

FBR

Floor diffuser with louvre grille

OPERATING CONDITIONS

- Primary air intake velocity: up to 2.5 m/s per spigot
- Primary air inlet temperature: above the dew point
- Relative humidity at the primary air inlet: above the dew point

ADVANTAGES

- Great adaptability to architectural requirements, both in terms of dimensions and design.
- Multiple installation solutions and easy assembly.
- Easy access to the unit for cleaning and maintenance work.
- Tool-free disassembly.

PERFORMANCE DATA

L (mm)	L _{WA} (dB(A))	B (mm)			
		100	200	300	400
400	30	213 m ³ /h	435 m ³ /h	435 m ³ /h	435 m ³ /h
		16 Pa	8 Pa	3 Pa	2 Pa
1000	30	487 m ³ /h	1166 m ³ /h	1304 m ³ /h	1304 m ³ /h
		11 Pa	8 Pa	4 Pa	2 Pa
3000	30	1248 m ³ /h	2988 m ³ /h	4347 m ³ /h	4347 m ³ /h
		8 Pa	6 Pa	4 Pa	2 Pa

Maximum achievable values of V_{CLOSED} (m³/h) and Δp_t (Pa), which must not exceed 30 dB(A) or 2.5 m/s per spigot for units with length (L) and width (W).

INTENDED USE

Intended use as a step-resistant louvre grille with plenum box for supplying or extracting primary air or designated use as an accessory element for installations with CNVA and CNV floor convectors.

The grilles are not suited for heavily frequented areas and loading zones.

CONTENTS

General description	3
Construction	3
FBR models	5
FBRZ models	12
TGER versions	15
Installation	16
Maintenance.....	18
Technical data.....	19
Legend	20
FBR order code	21
FBRZ order code	23
TGER order code.....	25
Specification text	26

GENERAL DESCRIPTION

The FBR floor diffuser with walk-on grille is suitable for use in supply and extract air systems. It can also be used as an accessory in combination with floor convectors such as CNV and CNVA.

The FBR floor diffuser with walk-on grille is designed for installation in raised floors and solid floors, mainly in the edge area.

The **FBR** floor diffuser is available in a wide range of models that can be easily adapted to any installation and meets a variety of requirements. The option of ordering the product with or without plenum box provides various installation solutions.

The **FBR** floor diffusers can be configured to the desired height, width and length. It is also possible to configure them for installation in a linear arrangement along long façades, for example.

The option of selecting internal elements such as filters increases user-friendliness and expands the product's application range. Other elements such as hit-and-miss dampers or air diffuser plates allow the air flow to be regulated and the installation to be customised at the diffuser itself, helping to create a high-quality environment.

Mounting elements like wall anchors, height-adjustable feet and protective covers make the installer's work easier and ensure accurate installation.

In combination with the FBRZ accessory series for floor boxes, the diffusers can be flexibly adapted to almost any room geometry.

The step-resistant louvre grille and the support frame can be ordered as separate elements (TGER). The linear grille option enables different air throw patterns, while the roll-down grille enables convenient handling both during installation and maintenance. The frame with PA3 profile can be integrated directly into the floor without a plenum box.

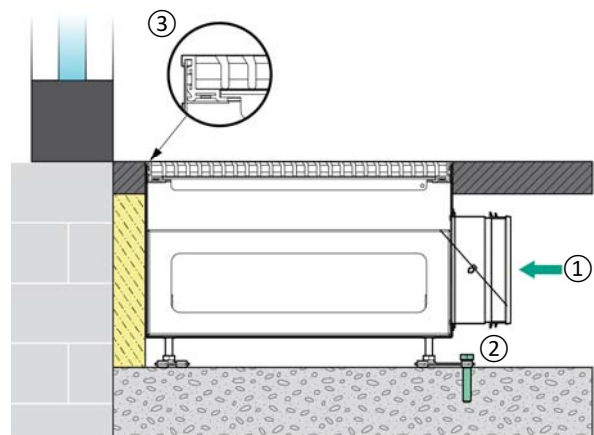
Maintenance effort is minimised, with easy access for filter cleaning and replacement. The floor diffusers can be removed without tools.

CONSTRUCTION

DEFINITION OF THE DIFFUSER SIDES

The sides of the floor diffuser are defined as follows:

- 1 Connection spigot on the long side
- 2 Fixing of the adjustable feet to the long side
- 3 Air jet directed to the façade



STANDARD MODEL

1 Plenum box

Made of 1 mm thick galvanised sheet steel, painted black in RAL 9005 inside and out. Optionally made of V2A stainless steel sheet. Optionally with powder coating and with external impact sound insulation.

2 Spacer profiles

Made of 1 mm thick galvanised sheet steel; they transfer the load of the grille to the device structure. Number of profiles depending on device length.

3 Connection spigot

Made of 0.7 mm thick galvanised sheet steel, located on the long, room-facing side of the device. Optionally at the front or on the underside of the device. Available in various diameters. Can also be configured with several spigots. Optionally available with rubber lip seal. Optionally available with damper.

4 Reinforcements

Made of galvanised sheet steel, 1 mm thick. They make the plenum box rigid and stable. The number of reinforcements varies depending on the device length.

5 Adjustable feet

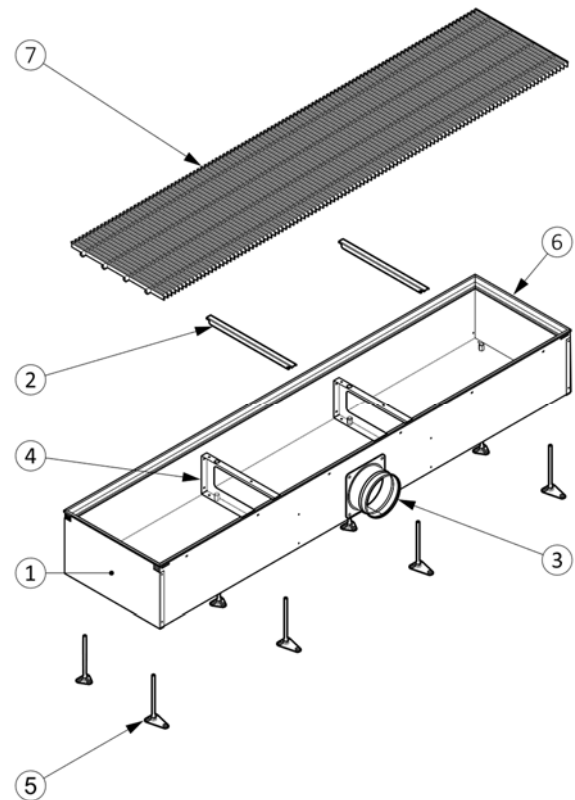
Adjustable feet made of M8 threaded rod (DIN 913) and galvanised sheet steel painted in black RAL 9005, 2 mm thick, length 70 mm. Fastening on the room-facing side. Optionally available in 130 mm length or without adjustable feet.

6 Grille support / frame

Extruded aluminium profile, anodised in natural colour. Available in black, bronze, gold or stainless steel colour.

7 Tread-resistant grille insert

Grille optionally made of extruded aluminium profile; blades available in black, bronze, gold or stainless steel colour. Option of a linear grille with blades arranged lengthwise at spacings of 8 mm or a roll-down grille with blades arranged cross-wise at 8 mm, 10 mm or 12 mm spacings. Spacer tubes made of aluminium profile $\varnothing 8$ mm; the roll-down grille is available in black and the linear grille in aluminium colour.



OPTIONAL ACCESSORIES

Internal elements

Various internal elements are optionally available. Internal elements in black RAL 9005.

- Perforated sheet 1 mm, free cross-section 46 %, made of galvanised sheet steel; air diffuser plate to achieve homogeneous air distribution.
- Hit-and-miss damper made of galvanised sheet steel for easy air volume regulation.
- ISO Coarse 40 % filter mat to improve air quality in the room. 1 mm thick galvanised sheet steel frame. Filter mat 10 mm.

Protective mounting cover

Protective cover to prevent possible damage to the device during transport and installation.

- either non-treadable corrugated board protection
- or tread-resistant MDF panel.

Wall anchor

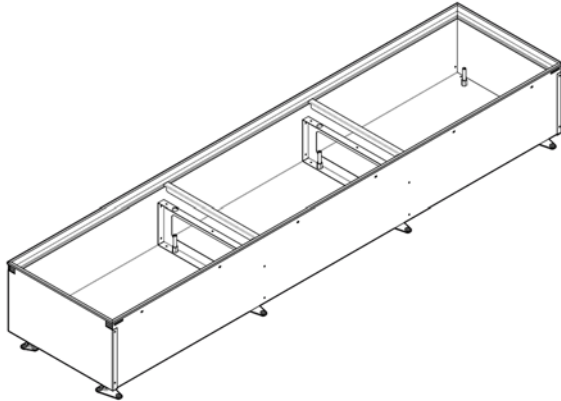
- With steel anchor claws for better fixing of the frame.

FBR MODELS

MATERIAL

The box can be made of galvanised sheet steel or V2A stainless steel.

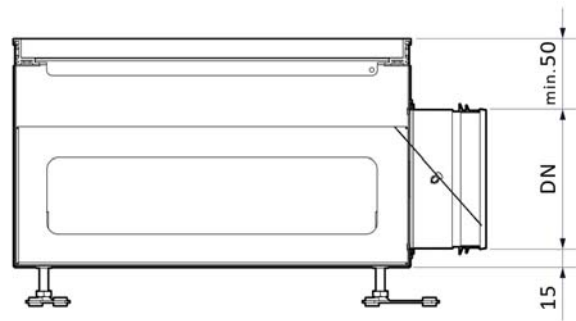
- M** = Galvanised sheet steel
A = V2A stainless steel



DIMENSIONS AND WEIGHTS

The device dimensions can be fully configured according to the available space.

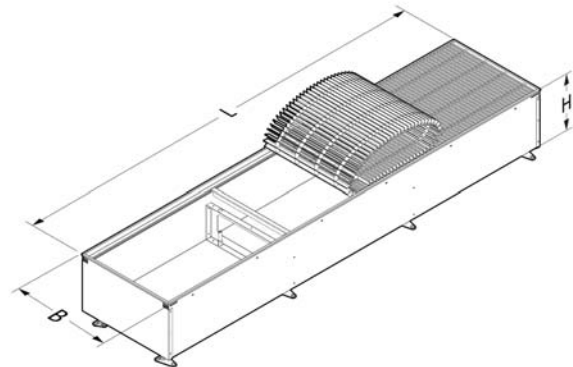
- xxx** = Width in mm, freely selectable (always with 3 digits; from 100 to 400)
xxx = Height in mm, freely selectable (always with 3 digits; minimum height = DN + 65; from 150 to 350; minimum height of 090 only possible with spigot from below (-P4))



DN (mm)	0	78	98	123	158	198	248
H _{min} (mm)	150	150	163	188	223	263	313

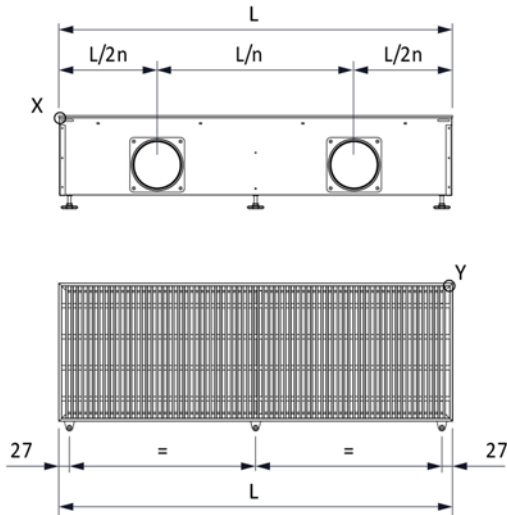
Does not apply to spigot position -P4.

- xxxxx** = Length (L or BL) in mm, freely selectable (always with 5 digits; single design from 00400 to 03000; band design starting from 03000; see available lengths on page 6)



NOTE

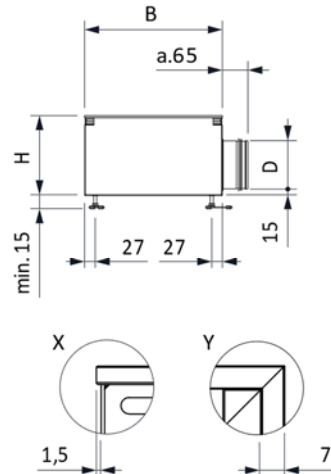
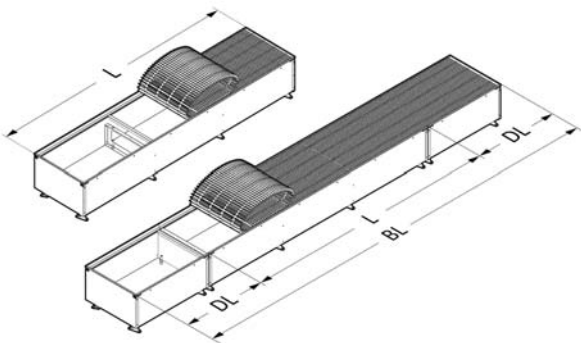
SCHAKO deducts 1 mm per running metre from the linear grille to compensate for expansion. If a different compensation is required, this must be specified in the order. For further information, see page 15.



n = Number of spigots according to order
 The number of adjustable foot pairs is 2 for $L \leq 500$. A further pair is added every 500 mm. If the positions of the adjustable feet match the spigot positions, an additional pair of adjustable feet is added.

SINGLE / BAND DESIGN

The floor diffusers can be configured as single devices or in band design to cover long lengths.



	B = 100	B = 200	B = 300	B = 400
H = 150	4.5 kg/m	5.7 kg/m	7.0 kg/m	8.2 kg/m
H = 350	8.1 kg/m	9.7 kg	11.2 kg/m	12.8 kg/m

Approximate weight per linear metre of the standard version, without grille and without spigot. Width (W) and height (H) in millimetres.

Available lengths

The **single design** version consists of a plenum box up to $L = 3000$ mm, with one or two identical grille sections up to 1800 mm. The grille insert is shortened by 7 mm at each end of the frame. Examples:

$L = 1600$ mm:

1x box = 1600, 1x grille insert = 1586

$L = 2000$ mm:

1x box = 2000, 2x grille insert = 993 + 993

The **band design** version consists of sections up to $L=3000$ mm, with two differences in length (DL). The grille insert is shortened by 7 mm at each end of the frame. Examples:

$BL = 5000$ mm:

2x box = 2500 + 2500,

4x grille insert = [1246 + 1246] + [1246 + 1246]

$BL = 6100$ mm:

3x box = 1550 + 3000 + 1550

4x grille insert = [1543] + [1500 + 1500] + [1543]

$BL = 7000$ mm:

3x box = 2000 + 3000 + 2000,

6x grille insert = [996 + 996] + [1500 + 1500] + [996 + 996]

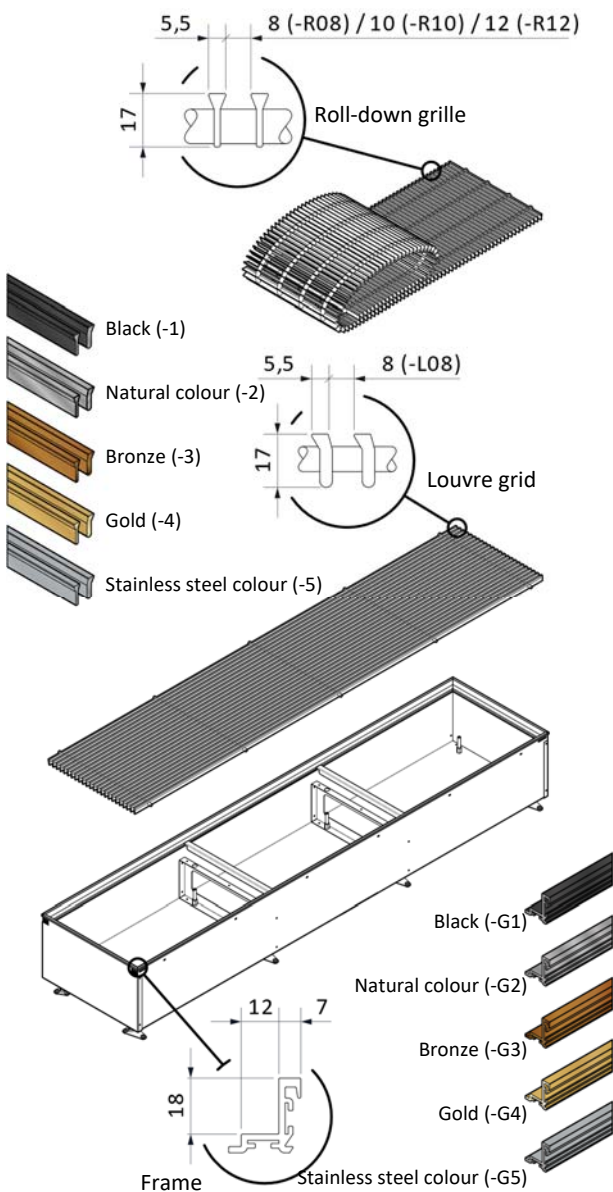
The components are labelled at the factory to enable easy identification and installation on site (see page 16).

GRILLE INSERT

Two different grille inserts are available. The linear grille has longitudinal blades with a deflection profile and 8 mm spacing. The roll-down grille model consists of transverse blades with a symmetrical profile and spacings of 8 mm, 10 mm or 12 mm.

All grille configurations are tread-resistant. The surface of the blades and frame is anodised and available in various colours. The spacer tubes of the blades are black for the roll-down grille and aluminium-coloured for the linear grille.

The grille insert can be configured with frame fastening (dismantling with tools as shown on page 17).



The colours shown are symbolic and do not represent the actual colours.

NOTE

If the configured length of the roll-down grille is not a multiple of [blade thickness + spacing], spacers are provided at one end of the grille.

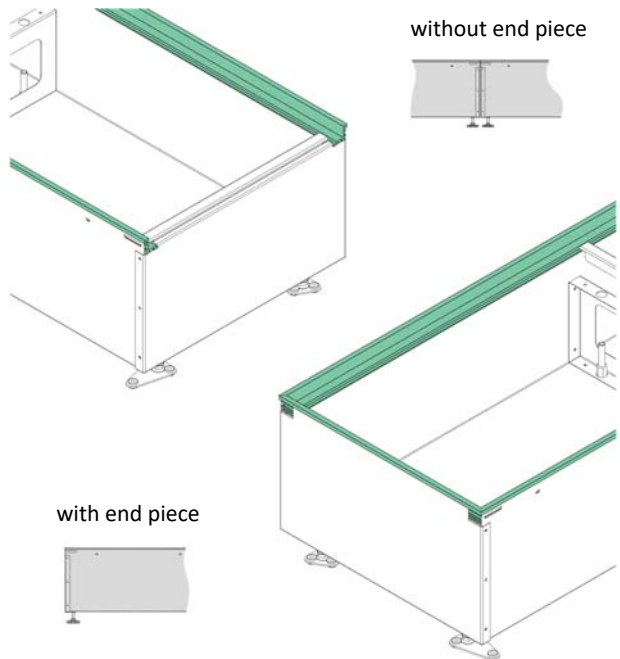
ATTENTION

The grilles are not suited for heavily frequented areas and loading zones.

END PIECE

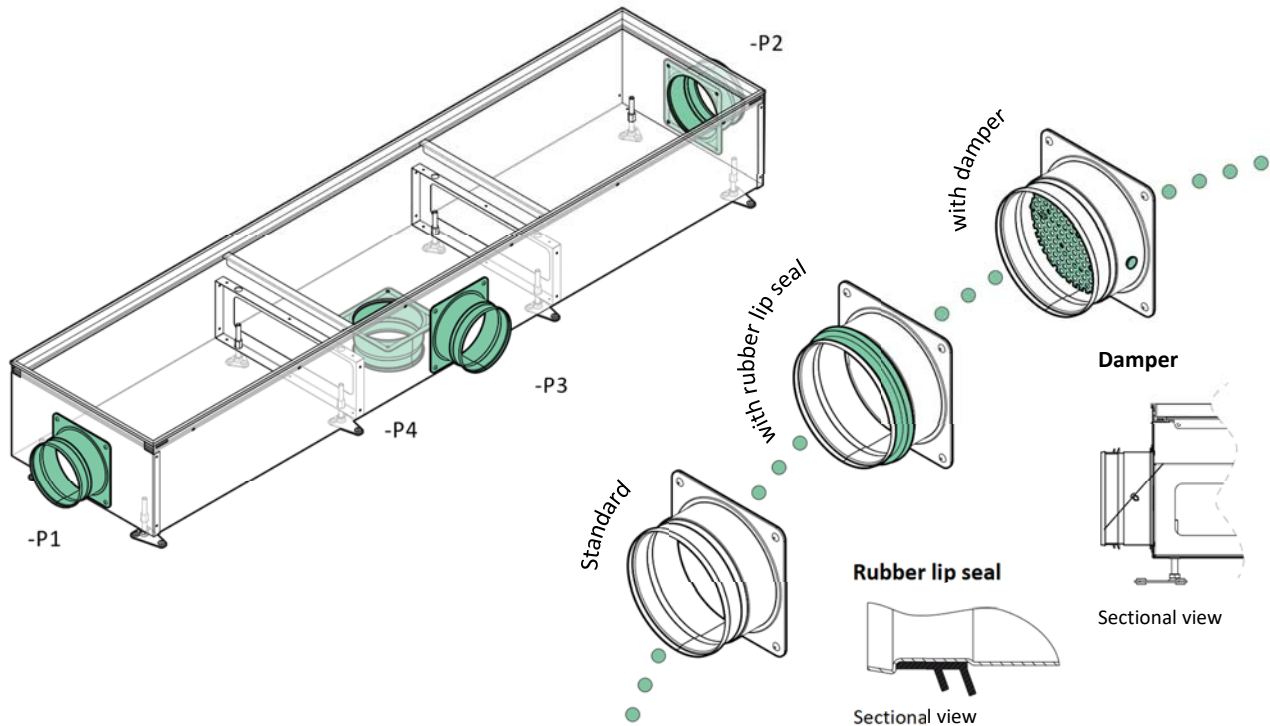
As the devices can be ordered with or without an end piece, it is possible to connect several FBR air diffusers, as well as corner pieces (FBRZ) and devices with active heat input (CNVA) and passive heat input (CNV).

- 0** = Without end piece
- Z** = End pieces on both sides (standard)
- L** = End piece on the left
- R** = End piece on the right



CONNECTION SPIGOT

There are various configuration options for the connection spigots. Different configurations with regard to the number of spigots, the diameter, the position, the rubber lip seal for sealing to the connection pipe and the air flow-regulating damper are possible.



Position of the primary air connection spigot

- P0** = Without spigot
- P1** = Front left
- P2** = Front right
- P3** = On the long, room-facing side (standard)
- P4** = On the underside

Spigot diameter

- 0** = Without spigot
- 1** = DN78
- 2** = DN98
- 3** = DN123
- 4** = DN158
- 5** = DN198
- 6** = DN248

Rubber lip seal

- 0** = Without rubber lip seal (standard)
- G** = With rubber lip seal

Damper

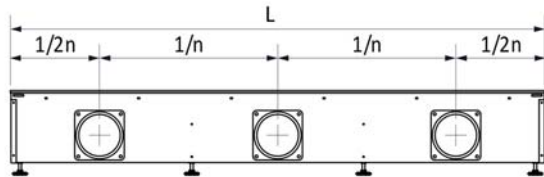
- D0** = Without damper (standard)
- D1** = With damper

Maximum number of spigots

The number of spigots can be freely configured. The maximum number of spigots is limited depending on the design and is indicated in the following tables:

Number of spigots on the long side (positions -P3 and -P4)

The required minimum length L in mm is specified as n spigots depending on the number of spigots n and the respective spigot diameter.

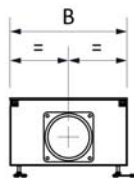


spigots	DN78	DN98	DN123	DN158	DN198	DN248
1	400	400	400	400	400	400
2	400	400	400	408	488	588
3	400	422	497	602	722	872
4	476	556	656	796	956	1156
5	590	690	815	990	1190	1440
6	704	824	974	1184	1424	1724

400 = Minimum length based on design restrictions

Number of spigots on the front side (positions -P1- and -P2)

The required minimum width W is specified in mm, depending on the number of spigots n and the respective spigot diameter.

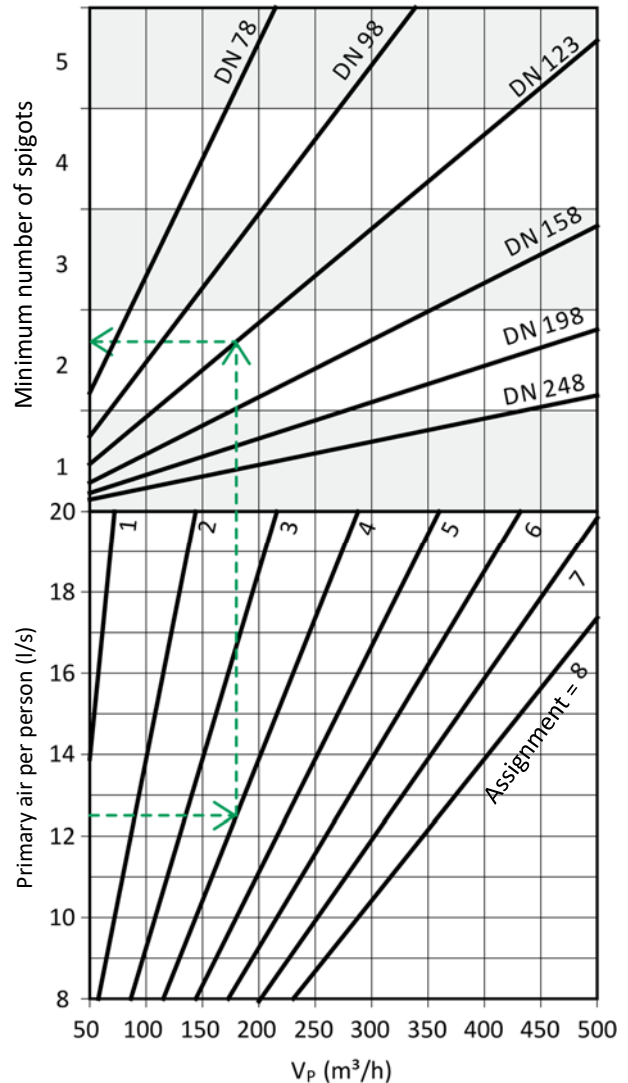


spigots	DN78	DN98	DN123	DN158	DN198	DN248
1	104	124	149	184	224	274
2	203	243	293	363	-	-
3	302	362	-	-	-	-

- = Not available due to design restrictions

Minimum number of spigots

The minimum number of spigots is configured according to the project's specific ventilation requirements and the air velocity per spigot. The minimum number of spigots required to ensure that the value of 2.5 m/s per spigot is not exceeded can be seen in the diagram.



Optimum air quality = 20 l/s per person:

Hospitals, clinics, laboratories, nurseries.

Good air quality = 12.5 l/s per person:

Offices, living rooms, reading rooms, museums, courtrooms, classrooms, swimming pools.

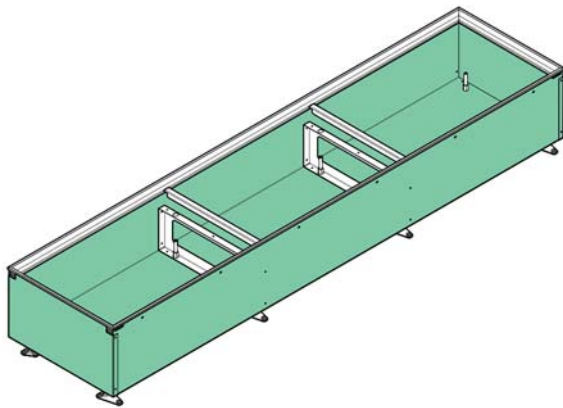
Average air quality = 8 l/s per person:

Commercial buildings, cinemas, theatres, meeting rooms, hotel rooms, restaurants, cafés, bars, nightclubs, gyms, sports halls, computer rooms.

EXTERNAL COATING

The plenum box can be finished with an anti-corrosion coating. With the option of a 3 mm impact sound insulation, it is possible to reduce the transmission of structure-borne noise.

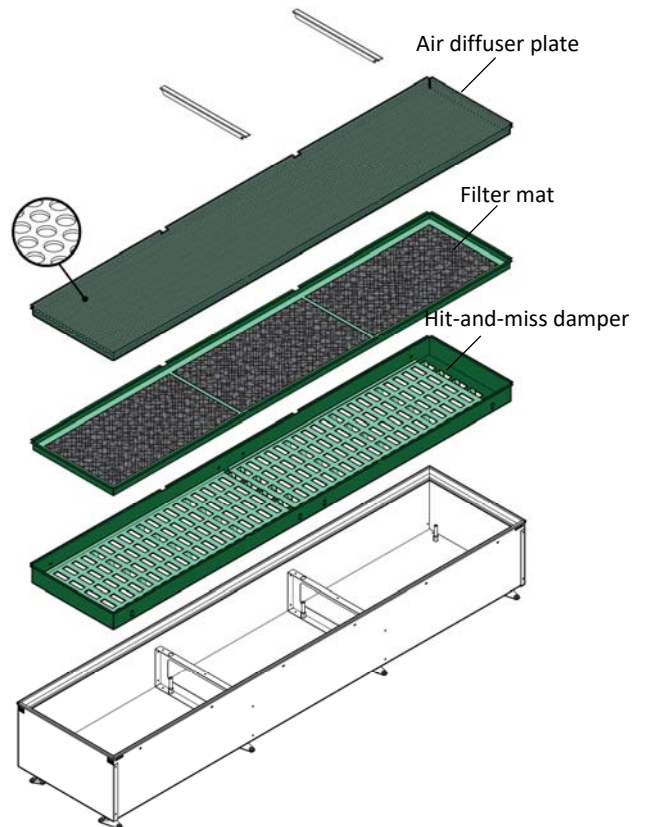
- A1** = Plenum box painted in RAL 9005 (black, standard)
- A2** = Plenum box painted in black with polyester powder for corrosion protection
- A3** = Plenum box painted in RAL 9005 (black) with 3 mm impact sound insulation bonded over the entire surface
- A4** = Plenum box painted in black with polyester powder for corrosion protection, 3 mm impact sound insulation bonded over the entire surface



INTERNAL ELEMENTS

By selecting additional internal elements, you can improve the functionality of the devices. The perforated plate on the inside ensures perfect distribution of the supply air in the plenum box. The hit-and-miss damper can be used to adjust the air volumes of the various devices. The ISO Coarse 40 % filter improves air quality and also ensures an even distribution of the air. It is also possible to combine several elements in the same device.

- I0** = Without internal elements (standard)
- I1** = With perforated plate for air diffusion
- I2** = With hit-and-miss damper
- I3** = With perforated plate for air diffusion and hit-and-miss damper
- I4** = With ISO Coarse 40 % filter mat
- I5** = With ISO Coarse 40 % filter mat and hit-and-miss damper

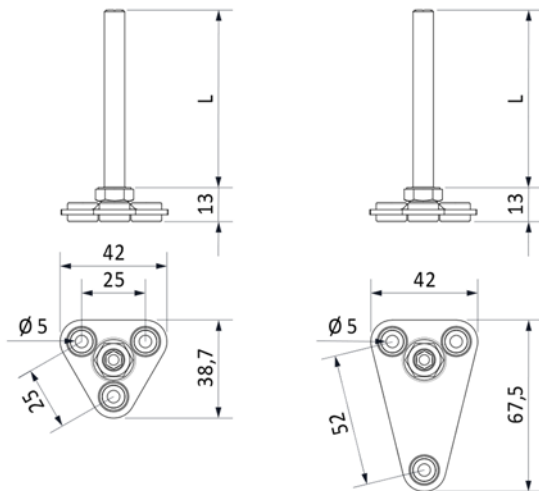
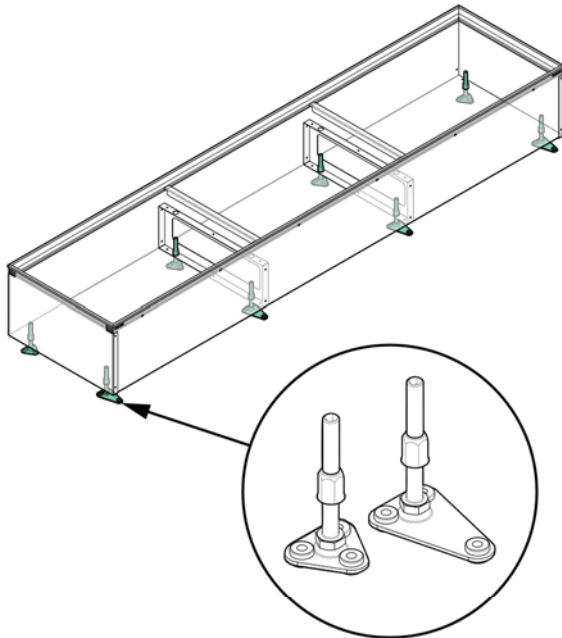


ADJUSTABLE FEET

The height of the device can be adjusted using the adjustable feet, making correct installation much easier. They consist of a DIN 913 M8 threaded rod and a 2 mm thick steel base with cushioned supports, painted black.

Two lengths are available. The 70 mm length has an adjustment range of up to 60 mm, while the 130 mm length has an adjustment range of up to 120 mm. The room-facing adjustable feet can be fastened to the floor.

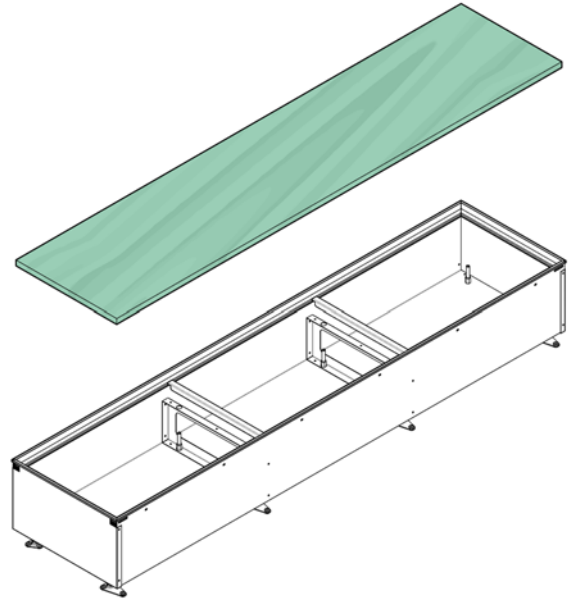
- 00** = Without adjustable feet (standard for model without plenum box (-0))
- 07** = Adjustable feet, 70 mm (standard)
- 13** = Adjustable feet, 130 mm



PROTECTIVE MOUNTING COVER

The device can be supplied with a protective plate made of cardboard (non-treadable) or MDF panel (tread-resistant) to prevent possible damage during transport and installation.

- M0** = Without protective cover (standard)
- M1** = With cardboard insert (non-treadable)
- M2** = With wooden insert (tread-resistant)



ATTENTION

We recommend that the protective cover is not removed until installation and commissioning have been completed.

NOTE

If a protective cover is selected for installation, the grille is supplied separately packaged.

FBRZ MODELS

The FBRZ corner piece complements the FBR air diffusers to configure accessories such as corners, bevelled edges and sound-insulated floor ducts for partition walls. The respective features of the FBRZ corner piece are identical to the features of the FBR air diffusers (see page 5).

MODEL

Three versions are available:

1 The sound insulation floor duct prevents sound transmission between rooms separated by partition walls.

2 The model with corner piece enables diffuser installation in a continuous closed linear arrangement (band design).

S = Floor duct with central sound insulation (not possible for model without plenum box)

E = Corner piece

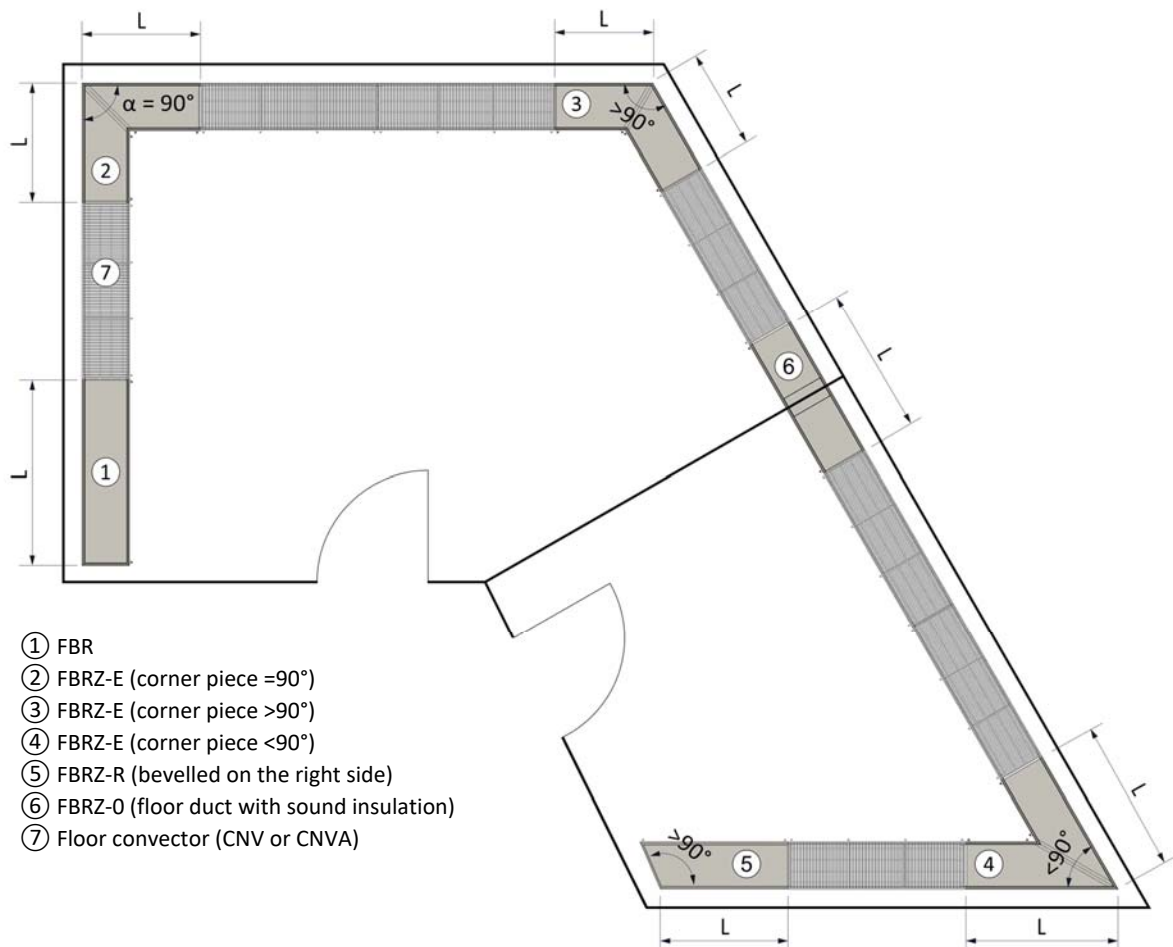
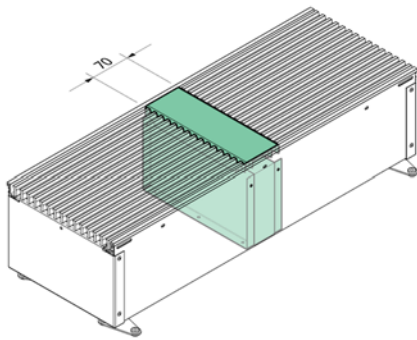
3 The bevel cut solution allows the corner pieces to be adapted to rooms with sloping walls or different angles.

L = Bevelled on the left side

R = Bevelled on the right side

NOTE

The length and angle of the bevelled edge are determined in relation to the façade (see figure → ⑤).



DIMENSIONS

xxxx = Length in mm, freely selectable (always with 4 digits; corner piece from (see table) to B + 500; bevelled cut from (see table) to 3000 - B; floor duct from 500 to 3000)

xxx = Angles in degrees, freely selectable (always with 3 digits; corner piece from 040 to 320; bevel cut from 040 to 140; floor duct 000)

Minimum corner lengths

The minimum length (L) is specified depending on the desired angle and width.

α (°)	B (mm)						
	100	150	200	250	300	350	400
40 320	475	613	750	887	1025	1162	1299
45 315	442	563	683	804	925	1045	1166
50 310	415	522	629	737	844	951	1058
55 305	393	489	585	681	777	873	969
60 300	374	460	547	634	720	807	893
65 295	357	436	514	593	671	750	828
70 290	343	415	486	558	629	700	772
75 285	331	396	461	526	591	657	722
80 280	320	379	439	498	558	618	677
85 275	310	364	419	473	528	582	637
90 270	300	350	400	450	500	550	600
95 265	292	338	384	430	475	521	567
100 260	284	326	368	410	452	494	536
105 255	277	316	354	392	431	469	507
110 250	271	306	341	376	411	446	481
115 245	264	296	328	360	392	423	455
120 240	258	287	316	345	374	403	431
125 235	253	279	305	331	357	383	409
130 230	247	270	294	317	340	364	387
135 225	242	263	283	304	325	345	366
140 220	237	255	273	291	310	328	346
145 215	232	248	264	279	295	311	327
150 210	227	241	254	267	281	294	308
155 205	223	234	245	256	267	278	289
160 200	218	227	236	245	253	262	271
165 195	214	220	227	233	240	247	253
170 190	209	214	218	222	227	231	235
175 185	205	207	209	211	214	216	218
180 180	200	200	200	200	200	200	200

If the desired angle is between two rows, use the longer length.

If the desired width is between two columns, use the longer length.

Minimum length of the bevelled edges

The minimum length (L) is specified depending on the desired angle and width.

α (°)	B (mm)						
	100	150	200	250	300	350	400
40	320	379	439	498	558	618	677
45	300	350	400	450	500	550	600
50	284	326	368	410	452	494	536
55	271	306	341	376	411	446	481
60	258	287	316	345	374	403	431
65	247	270	294	317	340	364	387
70	237	255	273	291	310	328	346
75	227	241	254	267	281	294	308
80	218	227	236	245	253	262	271
85	209	214	218	222	227	231	235
90	200	200	200	200	200	200	200
95	200	200	200	200	200	200	200
100	200	200	200	200	200	200	200
105	200	200	200	200	200	200	200
110	200	200	200	200	200	200	200
115	200	200	200	200	200	200	200
120	200	200	200	200	200	200	200
125	200	200	200	200	200	200	200
130	200	200	200	200	200	200	200
135	200	200	200	200	200	200	200
140	200	200	200	200	200	200	200

If the desired angle is between two rows, use the longer length.

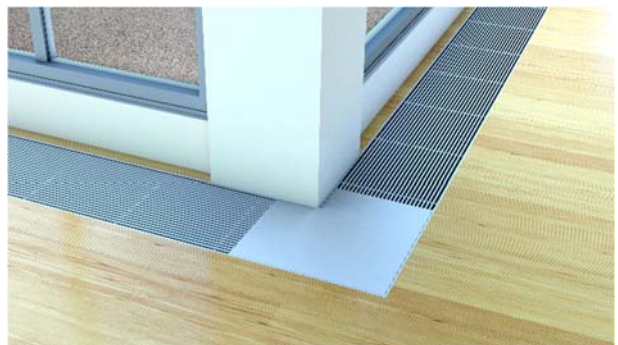
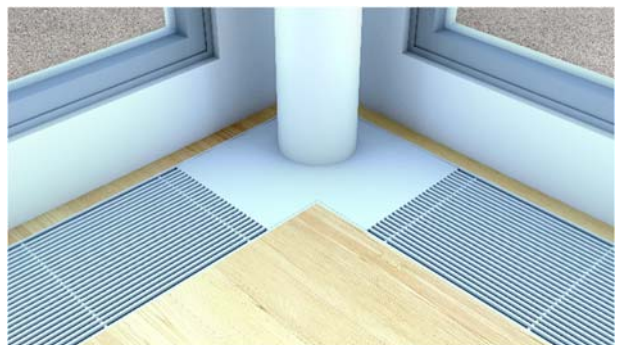
If the desired width is between two columns, use the longer length.

FIGURES

Different FBRZ configuration options are shown below.



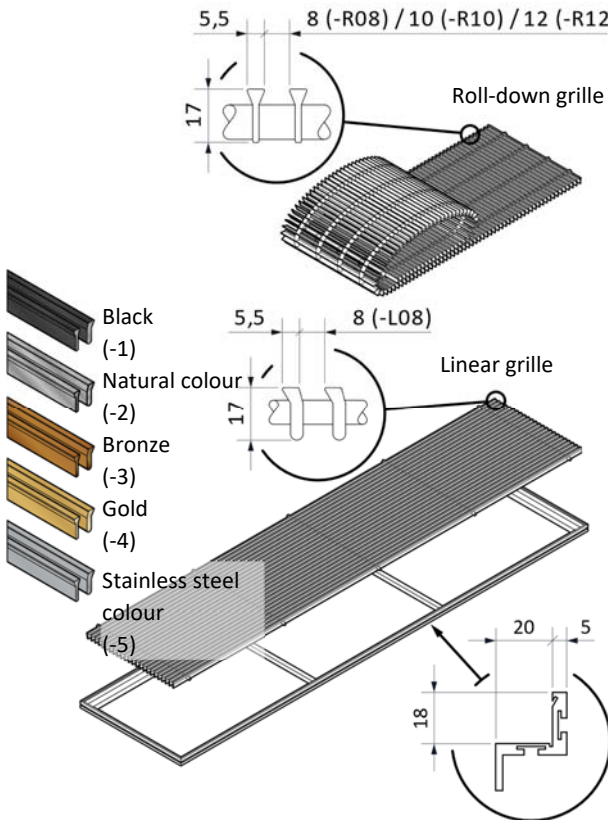
Cut-outs for columns and other special designs can also be configured upon request.



TGER VERSIONS

With the TGER grille insert option, it is possible to select the grilles of the FBR and FBRZ devices separately. The PA3 installation frame in the floor without a plenum box can also be ordered separately.

The respective features of the TGER grille inserts are identical to the features of the FBR air diffusers (see page 7).

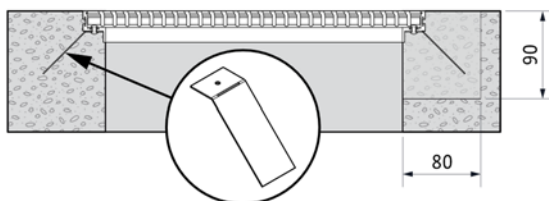


The colours shown are symbolic, and do not represent the actual colours.

WALL ANCHORS

The wall anchors are additional accessories to achieve a fixed connection between the grille frame and the floor.

- 0 = Without wall anchor (standard)
- 1 = With wall anchor (not possible with plenum box)



800 mm ≤ L: 4 wall anchors (2 per side)
 +2 additional wall anchors (1 per side) for every 400 mm

DIMENSIONS AND WEIGHTS

- xxx = Width in mm, freely selectable (always with 3 digits; from 086 to 390; see note*)
- xxxxx = Length in mm, freely selectable (always with 5 digits; see available lengths on page 6: see note*)

Model	B = 100	B = 200	B = 300	B = 400
Linear grille	1.2 kg/m	2.5 kg/m	3.7 kg/m	4.9 kg/m
Roll-down grille	0.8 kg/m	1.7 kg/m	2.5 kg/m	3.4 kg/m

Approximate weight per running metre with 8 mm blade spacing. Width (W) in millimetres.

* NOTE

The dimensions specified in the order must correspond to the actual dimensions.

For the length (L), the frame thickness and the expansion length must be deducted. The expansion length is not required for the roll-down grille.

For the width (W), 2 mm must be deducted for the linear grille and 1 mm for the roll-down grille.

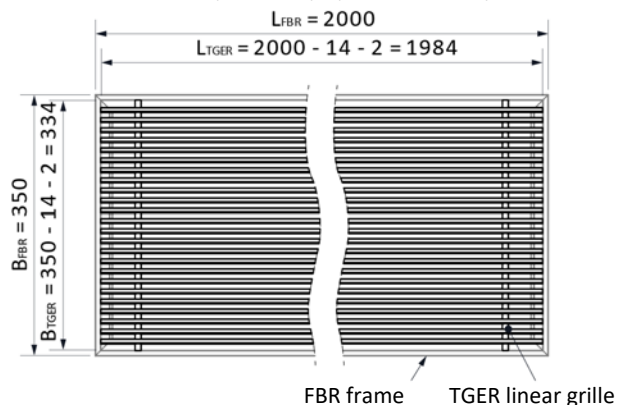
The table shows the reduction per linear metre of grille suggested by SCHAKO for the expansions. The reference manufacturing temperature is 20 °C.

ΔT < 40 °C	ΔT > 40 °C
1 mm/m	2 mm/m

Example: If you use a linear grille for an FBR of 350 mm width and 2000 mm length with a 7 mm frame at a temperature of 30 °C (ΔT = 30 - 20 = 10 °C), we recommend the following grille configuration:

$$B_{TGER} = 350 \text{ mm} - (2 \times 7 \text{ mm}) - 1 \text{ mm} = 335 \text{ mm}$$

$$L_{TGER} = 2000 \text{ mm} - (2 \times 7 \text{ mm}) - (1 \text{ mm/m} \times 2 \text{ m}) = 1984 \text{ mm}$$



NOTE

If the configured length of the roll-down grille is not a multiple of [blade thickness + spacing], spacers are provided at one end of the grille.

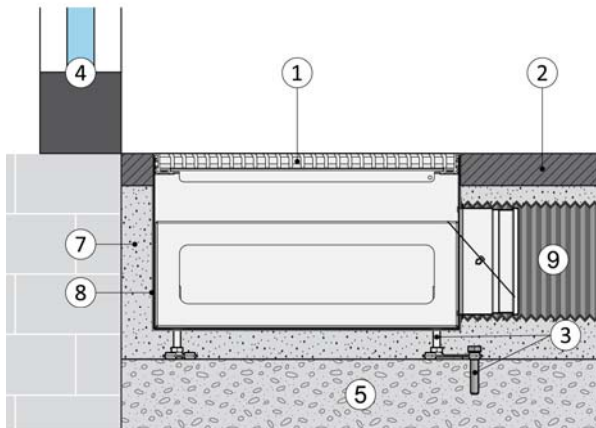
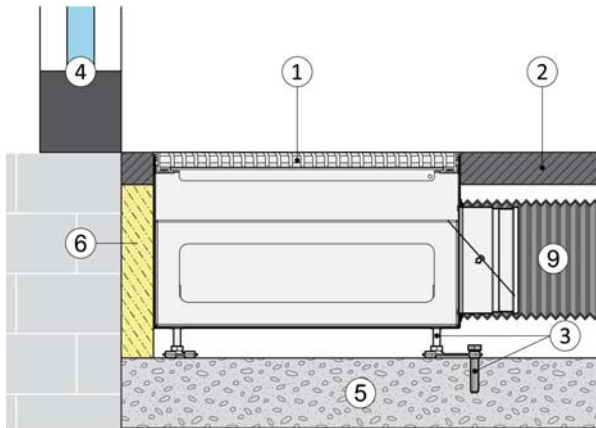
ATTENTION

The grilles are not suited for heavily frequented areas and loading zones.

INSTALLATION

The floor plenum box with walk-on grille is designed for horizontal installation both in raised floors and solid floors.

The device must be installed with the connection spigot and the adjustable feet fixing points on the room-facing side. The louvre grille must be positioned so that the air is deflected towards the façade.



- 1 = Grille | 2 = Floor covering | 3 = Adjustable feet with fixation
 4 = Façade | 5 = Concrete shell | 6 = Insulation * | 7 = Screed
 8 = Impact sound insulation** | 9 = Air duct
 * on site
 ** For installation in screed floors, SCHAKO recommends the use of additional external insulation (-A3)

ATTENTION

For installation in solid floors, place the stiffeners on the device. Otherwise, the volume fluctuation behaviour during construction material drying can lead to deformation.

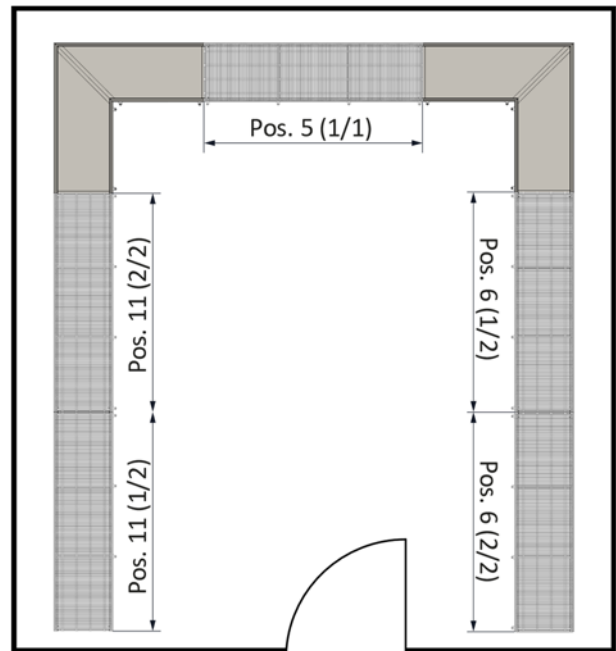
Subject to design changes.
 No return possible.

IDENTIFICATION OF THE SECTIONS

To make work on site easier, the components are labelled on the plenum box and on the blades at one end of the grille before delivery.

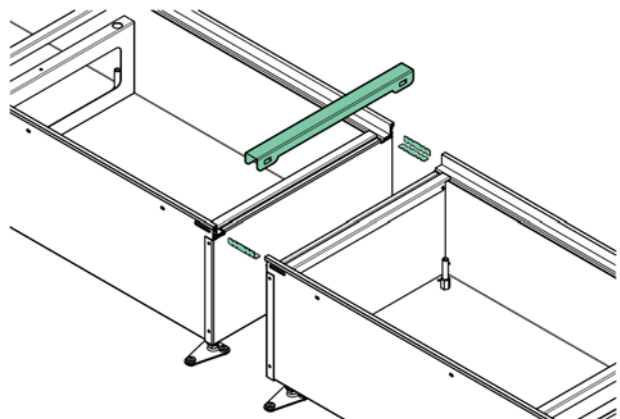
Each device line is labelled with its position on the order sheet and with a number relating to the position it occupies, in the order from left to right.

Example:



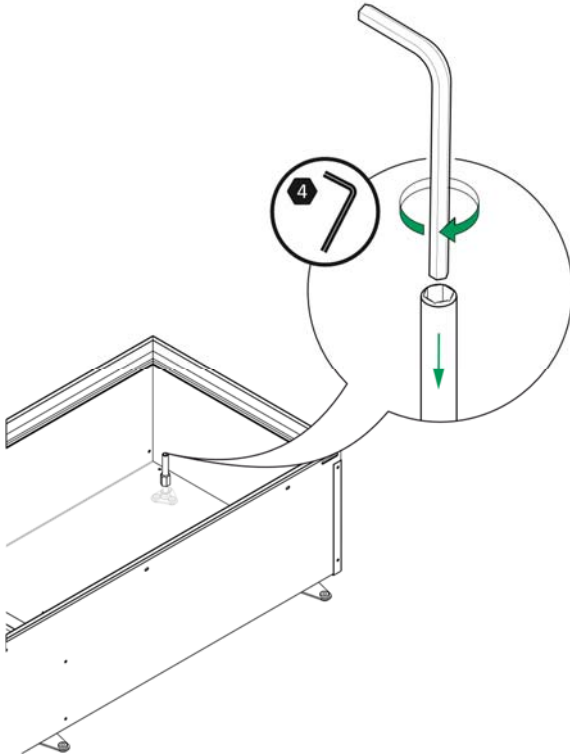
CONNECTING PIECE FOR BAND DESIGN

- 1 Align the devices.
- 2 Connect the devices with the material included in the delivery.
- 3 When installing diffusers in a linear arrangement (band design), make sure that the grille elements are aligned linearly! If this is not the case, the adjustable feet may need to be readjusted.



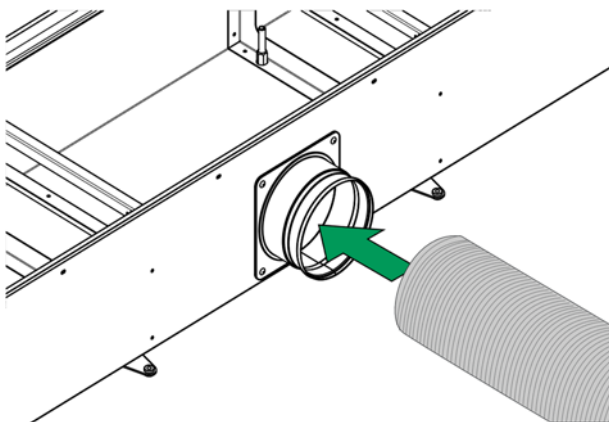
SETTING THE FEET FOR THE ALIGNMENT

The height of the adjustable feet can be set using a 4 mm Allen key.



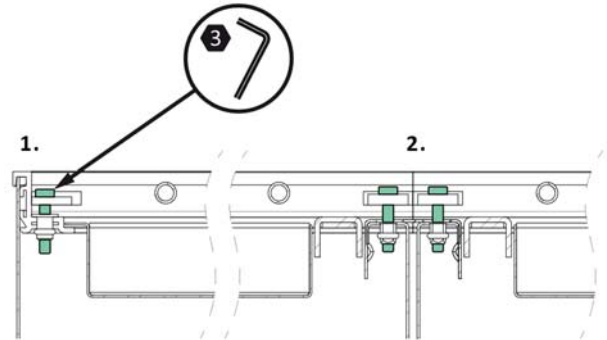
CONNECTING THE AIR DUCTS

- 1 Connect the connection pipe to the connection spigot. A connection spigot with a rubber lip seal can be supplied as an option to ensure tightness between the spigot and the connection duct.
- 2 The air duct is connected on site.



FASTENING THE GRILLE INSERT

To fasten the grille insert, use the DIN 912 screws located in the connecting clips of the sections (2) and in the end pieces (1). The grille insert can be fastened and removed using a 3 mm Allen key.

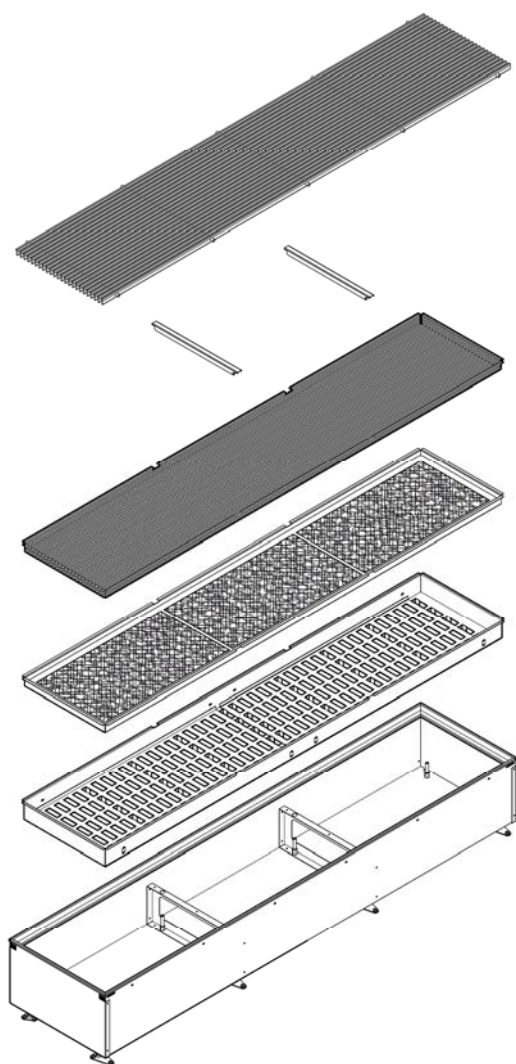


MAINTENANCE

The floor plenum box with walk-on FBR louvre grille is easy to maintain. Both the louvre grille and the roll-down grille as well as the internal elements can be removed without tools (exception: if the device has been configured with grille fastening; see page 17).

Once the inside of the device is accessible, it can be cleaned with a Hoover. After dismantling the device parts, check them for damage. The filter can be cleaned by vacuuming or blowing it out. The filters have a limited service life. They must be replaced if they are damaged or clogged.

We recommend servicing the devices every six months.



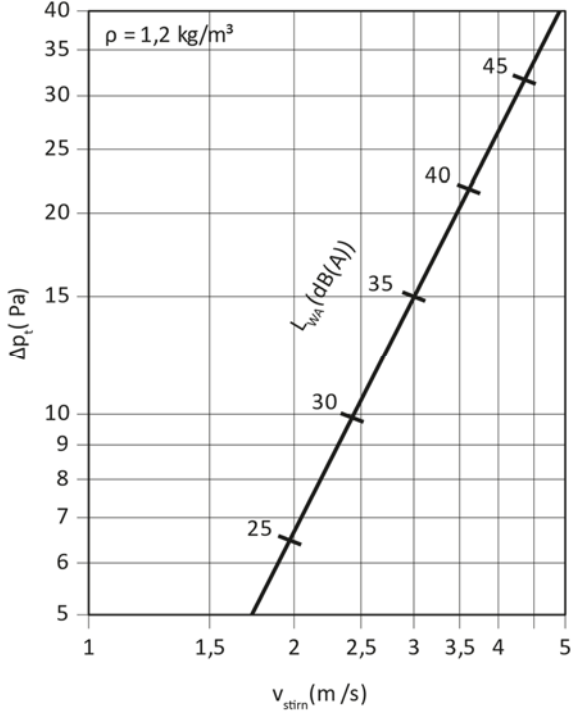
ATTENTION

If you detect deformation of the grille or the stiffeners due to excessive impacts or loads, the damaged elements must be replaced. Using the device with damaged elements can lead to personal injury.

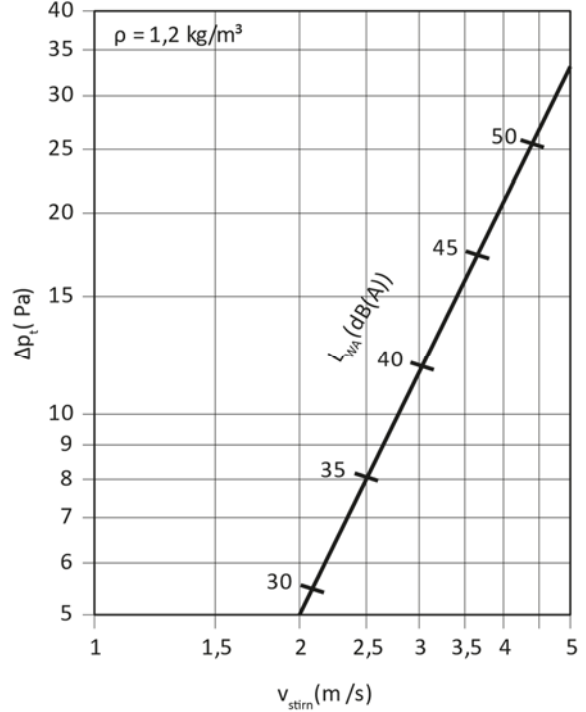
TECHNICAL DATA

PRESSURE LOSS AND NOISE LEVEL

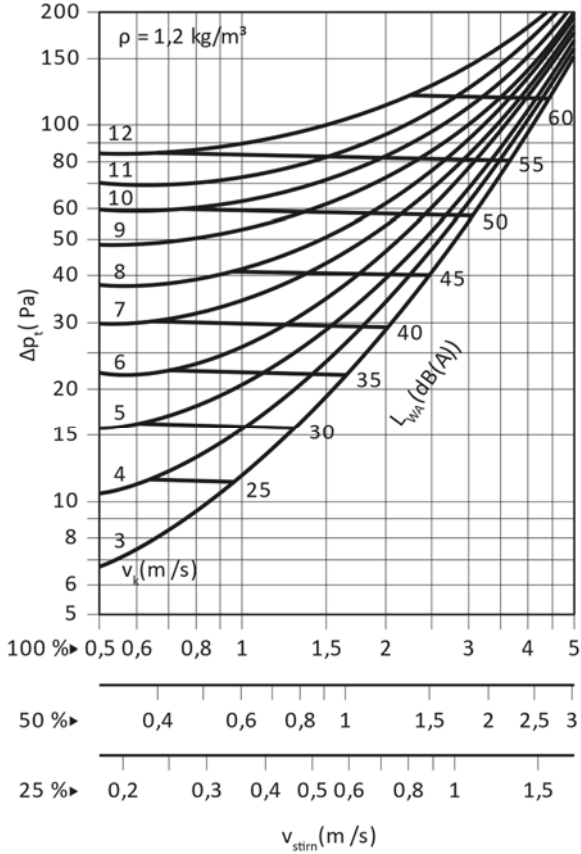
Supply air without hit-and-miss damper



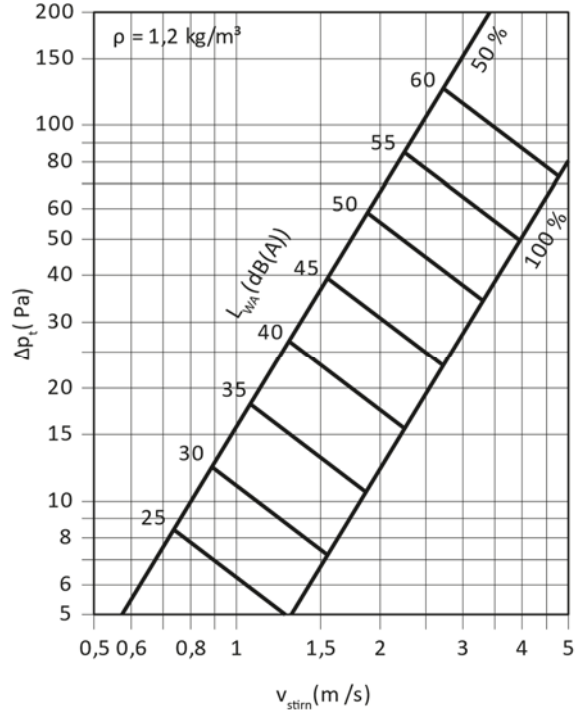
Return air without hit-and-miss damper



Supply air with hit-and-miss damper, OPEN in %



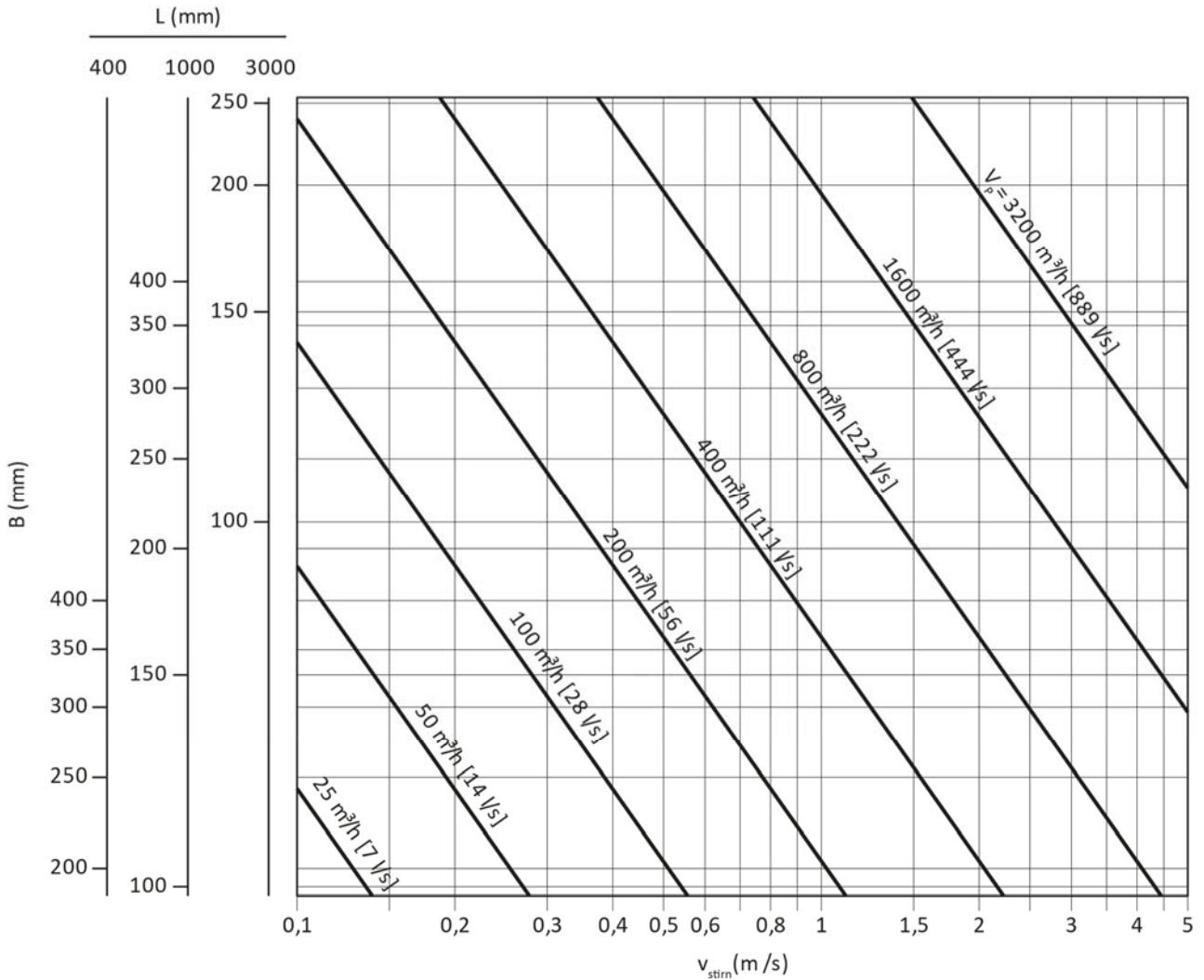
Return air with hit-and-miss damper, OPEN in %



Correction factor KF: $L_{WA} = L_{WA, diagram} + KF$:

L (mm)	B (mm)						
	100	150	200	250	300	350	400
400	-6	-3	-2	-0	+1	+1	+2
1000	-2	+1	+3	+4	+5	+6	+6
3000	+3	+6	+8	+9	+10	+11	+11

FACE VELOCITY



Face area, A_{stirn} (m²):

L (mm)	B (mm)						
	100	150	200	250	300	350	400
400	0.019	0.037	0.055	0.072	0.090	0.108	0.125
1000	0.052	0.099	0.147	0.195	0.242	0.290	0.338
3000	0.160	0.307	0.455	0.603	0.750	0.898	1.046

LEGEND

- V_{ZU} (m³/h) [l/s] = Supply air volume
- V_{AB} (m³/h) [l/s] = Return air volume
- v_K (m/s) = Duct velocity
- v_{stirn} (m/s) = Velocity in relation to A_{stirn}
- A_{stirn} (m²) = Face area
- ρ (kg/m³) = Density
- Δp_t (Pa) = Pressure loss
- L_{WA} (dB(A)) = A-weighted sound power level
- KF (dB(A)) = Correction factor
- B (mm) = Width
- H (mm) = Height
- L (mm) = Length
- BL (mm) = Length of band
- DN (mm) = Spigot diameter
- DL (mm) = Difference distance
- n = Number of spigots
- α (°) = Angle
- ΔT (K) = Temperature difference

FBR ORDER CODE

01	02	03	04	05	06	07
Type	Material	Width	Height	Length	Grille support / frame	Tread-resistant grille insert
Example						
FBR	-M	-350	-150	-01500	-G2	-000

08	09	10	11	12	13	14
Grille fastening	Grille insert colour	End piece	Position of the primary air connection spigot	Spigot diameter	Rubber lip seal	Number of spigots
Example						
-0	-0	-Z	-P3	-2	-0	-2

15	16	17	18	19
Damper	External coating	Internal elements	Adjustable feet	Protective mounting cover
Example				
-D0	-A1	-I0	-07	-M0

NOTE

Please always specify the complete order code in the order! In case of missing information, processing is impossible.
 Any special model not included in the order code must be queried before ordering.

EXAMPLE

FBR-M-350-150-01500-G2-000-0-0-Z-P3-2-0-2-D0-A1-I0-07-M0

Floor diffuser with louvre grille | galvanised sheet steel | width 350 mm | height 150 mm | length 1500 mm | frame made of natural anodised aluminium | without grille | without fastening | without grille | end pieces on both sides | room-facing on the long side | DN78 | without rubber lip seal | number of spigots 2 | without damper | plenum box painted in RAL 9005 (black) | without internal elements | adjustable feet 70 mm | without protective mounting cover

ORDER DETAILS

01 - Type

FBR = Floor diffuser with louvre grille

02 - Material

M = Galvanised sheet steel
 A = V2A stainless steel

03 - Width

xxx = Width in mm, freely selectable (always with 3 digits; from 100 to 400)

04 - Height

xxx = Height in mm, freely selectable (always with 3 digits; minimum height = DN + 65; from 150 to 350; minimum height of 090 only possible with spigot from below (-P4))

05 - Length

xxxxx = Length (L or BL) in mm, freely selectable (always with 5 digits; single design from 00400 to 03000; band design starting from 03000; see available lengths on page 6)

06 - Grille support / frame

G1 = Frame in black matt anodised aluminium
 G2 = Frame in natural colour anodised aluminium (standard)
 G3 = Frame in bronze matt anodised aluminium
 G4 = Frame in gold matt anodised aluminium
 G5 = Frame in anodised aluminium in stainless steel colour

07 - Tread-resistant grille insert

000 = Without grille (standard)
 L08 = Linear grille, 8 mm blade spacing
 R08 = Roll-down grille, 8 mm blade spacing
 R10 = Roll-down grille, 10 mm blade spacing
 R12 = Roll-down grille, 12 mm blade spacing

08 - Grille fastening

0 = Without fastening (standard)
 F = With fastening (disassembly with tools)

09 - Grille insert colour

- 0 = Without grille (standard)
- 1 = Black matt anodised aluminium
- 2 = Natural colour anodised aluminium
- 3 = Bronze matt anodised aluminium
- 4 = Gold matt anodised aluminium
- 5 = Anodised aluminium in stainless steel colour

10 - End piece

- 0 = Without end piece
- Z = End pieces on both sides (standard)
- L = End piece on the left
- R = End piece on the right

11 - Position of the primary air connection spigot

- P0 = Without spigot
- P1 = On the left side
- P2 = On the right side
- P3 = On the long, room-facing side (standard)
- P4 = On the underside

12 - Spigot diameter

- 0 = Without spigot
- 1 = DN78
- 2 = DN98
- 3 = DN123
- 4 = DN158
- 5 = DN198
- 6 = DN248

13 - Rubber lip seal

- 0 = Without rubber lip seal (standard)
- G = With rubber lip seal

14 - Number of spigots

- 0 = Without spigot
- x = Number of spigots freely selectable (number of spigots, see page 9)

15 - Damper

- D0 = Without damper (standard)
- D1 = With damper

16 - External coating

- A1 = Plenum box painted in RAL 9005 (black, standard)
- A2 = Plenum box painted in black with polyester powder for corrosion protection
- A3 = Plenum box painted in RAL 9005 (black) with 3 mm impact sound insulation bonded over the entire surface
- A4 = Plenum box painted in black with polyester powder for corrosion protection, 3 mm impact sound insulation bonded over the entire surface

17 - Internal elements

- I0 = Without internal elements (standard)
- I1 = With perforated plate for air diffusion
- I2 = With hit-and-miss damper
- I3 = With perforated plate for air diffusion and hit-and-miss damper
- I4 = With ISO Coarse 40 % filter mat
- I5 = With ISO Coarse 40 % filter mat and hit-and-miss damper

18 - Adjustable feet

- 00 = Without adjustable feet (standard for model -0)
- 07 = Adjustable feet, 70 mm (standard)
- 13 = Adjustable feet, 130 mm

19 - Protective mounting cover

- M0 = Without protective cover (standard)
- M1 = With cardboard insert (non-treadable)
- M2 = With wooden insert (tread-resistant)

FBRZ ORDER CODE

01	02	03	04	05	06	07
Type	Material	Building type	Width	Height	Length	Angle
Example						
FBRZ	-M	-E	-350	-150	-0600	-090

08	09	10	11	12	13	14
Grille support / frame	Tread-resistant grille insert	Grille fastening	Grille insert colour	End piece	External coating	Internal elements
Example						
-G2	-L08	-0	-2	-0	-A1	-I0

15	16
Adjustable feet	Protective mounting cover
Example	
-07	-M0

NOTE

Please always specify the complete order code in the order! In case of missing information, processing is impossible.
 Any special model not included in the order code must be queried before ordering.

EXAMPLE

FBRZ-M-E-350-150-0600-090-G2-L08-0-2-0-A1-I0-07-M0

Accessories for FBR floor diffuser | galvanised sheet steel | corner piece design | width 350 mm | height 150 mm | length 600 mm | angle 90° | frame in natural colour anodised aluminium | linear grille, 8 mm blade spacing | without fastening | natural colour anodised aluminium | without end piece | plenum box painted in RAL 9005 (black) | without internal elements | adjustable feet 70 mm | without protective mounting cover

ORDER DETAILS

01 - Type

FBRZ = Accessories for FBR floor diffuser

02 - Material

M = Galvanised sheet steel
 A = V2A stainless steel

03 - Building type

S = Floor duct with central sound insulation
 E = Corner piece
 L = Bevelled on the left side
 R = Bevelled on the right side

04 - Width

xxx = Width in mm, freely selectable (always with 3 digits; from 100 to 400)

05 - Height

xxx = Height in mm, freely selectable (always with 3 digits; from 090 to 350)

06 - Length

xxxx = Length in mm, freely selectable (always with 4 digits; corner piece from (see page 13) to B + 500; bevelled cut from (see page 13) to 3000 - B; floor duct from 0500 to 3000)

07 - Angles

xxx = Angles in degrees, freely selectable (always with 3 digits; corner piece from 040 to 320; bevel cut from 040 to 140; floor duct 000)

08 - Grille support / frame

G1 = Frame in black matt anodised aluminium
 G2 = Frame in natural colour anodised aluminium (standard)
 G3 = Frame in bronze matt anodised aluminium
 G4 = Frame in gold matt anodised aluminium
 G5 = Frame in anodised aluminium in stainless steel colour

09 - Tread-resistant grille insert

000 = Without grille (standard)
 L08 = Linear grille, 8 mm blade spacing
 R08 = Roll-down grille, 8 mm blade spacing
 R10 = Roll-down grille, 10 mm blade spacing
 R12 = Roll-down grille, 12 mm blade spacing

10 - Grille fastening

- 0 = Without fastening (standard)
- F = With fastening (disassembly with tools)

11 - Grille insert colour

- 0 = Without grille (standard)
- 1 = Black matt anodised aluminium
- 2 = Natural colour anodised aluminium
- 3 = Bronze matt anodised aluminium
- 4 = Gold matt anodised aluminium
- 5 = Anodised aluminium in stainless steel colour

12 - End piece

- 0 = Without end piece
- Z = End pieces on both sides (standard)
- L = End piece on the left
- R = End piece on the right

13 - External coating

- A1 = Plenum box painted in RAL 9005 (black, standard)
- A2 = Plenum box painted in black with polyester powder for corrosion protection
- A3 = Plenum box painted in RAL 9005 (black) with 3 mm impact sound insulation bonded over the entire surface
- A4 = Plenum box painted in black with polyester powder for corrosion protection, 3 mm impact sound insulation bonded over the entire surface

14 - Internal elements

- I0 = Without internal elements
- I1 = With perforated plate for air diffusion
- I4 = With ISO Coarse 40 % filter mat

15 - Adjustable feet

- 00 = Without adjustable feet (standard for model -0)
- 07 = Adjustable feet, 70 mm (standard)
- 13 = Adjustable feet, 130 mm

16 - Protective mounting cover

- M0 = Without protective cover (standard)
- M1 = With cardboard insert (non-treadable)
- M2 = With wooden insert (tread-resistant)

TGER ORDER CODE

01	02	03	04	05	06	07
Type	Building type	Width	Length	Angle	Grille support / frame	Tread-resistant grille insert
Example						
TGER	-G	-336	-00600	-000	-G2	-L08

08	09	10
Grille fastening	Grille insert colour	Wall anchor
Example		
-0	-2	-0

NOTE

Please always specify the complete order code in the order! In case of missing information, processing is impossible.
 Any special model not included in the order code must be queried before ordering.

EXAMPLE

TGER-G-336-00600-000-G2-L08-0-2-0

Tread-resistant grille insert/frame | straight grille/frame | width 336 mm | length 600 mm | angle 0° | frame in natural anodised aluminium | linear grille, 8 mm blade spacing | without fastening/without grille | natural anodised aluminium | without wall anchor

ORDER DETAILS

01 - Type

TGER = Tread-resistant grille insert/frame

02 - Building type

G = Straight grille/frame
 E = Corner piece
 L = Bevelled on the left side
 R = Bevelled on the right side

03 - Width

xxx = Width in mm, freely selectable (always with 3 digits; from 100 to 400)

04 - Length

xxxxx = Length (L or BL) in mm, freely selectable (standard) (always with 5 digits; from 00400, see available lengths on page 6; see note on page 15)

05 - Angles

xxx = Angles in degrees, freely selectable (always with 3 digits; corner piece from 040 to 320; bevel cut from 040 to 140; floor duct 000)

06 - Grille support / frame

00 = Without frame (not possible for option without grille)
 G1 = Frame in black matt anodised aluminium
 G2 = Frame in natural colour anodised aluminium (standard)
 G3 = Frame in bronze matt anodised aluminium
 G4 = Frame in gold matt anodised aluminium
 G5 = Frame in anodised aluminium in stainless steel colour

07 - Tread-resistant grille insert

000 = Without grille
 L08 = Linear grille, 8 mm blade spacing (standard)
 R08 = Roll-down grille, 8 mm blade spacing
 R10 = Roll-down grille, 10 mm blade spacing
 R12 = Roll-down grille, 12 mm blade spacing

08 - Grille fastening

0 = Without fastening/without grille
 F = With fastening (disassembly with tools)

09 - Grille insert colour

0 = Without grille
 1 = Black matt anodised aluminium
 2 = Natural colour anodised aluminium (standard)
 3 = Bronze matt anodised aluminium
 4 = Gold matt anodised aluminium
 5 = Anodised aluminium in stainless steel colour

10 - Wall anchor

0 = Without wall anchor (standard)
 1 = With wall anchor

SPECIFICATION TEXT

FBR floor diffuser with louvre grille, designed for installation in raised floors and solid floors, mainly in the edge area. Suitable for use in supply and extract air systems and as an accessory for installations with floor convectors. Consisting of profile grille and extruded aluminium blades and plenum box made of galvanised sheet steel.

Product: SCHAKO
Type: FBR

Corner piece for FBR floor diffuser with louvre grille. Consisting of profile grille and extruded aluminium blades and plenum box made of galvanised sheet steel.

Product: SCHAKO
Type: FBRZ

Tread-resistant grille insert for FBR and FBRZ devices. Consisting of a profile grille and extruded aluminium blades and plenum box made of galvanised sheet steel.

Product: SCHAKO
Type: TGER

FBR models

Type	
Floor diffuser with louvre grille	-FBR
Material	
Galvanised sheet steel	-M
V2A stainless steel	-A
Width	
Width in mm, freely selectable	-xxx
Height	
Height in mm, freely selectable	-xxx
Length	
Length (L or BL) in mm, freely selectable	-xxxxx
Grille support / frame	
Frame in black matt anodised aluminium	-G1
Frame in natural colour anodised aluminium	-G2
Frame in bronze matt anodised aluminium	-G3
Frame in gold matt anodised aluminium	-G4
Frame in anodised aluminium in stainless steel colour	-G5

Tread-resistant grille insert	
Without grille	-000
Linear grille, 8 mm blade spacing	-L08
Roll-down grille, 8 mm blade spacing	-R08
Roll-down grille, 10 mm blade spacing	-R10
Roll-down grille, 12 mm blade spacing	-R12

Grille fastening	
Without fastening	-0
With fastening	-F

Grille insert colour	
Without grille	-0
Black matt anodised aluminium	-1
Natural colour anodised aluminium	-2
Bronze matt anodised aluminium	-3
Gold matt anodised aluminium	-4
Anodised aluminium in stainless steel colour	-5

End piece	
Without end piece	-0
End pieces on both sides	-Z
End piece on the left	-L
End piece on the right	-R

Position of the primary air connection spigot	
Without spigot	-P0
On the left side	-P1
On the right side	-P2
On the long, room-facing side	-P3
On the underside	-P4

Spigot diameter	
Without spigot	-0
DN78	-1
DN98	-2
DN123	-3
DN158	-4
DN198	-5
DN248	-6

Rubber lip seal	
Without rubber lip seal	-0
With rubber lip seal	-G

Number of spigots	
Without spigot	-0
Number of spigots freely selectable	-x

Damper	
Without damper	-D0
With damper	-D1

External coating

Plenum box painted in RAL 9005 (black)	-A1
Plenum box painted in black with polyester powder for corrosion protection	-A2
Plenum box painted in RAL 9005 (black) with 3 mm impact sound insulation bonded over the entire surface	-A3
Plenum box painted in black with polyester powder for corrosion protection, 3 mm impact sound insulation bonded over the entire surface	-A4

Internal elements

Without internal elements	-I0
With perforated plate for air diffusion	-I1
With hit-and-miss damper	-I2
With perforated plate for air diffusion and hit-and-miss damper	-I3
With ISO Coarse 40 % filter mat	-I4
With ISO Coarse 40 % filter mat and hit-and-miss damper	-I5

Adjustable feet

without adjustable feet	-00
Adjustable feet 70 mm	-07
Adjustable feet 130 mm	-13

Protective mounting cover

Without protective mounting cover	-M0
With cardboard insert	-M1
With tread-resistant wooden insert	-M2

FBRZ models

Type

Accessories for FBR floor diffuser	-FBRZ
------------------------------------	-------

Material

Galvanised sheet steel	-M
V2A stainless steel	-A

Building type

Floor duct with central sound insulation	-S
Corner piece	-E
Bevelled on the left side	-L
Bevelled on the right side	-R

Width

Width in mm, freely selectable	-xxx
--------------------------------	------

Height

Height in mm, freely selectable	-xxx
---------------------------------	------

Length

Length in mm, freely selectable	-xxxx
---------------------------------	-------

Angle

Angles in degrees, freely selectable	-xxx
--------------------------------------	------

Grille support / frame

Frame in black matt anodised aluminium	-G1
Frame in natural colour anodised aluminium	-G2
Frame in bronze matt anodised aluminium	-G3
Frame in gold matt anodised aluminium	-G4
Frame in anodised aluminium in stainless steel colour	-G5

Tread-resistant grille insert

Without grille	-000
Linear grille, 8 mm blade spacing	-L08
Roll-down grille, 8 mm blade spacing	-R08
Roll-down grille, 10 mm blade spacing	-R10
Roll-down grille, 12 mm blade spacing	-R12

Grille fastening

Without fastening	-0
With fastening	-F

Grille insert colour

Without grille	-0
Black matt anodised aluminium	-1
Natural colour anodised aluminium	-2
Bronze matt anodised aluminium	-3
Gold matt anodised aluminium	-4
Anodised aluminium in stainless steel colour	-5

End piece

Without end piece	-0
End pieces on both sides	-Z
End piece on the left	-L
End piece on the right	-R

External coating

Plenum box painted in RAL 9005 (black)	-A1
Plenum box painted in black with polyester powder for corrosion protection	-A2
Plenum box painted in RAL 9005 (black) with 3 mm impact sound insulation bonded over the entire surface	-A3
Plenum box painted in black with polyester powder for corrosion protection, 3 mm impact sound insulation bonded over the entire surface	-A4

Internal elements

Without internal elements	-I0
With perforated plate for air diffusion	-I1
With ISO Coarse 40 % filter mat	-I4

Adjustable feet

without adjustable feet	-00
Adjustable feet 70 mm	-07
Adjustable feet 130 mm	-13

Protective mounting cover

Without protective mounting cover	-M0
With cardboard insert	-M1
With tread-resistant wooden insert	-M2

TGER versions

Type

Tread-resistant grille insert/frame -TGER

Building type

Straight grille/frame -G

Corner piece -E

Bevelled on the left side -L

Bevelled on the right side -R

Width

Width in mm, freely selectable -xxx

Length

Length (L or BL) in mm, freely selectable -xxxxx

Angle

Angles in degrees, freely selectable -xxx

Grille support / frame

Without frame -00

Frame in black matt anodised aluminium -G1

Frame in natural colour anodised aluminium -G2

Frame in bronze matt anodised aluminium -G3

Frame in gold matt anodised aluminium -G4

Frame in anodised aluminium in stainless steel colour -G5

Tread-resistant grille insert

Without grille -000

Natural colour anodised aluminium -L08

Bronze matt anodised aluminium -R08

Gold matt anodised aluminium -R10

Anodised aluminium in stainless steel colour -R12

Grille fastening

Without fastening/without grille -0

With fastening -F

Grille insert colour

Without grille -0

Black matt anodised aluminium -1

Natural colour anodised aluminium -2

Bronze matt anodised aluminium -3

Gold matt anodised aluminium -4

Anodised aluminium in stainless steel colour -5

Wall anchor

Without wall anchor -0

With wall anchor -1