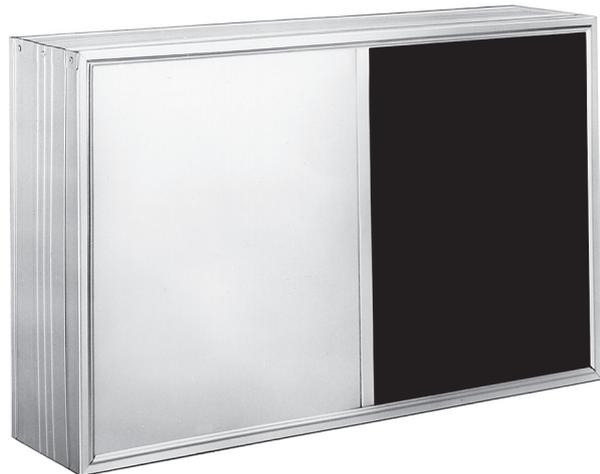


SB splitters, SKB sound attenuators

with glass fibre

Splitters and sound attenuators made of high-strength glass fibre and galvanized sheet steel for optimum sound attenuation in ventilation and air conditioning systems.

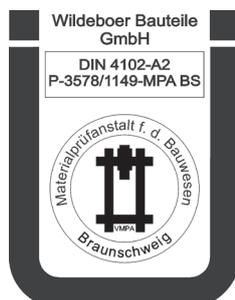
SB splitters for installation in ducts



SKB sound attenuator with SB splitters
- Standard design -



New option
Casing tightness
Class C



www.HYG.de

Geprüfte Qualität

Hygiene-Institut
des Ruhrgebiets
Institut für Umwelthygiene und Toxikologie

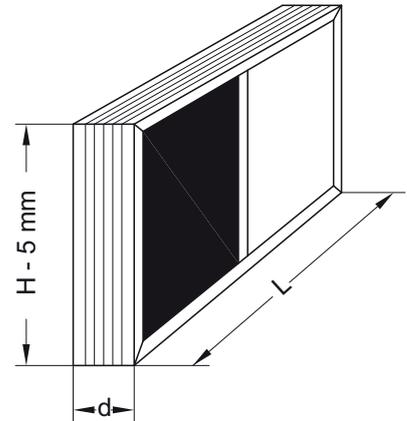


Nur gültig in Verbindung mit zugehörigem Zertifikat unter www.wildeboer.de!

SB splitters with glass fibre

Data sheet

SB splitters with glass fibre are combined absorbing and resonating sound attenuating splitters of dual-chamber type for ventilation and air conditioning systems. With peripheral profile frame made of galvanized sheet steel and with continuous stabilising and chamber separating profile for relatively high loading capacity. The surfaces of the absorbent material made of rotproof, bio-soluble mineral wool are lined with tear-resistant, abrasion-resistant and moisture-repellent glass fibre (glass filament fabric) and galvanized sheet steel. The design ensures **attenuation of broadband noise** with an **optimum** in the critical frequency range of around **250 Hz** with the smallest possible installation length.



Type	Thickness of splitters d [mm]	Gap widths [mm]	Nominal height H [mm]	Length L [mm]
SB100	100	50 to 200	150 to 1800	500
				750
				1000
SB200	200	50 to 400		1250
				1500

- Nominal heights H in 1-mm increments from 150 mm to 1800 mm.
- The lengths L are only supplied with the specified dimensions.
- All of the specified heights and lengths can be combined as standard.
- Greater heights H and lengths L can be achieved by combining several splitters.

The actual height of all splitters is always 5 mm less than the nominal height!

- Splitters with additional perforated metal covering on the surfaces coated with glass fibre are supplied as standard. The insertion losses remain unchanged.
- Splitters are to be installed in a suitable casing made of sheet metal or other mineral-based material, for example, in order to achieve the insertion losses specified in the catalogue with the specified gap widths.

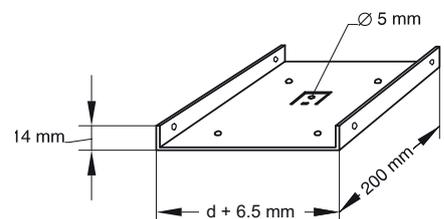
Characteristics and proof of conformity

- Insertion loss, flow noise and pressure loss according to DIN EN ISO 7235.
- Permissible operating temperature: 100°C
- Permissible air velocity in splitter gap: 20 m/s.
- Non-combustible (building material class A2 according to DIN 4102-1)
AbP P - 3578 / 1149 - MPA BS; certificate of compliance ZERT - 3 / 843 / 04 MPA BS.
- Proof of hygiene: VDI 6022-1; VDI 2067-1; VDI 3803; DIN 1946-4; DIN EN 13779
Ruhr District Institute of Hygiene, Gelsenkirchen.
- Proof of toxicological conformity: Due to bio-solubility, does not contain carcinogenic, mutagenic or teratogenic substances. Safety data sheet according to Announcement on Hazardous Substances 220 of the mineral wool manufacturer.

Accessories:

U-caps for on-site assembly of splitters

- Type U100 for 100-mm splitter thickness
- Type U200 for 200-mm splitter thickness



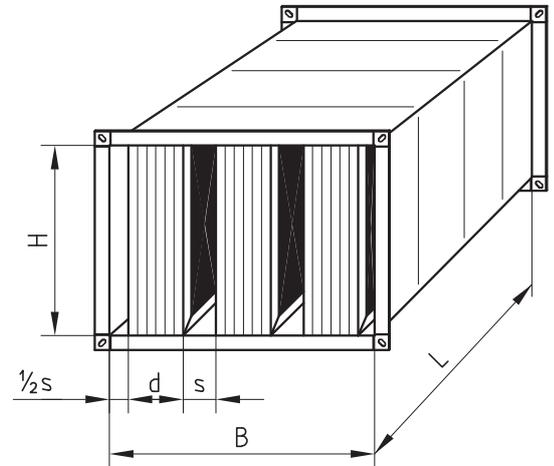
SKB sound attenuator with glass fibre

Data sheet

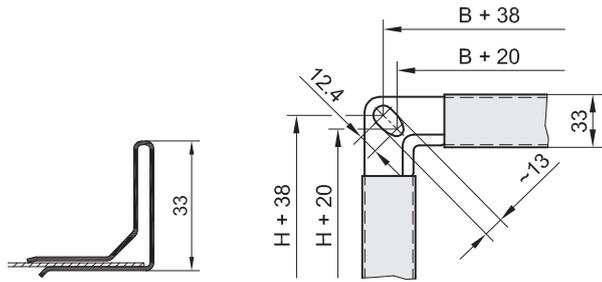
SKB sound attenuators with glass fibre are air duct casings made of galvanized sheet steel reinforced with beads and external longitudinal profiles with SB splitters inserted for ventilation and air conditioning systems.

Type	Built-in splitters	Gap widths s [mm]	Width B [mm]	Height H [mm]	Lengths L [mm]
SKB100	SB100	50 to 200	150 to 1600	150 ¹⁾ to 1800	500 750 1000
SKB200	SB200	50 to 400	250 to 2400		1250 1500

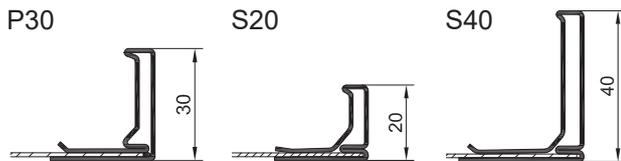
¹⁾ option 2 is available with height H from 153 mm!



- Widths B are available in 1-mm increments from 150 mm to 1600 mm, or 250 mm to 2400 mm and with n = 1 to 8 pc splitters with the specified gap widths s. For transportation reasons, the maximum widths cannot be exceeded.
- Heights H in 1-mm increments from 150 mm to 1800 mm are available.
- The lengths L are only supplied with the specified dimensions. Lengths L = 1750 mm to L = 3000 mm are divided into two pieces at the factory.



Standard frame profile V10 with slotted holes at the frame corners for commercially available connection profiles.



Special frame profiles

Order options		Ability to withstand pressure SKB casing [Pa]		Satisfies DIN EN 15727	
Frame profile	Casing	Underpressure	Overpressure	Pressure class	Leak tightness class
V10	Standard	-1000	+1000	2	A
	Option: 2		+2500	3	A
P30	Option: C	-1000	+1000	2	C
Option: S20	Standard	-630	+1000		2
Option: S40	Standard	-1000	+2500		3

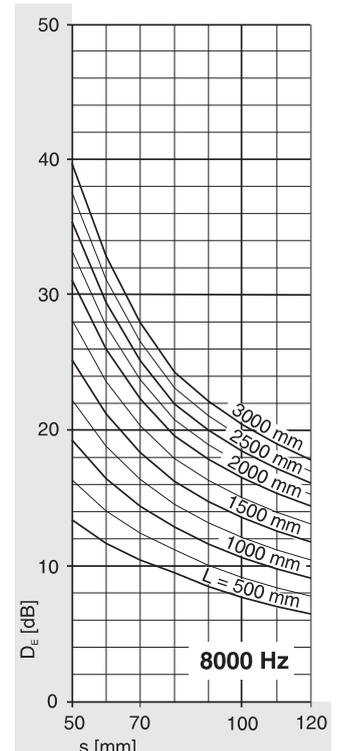
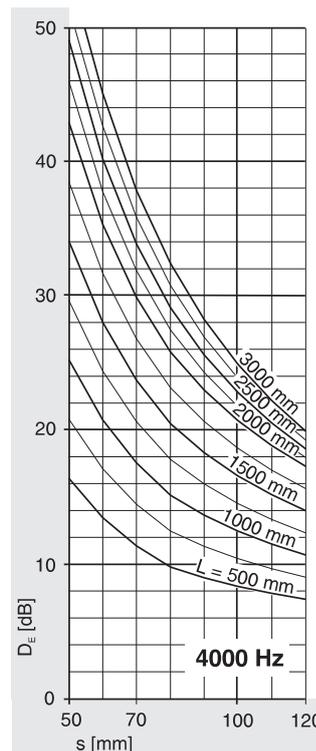
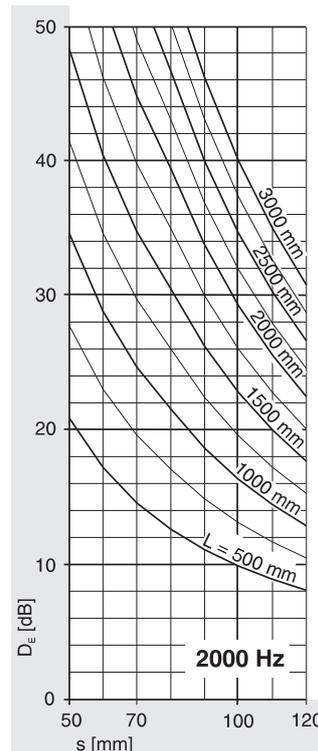
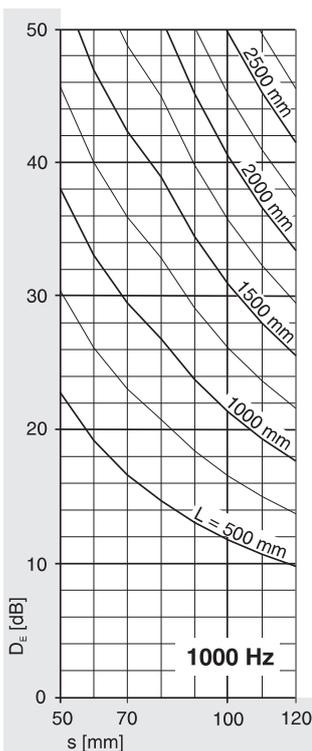
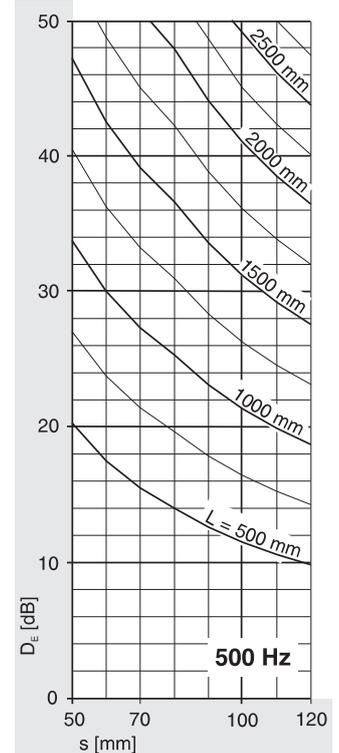
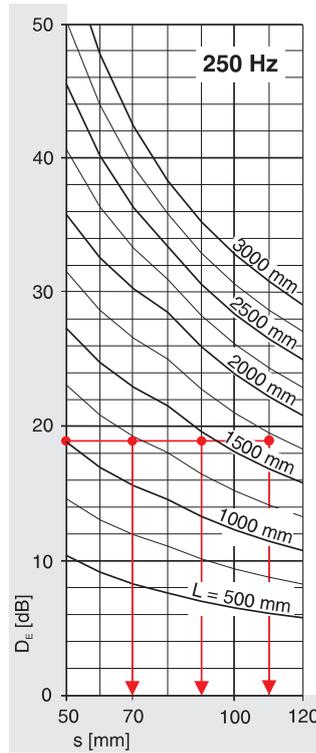
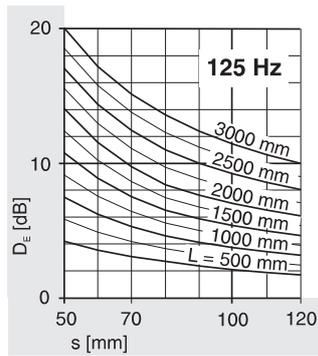
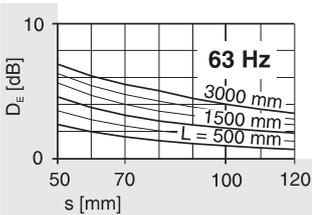
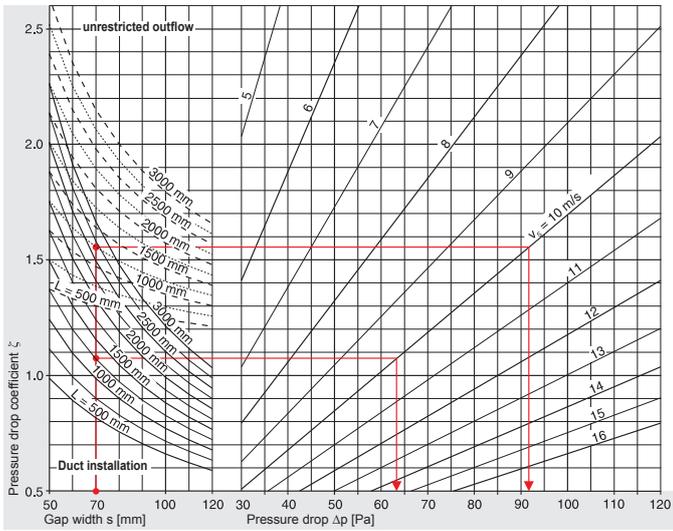
NOMENCLATURE → see pages 4 to 8

B [mm]	= Width
H [mm]	= Height
L [mm]	= Length
d [mm]	= Thickness of splitters
n	= Number of splitters
s [mm]	= Splitter gap
ζ	= Pressure drop coefficient
Δp [Pa]	= Pressure drop
A _A [m ²]	= Inflow cross-section; A _A [m ²] = B [mm] / H [mm] / 10 ⁶
A _{free} [m ²]	= free cross-section; A _{free} [m ²] = n · s [mm] · H [mm] / 10 ⁶

V [m ³ /h]	= Volume flow
v _s [m/s]	= Flow velocity in splitter gap; v _s [m/s] = V [m ³ /h] / 3600 / A _{free} [m ²]
v _A [m/s]	= Flow velocity in inflow cross-section; v _A [m/s] = V [m ³ /h] / 3600 / A _A [m ²]
D _E [dB]	= Insertion loss
L _{WA} [dB(A)]	= A - sound power level of flow noise
f [Hz]	= Octave mid frequency
L _W [dB/Oct.]	= Octave sound power level Flow noise
ΔL [dB]	= Relative sound power level

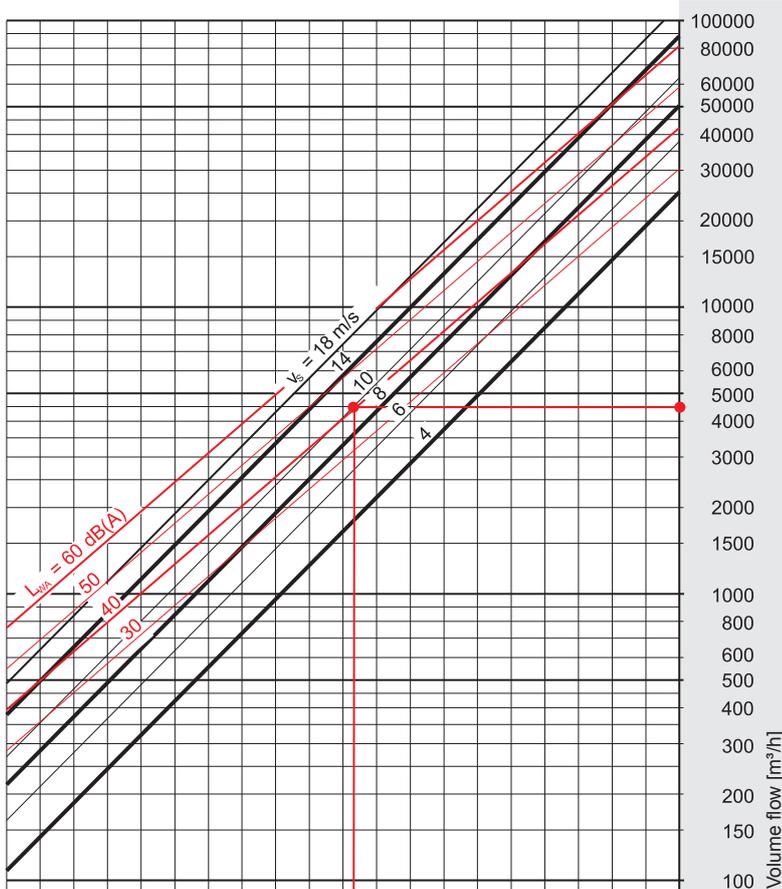
SB splitters with glass fibre, SKB sound attenuator

100-mm splitter thickness: Pressure loss Δp , insertion loss D_E



SB splitters with glass fibre, SKB sound attenuator

100-mm splitter thickness: Volume flow V, sound power level L_{WA}



Example

- Specified:
 - Volume flow V [m³/h]: 4500
 - Insertion loss D_E [dB at 250 Hz]: 19
- According to the **nomogram D_E** , the required insertion loss can be achieved **at 250 Hz** with:

	(1)	(2)	(3)
Length L [mm]	1250	1500	1750
Gap width s [mm]	70	90	110

selected

- A flow velocity of v_s in the splitter gap is selected in the **nomogram opposite**, based on the the permitted sound power level L_{WA} :

	(1a)	(1b)	(1c)	(1d)
L_{WA} [dB(A)]	< 30	≈ 35	40	≈ 50
v_s [m/s]	6	8	10	14

selected

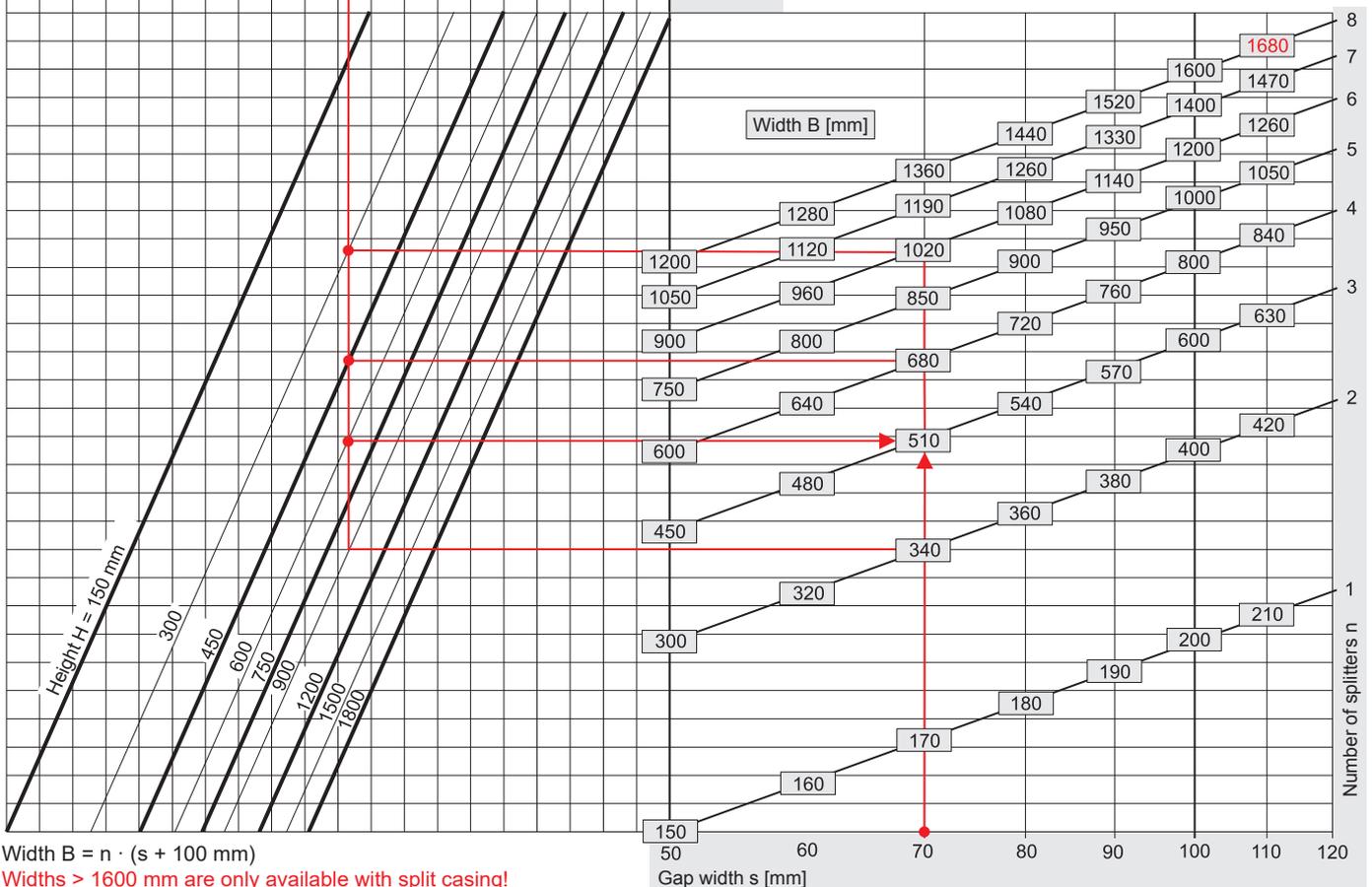
The splitter gap $s = 70$ mm determines, in combination with the number of splitters n , the width B and height H :

Number of splitters n	2	3	4	6
Width B [mm]	340	510	680	1020
Height H [mm]	900	600	450	300

selected

- According to the **nomogram for pressure loss**
 - $\Delta p = 63$ Pa with duct installation,
 - $\Delta p = 92$ Pa with unrestricted outflow,

NOMENCLATURE ⇒ see page 3

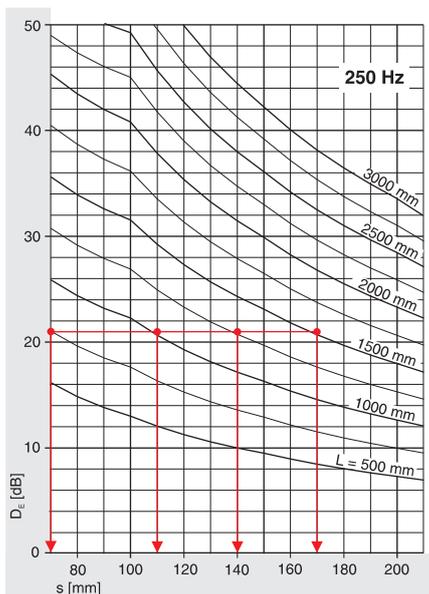
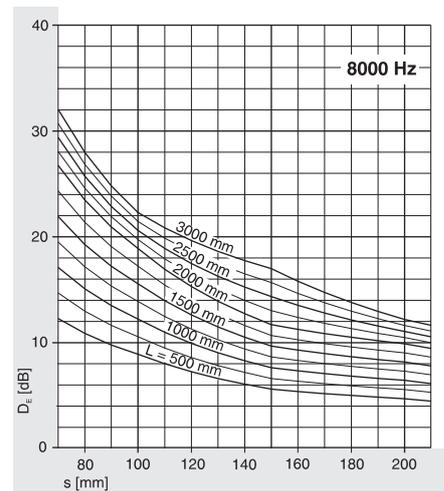
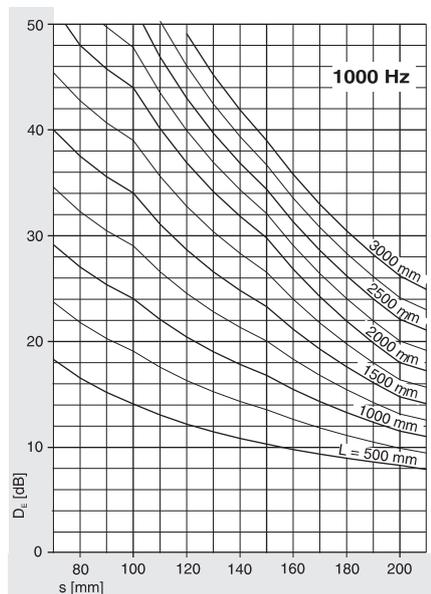
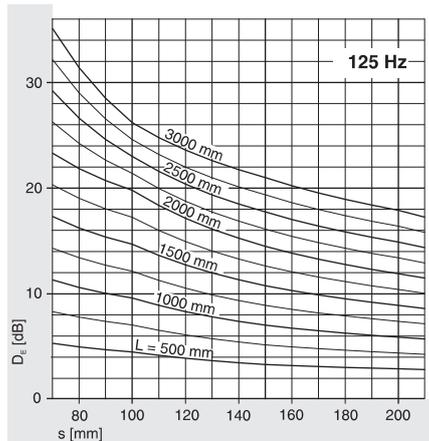
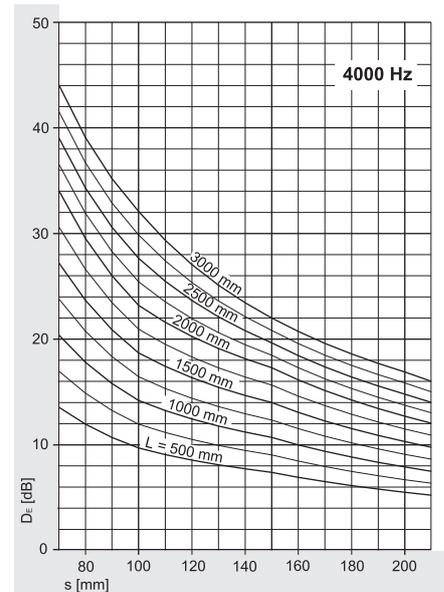
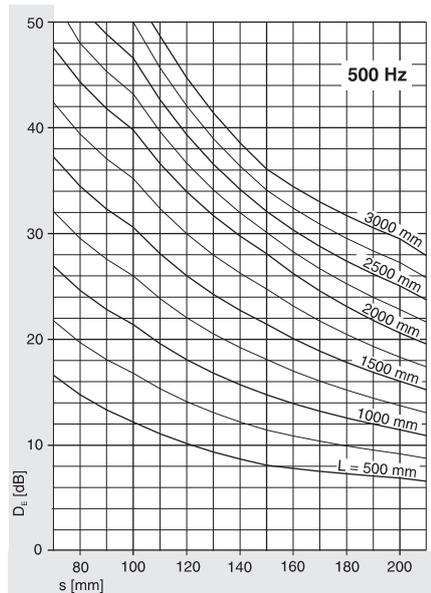
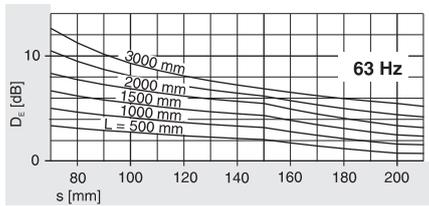
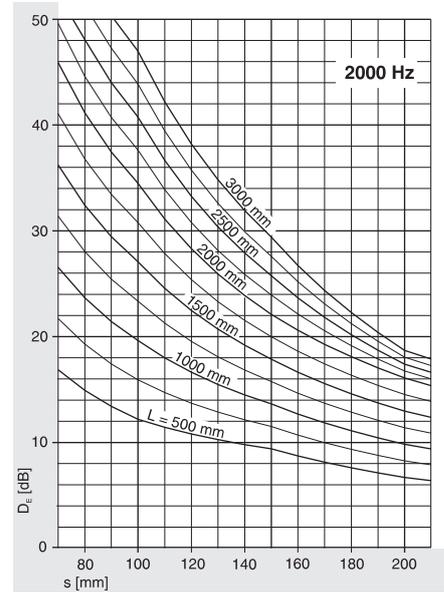
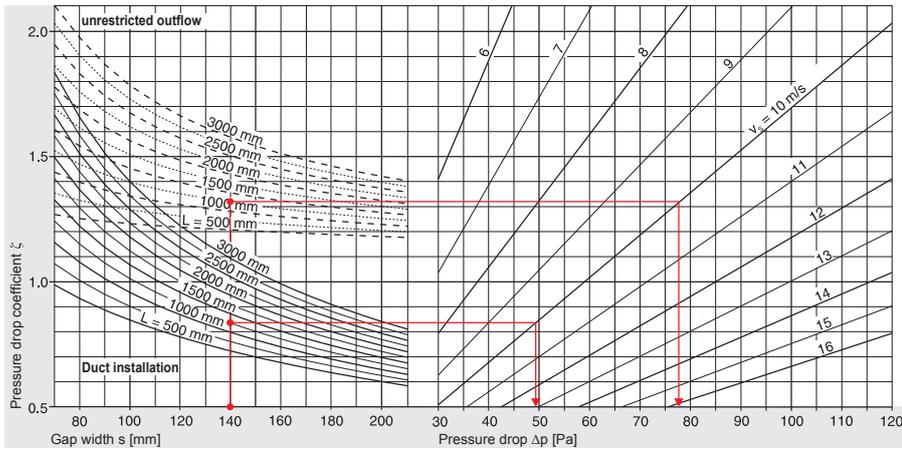


Width B = n · (s + 100 mm)

Widths > 1600 mm are only available with split casing!

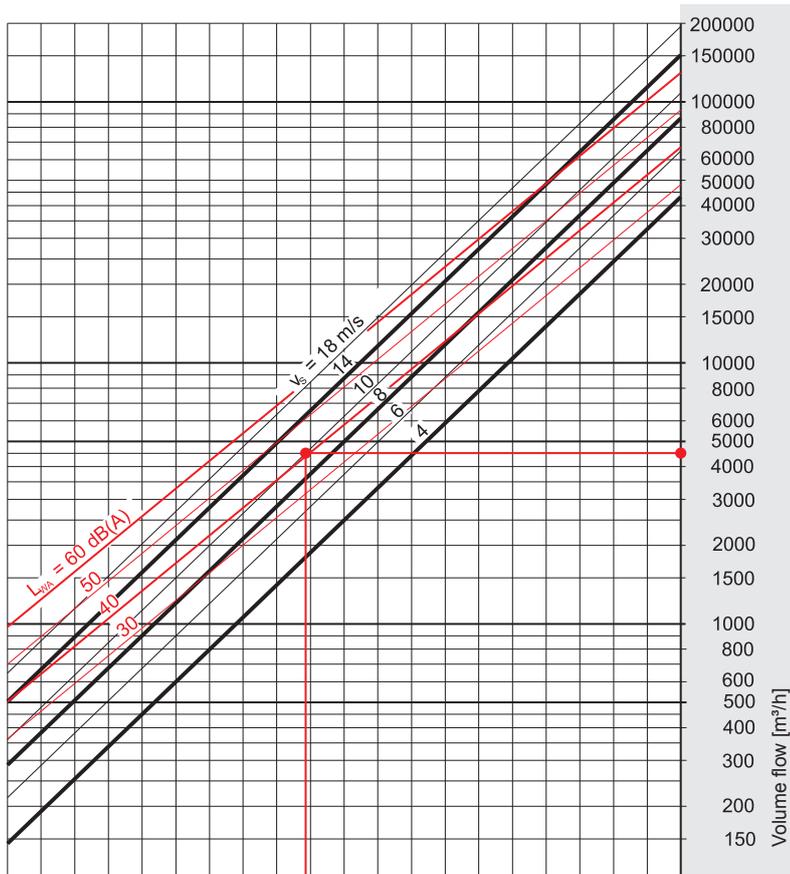
SB splitters with glass fibre, SKB sound attenuator

200-mm splitter thickness: Pressure loss Δp , insertion loss D_E



SB splitters with glass fibre, SKB sound attenuator

200-mm splitter thickness: Volume flow V , sound power level L_{WA}



Example

- Specified:
 Volume flow V [m^3/h]: 4500
 Insertion loss D_E [dB at 250 Hz]: 21
- According to the **nomogram D_E** , the required insertion loss can be achieved **at 250 Hz** with:

	(1)	(2)	(3)	(4)
Length L [mm]	750	1000	1250	1500
Gap width s [mm]	70	110	140	170

selected

- A flow velocity of v_s in the splitter gap is selected in the **nomogram opposite**, based on the permitted sound power level L_{WA} :

	(3a)	(3b)	(3c)	(3d)
L_{WA} [dB(A)]	< 30	□ 35	40	□ 50
v_s [m/s]	6	8	10	14

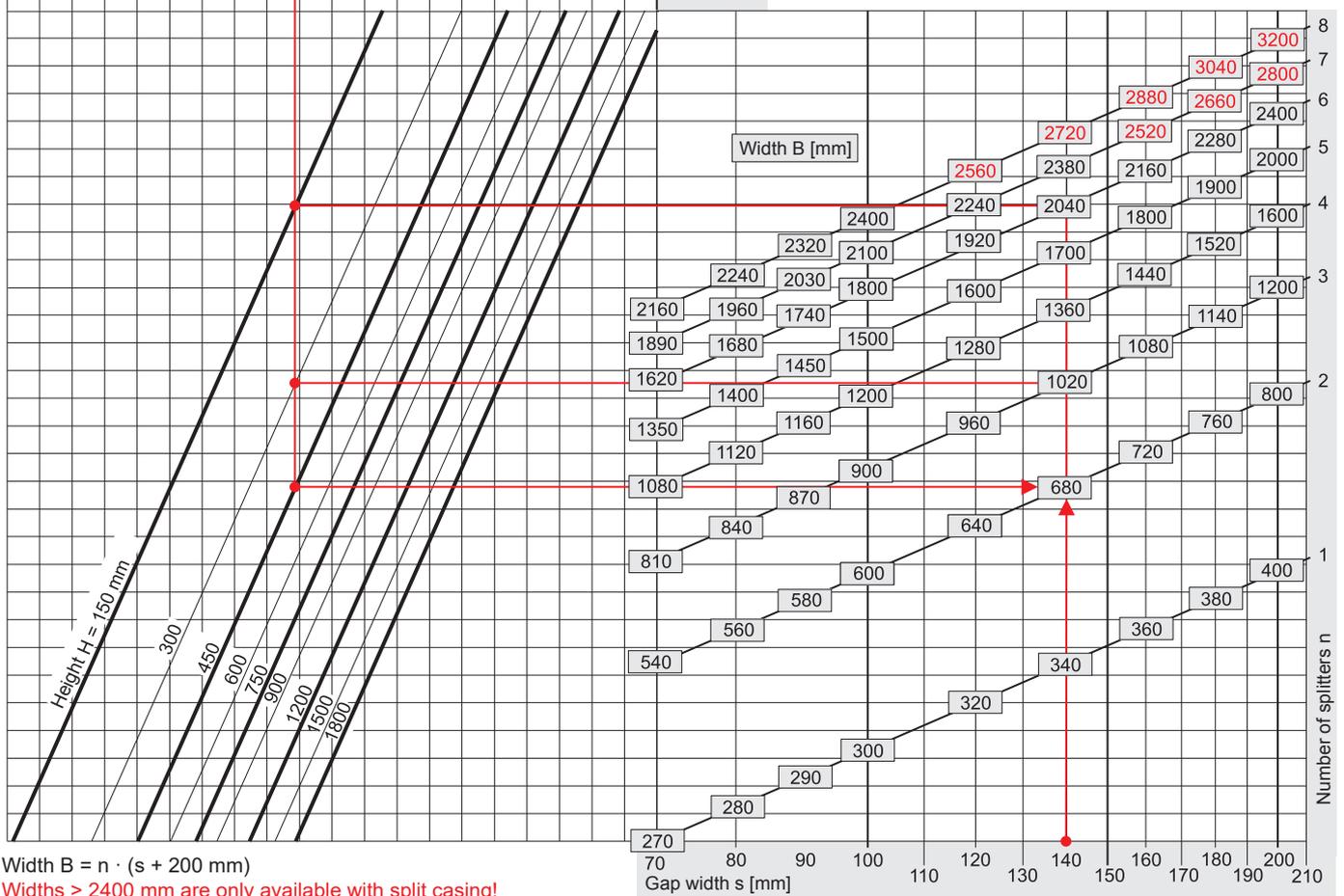
selected

The splitter gap $s = 140$ mm determines, in combination with the number of splitters n , the width B and height H :

Number of splitters n	2	3	6
Width B [mm]	680	1020	2040
Height H [mm]	450	300	150

selected

- According to the **nomogram for pressure loss**
 $\Delta p = 49$ Pa with duct installation,
 $\Delta p = 78$ Pa with unrestricted outflow,
 NOMENCLATURE \Rightarrow see page 3



Width $B = n \cdot (s + 200 \text{ mm})$

Widths > 2400 mm are only available with split casing!

SB splitters with glass fibre, SKB sound attenuator

Flow noise

Sound attenuators should be supplied with an airflow velocity that is evenly distributed across the duct cross-section. The stated pressure losses and sound power levels for flow noise apply subject to the following. Whenever possible, air entering sound attenuators downstream of bends, branches, fans, etc. should first pass through guide sections in order to compensate for anticipated variations in air velocity.

The maximum permissible air velocity in the gap s is 20 m/s. Due to the associated relatively high pressure losses and flow noise, the applicable flow velocities are generally lower in practice.

The sound power level L_{WA} of the flow noise depends on the flow velocity and volume flow:

$$L_{WA} \text{ [dB(A)]} = L_{WA1} \text{ [dB(A)]} + L_{WA2} \text{ [dB(A)]}$$

This sound power level L_{WA} should be at least 10 dB less than the sound power level of the plant noise downstream of the sound attenuator, as otherwise the flow noise of the sound attenuator could prevail.

$$L_{W-Oct} \text{ [dB]} = L_{WA} \text{ [dB(A)]} + \Delta L \text{ [dB]}$$

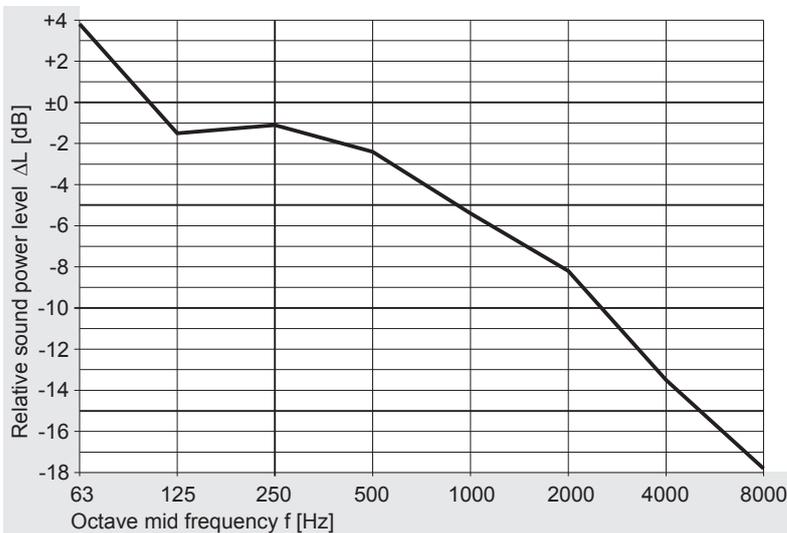
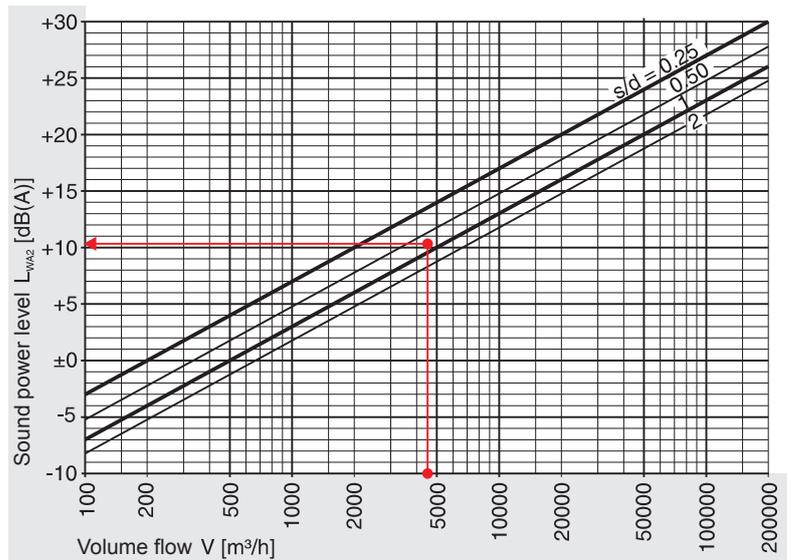
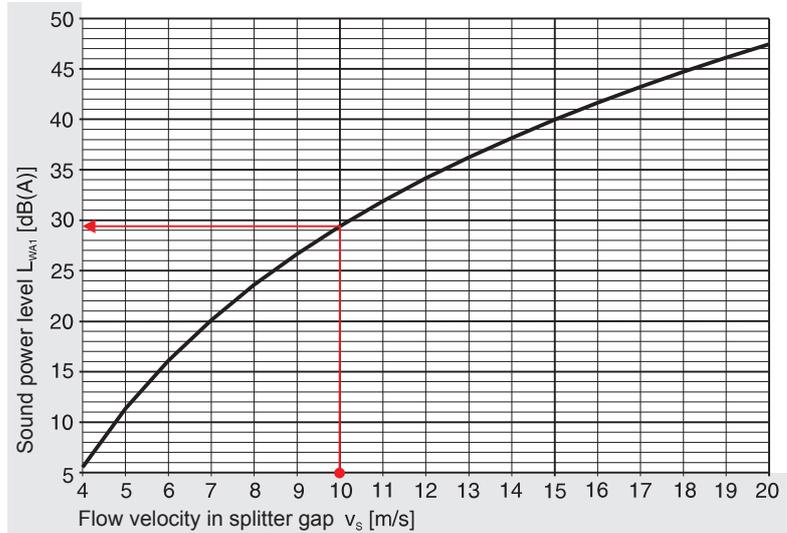
Example:

Flow velocity in gap s [m/s]	=	10
Volume flow V [m³/h]	=	4500
Gap width s [mm]	=	140
Splitter thickness d [mm]	=	200
relative gap width $s/d = 140 / 200$	=	0.7
L_{WA} [dB(A)]	≈ 29 + 11	= 40

f [Hz]	63	125	250	500	1000	2000	4000	8000
L_{WA} [dB(A)]	40	40	40	40	40	40	40	40
+ ΔL [dB]	+4	-2	-1	-2	-5	-8	-14	-18
L_{W-Oct} [dB]	44	38	39	38	35	32	26	22

According to this example, the sound power level of the plant noise downstream of the sound attenuator should not be much less than 50 dB(A). Select a smaller flow velocity in the gap s if necessary.

This approach is recommended as the relative levels used as the basis for level addition may be subject to significant tolerances, depending on the system used. The stated correction values ΔL are average values.



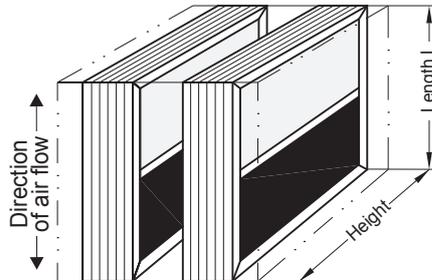
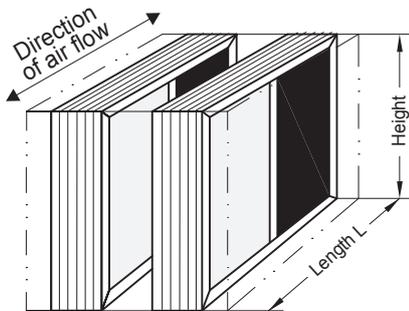
SB splitters with glass fibre, SKB sound attenuator

Installation

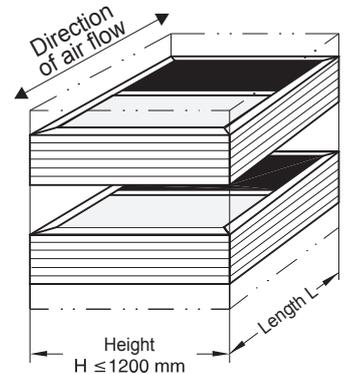
Installation positions

SB splitters are installed vertically.

Splitters can only be installed horizontally up to a maximum height of 1200 mm if moisture penetration is fundamentally ruled out.

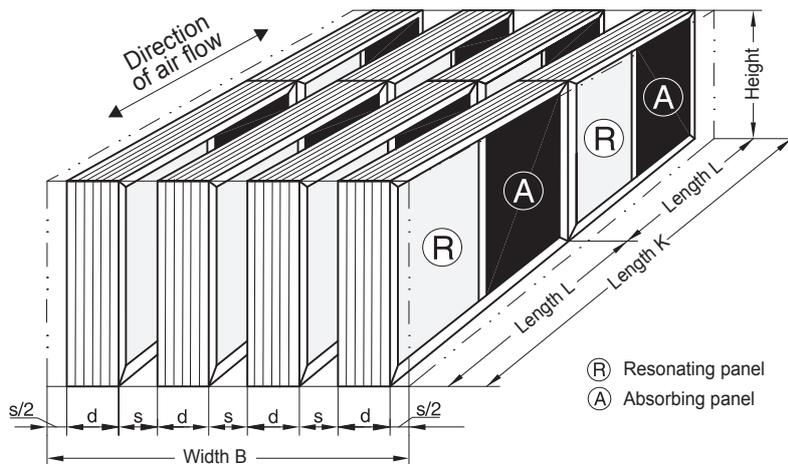


A central support should also be provided for heights above 600 mm!



Installation arrangement

SB splitters must be arranged in parallel so the absorbing panels (A) are always opposite resonating panels (R) and also follow them:



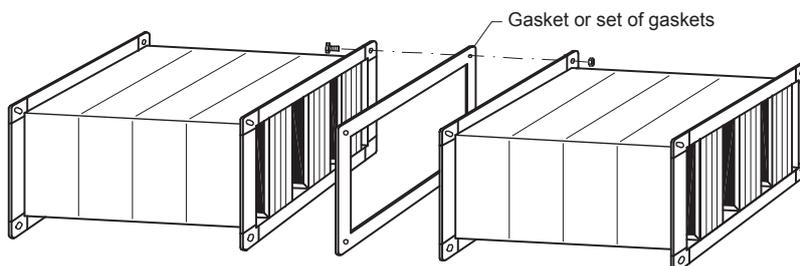
(R) Resonating panel
(A) Absorbing panel

Please note:

- The duct length K must be at least equal to the sum of splitter lengths L.
- Only splitters with equal lengths L may be arranged side by side or above one another.
- The splitter height H and splitter length L must not be swapped round.
- The airflow must pass through the gap s in the longitudinal direction of the splitter L.
- The widths of the gaps s between the two outer splitters and the duct is to be halved, i.e. set up with s/2.
- The gap widths must remain constant over length L and height H.
- Increasing the width of the gap leads to a reduction in attenuation.
- Reducing the width of the gap leads to an increase in pressure loss and flow noise.
- The actual dimension of the splitter height is 5 mm less than the nominal height H of the splitters to allow for duct wall thicknesses. If several splitters are installed on site in a stacked arrangement, it may be necessary to order higher splitters.
- The nominal height H of the splitters is always the ordering dimension.

Duct sizes

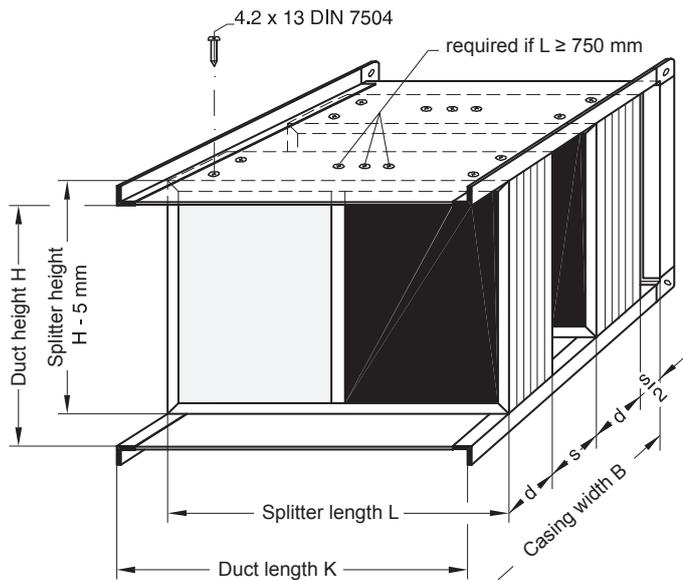
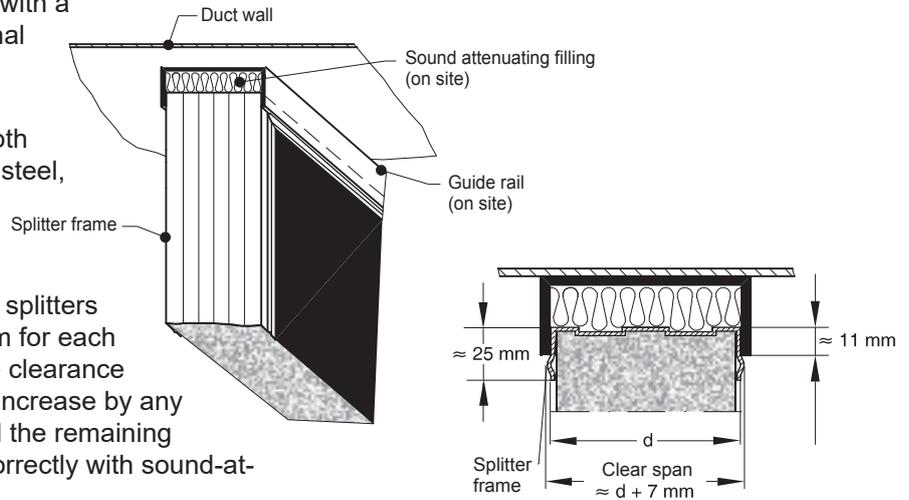
- SKB sound attenuators can be delivered as single units with a length of up to 1500 mm. Longer lengths of up to 3000 mm are divided and delivered in at least two parts for assembly on site.
- SKB sound attenuators higher than 1000 mm and longer than 750 mm are supplied with external lateral stiffening profiles with a height of roughly 32 mm.



SB splitters with glass fibre

Installation in on-site air ducts (1)

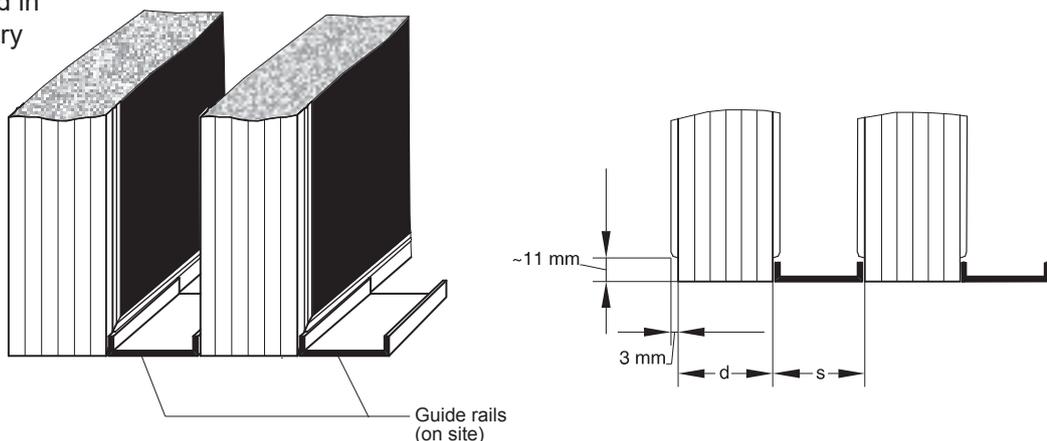
- SB splitters can be inserted into a duct with a clear height which is equal to the nominal height.
- Only air ducts whose walls are as smooth and plane-parallel as possible made of steel, aluminium, concrete or masonry should be used.
- If a stacked arrangement of several SB splitters is required, an additional height of 5 mm for each splitter should be ordered to ensure the clearance between the splitter and duct does not increase by any further than is necessary. Otherwise, fill the remaining spaces between the splitter and duct correctly with sound-attenuating fillings.
- SB splitters can be inserted with drilling screws in metal ducts.



Please note:

- The splitters must be securely seated and not exposed to vibrations.
- Seal screws if required.

- They can be installed in concrete and masonry ducts with guide rails.

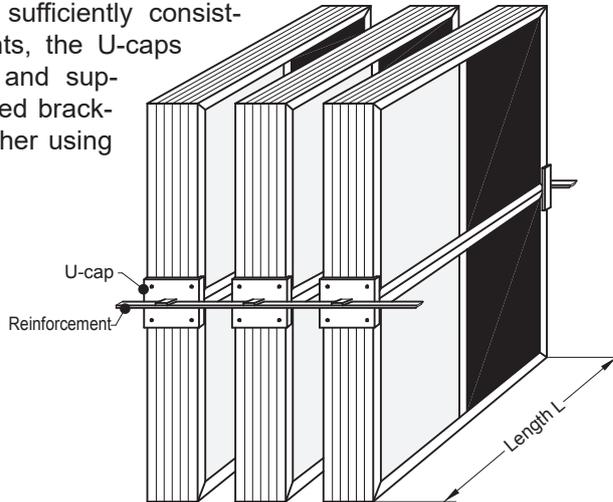


SB splitters with glass fibre

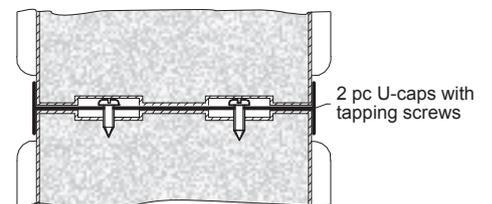
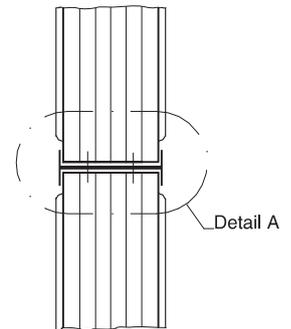
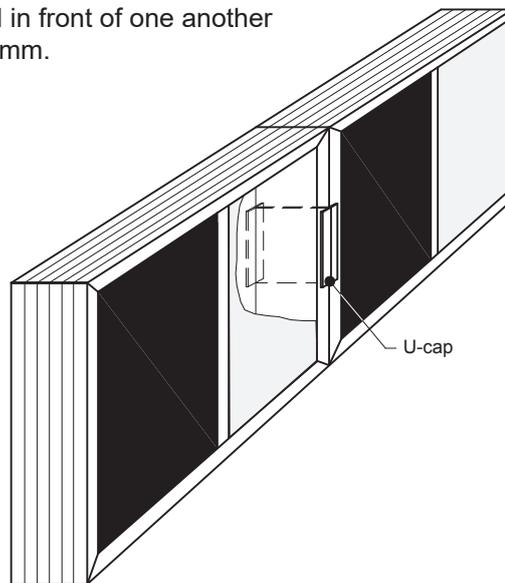
Installation in on-site air ducts (2)

- SB splitters can be stacked to an overall height of roughly 5390 mm. They should be connected with U-caps.

To keep the gaps sufficiently consistent over large heights, the U-caps should be stiffened and supported on the prepared brackets one below the other using steel flats.



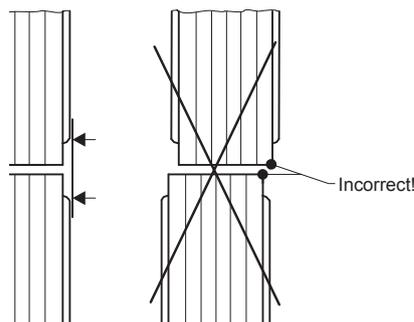
- SB splitters can be installed in front of one another up to a total length of 3000 mm.



Detail A

It must be ensured that the splitters are carefully aligned! Avoid offsetting of the splitters.

If required, two U-caps placed on top of one another should be installed.



SKB sound attenuator

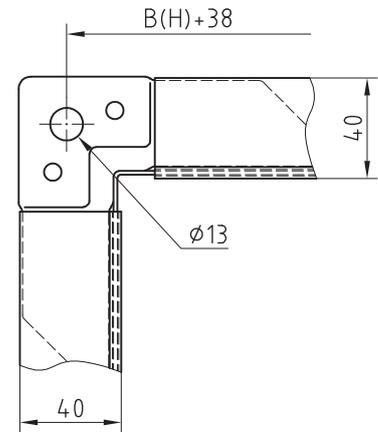
Assemblable casing

SKB sound attenuator with casings which can be assembled on site.

Outer frame profile S40, joint profiles made of steel flats. The screws required for assembly (M8x20) are to be provided on site.

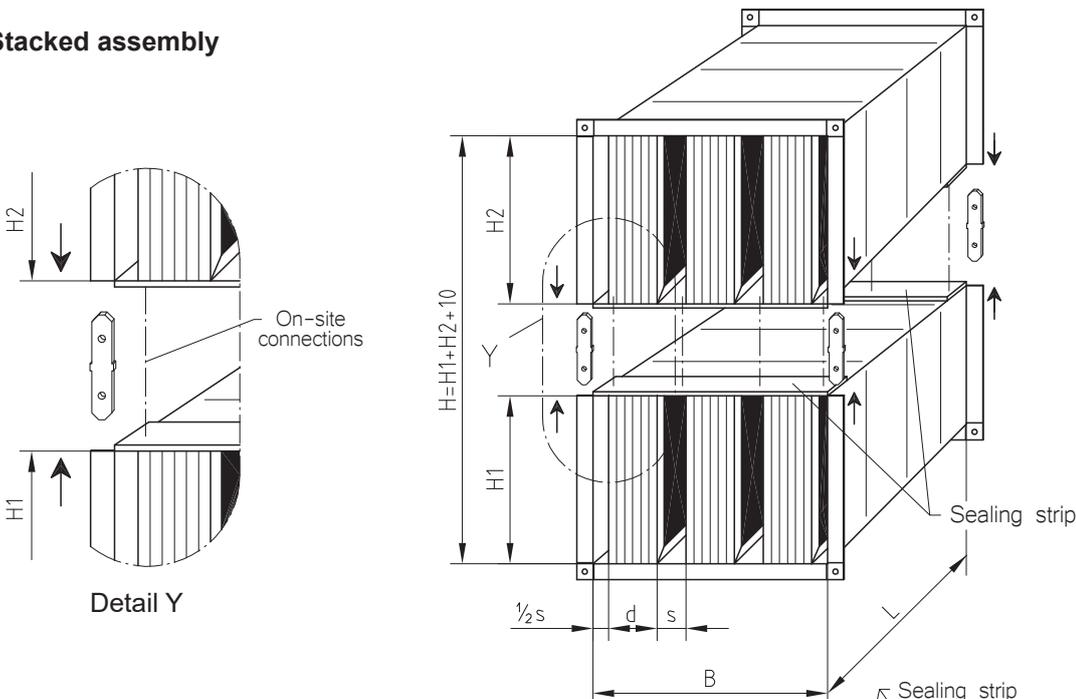
Two individual sound attenuators are to be ordered; in doing so the following must be observed:

- The same lengths L are required for both casings
- The same splitter thicknesses d should be used in both casings; likewise the gap widths s should always be the same
- Stacked assembly
 - The same widths B are required for both casings
 - The total height H is always 10 mm more than the sum of both individual heights $H_1 + H_2$
- Side-by-side assembly
 - The same heights H are required for both casings
 - The total width B is always 10 mm more than the sum of both individual widths $B_1 + B_2$

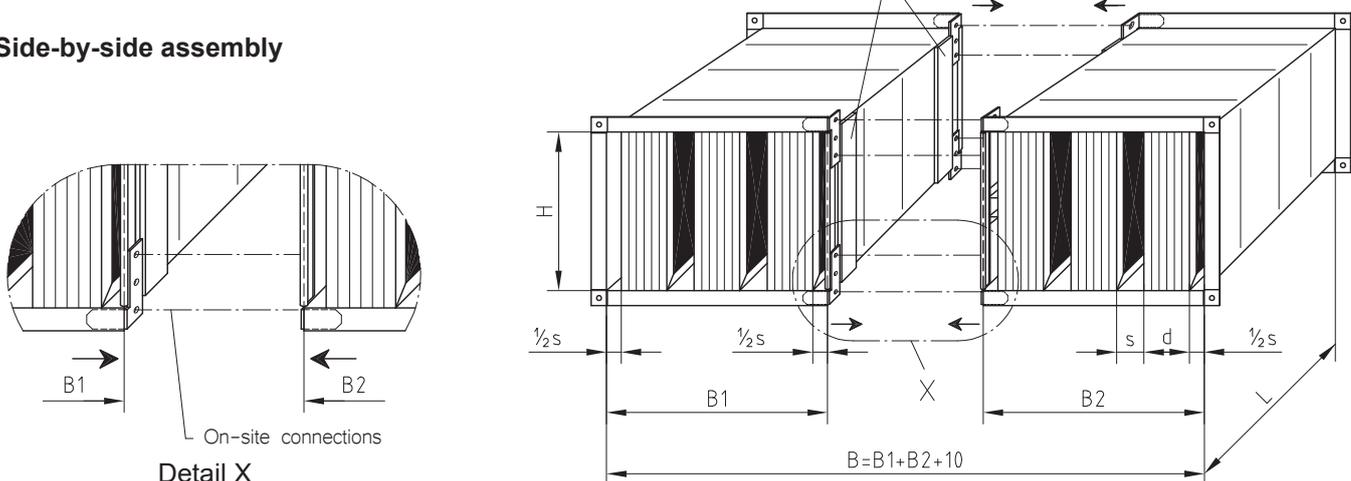


Frame profile S40

Stacked assembly



Side-by-side assembly



SB splitters

Specification text

SB splitters with bio-soluble mineral wool and high-strength, abrasion-resistant and moisture-repellent surface made of glass fibre. Non-combustible according to DIN 4102. Dual-chamber type made of galvanized sheet steel, with absorbing and resonating elements for optimum sound attenuation at 250 Hz, peripheral profile frame, and stabilising and chamber-separating profile.

..... pc splitter set each containing pc splitters

Thickness of splitters:..... mm

Casing width: mm

Heights of splitters:..... + mm

Lengths of splitters:..... + mm

Gap width: mm

Insertion loss: dB at 250 Hz

Volume flow: m³/h

Pressure drop: Pa

Flow noise: dB(A)

Manufacturer: **WILDEBOER®**

Type: **SB with glass fibre**

and additional perforated metal covering

Verification of usability according to state building regulation via general building authority test certificate.

Hygiene - verification according to VDI 6022-1, VDI 2067-1, VDI 3803, DIN 1946 - 4, DIN EN 13779

Supply complete with fixings and other accessories and install in an on-site casing made of

deliver:

install:

Select texts not highlighted in bold as required!

SKB sound attenuator

Specification text

SKB sound attenuators with built-in SB splitters with bio-soluble mineral wool and high-strength, abrasion-resistant, moisture-repellent surface made of glass fibre. Non-combustible according to DIN 4102. Dual-chamber type made of galvanized sheet steel, with resonating and absorbing elements for optimum sound attenuation at 250 Hz, peripheral profile frame, and stabilising and chamber separating profile. Duct casing made of galvanized sheet steel, with connection frame and stiffening profiles.

..... Pc

Thickness of splitters:..... mm

Number of splitters: Pc

Casing width: mm

Casing heights: + mm

Casing lengths: + mm

Gap width: mm

Insertion loss: dB at 250 Hz

Volume flow: m³/h

Pressure drop: Pa

Flow noise: dB(A)

Leak tightness class:.....

Operating pressure:

Manufacturer: **WILDEBOER®**

Type: **SKB with glass fibre**

and additional perforated metal covering

Verification of usability according to state building regulation via general building authority test certificate.

Hygiene - verification according to VDI 6022-1, VDI 2067-1, VDI 3803, DIN 1946 - 4, DIN EN 13779

Complete with fixings, counter frame and other accessories

deliver:

install:

Select texts not highlighted in bold as required!

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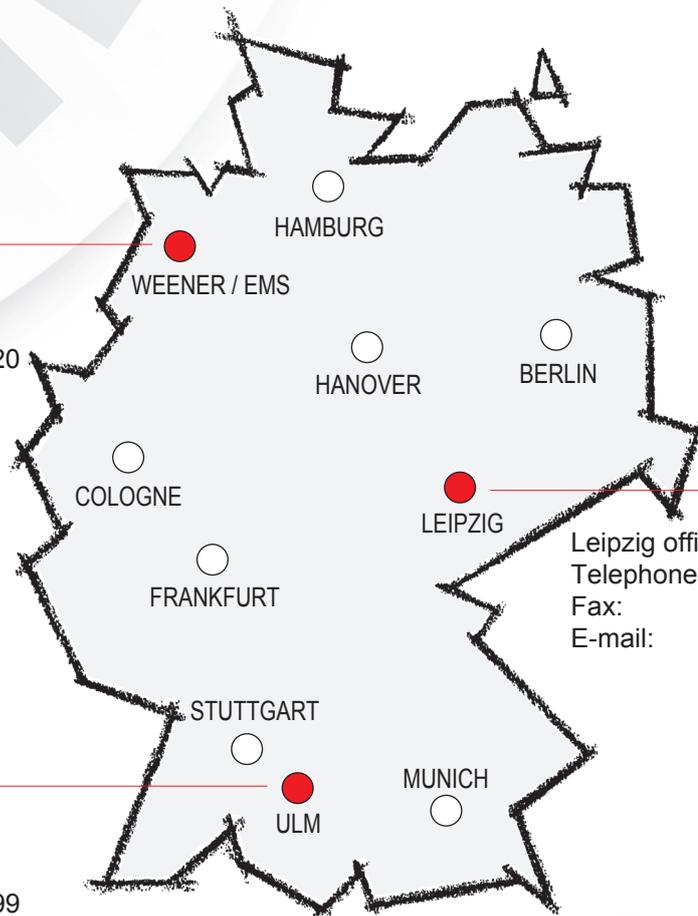
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