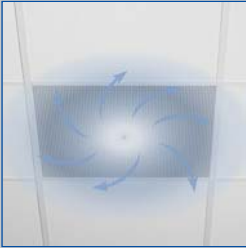
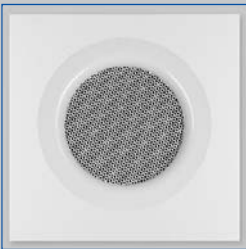


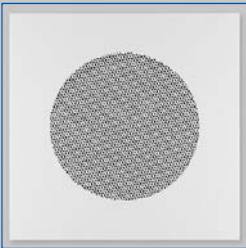
# Ceiling swirl diffusers with perforated face plate Type DCS



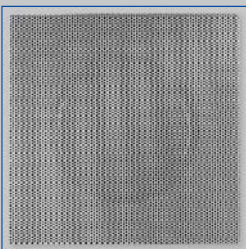
Horizontal swirling  
air discharge



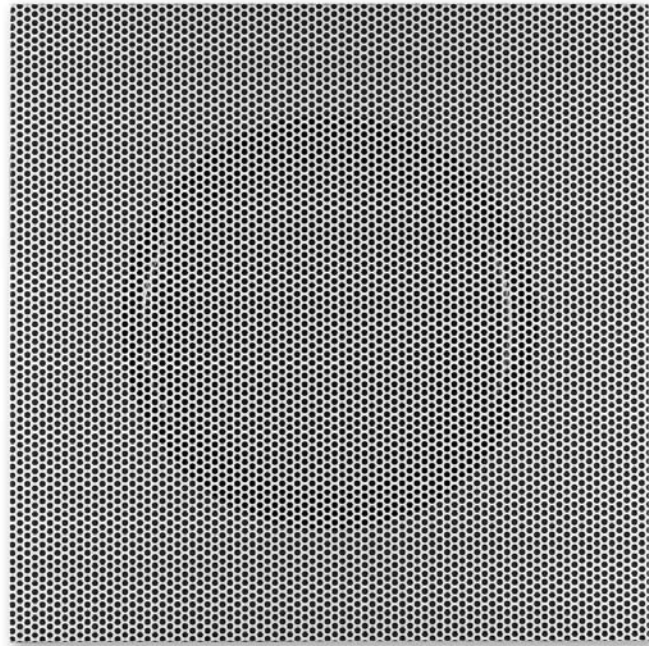
Diffuser face plate  
with perforated circular  
face style and exposed  
discharge nozzle



Diffuser face plate  
with perforated circular  
face style



Perforated diffuser face



## For horizontal swirling supply air discharge creating high induction levels, with fixed air control blades

Square ceiling swirl diffusers with perforated face plate,  
for comfort and industrial zones

- Nominal sizes 600, 625
- Volume flow rate range 4 – 260 l/s or 16 – 936 m<sup>3</sup>/h
- Perforated 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, particularly for T-bar ceilings
- Swirl unit inside, 6 sizes, for the best swirl effect and high induction levels
- Ideal for comfort zones

Optional equipment and accessories

- Exposed diffuser face available in RAL CLASSIC colours
- Horizontal or vertical duct connection
- Plenum box with lining

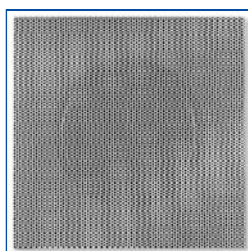
1

Type		Page
DCS	General information	1.3 – 2
	Order code	1.3 – 5
	Quick sizing	1.3 – 6
	Dimensions and weight – DCS-P	1.3 – 9
	Dimensions and weight – DCS-N	1.3 – 12
	Dimensions and weight – DCS-C	1.3 – 15
	Installation details	1.3 – 18
	Specification text	1.3 – 19
	Basic information and nomenclature	1.6 – 1

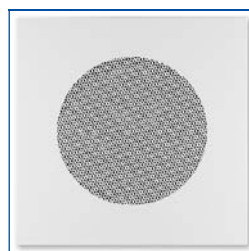
### Variants

Product examples

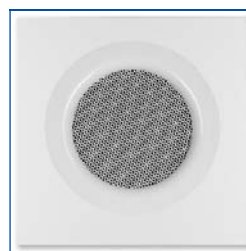
**DCS-P**



**DCS-N**



**DCS-C**



**DCS-P-...-K**



**DCS-N-...-US**

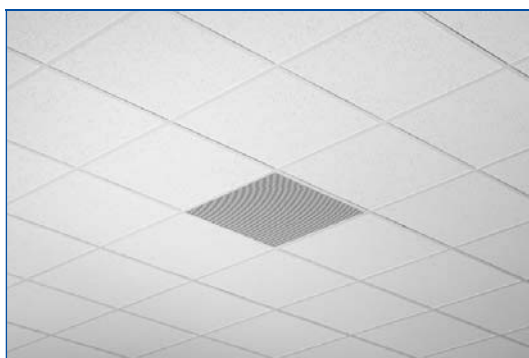


**DCS-C-...-A**



### Installation example

#### Installation in T-bar ceilings



### Description

### Application

- Type DCS ceiling swirl diffusers are preferably used as supply air diffusers for comfort and industrial zones
- Perfect integration with suspended perforated sheet metal ceilings
- Horizontal swirling supply air discharge for mixed flow ventilation
- The efficient swirl creates high induction levels, thereby rapidly reducing temperature differences and airflow velocities (supply air variant)
- For variable and constant volume flows
- For supply air to room air temperature differences from -12 to +10 K
- For room heights up to 4 m (lower edge of suspended ceiling)
- For T-bar ceilings

### Variants

- DCS-P: Perforated diffuser face
- DCS-N: Unperforated diffuser face
- DCS-C: Diffuser face with exposed discharge nozzle

### Installation type

- V: Exposed T-bars
- H: Concealed T-bars

### Connection

- K: Vertical duct connection, with duct collar
- US: Vertical duct connection, with transition piece
- A: Horizontal duct connection, with plenum box
- AK: Horizontal duct connection, with plenum box and lining

### Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

### Special characteristics

- Horizontal air discharge creating high induction levels
- Design variants with perforated square or circular diffuser face style
- For T-bar ceilings
- Horizontal or vertical duct connection

### Parts and characteristics

- Square diffuser face
- V: For T-bar ceilings with exposed T-bars
- H: For T-bar ceilings with concealed T-bars
- Swirl unit with radially arranged fixed air control blades

### Construction features

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

### Materials and surfaces

- Diffuser face, discharge nozzle, swirl unit, duct collar and plenum box made of galvanised sheet steel
- Transition piece made of aluminium
- Plenum box lining is mineral wool
- Swirl unit and discharge nozzle electrocoated RAL 9005, jet black
- Diffuser face and discharge nozzle powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

### Mineral wool

- To EN 13501, fire rating class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EG
- Faced with glass fibre fabric as protection against erosion through airflow velocities of up to 20 m/s
- Inert to fungal and bacterial growth

### Installation and commissioning

- Preferably for rooms with a clear height up to 4.0 m
- Flush ceiling installation
- Horizontal or vertical duct connection

### Standards and guidelines

- Sound power level of the air-regenerated noise measured according to EN ISO 5135

### Maintenance

- Maintenance-free as construction and materials are not subject to wear
- Inspection and cleaning to VDI 6022

### Technical data

Nominal sizes – diffuser face	593, 598, 618, 623 mm
Nominal sizes – swirl unit	125, 160, 200, 250, 315, 400 mm
Minimum volume flow rate, with $\Delta t_z = -6$ K	4 – 36 l/s or 16 – 128 m <sup>3</sup> /h
Maximum volume flow rate, with $L_{WA} \cong 50$ dB(A)	37 – 260 l/s or 132 – 936 m <sup>3</sup> /h
Supply air to room air temperature difference	-12 to +10 K

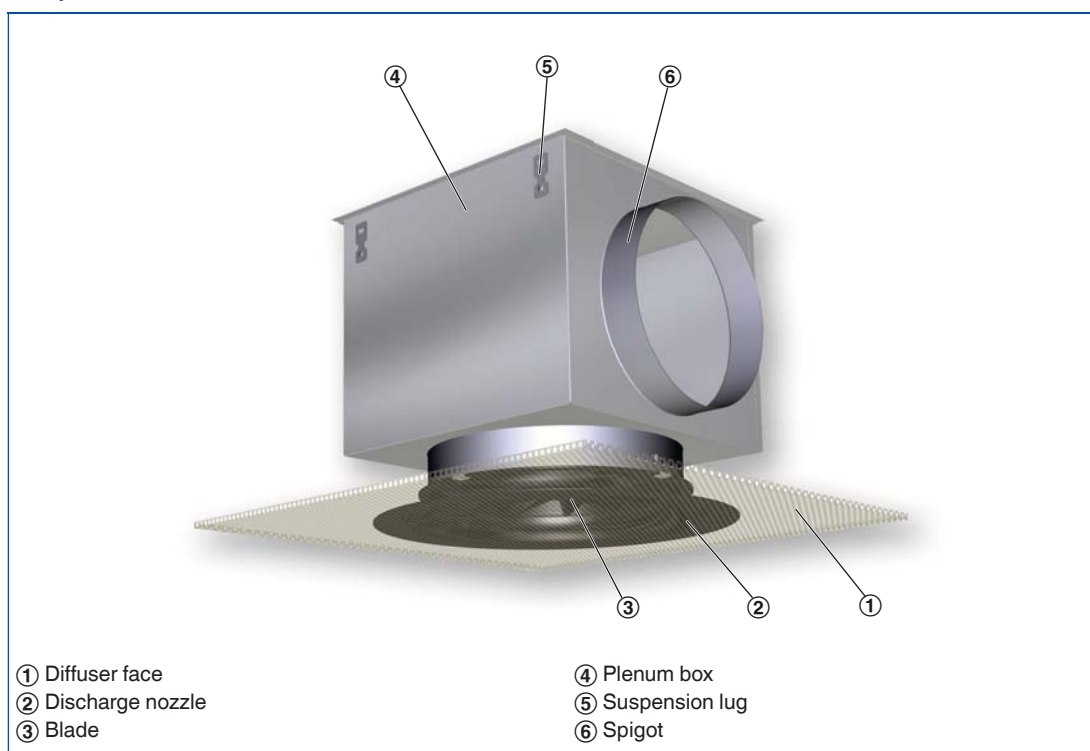
## Function

### Functional description

Ceiling swirl diffusers in air conditioning systems create a swirl to supply air to rooms. The resulting airflow induces high levels of room air, thereby rapidly reducing the airflow velocity and the temperature difference between supply air and room air. Ceiling swirl diffusers allow for large volume flow rates. The result is a mixed flow ventilation in comfort zones, with good overall room ventilation, creating only very little turbulence in the occupied zone.

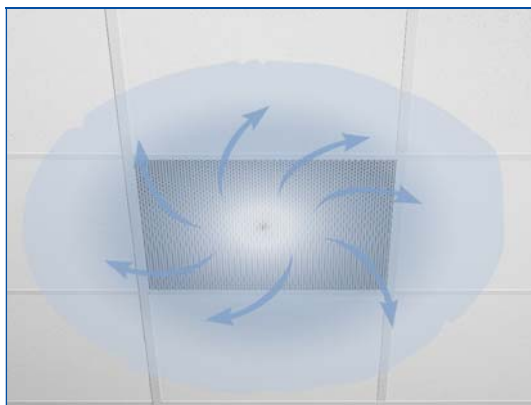
Type DCS ceiling swirl diffusers have fixed blades. The swirl unit required for the swirling air discharge is situated inside the plenum box, concealed by a perforated plate, and hence not visible from the room. Air discharge is horizontal omni directional. The supply air to room air temperature difference may range from  $-12$  to  $+10$  K. To give rooms an aesthetic, uniform look, Type DCS diffusers may also be used for extract air.

### Schematic illustration of the DCS, with perforated diffuser face and plenum box for horizontal duct connection



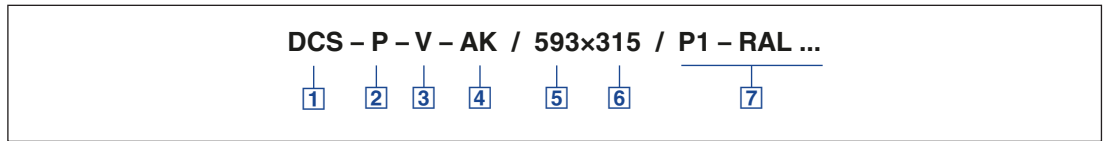
## Air patterns

### Horizontal omni directional air discharge



Order code

DCS



**1 Type**

**DCS** Swirl diffuser

**2 Construction style**

- P** Diffuser face, perforated
- N** Diffuser face, unperforated
- C** Diffuser face with discharge nozzle

**3 Installation type**

- V** T-bars exposed  
(diffuser face rests on T-bars)
- H** T-bars concealed  
(diffuser face conceals T-bars)

**4 Connection**

- K** Vertical, with duct collar
- US** Vertical, with transition piece
- A** Horizontal, with plenum box
- AK** Horizontal, with plenum box and lining

**5 Size of diffuser face plate**

- Installation type V
- 593**
- 618**
- Installation type H
- 598**
- 623**

**6 Nominal size [mm]**

- 125**
- 160**
- 200**
- 250**
- 315**
- 400**

**7 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

**DCS-P-V-AK/593x315/P1-RAL 9016**

<b>Construction style</b>	Perforated diffuser face
<b>Installation type</b>	Exposed T-bars
<b>Connection</b>	Plenum box with lining, horizontal connection
<b>Size of diffuser face plate</b>	593 mm
<b>Nominal size</b>	315 mm
<b>Exposed surface</b>	RAL 9016, traffic white, gloss level 70 %

1

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  $-6\text{ K}$ .

The maximum volume flow rates apply to a sound power level of approx.  $50\text{ dB (A)}$ .

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

### DCS-P-K, DCS-N-K

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

Nominal size	$\dot{V}$		$\Delta p_t$ Pa	$L_{WA}$ dB(A)
	l/s	m <sup>3</sup> /h		
125	4	16	1	<15
	20	72	17	28
	30	108	38	40
	40	146	69	50
160	6	23	1	<15
	30	108	16	26
	50	180	43	39
	70	252	85	50
200	9	32	1	<15
	35	126	8	21
	65	234	28	37
	98	354	65	50
250	14	50	1	<15
	55	198	10	26
	95	342	29	39
	135	486	59	50
315	25	90	1	<15
	85	306	9	27
	145	522	27	40
	200	720	52	50
400	36	128	1	<15
	110	396	9	26
	185	666	27	39
	260	936	53	50

### DCS-C-K

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

Nominal size	$\dot{V}$		$\Delta p_t$ Pa	$L_{WA}$ dB(A)
	l/s	m <sup>3</sup> /h		
125	4	16	1	<15
	15	54	16	21
	30	108	64	43
	40	128	89	50
160	6	23	1	<15
	20	72	9	21
	40	144	37	39
	60	216	83	51
200	9	32	1	<15
	35	126	12	24
	65	234	42	40
	85	306	71	50
250	14	50	1	2
	50	180	10	26
	85	306	29	39
	115	414	53	50
315	25	90	1	3
	70	252	10	24
	120	432	28	38
	170	612	56	50
400	36	128	1	14
	100	360	9	30
	165	594	25	40
	225	810	46	50



DCS-P-US, DCS-N-US

Quick sizing – sound power level  
and total differential pressure

Nominal size	$\dot{V}$		$\Delta p_t$ Pa	$L_{WA}$ dB(A)
	l/s	m <sup>3</sup> /h		
125	4	16	1	<15
	20	72	19	30
	30	108	43	43
	37	132	64	50
160	6	23	1	<15
	30	108	15	29
	50	180	42	43
	63	225	66	50
200	9	32	1	<15
	35	126	17	22
	65	234	57	38
	93	334	116	50
250	14	50	1	<15
	50	180	16	22
	85	306	47	36
	128	460	106	50
315	25	90	2	<15
	85	306	21	28
	145	522	60	42
	180	648	92	50
400	36	128	2	<15
	110	396	16	26
	180	648	42	39
	250	900	81	50

DCS-C-US

Quick sizing – sound power level  
and total differential pressure

Nominal size	$\dot{V}$		$\Delta p_t$ Pa	$L_{WA}$ dB(A)
	l/s	m <sup>3</sup> /h		
125	4	16	2	<15
	15	54	19	27
	20	72	33	36
	30	108	74	50
160	6	23	1	<15
	20	72	10	20
	40	144	39	40
	55	198	74	51
200	9	32	1	<15
	35	126	22	25
	60	216	64	40
	80	288	114	50
250	14	50	1	<15
	45	162	14	23
	75	270	40	37
	105	378	79	50
315	25	90	2	5
	70	252	17	27
	115	414	45	40
	160	576	86	50
400	36	128	2	5
	100	360	14	27
	160	576	36	39
	220	792	69	50

DCS-P-A, DCS-P-AK,  
DCS-N-A, DCS-N-AK

Quick sizing – sound power level  
and total differential pressure

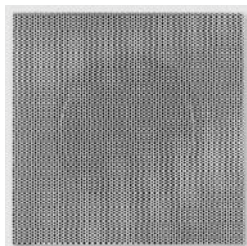
Nominal size	$\dot{V}$		$\Delta p_t$ Pa	$L_{WA}$ dB(A)
	l/s	m <sup>3</sup> /h		
125	4	16	1	<15
	15	54	13	21
	25	90	36	35
	39	140	88	51
160	6	23	1	<15
	25	90	12	20
	45	162	40	36
	65	234	84	50
200	9	32	1	<15
	35	126	11	22
	65	234	39	39
	90	324	76	50
250	14	50	1	<15
	50	180	10	23
	90	324	34	38
	128	462	68	50
315	25	90	1	<15
	80	288	12	25
	130	468	31	38
	185	666	62	50
400	36	128	1	<15
	110	396	11	25
	180	648	29	39
	250	900	57	50

DCS-C-A, DCS-C-AK

Quick sizing – sound power level  
and total differential pressure

Nominal size	$\dot{V}$		$\Delta p_t$ Pa	$L_{WA}$ dB(A)
	l/s	m <sup>3</sup> /h		
125	4	16	2	<15
	15	54	19	24
	25	90	53	39
	35	126	105	51
160	6	23	1	2
	20	72	10	15
	35	126	32	32
	55	200	80	50
200	9	32	1	<15
	35	126	15	24
	65	234	53	43
	80	288	80	50
250	14	50	1	<15
	45	162	10	21
	50	180	12	24
	110	396	58	50
315	25	90	1	0
	70	252	11	24
	115	414	31	38
	160	576	60	50
400	36	128	1	3
	95	342	9	24
	155	558	25	37
	225	810	52	50



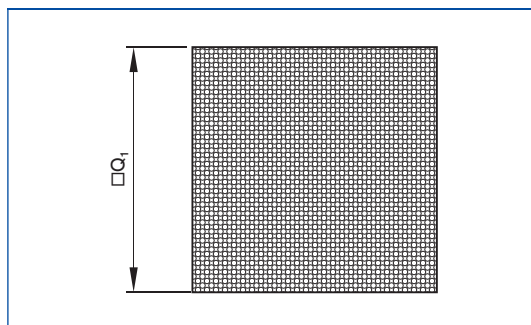


DCS-P



Order code detail

### Diffuser face DCS-P

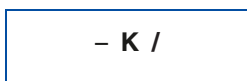


### Dimensions

Nominal size	$A_{eff}$
	$m^2$
... x 125	0.0034
... x 160	0.0060
... x 200	0.0092
... x 250	0.0150
... x 315	0.0265
... x 400	0.0355

□Q₁: 593, 598, 618, 623

### DCS-P\*-K



Order code detail

### Variant

- Ceiling swirl diffuser with perforated square diffuser face
- Perforated diffuser face

### Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

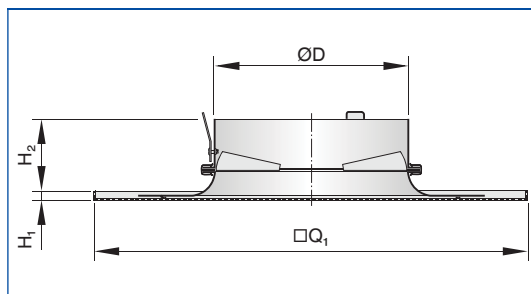
### Parts and characteristics

- Perforated square diffuser face
- Circular duct collar for connection to a vertical duct

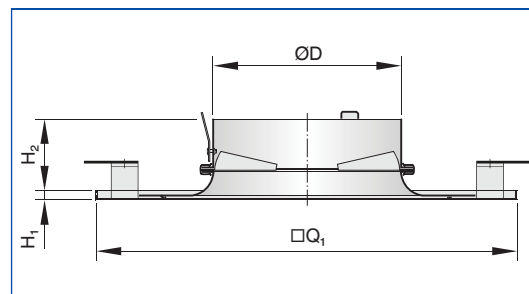
### Construction features

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

### DCS-P-V-K



### DCS-P-H-K



### Dimensions [mm] and weight [kg]

Nominal size	H-*/598 x ...	H-*/623 x ...	V-*/593 x ...	V-*/618 x ...	H₁	H₂	ØD	m	
	□Q₁								kg
	mm								
... x 125	598	623	593	618	8	69	123	1.9	
... x 160	598	623	593	618	8	69	158	2.2	
... x 200	598	623	593	618	8	69	198	2.3	
... x 250	598	623	593	618	8	69	248	2.5	
... x 315	598	623	593	618	8	79	313	3.1	
... x 400	598	623	593	618	8	79	398	3.8	

## DCS-P\*-US

– US /

Order code detail

### Variant

- Ceiling swirl diffuser with perforated square diffuser face
- Perforated diffuser face

### Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

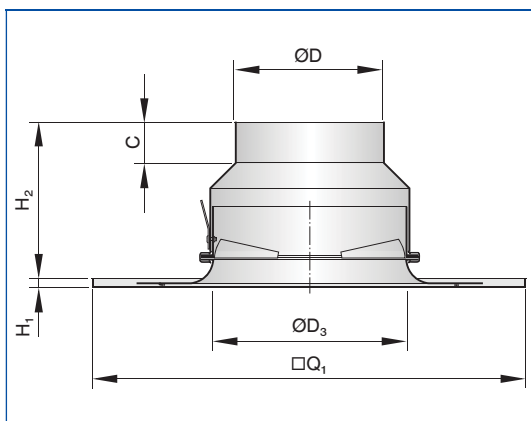
### Parts and characteristics

- Perforated square diffuser face
- Transition piece for connection to a vertical duct

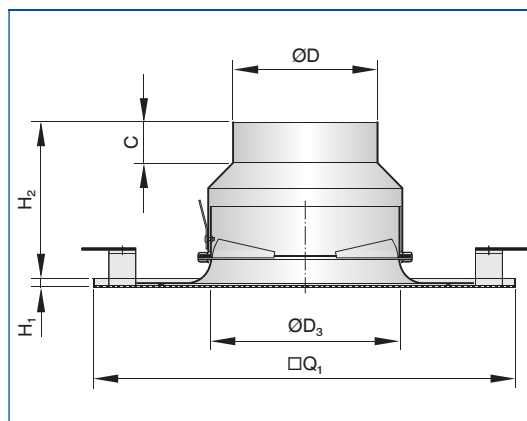
### Construction features

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

## DCS-P-V-US



## DCS-P-H-US



### Dimensions [mm] and weight [kg]

Nominal size	H-*/598 x ...	H-*/623 x ...	V-*/593 x ...	V-*/618 x ...	H <sub>1</sub>	H <sub>2</sub>	ØD <sub>3</sub>	ØD	C	m
	□Q <sub>1</sub>									
	mm									
... x 125	598	623	593	618	8	146	123	98	40	2.0
... x 160	598	623	593	618	8	151	158	123	40	2.3
... x 200	598	623	593	618	8	154	198	158	40	2.5
... x 250	598	623	593	618	8	159	248	198	40	2.8
... x 315	598	623	593	618	8	176	313	248	40	3.5
... x 400	598	623	593	618	8	186	398	313	40	4.3

### DCS-P\*-A

- A /  
- AK /

Order code detail

### Variant

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

### Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

### Parts and characteristics

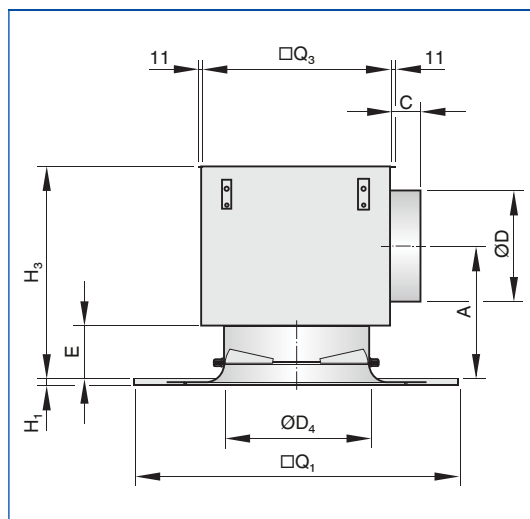
- Perforated square diffuser face
- Plenum box for horizontal duct connection
- Plenum box with lining, optional

### Construction features

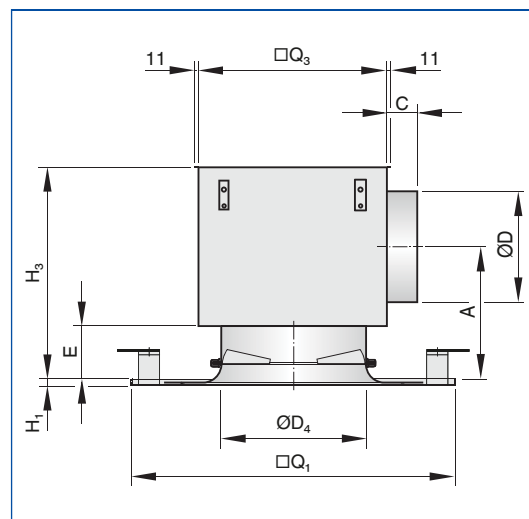
- Spigot suitable for circular ducts to EN 1506 or EN 13180

1

### DCS-P-V-A



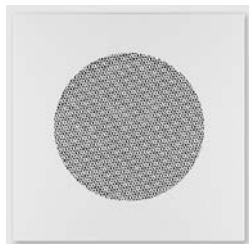
### DCS-P-H-A



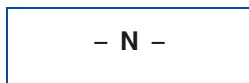
### Dimensions [mm] and weight [kg]

Nominal size	H-*/598 x ...	H-*/623 x ...	V-*/593 x ...	V-*/618 x ...	H <sub>1</sub>	H <sub>3</sub>	□Q <sub>3</sub>	ØD <sub>4</sub>	E	ØD	A	C	m
	□Q <sub>1</sub>												
	mm												
... x 125	598	623	593	618	8	225	180	123	69	98	136	49	3.4
... x 160	598	623	593	618	8	249	215	158	69	123	149	49	4.2
... x 200	598	623	593	618	8	284	255	198	69	158	167	49	5.0
... x 250	598	623	593	618	8	324	305	248	69	198	187	49	6.4
... x 315	598	623	593	618	8	384	370	313	79	248	222	49	8.5
... x 400	598	623	593	618	8	440	454	398	79	313	257	49	11.8

1

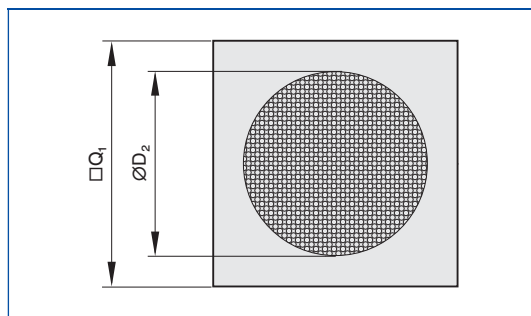


DCS-N



Order code detail

## Diffuser face DCS-N

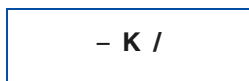


## Dimensions

Nominal size	$\varnothing D_2$	$A_{eff}$
	mm	m <sup>2</sup>
... x 125	175	0.0034
... x 160	210	0.0060
... x 200	250	0.0092
... x 250	300	0.0150
... x 315	385	0.0265
... x 400	470	0.0355

$\square Q_1$ : 593, 598, 618, 623

## DCS-N\*-K



Order code detail

### Variant

- Ceiling swirl diffuser with square diffuser face
- Diffuser face plate with perforated circular face style

### Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

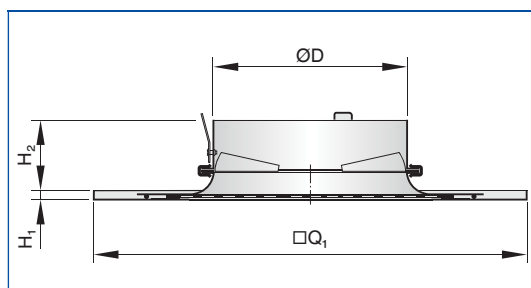
### Parts and characteristics

- Square diffuser face
- Circular duct collar for connection to a vertical duct

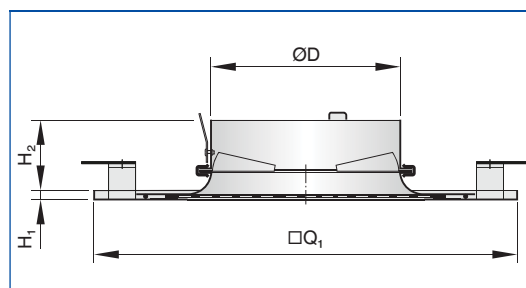
### Construction features

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

## DCS-N-V-K



## DCS-N-H-K



## Dimensions [mm] and weight [kg]

Nominal size	H-*/598 x ...	H-*/623 x ...	V-*/593 x ...	V-*/618 x ...	$H_1$	$H_2$	$\varnothing D$	m
	$\square Q_1$							
	mm							
... x 125	598	623	593	618	8	69	123	3.5
... x 160	598	623	593	618	8	69	158	3.7
... x 200	598	623	593	618	8	69	198	3.8
... x 250	598	623	593	618	8	69	248	3.9
... x 315	598	623	593	618	8	79	313	4.4
... x 400	598	623	593	618	8	79	398	4.9

## DCS-N\*-US

– US /

Order code detail

### Variant

- Ceiling swirl diffuser with square diffuser face
- DCS-N: Unperforated diffuser face

### Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

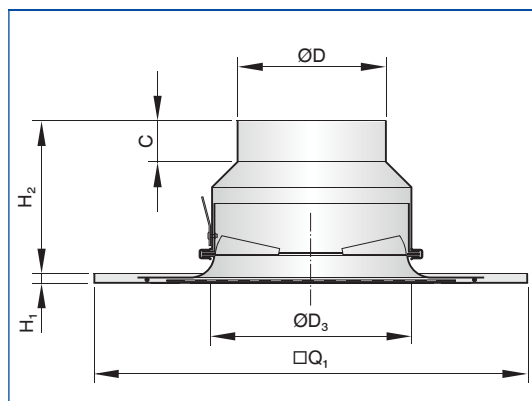
### Parts and characteristics

- Square diffuser face
- Transition piece for connection to a vertical duct

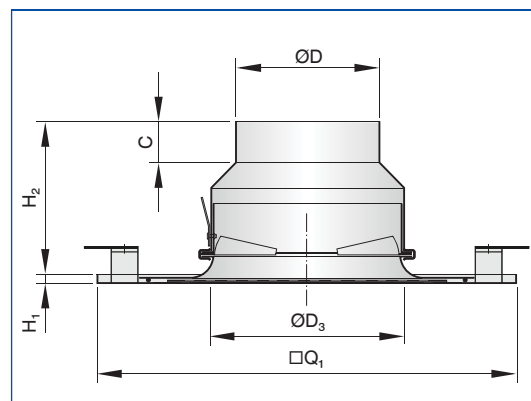
### Construction features

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

## DCS-N-V-US



## DCS-N-H-US



### Dimensions [mm] and weight [kg]

Nominal size	H-*/598 x ...	H-*/623 x ...	V-*/593 x ...	V-*/618 x ...	H <sub>1</sub>	H <sub>2</sub>	ØD <sub>3</sub>	ØD	C	m
	□Q <sub>1</sub>									
	mm									
... x 125	598	623	593	618	8	146	123	98	40	3.6
... x 160	598	623	593	618	8	151	158	123	40	3.9
... x 200	598	623	593	618	8	154	198	158	40	4.0
... x 250	598	623	593	618	8	159	248	198	40	4.2
... x 315	598	623	593	618	8	176	313	248	40	4.8
... x 400	598	623	593	618	8	186	398	313	40	5.4

### DCS-N\*-A

- A /
- AK /

Order code detail

### Variant

- Ceiling swirl diffuser with square diffuser face
- DCS-N: Unperforated diffuser face
- With plenum box for horizontal duct connection

### Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

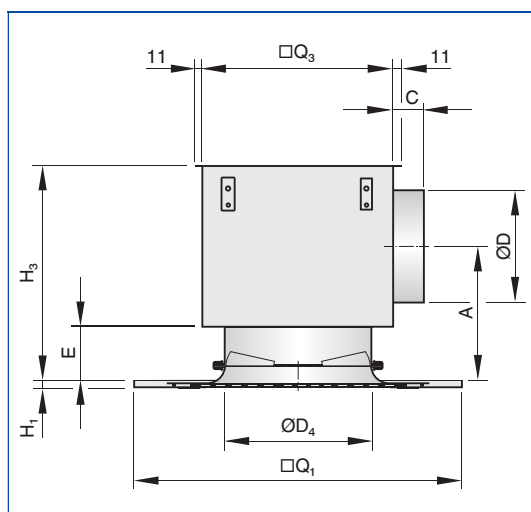
### Parts and characteristics

- Square diffuser face
- Plenum box for horizontal duct connection
- Plenum box with lining, optional

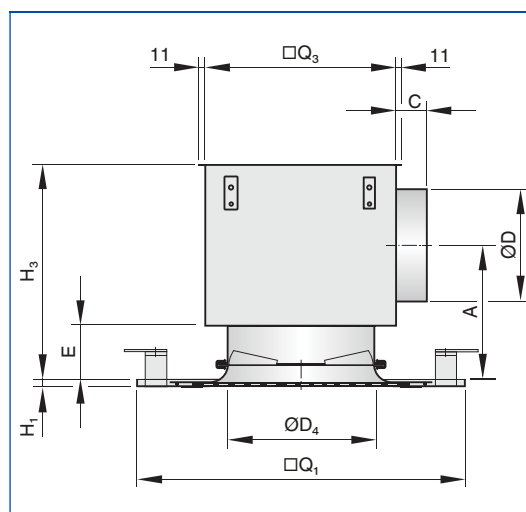
### Construction features

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

### DCS-N-V-A



### DCS-N-H-A

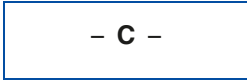


### Dimensions [mm] and weight [kg]

Nominal size	H-*/598 x ...	H-*/623 x ...	V-*/593 x ...	V-*/618 x ...	H <sub>1</sub>	H <sub>3</sub>	□Q <sub>3</sub>	ØD <sub>4</sub>	E	ØD	A	C	m		
	□Q <sub>1</sub>				mm									kg	
... x 125	598	623	593	618	8	225	180	123	69	98	136	49	4.9		
... x 160	598	623	593	618	8	249	215	158	69	123	149	49	5.7		
... x 200	598	623	593	618	8	284	255	198	69	158	167	49	6.4		
... x 250	598	623	593	618	8	324	305	248	69	198	187	49	7.7		
... x 315	598	623	593	618	8	384	370	313	79	248	222	49	9.8		
... x 400	598	623	593	618	8	440	454	398	79	313	257	49	12.9		

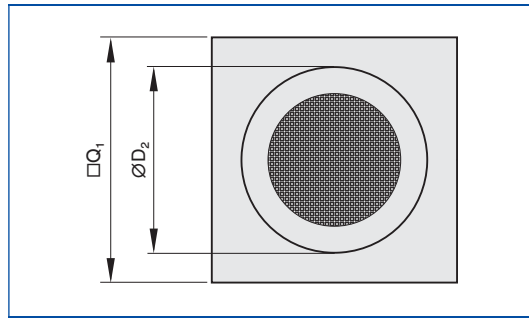


DCS-C



Order code detail

**Diffuser face DCS-C**

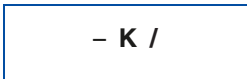


**Dimensions**

Nominal size	$\varnothing D_2$	$A_{\text{eff}}$
	mm	m <sup>2</sup>
... x 125	200	0.0034
... x 160	250	0.0060
... x 200	300	0.0092
... x 250	350	0.0150
... x 315	450	0.0265
... x 400	580	0.0355

$\square Q_1$ : 593, 598, 618, 623

**DCS-C\*-K**



Order code detail

**Variant**

- Ceiling swirl diffuser with square diffuser face
- Unperforated diffuser face with visible discharge nozzle

**Nominal sizes**

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

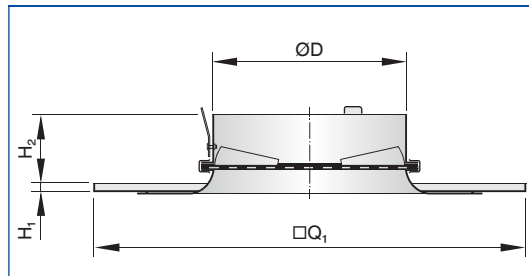
**Parts and characteristics**

- Square diffuser face
- Circular duct collar for connection to a vertical duct

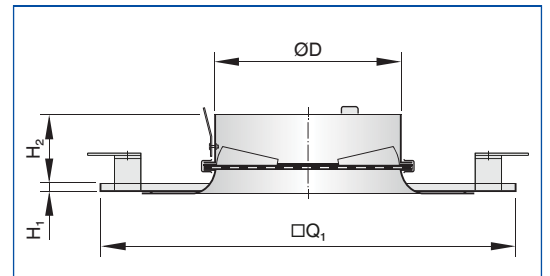
**Construction features**

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

**DCS-C-V-K**



**DCS-C-H-K**



**Dimensions [mm] and weight [kg]**

Nominal size	H-*/598 x ...	H-*/623 x ...	V-*/593 x ...	V-*/618 x ...	$H_1$	$H_2$	$\varnothing D$	m
	$\square Q_1$							
	mm							
... x 125	598	623	593	618	8	69	123	3.4
... x 160	598	623	593	618	8	69	158	3.6
... x 200	598	623	593	618	8	69	198	3.6
... x 250	598	623	593	618	8	69	248	3.8
... x 315	598	623	593	618	8	79	313	4.3
... x 400	598	623	593	618	8	79	398	4.7



### DCS-C\*-US

– US /

Order code detail

### Variant

- Ceiling swirl diffuser with square diffuser face
- Unperforated diffuser face with visible discharge nozzle

### Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

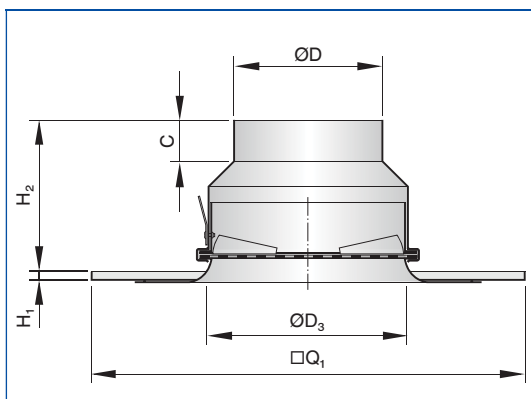
### Parts and characteristics

- Square diffuser face
- Transition piece for connection to a vertical duct

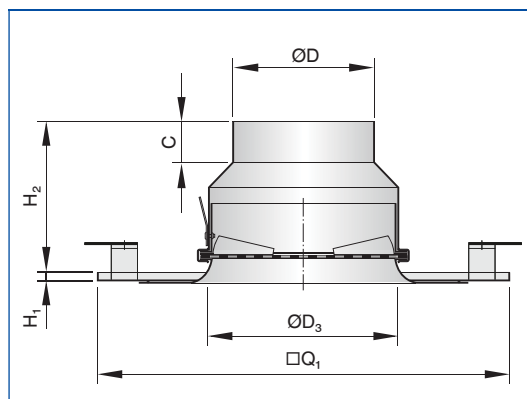
### Construction features

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

### DCS-C-V-US



### DCS-C-H-US



### Dimensions [mm] and weight [kg]

Nominal size	H-*/598 x ...	H-*/623 x ...	V-*/593 x ...	V-*/618 x ...	H <sub>1</sub>	H <sub>2</sub>	ØD <sub>3</sub>	ØD	C	m
	□Q <sub>1</sub>									
	mm									
... x 125	598	623	593	618	8	146	123	98	40	3.5
... x 160	598	623	593	618	8	151	158	123	40	3.8
... x 200	598	623	593	618	8	154	198	158	40	3.9
... x 250	598	623	593	618	8	159	248	198	40	4.1
... x 315	598	623	593	618	8	176	313	248	40	4.6
... x 400	598	623	593	618	8	186	398	313	40	5.2

### DCS-C-\*A

- A /
- AK /

Order code detail

### Variant

- Ceiling swirl diffuser with square diffuser face
- Unperforated diffuser face with visible discharge nozzle
- With plenum box for horizontal duct connection

### Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Swirl diffuser: 125, 160, 200, 250, 315, 400

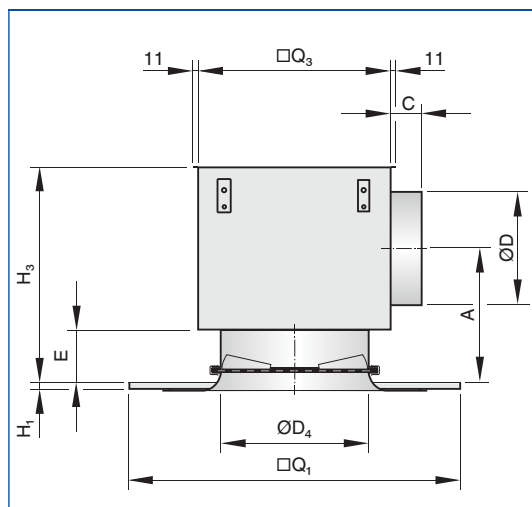
### Parts and characteristics

- Square diffuser face
- Plenum box for horizontal duct connection
- Plenum box with lining, optional

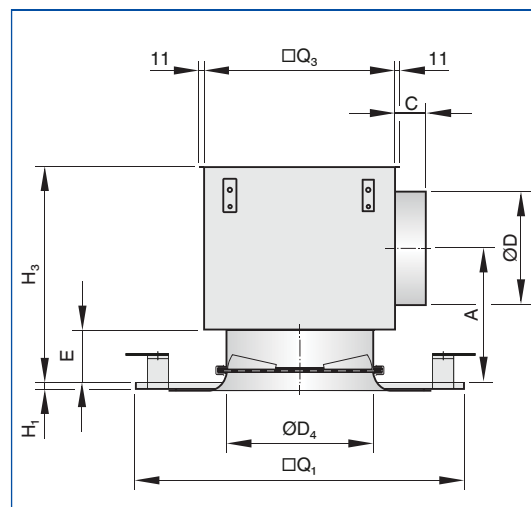
### Construction features

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

### DCS-C-V-A



### DCS-C-H-A



### Dimensions [mm] and weight [kg]

Nominal size	H-*/598 x ...	H-*/623 x ...	V-*/593 x ...	V-*/618 x ...	H <sub>1</sub>	H <sub>3</sub>	□Q <sub>3</sub>	ØD <sub>4</sub>	E	ØD	A	C	m		
	□Q <sub>1</sub>				mm									kg	
... x 125	598	623	593	618	8	225	180	123	69	98	136	49	4.8		
... x 160	598	623	593	618	8	249	215	158	69	123	149	49	5.6		
... x 200	598	623	593	618	8	284	255	198	69	158	167	49	6.3		
... x 250	598	623	593	618	8	324	305	248	69	198	187	49	7.7		
... x 315	598	623	593	618	8	384	370	313	79	248	222	49	9.7		
... x 400	598	623	593	618	8	440	454	398	79	313	257	49	12.7		

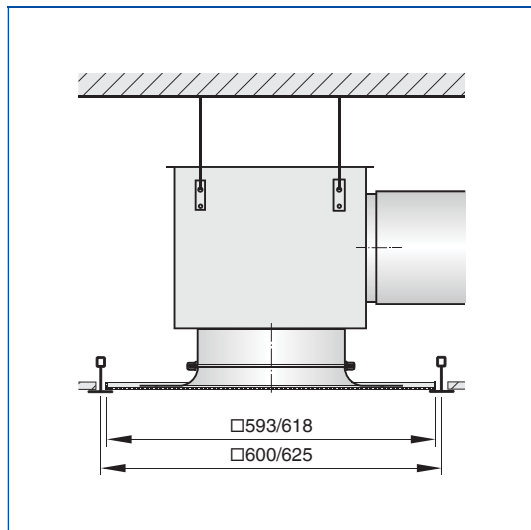
## Description

## Installation information

- Flush ceiling installation
- Installation and making connections to be performed by others

These are only schematic diagrams to illustrate installation details.

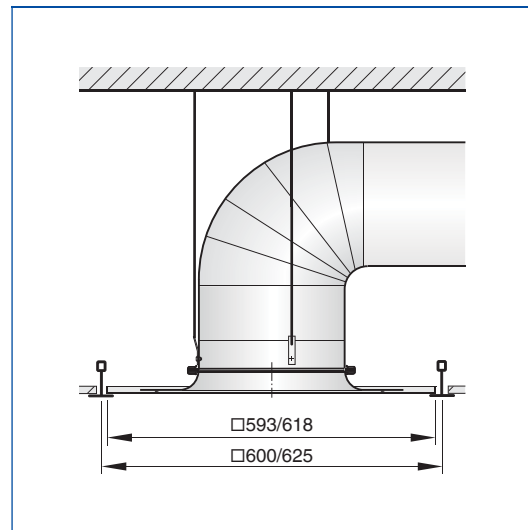
### Installation with the T-bars exposed



Variant DCS-\*V-A, DCS-\*V-AK-Uni

- Horizontal duct connection
- Four suspension lugs
- Diffuser face rests on T-bars

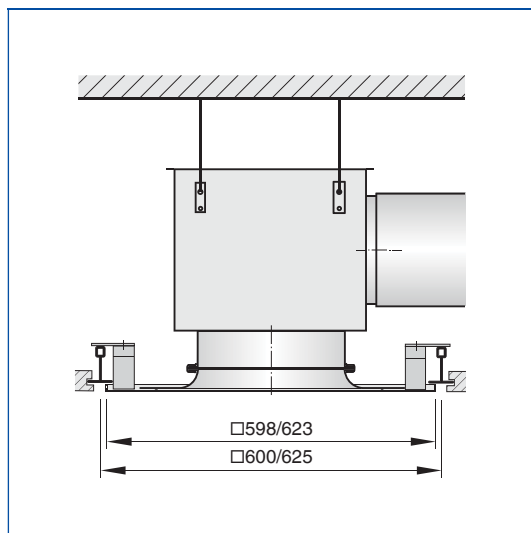
### Installation with the T-bars exposed



Variant DCS-\*V-K

- Vertical duct connection
- Three suspension lugs
- Diffuser face rests on T-bars

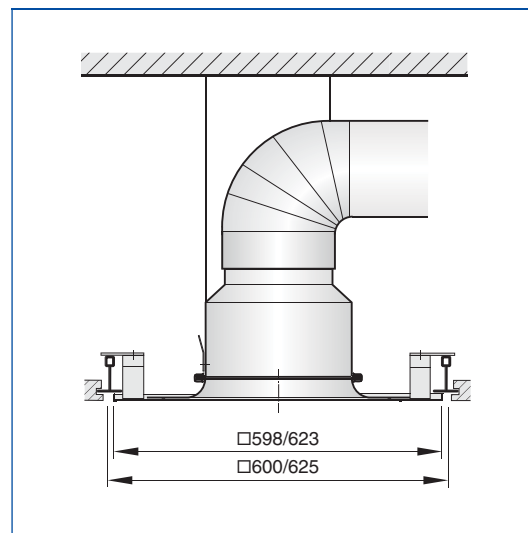
### Installation with the T-bars concealed



Variant DCS-\*H-A, DCS-\*H-AK-Uni

- Horizontal duct connection
- Four suspension lugs
- Push the diffuser face from below into the ceiling opening
- Diffuser face conceals T-bars

### Installation with the T-bars concealed



Variant DCS-\*V-K

- Vertical duct connection
- Four hanging brackets with movable lugs
- Push the diffuser face from below into the ceiling opening
- Diffuser face conceals T-bars

### Standard text

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

Design ceiling swirl diffusers with perforated square diffuser face, for comfort zones with particularly demanding requirements of aesthetics and design. Supply air and extract air variants. Excellent aerodynamic and acoustic function due to fixed air control blades for horizontal swirling air discharge, creating high levels of induction. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face, a top entry spigot or a plenum box with equalising element, a side entry spigot, and suspension lugs. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.

### Special characteristics

- Horizontal air discharge creating high induction levels
- Design variants with perforated square or circular diffuser face style
- For T-bar ceilings
- Horizontal or vertical duct connection

### Materials and surfaces

- Diffuser face, discharge nozzle, swirl unit, duct collar and plenum box made of galvanised sheet steel
- Transition piece made of aluminium
- Plenum box lining is mineral wool
- Swirl unit and discharge nozzle electrocoated RAL 9005, jet black
- Diffuser face and discharge nozzle powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

### Mineral wool

- To EN 13501, fire rating class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EG
- Faced with glass fibre fabric as protection against erosion through airflow velocities of up to 20 m/s
- Inert to fungal and bacterial growth

### Technical data

- Nominal sizes – diffuser face: 593, 598, 618, 623 mm
- Nominal sizes – swirl unit: 125, 160, 200, 250, 315, 400 mm
- Minimum volume flow rate, with  $\Delta_t = -6$  K: 4 – 36 l/s or 16 – 128 m<sup>3</sup>/h
- Maximum volume flow rate, with  $L_{WA} \approx 50$  dB(A): 37 – 260 l/s or 132 – 936 m<sup>3</sup>/h
- Supply air to room air temperature difference: -12 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**

**DCS** Swirl diffuser

**2 Construction style**

- P** Diffuser face, perforated
- N** Diffuser face, unperforated
- C** Diffuser face with discharge nozzle

**3 Installation type**

- V** T-bars exposed  
(diffuser face rests on T-bars)
- H** T-bars concealed  
(diffuser face conceals T-bars)

**4 Connection**

- K** Vertical, with duct collar
- US** Vertical, with transition piece
- A** Horizontal, with plenum box
- AK** Horizontal, with plenum box and lining

**5 Size of diffuser face plate**

Installation type V

- 593**
- 618**

Installation type H

- 598**
- 623**

**6 Nominal size [mm]**

- 125**
- 160**
- 200**
- 250**
- 315**
- 400**

**7 Exposed surface**

- P1** No entry: powder-coated RAL 9010, pure white  
Powder-coated, specify RAL CLASSIC colour  
Gloss level  
RAL 9010 50 %  
RAL 9006 30 %  
All other RAL colours 70 %

# Ceiling diffusers

## Basic information and nomenclature



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

# Ceiling diffusers

## Basic information and nomenclature

### Product selection

	Ceiling swirl diffusers								
	AIRNAMIC	VDW	TDV-SilentAIR	RFD	FD	TDF-SilentAIR	VD	VDL	FDE
<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:**
  - 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)
    - $l = b_1, x = 4,2$
    - 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

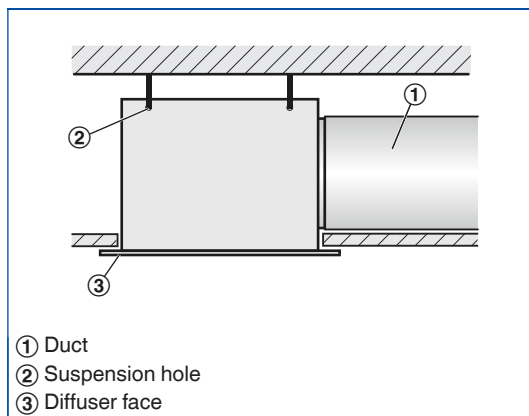
### Description

### 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

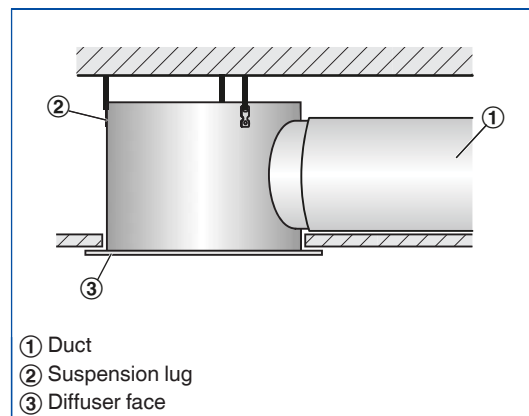
### Installation types

#### Flush ceiling installation with square plenum box



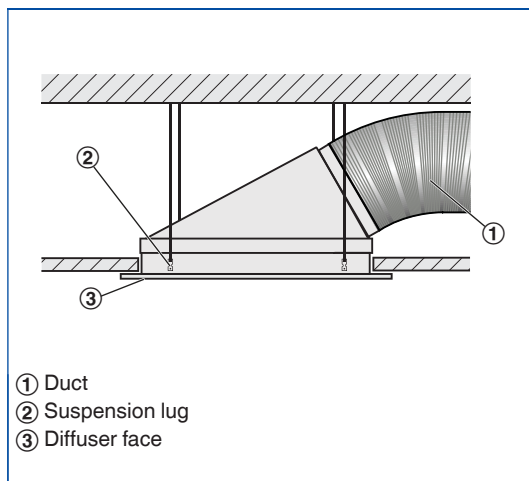
- Horizontal duct connection
- Four suspension holes
- Suspension with cords, wires or hangers, to be provided by others

#### Flush ceiling installation with circular plenum box



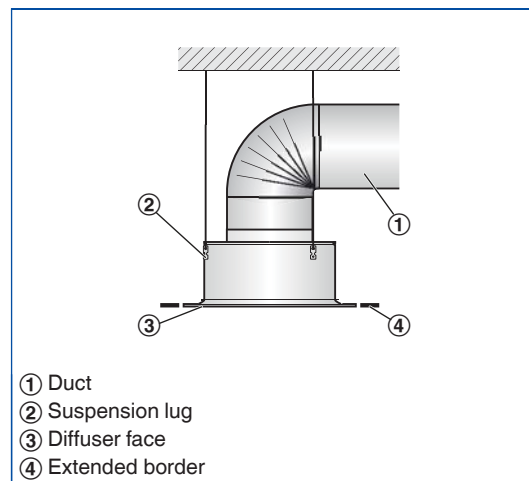
- Horizontal duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

#### 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



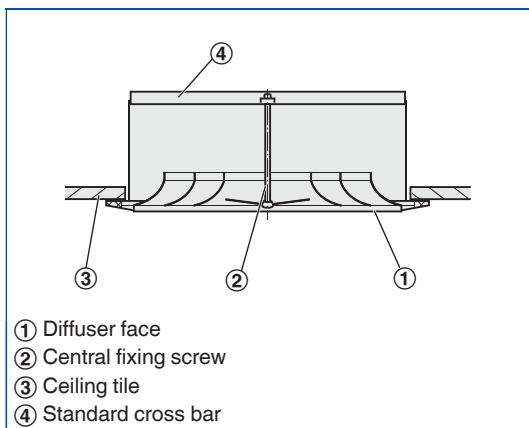
- Vertical duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

# Ceiling diffusers

## Basic information and nomenclature

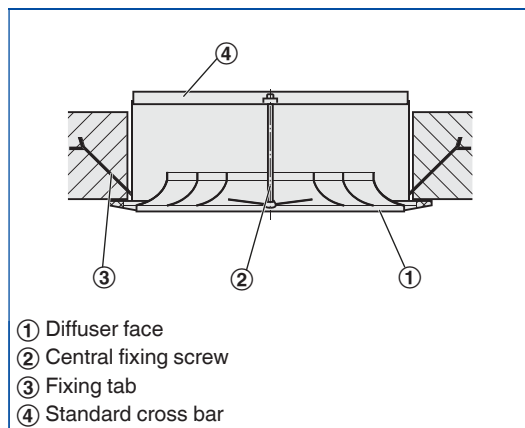
### 1 Installation without plenum box

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



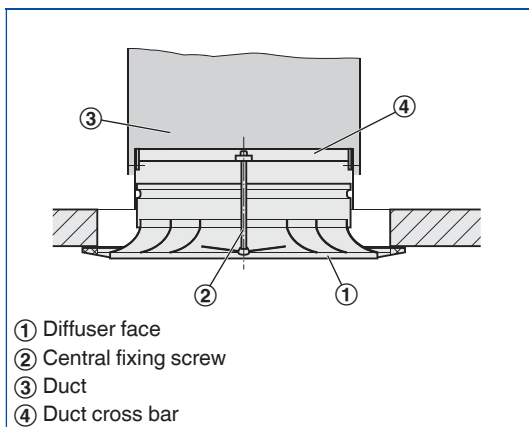
- No spigot
- Fixing of the standard cross bar to the ceiling tile is to be performed by others

#### 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

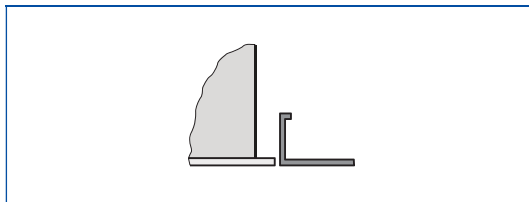
#### Flush ceiling installation with duct cross bar E1



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

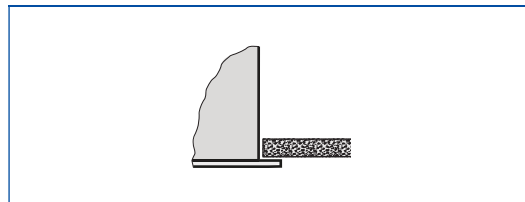
### Ceiling systems

#### Installation into grid ceilings



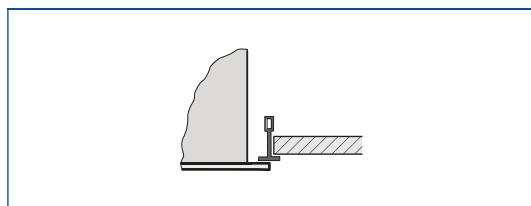
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

#### Installation in continuous ceilings



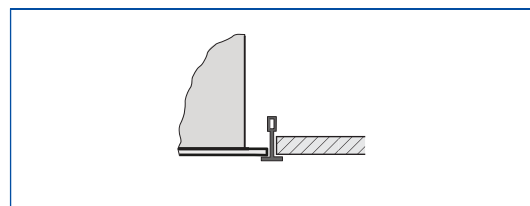
- Fix plenum box (including diffuser face, if necessary) to the ceiling
- Adjust plasterboard ceiling tile as required
- If necessary, fix the diffuser face after the ceiling has been completed

### 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

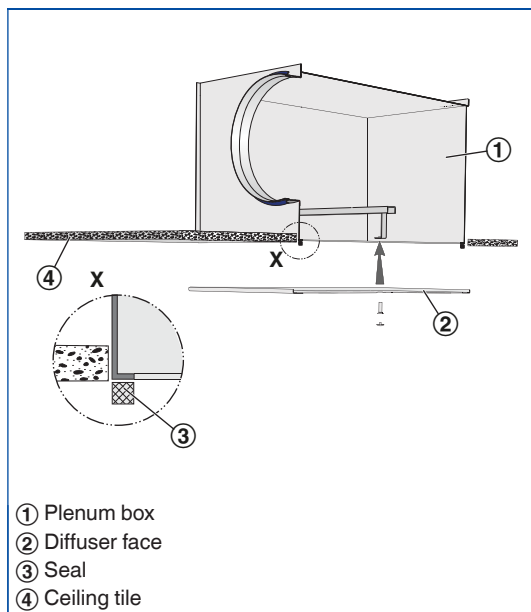
### Installation in T-bar ceilings, diffuser face rests on T-bars



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

### Diffuser face sealing and fixing

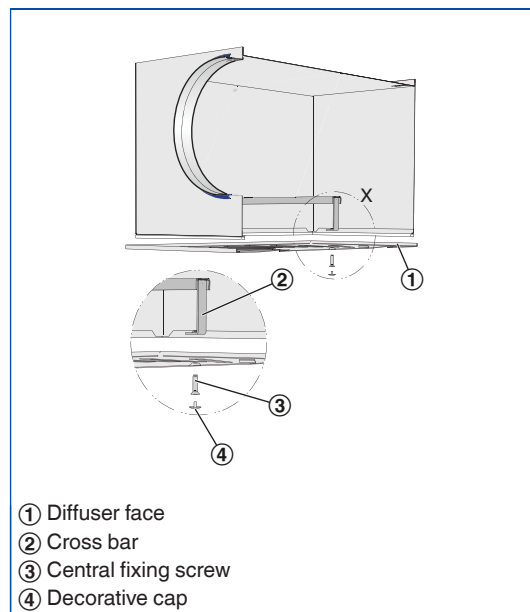
#### Diffuser face – sealing



- 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

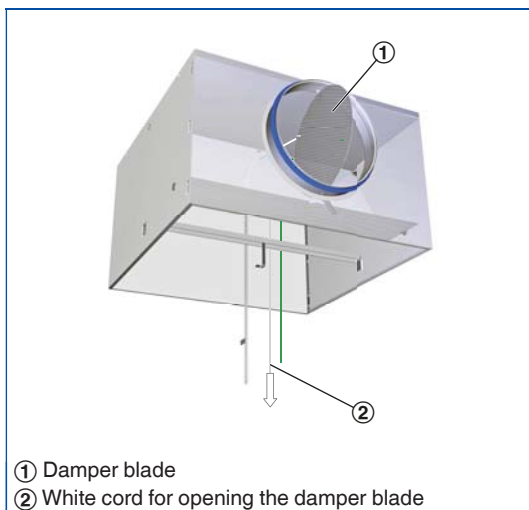
1

#### 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.

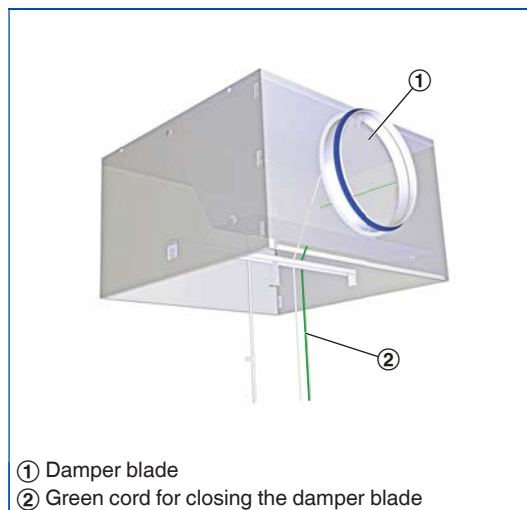
- AIRNAMIC, XARTO, FLEXTRO:  
The diffuser face can be removed to access the damper blade; the damper blade can then be set in 15° intervals between 0 and 90°
- Ceiling diffusers with universal plenum box and damper blade (variant -M):  
The diffuser face can be removed to access the damper blade; the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



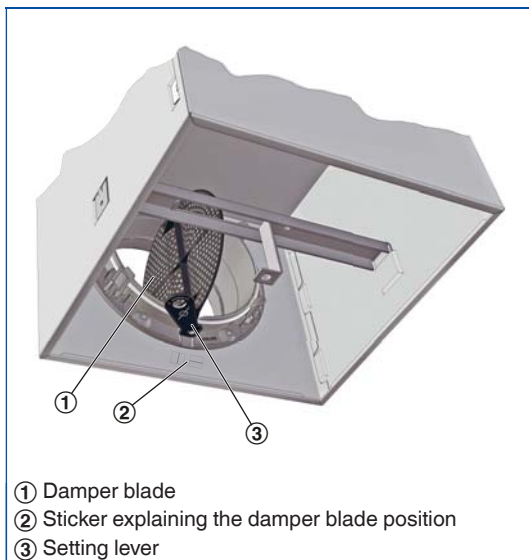
Open, 0°

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



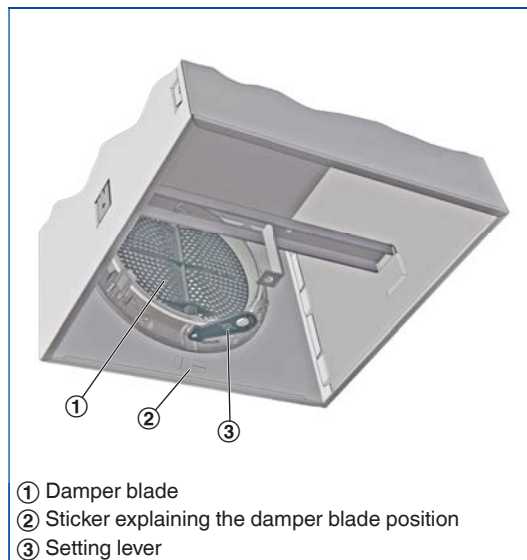
Closed, 90°

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



Open, 0°

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



Closed, 90°

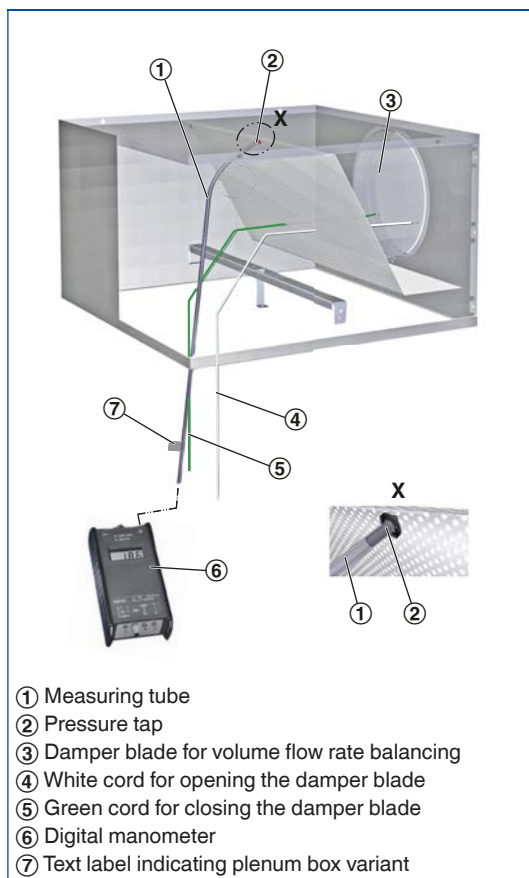
### Volume flow rate measurement

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

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