Ceiling swirl diffusers
Type TDV-SilentAIR

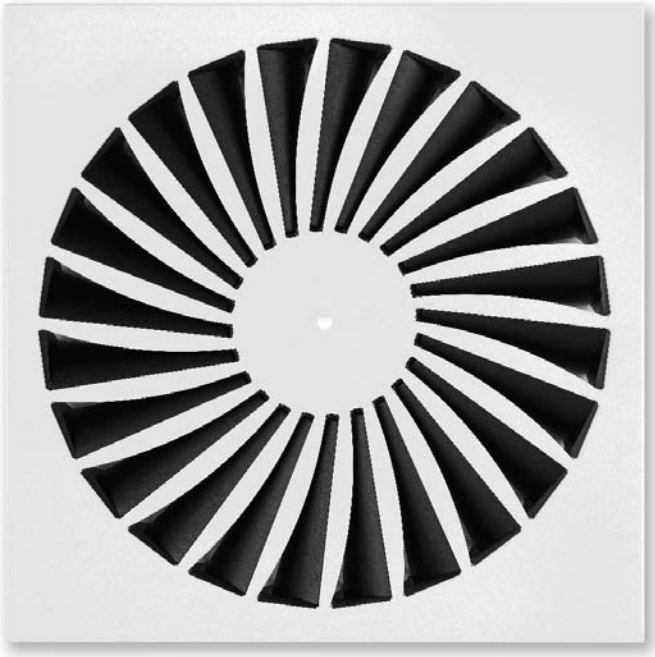
Horizontal
swirling air discharge

Horizontal
one-way air discharge

Horizontal
two-way air discharge

White air control blades

Circular diffuser face



With very low sound power level for comfort zones and individually manually adjustable air control blades

Circular and square ceiling swirl diffusers

- Nominal sizes 300, 400, 500, 600, 625
- Volume flow rate range 11 – 315 l/s or 40 – 1134 m^3/h
- Diffuser face made of galvanised sheet steel, powder-coated
- For supply and extract air
- For variable and constant volume flows
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- High induction results in a rapid reduction of temperature differences and airflow velocities
- Air control blades can be adjusted individually for adjusting the air pattern
- Ideal for comfort zones

Optional equipment and accessories

- Exposed diffuser face available in RAL CLASSIC colours, air control blades in black or white
- Horizontal or vertical duct connection
- Plenum box with cord-operated damper blade and pressure tap
- Acoustically optimised plenum box FLEXTRO

1

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Diffuser faces

Product examples

TDV-SA-Q-Z/600

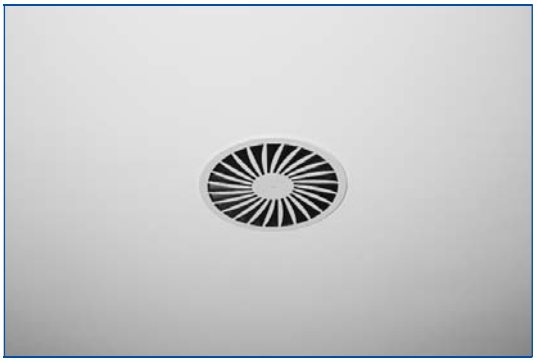
TDV-SA-R-Z/600

Installation examples

Installation in T-bar ceilings

Installation in T-bar ceilings, arrangement in a row

Installation in continuous ceilings



Description

For detailed information on plenum boxes see Chapter K1 – 1.5.

Application
- Type TDV-SilentAIR ceiling swirl diffusers are used as supply air or extract air diffusers for comfort zones
- Attractive design element for building owners and architects with demanding aesthetic requirements
- Horizontal swirling supply air discharge for mixed flow ventilation
- The efficient swirl creates high induction levels, thereby rapidly reducing temperature differences and airflow velocities (supply air variant)
- Individually adjustable air control blades to meet individual requirements
- For variable and constant volume flows
- For supply air to room air temperature differences from –12 to +10 K
- For room heights up to 4 m (lower edge of suspended ceiling)
- For all types of ceiling systems
- With an extended border also suitable for freely suspended installation (supply air variant)

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

Connection
- H: Horizontal duct connection
- V: Vertical duct connection
- X: Flexible plenum box FLEXTRO

Nominal sizes
- 300, 400, 500, 600, 625

Attachments
- M: Damper blade for volume flow rate balancing
- MN: Pressure tap and cord-operated damper blade for volume flow rate balancing with the diffuser face in place

Accessories
- Lip seal

Special characteristics
- Very low sound power level, ideal for comfort zones
- Individually manually adjustable air control blades
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- Black or white air control blades

Parts and characteristics
- Circular or square diffuser face
- Diffuser face with individually manually adjustable air control blades
- Simple installation of the diffuser face due to central fixing screw with decorative cap
- Damper blade for volume flow rate balancing (optional)

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 galvanised sheet steel
- V, H: Plenum box and cross bar made of galvanised sheet steel
- X: Plenum box made of plastic and galvanised sheet steel
- Air control blades made of plastic, UL 94, V-0, flame retardant
- Lip seal made of rubber
- Exposed diffuser face powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour
- Air control blades for supply air similar to RAL 9005, black; extract air variant without air control blades
- Q11: Air control blades for extract air similar to RAL 9005, black
- Q21: Air control blades for supply air and extract air similar to RAL 9010, white

Installation and commissioning
- Preferably for rooms with a clear height up to 4.0 m
- Flush ceiling installation
- Freely suspended installation only with an extended border (supply air variant)
- Horizontal 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

Nominal sizes	300, 400, 500, 600, 625 mm
Minimum volume flow rate, with Δt_Z = –6 K	11 – 47 l/s or 40 – 169 m³/h
Maximum volume flow rate, with L_{WA} ≅ 50 dB(A)	95 – 315 l/s or 342 – 1134 m³/h
Supply air to room air temperature difference	–12 to +10 K

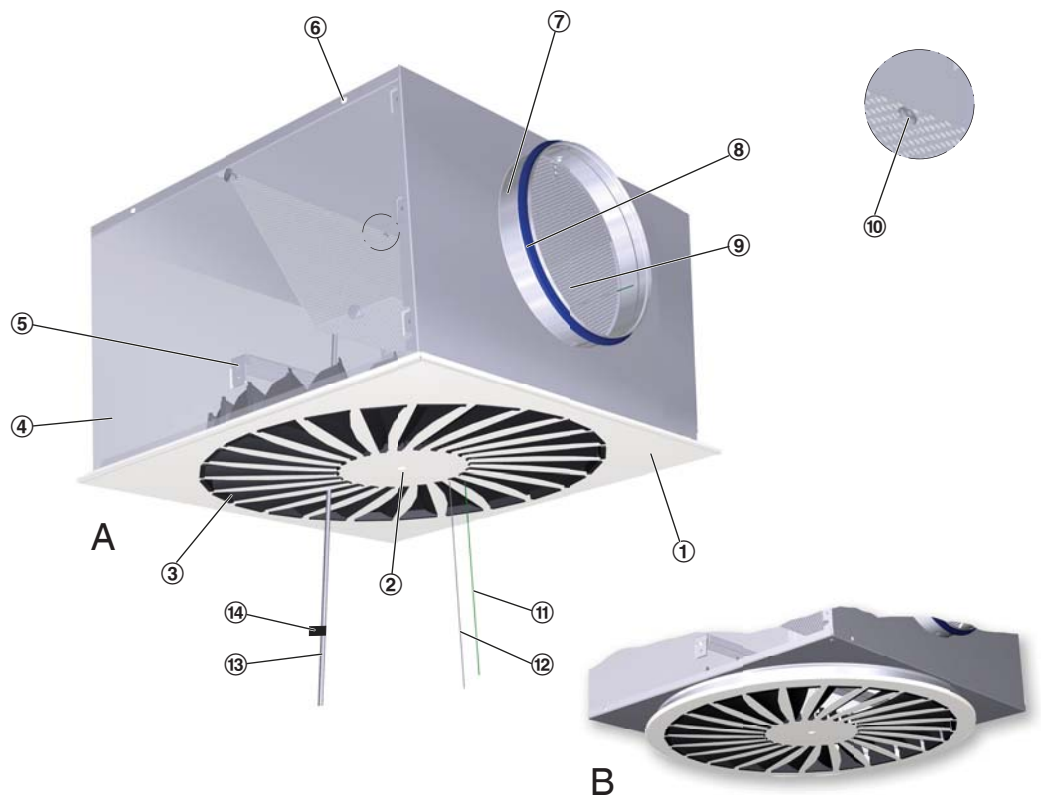
1 Function

Functional description

Ceiling swirl diffusers in air conditioning systems create a swirl to supply air to rooms. The resulting airflow induces high levels of room air, thereby rapidly reducing the airflow velocity and the temperature difference between supply air and room air. Ceiling swirl diffusers allow for large volume flow rates. The result is a mixed flow ventilation in comfort zones, with good overall room ventilation, creating only very little turbulence in the occupied zone.
Type TDV ceiling swirl diffusers have adjustable air control blades. The air pattern can be adjusted to meet different local requirements. Horizontal air discharge is one-way, two-way or omni directional. Vertical air discharge is possible but only for heating. The supply air to room air temperature difference may range from –12 to +10 K.

A damper blade (optional) simplifies volume flow rate balancing for commissioning. Pressure tap and cord-operated damper blade (optional) allow for volume flow rate balancing with the diffuser face in place.
To give rooms an aesthetic, uniform look, Type TDV diffusers may also be used for extract air. Air control blades are not required for extract air applications.

Schematic illustration of the TDV-SA, with plenum box for horizontal duct connection

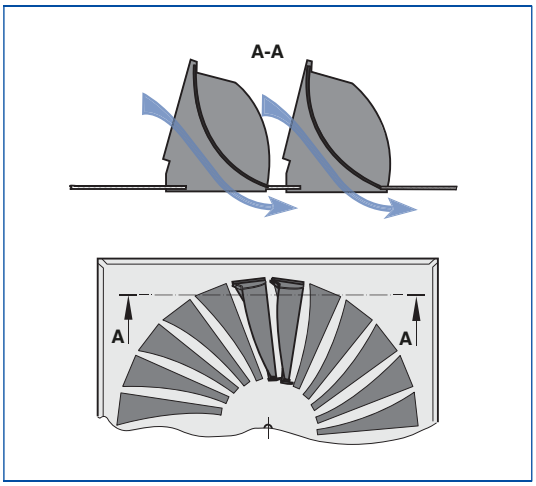


A TDV-SA-Q
B TDV-SA-R
① Diffuser face
② Central fixing screw
③ Adjustable air control blades
④ Plenum box
⑤ Cross bar
⑥ Suspension hole
⑦ Spigot

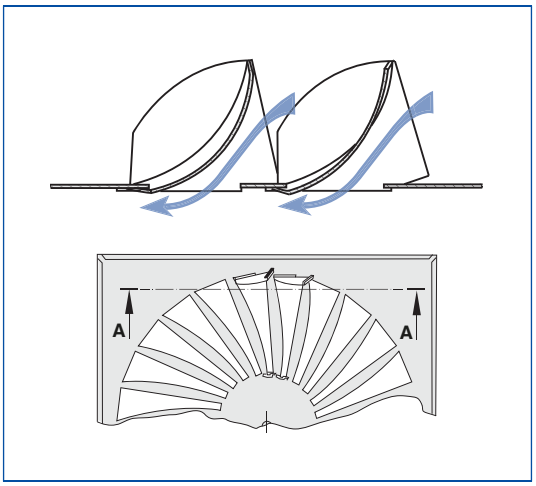
Options
⑧ Lip seal
⑨ Damper blade for volume flow rate balancing
⑩ Pressure tap
⑪ Green cord for closing the damper blade
⑫ White cord for opening the damper blade
⑬ Measuring tube
⑭ Text label indicating plenum box variant

Air patterns

Air control blades set to external swirl

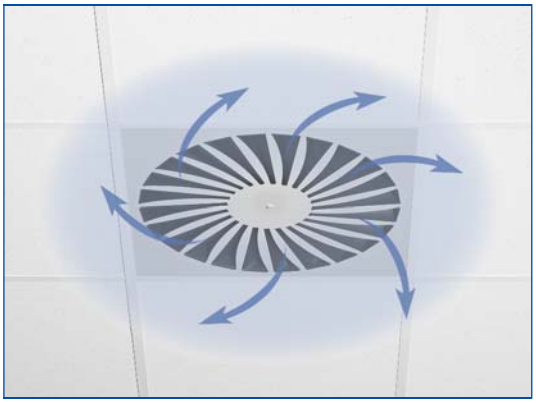


Air control blades set to internal swirl



Horizontal air discharge

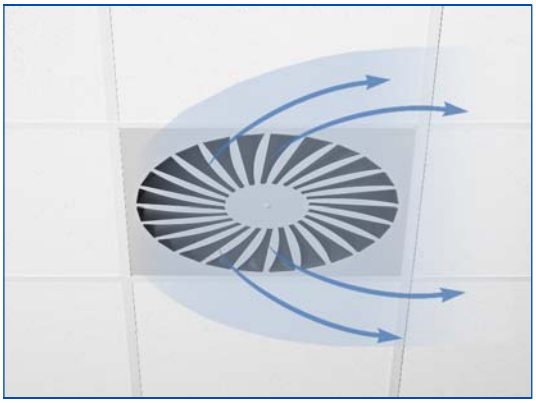
Horizontal omni directional air discharge



Setting of the air control blades

All air control blades set to external swirl

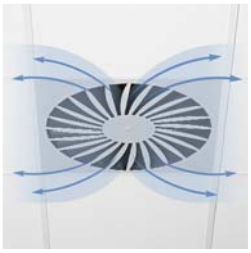
Horizontal one-way air discharge



Setting of the air control blades

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

Horizontal two-way air discharge



Setting of the air control blades

Air control blades set to internal and external swirl per quadrant

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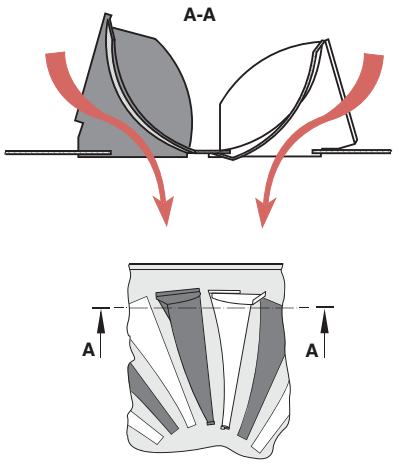
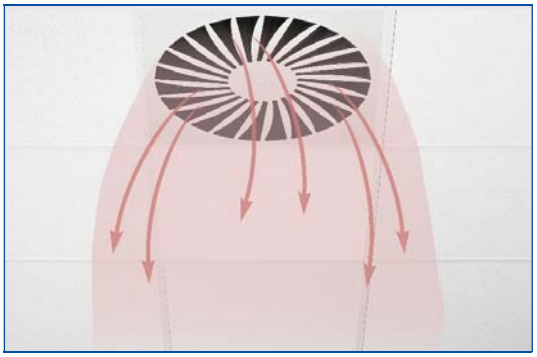
Vertical air discharge

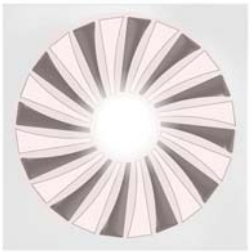
Air control blades set to vertical air discharge



Vertical air discharge



Setting of the air control blades



Air control blades set alternately to internal and external swirl

Order code

TDV-SA

TDV-SA – Q – Z – H – M – L / 500 / Q21 / P1 – RAL ...

1 2 3 4 5 6 7 8 9

1 Type
TDV-SA Swirl diffuser

2 Construction style
R Circular
Q Square

3 System
Z Supply air
A Extract air

4 Connection
H Horizontal
V Vertical
X Flexible plenum box FLEXTRO
(Only for nominal sizes 600 and 625)

5 Damper blade for volume flow rate balancing
Included with connection X

No entry: without damper blade
M With damper blade
MN With cords and pressure tap
(only with horizontal connection)

6 Accessories
Connection X includes a double lip seal

No entry: without accessories
L With lip seal

7 Nominal size [mm]
300
400
500
600
625

8 Colour of air control blades
No entry: supply air – black air control blades, extract air – no air control blades
Q11 Extract air – black air control blades
Q21 Supply air – white air control blades
Extract air – white air control blades

9 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 %

Order example

TDV-SA–Q–Z–H–MN–L/600/P1–RAL 9016

Construction style	Square
System	Supply air
Connection	Horizontal
Damper blade for volume flow rate balancing	With cords and pressure tap
Accessories	Lip seal
Nominal size	600
Colour of air control blades	Black
Exposed surface	RAL 9016, traffic white, gloss level 70 %

1

TDV-SA-Q-Z-H (supply air)

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

The minimum volume flow rates apply to a supply air to room air temperature difference of –6 K.

The maximum volume flow rates apply to a sound power level of approx. 50 dB (A) with damper blade position 0°.

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

Quick sizing – sound power level and total differential pressure

Nominal size	$\dot{V}$		Damper blade position					
			0°		45°		90°	
			Δp_t	L_{WA}	Δp_t	L_{WA}	Δp_t	L_{WA}
	l/s	m³/h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
300	11	40	1	<15	1	<15	2	<15
	40	144	11	25	14	27	32	25
	65	234	28	37	37	37	83	38
	95	342	60	50	79	48	179	52
400	20	72	1	<15	1	<15	3	<15
	60	216	10	26	12	18	28	27
	100	360	26	39	35	36	79	39
	140	504	52	50	68	49	154	49
500	30	108	1	<15	2	<15	6	<15
	80	288	11	22	16	21	46	26
	135	486	30	38	46	38	130	43
	190	684	59	50	91	51	257	55
600, 625	47	169	2	<15	2	<15	6	<15
	125	450	12	22	15	22	44	27
	200	720	30	38	39	37	112	43
	275	990	57	50	74	49	212	55

TDV-SA-R-Z-H (supply air)

Quick sizing – sound power level and total differential pressure

Nominal size	$\dot{V}$		Damper blade position					
			0°		45°		90°	
			Δp_t	L_{WA}	Δp_t	L_{WA}	Δp_t	L_{WA}
	l/s	m³/h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
300	11	40	1	<15	1	<15	2	<15
	40	144	10	25	14	24	32	23
	70	252	31	35	43	36	97	38
	111	398	78	50	108	50	243	54
400	20	72	1	<15	1	<15	3	<15
	65	234	11	25	14	25	34	25
	115	414	34	39	45	39	105	41
	155	558	62	50	82	48	191	51
500	30	108	1	<15	2	<15	6	<15
	90	324	13	22	20	23	56	28
	155	558	39	38	59	40	165	45
	215	774	75	50	114	52	318	57
600, 625	47	169	2	<15	2	<15	6	<15
	130	468	13	21	19	22	47	30
	215	774	35	37	51	38	130	45
	295	1062	66	50	96	50	244	57

TDV-SA-*-Z-V (supply air)

Quick sizing – sound power level and total differential pressure

Nominal size	$\dot{V}$		Damper blade position					
			0°		45°		90°	
			Δp_t	L_{WA}	Δp_t	L_{WA}	Δp_t	L_{WA}
	l/s	m³/h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
300	11	40	1	<15	1	<15	2	<15
	30	108	6	17	8	19	17	18
	65	234	29	37	36	38	82	38
	95	342	63	50	77	51	174	52
400	20	72	1	<15	1	<15	3	<15
	60	216	9	21	12	23	29	22
	110	396	31	39	40	39	96	42
	150	540	58	50	73	51	179	54
500	30	108	1	<15	2	<15	6	<15
	85	306	11	20	18	23	49	29
	140	504	30	38	49	42	133	46
	195	702	59	50	94	56	258	58
600, 625	47	169	2	<15	3	<15	7	<15
	120	432	12	23	17	25	42	33
	190	684	29	38	42	42	106	48
	260	936	55	50	79	55	198	60

TDV-SA-*-Z-X (supply air)

Quick sizing – sound power level and total differential pressure

Nominal size	$\dot{V}$		Damper blade position					
			0°		45°		90°	
			Δp_t	L_{WA}	Δp_t	L_{WA}	Δp_t	L_{WA}
	l/s	m³/h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
600, 625	47	169	2	<15	4	<15	7	<15
	135	486	18	21	29	26	54	31
	225	810	50	38	82	43	149	47
	315	1134	98	50	160	55	292	58

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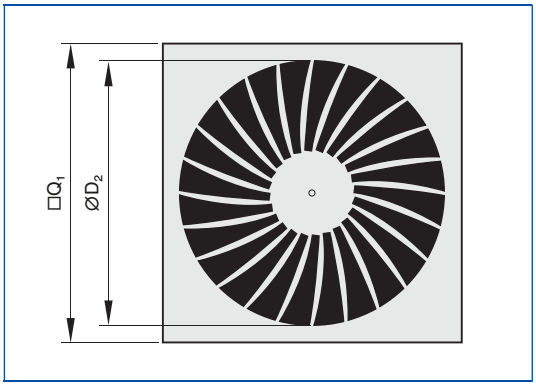
TDV-SA-Q-Z/600

– Q –

Order code detail

Diffuser face TDV-SA-Q



Dimensions

Nominal size	□Q_1	ØD_2	A_{eff}
	mm		m^2
300	298	254	0.0120
400	398	336	0.0210
500	498	440	0.0310
600	598	530	0.0440
625	623	530	0.0440

TDV-SA-Q-*-H

– Q – * – H –

Order code detail

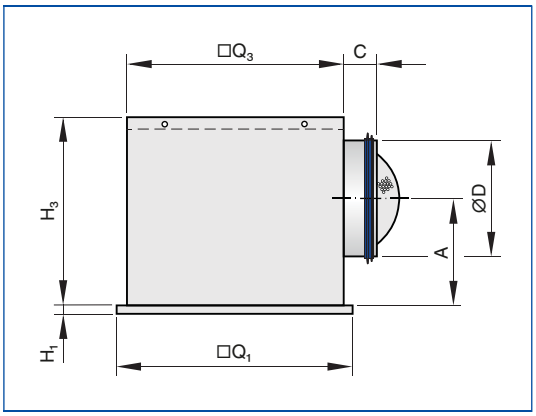
Variant
- Ceiling swirl diffuser with square diffuser face
- With plenum box for horizontal duct connection

Nominal sizes
- 300, 400, 500, 600, 625

Parts and characteristics
- Square diffuser face
- Plenum box for horizontal duct connection
- Square opening to accommodate the diffuser face
- Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Simple installation of the diffuser face due to central fixing screw with decorative cap
- Damper blade for volume flow rate balancing (optional)
- Pressure tap and cord-operated damper blade for volume flow rate balancing (optional)
- Lip seal (optional)

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)

Square diffuser face with plenum box for horizontal duct connection



Dimensions [mm] and weight [kg]

Nominal size	□Q_1	H_1	□Q_3	H_3	ØD	A	C	Plenum box	m
	mm								kg
300	298	8	290	250	158	139	50	AK-Uni-001	3.7
400	398	8	372	295	198	164	50	AK-Uni-002	5.7
500	498	8	476	295	198	164	50	AK-Uni-003	7.8
600	598	8	567	345	248	199	48	AK-Uni-004	10.9
625	623	8	567	345	248	199	48	AK-Uni-004	11.5

Weights apply to the supply air variant

1

TDV-SA-Q-*-V

– Q – * – V –

Order code detail

Variant

– Ceiling swirl diffuser with square diffuser face
– With plenum box for vertical duct connection

Nominal sizes

– 300, 400, 500, 600, 625

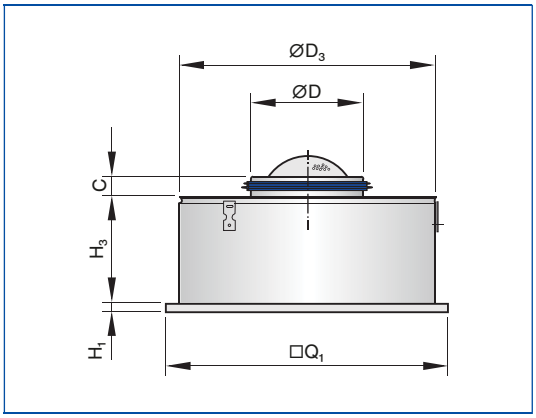
Parts and characteristics

– Square diffuser face
– Plenum box for vertical duct connection
– Circular opening to accommodate the diffuser face
– Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
– Simple installation of the diffuser face due to central fixing screw with decorative cap
– Damper blade for volume flow rate balancing (optional)
– Lip seal (optional)

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)

Square diffuser face with plenum box for vertical duct connection



Dimensions [mm] and weight [kg]

Nominal size	□Q_1	H_1	ØD_3	H_3	ØD	C	m
	mm						kg
300	298	8	275	200	158	50	2.7
400	398	8	364	200	198	50	4.2
500	498	8	462	200	198	50	6.0
600	598	8	559	200	248	48	8.2
625	623	8	559	200	248	48	8.4

Weights apply to the supply air variant

TDV-SA-Q-*-X

– Q – * – X –

Order code detail

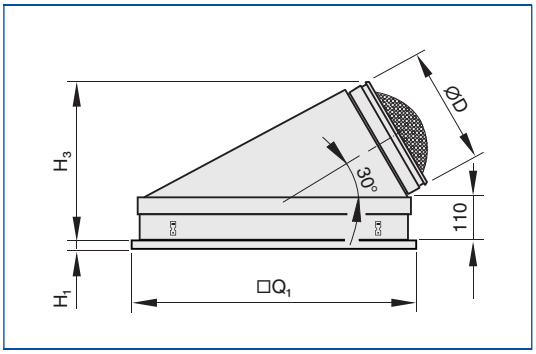
Variant
- Ceiling swirl diffuser with square diffuser face
- With flexible plenum box FLEXTRO

Nominal sizes
- 600, 625

Parts and characteristics
- Square diffuser face
- Flexible plenum box FLEXTRO
- Square opening to accommodate the diffuser face
- Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Damper blade for volume flow rate balancing, can be set in 15° intervals between 0 and 90°
- Spigot with double lip seal
- Simple installation of the diffuser face due to central fixing screw with decorative cap

Construction features
- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with double lip seal

Square diffuser face with flexible plenum box FLEXTRO



Dimensions [mm] and weight [kg]

Nominal size	□Q_1	H_1	H_3	ØD	Plenum box	m
	mm					kg
600	598	8	365	248	FLEXTRO-Q-*	6.8
625	623	8	365	248	FLEXTRO-Q-*	7.1

Weights apply to the supply air variant

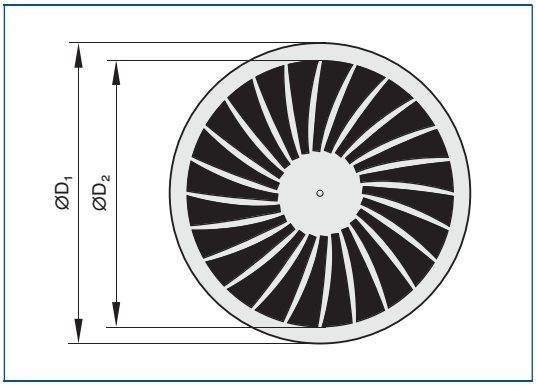
1

TDV-SA-R-Z/600

– R –

Order code detail

Diffuser face TDV-SA-R



Dimensions

Nominal size	$ØD_1$	$ØD_2$	A_{eff}
	mm		m^2
300	300	254	0.0120
400	400	336	0.0210
500	500	440	0.0310
600	600	530	0.0440
625	625	530	0.0440

TDV-SA-R-*-H

– R – * – H –

Order code detail

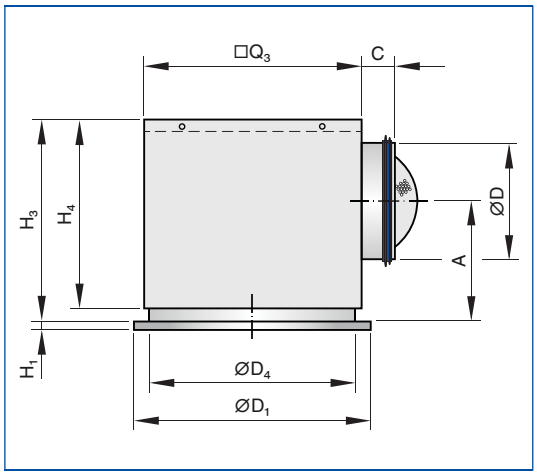
Variant
– Ceiling swirl diffuser with circular diffuser face
– With plenum box for horizontal duct connection

Nominal sizes
– 300, 400, 500, 600, 625

Parts and characteristics
– Circular diffuser face
– Plenum box for horizontal duct connection
– Circular opening to accommodate the diffuser face
– Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
– Simple installation of the diffuser face due to central fixing screw with decorative cap
– Damper blade for volume flow rate balancing (optional)
– Pressure tap and cord-operated damper blade for volume flow rate balancing (optional)
– Lip seal (optional)

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)

Circular diffuser face with plenum box for horizontal duct connection



Dimensions [mm] and weight [kg]

Nominal size	$ØD_1$	H_1	$□Q_3$	H_3	$ØD_4$	H_4	ØD	A	C	Plenum box	m
	mm										kg
300	300	8	290	285	278	250	158	174	50	AK-Uni-013	4.0
400	400	8	372	330	362	295	198	199	50	AK-Uni-014	6.1
500	500	8	476	330	460	295	198	199	50	AK-Uni-015	8.3
600	600	8	567	380	557	345	248	234	48	AK-Uni-016	11.2
625	625	8	567	380	557	345	248	234	48	AK-Uni-016	11.8

Weights apply to the supply air variant

1

TDV-SA-R-*-V

– R – * – V –

Order code detail

Variant

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

Nominal sizes

– 300, 400, 500, 600, 625

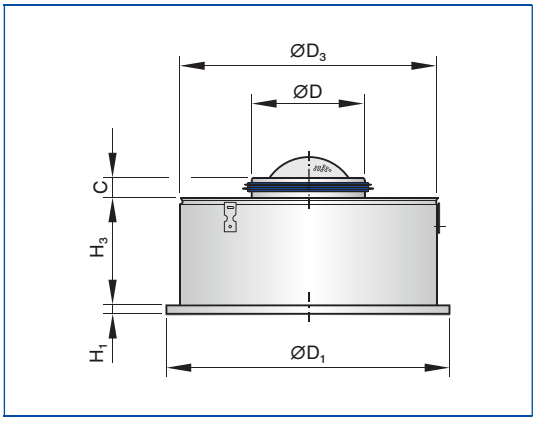
Parts and characteristics

– Circular diffuser face
– Plenum box for vertical duct connection
– Circular opening to accommodate the diffuser face
– Equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
– Simple installation of the diffuser face due to central fixing screw with decorative cap
– Damper blade for volume flow rate balancing (optional)
– Lip seal (optional)

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)

Circular diffuser face with plenum box for vertical duct connection



Dimensions [mm] and weight [kg]

Nominal size	ØD1	H1	ØD3	H3	ØD	C	m
	mm						kg
300	300	8	275	200	158	50	2.6
400	400	8	364	200	198	50	4.0
500	500	8	462	200	198	50	5.7
600	600	8	559	200	248	48	7.4
625	625	8	559	200	248	48	7.6

Weights apply to the supply air variant

TDV-SA-R-*-X

– R – * – X –

Order code detail

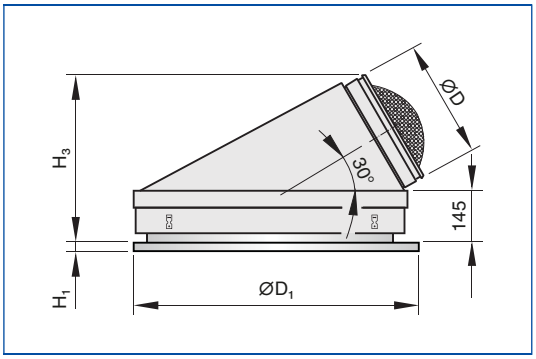
Variant
- Ceiling swirl diffuser with circular diffuser face
- With flexible plenum box FLEXTRO

Nominal sizes
- 600, 625

Parts and characteristics
- Circular diffuser face
- Flexible plenum box FLEXTRO
- Circular opening to accommodate he diffuser face
- Damper blade for volume flow rate balancing, can be set in 15° intervals between 0 and 90°
- Simple installation of the diffuser face due to central fixing screw with decorative cap
- Spigot with double lip seal

Construction features
- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with double lip seal

Circular diffuser face with flexible plenum box FLEXTRO/600



Dimensions [mm] and weight [kg]

Nominal size	$ØD_1$	H_1	H_3	ØD	Plenum box	m
	mm					kg
600	600	8	400	248	FLEXTRO-R-*/600	6.9
625	625	8	400	248	FLEXTRO-R-*/600	7.1

Weights apply to the supply air variant

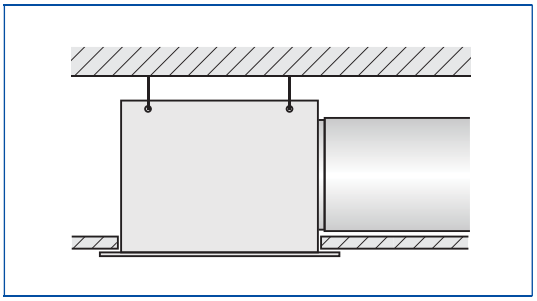
1

Installation types

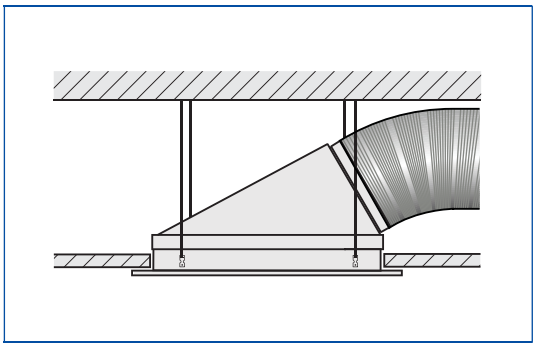
For more installation details see Chapter K1 – 1.6.

These are only schematic diagrams to illustrate installation details.

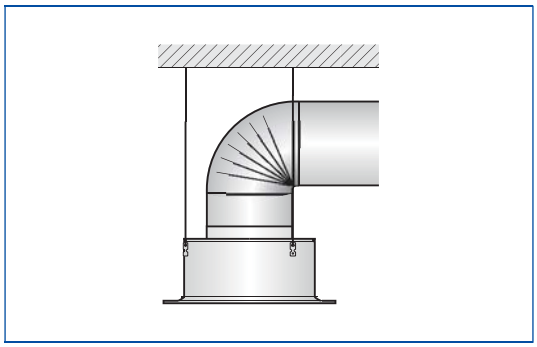
Flush ceiling installation with square plenum box



Flush ceiling installation with plenum box FLEXTRO

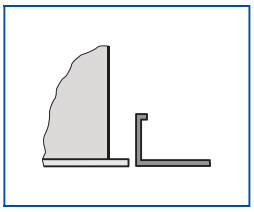


Freely suspended installation

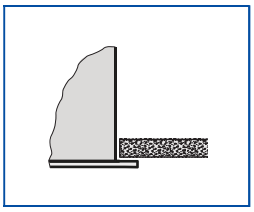


Ceiling systems

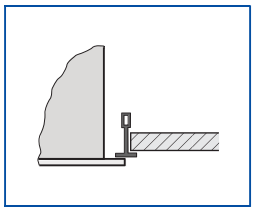
Grid ceiling



Continuous ceiling

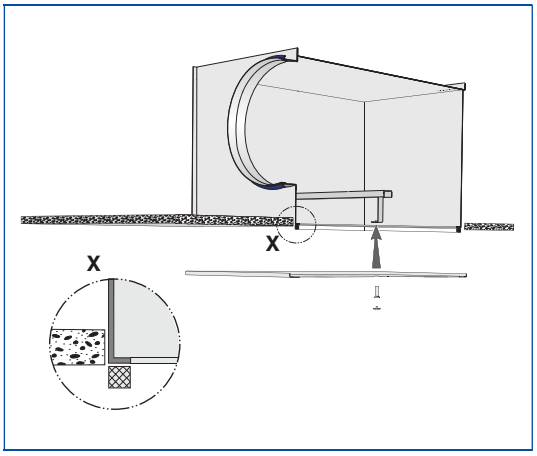


T-bar ceiling

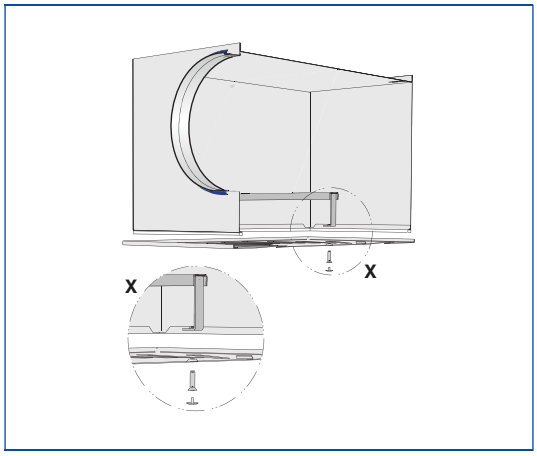


Diffuser face sealing and fixing

Diffuser face – sealing



Diffuser face – central screw fixing



Standard text

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

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.

Special characteristics

- Very low sound power level, ideal for comfort zones
- Individually manually adjustable air control blades
- For all types of ceiling systems, and with an extended border also suitable for freely suspended installation
- Black or white air control blades

Materials and surfaces

- Diffuser face made of galvanised sheet steel
- V, H: Plenum box and cross bar made of galvanised sheet steel
- X: Plenum box made of plastic and galvanised sheet steel
- Air control blades made of plastic, UL 94, V-0, flame retardant
- Lip seal made of rubber
- Exposed diffuser face powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour
- Air control blades for supply air similar to RAL 9005, black; extract air variant without air control blades
- Q11: Air control blades for extract air similar to RAL 9005, black
- Q21: Air control blades for supply air and extract air similar to RAL 9010, white

Technical data

- Nominal sizes: 300, 400, 500, 600, 625 mm
- Minimum volume flow rate, with $\Delta t_Z = -6$ K: 11 – 47 l/s or 40 – 169 m³/h
- Maximum volume flow rate, with $L_{WA} \cong 50$ dB(A): 95 – 315 l/s or 342 – 1134 m³/h
- Supply air to room air temperature difference: –12 to +10 K

Sizing data

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

Order options

1 Type
TDV-SA Swirl diffuser

2 Construction style
☐ **R** Circular
☐ **Q** Square

3 System
☐ **Z** Supply air
☐ **A** Extract air

4 Connection
☐ **H** Horizontal
☐ **V** Vertical
☐ **X** Flexible plenum box FLEXTRO (Only for nominal sizes 600 and 625)

5 Damper blade for volume flow rate balancing
Included with connection X

No entry: without damper blade
☐ **M** With damper blade
☐ **MN** With cords and pressure tap (only with horizontal connection)

6 Accessories
Connection X includes a double lip seal

No entry: without accessories
☐ **L** With lip seal

7 Nominal size [mm]
☐ **300**
☐ **400**
☐ **500**
☐ **600**
☐ **625**

8 Colour of air control blades
No entry: supply air – black air control blades, extract air – no air control blades
☐ **Q11** Extract air – black air control blades
☐ **Q21** Supply air – white air control blades
Extract air – white air control blades

9 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 %

Ceiling diffusers
Basic information and nomenclature

- Product selection
- Principal dimensions
- Nomenclature
- Sizing and sizing example
- Installation information
- Commissioning

1

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**

Product selection

	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**

1

Product selection

	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 [m^3/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**

Principal dimensions

ØD [mm]
Outside diameter of the spigot

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

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

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

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

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

$□Q_3$ [mm]
Dimensions of a square plenum box

H_1 [mm]
Distance (height) from the lower edge of the suspended ceiling to the lower edge of the diffuser face

H_2 [mm]
Height of a ceiling diffuser, from the lower edge of the suspended ceiling to the upper edge of the spigot

H_3 [mm]
Height of a ceiling diffuser with plenum box, from the lower edge of the suspended ceiling to the upper edge of the plenum box or of the spigot

A [mm]
Position of the spigot, defined by the distance of the spigot centre line to the lower edge of the suspended ceiling

C [mm]
Length of the spigot

m [kg]
Weight

Nomenclature

L_{WA} [dB(A)]
A-weighted sound power level of air-regenerated noise

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

Δt_z [K]
Supply air temperature difference

Δp_t [Pa]
Total differential pressure

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

All sound power levels are based on 1 pW.

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 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

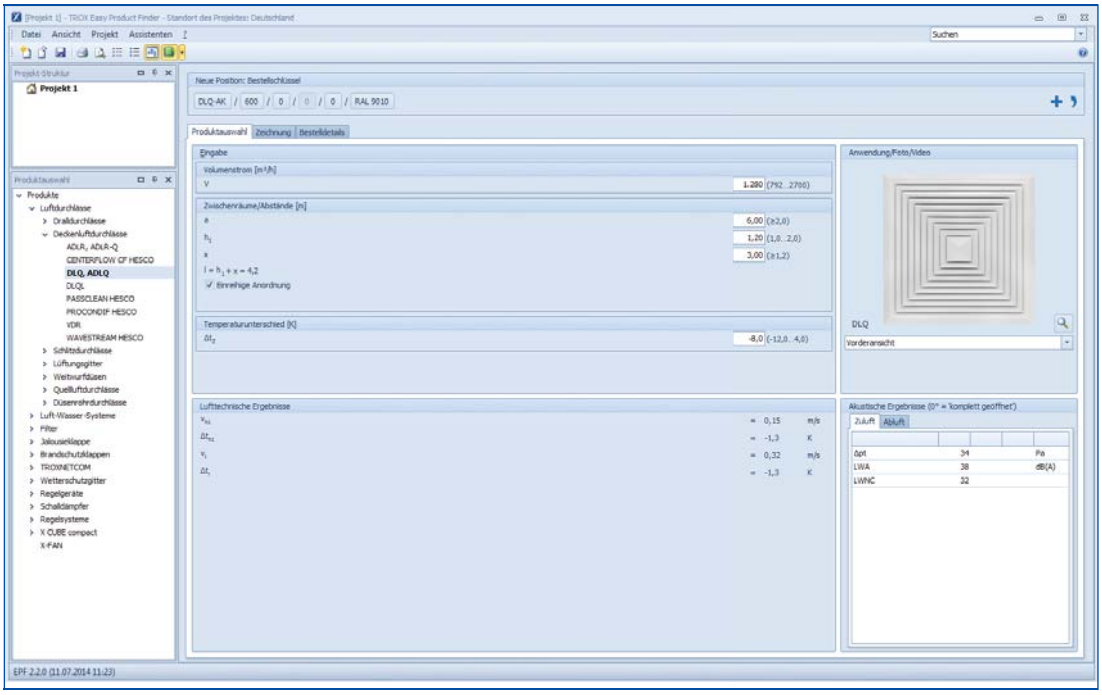
Quick sizing

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.



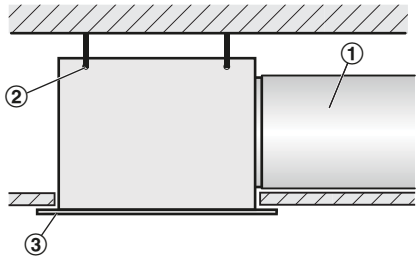
Description

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

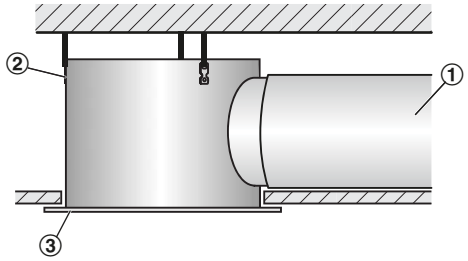
Flush ceiling installation with square plenum box



① Duct
② Suspension hole
③ Diffuser face

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

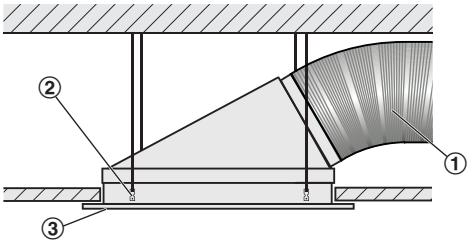
Flush ceiling installation with circular plenum box



① Duct
② Suspension lug
③ Diffuser face

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

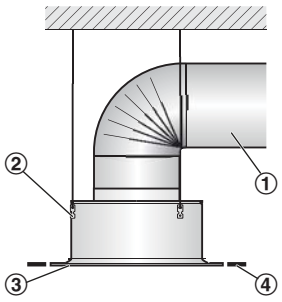
Flush ceiling installation with plenum box FLEXTRO



① Duct
② Suspension lug
③ Diffuser face

- Spigot at 30° angle
- Four suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Freely suspended installation



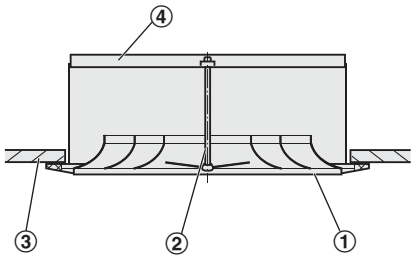
① Duct
② Suspension lug
③ Diffuser face
④ Extended border

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

1

Installation without plenum box

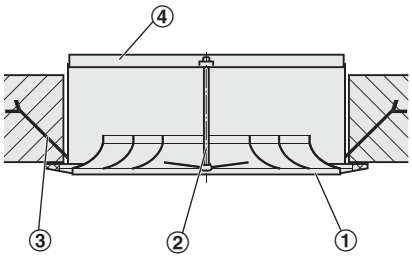
Flush ceiling installation with standard cross bar G1, screw-fixed to ceiling



① Diffuser face
② Central fixing screw
③ Ceiling tile
④ Standard cross bar

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

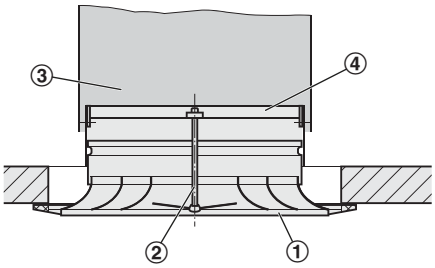
Flush ceiling installation with standard cross bar G1, with fixing tabs mortared in



① Diffuser face
② Central fixing screw
③ Fixing tab
④ Standard cross bar

– No spigot
– The standard cross bar has to be mortared into the ceiling by others

Flush ceiling installation with duct cross bar E1

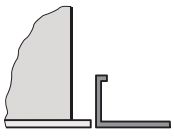


① Diffuser face
② Central fixing screw
③ Duct
④ Duct cross bar

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

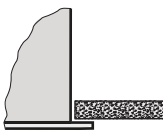
Ceiling systems

Installation into grid ceilings



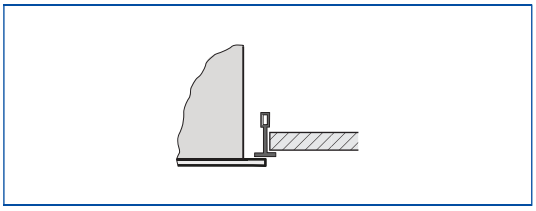
– Fix the plenum box to the ceiling
– The ceiling tile of the grid ceiling is independent of the ceiling diffuser
– Fix the diffuser face after the ceiling has been completed

Installation in continuous ceilings



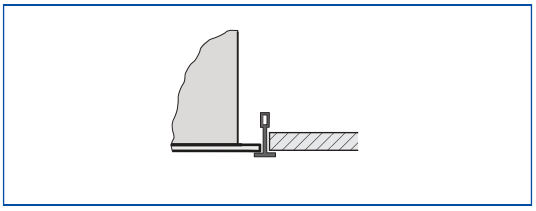
– Fix plenum box (including diffuser face, if necessary) to the ceiling
– Adjust plasterboard ceiling tile as required
– If necessary, fix the diffuser face after the ceiling has been completed

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

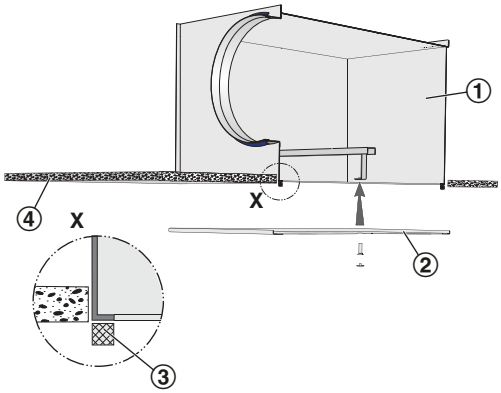
Installation in T-bar ceilings, diffuser face rests on T-bars



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

Diffuser face sealing and fixing

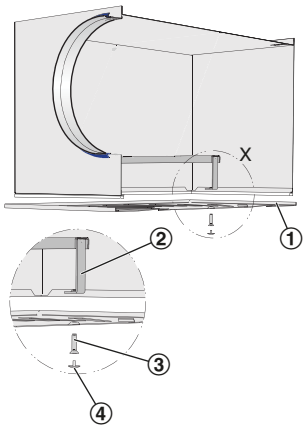
Diffuser face – sealing



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

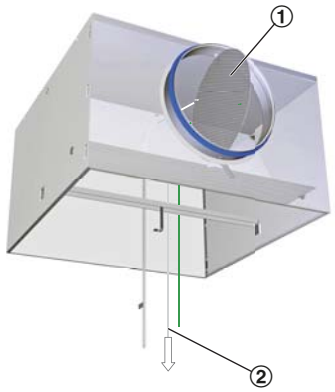
- Using the central fixing screw, fix the diffuser face to the cross bar of the plenum box
- Attach the decorative cap

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).

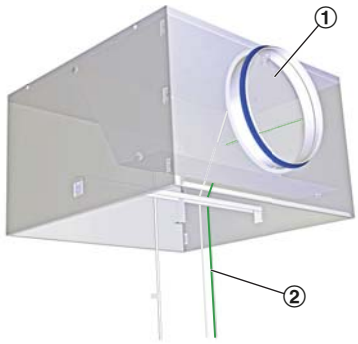
AK-Uni-...-MN Volume flow rate balancing



① Damper blade
② White cord for opening the damper blade

Open, 0°

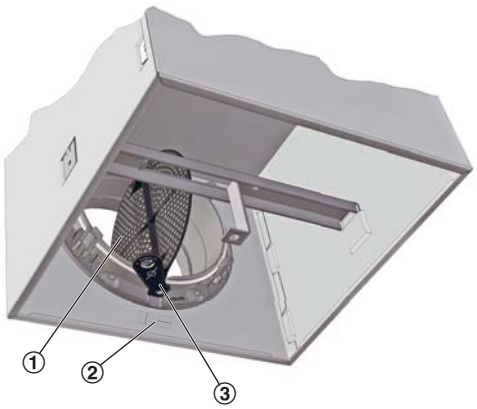
AK-Uni-...-MN Volume flow rate balancing



① Damper blade
② Green cord for closing the damper blade

Closed, 90°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



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

Open, 0°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing

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

Closed, 90°

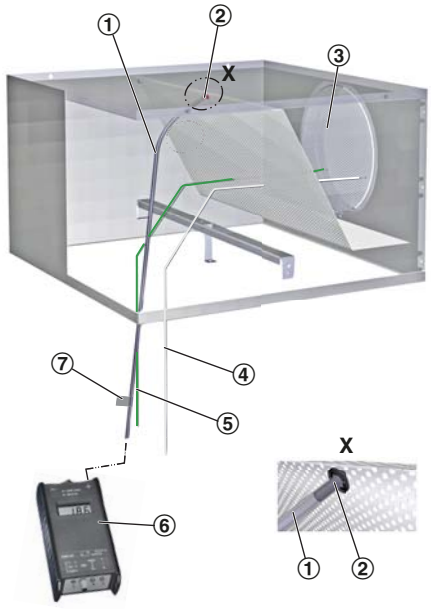
Volume flow rate measurement

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



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

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

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