

# ACOUSTIC SPLITTER

1.1.1+

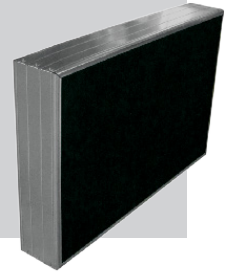
## SONIE BS+

ACOUSTICS

### Acoustic splitter standard+ : new acoustic insulation

Acoustic splitter SONIE BS+ is composed of :

- An aerodynamic frame including groove stiffening deformation
- A 24 kg/m<sup>3</sup> sound insulation
- A protection with anti-erosion glass silk layer
- Assembly with rivets
- Acoustic performances tested in laboratory according to EN 7235 standard



### CODIFICATION



SONIE BS+ splitters include rounded edges, reducing pressure losses by 30% compared with ordinary splitters

SONIE BS+ splitters are designed to be installed in ventilation and air-conditioning systems within the limits mentioned in our technical datasheet. Standard version can be supplied in 50, 100, 150, 200 or 300 mm thickness.

### CONSTRUCTION

		Characteristics	Options
Frame	Material	Galvanised steel sheet with groove stiffening deformation	Stainless steel, painted or aluminium
	Thickness	0,6 mm	0,8 mm, 1 mm ou 1,2 mm
	Width	50, 100, 150, 200 ou 300 mm	
	Assembly	Clips or rivets	Stainless or zinc-plated steel rivets
	Stiffener	Depending on the format	
Sound proofing material	Material	Mineral wool panel Fire classification MO / A2-S1-D0	
	Density	24 kg/m <sup>3</sup>	
	Protection	Anti-erosion glass silk	Spread metal (BD+), perforated sheet metal (BP+)

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.

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# ACOUSTIC SPLITTERS

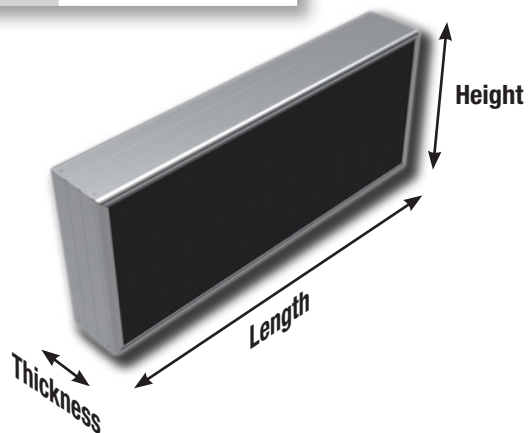
## SONIE BS+

### 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
Surface max.	4 m <sup>2</sup>
Weight max.	50 kg
Thickness (mm)	50, 100, 150, 200 or 300

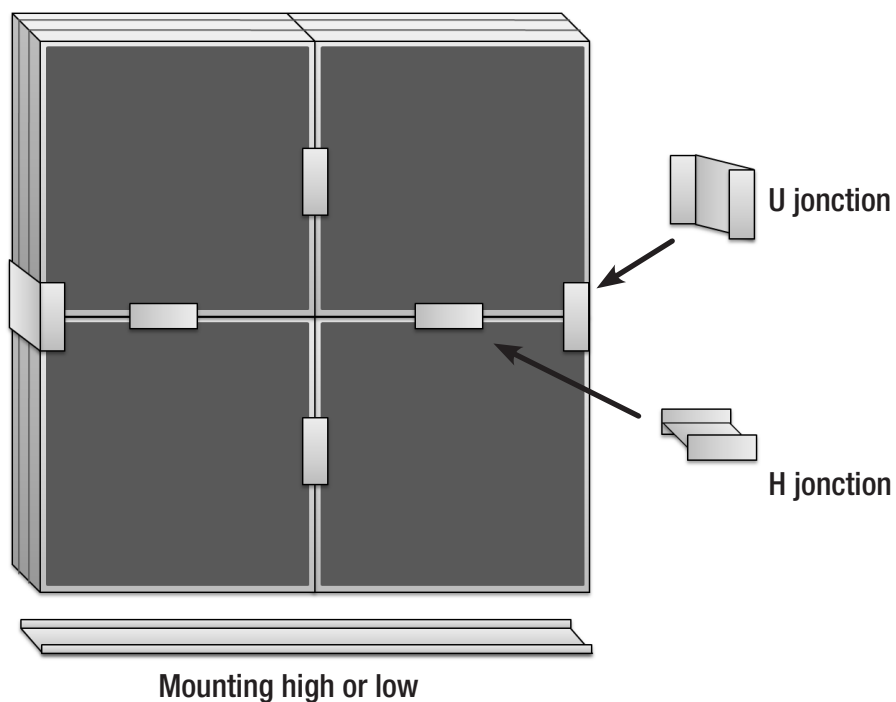
Surface and maximum weight for a construction in a single element. Beyond, baffles in several elements.



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

### MOUNTING ACCESSORIES

Example for a 4 unit splitter:



### WEIGHT (KG)

Epaisseur (mm)	Format	600	900	1200	1500	1800	2100	2400
100	600	2,5	3,4	4,2	5	5,8	6,7	7,5
200		4,6	6,1	7,7	9,2	10,8	12,3	13,9
300		6,6	8,9	11,2	13,4	15,7	18	20,2
100	900	3,4	4,4	5,4	6,5	7,5	8,6	9,6
200		6,1	8,1	10,1	12,1	14	16	18
300		8,9	11,8	14,7	17,6	20,6	23,5	26,4
100	1200	4,2	5,4	6,7	8	9,2	10,5	11,7
200		7,7	10,1	12,5	14,9	17,3	19,7	22,1
300		11,2	14,7	18,3	21,9	25,4	29	32,6
100	1500	5	6,5	8	9,4	10,9	12,4	13,9
200		9,2	12,1	14,9	17,8	20,6	23,4	26,3
300		13,4	17,6	21,9	26,1	30,3	34,5	38,7
100	1800	5,9	7,5	9,2	10,9	12,6	14,3	16
200		10,8	14	17,3	20,6	23,9	27,2	30,4
300		15,7	20,6	25,4	30,3	35,1	40	44,9

### PERFORMANCES

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

SONIE BS+ 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.

# ACOUSTIC SPLITTER

## SONIE BS+

### INSERTION LOSSES (dB)

SONIE BS+ 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	2	4	10	18	34	39	28	21
	100	1	1	5	11	24	22	13	9
900	50	2	6	15	23	42	43	36	23
	100	1	2	8	16	32	31	18	12
1200	50	3	7	20	29	49	47	43	24
	100	1	3	11	20	41	41	23	16
1500	50	4	9	20	33	52	48	47	25
	100	2	4	13	28	46	44	27	18
1800	50	4	10	20	37	54	49	50	26
	100	2	4	14	36	52	48	30	20
2100	50	5	12	26	41	57	52	52	26
	100	2	5	15	38	56	53	35	22
2400	50	5	13	32	46	59	55	53	26
	100	3	6	17	41	60	57	40	24

#### 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

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### Thickness 300 mm

Length of 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

### DYNAMIC REGENERATION OF BS SPLITTERS

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.

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):

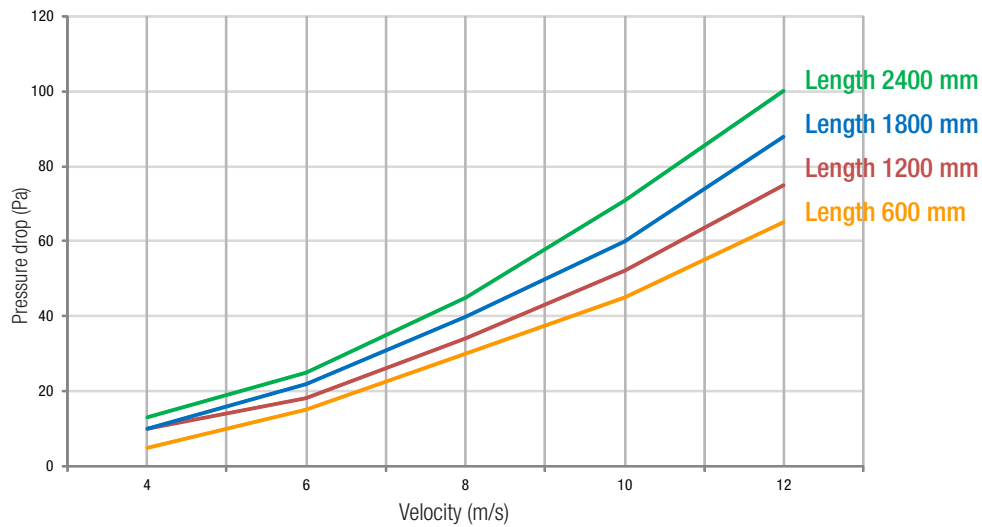
L x H (m <sup>2</sup> )	0.1	0.2	0.4	0.8	1	2	4	8	10
Correction (dB)	-9	-6	-3	0	+1	+4	+7	+10	+11

### PRESSURE LOSS

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
- A rounded aerodynamic frame in galvanized steel, grooving reinforced
- Soundproofing in one block rockwool panel with a medium-density of 24 kg/m<sup>3</sup>, inorganic, rot-proof and water-repellent.
- 2 faces protection with a glass silk's layer to reach 14 m/s in the airways