



# Floor slot diffuser

## Model FBS



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# Floor slot diffuser FBS

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## Floor slot diffuser FBS

### Description

The SCHAKO floor slot diffuser model FBS-AUDIX is highly suitable for installation in double floors of cafeterias, offices, conference halls, but also for keeping large window areas free of condensation and should be installed on the edges of the rooms.

The specially detachable floor slot diffuser type FBS-SS is suitable for installation in pressure floors in floating screed. It can be easily cleaned and offers the option of setting the diffuser resistances individually using the integrated hit-and-miss damper. For installation in floating screed, a special styropor casting core is required (included with the FBS-SS).

The FBS-AU with integrated telephony plenum box makes installation of the usually additionally required telephony silencer unnecessary. Any required air volume can be adjusted via a damper on the connection spigot by using a cord adjustment without dismounting it.

The SCHAKO FBS-AU can even be used as overflow grille.

### Advantages

- high air volumes at low sound power level
- small installation dimension
- easy to clean
- stable design
- adjustable air deflection blades for optimum adjustment to the room
- quick volume adjustment through integrated hit-and-miss damper (FBS-SS) or damper (FBS-AU)
- excellent sound-absorbing properties (FBS-AU)
- additional telephony silencer not required (for FBS-AU only)
- Acoustic insulating panels of building material class B1 (standard) or building material class A2 (non-flammable to DIN 4102 at an extra charge)

### Properties

High vertical penetration depth at high  $\Delta T$ . Supply air jet is spread over a large area with very quick temperature and flow velocity reduction. A subsequent adjustment of the air jet pattern to changed room conditions is possible. Wide volumetric flow range at low sound power level. At a very low air volume, the supply air jet is similar to a displacement diffuser, but has better temperature reduction. For large air volumes, the FBS is particularly suitable as air curtain ventilation. Suitable as supply and return air system, thus same optics.

**Attention:**  
**limited walkability!**

**Quick selection** (L=1000, damper OPEN, at  $L_{WA} = 35$  [dB(A)])

	FBS-AU	FBS-SS
$V_{ZU}$ (m <sup>3</sup> /h)	188	223
[l/s]	52	62

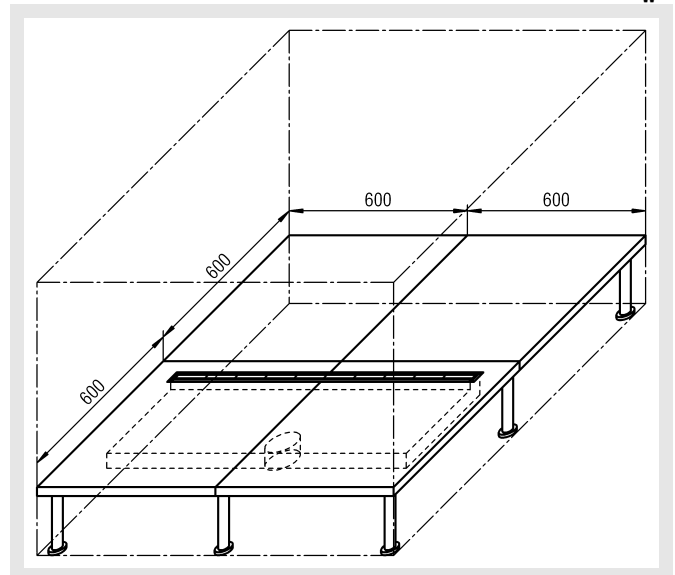
**Weighted sound absorption coefficient  $R'_w$**

	B	L	Damper	$R'_w$ (dB)							
				$f_m$ (Hz)							
				63	125	250	500	1000	2000	4000	8000
FBS-AU	350	500	OPEN	26	27	25	31	30	33	35	39
			CLOSED	27	29	25	32	31	33	36	40
		1000	OPEN	24	24	23	26	30	30	33	38
			CLOSED	25	25	24	26	31	32	34	39
	450	500	OPEN	28	29	26	36	34	36	41	44
			CLOSED	30	31	28	38	36	37	43	46
1000		OPEN	25	26	25	28	32	33	36	41	
		CLOSED	26	27	27	29	33	35	37	43	

When several cross-talk sound attenuator boxes are used in a room, the building sound absorption coefficient is reduced according to the table listed below.

Number diffusers	Reduction piece Building sound absorption coefficient in dB
1	0
2	3
4	6
8	9
16	12
32	15

**Measurement setup of the sound absorption coefficient  $R'_w$**



The following floor plates were used for the measurement setup:

Type	38 HAN
Plate core	Wood material

## Floor slot diffuser FBS

Underside	Aluminium foil
Dimensions in mm	600x600x38
Weight per plate	9.7 kg
Element class according to DIN 12825	2

### Construction

Hit-and-miss damper (for FBS-SS only)

- Galvanised sheet steel

Plenum box (for FBS-AU only)

- Galvanised sheet steel

Insulation (in plenum box) (for FBS-AU only)

- both sides 10 mm of insulating material, formed as reverse labyrinth
- Acoustic insulating panels of construction material class B1 (standard) or construction material class A2 (non flammable to DIN 4102, at an extra charge)

Slot rails

- Aluminium natural colour anodised E6/EV1
- Aluminium painted to RAL 9010 (white) at an extra charge

Air guide elements

- Plastic, similar to RAL colour 9010 (-LW, white) or RAL 9005 (-LS, black)

Insulating strips (for FBS-AU only)

- Tesamol 7 x 2mm

Dirt collection basket (integrated)

- Galvanised sheet steel

Insulating strips on clamping lug (for FBS-SS only)

- Astoflex 2mm

Casting core (for FBS-SS only)

- for casting the floor screed
- made of styropor L2 or floor opening 46 x 70 mm

### Model

- FBS-AU - Slot diffuser FDSXW, 1-slot, with wide frame profile (-PB), with integrated cross-talk sound attenuator box with round connection spigot. For installation in double-floor system.
- FBS-SS - Slot diffuser FDSXW, 1-slot, with wide frame profile (-PB), with integrated hit-and-miss damper and casting core. For installation in pressure floors in floating screed.

### Accessories

Damper (-DK2) (FBS-AU only)

- Manually adjustable with cable-operated adjustment
- Damper made of galvanised sheet steel
- Damper fastening made of plastic

Corner angle 90° (-EW, must be ordered separately)

- Extruded aluminium profile (in same colour as FBS)

Rubber lip seal (-GD1, FBS-AU only)

- Special rubber

Cover (-OA1)

- Galvanised sheet steel

Dummy box (-BLK, must be ordered separately)

- for optic design as connecting element
- Galvanised sheet steel

Pressure measurement box (must be ordered separately)

- for easy measurement of the supply air volumetric flow from outside
- made of galvanised sheet steel

### Fastening

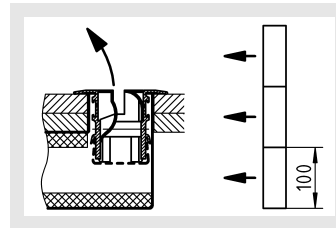
Fastening prongs (-BK)

- for concealed diffuser mounting or dismounting

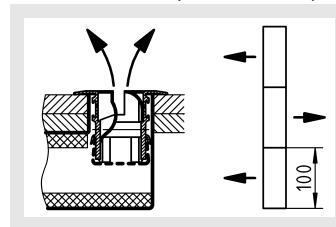
### Models and dimensions

#### Air throw pattern

Air guide element position  
one-way throw (-R)



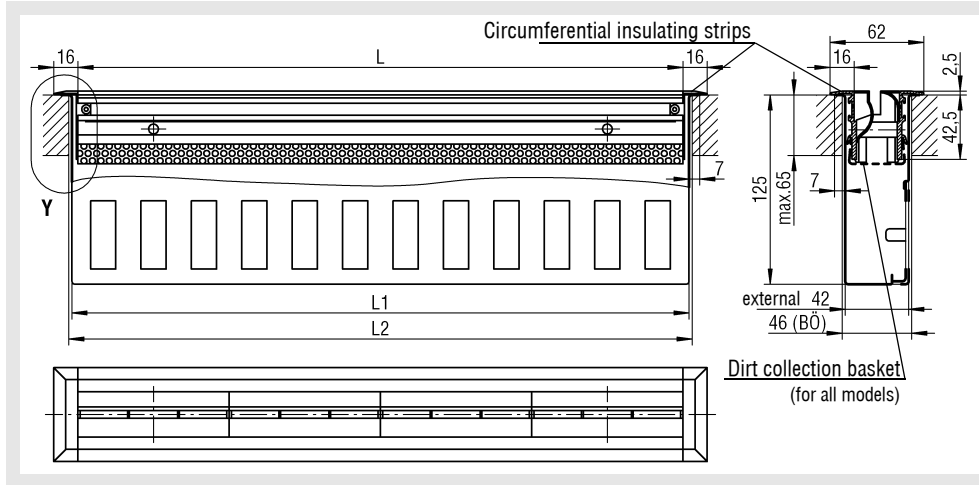
two-way throw (-B, standard)





# Floor slot diffuser FBS

## FBS-SS

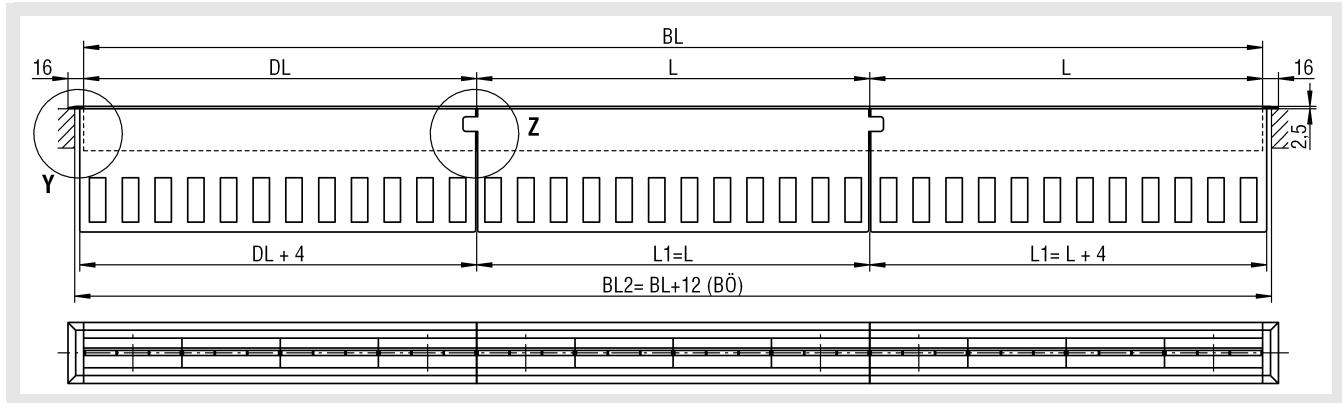


### Available sizes FBS-SS

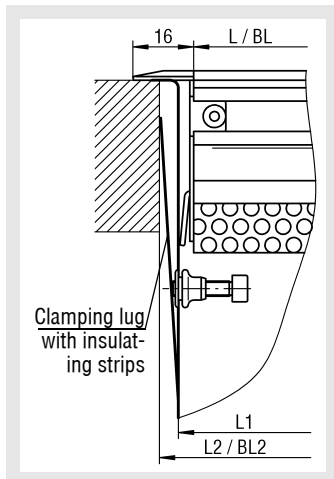
L	L1	L2
500	508	512
1000	1008	1012

BÖ = Floor opening  
 L2 = Floor opening lengthwise  
**Attention: Limited walk-on!**

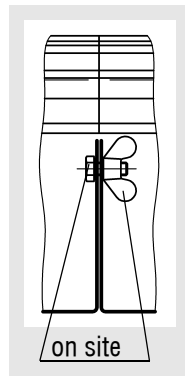
## FBS-SS as band



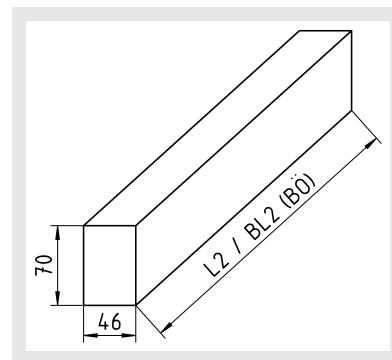
### Fastening FBS-SS / FBS-SS as band Detail Y



### Detail Z



### Casting core (for FBS-SS only)



L2
512
1012

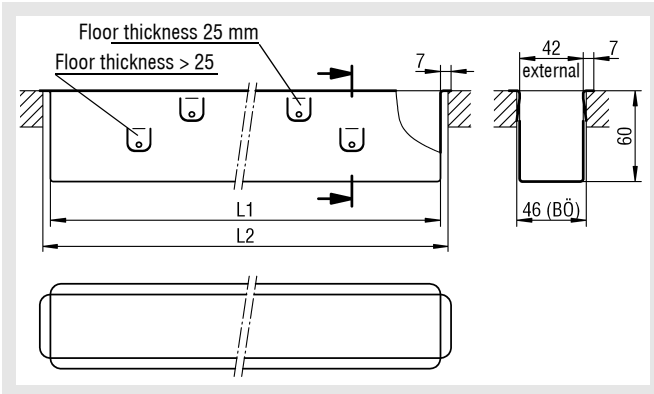
$BL2 = BL + 12$

BÖ = Floor opening

## Floor slot diffuser FBS

### Dimensions of accessories

#### Dummy box (-BLK)



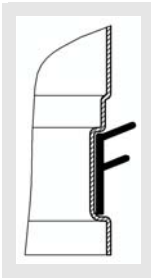
#### Available sizes -BLK

L	L1	L2
500	508	512
1000	1008	1012

BÖ = Floor opening  
L2 = Floor opening lengthwise

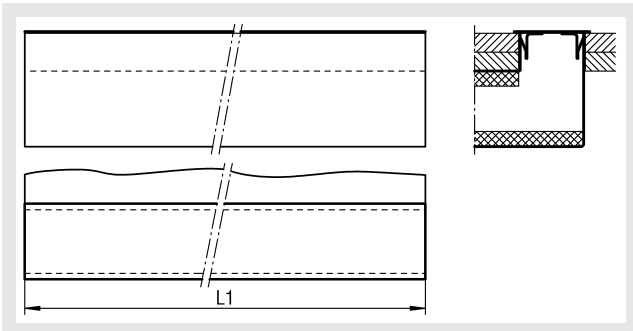
#### Rubber lip seal (-GD) (FBS-AU only)

Detail X

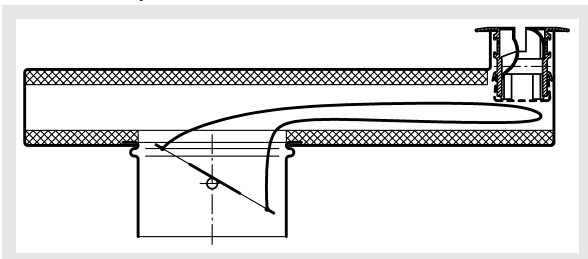


#### Cover (-OA1)

To prevent contamination or damage during assembly.



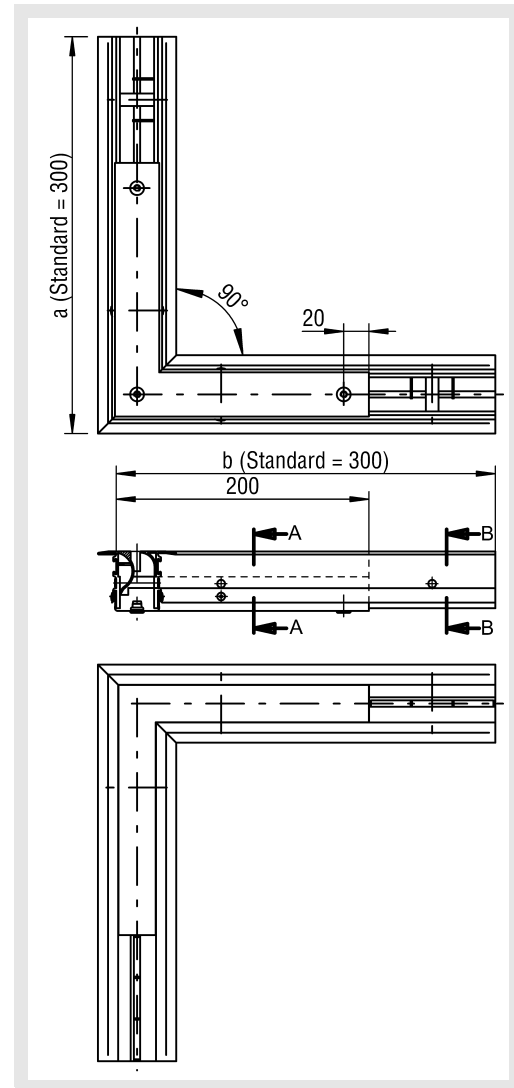
#### Damper (-DK2) (FBS-AU only) with cable adjuster



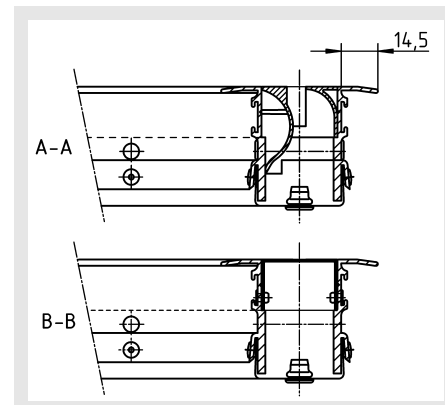
#### Corner angle (-EW) (1-slot)

Corner angles can only be produced as dummy pieces, i.e., without a cross-talk sound attenuator box or hit-and-miss damper.

The dummy piece used is painted in the colour of the air guide element. The corner angles are supplied loose as standard and must be ordered separately.



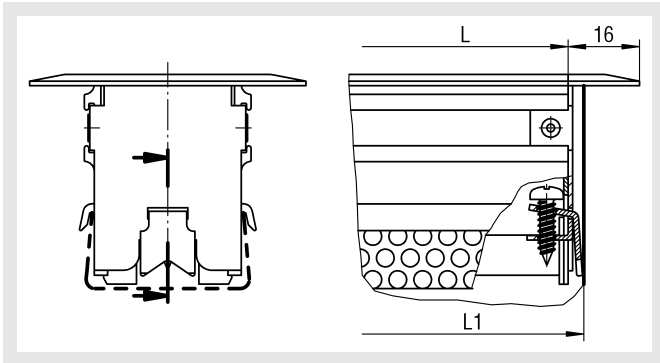
#### Sections



## Floor slot diffuser FBS

### Fastening methods

#### Prong fastening (-BK)



The fastening prong (-BK) is always attached at the front (to the end pieces).

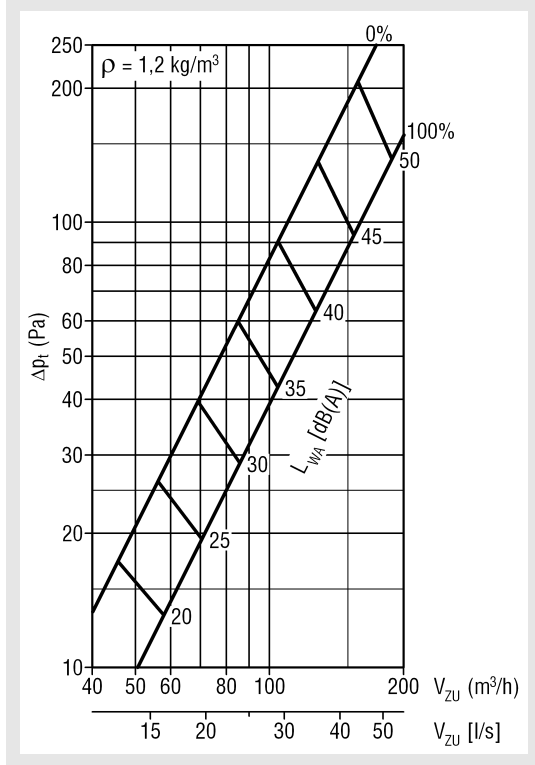


# Floor slot diffuser FBS

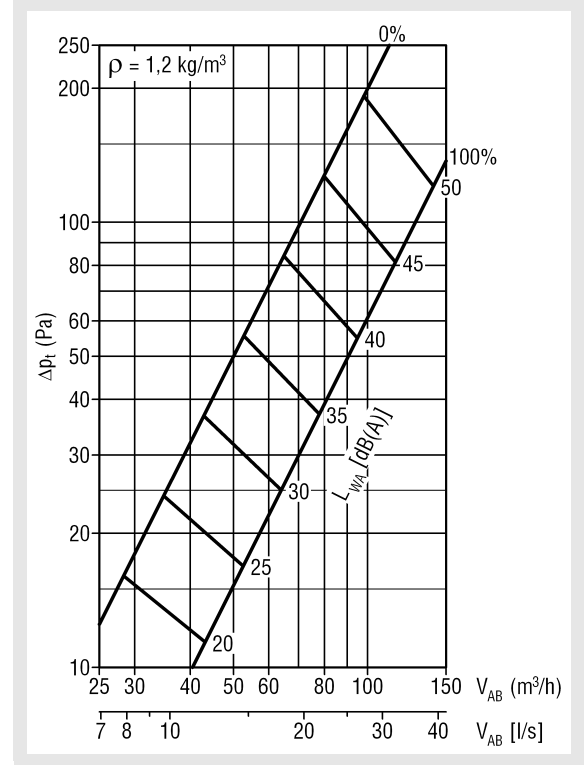
## Technical data

### Pressure loss and noise level

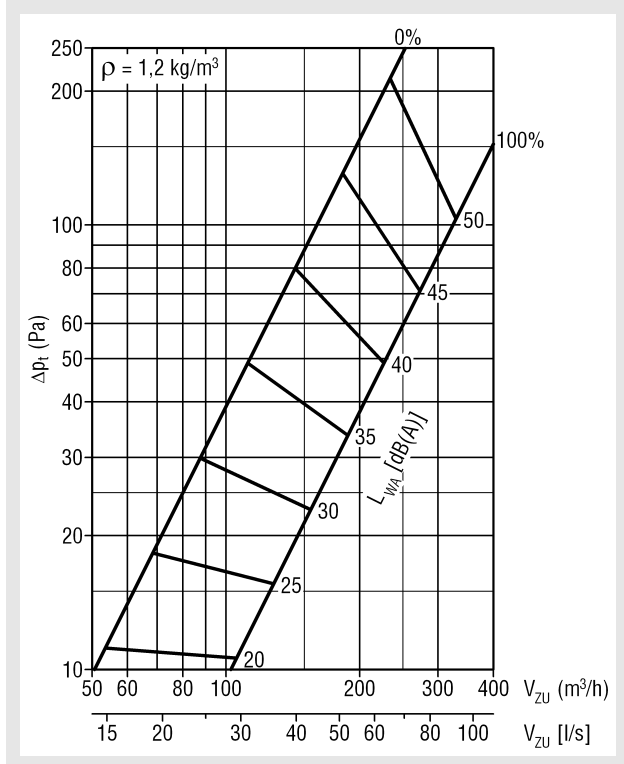
FBS-AU L=500 (for supply air)



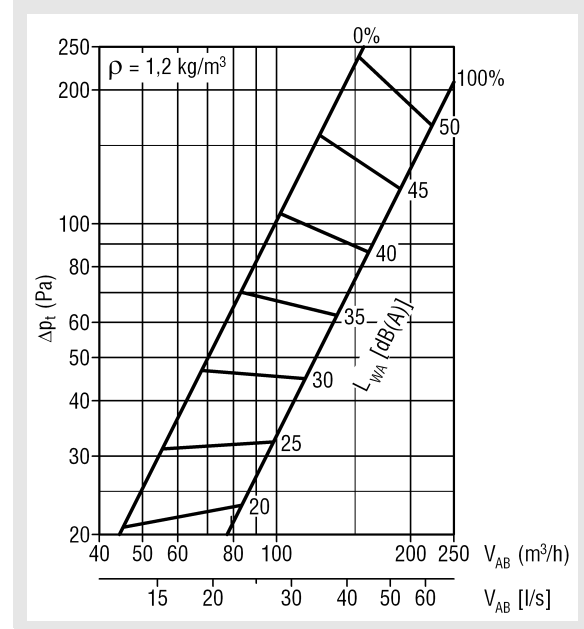
FBS-AU L=500 (for return air)



FBS-AU L=1000 (for supply air)

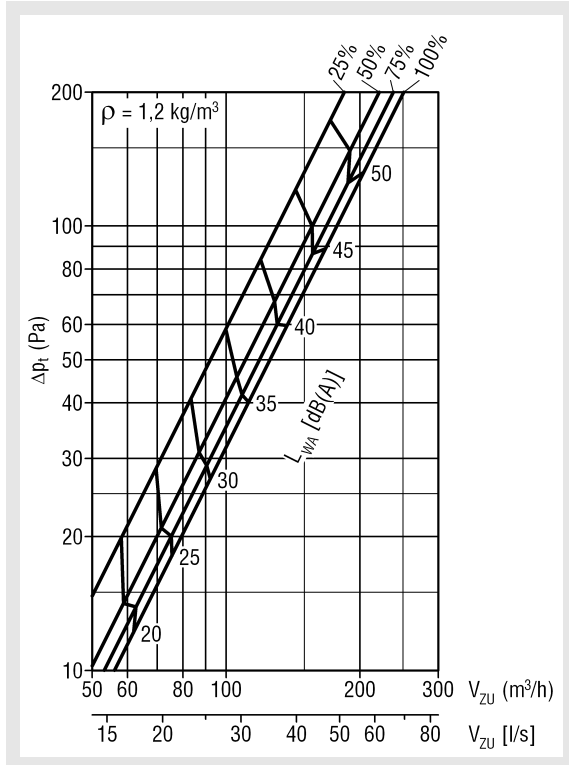


FBS-AU L=1000 (for return air)

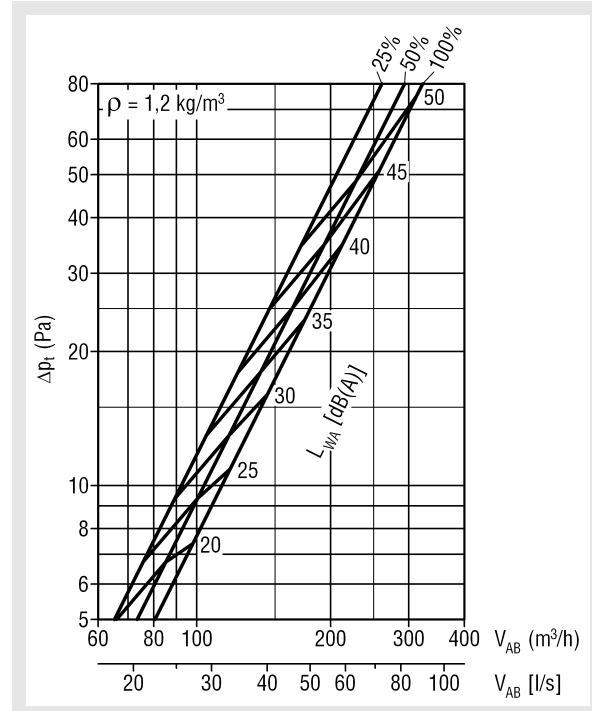


## Floor slot diffuser FBS

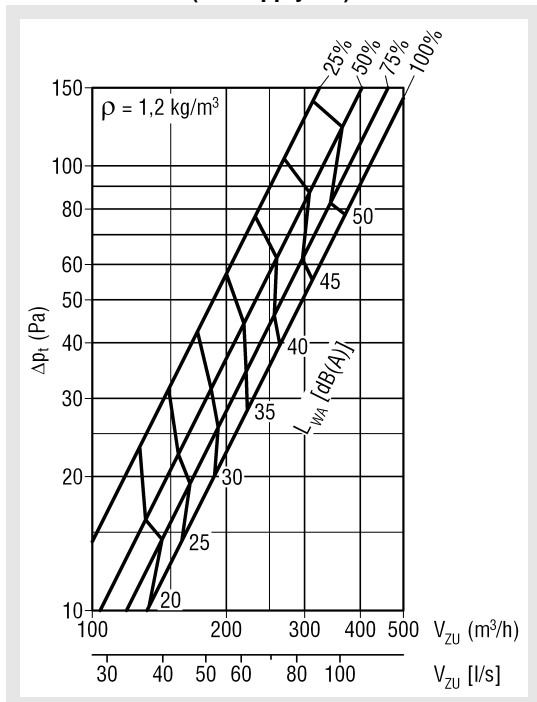
FBS-SS- L=500 (for supply air)



FBS-SS- L=1000 (for return air)



FBS-SS- L=1000 (for supply air)



Correction factor FBS-SS L=500 (for return air):

$$L_{WA} = (L:1000) \times 1.5$$

Damper position: 0% = CLOSED      25% = 1/4 OPEN  
 50% = 1/2 OPEN  
 100% = OPEN

Length correction FBS-SS band:

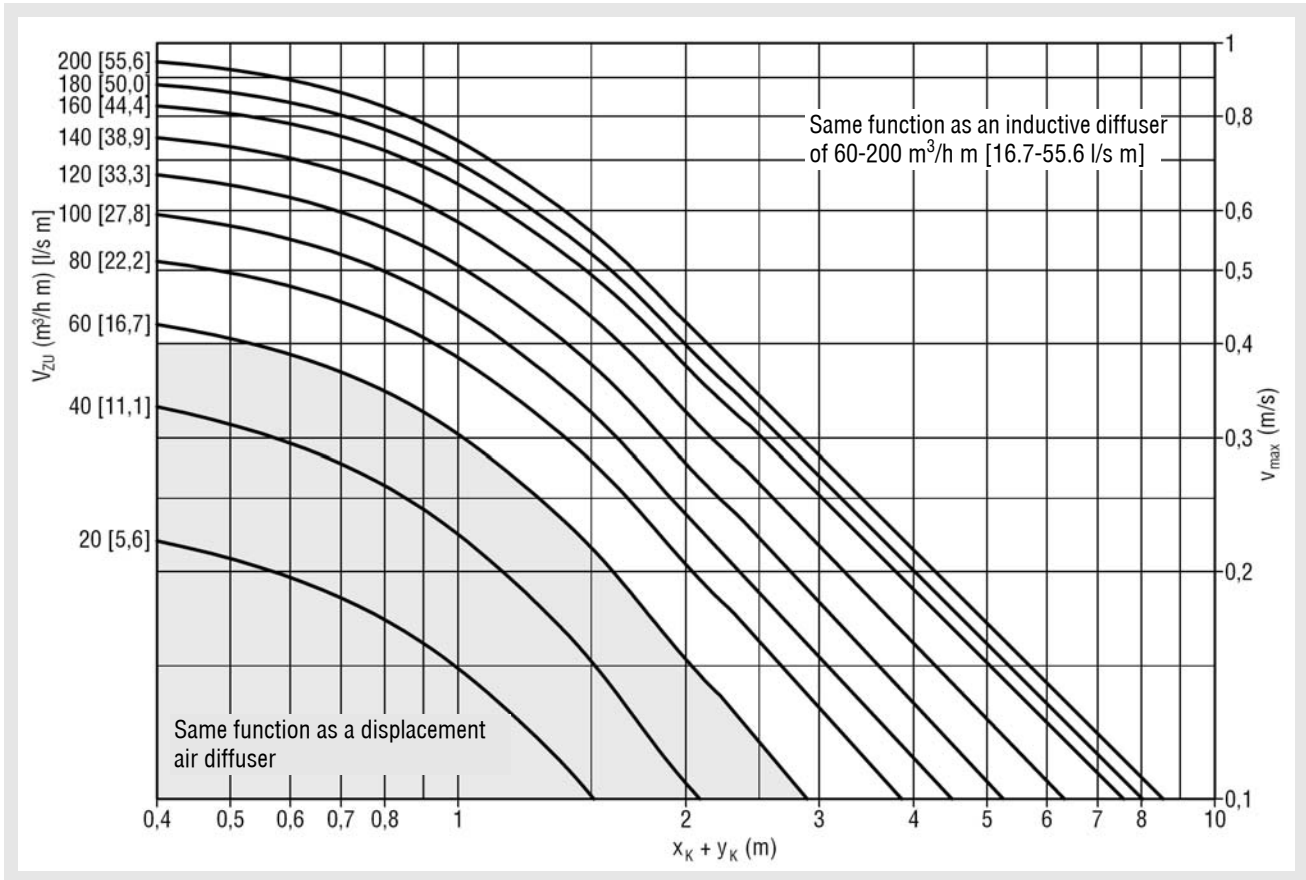
BL (m)	1	1,5	2	2,5	3	4	5
KF [dB(A)]	0	1,8	3	4	4,7	6	7

Damper position: 0% = CLOSED      25% = 1/4 OPEN  
 50% = 1/2 OPEN  
 75% = 3/4 OPEN  
 100% = OPEN

Maximum end velocity of jet

# Floor slot diffuser FBS

two-way throw



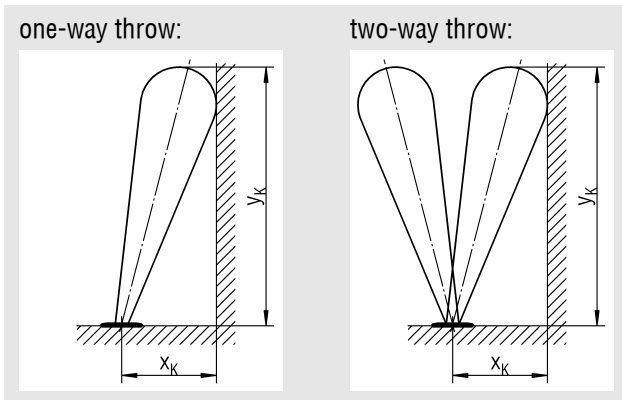
**Correction factor for  $v_{max}$**   
for length 500:

**$V_{zu} \times 2$**

Example:  
Length 500mm at  $V_{zu} = 50 \text{ m}^3/\text{h m} \times 2 \Rightarrow 100 \text{ m}^3/\text{h m}$

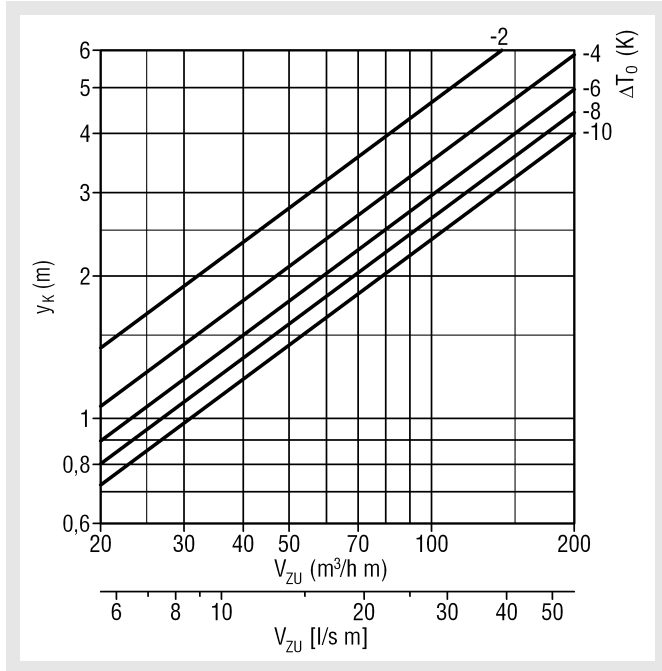
one-way throw:

**$v_{max} \times 1.82$**



## Floor slot diffuser FBS

### Maximum penetration in cooling mode, two-way throw



**Correction factor for  $y_k$**   
Air volumes for length 500:

$$V_{zu} \times 2$$

Example:  
Length 500mm /  $V_{zu} = 50 \text{ m}^3/\text{h}$   
 $\Rightarrow 50 \text{ m}^3/\text{h} \times 2 = 100 \text{ m}^3/\text{h m}$

two-way for length of throw:

$$x_k = y_k \times 0.969$$

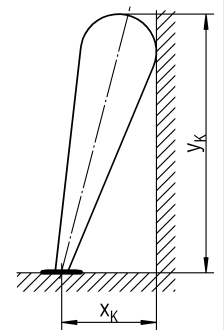
one-way for length of throw:

$$x_k = y_k \times 0.763$$

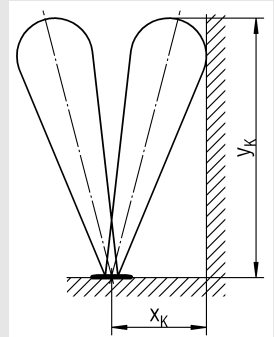
one-way throw for vertical penetration depth upwards:

$$y_k \times 0.735$$

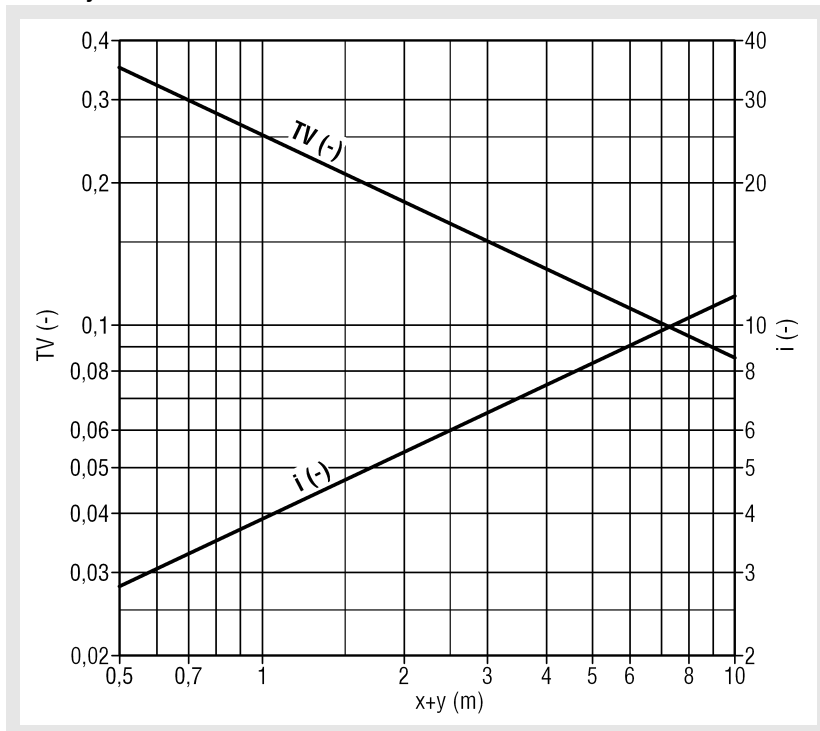
one-way throw:



two-way throw:



### Temperature and induction ratios two-way throw



**Correction factor  
one-way throw  
for temperature ratio:**

$$\times 1.23$$

for induction ratio:

$$\times 0.66$$

## Floor slot diffuser FBS

### Legend

$V_{ZU}$	(m <sup>3</sup> /h)	= Supply air volume
$V_{ZU}$	[l/s]	= Supply air volume
$V_{ZU}$	(m <sup>3</sup> /h m)	= Supply air volume per metre
$V_{ZU}$	[l/s m]	= Supply air volume per metre
$V_{AB}$	(m <sup>3</sup> /h)	= Return air volume
$V_{AB}$	[l/s]	= Return air volume
$\Delta p_t$	(Pa)	= Pressure loss
$\rho$	(kg/m <sup>3</sup> )	= Density
$L_{WA}$	[dB(A)]	= A-weighted sound power level
$v_{max}$	(m/s)	= Maximum end velocity of jet
$\Delta T_0$	(K)	= Temperature difference between supply air temperature and room temperature ( $\Delta T_0 = t_{ZU} - t_R$ )
TV	(-)	= Temperature ratio (TV = $\Delta T_x / \Delta T_0$ )
i	(-)	= Induction ratio (i = $V_x / V_{ZU}$ )
x + y	(m)	= Horizontal and vertical throw
$x_K + y_K$	(m)	= Horizontal and vertical throw in cooling mode
$x_K$	(m)	= Horizontal throw in cooling mode
$y_K$	(m)	= Vertical throw in cooling mode
$f_m$	(Hz)	= Octave centre frequency
$R'_w$	(dB)	= Weighted sound absorption coefficient
$\Delta T_x$	(K)	= Temperature difference at point x
$t_{zu}$	(°C)	= Supply air temperature
$t_R$	(°C)	= Room temperature
$V_x$	(m <sup>3</sup> /h)	= Total air jet volume at point x
$V_x$	[l/s]	= Total air jet volume at point x

## Floor slot diffuser FBS

### Order details FBS

01	02	03	04	05
Type	Model	Building material class of insulation material	Air diffuser	Height
<b>Example</b>				
Model FBS	-AU	-A2	-70	-350

06	07	08	09	10	11
Length	Single / band design	Damper	Rubber lip seal	Box neck extension	Cover
-00500	-N	-DK2	-GD1	-KHV	-OA0

#### Sample

#### FBS-AU-A2-70-350-00500-N-DK2-GD1-KHV-OA0

Floor slot diffuser FBS | model AUDIX | insulation material A2 | for slot diffuser FDSXW | height 350 mm | length 500 mm | single length | with damper with cable-operated adjustment | with rubber lip seal | without box neck extension | without cover

#### Order details

##### 01 - Type

FBS = Floor slot diffuser

##### 02 - Model

AU = AUDIX

SS = hit-and-miss damper

##### 03 - Building material class of insulation material

00 = without insulation material (standard for FBS-SS)

A2 = A2 – non-flammable to DIN4102

B1 = B1 – slightly flammable to DIN 4102 (standard for FBS-AU)

##### 04 - Air diffuser

70 = for slot diffuser FDSXW, 1-slot

##### 05 - Height

125 = height of plenum box 125 mm (standard for FBS-SS, not possible for FBS-AU)

350 = height of plenum box B 350 mm (standard for FBS-AU, not possible for FBS-SS)

450 = height of plenum box B 450 mm (not possible for FBS-SS)

xxx = height of plenum box freely selectable (only possible for FBS-AU, minimum height 250 mm)

##### 06 - Length

00500 = length of plenum box 500 mm

01000 = length of plenum box 1000 mm

xxxxx = length of plenum box freely selectable (length  $\geq$  400 up to max. 1200 mm, always with 5 digits)

##### 07 - Single / band design

N = Single length (standard)

B = band design (only possible for FBS-SS)

##### 08 - Damper

DK0 = Without damper (standard)

DK2 = With damper + cable

##### 09 - Rubber lip seal

GD0 = without rubber lip seal

GD1 = with rubber lip seal (only possible for FBS-AU, not possible for FBS-SS)

##### 10 - Box neck extension

KHV = without box neck extension (standard)

xxx = box neck extension in mm (floor thickness > 25 mm, always with 3 digits)

##### 11 - Cover

OA0 = without cover (standard)

OA1 = with cover

## Floor slot diffuser FBS

### Order details FDSXW

01	02	03	04	05
Type	Model	Air throw	Frame profile	Frame surface
<b>Example</b>				
FDSXW	-1	-Z	-PB	-ELOX

06	07	08	09	10
Blade colour	Blade position	Single / band design	Length	End piece
-L9005	-R	-N	-01000	-ES

#### Sample

#### FDSXW-1-Z-PB-ELOX-L9005-R-N-01000-ES

Slot diffuser FDSXW for FBS | 1-slot | supply air | with wide frame profile | aluminium natural colour anodised | blade colour black similar to RAL 9005 | one-way right throw | single length | length 1000mm | with end piece, pair supplied loose

#### Order details

##### 01 - Type

FDSXW = slot diffuser FDSXW for FBS

##### 02 - Model

1 = 1-slot

##### 03 - Air throw

Z = Supply air

A = Return air

##### 04 - Frame profile

PB = with wide frame profile (16 mm)

##### 05 - Frame surface

ELOX = Natural colour anodised aluminium (standard)

9010 = Aluminium painted to RAL colour 9010 (white)

xxxx = Aluminium painted to another RAL colour, of your choice (freely selectable, always with 4 digits)

##### 06 - Blade colour

L9005 = Blades made of plastic similar to RAL 9005 (black)

L9010 = Blades made of plastic similar to RAL9010 (white)

##### 07 - Blade position

R = -one-way horizontal throw to the right

B = two-way horizontal throw

##### 08 - Single / band design

N = single length (max. 1200 mm, standard for FBS-AU)

B = band design (available lengths according to SCHAKO standard for band design, only possible for FBS-SS)

##### 09 - Length

00400 = Length 400 mm

00500 = Length 500 mm

00600 = Length 600 mm

00800 = Length 800 mm

01000 = Length 1000 mm

01200 = Length 1200 mm

xxxxx = Length freely selectable in mm (always with 5 digits), for single length only possible up to 1200 mm, for band design >1200 mm possible (only possible for FBS-SS)

##### 10 - End piece

E0 = without end piece (standard)

ES = with end piece (pair, supplied loose, standard)

EB = with end piece (mounted ex-works on both sides)

EL = with end piece on the left (mounted ex works)

ER = with end piece on the right (mounted ex works)

## Floor slot diffuser FBS

### Order details corner angle

01	02	03	04	05	06	07	08
Type	Diffuser	Model	Frame surface	Frame shape	Angle between sides	Side length a	Side length b
<b>Example</b>							
EW	-70	-1	-ELOX	-PB	-090	-000	-000

#### Sample

**EW-70-1-ELOX-PB-090-000-000**

Corner angle | for slot diffuser FDSXW | 1-slot | aluminium natural colour anodised | with wide frame profile | angle between sides 90° | side length a standard length | side length b standard length

#### Order details

##### 01 - Type

EW = corner angle for slot diffuser

##### 02 - Diffuser

70 = for slot diffuser FDSXW

##### 03 - Model

1 = 1-slot

##### 04 - Frame surface

ELOX = Natural colour anodised aluminium

9010 = Painted to the RAL colour 9010 (white)

xxxx = RAL colour can be freely selected

##### 05 - Frame shape

PB = with wide frame profile

##### 06 - Angle between sides

090 = 90° (standard)

xxx = angle as required (a value between 090 and 170 is possible)

##### 07 - Side length a

000 = Standard length = 300 mm

xxx = length freely selectable between 300 and 999 mm

##### 08 - Side length b

000 = Standard length = 300 mm

xxx = length freely selectable between 300 and 999 mm



## Floor slot diffuser FBS

### Order details dummy box

01	02	03
Type	Length	Material
<b>Example</b>		
BLK	-0500	-SV

#### Sample BLK-0500-SV

Dummy box | length 500 mm | galvanised sheet steel

#### Order details

##### 01 - Type

BLK = Dummy box

##### 02 - Length

0500 = length of plenum box 500 mm

1000 = length of plenum box 1000 mm

xxxx = length of plenum box freely selectable (length  $\geq$  400  
up to max. 1200 mm, always with 4 digits)

##### 03 - Material

SV = galvanised sheet steel (standard)

## Floor slot diffuser FBS

### Specification text

Floor slot diffuser type FBS for installation in double floors for installation in the facade area. High vertical penetration at high  $\Delta T$ . Supply air jet is spread over a large area with high-speed reduction of temperature and speed in the occupied area down to the floor level. Suitable for conference rooms. The floor slot diffuser type FBS-AU achieves very high sound absorption values.

It consists of slot diffuser FDSXW (-70), 1-slot, with wide frame profile (-PB), with integrated cross-talk sound attenuator box with round connection spigot. Sound-absorbing box made of galvanised sheet steel with abrasion-resistant absorption material attached on both sides with fastening system for mounting. Slot rail consisting of frame profile made of aluminium natural colour anodised (E6/EV1) or aluminium painted to RAL 9010 (white), including insulating strips, with integrated dirt collection basket and end pieces on both sides. Blades made of plastic, similar to RAL colour 9005 (-L9005, black) or RAL 9010 (-L9010, white). Fastening by means of fastening prongs. Make: SCHAKO **type FBS-AU**

Consisting of slot diffuser FDSXW (-70), 1-slot, with wide frame profile (-PB), with integrated hit-and-miss damper made of galvanised sheet steel. Slot rail consisting of frame profile made of aluminium natural colour anodised (E6/EV1) or aluminium painted to RAL 9010 (white), including insulating strips, with integrated dirt collection basket and end pieces on both sides. Blades made of plastic, similar to RAL colour 9005 (-L9005, black) or RAL 9010 (-L9010, white). Fastening by means of fastening prongs. Including casting core for casting the floor screed, made of styropor.

Product: SCHAKO **type FBS-SS**

Accessories:

- Damper (-DK2), manually adjustable through cable, consisting of damper made of galvanised sheet steel and damper fastening made of plastic (FBS-AU only).
- Corner bracket 90° (-EW) (supplied loose as standard)
- Rubber lip seal (-GD1), made of special rubber (FBS-AU only)
- Cover (-OA1), made of galvanised sheet steel
- Dummy box (-BLK) as connecting element for optic design, made of galvanised sheet steel.
- Pressure measurement box for easy measurement of the supply air volumetric flow from outside, made of galvanised sheet steel.