

ACOUSTIC SPLITTER

SONIE BD+ / HIGH PERFORMANCE 400°/2H

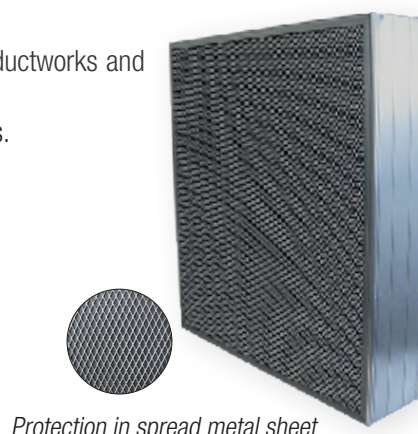
SONIE BD+ acoustic splitters are designed to be installed in HVAC ductworks and enable to attenuate the noise generated by the ventilation system.

SONIE BD+ splitter is particularly suited for smoke exhaust applications.

400°C/2h fire resistance tested by an independent laboratory.

CODIFICATION

X ———> **B** – Splitter
Y ———> **D** – Smoke exhaust
Z ———> **+** – High acoustic performances



Protection in spread metal sheet

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.

		Characteristics	Options
Frame	Material	Galvanized steel sheet with groovings	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	Stainless steel rivets
	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 supply
	Stiffener	Depending on the format	
Soundproofing	Material	Mineral wool panel and water-repellant Fire classification A2-S1-D0 (M0)	
	Density	24 kg/m³, +/- 10%	
	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.

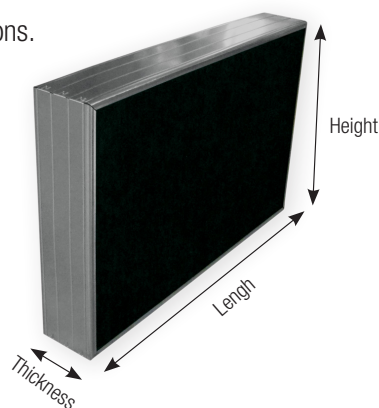
All these options are used in order to comply with most of the specifications according to applications.

DIMENSIONS

The splitters are made in one or several units depending on the dimensions.

A one unit construction shall respect the following criteria :

Lengh max. (mm)	2500
Height max. mm	2500
Thicknesses	50, 100, 150, 200 or 300 mm
Surface max.	3 m²
Weight max.	50 kg



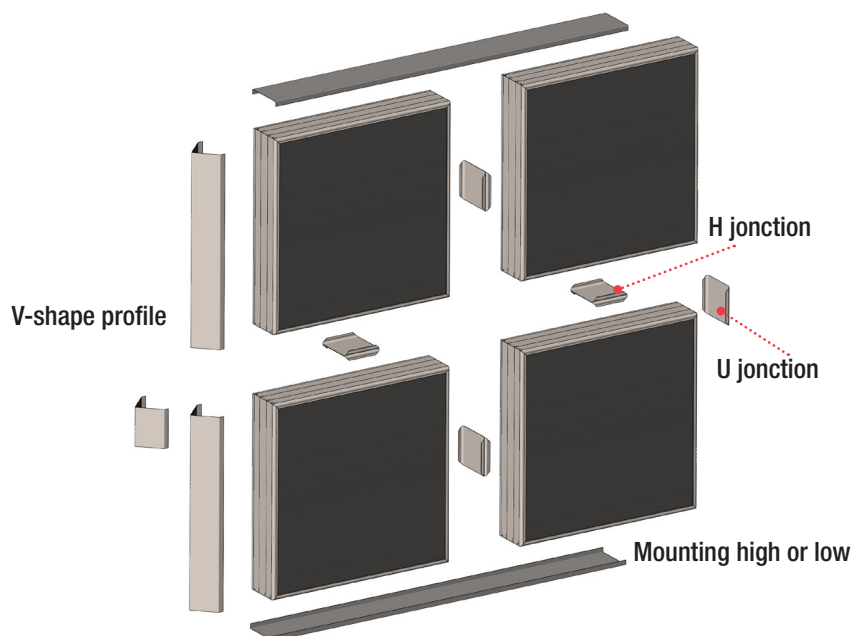
For larger dimensions, acoustic splitters are provided in several units with mounting accessories.

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MOUNTING ACCESSORIES

Example for a 4 unit splitter :



WEIGHT (KG)

		Length (mm)						
Height (mm)	Thickness (mm)	600	900	1200	1500	1800	2100	2400
600	100	4	5	7	8	9	11	12
	200	5	8	10	12	14	16	18
	300	7	10	13	16	18	21	24
900	100	5	7	9	11	13	15	17
	200	8	10	13	16	19	22	25
	300	10	14	18	21	25	29	33
1200	100	7	9	12	14	17	19	22
	200	10	13	17	21	24	28	31
	300	13	18	22	27	32	36	41
1500	100	8	11	14	17	20	23	26
	200	12	16	21	25	29	34	38
	300	16	21	27	33	38	44	50
1800	100	9	13	17	20	24	27	31
	200	14	19	24	29	34	40	45
	300	18	25	32	38	45	52	58

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PERFORMANCES

Acoustic performances of the splitter depend on the following parameters : air velocity, splitters width, length and airways between the splitters.

SONIE BD+ acoustic performances have been tested by an independent laboratory following the EN ISO 7235 standard, in date of July 1995 and July 2004.

Many configurations have been considered and tested (length, airways, width,...) and permit to optimize our acoustic solutions.

In some cases (refer to the graph below), in low frequencies , the **difference of attenuation can reach 15 dB**.

INSERTION LOSSES (dB)

SONIE BD+ acoustic performances have been tested by an independent laboratory following the EN ISO 7235 standard, in date of July 1995 and July 2004.

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	0	1	3	9	19	14	8	6
900	50	2	6	15	23	42	43	36	23
	100	1	2	8	16	32	31	18	12
	150	0	2	6	12	27	20	11	8
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
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
2400	50	6	12	30	39	50	50	50	36
	100	4	10	23	41	50	50	44	32
	150	1	4	13	31	55	42	23	14

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ACOUSTIC

INSERTION LOSSES (dB)

Thickness 200 mm

Length of splitter (mm)	Airway spacing (mm)	Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
600	50	4	11	19	30	44	43	29	24
	100	2	5	12	21	28	27	17	12
	150	2	4	11	18	22	20	12	8
	200	1	4	9	13	17	14	7	6
1200	50	6	17	27	40	51	52	36	34
	100	4	10	29	33	49	45	26	18
	150	2	9	22	31	42	34	18	12
	200	2	7	17	25	32	24	12	8
1800	50	10	26	42	49	53	54	38	42
	100	6	14	39	46	52	50	34	22
	150	4	12	30	44	54	47	25	15
	200	4	10	24	36	45	31	16	9
2400	50	13	31	47	52	54	55	39	45
	100	6	17	44	50	55	53	37	29
	150	5	15	40	50	56	54	29	19
	200	4	12	32	45	56	37	19	11

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 BD+ 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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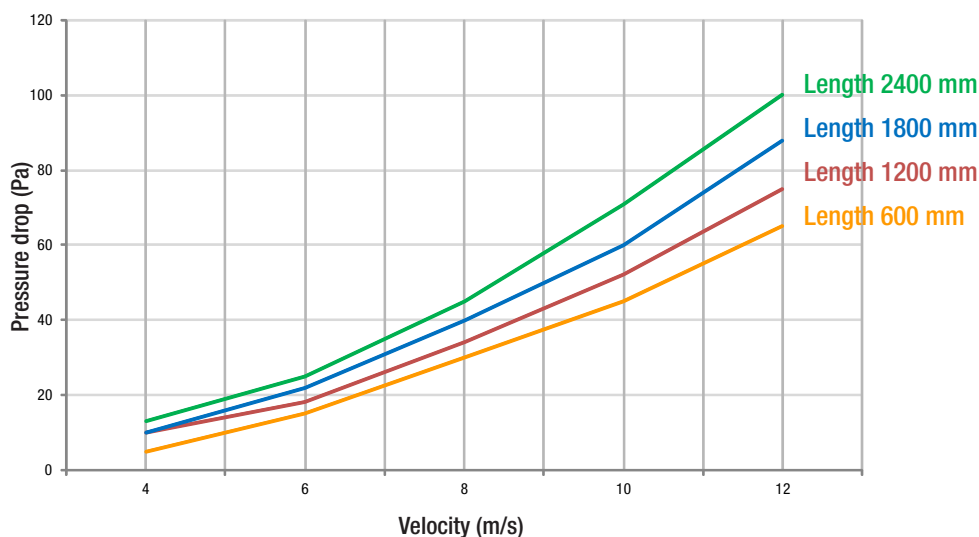
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PRESSURE LOSSES

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

Thickness of each splitter : 200 mm

Airways spacing : 100 mm



PRESCRIPTION

- Standard acoustic splitter BD+
- A rounded aerodynamic frame in galvanized steel, grooving reinforced.
- Soundproofing in one block rockwool panel with a medium-density of 24 kg/m³, inorganic, rot-proof and water-repellent.
- 2 faces protection with a glass silk's layer to reach 20 m/s in the airways