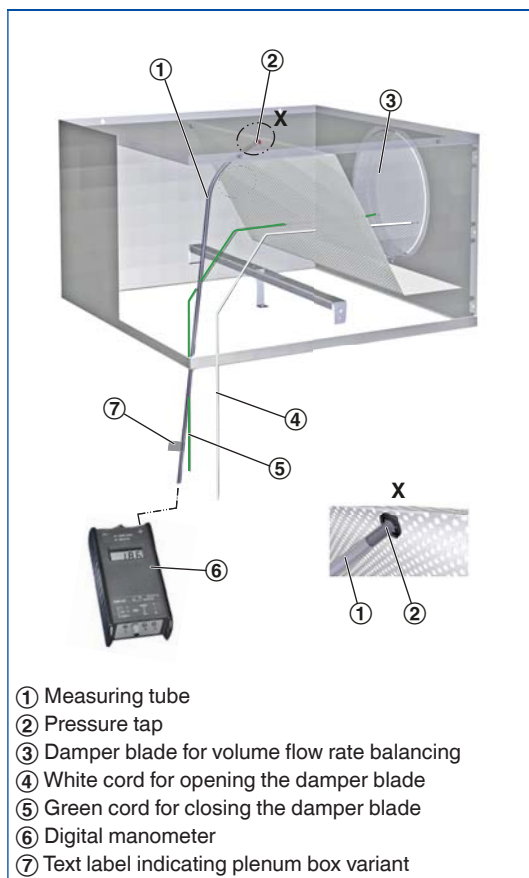
Volume flow rate measurement

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

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