



Circular diffuser face with circular plenum box and horizontal spigot



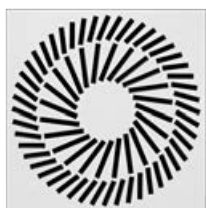
Square diffuser face with square plenum box and horizontal spigot



Circular diffuser face with circular plenum box and vertical spigot



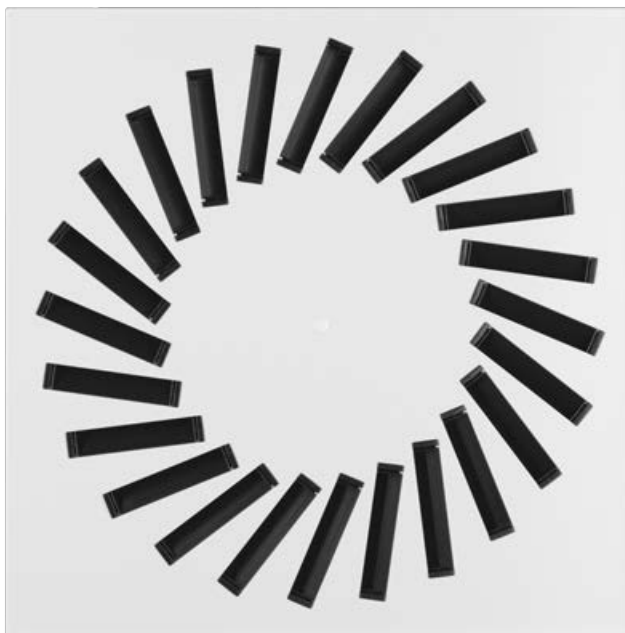
Circular diffusers with white air control blades



Swirl diffusers up to size 825

Ceiling diffusers

VDW



With low sound power level for comfort zones, with individually manually adjustable air control blades

Circular and square swirl diffusers for high air change rates

- Nominal sizes 300, 400, 500, 600, 625, 825
- Volume flow range 7 – 470 l/s or 25 – 1692 m³/h
- Diffuser face made of galvanised sheet steel, powder-coated
- For constant and variable volume flows
- For all ceiling systems, and with an extended border also suitable for freely suspended installation
- Small diffuser faces for 600 and 625 ceiling grids
- High induction results in a rapid reduction of the temperature difference and air velocity
- Ideal for comfort zones

Optional equipment and accessories

- Exposed diffuser face available in RAL CLASSIC colours, air control blades in black or white
- Horizontal and vertical spigots
- Square plenum box with cord-operated damper blade and pressure tap

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General information

Application

- Swirl diffusers for supply air and extract air in comfort zones
- A design feature for building owners and architects with high demands on architecture and design
- Horizontal swirling supply air discharge for mixing ventilation
- Efficient swirling airflow with high induction for rapid reduction of temperature differences and air velocity (supply air)
- For constant and variable volume flows
- For supply air to room air temperature differences of -12 – +10 K
- For rooms with heights up to 4 m (underside of suspended ceiling)
- For all types of ceiling systems
- Smaller swirl diffusers suitable for 600 or 625 ceiling grids
- With an extended border also suitable for freely suspended installation (supply air variant)

Special characteristics

- High induction results in a rapid reduction of the supply air to room air temperature difference and airflow velocity
- For all ceiling systems, and with an extended border also suitable for freely suspended installation
- Smaller swirl diffusers suitable for 600 or 625 ceiling grids
- Spigot horizontal and vertical
- Very high room air change rates possible thanks to row arrangement with a minimum centre-to-centre spacing of 0.9 m

Nominal sizes

- 300 x 8, 400 x 16, 500 x 24, 600 x 24, 600 x 48, 625 x 24, 625 x 54, 825 x 72

Variants

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

Spigot

- H: horizontal spigot
- V: vertical spigot

Accessories

Lip seal

- Optionally available

Note:

For circular plenum box with horizontal spigot: Lip seal only available in combination with damper blade

Attachments

- M: Damper element for volume flow rate balancing
- MN: Pressure tap and cord-operated damper unit for volume flow rate balancing with the diffuser face in place (only possible with square plenum box)

Construction features

- Spigot suitable for circular air ducts according to DIN EN 1506 or DIN EN 13180
- Spigots are always fitted with a groove for a lip seal
- Retrofitting of the lip seal is possible at a later stage
- Optional: Lip seal and damper blade are factory-fitted
- Simple installation of the diffuser face using a central fixing screw with cap

Square plenum box

- Spigot made of galvanised sheet steel
- Equalising element to ensure a uniform airflow through the diffuser face (supply air variant)

Circular plenum box

- With vertical spigot: Spigot made of galvanised sheet steel
- With horizontal spigot: Spigot made of black ABS plastic
- Equalising element to ensure a uniform airflow through the diffuser face (supply air variant)

Materials and surfaces

Diffuser face

- Made of galvanised sheet steel
- Coated, RAL 9010, pure white (no entry)
- P1: powder-coated, RAL CLASSIC colour

Damper blade

- Made of ABS plastic

Circular plenum box

- Made of galvanised sheet steel
- With vertical spigot
 - Spigot made of galvanised sheet steel
 - For supply air, with galvanised perforated plate for air distribution
- With horizontal spigot
 - Spigot made of black ABS plastic, flame-retardant in accordance with UL94, V0
 - Equipped with a polyester equalising element for supply air
- Crossbar made of galvanised sheet steel for mounting the diffuser face

Square plenum box

- Made of galvanised sheet steel
- With horizontal spigot
- Spigot made of galvanised sheet steel
- For supply air, with galvanised perforated plate for air distribution
- Crossbar made of galvanised sheet steel for mounting the diffuser face

Lip seal

- Made of Evoprene

Air control blades

- Supply air:
 - Similar to RAL 9005, jet black
 - Made of plastic, UL 94, V- 0, flame-retardant
 - Q21: Air control blades supply air similar to RAL 9010, pure white
- Extract air:
 - No air control blades
 - Q11: Air control blades for extract air similar to RAL 9005, jet black
 - Q21: Air control blades for extract air similar to RAL 9010, pure white

Standards and guidelines

- Spigot, suitable for air ducts according to DIN EN 1506 or DIN EN 13180
- Sound power level of the air-regenerated noise measured according to DIN EN ISO 5135

Maintenance

- Low maintenance as construction and materials are not subject to wear
- Inspection and cleaning to VDI 6022

Disclosure of Chemicals

- RoHS EU Directive 2011/65/EU (RoHS)
 - This product or single variants comply with EU Directive 2011/65/EU (RoHS) on the restriction of the use of certain hazardous substances in electrical and electronic equipment. For more information, please refer to our Environmental Product Declarations.
- REACH 1907/2006 (EC Regulation REACH)
 - This product or single variants comply with the provisions of EC Regulation No. 1907/2006, also known as REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals). For more information, please refer to our Environmental Product Declarations.

Function

Swirl diffusers discharge supply air from HVAC systems into the room with a swirling airflow pattern. This airflow results in a high induction of room air, thereby rapidly reducing the airflow velocity and the temperature difference between supply air and room air. Large volume flows are possible with swirl diffusers. This results in mixing ventilation for comfort areas, ensuring effective room air circulation with low turbulence in the occupied zone.

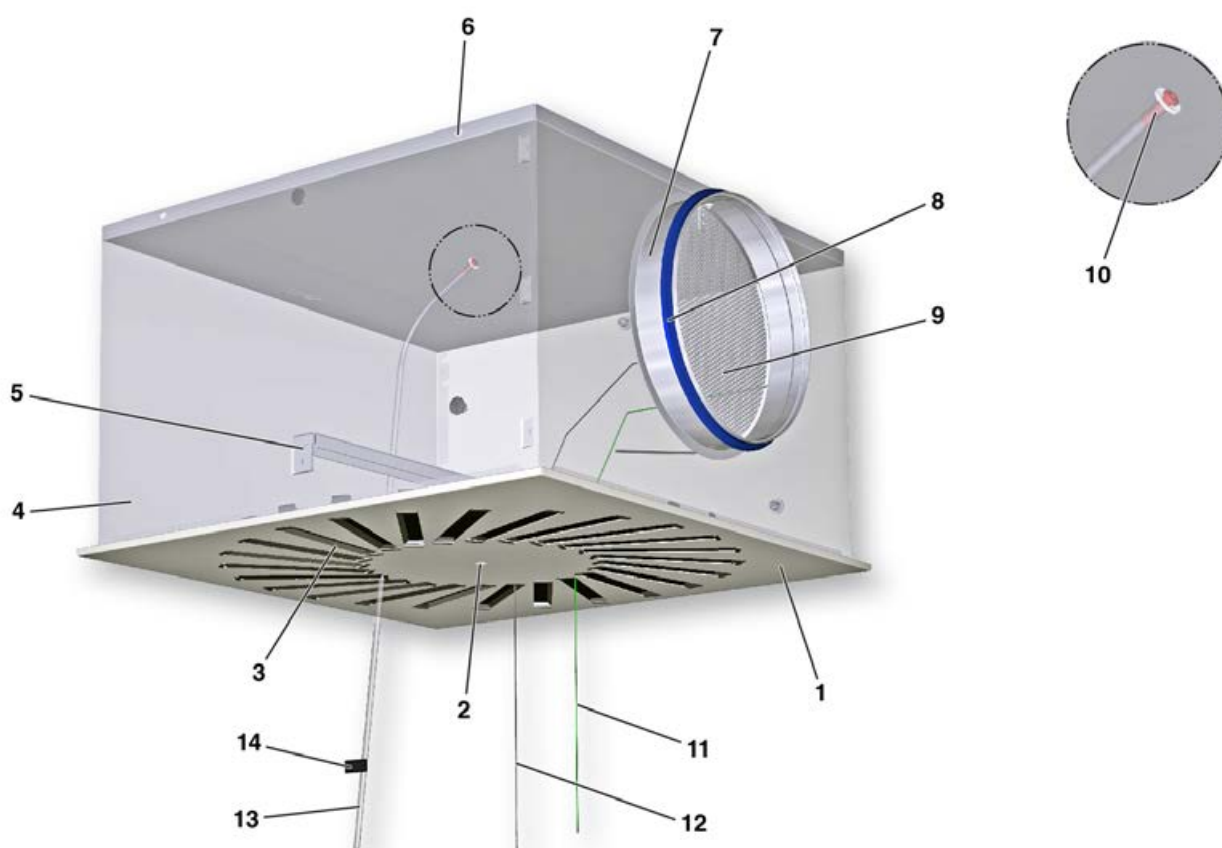
Swirl diffusers type VDW have adjustable air control blades. The airflow direction can be adjusted to meet various local requirements. Horizontal airflow is provided in all-round, two-way

or one-way configurations. Vertical air discharge is also possible, but only for heating mode. The supply air to room air temperature difference can be $-12 - +10$ K.

A damper blade (optional) simplifies volume flow balancing at commissioning. Pressure tap and cord-operated damper blade (optional) allow for volume flow balancing with the diffuser face in place.

To achieve a uniform architectural design, type VDW diffusers may also be used for extract air. Air control blades are not required for extract air applications.

Schematic illustration: VDW-Q with square plenum box



- 1 Diffuser face
- 2 Central fixing screw
- 3 Adjustable air control blade
- 4 Plenum box
- 5 Cross bar
- 6 Suspension hole
- 7 Spigot

- Optional
- 8 Lip seal
- 9 Damper blade for volume flow balancing
- 10 Pressure tap
- 11 Green cord, closing the damper blade
- 12 White cord, opening the damper blade
- 13 Measuring hose
- 14 Text label indicating plenum box variant

Schematic illustration: VDW-R with circular plenum box and horizontal spigot



- 1 Diffuser face
- 2 Central fixing screw
- 3 Adjustable air control blade
- 4 Plenum box
- 5 Cross bar
- 6 Equalising element
- 7 Suspension lug
- 8 Spigot
- Optional
- 9 Lip seal
- 10 Damper blade for volume flow balancing

Technical data

Nominal sizes	300, 400, 500, 600, 625, 825 mm
Dimensions ceiling panel	598 x 598 or 623 x 623
Minimum volume flow rate, with $\Delta t_z = -6$ K	7 – 99 l/s or 25 – 357 m³/h
maximum volume flow, at $L_{WA} \approx 50$ dB(A)	80 – 470 l/s or 288 – 1692 m³/h
Supply air to room air temperature difference	-12 – +10 K

Quick sizing

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 program.

VDW-Z-H (supply air), sound power level and total differential pressure

NS	q_v [l/s]	q_v [m³/h]	0°		45°		90°	
			Δp_t [Pa]	L_{WA} [dB(A)]	Δp_t [Pa]	L_{WA} [dB(A)]	Δp_t [Pa]	L_{WA} [dB(A)]
300 x 8	7	26	1	<15	1	<15	1	<15
300 x 8	35	108	12	20	14	20	22	21
300 x 8	60	198	41	38	46	38	74	39
300 x 8	85	288	87	50	98	51	157	52
400 x 16	13	46	1	<15	1	<15	1	<15
400 x 16	60	198	11	21	13	20	26	20
400 x 16	100	360	38	39	44	40	85	40
500 x 24	70	252	10	18	14	21	35	24
500 x 24	125	450	31	36	45	40	112	43
500 x 24	175	648	65	50	94	54	233	59
600 x 24, 625 x 24	28	102	1	<15	1	<15	2	<15
600 x 24, 625 x 24	105	360	10	22	13	23	30	26
600 x 24, 625 x 24	165	612	28	38	38	40	87	43
600 x 24, 625 x 24	260	864	56	50	75	54	174	57
600 x 48	40	145	1	<15	2	<15	4	<15
600 x 48	130	432	10	22	16	26	39	31
600 x 48	210	720	27	38	43	44	109	48
600 x 48	305	1008	53	50	85	58	214	63
625 x 54	140	468	10	23	16	26	42	33
625 x 54	225	756	27	38	42	44	109	49
625 x 54	310	1044	51	50	81	59	208	62
825 x 72	99	357	3	<15	4	<15	10	<15
825 x 72	225	756	11	25	17	27	46	28
825 x 72	470	1692	47	50	70	55	193	54

0°, 45°, 90°: Position of the damper blade

VDW*-Z-V (supply air), sound power level and total differential pressure

NS	q _v [l/s]	q _v [m³/h]	0°		45°		90°	
			Δp _t [Pa]	L _{WA} [dB(A)]	Δp _t [Pa]	L _{WA} [dB(A)]	Δp _t [Pa]	L _{WA} [dB(A)]
300 x 8	7	26	1	<15	1	<15	1	<15
300 x 8	30	108	12	20	14	20	22	21
300 x 8	55	198	41	38	46	38	74	39
300 x 8	80	288	87	50	98	51	157	52
400 x 16	13	46	1	<15	1	<15	1	<15
400 x 16	55	198	11	21	13	20	26	20
400 x 16	100	360	38	39	44	40	85	40
400 x 16	140	504	74	50	86	51	167	52
500 x 24	19	70	1	<15	1	<15	3	<15
500 x 24	70	252	10	18	14	21	35	24
500 x 24	125	450	31	36	45	40	112	43
500 x 24	180	648	65	50	94	54	233	59
600 x 24, 625 x 24	28	102	1	<15	1	<15	2	<15
600 x 24, 625 x 24	100	360	10	22	13	23	30	26
600 x 24, 625 x 24	170	612	28	38	38	40	87	43
600 x 24, 625 x 24	240	864	56	50	75	54	174	57
600 x 48	40	145	1	<15	2	<15	4	<15
600 x 48	120	432	10	22	16	26	39	31
600 x 48	200	720	27	38	43	44	109	48
600 x 48	280	1008	53	50	85	58	214	63
625 x 54	52	186	2	<15	3	<15	7	<15
625 x 54	130	468	10	23	16	26	42	33
625 x 54	210	756	27	38	42	44	109	49
625 x 54	290	1044	51	50	81	59	208	62
825 x 72	99	357	3	<15	4	<15	10	<15
825 x 72	210	756	11	25	17	27	46	28
825 x 72	320	1152	26	39	39	42	107	42
825 x 72	430	1692	47	50	70	55	193	54

0°, 45°, 90°: Position of the damper blade

Specification text

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

Specification text

Swirl diffusers VDW with a square or circular diffuser face.

- For supply air and extract air in comfort zones
- Up to 35 air changes per hour
- For installation into all types of suspended ceilings

Ready-to-install component, consisting of:

- Diffuser face with radially arranged air control blades
- Square or circular plenum box

Plenum box

- With square diffuser face (-Q) and horizontal spigot (-H): square design
 - With drill holes for suspension
- With circular diffuser face (-R) and horizontal spigot (-H): circular design
- Suspension lugs for hanging
- For square (-Q) or circular (-R) diffuser face with vertical spigot (-V): circular design
 - With suspension lugs for hanging
- Spigot with groove for factory-fitted or retrofitted lip seal
- Spigot with mounting points for a damper blade
 - The damper blade can be retrofitted to galvanised spigots
- For supply air, equipped with an equalising element
- With crossbar for mounting the diffuser face

Diffuser face

- Air control blades for horizontal swirling airflow
 - Before installation, set the air control blades in 2 different directions to suit the desired flow pattern
- The diffuser face is fixed to the crossbar with a central screw, concealed by a decorative cap

Special characteristics

- High induction results in a rapid reduction of the supply air to room air temperature difference and airflow velocity
- For all ceiling systems, and with an extended border also suitable for freely suspended installation
- Smaller swirl diffusers suitable for 600 or 625 ceiling grids
- Spigot horizontal and vertical
- Very high room air change rates possible thanks to row arrangement with a minimum centre-to-centre spacing of 0.9 m

Materials and surfaces

Diffuser face

- Made of galvanised sheet steel
- Coated, RAL 9010, pure white (no entry)
- P1: powder-coated, RAL CLASSIC colour

Damper blade

- Made of ABS plastic

Circular plenum box

- Made of galvanised sheet steel
- With vertical spigot
 - Spigot made of galvanised sheet steel

- For supply air, with galvanised perforated plate for air distribution
- With horizontal spigot
 - Spigot made of black ABS plastic, flame-retardant in accordance with UL94, V0
 - Equipped with a polyester equalising element for supply air
- Crossbar made of galvanised sheet steel for mounting the diffuser face

Square plenum box

- Made of galvanised sheet steel
- With horizontal spigot
- Spigot made of galvanised sheet steel
- For supply air, with galvanised perforated plate for air distribution
- Crossbar made of galvanised sheet steel for mounting the diffuser face

Lip seal

- Made of Evoprene

Air control blades

- Supply air:
 - Similar to RAL 9005, jet black
 - Made of plastic, UL 94, V- 0, flame-retardant
 - Q21: Air control blades supply air similar to RAL 9010, pure white
- Extract air:
 - No air control blades
 - Q11: Air control blades for extract air similar to RAL 9005, jet black
 - Q21: Air control blades for extract air similar to RAL 9010, pure white

Technical data

300 x 8, 400 x 16, 500 x 24, 600x 24, 600 x 48, 625 x 24, 625 x 54, 825 x 72

Minimum volume flow rate, at $\Delta t_z = -6 \text{ K}$: 7 – 99 l/s or 26 – 357 m³/h

Maximum volume flow, at $L_{WA} \approx 50 \text{ dB(A)}$: 85 – 470 l/s or 306 – 1692 m³/h

Supply air to room air temperature difference: -12 – +10 K

Standards and guidelines

- Spigot, suitable for air ducts according to DIN EN 1506 or DIN EN 13180
- Sound power level of the air-regenerated noise measured according to DIN EN ISO 5135

Life cycle assessment

A life cycle assessment is available for the product type in the form of an environmental product declaration (EPD), which has been checked and published by a programme holder.

Order code

VDW – Q – Z – H – M – L / 500 × 24 × 598 / Q21 / P1 - RAL 9016

1 2 3 4 5 6 7 8 9

1 Type

VDW Swirl diffuser

600 × 24

600 × 48

625 × 24

2 Construction style

R circular

Q square

625 × 54 (only with construction style Q)

825 × 72 (only with construction style Q)

3 System

Z Supply air

A Extract air

Ceiling panel size (only with construction style Q)

No entry: Ceiling panel size according to nominal size swirl diffuser

598 square ceiling panel, 598 x 598 mm (not for nominal size swirl diffuser 625, 825)

623 square ceiling panel, 623 x 623 mm (not for nominal size 825 swirl diffuser)

4 Spigot

H with horizontal spigot

V with vertical spigot (plenum box is always circular)

5 Damper blade for volume flow balancing

No entry: without damper blade

M with damper blade

MN with cords and pressure tap (only with square plenum box)

8 Colour of air control blades

No entry: system Z (supply air) – black air control blades; system A (extract air) – no air control blades

Q11 black air control blades (system A only)

Q21 white air control blades

6 Accessories

No entry: without accessories

L with lip seal

9 Exposed surface

No entry: powder-coated, RAL 9010 (pure white)

P1 powder-coated; specify RAL CLASSIC colour

7 Nominal size [mm]

Nominal size swirl diffuser x number of air control blades x ceiling panel size

Nominal size swirl diffuser x number of air control blades

300 × 8

400 × 16

500 × 24

Gloss level

RAL 9010 GU 50

RAL 9006 GU 30

All other RAL colours GU 70

Note: Circular plenum boxes with a horizontal spigot have either no damper blade and no lip seal or both a damper blade and a lip seal. Features 2 and 4 define the plenum box geometry.

Order example: VDW-Q-Z-H-M-L/500×24×598/Q21/P1-RAL9016

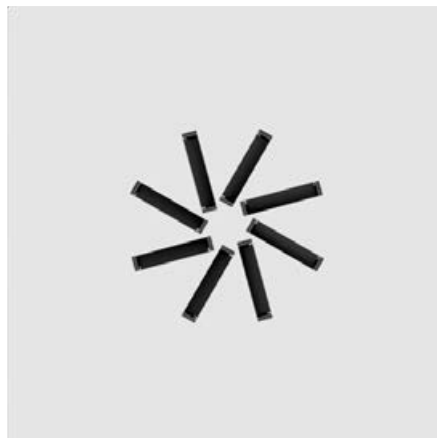
Type	VDW – Swirl diffuser
Construction style	square
System	Supply air
Spigot	with horizontal spigot
Damper blade for volume flow balancing	with damper blade
Accessories	with lip seal
Nominal size [mm]	Nominal size 500, number of air control blades 24, square ceiling panel, 598 x 598 mm
Colour of air control blades	white air control blades
Exposed surface	powder-coated, RAL 9016 (traffic white), GU 70

Variants

VDW-Q-Z/300 x 8



VDW-Q-Z/300 x 8 in ceiling panel □Q₁: 598/623

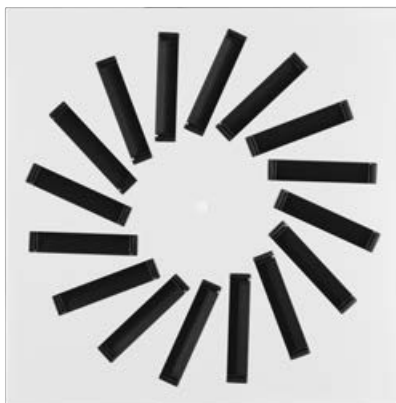


□300 x 8; ceiling panel dimensions 598 x 598 or 623 x 623 mm

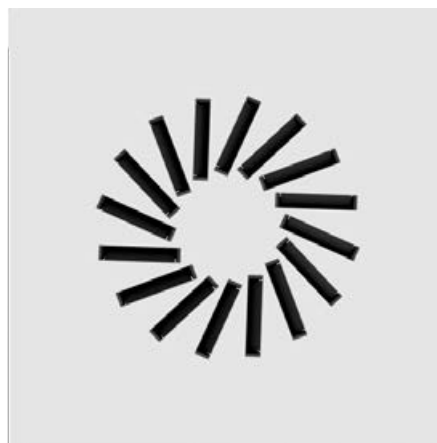
Nominal sizes

□300 x 8

VDW-Q-Z/400 x 16



VDW-Q-Z/400 x 16 in ceiling panel □Q₁: 598/623

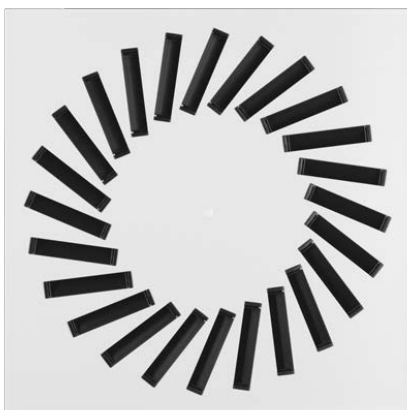


□ 400 x 16; ceiling panel dimensions 598 x 598 or 623 x 623 mm

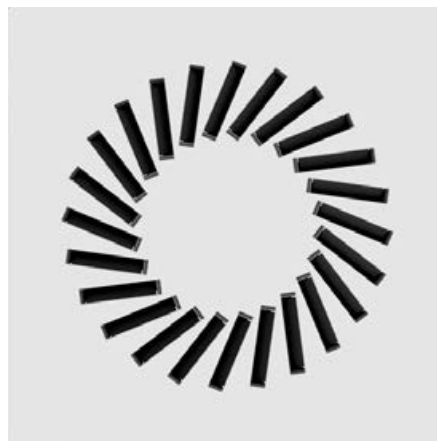
Nominal sizes

□400 x 16

VDW-Q-Z/500 x 24



VDW-Q-Z/500 x 24 in ceiling panel □Q1: 598/623

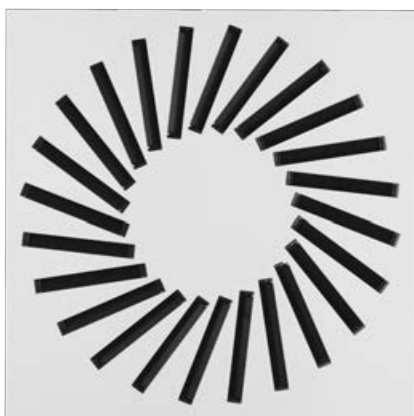


□500 x 24; ceiling panel dimensions 598 x 598 or 623 x 623 mm

Nominal sizes

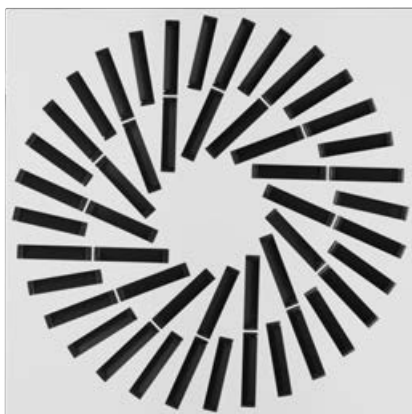
□500 x 24

VDW-Q-Z/600 x 24

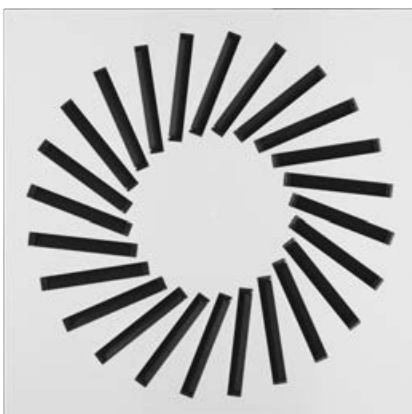


Nominal sizes

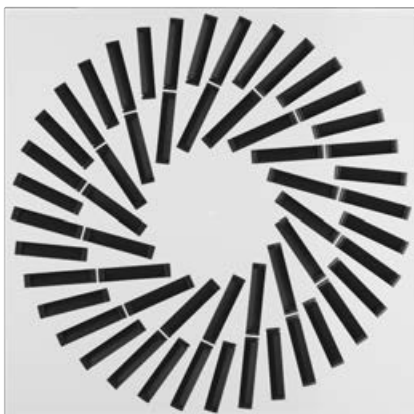
□600 x 24

VDW-Q-Z/600 x 48**Nominal sizes**

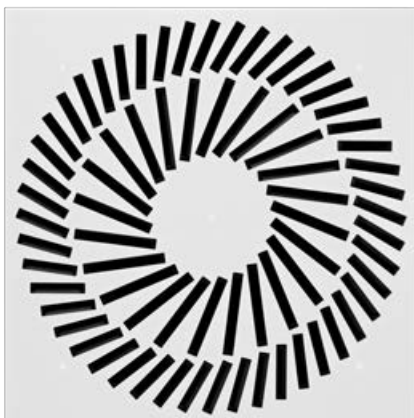
□600 x 48

VDW-Q-Z/625 x 24**Nominal sizes**

□625 x 24

VDW-Q-Z/625 x 54**Nominal sizes**

□625 x 54

VDW-Q-Z/825 x 72**Nominal sizes**

□825 x 72

VDW-Q-*-H

Variants

- Swirl diffuser with a square diffuser face
- With square plenum box for horizontal spigot
- Optional nominal size 300 x 8, 400 x 16 or 500 x 24 in a diffuser face 598 x 598 or 623 x 623
- Pressure tap and cord-operated damper blade for volume flow balancing (optional)

Nominal sizes

- 300 x 8, 400 x 16, 500 x 24, 600 x 24, 600 x 48, 625 x 24, 625 x 54, 825 x 72

VDW-Q-*-V

Variants

- Swirl diffuser with a square diffuser face
- With circular plenum box for vertical spigot

Nominal sizes

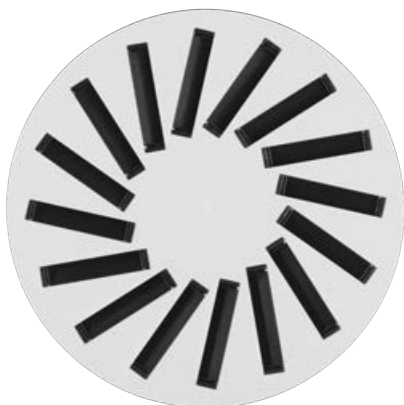
- 300 x 8, 400 x 16, 500 x 24, 600 x 24, 600 x 48, 625 x 24, 625 x 54, 825 x 72

VDW-R-Z/300 x 8

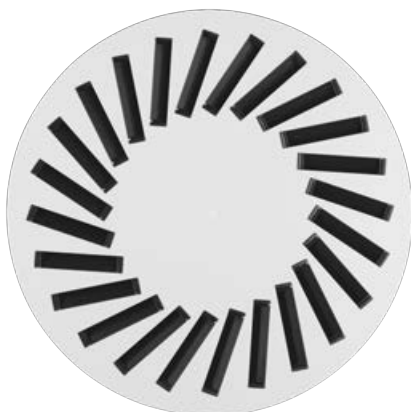


Nominal sizes

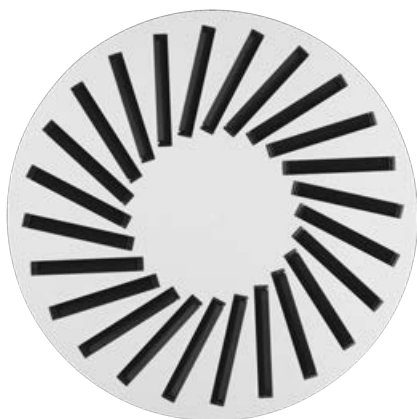
Ø 300 x 8

VDW-R-Z/400 x 16**Nominal sizes**

Ø 400 x 16

VDW-R-Z/500 x 24**Nominal sizes**

Ø 500 x 24

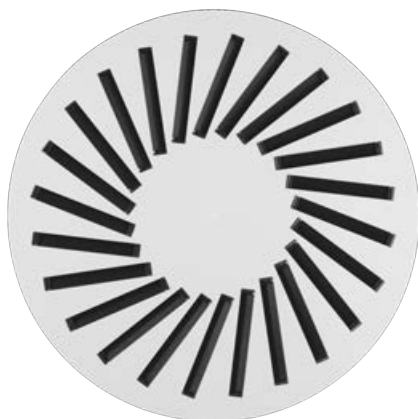
VDW-R-Z/600 x 24**Nominal sizes**

Ø 600 x 24

VDW-R-Z/600 x 48**Nominal sizes**

Ø 600 x 48

VDW-R-Z/625 x 24

**Nominal sizes**

Ø 625 x 24

VDW-R-*-H**Variants**

- Swirl diffuser with circular diffuser face
- Mit circular plenum box for horizontal spigot

Nominal sizes

- 300 x 8, 400 x 16, 500 x 24, 600 x 24, 600 x 48, 625 x 24
-

VDW-R-*-V**Variants**

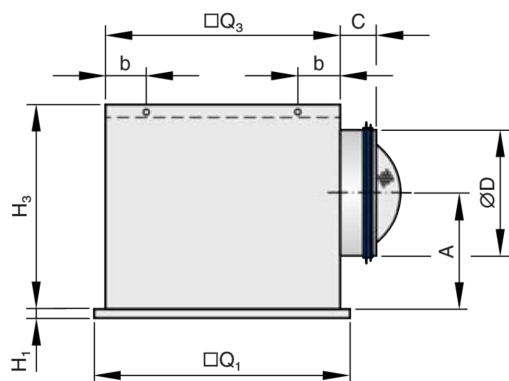
- Swirl diffuser with circular diffuser face
- With circular plenum box for vertical spigot

Nominal sizes

- 300 x 8, 400 x 16, 500 x 24, 600 x 24, 600 x 48, 625 x 24

Dimensions

Square diffuser face with plenum box for horizontal spigot



VDW-Q-*-H

NS	□Q ₁	H ₁	□Q ₃	H ₃	∅D	A	C	1	m [kg]
300 × 8	310	8	290	250	158	139	50	AK-Uni-001	3,7
400 × 16	398	8	372	295	198	164	50	AK-Uni-002	5,7
500 × 24	498	8	476	295	198	164	50	AK-Uni-003	7,8
600 × 24	598	8	567	345	248	199	48	AK-Uni-004	11,1
600 × 48	598	8	590	345	248	189	48	AK-Uni-005	11,4
625 × 24	623	8	567	345	248	199	48	AK-Uni-004	11,3
625 × 54	623	8	615	345	248	189	48	AK-Uni-006	12,0
825 × 72	825	8	806	410	313	222	50	AK-Uni-007	21,2

1 Plenum box

The stated weights apply to the supply air variant.

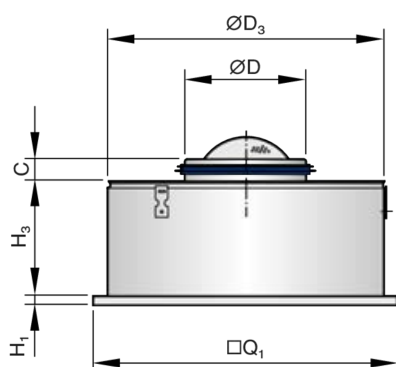
VDW: Type Q - smaller swirl diffusers suitable for 600 or 625 ceiling grids

NS	□Q ₁	H ₁	□Q ₃	H ₃	∅D	A	C	1	m [kg]
300 × 8	598	8	290	250	158	139	50	AK-Uni-001	11.1
300 × 8	623	8	290	250	158	139	50	AK-Uni-001	11.1
400 × 16	598	8	372	295	198	164	50	AK-Uni-002	11.1
400 × 16	623	8	372	295	198	164	50	AK-Uni-002	11.1
500 × 24	598	8	476	295	198	164	50	AK-Uni-003	11.1
500 × 24	623	8	476	295	198	164	50	AK-Uni-003	11.1

1 Plenum box

The stated weights apply to the supply air variant.

Square diffuser face with circular plenum box for vertical spigot



VDW-Q*-V

NS	H ₁	ØD ₃	H ₃	□Q ₁	ØD	C	m [kg]
300 × 8	8	275	200	310	158	50	2,7
400 × 16	8	364	200	398	198	50	4,2
500 × 24	8	462	200	498	198	50	6,0
600 × 24	8	559	200	598	248	48	8,4
600 × 48	8	575	300	598	248	48	9,6
625 × 24	8	559	200	623	248	48	8,6
625 × 54	8	600	300	623	248	48	10,3
825 × 72	8	796	300	825	313	50	16,2

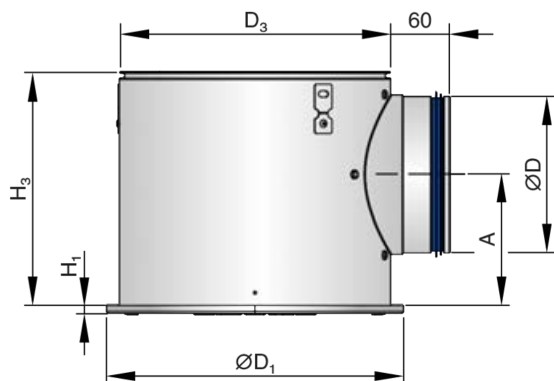
The stated weights apply to the supply air variant.

VDW-Q

NS	$\square Q_1$	$\varnothing D_2$	n	$A_{\text{eff}} [\text{m}^2]$
300 × 8	310	269	8	0.007
300 × 8	598	269	8	0.007
300 × 8	623	269	8	0.007
400 × 16	398	352	16	0.014
400 × 16	598	352	16	0.014
400 × 16	623	352	16	0.014
500 × 24	498	440	24	0.021
500 × 24	598	440	24	0.021
500 × 24	623	440	24	0.021
600 × 24	598	546	24	0.0295
600 × 48	598	568	48	0.039
625 × 24	623	546	24	0.0295
625 × 54	623	594	54	0.047
825 × 72	825	773	72	0.073

n = number of air control blades

Circular diffuser face with circular plenum box for horizontal spigot



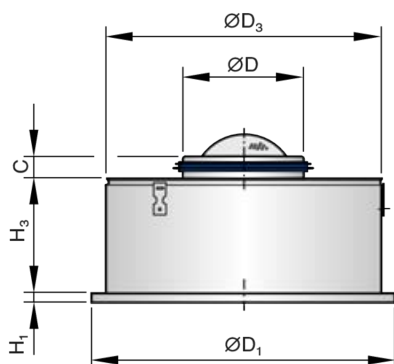
VDW-R*-H

NS	ØD ₁	H ₁	H ₃	ØD ₃	ØD	A	1
300 × 8	300	8	243	274	158	139	AKR-01
400 × 16	400	8	290	363	198	166	AKR-02
500 × 24	500	8	290	461	198	166	AKR-03
600 × 24	600	8	344	574	248	195	AKR-05
600 × 48	600	8	344	574	248	195	AKR-05
625 × 24	625	8	344	574	248	195	AKR-05

1 Plenum box

The stated weights apply to the supply air variant.

Circular diffuser face with circular plenum box for vertical spigot

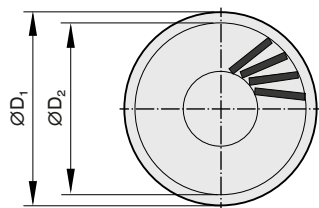


VDW-R*-V

NS	ØD ₁	H ₁	ØD ₃	H ₃	ØD	C	m [kg]
300 × 8	300	8	275	200	158	50	2,5
400 × 16	400	8	364	200	198	50	3,9
500 × 24	500	8	462	200	198	50	5,6
600 × 24	600	8	559	200	248	48	7,5
600 × 48	600	8	575	300	248	48	8,7
625 × 24	625	8	559	200	248	48	7,7

The stated weights apply to the supply air variant.

Diffuser face VDW-R



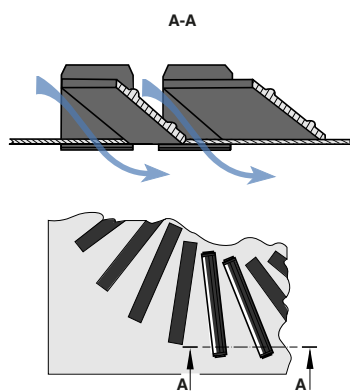
VDW-R

NS	ØD ₁	ØD ₂	N	Aeff [m²]
300 × 8	300	269	8	0.0070
400 × 16	400	352	16	0.0140
500 × 24	500	440	24	0.0210
600 × 24	600	546	24	0.0295
600 × 48	600	568	48	0.0390
625 × 24	625	546	24	0.0295

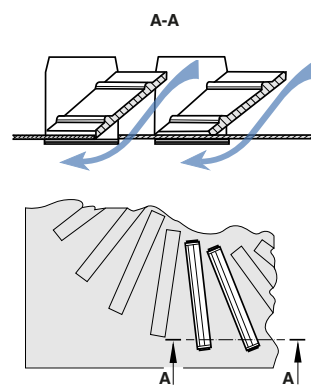
n = no. of air control blades

Air patterns

Air control blades set to external swirl



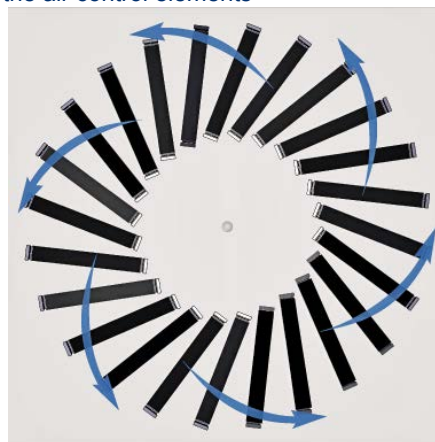
Air control blades set to internal swirl



Horizontal omni directional air discharge

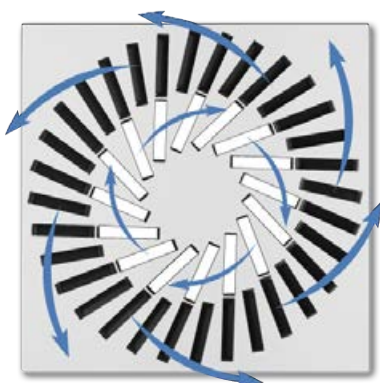


Setting of the air control elements



All air control blades set to external swirl

Setting of the air control elements



Outer air control blades set to external swirl, inner blades set to internal swirl

Horizontal one-way air discharge

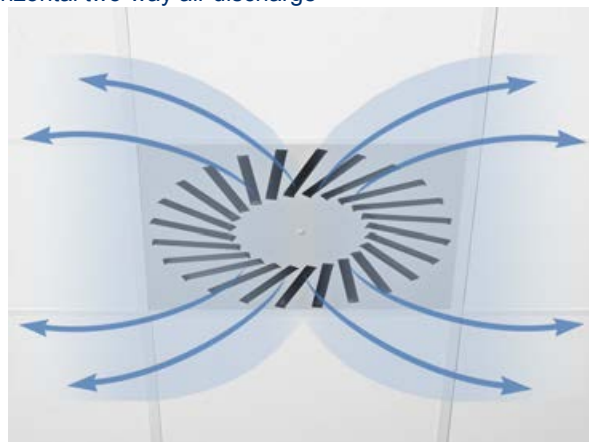


Setting of the air control elements

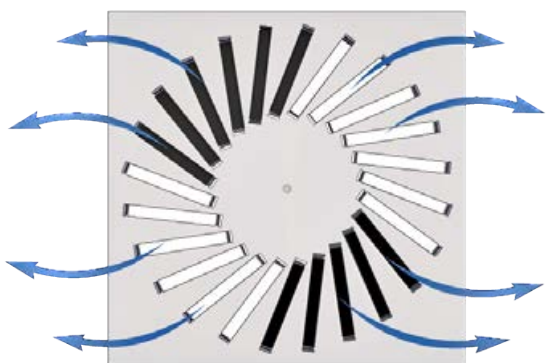


Air control blades set to internal and external swirl per half circle

Horizontal two-way air discharge

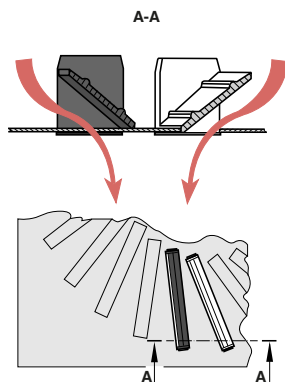


Setting of the air control elements

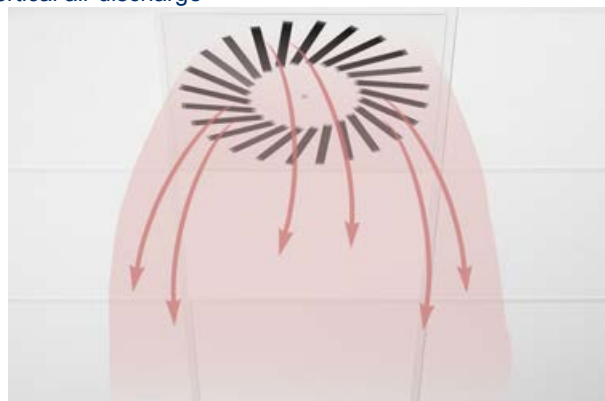


Air control blades set to internal and external swirl per quadrant

Air control blades set to vertical air discharge



Vertical air discharge



Setting of the air control elements



Air control blades set alternately to internal and external swirl

Product details

Installation in T-bar ceilings



VDW-Q with black air control blades

Installation in T-bar ceilings



VDW-Q with white air control blades

Installation in T-bar ceilings, arrangement in a row



Installation in continuous ceilings

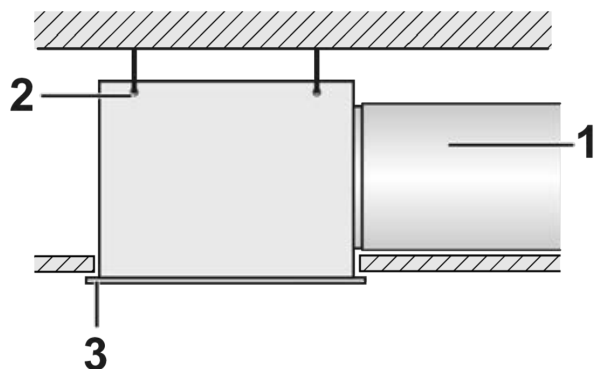


Installation and commissioning

- Preferably for rooms with a clear height up to 4.0 m
- Flush ceiling installation
- Freely suspended installation only with an extended border (supply air variant)
- Spigot horizontal or vertical
- If necessary, carry out volume flow balancing on the damper blade

These are only schematic diagrams to illustrate installation details.

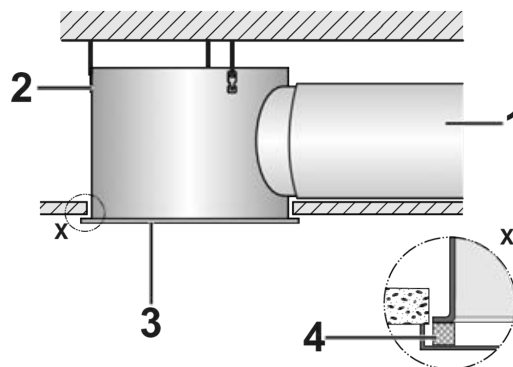
Flush ceiling installation with square plenum box



- 1 Air duct
- 2 Suspension hole
- 3 Diffuser face

- Horizontal spigot
- 4 Suspension holes
- Customer-provided suspension using cables, suspension wires or vernier hangers

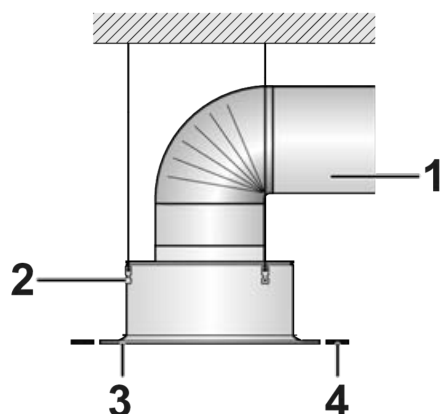
Flush ceiling installation with circular plenum box



- 1 Air duct
- 2 Suspension lug
- 3 Diffuser face

- Horizontal spigot
- 3 Suspension lugs
- Customer-provided suspension using cables, suspension wires or vernier hangers

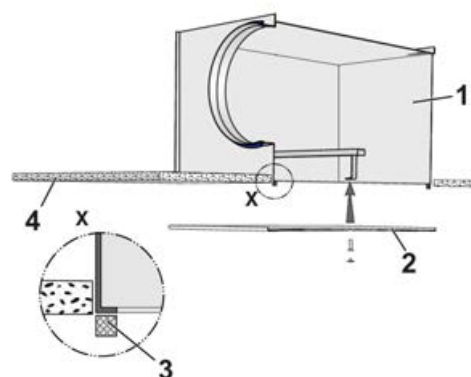
Freely suspended installation



- 1 Air duct
- 2 Suspension lug
- 3 Diffuser face
- 4 Extended border

- Vertical spigot
- 3 Suspension lugs
- Customer-provided suspension using cables, suspension wires or vernier hangers

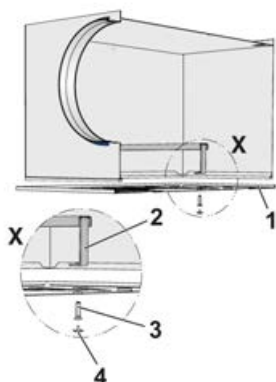
Sealing diffuser face



- 1 Plenum box
- 2 Diffuser face
- 3 Seal
- 4 Ceiling panel

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

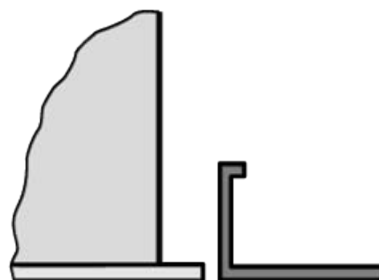
Central screw to fix the diffuser face



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

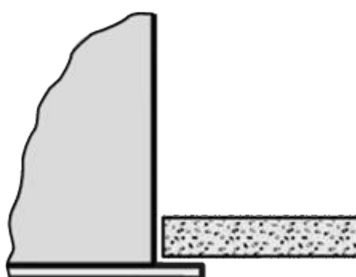
- Using the central fixing screw, fix the diffuser face to the cross bar of the plenum box
- Attach the decorative cap

Installation in metal ceilings



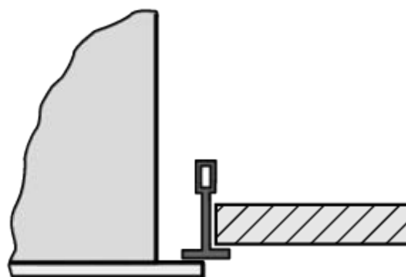
- Fix the plenum box to the ceiling
- Ceiling tile of the metal ceiling is independent of the air diffuser
- Fix the diffuser face after the ceiling has been completed

Installation in continuous ceilings



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

Installation in T-bar ceilings



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

Volume flow balancing

When several swirl diffusers are connected to just one volume flow controller, it may be necessary to balance the volume flows.

- Swirl diffusers with square plenum box and damper blade (variant-M): When the diffuser face is removed, the damper blade is accessible, which can be adjusted in 5 stages
- Swirl diffusers with square plenum box, with damper blade and pressure tap (variant-MN): The damper blade can also be adjusted using 2 cords (white and green) when the diffuser face is in place.

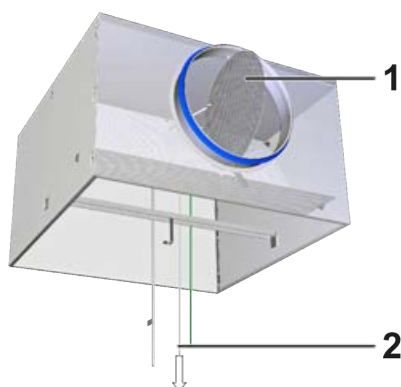
Volume flow measurement

Swirl diffusers with square plenum box, with damper blade and pressure tap (variant -MN) allow for volume flow balancing with the diffuser face in place.

- Connect the measuring hose to the digital manometer
- Read the differential pressure
- Read off or calculate the volume flow rate from the characteristic curve
- If necessary, adjust the damper blade position using the cords.

A characteristic curve is supplied with each plenum box.

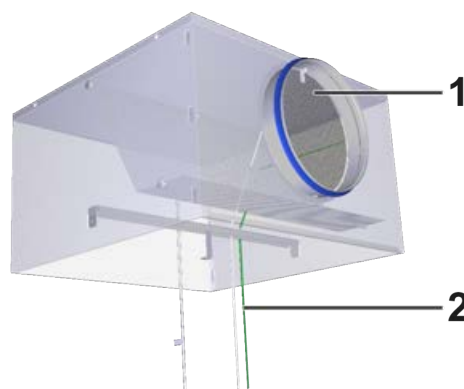
AK-Uni-...-MN Volume flow rate balancing



- 1 Damper blade
2 White cord for opening the damper blade

Open, 0°

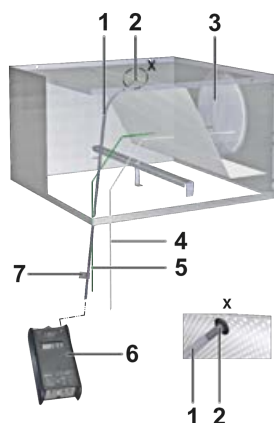
AK-Uni-...-MN Volume flow rate balancing



- 1 Damper blade
2 Green cord for closing the damper blade

Closed, 90°

AK-Uni-...-MN volume flow rate measurement



- 1 Measuring tube
2 Pressure tap
3 Damper blade for volume flow rate balancing
4 White cord for opening the damper blade
5 Green cord for closing the damper blade
6 Digital manometer
7 Text label indicating plenum box variant

Volume flow rate calculations

$$1 \quad q_v = C \times \sqrt{\Delta p_w}$$

$$2 \quad q_v = C \times \sqrt{\Delta p_w} \times \sqrt{\frac{1.2}{\rho}}$$

- 1 For an air density of 1.2 kg/m
2 For other air densities

Nomenclature

A [mm]

Position of the spigot, defined by the distance from the centre line to the lower edge of the plenum box

A_{eff} [m²]

Effective air discharge area

C [mm]

Length of the spigot

ØD [mm]

Outer 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

H₁ [mm]

Height of diffuser face

H₃ [mm]

Height of the plenum box

L_{WA} [dB(A)]

A-weighted sound power level of air-regenerated noise

m [kg]

Weight

NS [mm]

Nominal size

Δp_t [Pa]

Total differential pressure

□Q₁ [mm]

Outer diameter of a square diffuser face

□Q₃ [mm]

Dimensions of a square plenum box

q_v [m³/h]; [l/s]

Volume flow rate

Δt_z [K]

Supply air to room air temperature difference, i.e. supply air temperature minus room temperature

Lengths

All lengths are given in millimetres [mm] unless stated otherwise.

All sound power levels are based on 1 pW.

Ceiling diffusers

Ceiling diffusers are used for controlled air supply to or controlled air extraction from rooms, and are suitable for ceiling installation. Ceiling diffusers essentially consist of a plenum box and a diffuser face or a front rail.

Types

Ceiling diffusers with diffuser face with evenly distributed openings - e.g. Perforated diffuser face

- Suitable for directed horizontal airflow

Swirl diffusers:

- Diffuser face for swirling horizontal airflow
- The airflow is directed via air control blades in the diffuser face

Slot diffusers:

- The airflow is directed via one or more front rails with slotted air control elements