



With clamping flange and dirt trap, adjustable on the rear side



With compensating ring and dirt trap, adjustable on the rear side



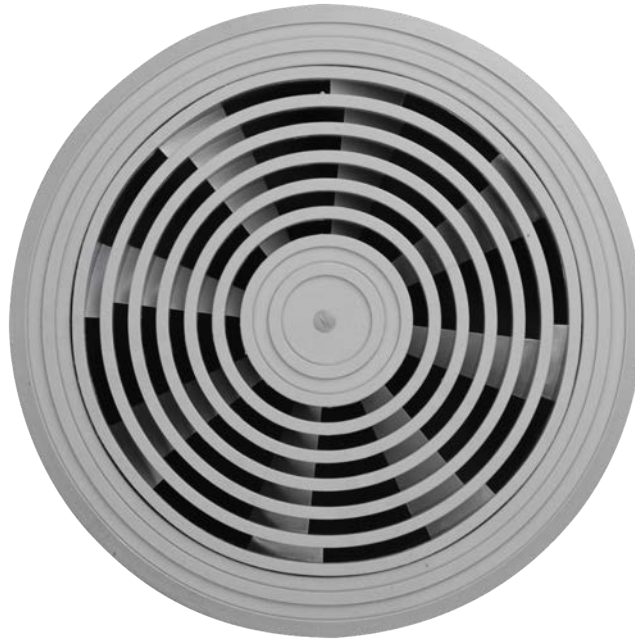
Black floor diffuser with clamping flange and dirt trap



Black floor diffuser with dirt trap

Floor diffusers

FBK



Round plastic air diffusers for installation in the floor

Air diffuser for different installation situations and room air flows

- Nominal sizes 150, 200 mm
 - Volume flow rate range 1 – 59 l/s or 4 – 213 m³/h
 - Circular diffuser face style
 - For constant and variable volume flows
 - For all types of raised floors
 - Horizontal or vertical airflow
 - Damper element can be adjusted on the front or rear side
 - Can be installed with or without clamping flange
 - The clamping flange allows quick and easy installation and removal of the grille core for cleaning purposes
 - Ideal for comfort zones
- Optional equipment and accessories
- Adjustable swirl unit for manual adjustment between vertical and horizontal air routing
 - Clamping flange with clamp spring attachment to cover the installation opening
 - Dirt trap can also be used as a damper element
 - Plenum box

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General information

Application

- Floor diffusers as supply air diffusers for comfort areas
- Installation in raised floors without plenum box if it is constructed as a pressurised floor
- Installation in raised floors with plenum box to allow individual ventilation in rooms or zones
- Vertical supply airflow, with adjustable swirl unit and added horizontal air routing
- Variants with adjustable swirl units can be manually set to vertical or horizontal air routing
- Surface floor grille and clamping flange in 2 factory-available colours - for builders and architects with special demands on architecture and design
- Comfortable and energy-efficient airflow through supporting convection currents in the occupied zone
- Thermal loads are effectively dissipated
- For constant and variable volume flows
- For supply air temperature differences of -12 - +20 K

Special features

- Simple and quick assembly and covering of the installation opening when used with clamping flange and clamp spring attachment
- Installation in hard flooring requires a compensating ring. The compensating ring is included in the delivery if no clamping flange has been selected
- Grille inserts are twist-proof when combined with clamping flange
- Quick and easy installation of floor diffusers with clamping flange and clamp spring attachment
- With or without swirl unit to allow for various air patterns
- Dirt trap adjustable at the front and rear, which can be used for volume flow balancing and reduces soiling of the raised floor

Nominal sizes

- 150, 200

Variants

Setting of the airflow direction

- -*: no entry: vertical airflow, inalterable
- -V: vertical swirling airflow, the swirl unit is manually adjustable
- -H: horizontal swirling airflow, manually adjustable swirl unit

Installation

- -*: Floor diffuser with compensating ring
- -KF: Floor diffuser with clamping flange and clamp spring attachment

Dirt trap

- -*: Floor diffuser with compensating ring
- -SM: with adjustable dirt trap The adjustment which simultaneously serves as a damper element to balance the volume flow, is carried out at the rear of the diffuser
- -SV: with adjustable dirt trap. The adjustment which simultaneously serves as a damper element to balance the volume flow, is carried out at the front of the diffuser

Plenum box

- -*: no entry: without plenum box
- -A: with plenum box for connection to the on-site air duct system

Construction

- -1: Diffuser face similar to RAL 7037, dust grey
- -2: Diffuser core similar to RAL 9005, black

Parts and characteristics

Diffuser core

- Ring spacing 6 mm
- Height-adjustable dirt trap serves as a damper element for volume flow rate balancing
- Adjustable swirl unit for swirling airflow in vertical or horizontal flow direction

Clamping flange with clamp spring attachment

- Anti-twist device for the grille insert
- Covers the installation opening
- Clamp spring attachment enables different magnitude of the raised floor and the compensation of large cut-out tolerances when creating the installation openings. For the tightest possible fit of the clamping flange, we recommend the minimum installation dimension
- Levelling of soft flooring, e.g. carpet

Attachments

- Clamping flange with clamp spring attachment
- Adjustable swirl unit for vertical or horizontal swirling airflow
- Fixed swirl unit for vertical airflow (only for nominal size 200)
- Height-adjustable dirt trap which also serves as a damper element for volume flow rate balancing

Accessories

Plenum box -A:

- For direct connection to the on-site air duct system
- With incorporated air distribution element for a steady flow to the floor diffuser
- Plenum box suitable for all nominal sizes

Materials and surfaces

- Grille core and clamping flange made of plastic Polyamide PA 6 UL94, V-0
- Spring clips made of stainless steel
- Adjustable swirl unit and dirt trap made of ABS plastic UL94, V-0
- Compensating ring made of ABS plastic UL94, V-0
- Dirt trap adjustment device and connective material made of galvanised steel

- Plenum box made of galvanised sheet steel
- Plastic surface, optionally in the colours dust grey (similar to RAL 7037) or deep black (similar to RAL 9005)

Technical data

- Nominal sizes: 150, 200 mm
- Volume flow rate range: 1 – 59 l/s or 4 – 213 m³ /h
- Supply air temperature difference: -12 - +20 K
- Crush resistance > 5 kN

Function

Floor diffusers allow supply air in mechanical ventilation and air conditioning systems to flow into the room from below or from the floor. For adaptation to different local conditions, 3 different variants of the air routings are possible.

Vertical flow without adjustment option

Without adjustable swirl unit, the supply air flows vertically into the room at a moderate speed. Since cold air is heavier than warm air, the direction of flow reverses and the supply air flows back towards the floor. A low-turbulence or swell-like flow spreads over the entire floor surface. A lift current forms at heat sources such as people and equipment, so that the air is primarily exchanged in these areas.

This type of hybrid ventilation or mixed-source ventilation is designed exclusively for cooling operation. It is particularly suitable for rooms with a clear division between circulation and occupied areas. These include, for instance, cinema or theatre halls and waiting areas. The maximum supply air temperature difference should not exceed -6 K. The exhaust air should be dissipated in the upper part of the room, above the occupied zone.

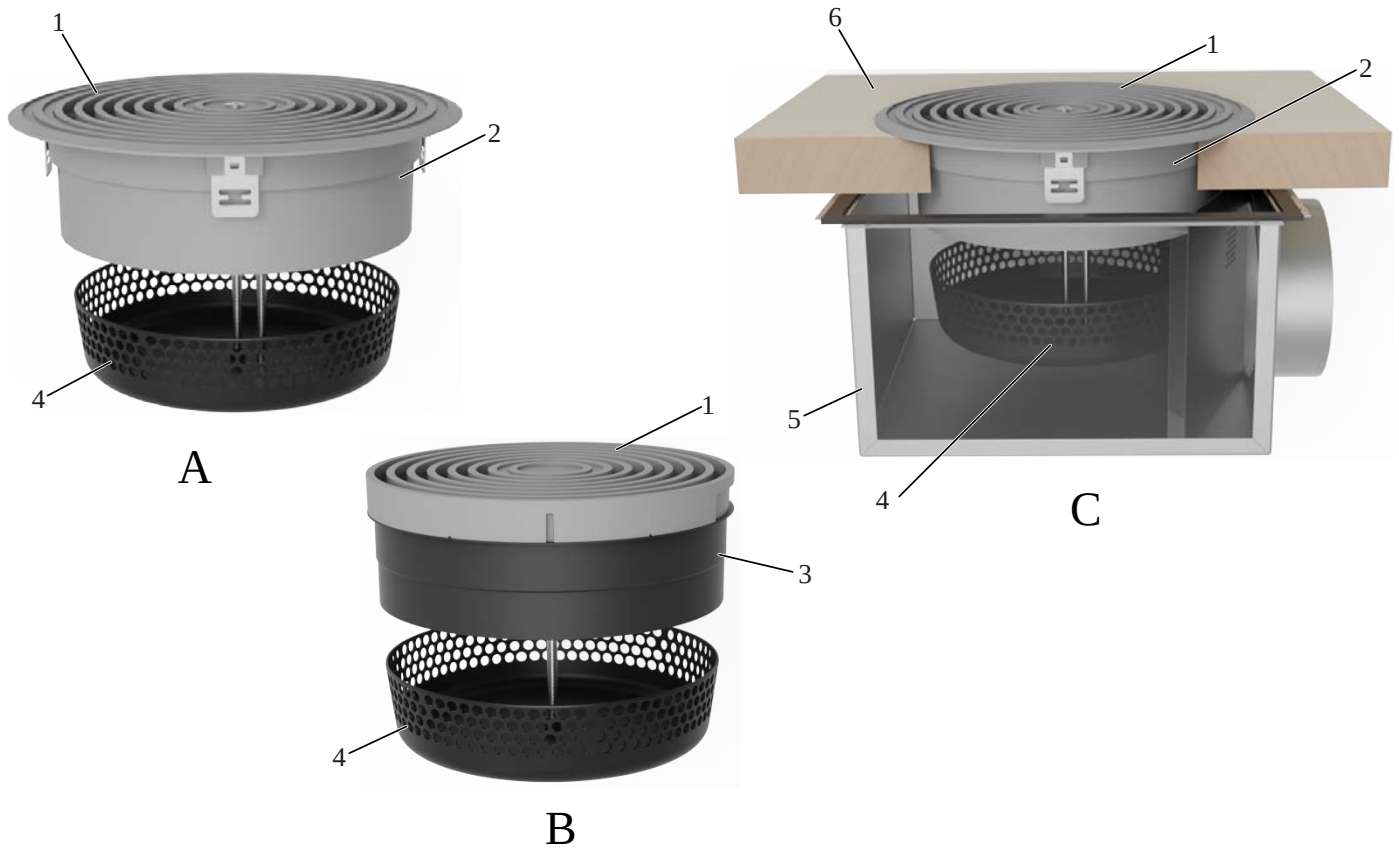
Horizontal swirling airflow

An adjustable swirl unit set for vertical flow causes a swirling vertical supply air flow into the room. In doing so, the supply air induces room air near the floor surface and quickly reduces the air velocity as well as the temperature difference between supply air and room air. This type of mixed ventilation is particularly suitable for areas that are permanently intended for people to remain. This includes, for example, office spaces or assembly and meeting rooms.

Vertical swirling airflow

An adjustable swirl blade set for vertical flow causes a swirling vertical supply air flow into the room. Through this process, the supply air induces room air. There is a rapid reduction in flow velocities and a quick reduction of the temperature difference between supply air and room air. This type of mixed ventilation results in proficient room ventilation. It is particularly suitable for areas in which people do not remain for longer periods of time. This includes corridors or similar circulation areas.

Schematic illustration



A FBK-...-KF

B FBK

C FBK-...-KF-A

1 Diffuser face

2 Housing with clamping flange and clamping springs

3 Spacing ring

Optional

4 Dirt trap

5 Plenum box

6 Base plate (on-site)

Technical data

Nominal sizes	150, 200 mm
Volume flow rate range	1 – 59 l/s or 4 – 213 m ³ /h
Supply air to room air temperature difference	-12 to +20 K
Crush resistance	> 5 kN

Quick sizing

The quick lay-out provides a proficient overview of the possible volume flow rates, the corresponding sound power levels and pressure differences with horizontal air flow.

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

The maximum volume flows apply to a sound power level of approx. 50 dB(A)

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

Air diffuser only

NS	q _v		Δp _t Pa	L _{WA} dB(A)
	l/s	m ³ /h		
150	1	4	0	< 15
	11	39	13	20
	21	77	49	39
	32	115	109	50
200	1	4	0	< 15
	20	72	11	17
	40	143	43	38
	59	213	95	50

With plenum box

NS	q _v		Δp _t Pa	L _{WA} dB(A)
	l/s	m ³ /h		
150	1	4	0	< 15
	13	47	15	24
	26	93	57	40
	39	140	127	50
200	1	4	0	< 15
	19	67	14	19
	37	133	54	38
	55	198	119	50

With dirt trap

NS	q _v		H ₄ = maximum		H ₄ = 45		H ₄ = 35	
			Δp _t	L _{WA}	Δp _t	L _{WA}	Δp _t	L _{WA}
	l/s	m ³ /h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
150	1	4	0	< 15	0	< 15	0	< 15
	11	39	12	20	14	18	16	21
	22	78	48	39	54	39	61	41
	32	116	108	50	120	51	136	52



NS	q _v		H ₄ = maximum		H ₄ = 50		H ₄ = 40	
			Δp _t	L _{wA}	Δp _t	L _{wA}	Δp _t	L _{wA}
	l/s	m ³ /h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
200	1	4	0	< 15	0	< 15	0	< 15
	20	73	11	18	13	19	14	19
	40	143	42	38	49	39	56	40
	59	214	93	50	110	50	126	52

With plenum box and dirt trap

NS	q _v		H ₄ = maximum		H ₄ = 45		H ₄ = 35	
			Δp _t	L _{wA}	Δp _t	L _{wA}	Δp _t	L _{wA}
	l/s	m ³ /h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
150	1	4	0	< 15	0	< 15	0	< 15
	12	44	14	22	16	19	18	22
	24	86	54	40	60	40	69	42
	36	129	119	50	135	53	155	54

NS	q _v		H ₄ = maximum		H ₄ = 50		H ₄ = 40	
			Δp _t	L _{wA}	Δp _t	L _{wA}	Δp _t	L _{wA}
	l/s	m ³ /h	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
200	1	4	0	< 15	0	< 15	0	< 15
	18	64	13	19	14	19	15	19
	35	125	49	38	54	39	60	39
	52	187	108	50	121	50	133	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.

Specification text

General information:

Floor diffusers as supply air diffusers for installation in raised floors of all types. Supply air provision either directly via the raised floor if it is constructed as a pressurised floor, or via a plenum box connected to the on-site air duct system.

Grille core with twist-shaped connecting bars made of plastic polyamide PA 6 UL94, V-0, flame-retardant.

Installation:

1. With stepped compensating ring made of ABS plastic UL94, V-0, flame-retardant for precise installation in the raised floor
2. With clamping flange and clamp spring attachment for easy assemblage with various base plate magnitude from 10 mm. The component made of plastic polyamide PA 6 UL94, V-0 centres the grille core and simultaneously secures it against twisting

Airflow direction:

1. Without adjustable swirl unit for vertical airflow
2. With adjustable swirl unit made from ABS plastic UL94-V-0 for vertical or horizontal airflow. If required, the swirl unit can be adjusted manually

Dirt trap:

1. Without dirt trap and hence without damper element for volume flow rate balancing

2. With dirt trap made of ABS plastic UL94-V-0 which also serves as an adjustable damper element for volume flow rate balancing

Plenum box:

1. Without plenum box for installation in pressurised floor
2. With plenum box made of galvanised sheet steel; plenum box with Ø 123 mm spigot for connection to the air duct system With incorporated air distribution element for a steady flow to the floor diffuser

Equivalence criteria

2 nominal sizes [mm]

- 150
- 200

2 versions

- Diffuser face similar to RAL7037, dust grey
- Diffuser face similar to RAL 9005, black

Volume flow rate range

- 1 – 59 l/s or 4 – 213 m³/h

Supply air to room air temperature difference

- -12 – 20 K

Crush resistance

- > 5 kN

Order code

FBK - 2 - V - KF - SM - A / 150
| | | | | | |
1 2 3 4 5 6 7

1 Type

FBK Floor diffuser

2 Surface floor grille and trim ring

1 Similar to RAL 7037 (dusty grey)

2 Similar to RAL 9005 (jet black)

3 Airflow direction

No entry: vertical

V vertical, adjustable swirl unit

H horizontal, adjustable swirl unit

4 Installation

No entry: spacing ring for stepped holes

Order example: FBK-2-V-KF-SM-A/150**Type****Surface of diffuser core and trim ring****Swirl unit (to set the airflow direction)****Installation****Dirt trap****Plenum box****Nominal size [mm]**

KF Trim ring and spring clip fixing

5 Dirt trap

No entry: without dirt trap

SF flow rate adjustment on the rear side

SV flow rate adjustment on the front side (diffuser face)

6 Plenum box

No entry: without plenum box

A with plenum box

7 Nominal size [mm]

150, 200

FBK

Similar to RAL 9005 (jet black)

Vertical, adjustable swirl unit

Trim ring with spring clips

Flow rate adjustment from the underside

With plenum box

150

Variants

FBK-1



Without clamping flange, without swirl unit

Surface

- Plastic floor diffuser in dust grey, similar to RAL 7037
- For combinations with clamping flange, the clamping flange is also made of plastic and dust grey, similar to RAL 7037

FBK-2/200



Surface

- Plastic floor diffuser in deep black, similar to RAL 9005
- For combinations with clamping flange, the clamping flange is also made of plastic and deep black, similar to RAL 9005

FBK-2*-SM

**Dirt trap**

- Dirt trap to reduce contamination in the raised floor
- Can be used as a damper element due to the height adjustment. Volume flow adjustment possible through rear adjustment
- For the damper effect, the gap dimension between the lower edge of the grille core and the upper edge of the dirt trap is changed. The smaller the gap dimension, the greater the dampening effect

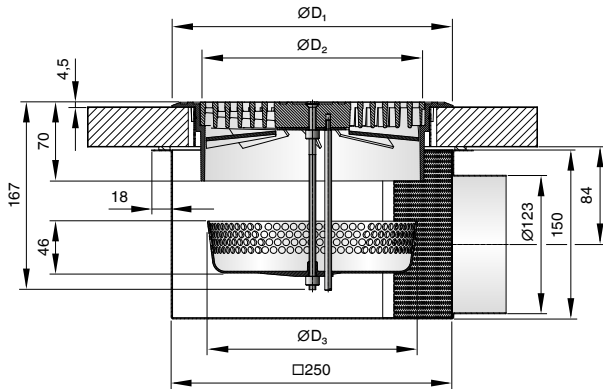
FBK-2*-SV



Black floor diffuser with dirt trap

Dirt trap

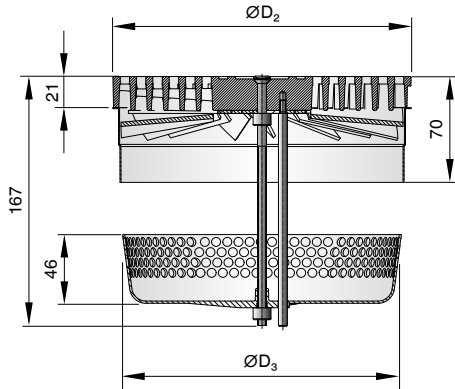
- Dirt trap to reduce contamination in the raised floor
- Can be used as a damper element due to the height adjustment. Volume flow adjustment possible through front adjustment
- For the damper effect, the gap dimension between the lower edge of the grille core and the upper edge of the dirt trap is changed. The smaller the gap dimension, the greater the dampening effect.

Floor diffuser with clamping flange, dirt trap with front adjustment and plenum box**Plenum box**

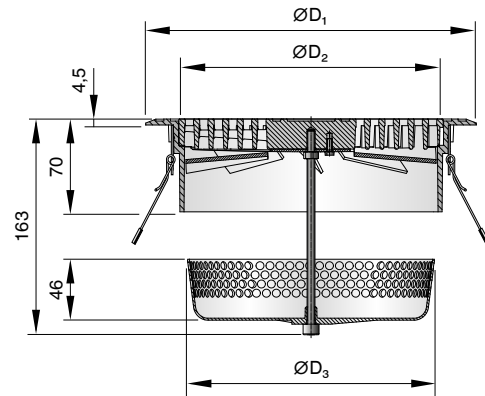
- Plenum box for direct connection to the on-site air duct system. Connection piece diameter 123 mm
- Integrated air distribution element for uniform flow to the floor diffuser
- The plenum box can be combined with all variants of floor diffusers

Dimensions

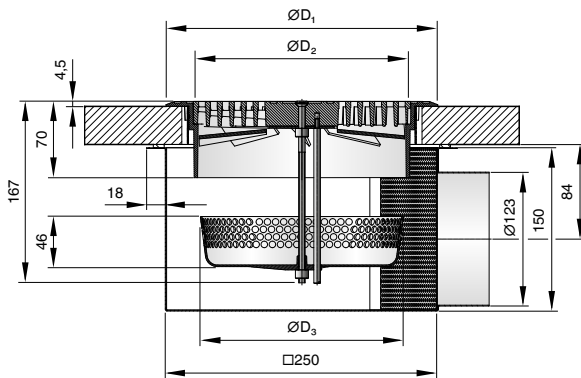
Floor diffuser with compensating ring and dirt trap with front adjustment



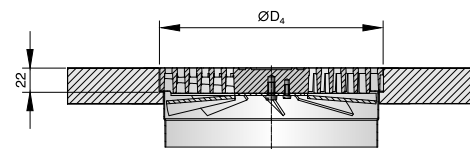
Floor diffuser with clamping flange and dirt trap with rear adjustment



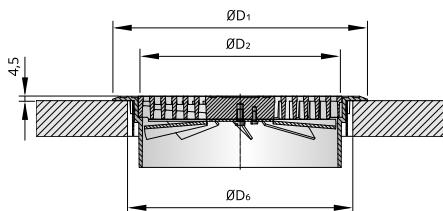
Floor diffuser with clamping flange, dirt trap with front adjustment and plenum box



Installation opening with compensating ring ØD4



Installation opening with clamping flange ØD6

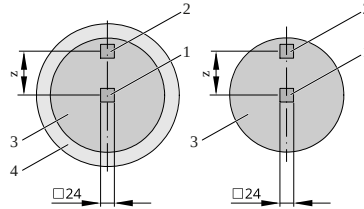


Dimensions

NS	Outer diameter clamping flange	Outer diameter grille insert	Outer diameter dirt trap	Installation opening with compensating ring	Installation opening with clamping flange
	ØD ₁	ØD ₂	ØD ₃	ØD ₄	ØD ₆
150	200	150	137	151	170 – 180
200	250	200	187	201	220 – 230

Weight m [kg]

NS	150	200
Floor grille	0.3	0.4
Clamping flange	0.2	0.2
Dirt trap	0.1	0.1

Crush resistance


- 1 Central load
- 2 Off-centre load
- 3 Diffuser core
- 4 Clamping flange

Crush resistance

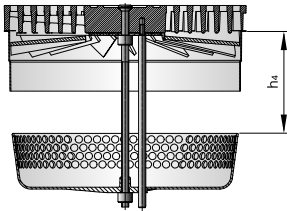
NS	FBK-*-KF		FBK-*-*	
	off-centre load	central load	off-centre load	central load
150	≥ 8 kN	≥ 8 kN	≥ 8 kN	≥ 8 kN
200	≥ 5 kN	≥ 8 kN	≥ 5 kN	≥ 5 kN

Product details

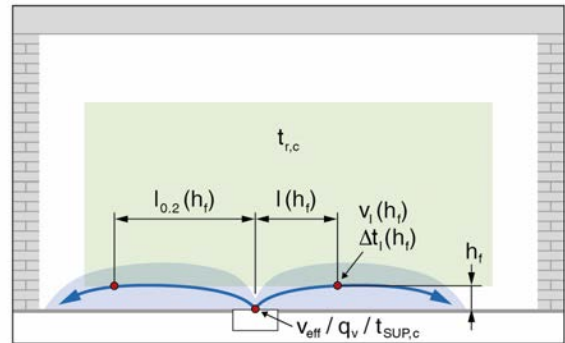
- Installation in pressurised floors without plenum box
- Plan plenum boxes for rooms with individual volume flows and/or supply air temperatures
- For raised floors (from 10 mm panel magnitude) with carpet coverings use floor diffusers with clamping flange for better edge protection
- Clamping flanges are suitable for compensating tolerances when creating the installation opening. A particularly tight fit is achieved when the minimum dimension of the installation opening is realised
- By installation without a clamping flange in a stepped bore use the supplied spacing ring to ensure the function and height compensation
- Variants with adjustable swirl unit can be adjusted manually. Setting position H provides a horizontal supply airflow, setting position V provides a vertical supply airflow

The schematic diagrams are provided to illustrate installation details.

Dirt trap setting for volume flow balancing

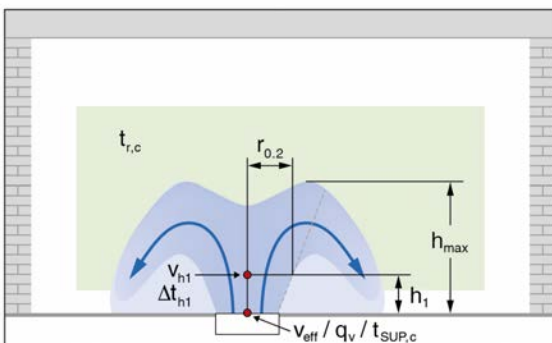


Air flow with horizontally adjusted swirl unit



For flow rate balancing (adjusting reduction), the height H_d is changed between the upper edge of the dirt trap and the lower edge of the floor grille.

Air flow with vertically adjusted swirl unit



Nomenclature

NS [mm]; [in]
Nominal size

q_v [m³/h]; [l/s]
Volume flow rate

Δp_t [Pa]
Total differential pressure

L_{WA} [dB(A)]
A-weighted sound power level

m [kg]
Weight

H₄ [mm]
Distance between upper edge of dirt trap and lower edge of grille insert

ØD₁ [mm]

Outer diameter trim ring

ØD₂ [mm]
Outer diameter grille insert

ØD₃ [mm]
Outer diameter dirt trap

ØD₄ [mm]
Installation opening with spacing ring

ØD₆ [mm]
Installation opening with trim flange

Z [mm]
Distance off-centre breaking load determination according to DIN EN 13264

Lengths

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