Horizontal swirling air discharge

Without air outlet nozzle

With air outlet nozzle

Circular diffuser face

Ceiling swirl diffusers

RFD

With low sound power level for comfort and industrial zones, with fixed air control blades

Circular and square ceiling swirl diffusers

- Nominal sizes 125, 160, 200, 250, 315, 400
- Volume flow rate range 4 – 330 l/s or 14 – 1188 m³/h
- Diffuser face made of galvanised sheet steel, powder-coated, or of aluminium (depending on variant)
- For supply and extract air
- For constant and variable volume flows
- For all types of ceiling systems
- With discharge nozzle ideal for cooling in case of freely suspended installation
- High induction results in a rapid reduction of the temperature difference and airflow velocity
- Air change rates of up to 35 per hour can be achieved by arranging several diffusers in a row with a minimum pitch of 0.9 m (centre line to centre line)
- Ideal for comfort zones

Optional equipment and accessories

- Exposed diffuser face available in RAL CLASSIC colours
- Horizontal or vertical duct connection
- Plenum box with cord-operated damper blade and pressure tap
- Shallow plenum box

General information

Application

- Type RFD 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 the temperature difference and airflow velocity (for supply air)
- For constant and variable 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 and discharge nozzle also suitable for freely suspended installation (supply air variant)

Special characteristics

- Low sound power level, ideal for comfort zones
- Fixed blades
- For all types of ceiling systems
- Horizontal or vertical duct connection
- Air change rates of up to 35 per hour can be achieved by arranging several diffusers in a row with a minimum pitch of 0.9 m (centre line to centre line)

Nominal sizes

- 125, 160, 200, 250, 315, 400

Variants

- RFD-Q: Square diffuser face
- RFD-R: Circular diffuser face
- RFD-*-D: Diffuser face with discharge nozzle

Connection

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

Only RFD-R

- UO: Vertical duct connection, with transition piece and crossbar for fixing of diffuser face by central fixing screw

Only RFD-R-D

- UD: Vertical duct connection with transition piece, cross bar for fixing of diffuser face by central fixing screw and discharge nozzle
- N: Horizontal duct connection, with shallow plenum box to be installed above open cell ceilings

Parts and characteristics

- Circular or square diffuser face
- Diffuser face with radially arranged fixed air control blades

Attachments

- M: Damper element 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

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

- Q: Diffuser face made of aluminium
- R: Diffuser face made of galvanised sheet steel
- Plenum box, duct collar and cross bar made of galvanised sheet steel
- Transition piece made of aluminium
- Lip seal made of rubber
- Diffuser face powder-coated, RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

Standards and guidelines

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

Maintenance

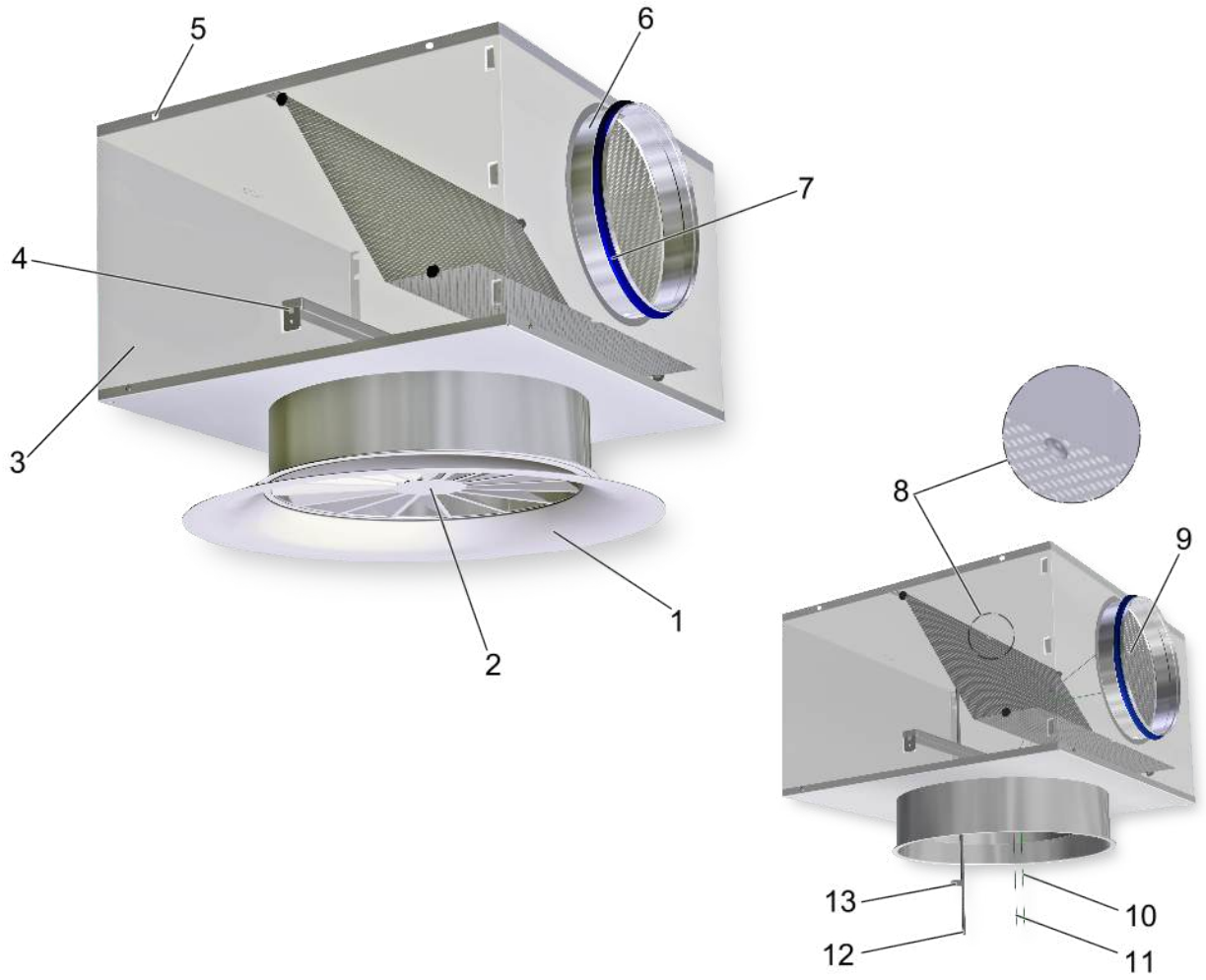
- Low maintenance as construction and materials are not subject to wear and tear
- Inspection and cleaning according to VDI 6022

Function

Functional description

Ceiling swirl diffusers allow the supply air from ventilation systems to flow into the room in a swirl pattern. 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 RFD ceiling swirl diffusers have fixed blades. Air discharge is horizontal with an omni-directional flow. 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 RFD diffusers may also be used for extract air.



1 Diffuser face
2 Centre screw fixing
3 Plenum box
4 Crossbar
5 Suspension hole
6 Connection spigot

Optional
7 Lip seal
8 Measuring nipple
9 Throttle element for volume flow rate equalisation
10 Green cable pull, close throttle element
11 White cable pull, open throttle element
12 Measuring hose
13 Text label plenum box variant

Horizontal omnidirectional flow

Technical data

Nominal size	125, 160, 200, 250, 315, 400 mm
Minimum volume flow, at Δt_Z = -6 K	4 – 36 l/s or 14 – 130 m³/h
Maximum volume flow, at L_{WA} ≅ 50 dB(A)	22 – 330 l/s or 79 – 1188 m³/h
Supply air temperature difference	-12 – +10 K

Quick sizing

Quick sizing tables provide a good overview of the volume flow rates and corresponding sound power levels and differential pressures. The minimum volume flow rates apply to a supply air to room air temperature difference of -6 K. The maximum volume flow rates apply to a sound power level of approx. 50 dB (A) with damper blade position 0°. Exact values for all parameters can be determined with our Easy Product Finder design program.

RFD-*-K, Sound power level and total pressure difference

NS	q_v [l/s]	q_v [m³/h]	Δp_t [Pa]	L_{WA} [dB(A)]
125	4,4	16	2	<15
	10	36	16	29
	15	54	36	38
	24	86	92	50
160	5	18	1	<15
	15	54	8	16
	30	108	34	34
	47	169	83	50
200	7	25	1	<15
	30	108	15	26
	50	180	43	38
	75	270	96	50
250	10	36	1	<15
	45	162	14	27
	80	288	43	41
	114	410	87	50
315	19	68	1	<15
	75	270	12	25
	130	468	37	40
	185	666	75	50
400	27	97	1	<15
	95	342	12	26
	165	594	35	40
	230	828	69	50

RFD-*-D-K, Sound power level and total pressure difference

NS	q_v [l/s]	q_v [m³/h]	Δp_t [Pa]	L_{WA} [dB(A)]
125	4,4	16	1	<15
	15	54	8	18
	30	108	33	36
	46	166	79	50
160	6,4	23	1	<15
	25	90	8	16
	45	162	26	33
	76	274	74	50
200	9	32	0	<15

NS	q_v [l/s]	q_v [m³/h]	Δp_t [Pa]	L_{WA} [dB(A)]
	45	162	11	23
	75	270	31	37
	110	396	66	50
250	14	50	0	<15
	65	234	10	21
	115	414	33	38
	164	590	66	50
315	25	90	1	<15
	95	342	11	23
	165	594	32	38
	240	864	67	50
400	36	130	1	<15
	135	486	12	24
	235	846	36	40
	330	1188	71	50

RFD-*-US, Sound power level and total pressure difference

NS	q_v [l/s]	q_v [m³/h]	Δp_t [Pa]	L_{WA} [dB(A)]
125	4	14	2	<15
	10	36	17	28
	15	54	37	39
	22	79	80	50
160	5	18	1	<15
	20	72	15	24
	30	108	35	37
	42	151	68	50
200	7	25	1	<15
	30	108	22	23
	50	180	60	39
	70	252	117	50
250	10	36	1	<15
	45	162	19	25
	80	288	61	40
	114	410	123	50
315	19	68	1	<15
	70	252	17	25
	130	468	59	42
	170	612	101	50
400	27	97	1	<15
	90	324	15	24
	155	558	44	39
	220	792	88	50

RFD-*-D-US, Sound power level and total pressure difference

NS	q_v [l/s]	q_v [m³/h]	Δp_t [Pa]	L_{WA} [dB(A)]
125	4,4	16	1	<15
	15	54	10	17
	25	90	28	34
	38	137	64	50
160	6	22	1	<15
	25	90	9	16
	45	162	29	35
	66	238	62	50
200	9	32	1	<15
	40	144	22	20
	70	252	66	37
	102	367	140	50
250	14	50	1	<15
	60	216	21	22
	105	378	63	39
	145	522	120	50
315	25	90	2	<15
	90	324	21	22
	155	558	62	38
	220	792	125	50
400	36	130	1	<15
	120	432	17	22
	205	738	49	38
	285	1026	95	50

RFD-*-A, Sound power level and total pressure difference

NS	q_v [l/s]	q_v [m³/h]	Damper blade position					
			0°		45°		90°	
			Δp_t [Pa]	L_{WA} [dB(A)]	Δp_t [Pa]	L_{WA} [dB(A)]	Δp_t [Pa]	L_{WA} [dB(A)]
125	4	14	2	<15	3	<15	4	<15
	10	36	17	28	19	28	26	28
	15	54	38	38	43	39	58	38
	22	79	82	50	93	49	124	50
160	5	18	1	<15	1	<15	1	<15
	15	54	9	16	11	17	15	15
	30	108	35	34	43	36	60	34
	47	169	86	50	105	51	147	51
200	7	25	1	<15	1	<15	1	<15
	25	90	12	21	15	21	20	21
	44	158	36	35	45	36	61	35
	70	252	91	50	114	52	156	51
250	10	36	1	<15	1	<15	1	<15
	45	162	14	25	19	26	25	25
	75	270	40	38	52	40	70	39
	110	396	86	50	113	52	151	52
315	19	68	1	<15	1	<15	2	<15
	70	252	12	24	17	26	22	24
	120	432	35	39	49	40	63	38
	175	630	75	50	103	52	135	50
400	27	97	1	<15	1	<15	1	<15
	90	324	10	24	13	25	17	24
	160	576	33	40	40	41	53	39
	220	792	63	50	75	52	100	49

RFD-*-D-A, Sound power level and total pressure difference

NS	q_v [l/s]	q_v [m³/h]	Damper blade position					
			0°		45°		90°	
			Δp_t [Pa]	L_{WA} [dB(A)]	Δp_t [Pa]	L_{WA} [dB(A)]	Δp_t [Pa]	L_{WA} [dB(A)]
125	4,4	16	1	<15	1	<15	3	<15
	15	54	12	19	17	20	33	23
	30	108	48	37	68	40	132	41
	43	155	98	50	139	52	271	53
160	6,4	23	1	<15	1	<15	2	<15
	30	108	16	22	24	22	44	25
	50	180	45	37	68	38	123	41
	71	256	91	50	138	53	250	54
200	9	32	1	<15	1	<15	2	<15
	40	144	13	21	19	22	34	24
	70	252	39	37	59	38	104	40
	105	378	89	50	133	53	234	54
250	14	50	1	<15	1	<15	2	<15
	60	216	12	20	18	23	32	23
	108	389	39	37	58	39	103	40
	153	551	79	50	116	53	207	52
315	25	90	1	<15	2	<15	2	<15
	90	324	13	23	20	25	29	25
	150	540	35	38	55	40	82	40
	215	774	72	50	114	52	168	52
400	36	130	1	<15	1	<15	2	<15
	120	432	11	23	15	23	22	23
	205	738	33	38	44	39	65	39
	290	1044	65	50	87	50	131	51

Specification text

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

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones and industrial zones. Diffuser face with fixed air control blades for horizontal swirling supply air discharge creating high induction levels. Ready-to-install component which consists of the diffuser face with radially arranged fixed air control blades and either a spigot only or a plenum box with 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. Spigots are suitable for ducting according to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.

Special characteristics

- Low sound power level, ideal for comfort zones
- Fixed blades
- For all types of ceiling systems
- Horizontal or vertical duct connection
- Air change rates of up to 35 per hour can be achieved by arranging several diffusers in a row with a minimum pitch of 0.9 m (centre line to centre line)

Materials and surfaces

- Q: Diffuser face made of aluminium
- R: Diffuser face made of galvanised sheet steel
- Plenum box, duct collar and cross bar made of galvanised sheet steel
- Transition piece made of aluminium
- Lip seal made of rubber
- Diffuser face powder-coated, RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

Technical data

- Nominal size: 125, 160, 200, 250, 315, 400 mm
- Minimum volume flow rate, with Δt_Z = -6 K: 4 – 36 l/s or 14 – 130 m³/h
- Maximum volume flow rate, at L_{WA} ≅ 50 dB(A): 22 – 330 l/s or 79 – 1188 m³/h
- Supply air to room air temperature difference: -12 to +10 K

Sizing data

- q_v [m³ /h]
- Δp_t [Pa]

air-regenerated noise

- L_{WA} [dB(A)]

Life cycle assessment

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

Order code

RFD – Q – Z – D – A – M – L / 200 / P1 - RAL 9016
1 2 3 4 5 6 7 8 9

1 Type
RFD Swirl diffuser

2 Construction style
R circular
Q square

3 System
Z Supply air
A Extract air

4 Construction
No entry: without discharge nozzle
D with discharge nozzle

5 Connection
K vertical, with duct collar
US vertical, with transition piece
A horizontal, with plenum box

Only with construction style R
UO vertical, with transition piece and cross bar

Only with design R and design D
UD vertical, with transition piece, cross bar and discharge nozzle
N horizontal, with plenum boxes for open grid ceilings

6 Damper blade for volume flow balancing
No entry required: Without damper blade
M with damper blade (only with connection A or N)
MN with cords and pressure tap (only with connection A)

7 Accessories
No entry: without lip seal
L with lip seal (only with connection A or N)

8 Nominal size [mm]
125, 160, 200, 250, 315, 400

9 Exposed surface
No entry: powder-coated RAL 9010 (pure white)
P1 powder-coated; specify RAL CLASSIC colour

Gloss level
RAL 9010 GU 50
RAL 9006 GU 30
All other RAL colours GU 70

Order example: RFD-Q-Z-D-A-M-L/200/P1-RAL9016

Type	RFD
Construction style	Square
System	Supply air
Construction	With discharge nozzle
Connection	Horizontal, with plenum box
Damper unit for volume flow rate balancing	With
Accessories	Lip seal
Nominal size	200
Exposed surface	powder-coated RAL 9016 (traffic white)

Variants

RFD-Q-D

RFD-R-D

RFD-Q

RFD-R

RFD-Q-D-K

RFD-R-D-K

RFD-Q-US

RFD-R-UO

RFD-Q-D-A

RFD-R-D-A

RFD-R-D-N

RFD-Q-K

Variant
- Ceiling swirl diffuser with square diffuser face

Nominal sizes
- 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

RFD-Q-D-K

Variant
- Ceiling swirl diffuser with discharge nozzle and square diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Square diffuser face
- Discharge nozzle improves aerodynamic and acoustic characteristics
- Circular duct collar for connection to a vertical duct

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

RFD-Q-US

Variant
- Ceiling swirl diffuser with square diffuser face

Nominal sizes
- 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

RFD-Q-D-US

Variant
- Ceiling swirl diffuser with discharge nozzle and square diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Square diffuser face
- Discharge nozzle improves aerodynamic and acoustic characteristics
- Transition piece for connection to a vertical duct

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

RFD-Q-A

Variant
- Ceiling swirl diffuser with square diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Square diffuser face
- Plenum box for horizontal duct connection
- Circular opening to accommodate the diffuser face
- 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)

RFD-Q-D-A

Variant
- Ceiling swirl diffuser with discharge nozzle and square diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Square diffuser face
- Discharge nozzle improves aerodynamic and acoustic characteristics
- Plenum box for horizontal duct connection
- Circular opening to accommodate the diffuser face
- 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)

RFD-R-K

Variant
- Ceiling swirl diffuser with circular diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Circular diffuser face
- Circular duct collar for connection to a vertical duct

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

RFD-R-D-K

Variant
- Ceiling swirl diffuser with discharge nozzle and circular diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Circular diffuser face
- Discharge nozzle improves aerodynamic and acoustic characteristics
- Circular duct collar for connection to a vertical duct

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

RFD-R-US

Variant
- Ceiling swirl diffuser with circular diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Circular diffuser face
- Transition piece for connection to a vertical duct

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

RFD-R-D-US

Variant
- Ceiling swirl diffuser with discharge nozzle and circular diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Circular diffuser face
- Discharge nozzle improves aerodynamic and acoustic characteristics
- Transition piece for connection to a vertical duct

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

RFD-R-UO

Variant
- Ceiling swirl diffuser with circular diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Circular diffuser face
- Transition piece for connection to a vertical duct
- 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

RFD-R-D-UD

Variant
- Ceiling swirl diffuser with discharge nozzle and circular diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Circular diffuser face
- Discharge nozzle improves aerodynamic and acoustic characteristics
- Transition piece for connection to a vertical duct
- 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

RFD-R-A

Variant
- Ceiling swirl diffuser with circular diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Circular diffuser face
- Plenum box for horizontal duct connection
- Circular opening to accommodate the diffuser face
- 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)

RFD-R-D-A

Variant
- Ceiling swirl diffuser with discharge nozzle and circular diffuser face

Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Circular diffuser face
- Discharge nozzle improves aerodynamic and acoustic characteristics
- Plenum box for horizontal duct connection
- Circular opening to accommodate the diffuser face
- 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)

RFD-R-D-N

Variant
- Ceiling swirl diffuser with discharge nozzle and circular diffuser face

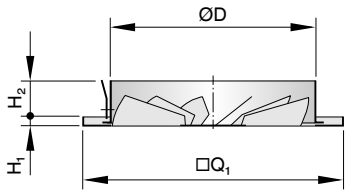
Nominal sizes
- 125, 160, 200, 250, 315, 400

Parts and characteristics
- Circular diffuser face
- Discharge nozzle improves aerodynamic and acoustic characteristics
- Plenum box for horizontal duct connection
- Compact unit which consists of the diffuser and a plenum box, shallow construction for installation above open cell ceilings
- Damper blade for volume flow rate balancing (optional)
- Lip seal (optional)

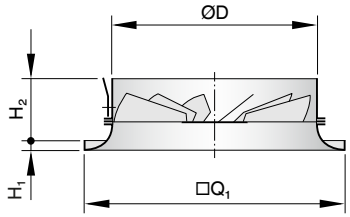
Construction features
- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal (if accessory lip seal has been ordered)

Dimensions and weight

RFD-Q-K



RFD-Q-D-K

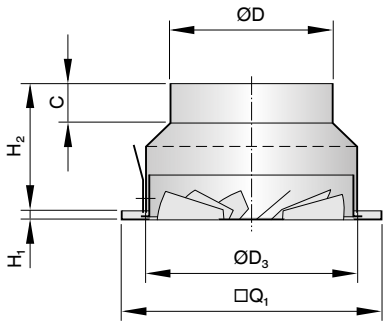


RFD, doc_techdraw_000836 / 15.05.2013

RFD-Q-K, RFD-Q-D-K

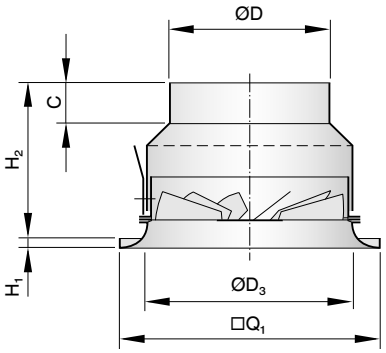
NS	RFD-Q-K			RFD-Q-D-K				
	□Q_1 [mm]	H_2 [mm]	m [kg]	□Q_1 [mm]	H_2 [mm]	m [kg]	ØD [mm]	H_1 [mm]
125	158	41	0,6	198	66	0,7	123	8
160	198	45	0,7	248	70	0,9	158	8
200	248	45	1,0	248	68	1,2	198	8
250	298	41	1,5	298	66	1,7	248	8
315	398	43	2,4	398	78	2,9	313	8
400	498	43	3,6	498	78	4,3	398	8

RFD-Q-US



Sizes 125 and 160 without perforated sheet metal

RFD-Q-D-US

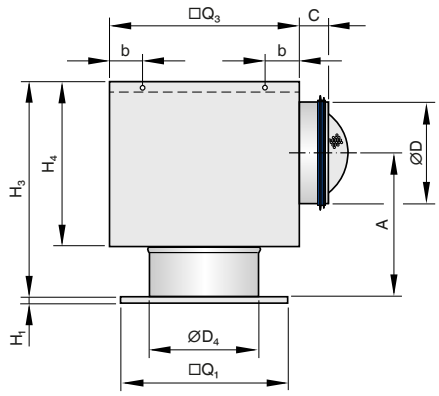


Sizes 125 and 160 without perforated sheet metal

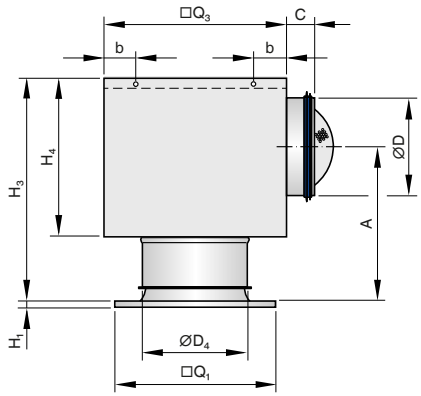
RFD-Q-US, RFD-Q-D-US

NS	RFD-Q-US			RFD-Q-D-US						
	□Q_1 [mm]	H_2 [mm]	m [kg]	□Q_1 [mm]	H_2 [mm]	m [kg]	ØD [mm]	H_1 [mm]	ØD_3 [mm]	C [mm]
125	198	120	0,7	198	145	0,8	98	8	127	40
160	198	125	0,9	248	150	1,1	123	8	162	40
200	248	128	1,2	248	153	1,4	158	8	202	40
250	298	133	1,7	298	158	2,0	198	8	252	40
315	398	140	2,7	398	175	3,2	248	8	318	40
400	498	150	4,1	498	185	4,7	313	8	403	40

RFD-Q-A



RFD-Q-D-A

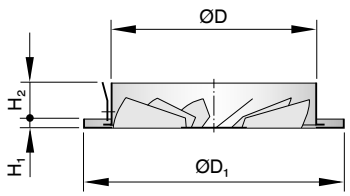


RFD-Q-A, RFD-Q-D-A

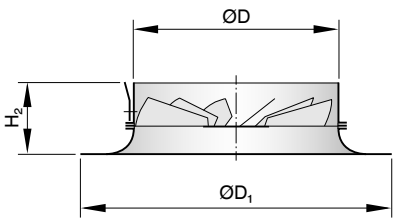
NS	RFD-Q-A				RFD-Q-D-A										
	□Q_1 [mm]	H_3 [mm]	A [mm]	m [kg]	□Q_1 [mm]	H_3 [mm]	A [mm]	m [kg]	H_1 [mm]	□Q_3 [mm]	H_4 [mm]	ØD_4 [mm]	ØD [mm]	C [mm]	Plenum box
125	198	248	168	3,0	198	275	194	3,1	8	216	196	125	98	48	AK-Uni-028
160	198	300	181	3,5	248	300	207	3,8	8	266	221	160	123	46	AK-Uni-029
200	248	304	193	4,3	248	330	219	4,5	8	266	251	200	158	48	AK-Uni-030
250	298	348	218	8,7	298	374	244	9,0	8	476	296	250	198	48	AK-Uni-031
315	398	395	252	12,0	398	444	289	12,5	8	567	346	315	248	46	AK-Uni-032
400	498	464	276	15,1	498	500	312	15,8	8	615	411	400	313	48	AK-Uni-033

NS	b [mm]
125	50
160	50
200	50
250	90
315	90
400	90

RFD-R-K



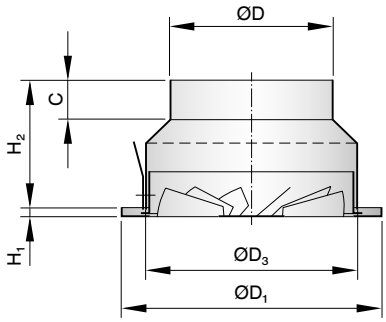
RFD-R-D-K



RFD-R-K, RFD-R-D-K

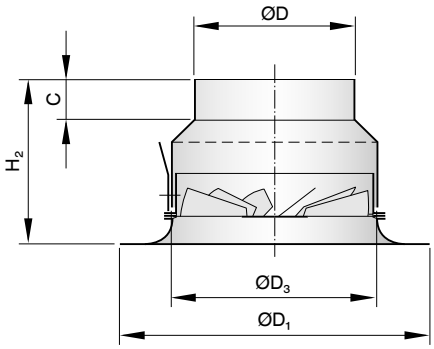
NS	RFD-R-K			RFD-R-D-K				
	$ØD_1$ [mm]	H_2 [mm]	m [kg]	$ØD_1$ [mm]	H_2 [mm]	m [kg]	ØD [mm]	H_1 [mm]
125	158	41	0,4	200	74	0,5	123	8
160	197	43	0,6	250	76	1,0	158	8
200	241	43	0,9	300	76	1,3	198	8
250	295	41	1,3	350	74	1,8	248	8
315	364	43	1,9	450	85	2,8	313	8
400	450	43	2,9	580	85	4,1	398	8

RFD-R-US



Sizes 125 and 160 without perforated sheet metal

RFD-R-D-US

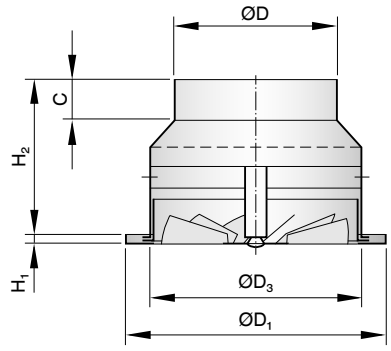


Sizes 125 and 160 without perforated sheet metal

RFD-R-US, RFD-R-D-US

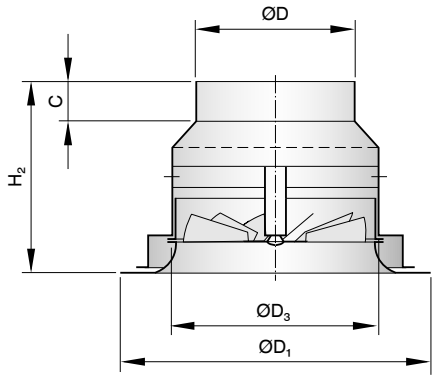
NS	RFD-R-US			RFD-R-D-US						
	$ØD_1$ [mm]	H_2 [mm]	m [kg]	$ØD_1$ [mm]	H_2 [mm]	m [kg]	ØD [mm]	H_1 [mm]	$ØD_3$ [mm]	C [mm]
125	158	119	0,5	200	152	0,6	98	8	127	40
160	197	124	0,8	250	157	1,1	123	8	162	40
200	241	127	1,1	300	160	1,5	158	8	202	40
250	295	132	1,6	350	165	2,1	198	8	252	40
315	364	139	2,3	450	182	3,2	248	8	318	40
400	450	149	3,4	580	192	4,6	313	8	403	40

RFD-R-UO



Sizes 125 and 160 without perforated sheet metal

RFD-R-D-UD

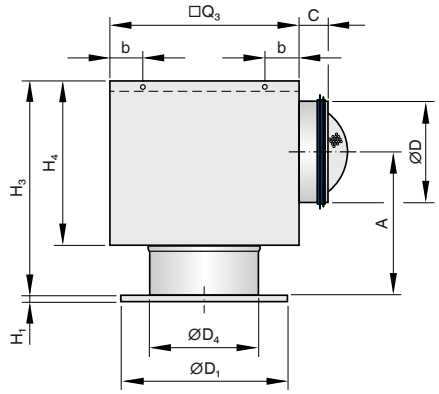


Sizes 125 and 160 without perforated sheet metal

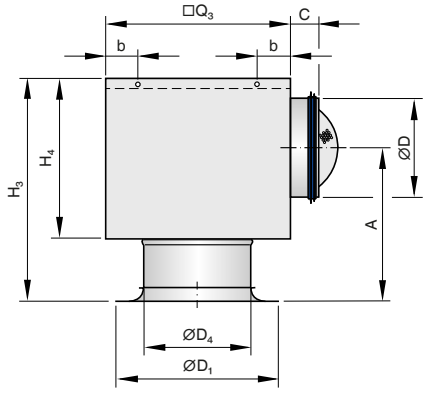
RFD-R-UO, RFD-R-D-UD

NS	RFD-R-UO			RFD-R-D-UD						
	$ØD_1$ [mm]	H_2 [mm]	m [kg]	$ØD_1$ [mm]	H_2 [mm]	m [kg]	ØD [mm]	H_1 [mm]	$ØD_3$ [mm]	C [mm]
125	158	149	0,6	200	189	0,7	98	8	127	40
160	197	154	0,8	250	196	1,2	123	8	162	40
200	241	157	1,2	300	197	1,7	158	8	202	40
250	295	162	1,6	350	202	2,2	198	8	252	40
315	364	169	2,5	450	219	3,6	248	8	318	40
400	450	179	3,7	580	229	5,3	313	8	403	40

RFD-R-A



RFD-R-D-A

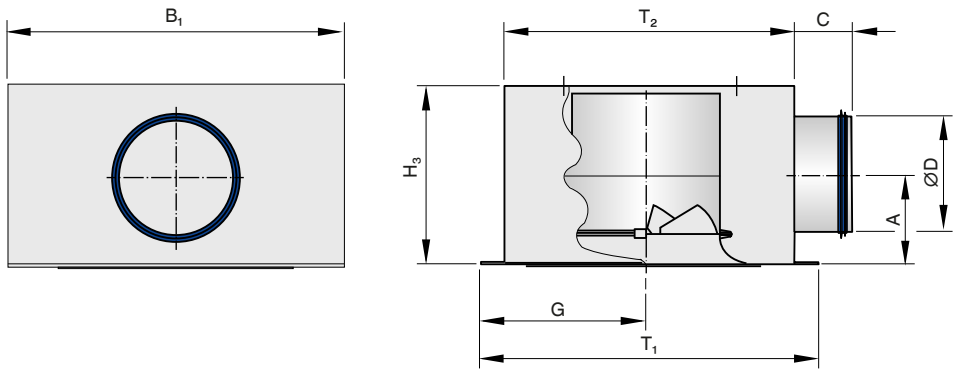


RFD-R-A, RFD-R-D-A

NS	RFD-R-A				RFD-R-D-A										
	$ØD_1$ [mm]	H_3 [mm]	A [mm]	m [kg]	$ØD_1$ [mm]	H_3 [mm]	A [mm]	m [kg]	H_1 [mm]	□Q_3 [mm]	H_4 [mm]	$ØD_4$ [mm]	ØD [mm]	C [mm]	Plenum box
125	158	249	168	2,8	200	282	201	2,9	8	216	196	125	98	50	AK-Uni-028
160	197	274	180	3,5	250	307	213	3,8	8	266	221	160	123	48	AK-Uni-029
200	241	304	193	4,2	300	337	226	4,6	8	290	251	200	158	50	AK-Uni-030
250	295	349	218	8,5	350	382	251	9,0	8	476	296	250	198	50	AK-Uni-031
315	364	408	253	11,6	450	442	296	12,5	8	567	346	315	248	48	AK-Uni-032
400	450	464	275	14,4	580	507	318	15,7	8	615	411	400	313	50	AK-Uni-033

NS	b [mm]
125	50
160	50
200	50
250	90
315	90
400	90

RFD-R-D-N

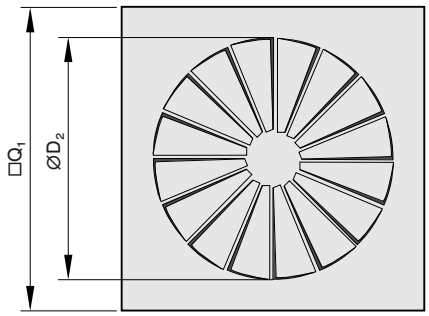


RFD-R-D-N

NS	ØD [mm]	B_1 [mm]	T_1 [mm]	H_3 [mm]	T_2 [mm]	A [mm]	C [mm]	G [mm]	m [kg]
125	98	283	304	152	264	77	48	159	2,4
160	123	335	333	177	293	89	46	155	3,8
200	158	392	413	212	373	106	48	195	5,1
250	198	435	456	262	416	131	48	195	6,5
315	248	496	516	312	476	156	56	230	10,0
400	313	728	692	377	652	189	48	305	15,0

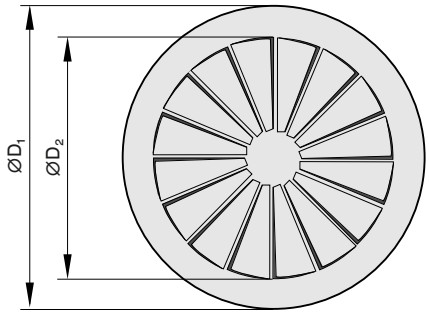
Produktdetails

Diffuser face RFD-Q



	RFD-Q-K		RFD-Q-D-K		
NS	□Q_1 [mm]	A_{eff} [m²]	□Q_1 [mm]	A_{eff} [m²]	ØD_2 [mm]
125	198	0,0026	198	0,0034	120
160	198	0,0037	248	0,0060	155
200	248	0,0066	248	0,0092	195
250	298	0,0110	298	0,0150	245
315	398	0,0205	398	0,0265	310
400	498	0,0280	498	0,0355	395

Diffuser face RFD-R



RFD-R

	RFD-R-K		RFD-R-D-K		
NS	ØD_1 [mm]	A_{eff} [m²]	ØD_1 [mm]	A_{eff} [m²]	ØD_2 [mm]
125	158	0,0026	200	0,0034	120
160	197	0,0037	250	0,0060	155

	RFD-R-K		RFD-R-D-K		
NS	$ØD_1$ [mm]	A_{eff} [m²]	$ØD_1$ [mm]	A_{eff} [m²]	$ØD_2$ [mm]
200	241	0,0066	300	0,0092	195
250	295	0,0110	350	0,0150	245
315	364	0,0205	450	0,0265	310
400	450	0,0280	580	0,0355	395

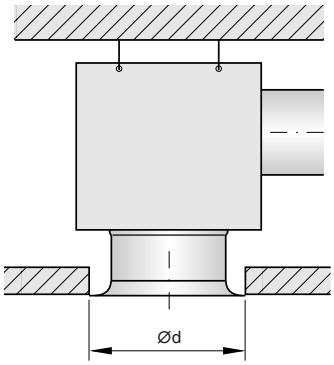
Installation in continuous ceilings

Installation and commissioning

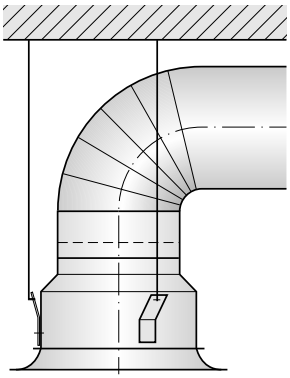
- Preferably for clear room heights up to 4.0 m
- Flush ceiling installation
- RFD-*-D: Also freely suspended installation
- RFD-*-UO, RFD-*-UD: Clamp mounting in ceiling panels up to 20 mm
- Horizontal or vertical air duct connection

The illustrations are schematic and serve to provide a better understanding of the installation details

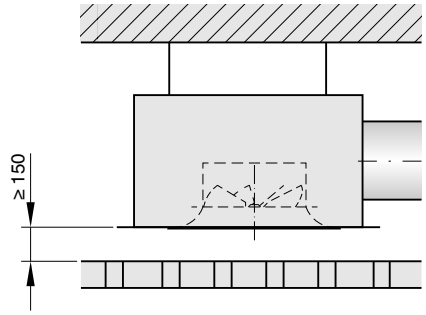
Flush ceiling installation



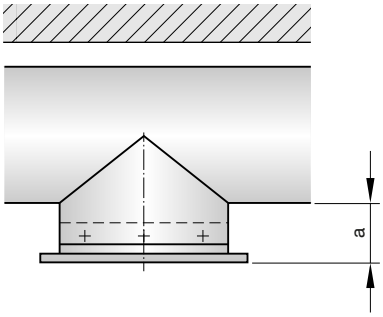
Freely suspended installation



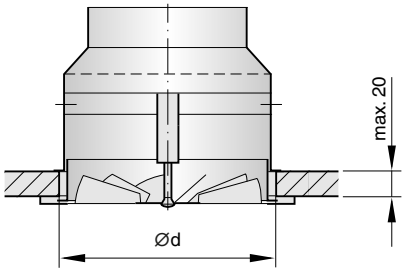
Installation above an open cell ceiling



Installation onto a duct



Clamping of RFD-...-UO

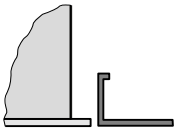


Diffuser face fixing with central screw

Ceiling cut-out

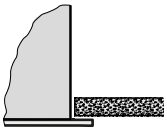
Product variant	125		160		200		250		315		400	
	a [mm]	Ød [mm]	a [mm]	Ød [mm]	a [mm]	Ød [mm]	a [mm]	Ød [mm]	a [mm]	Ød [mm]	a [mm]	Ød [mm]
RFD-Q-K	180	140	235	175	295	215	370	265	465	330	595	415
RFD-Q-D-K	180	170	235	205	295	245	370	295	465	380	595	465
RFD-Q-A		140		175		215		265		330		415
RFD-Q-D-A		170		205		245		295		380		465
RFD-R-K	180	140	235	175	295	215	370	265	465	330	595	415
RFD-R-D-K	180	170	235	205	295	245	370	295	465	380	595	480
RFD-R-UO		130		165		205		255		320		405
RFD-R-D-UD		165		200		240		290		375		460
RFD-R-A		140		175		215		265		330		415
RFD-R-D-A		170		205		245		295		380		465

Installation in metal ceilings



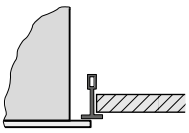
- Fix the plenum box to the ceiling
- Ceiling tile of the metal ceiling is independent of the air terminal device
- Fix the diffuser face after the ceiling has been completed

Installation in continuous ceilings



- Fix the plenum box (possibly with diffuser face) to the ceiling
- Adjust plasterboard ceiling tile as required (flush mounted or offset)
- If necessary, fix the diffuser face after the ceiling has been completed

Installation in T-bar ceilings



- Installation in T-bar ceiling. Attach the connection box to the ceiling
- T-bar ceiling is independent of the air passage
- Fasten the diffuser face below the T-bar profile after completing the ceiling work

Volume flow rate balancing

If several air diffusers are assigned to one volume flow controller, it may be necessary to equalise the volume flow rates.

- Ceiling diffusers with universal plenum box and damper element (variant -M): When the diffuser face is removed, a damper element is accessible, which can be continuously adjusted from 0 to 90°
- Ceiling diffusers with universal plenum box with damper element and measuring nipple (variant -MN): The damper can also be operated with two cable pulls (white and green) when the diffuser face is fitted.

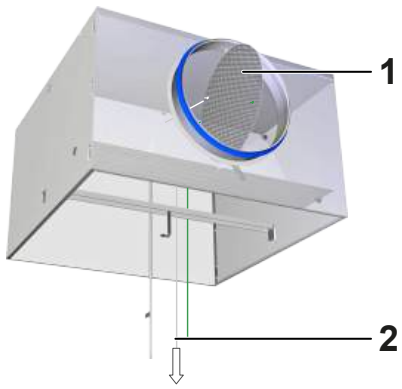
Volume flow rate measurement

Ceiling diffusers with universal plenum box, throttle element and measuring nipple (variant -MN) enable volume flow rate equalisation when the diffuser face is fitted.

- Push the measuring tube onto the digital pressure gauge
- Read the differential pressure
- Read off or calculate the volume flow rate from the characteristic curve
- If necessary, adjust the throttle damper using the cable pulls

A characteristic curve is supplied with every AK-Uni plenum box.

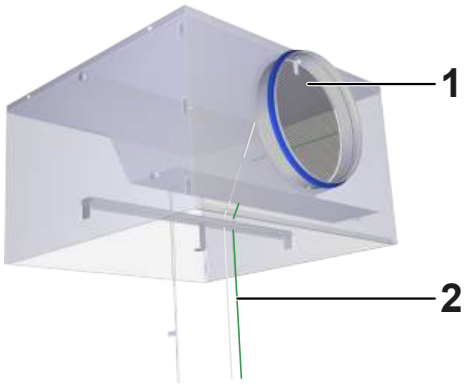
AK-Uni-...-MN Volume flow rate balancing



Open, 0°

1 Damper blade
2 White cord for opening the damper blade

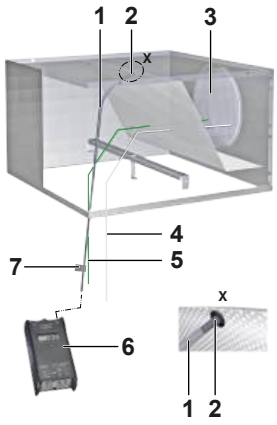
AK-Uni-...-MN Volume flow rate balancing



Closed (maximum restriction), 90°

1 Damper blade
2 Green cord for closing the damper blade

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 (to be provided by others)

Volume flow rate calculation for air density 1.2 kg/m³

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

Volume flow rate calculation for other air densities

$$q_v = C \times \sqrt{\Delta p_w} \times \sqrt{\frac{1{,}2}{\rho}}$$

Nomenclature

ØD [mm]
Outer 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

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

q_v [m³/h]; [l/s]
Volume flow rate

Δt_z [K]
Supply air to room air temperature difference, i.e. supply air temperature minus room temperature

Δp_t [Pa]
Total differential pressure

A_{eff} [m²]
Effective air discharge area

NS [mm]
Nominal size

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

All sound power levels are based on 1 pW.