Ceiling swirl diffusers
Type RFD

Circular plenum box

Horizontal swirling air discharge

Square diffuser face

Circular diffuser face

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 m^3/h
- Diffuser face made of galvanised sheet steel, powder-coated, or of aluminium (depending on variant)
- For supply and extract air
- For variable and constant 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

Application

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 (supply air variant)
- For variable and constant volume flows
- For supply air to room air temperature differences from –10 to +10 K (ceiling mounted)
- For supply air to room air temperature differences from –10 to +4 K (exposed)
- 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

Description

Variants

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

Connection

- K: Vertical duct connection, with duct collar
- S: Horizontal duct connection, in combination with AKV-RFD plenum box

Parts and characteristics

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

Standards and guidelines

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

Accessories

- AKV-ZH: Square plenum box with optional internal lining and spigot mounted damper blade
- AKV-ZHR: Circular plenum box with optional internal lining and spigot mounted damper blade

Construction features

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

Materials and surfaces

- Diffuser face made of galvanised steel and aluminium
- Discharge nozzle made of aluminium
- Plenum box, duct collar and cross bar made of galvanised sheet steel
- P2: Diffuser face powder-coated RAL 9006/30%
- P3: Diffuser face powder-coated RAL 9010/20%
- P4: Diffuser face powder-coated RAL 9005/20%
- P6: Powder-coated, RAL CLASSIC colour 30% gloss

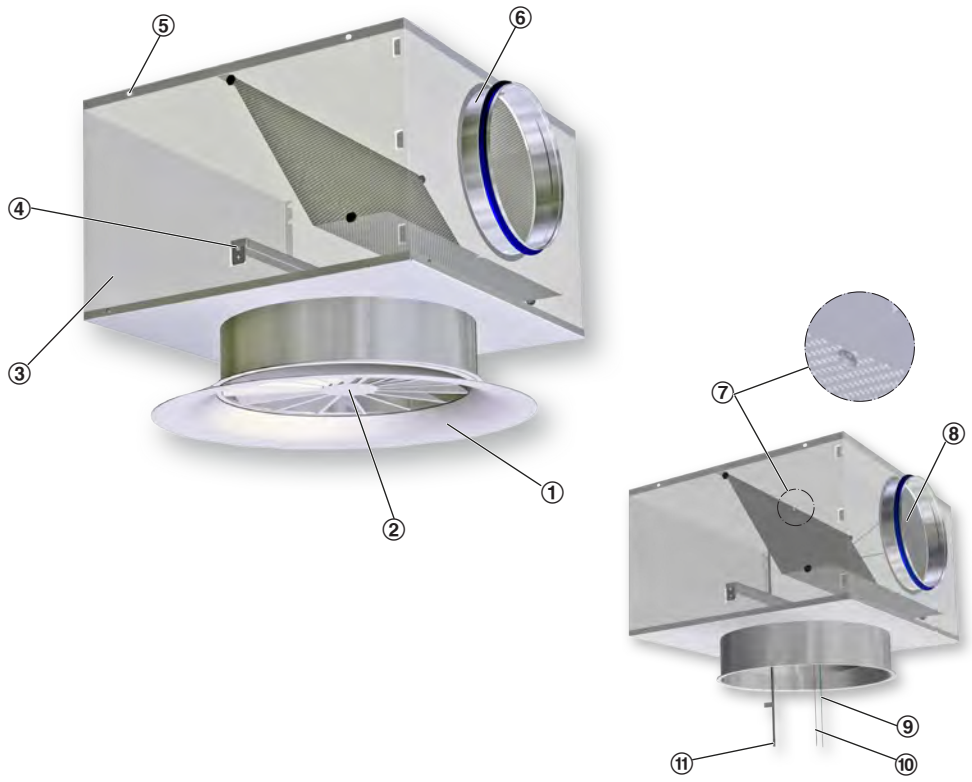
Maintenance

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

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 RFD ceiling swirl diffusers have fixed blades.
Air discharge is horizontal omnidirectional. 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.

Schematic illustration of the RFD-R-D-S, with AKV-RFD-ZH plenum box for horizontal duct connection



① Diffuser face
② Central fixing screw
③ Plenum box
④ Cross bar
⑤ Suspension hole
⑥ Spigot

Optional
⑦ Pressure tap
⑧ Damper blade for volume flow rate balancing
⑨ Cord for closing the damper blade
⑩ Cord for opening the damper blade
⑪ Measuring tube

Function

Horizontal omnidirectional air discharge

Technical data

Nominal sizes	125, 160, 200, 250, 315, 400 mm
Minimum volume flow rate, with Δt_Z = –6 K	4 – 36 l/s or 14 – 130 m^3/h
Maximum volume flow rate, with L_{WA} ≅ 50 dB(A)	22 – 330 l/s or 79 – 1188 m^3/h
Supply air to room air temperature difference	–12 to +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. 40 dB (A) with damper blade position 0°
Exact values for all parameters can be determined with our Easy Product Finder design program.

RFD-R-D-S + AKV-*-ZH, sound power level and total differential pressure

Nominal size	$\dot{V}$	$\dot{V}$	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)
125	14	50	10	16	15	18	29	20
	17	61	15	22	22	23	42	26
	19	68	20	25	27	27	53	29
	22	79	25	29	36	31	71	33
160	23	83	10	<15	14	<15	26	17
	29	104	15	21	23	21	42	24
	33	119	20	24	30	25	54	28
	37	133	25	28	37	29	68	32
200	36	130	10	18	16	19	28	20
	43	155	15	23	22	25	39	25
	50	180	20	27	30	29	53	30
	56	202	25	31	38	32	67	33
250	55	198	10	16	15	19	27	19
	67	241	15	23	22	25	40	25
	77	277	20	27	29	29	52	30
	86	310	25	31	36	33	65	33
315	82	295	10	21	17	22	24	23
	99	356	15	26	24	27	36	28
	114	410	20	30	32	31	47	32
	128	461	25	38	40	35	59	35
400	116	418	10	21	14	22	21	21
	141	508	15	27	21	28	31	28
	162	583	20	31	27	32	41	32
	181	652	25	35	34	35	51	35

Quick sizing

RFD-R-D-S / 125 + AKV-RFD-ZHR-*-M / * / ADE, sound power level and total differential pressure

Nominal size	V̇	V̇	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)
125 x 269 x 98	12	43	12	16	18	18	25	19
	15	54	19	21	28	22	40	23
	18	65	27	24	40	26	57	27
	21	76	37	28	54	30	77	31
125 x 269 x 123	12	43	8	<15	10	<15	14	14
	15	54	13	18	16	18	21	18
	18	65	19	22	23	22	31	22
	21	76	26	26	31	26	42	26
125 x 269 x 158	12	43	8	<15	9	<15	10	<15
	15	54	12	18	14	19	15	20
	18	65	17	22	20	23	22	23
	21	76	23	26	27	26	30	27
125 x 367 x 198	12	43	6	<15	6	<15	7	<15
	15	54	9	18	10	18	11	18
	18	65	13	22	14	22	15	22
	21	76	17	25	19	25	21	25
125 x 367 x 248	12	43	6	<15	6	<15	6	<15
	15	54	9	15	9	16	9	16
	18	65	13	20	13	20	13	20
	21	76	17	24	18	24	18	24

RFD-R-D-S / 160 + AKV-RFD-ZHR-*-M / * / ADE, sound power level and total differential pressure

Nominal size	V̇	V̇	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)
160 x 269 x 123	21	76	13	17	22	20	32	22
	25	90	19	21	31	24	45	26
	29	104	26	25	42	28	60	30
	32	115	31	27	51	30	73	33
160 x 269 x 158	21	76	10	16	14	17	18	17
	25	90	15	20	20	21	25	21
	29	104	20	25	27	25	34	25
	32	115	24	27	33	28	42	28
160 x 367 x 198	21	76	7	16	8	16	10	16
	25	90	10	20	11	20	13	20
	29	104	14	23	15	23	18	24
	32	115	16	26	19	26	22	26
160 x 367 x 248	21	76	7	<15	7	<15	8	<15
	25	90	10	18	10	18	10	18
	29	104	13	22	14	22	15	22
	32	115	16	25	17	25	18	25

Quick sizing

RFD-R-D-S / 200 + AKV-RFD-ZHR-*-M / * / ADE, sound power level and total differential pressure

Nominal size	$\dot{V}$	$\dot{V}$	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)
200 x 269 x 158	32	115	14	18	20	20	33	21
	39	140	21	23	30	25	49	26
	46	166	30	27	41	29	67	30
	53	191	40	31	54	33	90	34
200 x 367 x 198	32	115	8	16	11	16	14	16
	39	140	12	21	16	20	20	20
	46	166	17	25	22	25	28	25
	53	191	22	29	30	29	37	29
200 x 367 x 248	32	115	8	18	9	18	11	18
	39	140	12	23	14	23	16	23
	46	166	17	27	19	27	22	27
	53	191	23	31	25	31	30	31
200 x 462 x 248	32	115	7	<15	8	<15	9	15
	39	140	10	19	12	19	13	20
	46	166	14	24	16	24	19	25
	53	191	18	28	21	28	25	29
200 x 462 x 313	32	115	6	<15	7	<15	7	<15
	39	140	9	19	10	19	10	19
	46	166	13	23	14	23	15	23
	53	191	17	27	19	27	20	27

RFD-R-D-S / 250 + AKV-RFD-ZHR-*-M / * / ADE, sound power level and total differential pressure

Nominal size	$\dot{V}$	$\dot{V}$	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)
250 x 367 x 198	53	191	13	19	19	19	30	21
	66	238	19	24	30	25	45	26
	79	284	28	29	43	29	65	30
	92	331	38	33	58	34	88	35
250 x 367 x 248	53	191	13	21	14	21	19	21
	66	238	20	27	22	27	30	27
	79	284	29	31	32	31	42	31
	92	331	39	36	43	36	57	36
250 x 462 x 248	53	191	10	18	12	18	16	18
	66	238	15	23	19	23	25	23
	79	284	21	28	27	28	36	28
	92	331	29	33	36	33	49	33
250 x 462 x 313	53	191	9	19	10	19	11	19
	66	238	13	24	15	24	17	24
	79	284	19	29	22	29	25	29
	92	331	26	34	30	34	34	34

Quick sizing

RFD-R-D-S / 315 + AKV-RFD-ZHR-*-M / * / ADE, sound power level and total differential pressure

Nominal size	$\dot{V}$	$\dot{V}$	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)
315 x 367 x 198	**92**	**331**	25	27	40	28	77	32
	103	**371**	32	30	50	32	97	36
	114	**410**	39	34	61	35	118	39
	125	**450**	46	37	73	38	142	42
315 x 367 x 248	**92**	**331**	26	30	33	30	44	31
	103	**371**	32	33	41	33	55	34
	114	**410**	40	36	50	36	67	37
	125	**450**	48	39	61	39	80	40
315 x 462 x 248	**92**	**331**	16	25	26	25	37	25
	103	**371**	21	28	32	28	46	29
	114	**410**	25	32	39	32	56	32
	125	**450**	30	35	47	35	68	35
315 x 462 x 313	**92**	**331**	14	27	17	27	22	27
	103	**371**	17	30	22	30	27	30
	114	**410**	21	33	27	33	34	33
	125	**450**	26	37	32	36	40	37

RFD-R-D-S / 400 + AKV-RFD-ZHR-*-M / * / ADE, sound power level and total differential pressure

Nominal size	$\dot{V}$	$\dot{V}$	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)
400 x 462 x 248	**125**	**450**	21	27	39	28	60	29
	136	**490**	25	29	46	31	71	32
	147	**529**	29	32	53	33	83	34
	158	**569**	33	34	62	35	95	37
400 x 462 x 313	**125**	**450**	17	28	24	28	32	29
	136	**490**	20	31	28	31	38	31
	147	**529**	24	33	33	33	45	33
	158	**569**	28	35	38	35	52	36

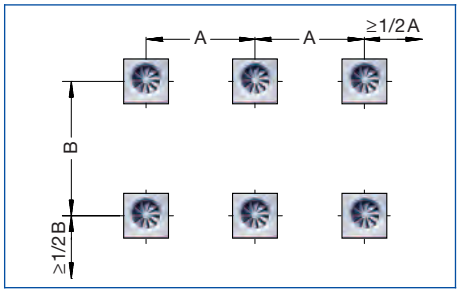
Aerodynamic data

Quick sizing tables provide a good overview of the volume flow rates and corresponding aerodynamic performance based on different diffuser arrangements.
The minimum volume flow rates apply to a supply air to room air temperature difference of –6 K.

In all cases, the sound power level is L_{WA} 40 dB(A) per diffuser and the MAX pressure drop ΔPt 45 Pa.

Selection valid for ceiling height 2.7 m.
With V_{H1} = <0.25 m/s

Diffuser layout



Nomenclature

$\dot{V}$ in l/s = Flow rate
$\dot{V}_{min}$ in l/s = Minimum flow rate
A, B in m = Distance between two diffusers

Nominal size	Flow rate (l/s) - Arrangement SINGLE ROW						
	Installation centre A (m)						
	0.8	1.2	1.8	2.4	3.0	3.6	4.2
125	29	29	29	29	29	29	29
160	50	50	50	50	50	50	50
200	73	67	64	63	65	72	75
250	94	86	82	81	85	92	104
315	123	114	108	108	113	124	142
400	125	122	121	124	131	143	161

Minimum flow rate	
Size	$\dot{V}_{min}$
125	4
160	6
200	9
250	14
315	25
400	36

Nominal size	B (m)	Flow rate (l/s) - Arrangement MULTI ROW					
		Installation centre A (m)					
		1.2	1.8	2.4	3.0	3.6	4.2
125	2.4	20	21	22	27	29	29
	3.0	25	25	27	29	29	29
	3.6	29	29	29	29	29	29
	4.2	29	29	29	29	29	29
160	2.4	27	28	29	35	41	50
	3.0	32	34	35	38	45	50
	3.6	38	39	41	45	49	50
	4.2	50	50	50	50	50	50
200	2.4	33	34	36	44	51	63
	3.0	40	41	44	48	56	66
	3.6	46	48	51	56	62	72
	4.2	67	64	63	66	72	75
250	2.4	42	44	47	56	66	81
	3.0	51	53	56	61	71	85
	3.6	59	62	66	71	78	92
	4.2	86	82	81	85	92	104
315	2.4	56	59	62	75	88	108
	3.0	68	71	75	81	95	113
	3.6	80	83	88	95	106	124
	4.2	114	108	108	113	124	142
400	2.4	63	67	72	87	101	124
	3.0	77	81	87	94	110	131
	3.6	89	94	101	110	122	143
	4.2	122	121	124	131	143	161

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. For installation into all types of suspended ceilings.
Ready-to-install component which consists of the diffuser face with radially arranged fixed air control blades and plenum box with side entry spigot, and suspension holes or suspension lugs.
The diffuser face is fixed to the cross bar with a central screw.
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

- 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

- Diffuser face made of galvanised steel
- Discharge nozzle made of aluminium
- Plenum box, duct collar and cross bar made of galvanised sheet steel
- P2: Diffuser face powder-coated RAL 9006/30%
- P3: Diffuser face powder-coated RAL 9010/20%
- P4: Diffuser face powder-coated RAL 9005/20%
- P6: Powder-coated, RAL CLASSIC colour 30% gloss

Technical data

- Nominal sizes: 125, 160, 200, 250, 315, 400 mm
- Minimum volume flow rate, with $\Delta t_Z = -6$ K: 4 – 36 l/s or 14 – 130 m^3/h
- Maximum volume flow rate, with $L_{WA} \cong 50$ dB(A): 22 – 330 l/s or 79 – 1188 m^3/h
- Supply air to room air temperature difference: –12 to +10 K

Sizing data

- $\dot{V}$ _____ _____ [m^3/h]
- Δp_t _____ _____ [Pa]

Air-regenerated noise

- L_{WA} _____ _____ [dB(A)]

Order code Diffuser

RFD

RFD – Q – D – S / 200 / P3 – RAL9010 /20% / W
1 2 3 4 5 6 7

1 Type
RFD Swirl diffuser

2 Construction style
R Circular
Q Square

3 Construction
D With discharge nozzle
Dx With extended discharge nozzle (construction style R only)

4 Connection
K Vertical with duct collar
S Central screw fixing to suit AKV plenum box

5 Nominal size [mm]
125
160
200
250
315
400

6 Exposed surface
P2 Powder-coated RAL 9006:30%
P3 Powder-coated RAL 9010:20%
P4 Powder-coated RAL 9005:20%
P6 All other RAL colours 30%

7 Screw cap colour
W White
B Black
G Grey

Order example: RFD–Q–D–S/200/P3-RAL9010/20%/W

Construction style	Square
Construction	With discharge nozzle
Connection	To suit AKV plenum
Nominal size	200
Exposed surface	RAL 9010, white, gloss level 20 %
Screw cap colour	White

Order code
Plenum box
Square

AKV-RFD

AKV-RFD – ZH - D12 - M / 200 x 158 x 344 / C / P4 - RAL 9005:20%
1 2 3 4 5 6 7 8 9

1 Plenum type
AKV-RFD

2 Construction
ZH Horizontal supply
AH Horizontal extract

3 Internal lining
0 No lining
D12 12mm Class 'O' internal lining

4 Damper
0 No damper
M Perforated spigot damper
MC Perforated spigot damper with cord

5 Nominal diffuser size
125
160
200
250
315
400

6 Spigot Size [mm]
Ø98mm [RFD/125]
Ø123mm [RFD/160]
Ø158mm [RFD/200]
Ø198mm [RFD/250]
Ø248mm [RFD/315]
Ø313mm [RFD/400]

7 Assembled height [mm]
RFD/125, 160, 200, 250: ØD+186
RFD/315, 400: ØD+196

8 Exposed surface
0 Unpainted
C Powder-coated

9 Paint colour
0 Not required
P2 RAL 9006:30% (grey)
P3 RAL 9010:20% (white)
P4 RAL 9005:20% (black)
P6 RAL CLASSIC colour, Gloss level 30%

NB: Some fixings on painted plenums will be natural finish (unpainted) due to construction process.

Order example: AKV-RFD-ZH-D12-M / 200x158x344 / C / P4 - RAL9005:20%

Plenum type	Horizontal supply air
Internal lining	12mm foam
Damper	Perforated spigot damper
Nominal diffuser size	Ø200mm
Spigot size	Ø158mm
Assembled height	344mm
Exposed surface	Powder-coat finish
Paint colour	RAL9005:20% (black)

Order code
Plenum box
Circular

AKV-RFD

AKV-RFD – ZHR - D12 - M - 0 / 200 x 269 x 158 x 261 x 346 / ADE / C / P4 - RAL 9005:20%

1 2 3 4 5 6 7 8 9 10 11 12

1 Plenum type
AKV-RFD-ZHR

2 Internal lining
0 No lining
D6 6mm Class 'O' internal lining
D12 12mm Class 'O' internal lining

3 Damper
0 No damper
M Perforated spigot damper

4 Plenum fixing
0 Central threaded rod
SB Fixing brackets

5 Nominal diffuser size
125
160
200
250
315
400

6 Plenum diameter [mm]
269 [RFD/125, 160, 200]
367 [RFD/125, 160, 200, 250, 315]
462 [RFD/200, 250, 315, 400]

7 Spigot size [mm]
Ø98mm [RFD/125]
Ø123mm [RFD/125, 160]
Ø158mm [RFD/125, 160, 200]
Ø198mm [RFD/125, 160, 200, 250, 315]
Ø248mm [RFD/125, 160, 200, 250, 315, 400]
Ø313mm [RFD/200, 250, 315, 400]

8 Plenum height [mm]
191 [ØD=98, Plenum Ø269]
216 [ØD=123, Plenum Ø269]
261 [ØD=158, Plenum Ø269]
296 [ØD=198, Plenum Ø367]
356 [ØD=248, Plenum Ø367]
426 [ØD=248/313, Plenum Ø462]

Note: All plenum heights can be extended to a maximum of 436mm (1 mm increments)

9 Assembled height [mm]
[RFD/125, 160, 200, 250]
Plenum height + 85 mm

[RFD/315, 400]
Plenum height + 95 mm

10 Air distribution element
No entry None
ADE With air distribution element

11 Exposed Surface
0 Unpainted
C Powder-coated

12 Paint colour
0 Not required
P2 RAL 9006:30% (grey)
P3 RAL 9010:20% (white)
P4 RAL 9005:20% (black)
P6 RAL CLASSIC colour, Gloss level 30%

NB: Some fixings on painted plenums will be natural finish (unpainted) due to construction process.

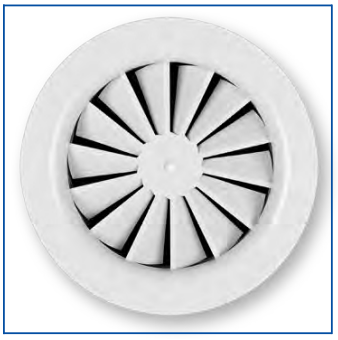
Order example: AKV-RFD-ZHR-D12-M-0 / 200x269x158x261x346 / ADE / C / P4 - RAL9005:20%

Plenum type	Horizontal supply air
Internal lining	12mm foam
Damper	Perforated spigot damper
Plenum fixing	Central threaded rod
Nominal diffuser size	Ø200mm
Plenum diameter	Ø269mm
Spigot size	Ø158mm
Plenum height	261mm
Assembled height Air	346mm
distribution element	With
Exposed surface colour	Powder-coat finish
Paint colour	RAL9005:20% (black)

RFD-Q-D

RFD-R-D, Dx

RFD-R-D, Dx



RFD-Q-D-S...-AKV-ZH

RFD-R-D-S...-AKV-ZH

RFD-R-D-S...-AKV-ZHR

RFD-Q-D-S + AKV Plenum

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)
- Cord-operated damper blade for volume flow rate balancing (optional)

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

RFD-R-D-S + AKV Plenum

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- Ceiling swirl diffuser with discharge nozzle and circular diffuser face

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

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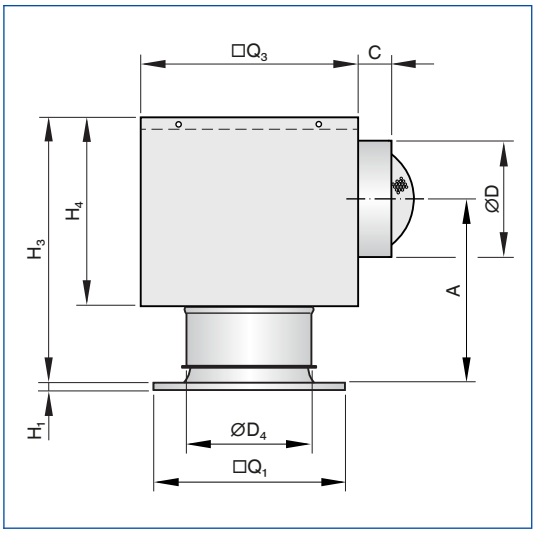
Construction features
- Spigot suitable for circular ducts to EN 1506 or EN 13180

RFD-Q-D-S...-AKV

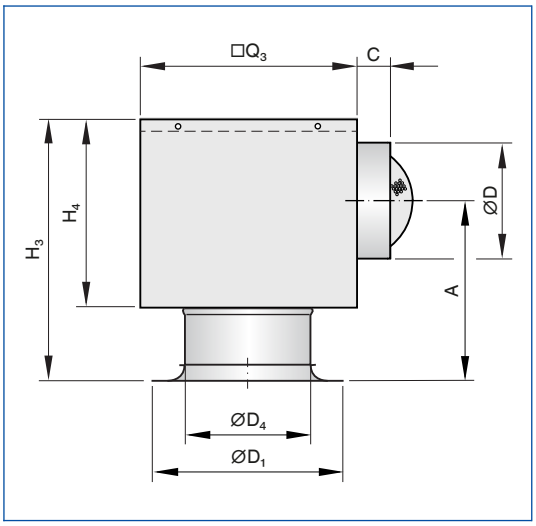


RFD-Q-D-S + AKV-RFD-ZH

Nominal size	RFD-Q-D-S + AKV-RFD-ZH									
	□Q_1	H_3	A	m	H_1	□Q_3	H_4	ØD_4	ØD	C
	mm	mm	mm	kg	mm	mm	mm	mm	mm	mm
125	198	276	196	3.1	8	216	195	125	98	40/*75
160	248	301	208	3.8	8	266	220	160	123	40/*75
200	248	336	220	4.5	8	290	255	200	158	40/*75
250	298	376	245	9.0	8	477	295	250	198	40/*75
315	398	436	281	12.5	8	567	345	315	248	40/*75
400	498	501	313	15.8	8	615	410	400	313	40/*75

* Increased dimension C when specified with ...-M or ...-MC spigot mounted damper

RFD-R-D-S...-AKV-ZH

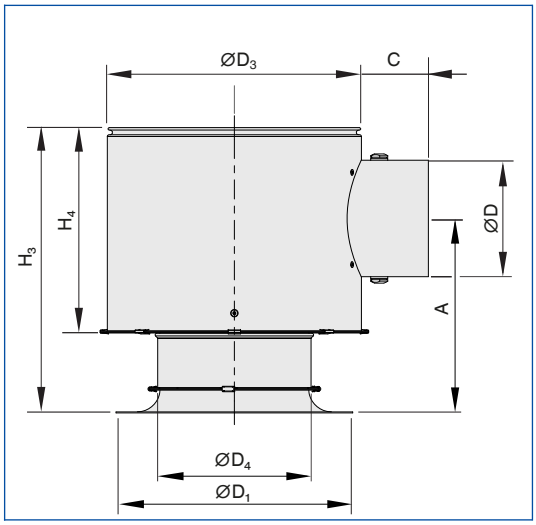


RFD-R-*-S + AKV-RFD-ZH

Nominal size	RFD-R-D-S + AKV-RFD-ZH									
	D $ØD_1$	Dx $ØD_1$	H_3	A	m	$□Q_3$	H_4	$ØD_4$	ØD	C
	mm	mm	mm	mm	kg	mm	mm	mm	mm	mm
125	200	300	284	204	2.9	216	195	125	98	40/*75
160	250	350	309	216	3.8	266	220	160	123	40/*75
200	300	400	344	234	4.6	290	255	200	158	40/*75
250	350	450	384	254	9.0	477	295	250	198	40/*75
315	450	550	444	289	12.5	567	345	315	248	40/*75
400	580	680	509	321	15.7	615	410	400	313	40/*75

* Increased dimension C when specified with ...-M or ...-MC spigot mounted damper

RFD-R-D-S...-AKV-ZHR

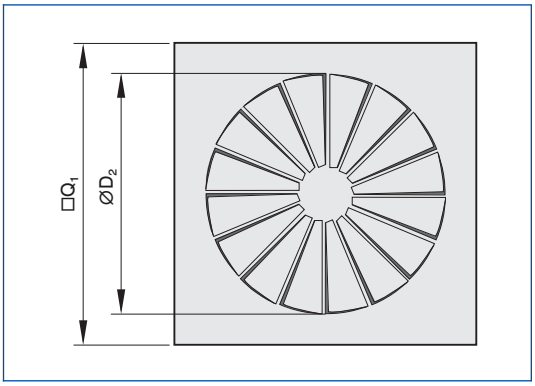


RFD-R-*-S...-AKV-RFD-ZHR

Nominal size	RFD-R-*-S + AKV-RFD-ZHR								
	ØD	D ØD1	Dx ØD1	H3	A	ØD3	H4	ØD4	C
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
125	98	200	300	276	192	269	191	125	71
	123	200	300	301	205	269	216	125	71
	158	200	300	346	232	269	261	125	71
	198	200	300	381	247	367	296	125	72
	248	200	300	441	283	367	356	125	72
160	123	250	350	301	205	269	216	160	71
	158	250	350	346	232	269	261	160	71
	198	250	350	381	247	367	296	160	72
	248	250	350	441	283	367	356	160	72
200	158	300	400	346	232	269	261	200	71
	198	300	400	381	247	367	296	200	72
	248	300	400	441	283	367	356	200	72
	248	300	400	511	353	462	426	200	74
	313	300	400	511	320	462	426	200	74
250	198	350	450	381	247	367	296	250	72
	248	350	450	441	283	367	356	250	72
	248	350	450	511	353	462	426	250	74
	313	350	450	511	320	462	426	250	74
315	198	450	550	391	257	367	296	315	72
	248	450	550	451	293	367	356	315	72
	248	450	550	521	363	462	426	315	74
	313	450	550	521	330	462	426	315	74
400	248	580	680	521	363	462	426	400	74
	313	580	680	521	330	462	426	400	74

Diffuser face RFD-Q

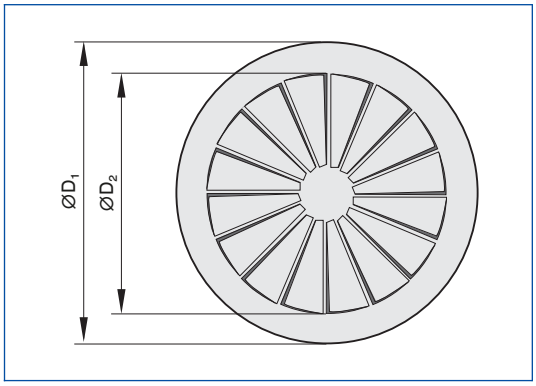
RFD-Q



Nominal size	RFD-Q-D-K		
	$□Q_1$	A_{eff}	$ØD_2$
	mm	m^2	mm
125	198	0.0034	120
160	248	0.0060	155
200	248	0.0092	195
250	298	0.0150	245
315	398	0.0265	310
400	498	0.0355	395

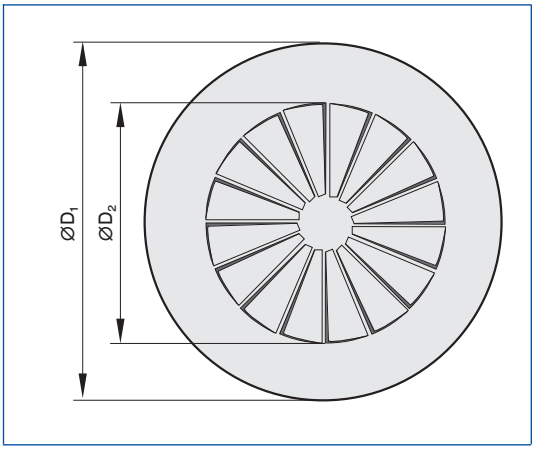
Diffuser face RFD-R

RFD-R-D



Nominal size	RFD-R-D-K		
	$ØD_1$	A_{eff}	$ØD_2$
	mm	m^2	mm
125	200	0.0034	120
160	250	0.0060	155
200	300	0.0092	195
250	350	0.0150	245
315	450	0.0265	310
400	580	0.0355	395

RFD-R-Dx



Nominal size	RFD-R-Dx-K		
	$ØD_1$	A_{eff}	$ØD_2$
	mm	m^2	mm
125	300	0.0034	120
160	350	0.0060	155
200	400	0.0092	195
250	450	0.0150	245
315	550	0.0265	310
400	680	0.0355	395

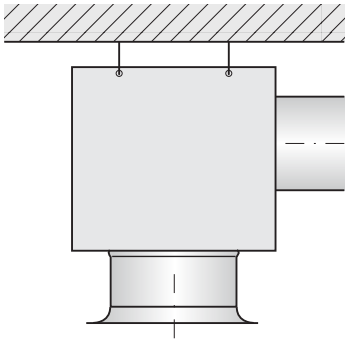
Installation details

Installation and commissioning

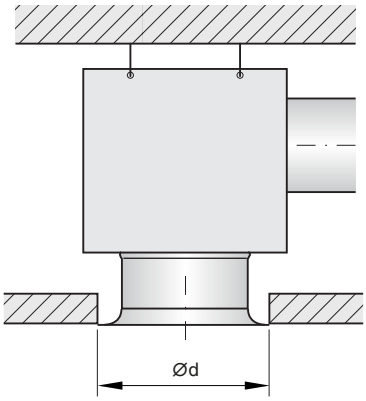
- Preferably for rooms with a clear height up to 4.0 m
- Flush ceiling installation
- RFD-*-D: Also for freely suspended installation
- Horizontal duct connection

These are only schematic diagrams to illustrate installation details.

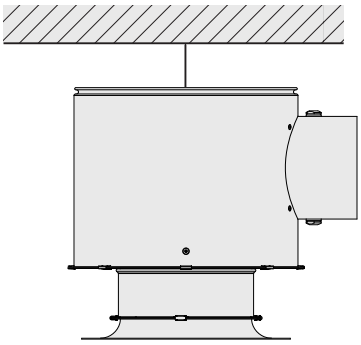
Freely suspended installation AKV-ZH



Flush ceiling installation AKV-ZH

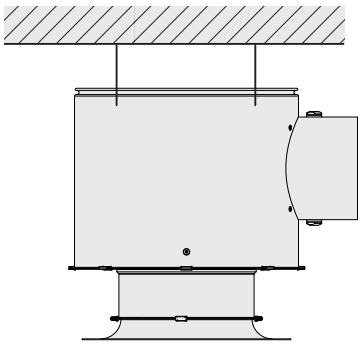


Freely suspended installation AKV-ZHR



M8 captive nut provided in top of ZHR plenum

Freely suspended installation AKV-ZHR



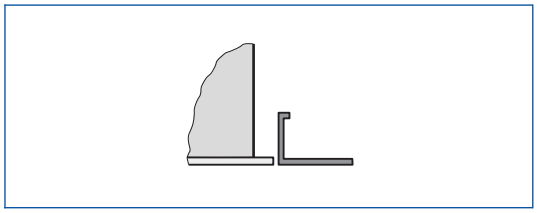
SB fixing brackets on plenum body

Ceiling cut-out

Variant	125	160	200	250	315	400
	Ød					
RFD-Q-D-*	170	205	233	283	380	480
RFD-R-D-*	170	205	245	295	380	480

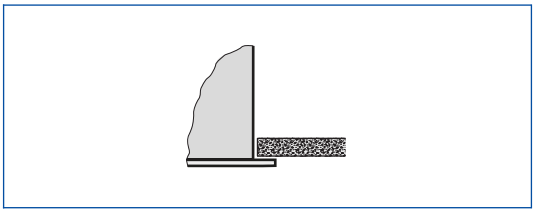
Ceiling systems

Installation into grid ceilings



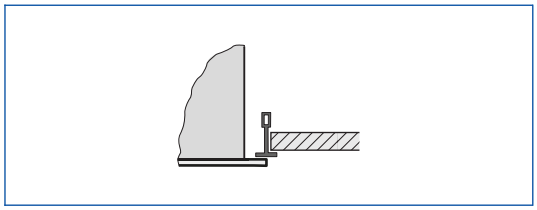
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

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

Principal dimensions

ØD [mm]
Outer diameter of the spigot

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

$ØD_3$ [mm]
Outer diameter of a circular plenum box

$ØD_4$ [mm]
Nominal size of diffuser

$□Q_1$ [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_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

H_4 [mm]
Plenum box height excluding diffuser connection

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

Δp_t [Pa]
Total differential pressure

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

All sound power levels are based on 1 pW.