



Step Impulse Diffuser

SIA



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Step Impulse Diffuser SIA

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Step Impulse Diffuser SIA

Description

The SCHAKO **step impulse diffuser** type SIA is suitable for installation in steps in pressure floors and is mainly used for air-conditioning of concert halls, auditoria, theatres and cinemas. The modern design of the perforated surface fits in very well with today's architectural demands. Unlike conventional displacement air diffusers with an only low induction, the SIA diffuser reaches an induction factor of 2.8 after only 0.5 m. Ingenious fittings on the inside of the SIA reduce the speed and temperature at a distance of only 0.4 m between diffuser and legs at such a high rate that no draught is formed, this being achieved even at a maximum temperature difference of -6 Kelvin. The maximum load per metre is 95 m³/h at a very low sound power level of 20 dB(A) of the flow-generated noise.

Advantages

- high air volumes at low sound power level
- suitable for cooling and heating up to +/-6 Kelvin
- easy to clean
- modern, discreet design
- also available as return air diffuser
- Available in band design.

Properties

Inductive step impulse diffuser with a very fast temperature and speed reduction after only a few centimetres. Suitable for heating and cooling at a maximum ΔT of +/-6 K.

Construction

Air diffuser elements (for supply air model only)

- Sheet steel RAL 9010 (white) or RAL 9005 (black) with spring fastening und pole brace for concealed mounting

Frame

- Made of extruded aluminium profile (PB profile) painted to RAL 9010 (-9010, white) or RAL 9005 (-9005, black)

Body and diffuser plate

- Sheet steel painted to RAL 9005 (black)

Model

- SIA-Z - Supply air model (with guiding plate)
- SIA-A - Return air model (without guiding plate)
- SIA-...-N Single length
- SIA-...-B - Band design
- SIA-...-EO - without end pieces
- SIA-...-EB - With end pieces on both both sides, supplied loose
- SIA-...-EL - With end piece on the left, mounted ex works
- SIA-...-ER - With end piece mounted ex works on the right

Fastening

Concealed mounting (-VM)

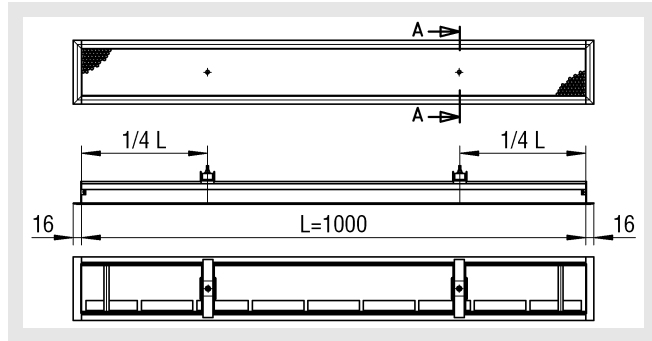
- with spring fastening and pole brace

Step Impulse Diffuser SIA

Models and dimensions

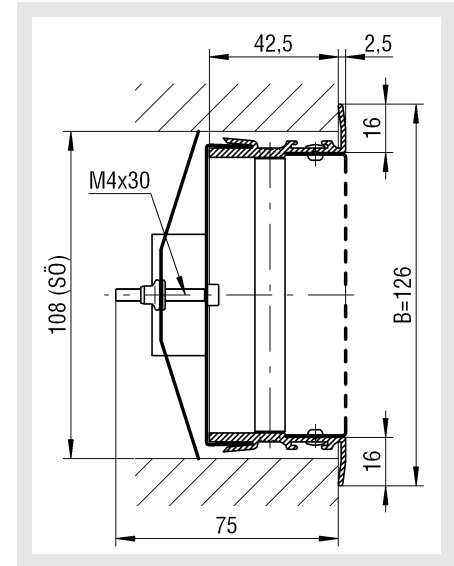
Dimensions

SIA-...-01000-...



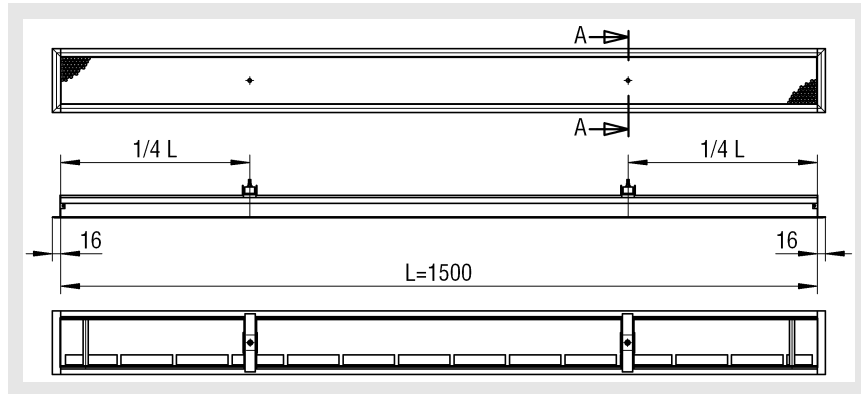
Step opening:
L+10

Section A-A

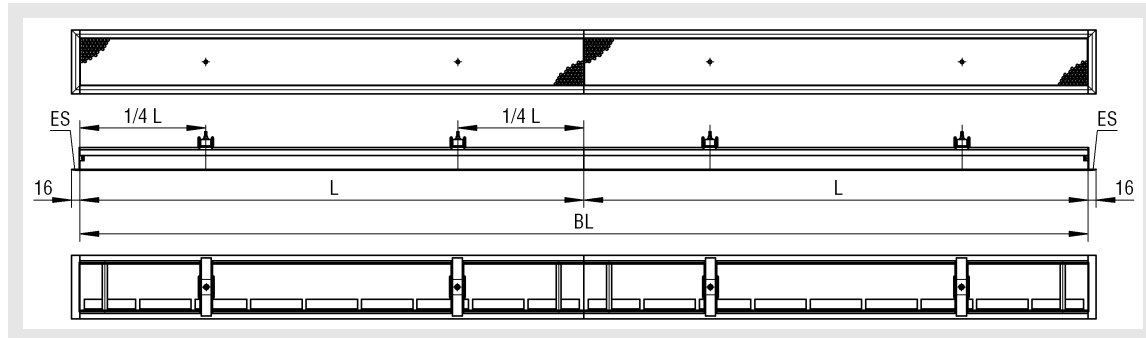


SÖ = step opening

SIA-...-01500-...

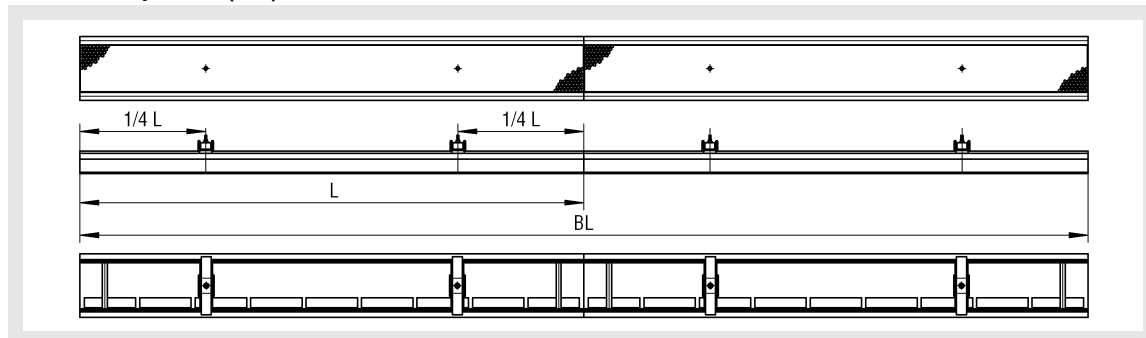


Band design with end pieces (-EB)



Step opening:
BL+10

without end pieces (-E0)

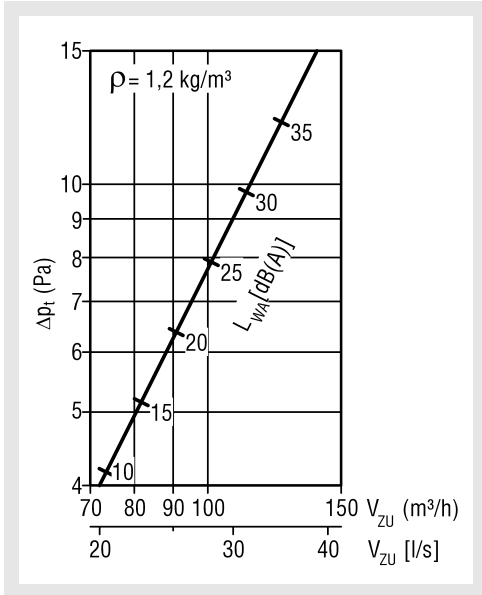


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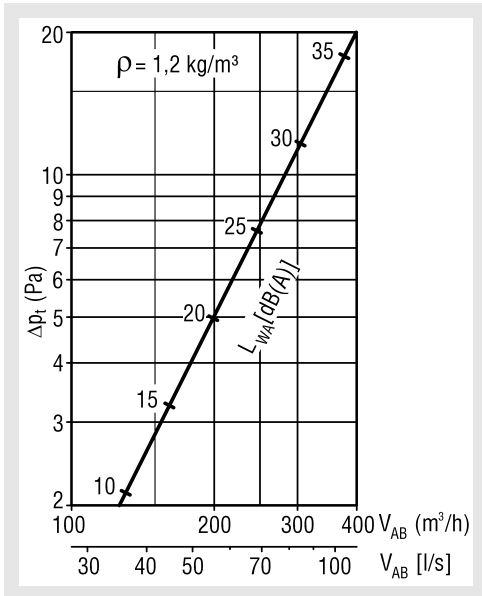
Technical data

Pressure loss and noise level

SIA-Z-...-01000-...
with air diffuser plate



SIA-A-...-01000-...
without air diffuser plate

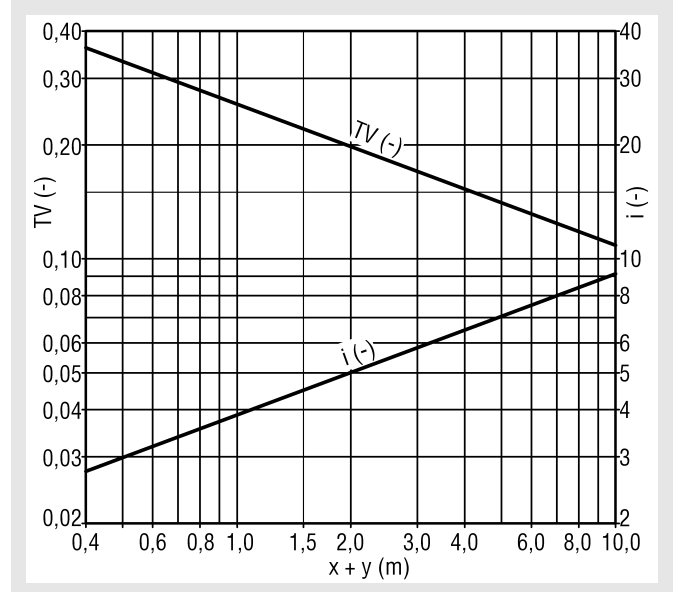


Correction of length (supply and exhaust air)

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

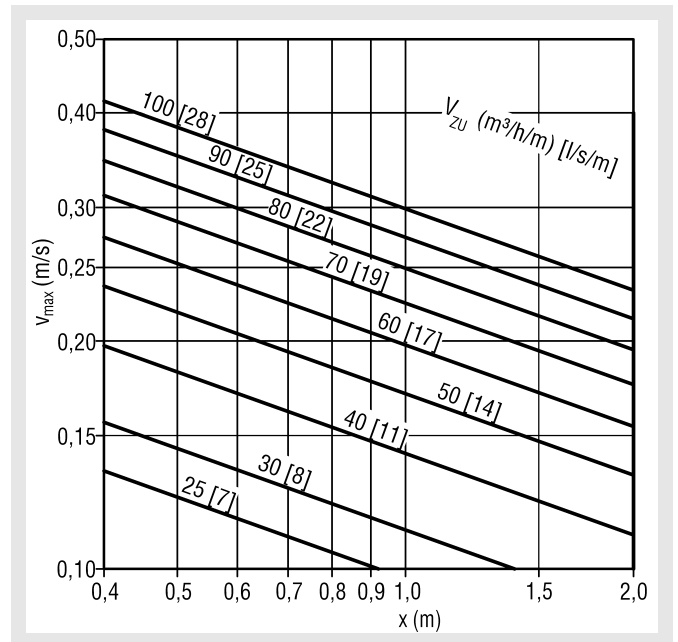
Temperature and induction ratios

SIA-Z-...-01000-... (vertical installation)



Maximum end velocity of jet

SIA-Z-...-01000-...



Correction factor

for SIA-Z-...-01500-... for SIA-Z-...-00500-...

$$V_{max} \times 0,66$$

$$V_{max} \times 2$$

$$V_{mittel} = V_{max} \times 0,5$$

Step Impulse Diffuser SIA

Order code

01	02	03	04	05	06	07
Type	Type of air	Frame surface/ faceplate	Length	Single / band design	Mounting	End piece
Example						
SIA-	-Z	-9005	-01000	-N	-VM	-E0

All fields must be filled out when ordering

Sample

SIA-Z-9005-01000-N-VM-E0

Step impulse diffuser type SIA | Supply air | Painted to RAL colour 9005 (black) | Length 1000 mm | Single length | With concealed mounting | Without end piece

Order details

01 - Type

SIA = Step Impulse Diffuser type SIA

02 - Type of air

Z = Supply air (with air diffuser plate)

A = Return air (without air diffuser plate)

03 - Frame surface / faceplate

9005 = Painted to RAL colour 9005 (black, standard)

9010 = Painted to the RAL colour 9010 (white)

xxxx = RAL colour can be freely selected (always with 4 digits)

04 - Length

01000 = Length 1000 mm

01500 = Length 1500 mm

xxxxx = length can be freely selected in mm (section length ≥ 400 to max. 1500 mm, always with 5 digits)

05 - Single/ band design

N = Single length

B = Band design (available lengths according to SCHAKO standard for band design)

06 - Mounting

VM = Concealed mounting (standard, with spring fastening and pole brace)

07 - End piece

E0 = Without end pieces (standard)

EB = With end pieces mounted ex works on both sides

EL = With end piece mounted ex works on the left

ER = With end piece mounted ex works on the right

Step Impulse Diffuser SIA

Legend

V_{ZU}	(m ³ /h) [l/s]	= Supply air volume
V_{AB}	(m ³ /h) [l/s]	= Return air volume
V_X	(m ³ /h) [l/s]	= Total air jet volume at point x
v_{max}	(m/s)	= Maximum end velocity of jet
v_{mittel}	(m/s)	= Average end velocity of jet ($v_{average} = v_{max} \times 0.5$)
x	(m)	= horizontal throw
y	(m)	= vertical throw
ρ	(kg/m ³)	= Density
Δp_t	(Pa)	= Pressure loss
L_{WA}	[dB(A)]	= A-weighted sound power level
i	(-)	= Induction ratio ($i = V_X / V_{ZU}$)
TV	(-)	= Temperature ratio ($TV = \Delta T_X / \Delta T_0$)
ΔT_0	(K)	= Temperature difference between supply air temperature and room temperature ($\Delta T_0 = t_{ZU} - t_R$)
ΔT_X	(K)	= Temperature difference at point x
t_{zu}	(°C)	= Supply air temperature
t_R	(°C)	= Room temperature
AL	(-)	= Diffuser length
KF	(-)	= Correction factor

Specification texts

Step impulse diffuser with high induction factor for vertical installation in steps in pressure floors. The main fields of application are concert halls, auditoria, theatres, and cinemas for air-conditioning. Consisting of a rectangular diffuser plate made of sheet steel painted to RAL 9010 (-9010, white) or RAL 9005 (-9005, black) with a circumferential frame made of extruded aluminium profile painted to the same colour as the diffuser plate. With integrated guiding plate for building up an initial pressure, made of galvanised sheet steel painted to RAL colour 9005 (black). Ingenious fittings on the inside rapidly reduce speed and temperature between the diffuser and the legs. Fixing with concealed mounting (-VM).

Product: SCHAKO **type SIA**

Air throw

- Supply air (with air diffuser plate) **type SIA-Z**
- Return air (without air diffuser plate) **type SIA-A**

End pieces

- Without end piece (-EO)
- Mounted on both sides (-EB)(supplied loose)
- Mounted on the left (-EL)(mounted ex works)
- Mounted on the right (-ER)(mounted ex works)