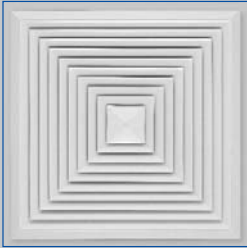
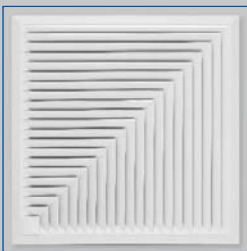


Horizontal air discharge



DLQ-AK-4



DLQ-AK-2E



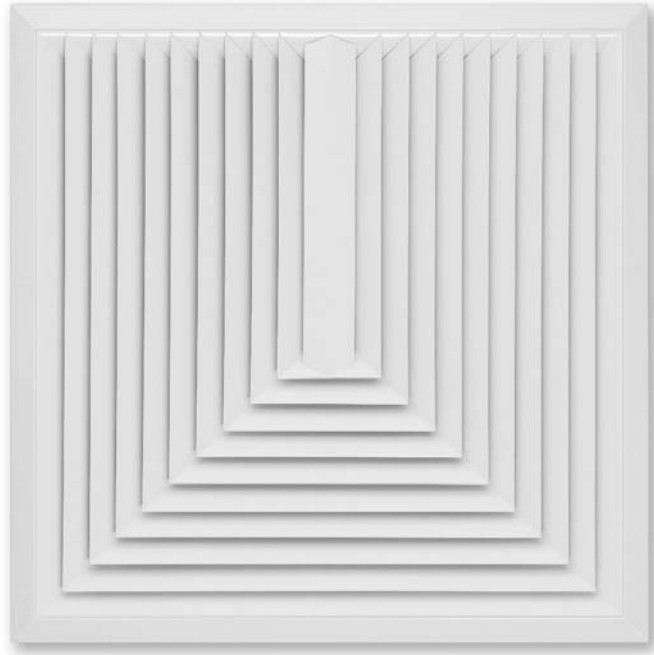
DLQ-AK-2



DLQ-AK-1

# Ceiling diffusers

## Type DLQ-AK



### For horizontal one-way to four-way supply air discharge, with fixed air control blades – sheet steel diffuser face

#### Square ceiling diffusers

- Nominal sizes 300, 400, 500, 600, 625
- Volume flow rate range 40 – 565 l/s or 144 – 2034 m<sup>3</sup>/h
- Square diffuser face
- Diffuser face made of galvanised sheet steel, powder-coated
- For supply air
- For variable and constant volume flows
- For all types of ceiling systems
- High induction results in a rapid reduction of temperature differences and airflow velocities

#### Optional equipment and accessories

- Exposed diffuser face available in RAL CLASSIC colours
- Horizontal duct connection
- Plenum box with damper blade

1

Type		Page
DLQ-AK	General information	1.4 – 94
	Order code	1.4 – 97
	Quick sizing	1.4 – 98
	Dimensions and weight	1.4 – 99
	Installation details	1.4 – 101
	Specification text	1.4 – 102
	Basic information and nomenclature	1.6 – 1

Variants

Product examples

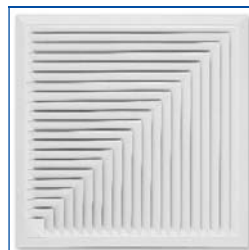
DLQ-AK-1



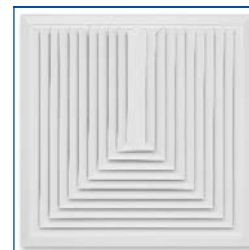
DLQ-AK-2



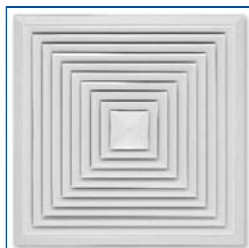
DLQ-AK-2E



DLQ-AK-3



DLQ-AK-4

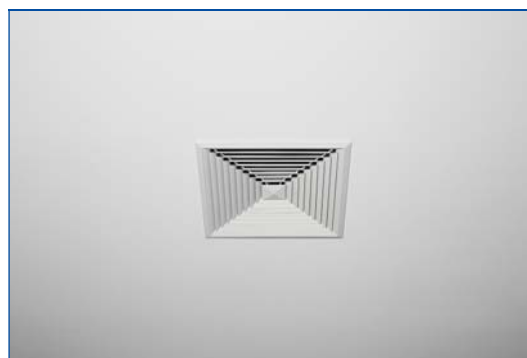


Installation examples

Installation in T-bar ceilings,  
arrangement in a row



Installation in continuous ceilings



**Description**

**Application**

- Type DLQL-AK ceiling diffusers are used as supply air diffusers for comfort zones
- Attractive design element for building owners and architects with demanding aesthetic requirements
- Horizontal one-way to four-way supply air discharge for mixed flow ventilation
- High induction results in a rapid reduction of temperature differences and airflow velocities (supply air variant)
- For variable and constant volume flows
- For supply air to room air temperature differences from -10 to +10 K
- For room heights up to 4 m (lower edge of suspended ceiling)
- For all types of ceiling systems

**Variants**

- DLQ-AK-1: One-way air discharge
- DLQ-AK-2: Two-way air discharge
- DLQ-AK-2E: Two-way air discharge, for corners
- DLQ-AK-3: Three-way air discharge
- DLQ-AK-4: Four-way air discharge

**Nominal sizes**

- 300, 400, 500, 600, 625

**Attachments**

- M: Damper blade for volume flow rate balancing

**Special characteristics**

- Horizontal one-way to four-way supply air discharge
- Diffuser face made of formed sheet steel, powder-coated
- For all types of ceiling systems
- Spigot side can be selected
- Horizontal duct connection

**Parts and characteristics**

- Square diffuser face with fixed air control blades
- Diffuser front frame
- Diffuser face is attached to the plenum box and cannot be removed

**Construction features**

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal (if accessory lip seal has been ordered)

**Materials and surfaces**

- Diffuser face made of formed sheet steel
- Damper blade and plenum box made of galvanised sheet steel
- 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
- Horizontal or vertical 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**

<b>Nominal sizes</b>	300, 400, 500, 600, 625 mm
<b>Minimum volume flow rate</b>	40 – 150 l/s or 144 – 540 m <sup>3</sup> /h
<b>Maximum volume flow rate, with L<sub>WA</sub> ≈ 50 dB(A)</b>	545 – 565 l/s or 1962 – 2034 m <sup>3</sup> /h
<b>Supply air to room air temperature difference</b>	-10 to +10 K

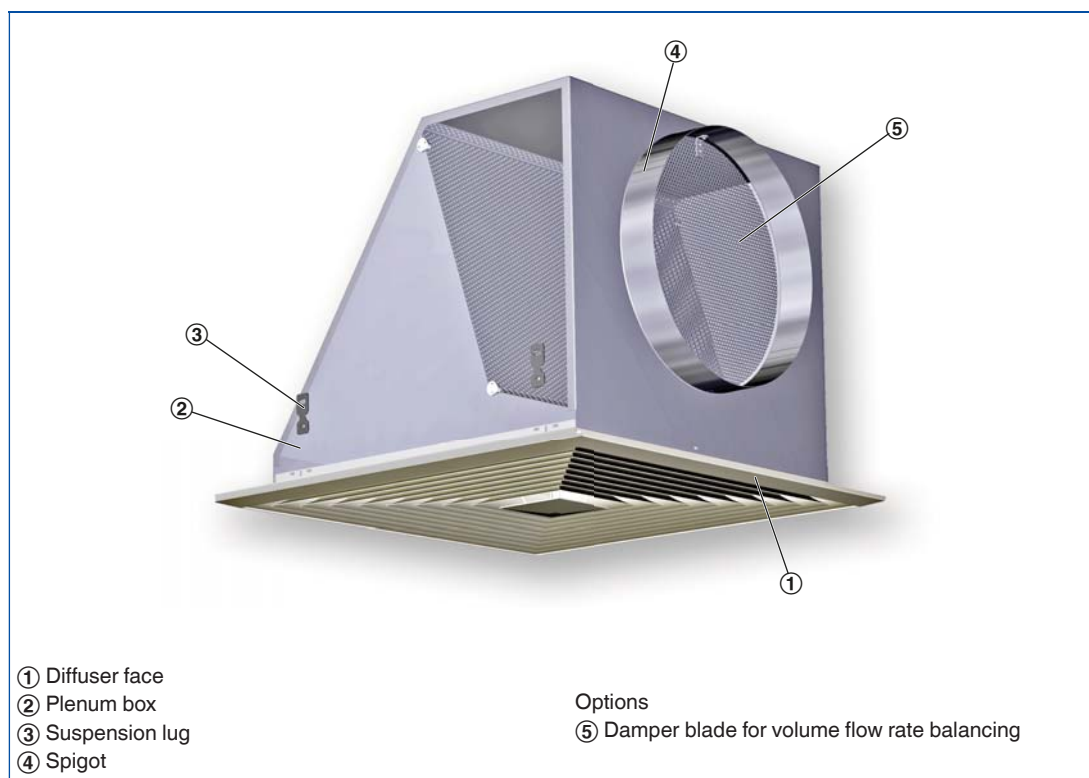
### Function

#### 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 in comfort zones, with good overall room ventilation, creating only very little turbulence in the occupied zone.

Type DLK-AK ceiling diffusers have fixed blades. Horizontal air discharge is one-way to four-way. The supply air to room air temperature difference may range from  $-10$  to  $+10$  K.

#### Schematic illustration



### Air patterns

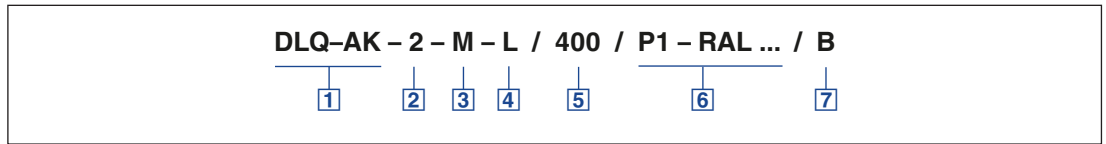
#### Horizontal air discharge

#### Horizontal air discharge



Order code

DLQ-AK



**1 Type**

**DLQ-AK** Ceiling diffuser

**2 No. of sides for air discharge**

- 1
- 2
- 2E
- 3
- 4

**3 Damper blade for volume flow rate balancing**

- No entry: none
- M With

**4 Accessories**

- No entry: none
- L With lip seal

**5 Nominal size [mm]**

- 300
- 400
- 500
- 600
- 625

**6 Exposed 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 %

**7 Spigot side**

- No specification required in case of 4-way air discharge
- A
- B
- C
- D

Order example

**DLQ-AK-3-M/600/P1-RAL 9006/A**

No. of sides for air discharge	3
Connection	Plenum box, horizontal connection
Damper blade for volume flow rate balancing	With
Nominal size	600
Exposed surface	RAL 9006, white aluminium, gloss level 30%
Spigot side	A

### DLQ-AK-1, DLQ-AK-2, DLQ-AK-3, DLQ-AK-4 (supply air)

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.

### Quick sizing – sound power level and total differential pressure

Nominal size	$\dot{V}$		Damper blade position					
			0°		45°		90°	
			$\Delta p_t$	$L_{WA}$	$\Delta p_t$	$L_{WA}$	$\Delta p_t$	$L_{WA}$
	l/s	m <sup>3</sup> /h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
300	40	144	10	16	12	19	18	23
	65	234	26	31	32	34	47	38
	95	342	56	42	67	45	101	49
	120	432	90	50	107	53	161	57
400	50	180	4	<15	6	<15	10	13
	105	378	19	28	25	32	42	35
	160	576	45	41	58	45	99	48
	215	774	81	50	105	54	178	57
500	100	360	5	16	7	19	14	23
	180	648	16	32	22	35	46	39
	260	936	33	43	47	46	97	50
	340	1224	57	50	80	53	166	57
600	150	540	4	14	7	19	14	23
	265	954	14	31	21	36	44	40
	385	1386	29	42	44	47	94	51
	505	1818	50	50	76	55	161	59
625	150	540	4	11	7	16	15	21
	265	954	14	28	21	33	46	38
	385	1386	29	39	44	44	97	49
	545	1962	59	50	88	55	194	60

### DLQ-AK-2E (supply air)

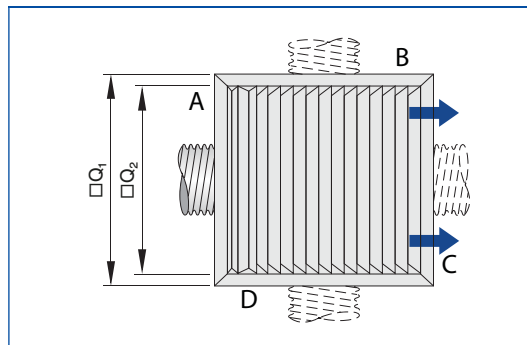
### Quick sizing – sound power level and total differential pressure

Nominal size	$\dot{V}$		Damper blade position					
			0°		45°		90°	
			$\Delta p_t$	$L_{WA}$	$\Delta p_t$	$L_{WA}$	$\Delta p_t$	$L_{WA}$
	l/s	m <sup>3</sup> /h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
300	40	144	9	16	11	18	17	22
	65	234	24	31	28	33	45	37
	95	342	50	42	61	44	96	48
	120	432	80	50	97	52	153	56
400	50	180	4	<15	6	9	10	13
	105	378	19	28	25	31	45	35
	160	576	45	41	59	44	104	48
	215	774	82	50	106	53	188	57
500	100	360	5	12	7	16	15	20
	180	648	16	30	23	34	47	38
	260	936	34	41	47	45	98	49
	350	1260	61	50	86	54	178	58
600	150	540	4	11	7	15	13	20
	265	954	13	29	21	33	41	38
	385	1386	27	41	43	45	87	50
	515	1854	48	50	78	54	155	59
625	150	540	4	8	7	13	14	17
	265	954	13	26	21	31	42	35
	385	1386	27	38	43	43	89	47
	565	2034	58	50	93	55	193	59

## Spigots

### DLQ-AK-1

### Diffuser face DLQ-AK-1



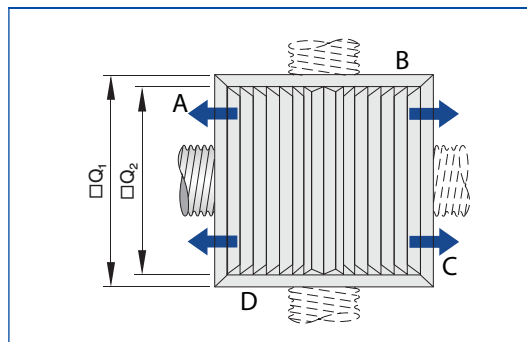
Spigot sides – A, B, C, D

### Dimensions

Nominal size	□Q <sub>1</sub>	□Q <sub>2</sub>	A <sub>eff</sub>
	mm		m <sup>2</sup>
300	298	246	0.0175
400	398	346	0.0370
500	498	446	0.0675
600	598	546	0.1100
625	623	571	0.1230

### DLQ-AK-2

### Diffuser face DLQ-AK-2



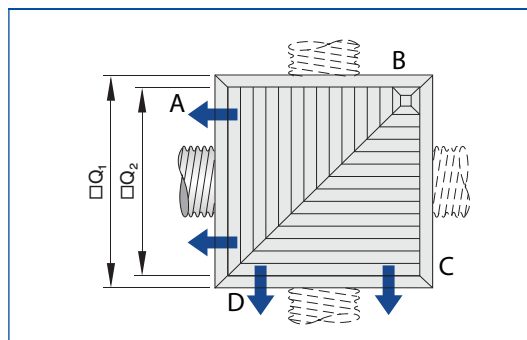
Spigot sides – A, B, C, D

### Dimensions

Nominal size	□Q <sub>1</sub>	□Q <sub>2</sub>	A <sub>eff</sub>
	mm		m <sup>2</sup>
300	298	246	0.0165
400	398	346	0.0350
500	498	446	0.0610
600	598	546	0.1040
625	623	571	0.1150

### DLQ-AK-2E

### Diffuser face DLQ-AK-2E



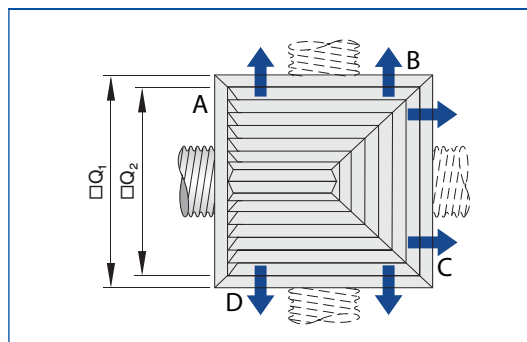
Spigot sides – A, B, C, D

### Dimensions

Nominal size	□Q <sub>1</sub>	□Q <sub>2</sub>	A <sub>eff</sub>
	mm		m <sup>2</sup>
300	298	246	0.0182
400	398	346	0.0385
500	498	446	0.0671
600	598	546	0.1144
625	623	571	0.1265

### DLQ-AK-3

### Diffuser face DLQ-AK-3



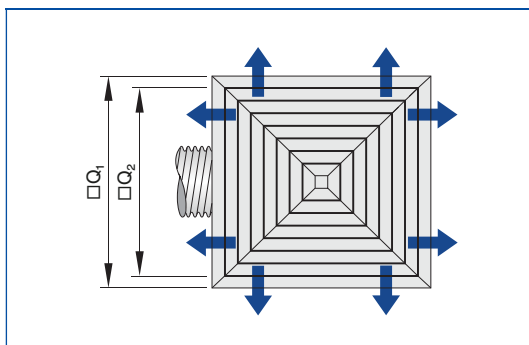
Spigot sides – A, B, C, D

### Dimensions

Nominal size	□Q <sub>1</sub>	□Q <sub>2</sub>	A <sub>eff</sub>
	mm		m <sup>2</sup>
300	298	246	0.0175
400	398	346	0.0370
500	498	446	0.0675
600	598	546	0.1100
625	623	571	0.1230

DLQ-AK-4

Diffuser face DLQ-AK-4

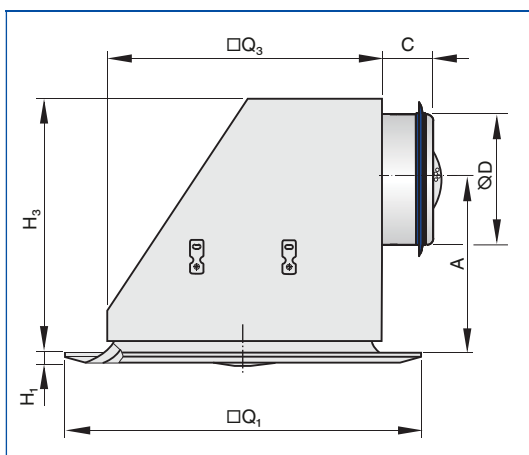


Dimensions

Nominal size	$\square Q_1$	$\square Q_2$	$A_{\text{eff}}$
	mm		m <sup>2</sup>
300	298	246	0.0175
400	398	346	0.0370
500	498	446	0.0675
600	598	546	0.1100
625	623	571	0.1230

Dimensions

DLQ-AK



Dimensions [mm] and weight [kg]

Nominal size	$\square Q_1$	$H_1$	$\square Q_3$	$H_3$	$\text{ØD}$	$A$	$C$	$m$
	mm							
300	298	13	195	277	158	162	42	3.0
400	398	13	295	307	198	177	42	4.5
500	498	13	395	377	248	217	42	7.0
600	598	13	495	427	313	235	42	10.0
625	623	13	520	427	313	235	42	10.5

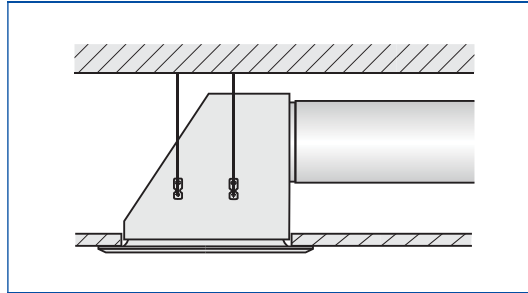


## Installation types

For more installation details see Chapter K1 – 1.6.

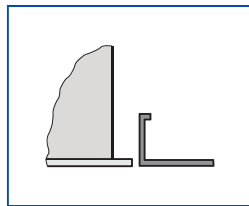
These are only schematic diagrams to illustrate installation details.

## Flush ceiling installation

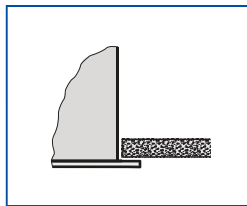


## Ceiling systems

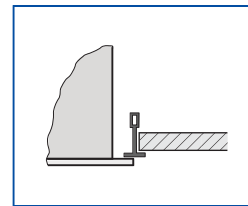
### Grid ceiling



### Continuous ceiling



### T-bar ceiling



### 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 square diffuser face. For supply air only, for comfort zones. Diffuser face with fixed air control blades for horizontal one-way to four-way supply air discharge. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with fixed air control blades, front frame with perimeter seal, plenum box, side entry spigot and suspension holes. 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

- Horizontal one-way to four-way supply air discharge
- Diffuser face made of formed sheet steel, powder-coated
- For all types of ceiling systems
- Spigot side can be selected
- Horizontal duct connection

### Materials and surfaces

- Diffuser face made of formed sheet steel
- Damper blade and plenum box made of galvanised sheet steel
- Lip seal made of rubber
- Diffuser face powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

### Technical data

- Nominal sizes: 300, 400, 500, 600 mm
- Minimum volume flow rate: 440 – 150 l/s or 144 – 540 m<sup>3</sup>/h
- Maximum volume flow rate, with  $L_{WA} \approx 50$  dB(A): 545 – 565 l/s or 1962 – 2034 m<sup>3</sup>/h
- Supply air to room air temperature difference: -10 to +10 K

### Sizing data

- $\dot{V}$  \_\_\_\_\_ [m<sup>3</sup>/h]
- $\Delta p_t$  \_\_\_\_\_ [Pa]
- $L_{WA}$  Air-regenerated noise \_\_\_\_\_ [dB(A)]

### Order options

#### 1 Type

DLQ-AK Ceiling diffuser

#### 2 No. of sides for air discharge

- 1
- 2
- 2E
- 3
- 4

#### 3 Damper blade for volume flow rate balancing

- No entry: none
- M With

#### 4 Accessories

- No entry: none
- L With lip seal

#### 5 Nominal size [mm]

- 300
- 400
- 500
- 600
- 625

#### 6 Exposed 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 %

#### 7 Spigot side

- No specification required in case of 4-way air discharge
- A
- B
- C
- D

# 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
<b>Diffuser face style</b>									
Circular	●	●	●	●	●	●		●	
Square	●						●		●
<b>Diffuser face</b>									
Circular	●	●	●	●	●	●		●	
Square	●	●	●	●	●	●	●		●
Galvanised sheet steel		●	●	●	●	●		●	●
Aluminium				●			●		
Plastic	●								
<b>Air control blades</b>									
Fixed	●			●	●	●			●
Adjustable		●	●				●	●	
Plastic, black and white		●	●						
<b>Duct connection</b>									
Horizontal	●	●	●	●	●	●	●	●	●
Vertical		●	●	●	●	●	●	●	
FLEXTRO	●	●	●		●	●			
<b>Attachments</b>									
Damper blade	●	●	●	●	●	●			●
Pressure tap		●	●	●	●	●			●
Actuator							●	●	
<b>Accessories</b>									
Lip seal	●	●	●	●	●	●			●
Protective cage							●	●	
Extended border							●	●	
<b>Nominal sizes</b>									
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
<b>Technical data</b>									
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 <sup>3</sup> /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
<b>Diffuser face style</b>			
Circular	●	●	●
Square	●		●
<b>Diffuser face</b>			
Circular	●	●	
Square	●	●	●
Galvanised sheet steel	●	●	●
Aluminium			
Plastic			
<b>Air control blades</b>			
Fixed	●	●	●
Adjustable			
Plastic, black and white			
<b>Duct connection</b>			
Horizontal	●	●	●
Vertical		●	●
FLEXTRO			
<b>Attachments</b>			
Damper blade	●	●	
Pressure tap		●	
Actuator			
<b>Accessories</b>			
Lip seal	●	●	
Protective cage			
Extended border			
<b>Nominal sizes</b>			
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
<b>Technical data</b>			
Volume flow rate range [l/s]	31 – 265	20 – 465	4 – 260
Volume flow rate range [m <sup>3</sup> /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
<b>Diffuser face style</b>							
Circular	●			●			
Square		●	●		●	●	●
<b>Diffuser face</b>							
Circular	●			●			
Square		●	●	●	●	●	●
Galvanised sheet steel			●		●	●	●
Aluminium	●	●		●			
Plastic							
<b>Air control blades</b>							
Fixed		●	●	●	●	●	●
Adjustable	●						
Plastic, black and white							
<b>Duct connection</b>							
Horizontal	●	●	●	●	●	●	●
Vertical	●			●	●		
FLEXTRO		●					
<b>Attachments</b>							
Damper blade		●	●	●	●		
Pressure tap		●	●	●			
Actuator	●						
<b>Accessories</b>							
Lip seal		●	●	●	●		
Protective cage							
Extended border							
<b>Nominal sizes</b>							
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						
<b>Technical data</b>							
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

**ØD<sub>1</sub> [mm]**

Outer diameter of a circular diffuser face

**ØD<sub>2</sub> [mm]**

Diameter of a circular diffuser face style

**ØD<sub>3</sub> [mm]**

Diameter of a circular plenum box

**□Q<sub>1</sub> [mm]**

Outer diameter of a square diffuser face

**□Q<sub>2</sub> [mm]**

Dimensions of a square diffuser face style

**□Q<sub>3</sub> [mm]**

Dimensions of a square plenum box

**H<sub>1</sub> [mm]**

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

**H<sub>2</sub> [mm]**

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

**H<sub>3</sub> [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<sub>WA</sub> [dB(A)]**

A-weighted sound power level of air-regenerated noise

 **$\dot{V}$  [m<sup>3</sup>/h] and [l/s]**

Volume flow rate

**Δt<sub>z</sub> [K]**

Supply air temperature difference

**Δp<sub>t</sub> [Pa]**

Total differential pressure

**A<sub>eff</sub> [m<sup>2</sup>]**

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 m<sup>3</sup>/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:**
  - Produktauswahl: DLQ AK
  - Zeichnung / Bestellblatt
  - Eingabe:
    - Volumenstrom [m<sup>3</sup>/s]:  $\dot{V} = 1.280$  (792 - 2795)
    - Zwischenräume/Abstände [m]:
      - $a = 6.00$  (x2,0)
      - $b_1 = 1.20$  (1,0, 2,0)
      - $x = 3.00$  (x1,2)
      - $l = b_1, s, x = 4,2$
      - Einzelige Anordnung
    - Temperaturunterschied [K]:  $\Delta T_2 = -8,0$  (-12,0 - 4,4)
- Technical Results (Lufttechnische Ergebnisse):**

$v_{10}$	= 0,15	m/s
$\Delta p_{10}$	= -1,3	K
$v_1$	= 0,32	m/s
$\Delta p_1$	= -1,3	K
- Acoustic Results (Akustische Ergebnisse):**

Zu/A	dB(A)	Pa
dot	34	
LWA	38	
LWNC	32	



# Ceiling diffusers

## Basic information and nomenclature

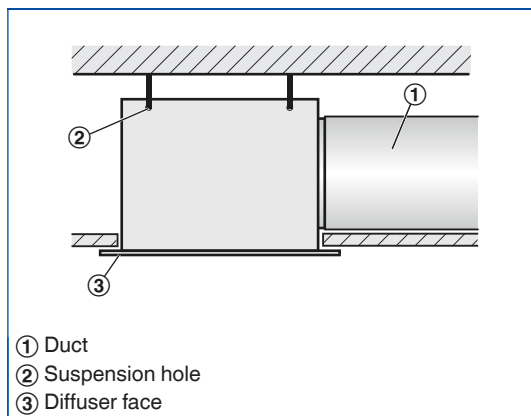
### Description

### 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

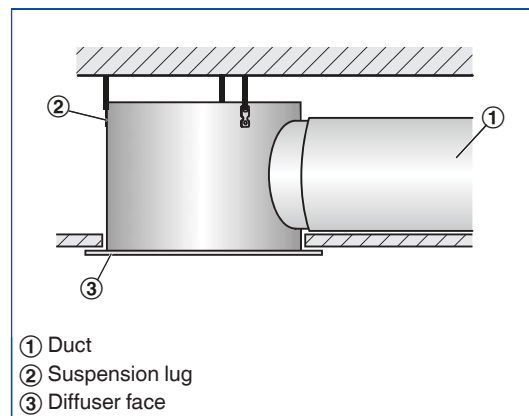
### Installation types

#### Flush ceiling installation with square plenum box



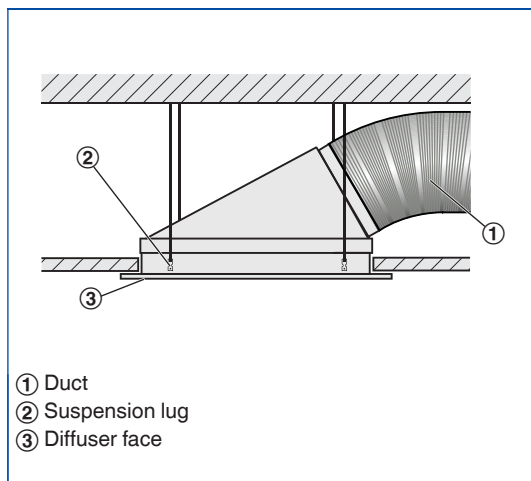
- Horizontal duct connection
- Four suspension holes
- Suspension with cords, wires or hangers, to be provided by others

#### Flush ceiling installation with circular plenum box



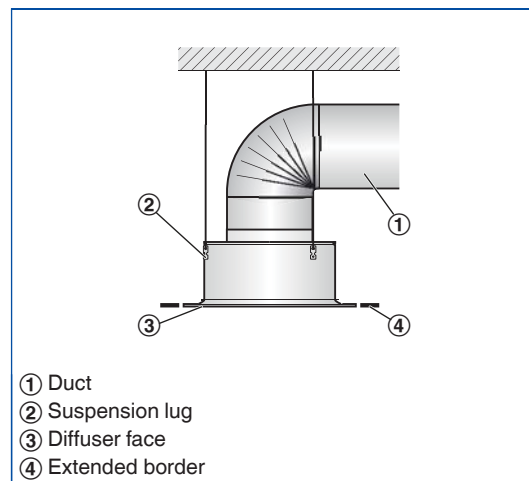
- Horizontal duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

#### 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



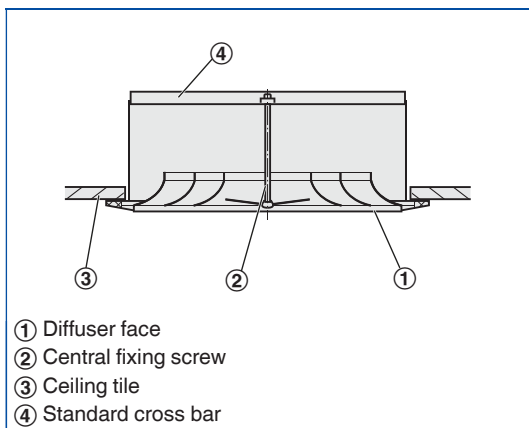
- Vertical duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

# Ceiling diffusers

## Basic information and nomenclature

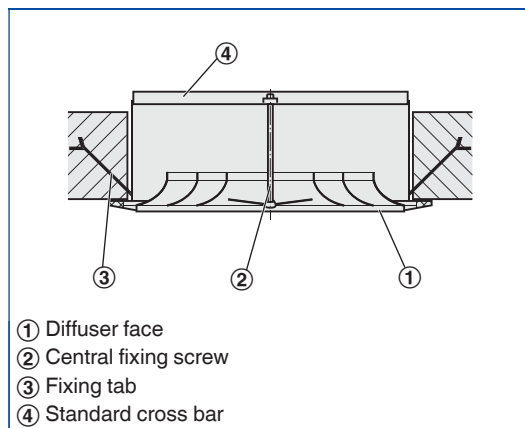
### 1 Installation without plenum box

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



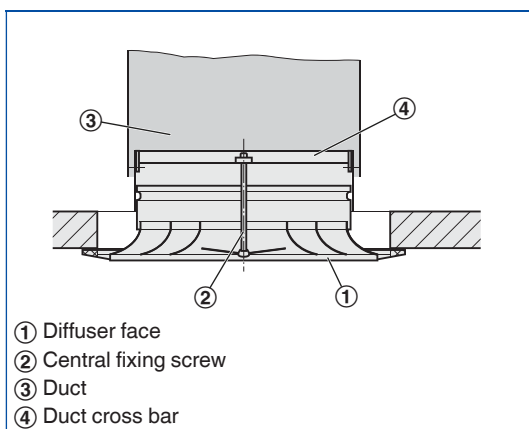
- No spigot
- Fixing of the standard cross bar to the ceiling tile is to be performed by others

#### 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

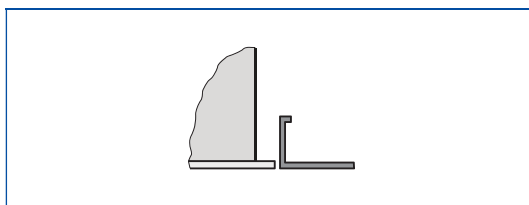
#### Flush ceiling installation with duct cross bar E1



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

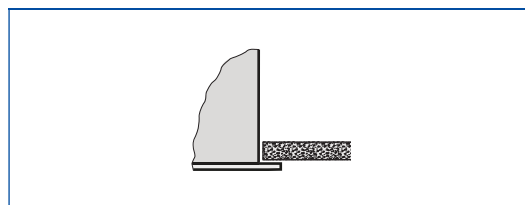
### Ceiling systems

#### Installation into grid ceilings



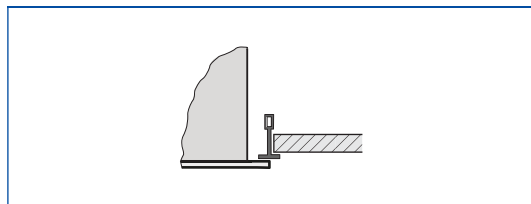
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

#### Installation in continuous ceilings



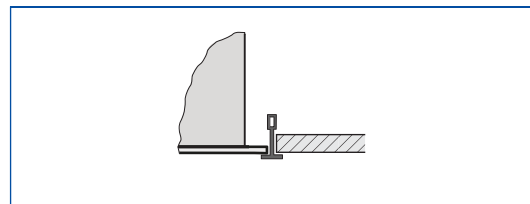
- Fix plenum box (including diffuser face, if necessary) to the ceiling
- Adjust plasterboard ceiling tile as required
- If necessary, fix the diffuser face after the ceiling has been completed

### 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

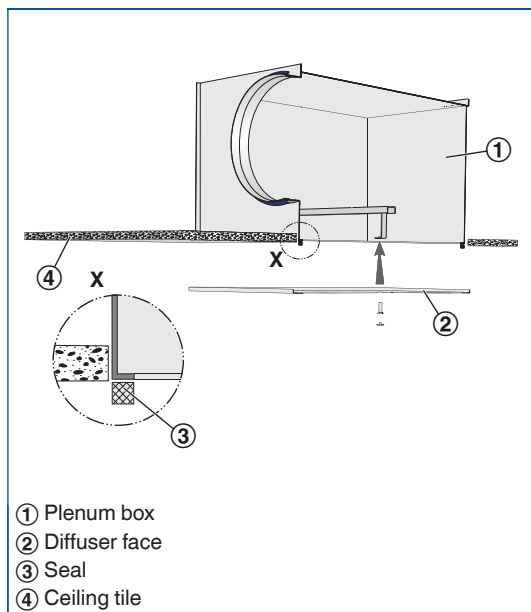
### Installation in T-bar ceilings, diffuser face rests on T-bars



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

### Diffuser face sealing and fixing

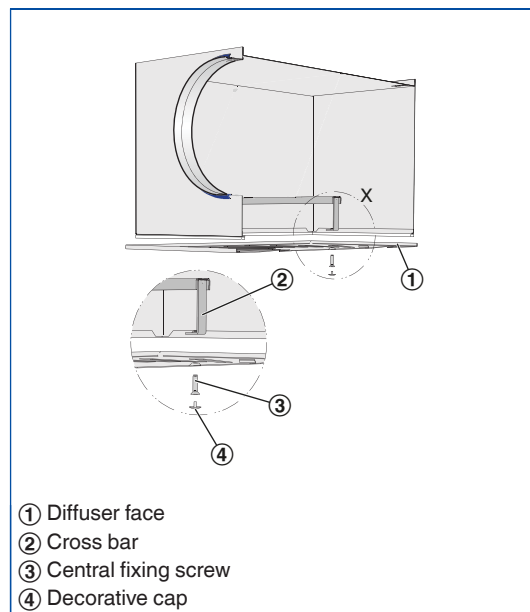
#### Diffuser face – sealing



- 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

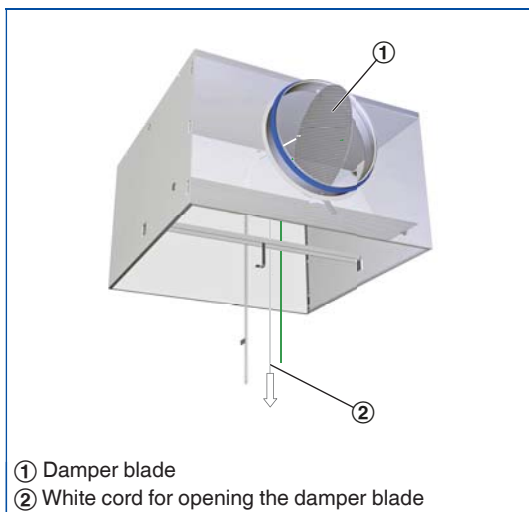
1

#### 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.

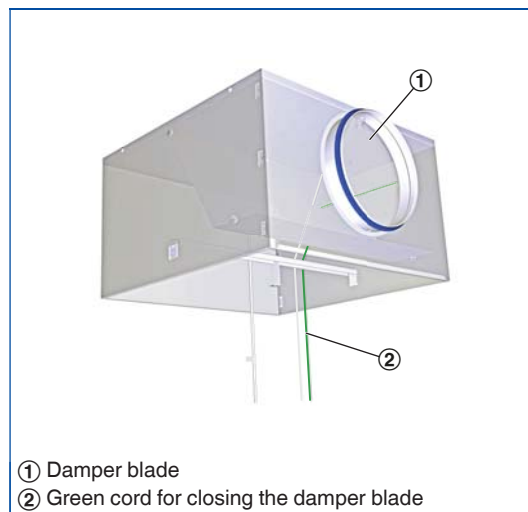
- AIRNAMIC, XARTO, FLEXTRO:  
The diffuser face can be removed to access the damper blade; the damper blade can then be set in 15° intervals between 0 and 90°
- Ceiling diffusers with universal plenum box and damper blade (variant -M):  
The diffuser face can be removed to access the damper blade; the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



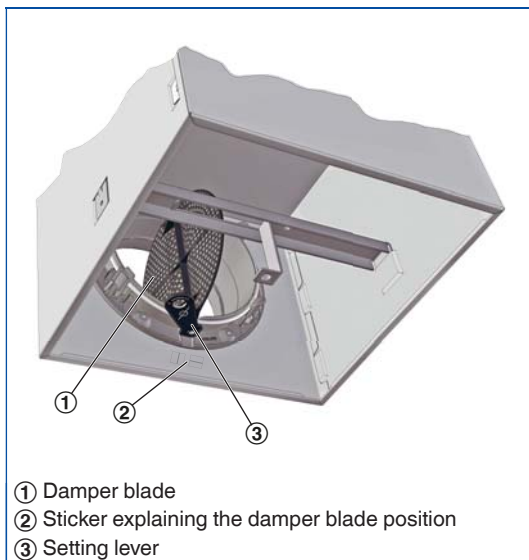
Open, 0°

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



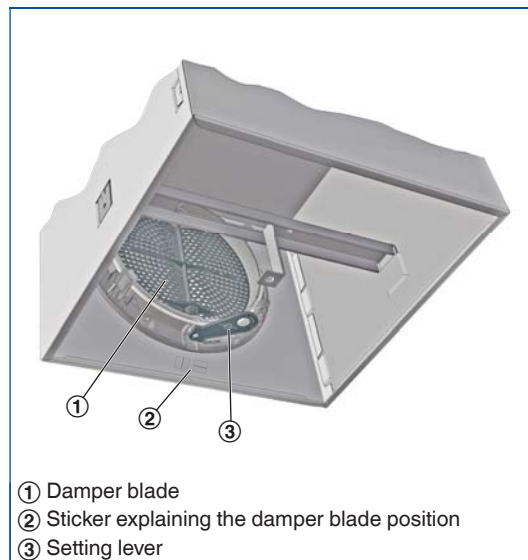
Closed, 90°

#### AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Open, 0°

#### AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Closed, 90°

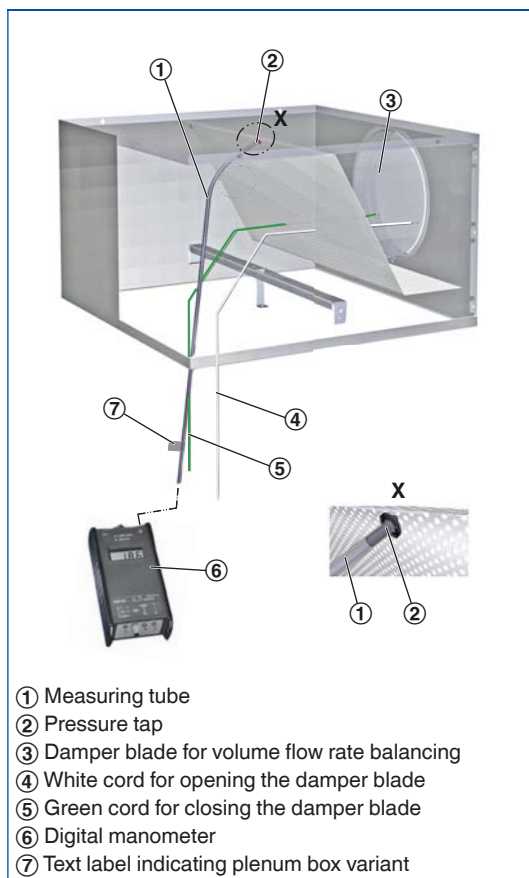
### Volume flow rate measurement

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/m<sup>3</sup>

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

### Volume flow rate calculation for other air densities

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