

ACOUSTIC SPLITTER

SONIE BS - STANDARD

SONIE BS acoustic splitters are designed to be installed in HVAC ductworks and enable to attenuate the noise generated by the ventilation system.

Certified 400°C/2h for air velocity less than 14 m/s, its performance has been tested in an independent laboratory according to the standard ISO 7235.

CODIFICATION

X —————> **B** – Splitter
Y —————> **S** – Commercial buildings



CONSTRUCTION

Frame design include a rounded edges twchich reduce pressure losses by up to 30% compared to a straight edge on small thicknesses.

Standard version can be supplied in 50, 100, 150, 200 or 300 mm thickness with a protection with anti-erosion glass silk layer which ensures the protection of the insulating panel.

The fire resistance of the SONIE BS splitter has been tested for 100, 200 and 300 mm thickness. The test n° EFR-17-003511, carried out by the Efectis laboratory, showed the good resistance of splitters at a temperature of 400°C during 2h.

		Characteristics	Options
Frame	Material	Rounded aerodynamic frame in Galvanized steel sheet with groove stiffening deformation.	Stainless steel 304L or 316L, painted steel (RAL standard) or aluminium
	Thickness	0.5 mm	0.8, 1.0, 1.2, 1.5 mm
	Assembly	By plated steel rivets or clips	Rivets en acier inoxydable
	Width	50, 100, 150, 200 or 300 mm	Holes for water draining on frame's low part Support rails, V-shape inlet and outlet profiles supplied
	Stiffener	Depending on the format	
Soundproofing	Material	Stone wool panel and water-repellant Fire classification A1 (M0)	
	Density	40 kg/m³, +/- 10%	Other on request (depending on quantity)
	Protection	Anti-erosion fiberglass silk layer on both faces (2 faces on request for 50 mm thick splitter)	

Sound-proofing material can be provided with other protections such as: perforated steel sheets, stretched metal, fiberglass fabric, polyane or Tedlar housing.

All these options are used in order to comply with most of the specifications according to applications.

NB : we recommend using a BD splitter with spread metal wool protection :

- for splitters exposed to the elements, and UV
- over 14 m/s in the airways

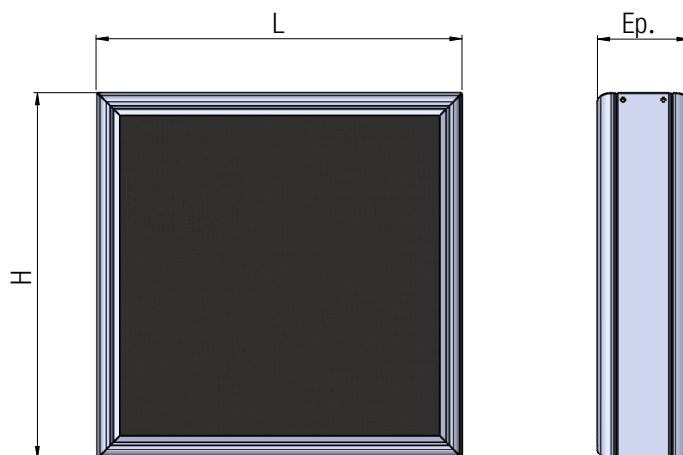
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DIMENSIONS

The splitters are made in one or several units depending on the dimensions.
A one unit construction shall respect the following criteria:

Length max. (mm)	2500
Height max. mm	2500
Thicknesses	50,100, 150, 200 or 300 mm
Surface max.	4 m ²
Weight max.	50 kg

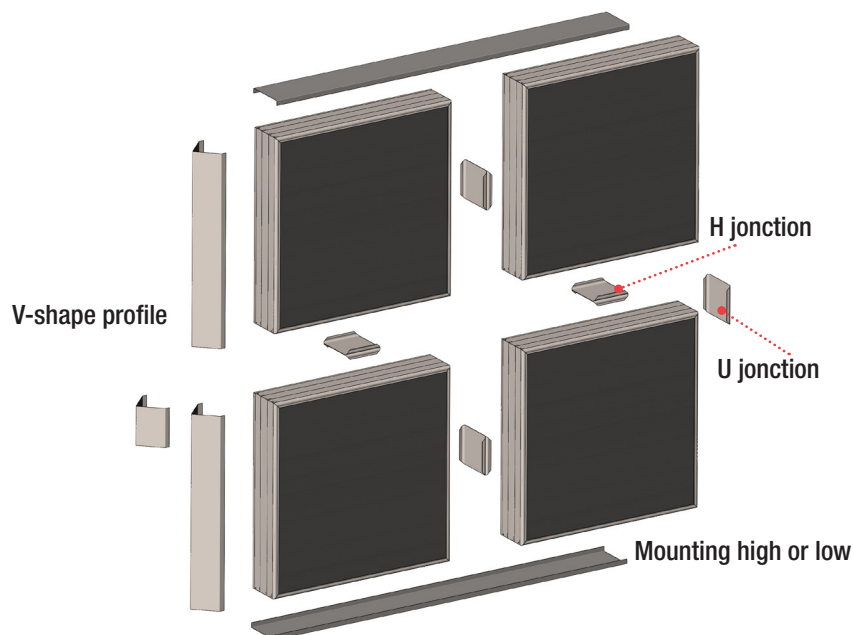


Splitter L 1000 mm x H 1000 mm, thickness 200 mm, weight:12 kg.

For larger dimensions, acoustic splitters are provided in several units with mounting accessories.

MOUNTING ACCESSORIES

Example for a 4 unit splitter :



Find an mounting tutorial by [clicking HERE](#)

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WEIGHT (KG)

		Length (mm)							
Height (mm)	Thickness (mm)	300	600	900	1200	1500	1800	2100	2400
300	50	1	1	2	2	2	3	3	4
	100	1	2	3	3	4	5	5	6
	200	2	3	5	6	7	9	10	11
	300	3	5	7	8	10	12	14	16
600	50	1	2	2	3	4	4	5	5
	100	2	3	4	5	6	7	8	9
	200	3	5	7	9	11	13	15	18
	300	5	8	11	14	17	20	23	26
900	50	2	2	3	4	5	5	6	7
	100	3	4	5	7	8	10	11	13
	200	5	7	10	13	16	18	21	24
	300	7	11	15	19	23	27	31	35
1200	50	2	3	4	5	6	7	8	9
	100	3	5	7	9	11	12	14	16
	200	6	9	13	16	20	23	27	30
	300	8	14	19	24	29	34	39	45
1500	50	2	4	5	6	7	8	9	10
	100	4	6	8	11	13	15	17	19
	200	7	11	16	20	24	28	32	37
	300	10	17	23	29	35	42	48	54
1800	50	3	4	5	7	8	9	11	12
	100	5	7	10	12	15	17	20	22
	200	9	13	18	23	28	33	38	43
	300	12	20	27	34	42	49	56	64

RECOMMENDATIONS

The acoustic performances of a splitter silencer depend on the following parameters:

- **Air velocity**

The dynamic sound regeneration of a splitter is proportional to the air velocity in the airways. Dynamic regeneration sound level must not be higher than 10 dB of the residual global sound level

- **Width**

For a same air velocity in an airway, a wider splitter is more efficient at low frequencies.

- **Length**

To improve acoustic performances, we recommend to mount two splitters sections in series (with a discharge plenum) rather than using very long splitters section. Attenuation of the two splitters can be added while the insertion losses of a long section reach their limits over 2500mm length.

- **Spacing between the splitters**

Air velocity depends on space between splitters. If the reduction of the spacing between the splitters improves the attenuation of the silencer, make sure that the dynamic sound regeneration will not reduce the global sound attenuation. In some cases, it is possible to mount two silencers in series with different splitters spacing to improve insertion loss at different frequency bands afin d'atténuer sur des bandes de fréquences différentes.

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INSERTION LOSSES (dB)

Thickness 100 mm

Length of splitter (mm)	Airway spacing (mm)	Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
600	50	1	3	8	15	29	30	19	12
	100	1	3	7	12	27	29	18	10
	150	1	1	3	9	19	14	8	6
	200	1	1	3	8	17	11	7	5
1200	50	3	7	19	29	48	50	35	29
	100	2	4	12	24	47	49	30	19
	150	1	3	8	16	35	25	15	10
	200	1	2	6	14	30	17	10	7
1800	50	4	9	26	36	50	50	44	33
	100	3	8	20	33	50	50	39	27
	150	1	3	12	26	46	34	19	12
	200	1	3	9	20	41	23	12	9
2400	50	6	12	30	39	50	50	50	36
	100	4	10	23	41	50	50	44	32
	150	1	4	13	31	50	42	23	14
	200	2	3	10	28	50	29	15	11

Find all our entire acoustic data for all your configurations in our free online software :

e.sonie
DIMENSIONNEMENT ACOUSTIQUE EN LIGNE

Thickness 200 mm

Length of the splitter (mm)	Airway spacing (mm)	Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
600	50	4	8	16	29	42	45	30	24
	100	2	4	10	20	26	26	16	11
	150	2	4	9	15	23	22	13	7
	200	1	3	6	14	18	17	10	5
1200	50	6	18	25	37	50	50	35	35
	100	4	9	18	32	46	47	28	18
	150	3	7	17	29	39	38	19	12
	200	2	5	13	26	31	27	16	8
1800	50	10	26	36	48	53	53	38	43
	100	7	13	24	44	52	50	34	22
	150	5	11	24	43	52	52	25	15
	200	3	8	20	37	44	36	20	12
2400	50	13	32	43	53	54	55	39	45
	100	8	17	33	50	56	53	38	26
	150	6	14	27	49	55	54	29	18
	200	4	10	27	47	50	45	24	14

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INSERTION LOSSES (dB)

Thickness 300 mm

Length of the splitter (mm)	Airway spacing (mm)	Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
600	50	7	15	23	36	45	43	29	27
	100	3	10	17	25	31	31	20	15
	150	2	7	13	17	21	20	11	9
	200	3	7	13	17	18	14	8	6
1200	50	11	20	26	45	47	40	32	34
	100	6	18	23	43	46	38	30	22
	150	4	14	19	33	38	31	18	11
	200	6	11	19	30	33	24	13	9
1800	50	15	31	39	49	54	51	36	43
	100	10	25	37	51	55	53	37	28
	150	7	20	29	43	51	42	23	14
	200	9	17	29	41	47	34	17	11
2400	50	21	32	41	51	54	54	37	46
	100	14	26	38	55	57	54	38	35
	150	8	25	34	49	54	48	27	17
	200	12	22	32	47	54	43	22	13

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DYNAMIC REGENERATIONS OF BS+ SPLITTERS

Dynamic regeneration data are the result of tests carried out by an independent laboratory.

The dynamic regeneration must be 10 dB under the residual sound power level. If this is not the case, you have to increase the spacing between the splitters or the section of the duct.

Sound power level of air-regenerated noise L_w in dB

Internal air velocity (m/s)	Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
2	10	5	1	0	0	0	0	0
3	19	14	11	10	9	9	7	6
4	29	23	21	19	18	17	14	11
5	34	28	26	24	23	22	19	15
6	40	33	32	31	29	27	24	19
7	44	38	37	35	34	32	29	24
8	48	43	41	39	38	37	33	28
9	50	45	42	41	40	39	35	30
10	52	46	45	43	42	41	37	31
11	55	49	48	47	45	45	39	33
12	57	52	50	49	47	47	41	35
13	61	56	54	53	51	51	45	38
14	64	59	58	57	54	55	48	41
15	73	68	67	68	64	66	56	46

The data applies to an front section $L \times H = 0,8 \text{ m}^2$.

A correcting coefficient must be applied for different sections (see table below) :

$L \times H \text{ (m}^2\text{)}$	0.1	0.2	0.4	0.8	1	2	4	8	10
Correction dB	-9	-6	-3	0	+1	+4	+7	+10	+11

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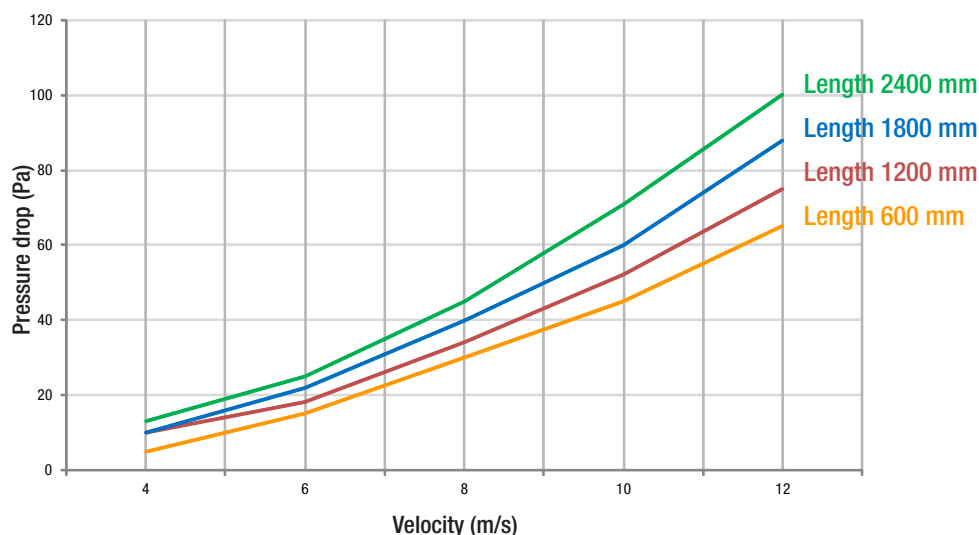
SONIE BS+ / HIGH PERFORMANCE

PRESSURE LOSSES

The hereunder graph shows the pressure losses of a silencer equipped with SONIE BS+ splitters.

Thickness of each splitter : 200 mm

Airways spacing : 100 mm.



PRESCRIPTION

- Standard acoustic splitter BS+
- A rounded aerodynamic frame in galvanized steel, grooving reinforced.
- Soundproofing in one block rockwool panel with a medium-density of 40 kg/m³, inorganic, rot-proof and water-repellent.
- 2 faces protection with a glass silk's layer to reach 14 m/s in the airways