

Ceiling diffusers

Type VDR



Vertical air discharge



Horizontal air discharge



Blade adjustment
with actuator

For large temperature differences in heating mode, high penetration of air, with adjustable air control blades

Circular ceiling diffusers, with manual or motorised adjustment of the air discharge direction, particularly suitable for high rooms

- Nominal sizes 315, 400, 630, 800
- Volume flow rate range 175 – 1495 l/s or 630 – 5382 m³/h
- Diffuser face made of aluminium
- For supply air
- For variable and constant volume flows
- Discharge direction can be adjusted manually or with an actuator
- High penetration of air at low sound power level

Optional equipment and accessories

- Exposed diffuser face available in RAL CLASSIC colours
- Horizontal or vertical duct connection
- Actuators for adjusting the air discharge direction

1

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Variants

Product examples

VDR



VDR-E*



VDR-H



VDR-V



Installation example

VDR heating mode



Description

For detailed information on control units and actuators see Chapter K1 – 10.

Application

- Type VDR ceiling diffusers are used as supply air diffusers for high rooms in comfort and industrial zones
- For mixed flow ventilation with different air patterns in heating and cooling modes
- Horizontal two-way supply air discharge in cooling mode
- High induction results in a rapid reduction of temperature differences and airflow velocities
- Air discharge from 0° (horizontal) to 90° (vertical)
- For variable and constant volume flows
- For supply air to room air temperature differences from –10 to +15 K
- For room heights exceeding 3.8 m
- For suspended ceilings
- Freely suspended installation
- Ideal for combination with TDC temperature difference control module

Variants

- Diffuser face only

Connection

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

Nominal sizes

- 315, 400, 630, 800

Attachments

- Electric actuators for adjusting the air discharge direction

Useful additions

- TDC temperature difference control module

Special characteristics

- High penetration of air at low sound power level
- Particularly suitable for rooms with varying heat loads
- Ideal adaptation of the air discharge pattern due to two sections of adjustable blades
- Discharge direction can be adjusted manually or with an actuator
- Plenum box with side entry or top entry spigot, and variant with electric actuator and inspection access

Parts and characteristics

- Circular diffuser face with two sections of adjustable blades
- Diffuser front frame
- Spigot ring

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180

Materials and surfaces

- Blades, front frame and spigot ring made of aluminium
- Plenum box and cross bar made of galvanised sheet steel
- Front frame, blades and spigot ring powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

Installation and commissioning

- Preferably for rooms with a clear height from 3.8 m
- Freely suspended and flush ceiling installation
- Horizontal or vertical duct connection

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	315, 400, 630, 800 mm
Minimum volume flow rate	175 – 695 l/s or 630 – 2502 m ³ /h
Maximum volume flow rate, with $L_{WA} \cong 50$ dB(A)	320 – 1495 l/s or 1152 – 5382 m ³ /h
Supply air to room air temperature difference	–10 to +15 K

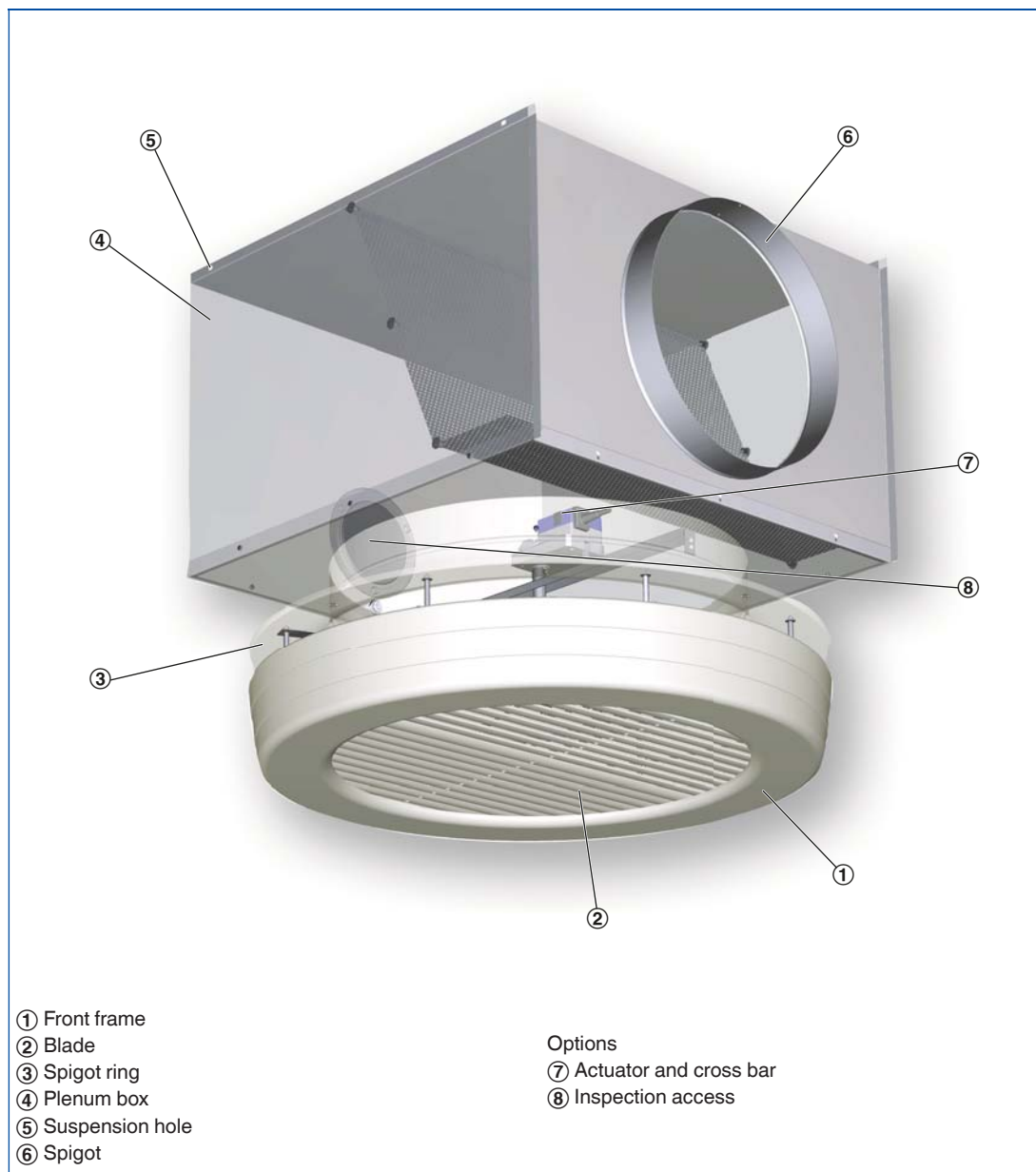
Function

Functional description

Ceiling diffusers direct the air from air conditioning systems into the room. 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 diffusers allow for large volume flow rates. The result is a mixed flow ventilation for industrial and comfort zones, with good overall room ventilation, creating only very little turbulence in the occupied zone.

Type VDR ceiling diffusers have adjustable blades. The air pattern can be adjusted to meet different local requirements. Horizontal air discharge is omni directional. Vertical air discharge is possible in heating mode. The supply air to room air temperature difference may range from -10 to $+15$ K. An actuator (optional) adjusts the blades based on demand.

Schematic illustration of the VDR, with actuator and plenum box for horizontal duct connection



Air patterns

VDR – cooling mode



VDR – heating mode



Order code

VDR

VDR - V - E1 / 630 / P1 - RAL ...

1 2 3 4 5

1 Type

VDR Ceiling diffuser

2 Connection

No entry: diffuser face only

H Horizontal, with plenum box

V Vertical, with plenum box

3 Adjustment

No entry: manual

Electric actuator

E1 230 V AC, 3-point

E2 24 V AC/DC, 3-point

E3 24 V AC/DC, modulating 2 – 10 V DC

4 Nominal size [mm]

315

400

630

800

5 Exposed surface of diffuser face

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

VDR-H-E2/800

Connection	Horizontal
Adjustment	Actuator 24 V AC
Nominal size	800
Exposed surface of diffuser face	RAL 9010, pure white, gloss level 50 %

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

The maximum volume flow rates apply to a sound power level of approx. 50 dB (A).

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

VDR

Quick sizing – sound power level and total differential pressure

Nominal size	\dot{V}		Δp_t Pa	L_{WA} dB(A)
	l/s	m ³ /h		
315	175	630	5	19
	255	918	10	32
	335	1206	17	42
	420	1512	27	50
400	250	900	5	18
	400	1440	14	32
	550	1980	26	44
	650	2340	36	50
630	555	1998	7	30
	680	2448	11	38
	805	2898	15	45
	925	3330	20	50
800	556	2500	6	27
	870	3132	8	33
	1185	4266	16	42
	1495	5382	25	50

VDR-H

Quick sizing – sound power level and total differential pressure

Nominal size	\dot{V}		Δp_t Pa	L_{WA} dB(A)
	l/s	m ³ /h		
315	175	630	22	28
	230	828	38	37
	280	1008	57	45
	320	1152	74	50
	400	1440	118	50
400	250	900	19	27
	320	1152	31	36
	390	1404	46	43
	465	1674	65	50
630	490	1764	24	28
	615	2214	38	36
	740	2664	55	44
	870	3132	75	50
800	695	2502	21	30
	855	3078	31	37
	1015	3654	44	44
	1180	4248	59	50

VDR-V

Quick sizing – sound power level and total differential pressure

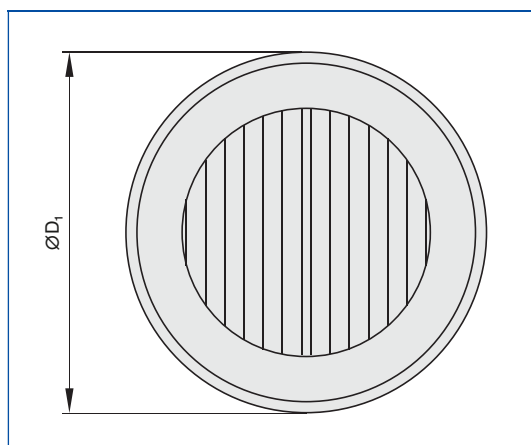
Nominal size	\dot{V}		Δp_t Pa	L_{WA} dB(A)
	l/s	m ³ /h		
315	175	630	10	29
	230	828	18	38
	280	1008	27	45
	320	1152	35	50
400	250	900	9	30
	330	1188	16	38
	405	1458	24	45
	480	1728	33	50
630	490	1764	18	27
	650	2340	32	36
	810	2916	49	44
800	970	3492	71	50
	695	2502	15	28
	940	3384	27	36
	1190	4284	43	44
	1450	5220	64	50

1



VDR

Diffuser face VDR



Dimensions

Nominal size	ØD ₁	A _{eff}
	mm	m ²
315	450	0.0885
400	570	0.1260
630	870	0.2450
800	1070	0.3480

VDR

Variant

- Ceiling diffuser with circular diffuser face
- Manual adjustment

Nominal sizes

- 315, 400, 630, 800

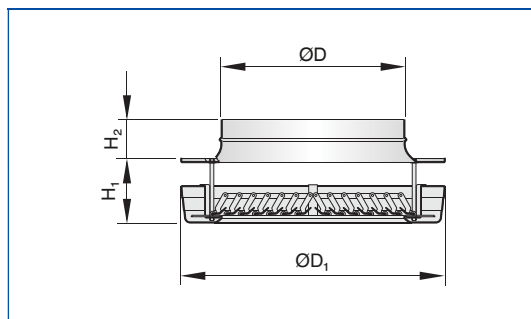
Parts and characteristics

- Top entry spigot

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180

VDR



Dimensions [mm] and weight [kg]

Nominal size	ØD	ØD ₁	H ₁	H ₂	m
	mm				kg
315	313	450	122	77	3
400	398	570	139	84	5
630	628	870	184	114	11
800	798	1070	220	135	15



VDR-E*

- E* /

Order code detail

Variant

- Ceiling diffuser with circular diffuser face
- Actuator for blade adjustment

Nominal sizes

- 315, 400, 630, 800

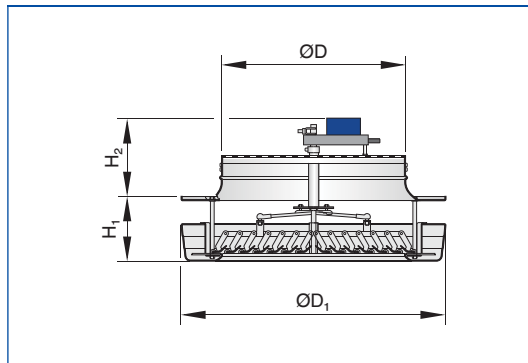
Parts and characteristics

- Top entry spigot

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180

VDR-E*



Dimensions [mm] and weight [kg]

Nominal size	ØD	ØD ₁	H ₁	H ₂	m
	mm				kg
315	313	450	122	158	5
400	398	570	139	166	7
630	628	870	184	196	13
800	798	1070	220	218	18

VDR-H



VDR-H

- H -

Order code detail

Variant

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

Nominal sizes

- 315, 400, 630, 800

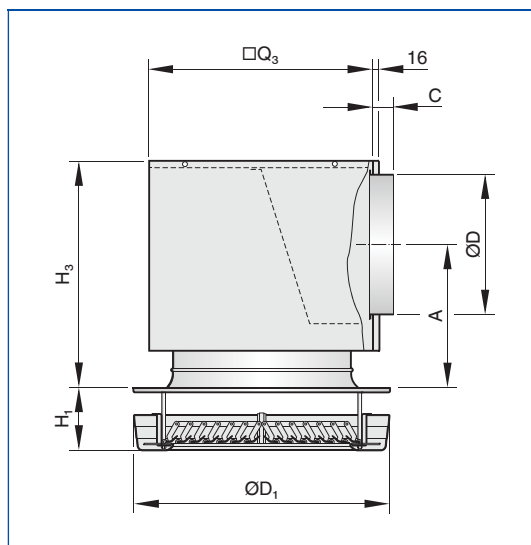
Parts and characteristics

- Plenum box for horizontal duct connection
- Actuator for blade adjustment, optional
- Variant with actuator has an inspection access at the side

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180

VDR-H



Dimensions [mm] and weight [kg]

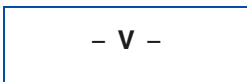
Nominal size	ØD	ØD ₁	H ₁	H ₃	□Q ₃	C	A	m
	mm							kg
315	248	450	122	448	415	45	292	12
400	313	570	139	528	500	45	339	16
630	398	870	184	623	750	45	392	31
800	498	1070	220	745	920	45	464	43

Weights apply to the variant with actuator

VDR-V



VDR-V



Order code detail

Variant

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

Nominal sizes

- 315, 400, 630, 800

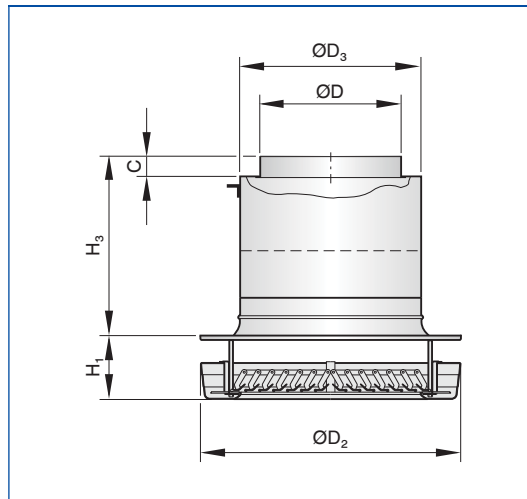
Parts and characteristics

- Plenum box for vertical duct connection
- Actuator for blade adjustment, optional
- Variant with actuator has an inspection access

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180

VDR-V



Dimensions [mm] and weight [kg]

Nominal size	ØD	ØD ₁	H ₁	H ₃	ØD ₃	C	m
	mm						kg
315	248	450	122	305	314	45	8
400	313	570	139	411	399	45	12
630	398	870	184	486	629	45	22
800	498	1070	220	570	799	45	32

Weights apply to the variant with actuator

Description

Installation information

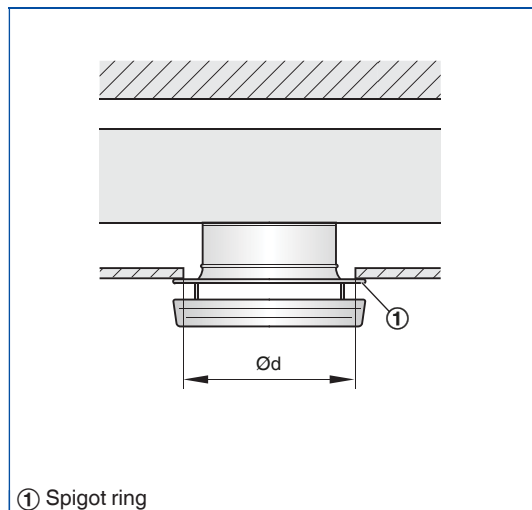
- Installation with spigot ring can be flush with the ceiling or freely suspended
- Continuous adjustment of the air pattern using an actuator is possible with flush or freely suspended installation
- Installation and making connections to be performed by others

Installation types

For more installation details see Chapter K1 – 1.6.

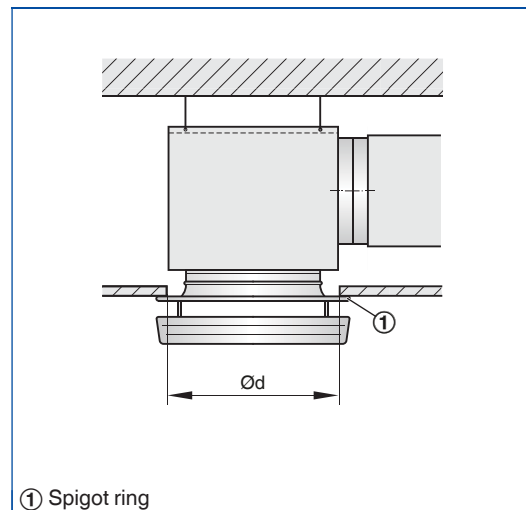
These are only schematic diagrams to illustrate installation details.

Ceiling installation without plenum box



- Continuous adjustment of the discharge direction
- Vertical duct connection
- Spigot on the rectangular duct is to be provided by others

Ceiling installation with plenum box for horizontal duct connection



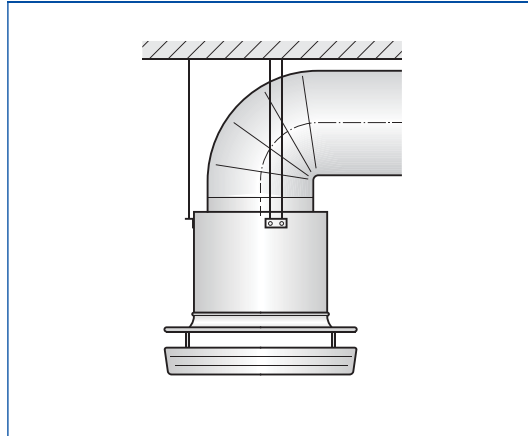
- Continuous adjustment of the discharge direction
- Horizontal duct connection

Ceiling cut-out

Dimensions

Nominal size	Ød
	mm
315	398
400	518
630	808
800	1008

**Freely suspended installation
with plenum box for vertical duct connection**



- Continuous adjustment of the discharge direction
- Horizontal or vertical duct connection

Standard text

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

Ceiling diffusers with circular diffuser front frame, for comfort and industrial zones. For supply air only. Diffuser face with adjustable air control blades for air discharge from horizontal (0°) to vertical (90°) For freely suspended installation and for suspended ceilings. Ready-to-install component which consists of the diffuser face with diffuser front frame and adjustable air control blades, a plenum box with equalising element, side entry or top entry spigot, and suspension holes or suspension lugs. 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

- High penetration of air at low sound power level
- Particularly suitable for rooms with varying heat loads
- Ideal adaptation of the air discharge pattern due to two sections of adjustable blades
- Discharge direction can be adjusted manually or with an actuator
- Plenum box with side entry or top entry spigot, and variant with electric actuator and inspection access

Materials and surfaces

- Blades, front frame and spigot ring made of aluminium
- Plenum box and cross bar made of galvanised sheet steel
- Front frame, blades and spigot ring powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

Technical data

- Nominal sizes: 315, 400, 630, 800 mm
- Minimum volume flow rate: 175 – 695 l/s or 630 – 2502 m³/h
- Maximum volume flow rate, with $L_{WA} \approx 50$ dB(A): 320 – 1495 l/s or 1152 – 5382 m³/h
- Supply air to room air temperature difference: -10 to +15 K

Sizing data

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

Order options

1 Type

VDR Ceiling diffuser

2 Connection

No entry: diffuser face only

- H** Horizontal, with plenum box
- V** Vertical, with plenum box

3 Adjustment

No entry: manual

Electric actuator

- E1** 230 V AC, 3-point
- E2** 24 V AC/DC, 3-point
- E3** 24 V AC/DC, modulating 2 – 10 V DC

4 Nominal size [mm]

- 315**
- 400**
- 630**
- 800**

5 Exposed surface of diffuser face

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

 $\varnothing D$ [mm]

Outside diameter of the spigot

 $\varnothing D_1$ [mm]

Outer diameter of a circular diffuser face

 $\varnothing D_2$ [mm]

Diameter of a circular diffuser face style

 $\varnothing D_3$ [mm]

Diameter of a circular plenum box

 $\square Q_1$ [mm]

Outer diameter of a square diffuser face

 $\square Q_2$ [mm]

Dimensions of a square diffuser face style

 $\square Q_3$ [mm]

Dimensions of a square plenum box

 H_1 [mm]

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

 H_2 [mm]

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

 H_3 [mm]

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

 A [mm]

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

 C [mm]

Length of the spigot

 m [kg]

Weight

Nomenclature

 L_{WA} [dB(A)]

A-weighted sound power level of air-regenerated noise

 \dot{V} [m³/h] and [l/s]

Volume flow rate

 Δt_z [K]

Supply air temperature difference

 Δp_t [Pa]

Total differential pressure

 A_{eff} [m²]

Effective air discharge area

All sound power levels are based on 1 pW.

Ceiling diffusers

Basic information and nomenclature

1 Sizing with the help of this catalogue

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

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

Sizing example

Given data

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

Quick sizing

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

Easy Product Finder



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

You will find the Easy Product Finder on our website.

The screenshot shows the 'Easy Product Finder' software interface. The main window displays the following information:

- Project Structure:** Projekt 1
- Product Selection:** DLQ AK // 600 // 0 // 0 // 0 // RAL 9010
- Input Parameters:**
 - 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]:
 - ΔT_z: -8,0 (-12,0 - 4,4)
- Technical Results:**
 - v₁₀: 0,15 m/s
 - ΔP₁₀: -1,3 K
 - v₁: 0,32 m/s
 - ΔP₁: -1,3 K
- Acoustic Results (l² = Kompletz geöffnet):**

Zu/R	dB(A)	Pa
dot	34	
LWA	28	
LWNC	22	

Ceiling diffusers

Basic information and nomenclature

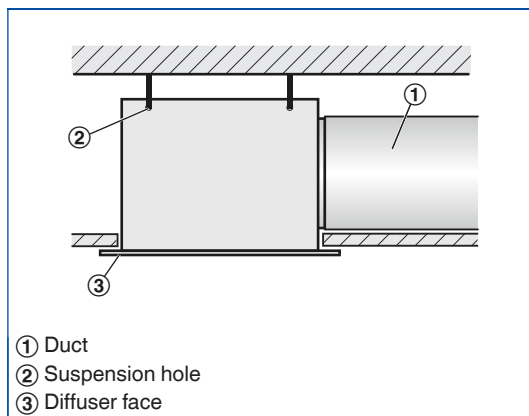
Description

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

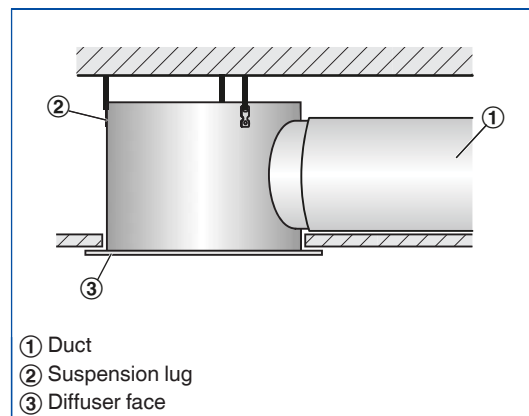
Installation types

Flush ceiling installation with square plenum box



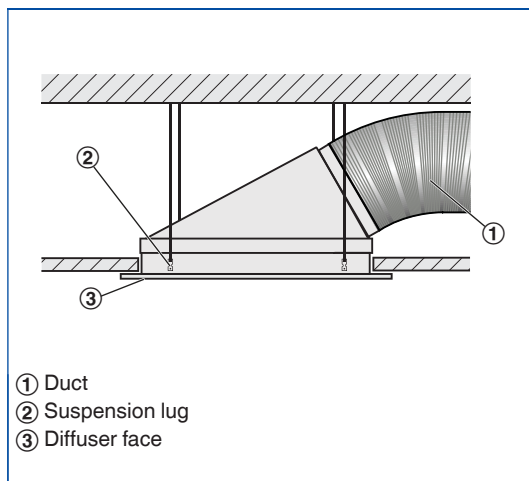
- Horizontal duct connection
- Four suspension holes
- Suspension with cords, wires or hangers, to be provided by others

Flush ceiling installation with circular plenum box



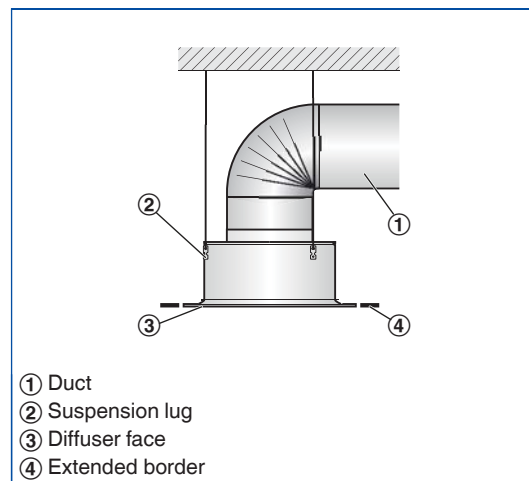
- Horizontal duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

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



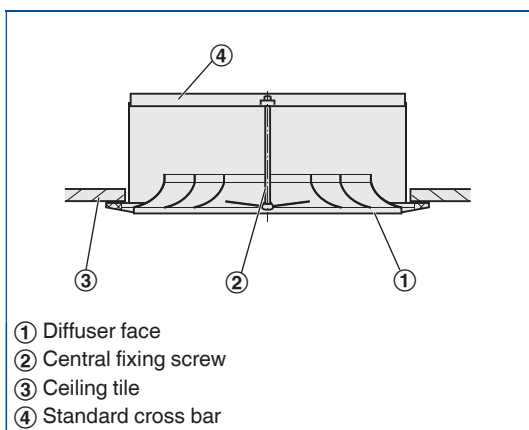
- Vertical duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Ceiling diffusers

Basic information and nomenclature

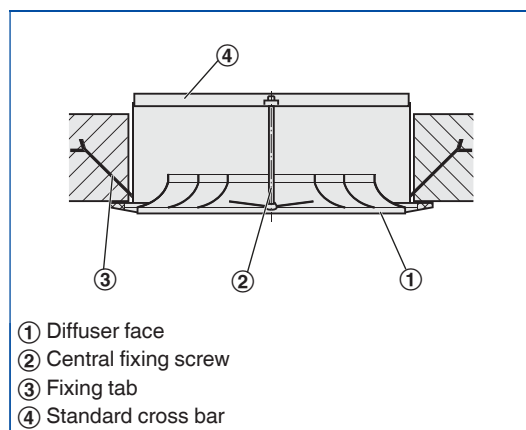
1 Installation without plenum box

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



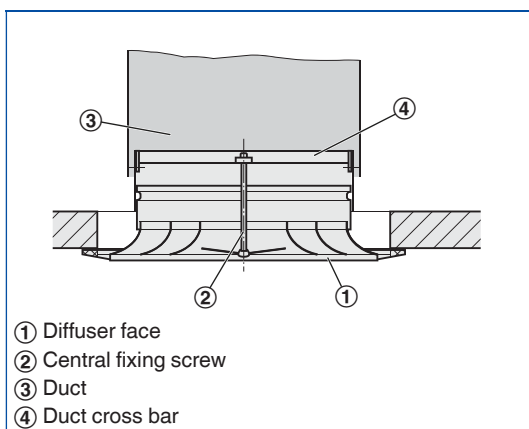
- No spigot
- Fixing of the standard cross bar to the ceiling tile is to be performed by others

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

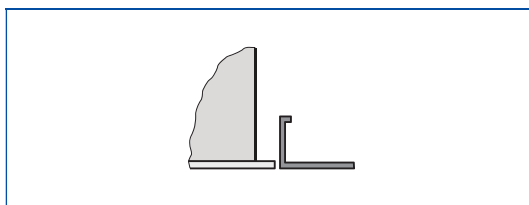
Flush ceiling installation with duct cross bar E1



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

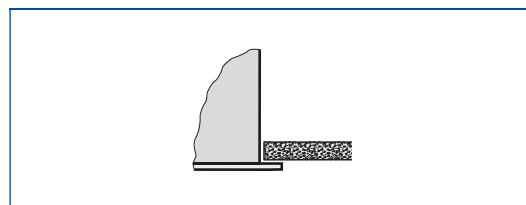
Ceiling systems

Installation into grid ceilings



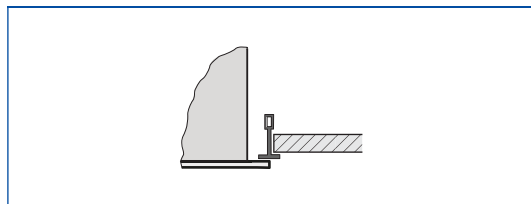
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

Installation in continuous ceilings



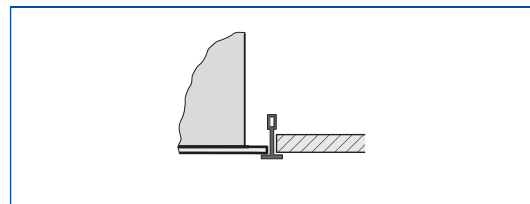
- Fix plenum box (including diffuser face, if necessary) to the ceiling
- Adjust plasterboard ceiling tile as required
- If necessary, fix the diffuser face after the ceiling has been completed

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

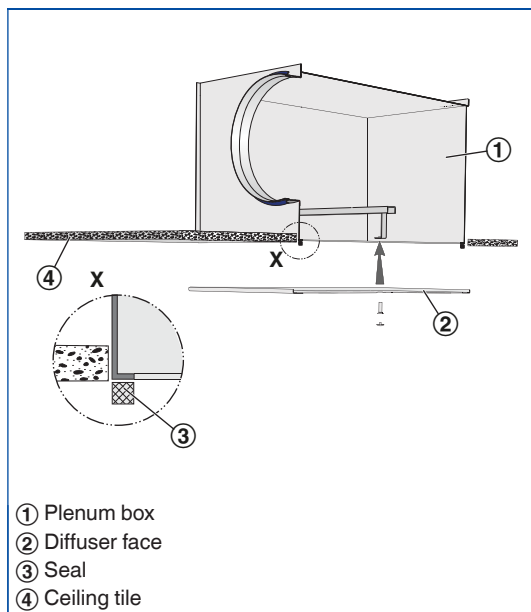
Installation in T-bar ceilings, diffuser face rests on T-bars



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

Diffuser face sealing and fixing

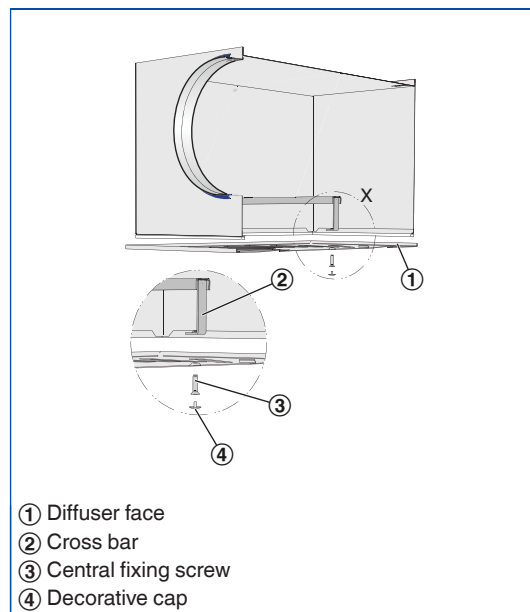
Diffuser face – sealing



- 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

Commissioning

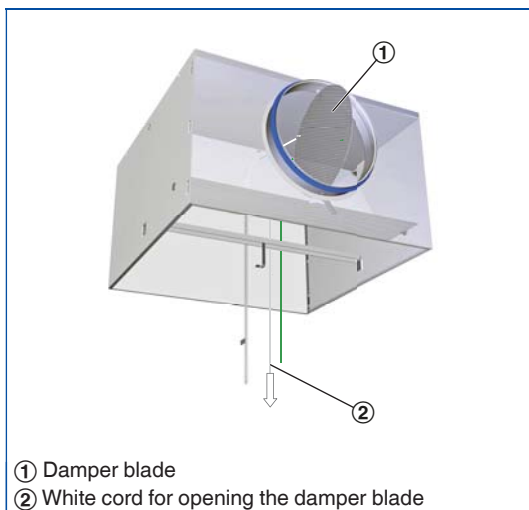
1

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.

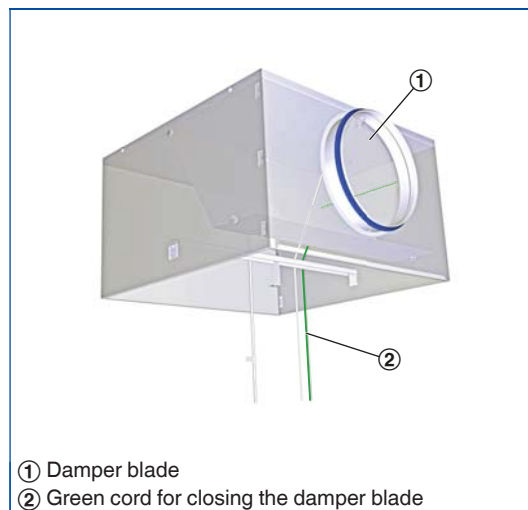
- AIRNAMIC, XARTO, FLEXTRO:
The diffuser face can be removed to access the damper blade; the damper blade can then be set in 15° intervals between 0 and 90°
- Ceiling diffusers with universal plenum box and damper blade (variant -M):
The diffuser face can be removed to access the damper blade; the damper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



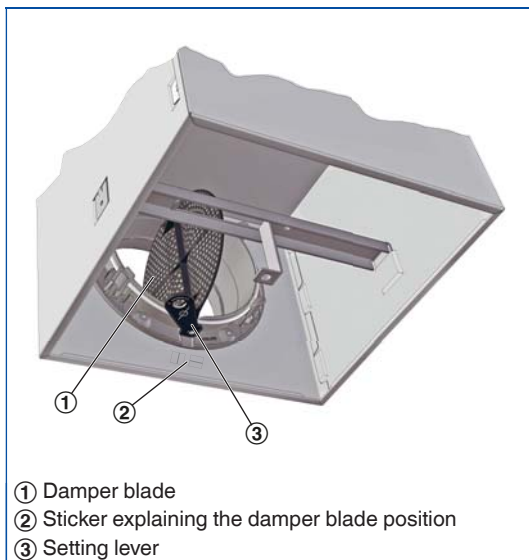
Open, 0°

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



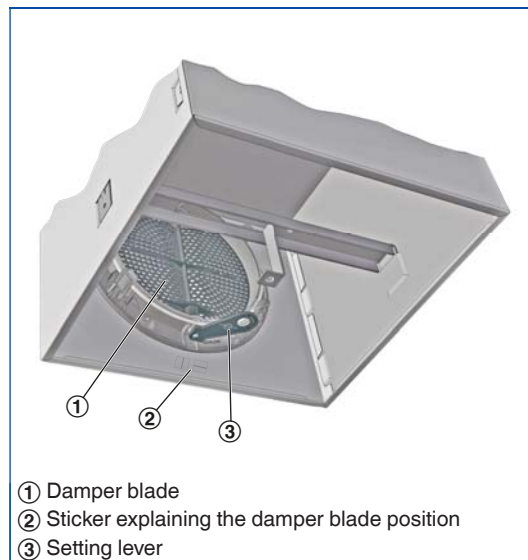
Closed, 90°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Open, 0°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Closed, 90°

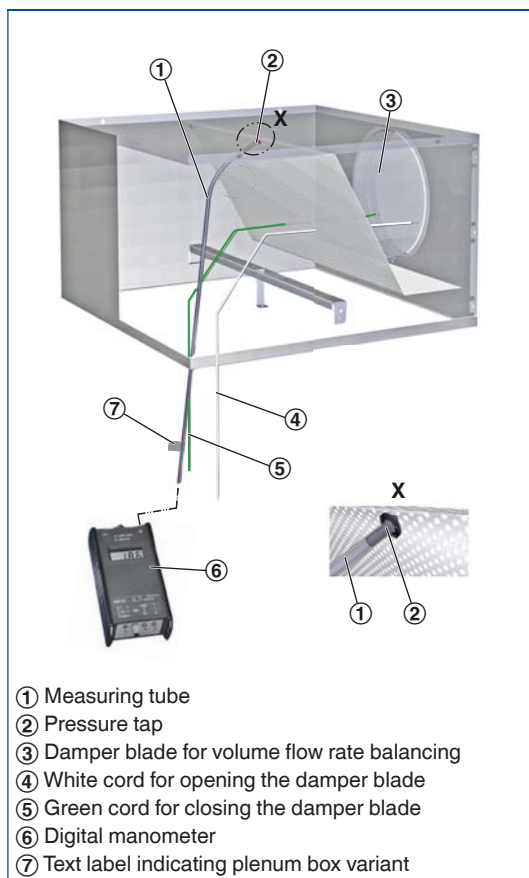
Volume flow rate measurement

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

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