



## DESCRIPTION:

Sound attenuators are a proven and effective method for reducing the noise generated by fans and other equipment. Also referred to as duct silencers, sound traps or mufflers, they are designed to reduce the noise transmitted from a source to the receiver.

Rectangular silencers are designed to reduce noise in rectangular ductwork while minimizing system pressure drop. The simple design, relatively low cost, and high level of performance flexibility make rectangular silencers a reliable and cost-effective choice.

## CONSTRUCTION:

Standard Material Galvanized Sheet Steel. Optional: .304-316 Stainless Steel, Aluminum

## APPLICATION:

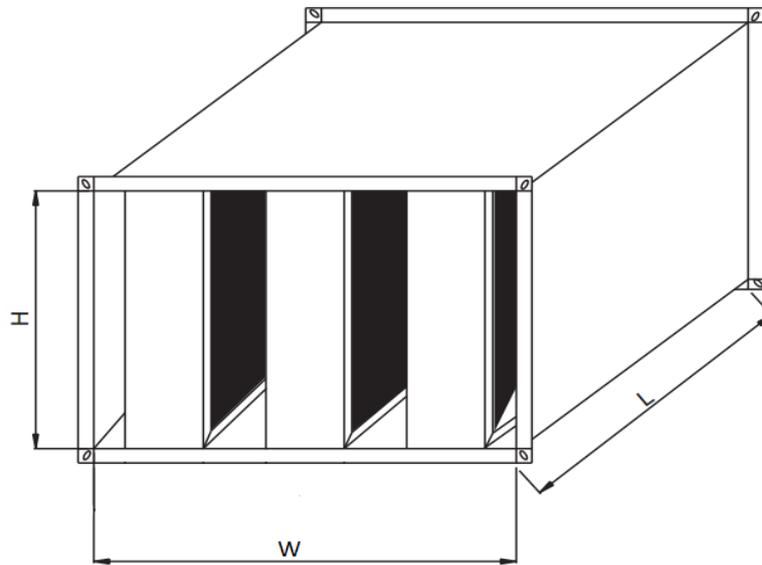
For HVAC applications, they are commonly installed on intake and discharge sides of a fan or air handling unit. They can also be used on the receiver side of noise generating equipment (terminal boxes, air valves and dampers) and in areas outside the primary air system where they can reduce transfer noise between spaces

## ACCESSORIES:

- Extended casing
- Fiberglass cloth
- Flanges
- Transitions



**STANDARD DIMENSIONS:**



**Metric System**

AVAILABLE SIZES (mm) - Always width x height											
	WIDHT										
HEIGHT	200	400	600	800	1000	1200	1400	1600	1800	2000	2200
300	X	X	X	X	X	X	X	X	X	X	X
600	X	X	X	X	X	X	X	X	X	X	X
900	X	X	X	X	X	X	X	X	X	X	X
1200	X	X	X	X	X	X	X	X	X	X	X
1500	X	X	X	X	X	X	X	X	X	X	X
1800	X	X	X	X	X	X	X	X	X	X	X
2000	X	X	X	X	X	X	X	X	X	X	X

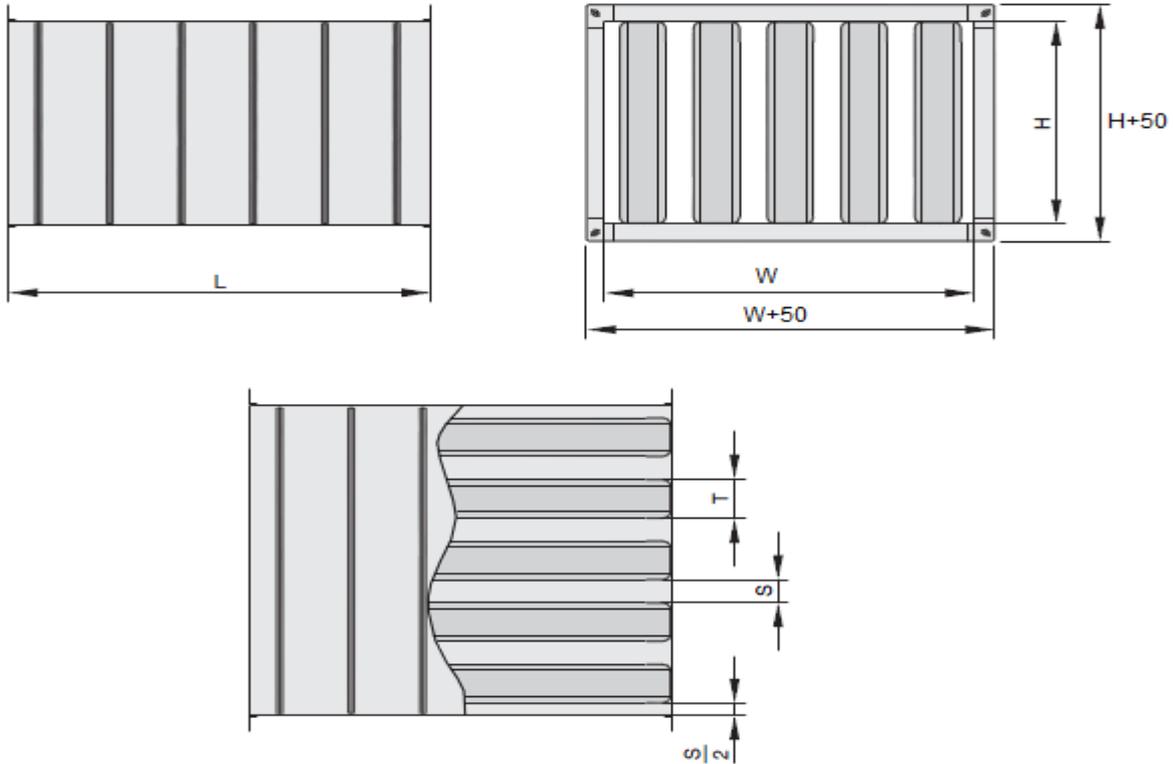
**Imperial System**

AVAILABLE SIZES (in.) - Always width x height											
	WIDHT										
HEIGHT	8"	16"	24"	31"	39"	47"	55"	63"	70"	78"	24"
12"	X	X	X	X	X	X	X	X	X	X	X
24"	X	X	X	X	X	X	X	X	X	X	X
35"	X	X	X	X	X	X	X	X	X	X	X
47"	X	X	X	X	X	X	X	X	X	X	X
60"	X	X	X	X	X	X	X	X	X	X	X
70"	X	X	X	X	X	X	X	X	X	X	X
78"	X	X	X	X	X	X	X	X	X	X	X

**L: 500 - 750 - 1000 - 1250 - 1500mm  
20" - 30" - 39" - 49" - 59" in**



- 1- Construction with 25mm flange
- 2- Construction with 35mm flange



**nominal length**

<b>L</b>	<b>mm</b>	500	750	1000	1250	1500
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**nominal height**

<b>H</b>	<b>mm</b>	300	600	900	1200	1500	1800
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**Sound attenuator casing, nominal width**

W	RSA-100			RSA-200		
	T	n	S	T	n	S
	mm	-	mm	mm	-	mm
200	100	1	100	-	-	-
400	100	2	100	200	1	200
600	100	2 - 4	50 - 200	200	2	100
800	100	3 - 5	60 - 167	200	2 - 3	67 - 200
1000	100	4 - 7	43 - 150	200	3 - 4	50 - 133
1200	100	4 - 8	50 - 200	200	3 - 5	40 - 200
1400	100	5 - 10	40 - 180	200	4 - 5	80 - 150
1600	100	6 - 11	46 - 200	200	4 - 7	57 - 200
1800	100	6 - 12	50 - 200	200	5 - 8	50 - 160
2000	100	7 - 14	43 - 186	200	5 - 8	50 - 200
2200	100	7 - 15	47 - 200	200	6 - 9	44 - 167
2400	100	8 - 16	50 - 200	200	6 - 10	40 - 200



## QUICK SELECTION - Metric System

### Air-regenerated noise

$v_s$	m/s	4	6	8	10	12	14	16	18	20
$L_{WA}$	dB(A)	21	31	38	43	48	51	55	58	60

### RSA-100 insertion loss and differential pressure

L	S	Centre frequency $f_m$ [Hz]								$v_s$ [m/s]		
		63	125	250	500	1000	2000	4000	8000	4	10	20
mm	mm	$D_e$ Hz								$\Delta p_{st}$ Pa		
500	40	4	10	11	13	21	27	24	18	5	32	>80
	60	5	13	20	23	31	38	32	26	7	44	>80
1000	40	5	11	17	19	28	32	27	21	5	33	>80
	60	6	16	30	32	42	48	40	34	9	55	>80
1500	40	6	14	25	28	38	41	33	27	6	38	>80
	60	4	10	14	19	29	28	19	14	5	29	>80
2000	40	8	19	39	42	50	50	49	42	11	66	>80
	60	7	16	32	36	47	50	40	34	7	44	>80
2500	40	5	12	19	25	37	35	23	16	5	32	>80
	60	3	9	10	17	25	15	9	8	4	25	>80
3000	40	9	22	48	50	50	50	50	50	12	77	>80
	60	8	19	40	45	50	50	47	40	8	50	>80
500	100	6	14	24	30	45	41	27	19	6	34	>80
	200	3	12	12	21	33	19	12	11	4	26	>80
1000	40	10	25	50	50	50	50	50	50	14	>80	>80
	60	9	22	48	50	50	50	50	46	9	56	>80
1500	40	7	16	28	36	50	47	31	22	6	37	>80
	60	2	14	15	26	41	24	16	14	4	27	>80

### RSA-200 insertion loss and differential pressure

L	S	Centre frequency $f_m$ [Hz]								$v_s$ [m/s]		
		63	125	250	500	1000	2000	4000	8000	4	10	20
mm	mm	$D_e$ Hz								$\Delta p_{st}$ Pa		
500	50	5	7	19	21	26	22	17	14	9	58	>80
	100	2	4	12	12	15	11	9	8	5	31	>80
1000	50	6	16	33	39	41	39	26	20	11	67	>80
	100	4	10	22	23	26	19	13	11	6	35	>80
1500	50	9	22	44	50	50	50	34	25	12	75	>80
	100	2	7	13	12	12	10	8	6	3	21	>80
2000	50	9	22	44	50	50	50	34	25	12	75	>80
	100	5	15	32	33	37	25	16	14	6	40	>80
2500	50	3	9	19	18	15	12	10	7	4	23	>80
	100	1	6	10	8	8	6	4	4	2	15	61
3000	50	12	29	50	50	50	50	43	29	13	>80	>80
	100	6	19	42	44	47	31	19	17	7	44	>80
500	200	4	12	25	23	18	15	12	9	4	25	>80
	400	1	8	13	10	10	8	5	5	3	17	67
1000	50	14	38	50	50	50	50	49	35	15	>80	>80
	100	8	25	50	50	50	38	23	18	8	48	>80
1500	50	5	16	30	29	23	16	13	10	4	28	>80
	100	2	10	16	13	12	9	6	5	3	18	72
2000	50	17	48	50	50	50	50	50	40	16	>80	>80
	100	10	30	50	50	50	44	26	19	8	53	>80
2500	200	6	19	35	35	27	17	15	11	5	30	>80
	400	3	13	19	15	14	10	7	6	3	19	77



## QUICK SELECTION - imperial System

Silencer Model No.	Octave Bands	2	3	4	5	6	7	8
	Center Frequency	125	250	500	1000	2000	4000	8000
	Face Velocity FPM	Net Insertion Loss in Decibels (dB)						
RSA-3	-1500	8	22	28	38	39	26	14
	-1000	10	22	32	42	39	30	17
	0	8	18	30	42	40	31	19
	+1000	6	15	28	42	42	32	19
	+1500	6	14	25	32	34	30	17
RSA-5	-1500	15	33	46	47	41	35	26
	-1000	13	30	45	53	50	47	26
	0	12	26	42	53	58	49	27
	+1000	11	23	40	52	55	49	29
	+1500	9	21	40	50	50	44	29
RSA-7	-1500	16	36	45	48	42	34	31
	-1000	15	36	48	57	54	52	34
	0	15	35	46	54	53	52	34
	+1000	15	34	45	55	55	52	35
	+1500	10	33	44	47	48	41	35

### Self-Noise Sound Power Ratings (P.W.L.) — (dB re 10<sup>-12</sup> watts)

Silencer Model No.	Octave Bands	2	3	4	5	6	7	8
	Center Frequency	125	250	500	1000	2000	4000	8000
	Face Velocity FPM	Self Noise Sound Power Levels in Decibels (dB)						
RSA-3	-1500	56	51	53	56	65	66	55
	-1000	46	42	44	50	55	49	40
RSA-5	+1000	51	44	43	46	48	45	39
RSA-7	+1500	64	55	54	53	57	58	54

Face Area Adjustments	Area (sq.ft.)	2	4	8	16	32
	Adjustment		-3	0	+3	+6

### Air Flow Performance Data

Model	Static Pressure Loss (inches WG)					
RSA-3	0.07	0.12	0.18	0.24	0.38	0.49
RSA-5	0.07	0.13	0.20	0.27	0.42	0.55
RSA-7	0.10	0.18	0.27	0.36	0.56	0.73
Face Velocity FPM	365	490	610	705	875	1000

### Sizing example :

#### Given data

Duct W = 800 mm, H = 900 mm  
V = 2900 l/sn (10440 m<sup>3</sup>/h)  
De = 30 dB at 250 Hz

#### Quick sizing

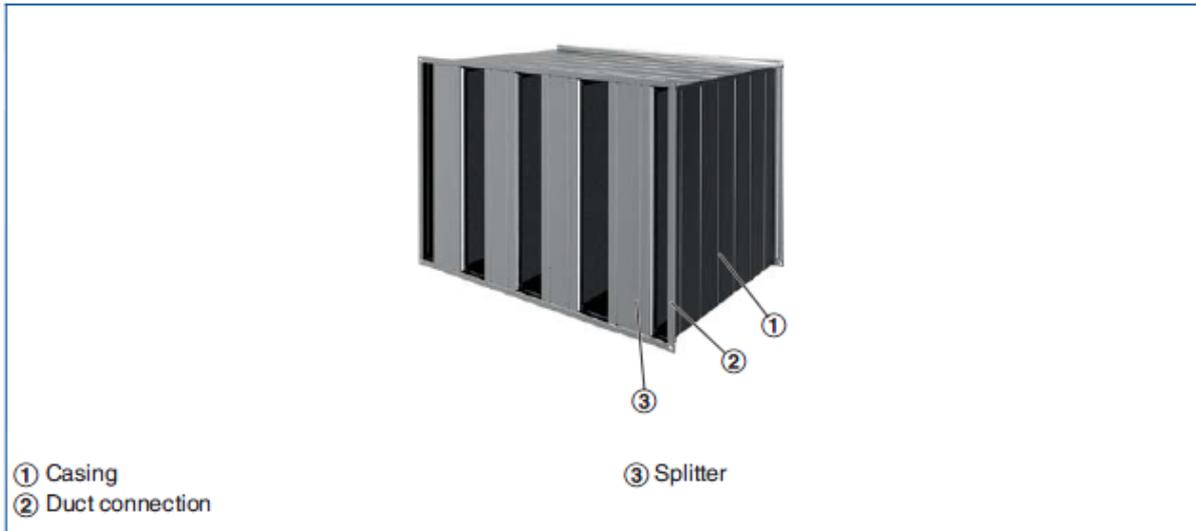
RSA200 L = 1000 mm, S = 50 mm

#### Calculation procedure

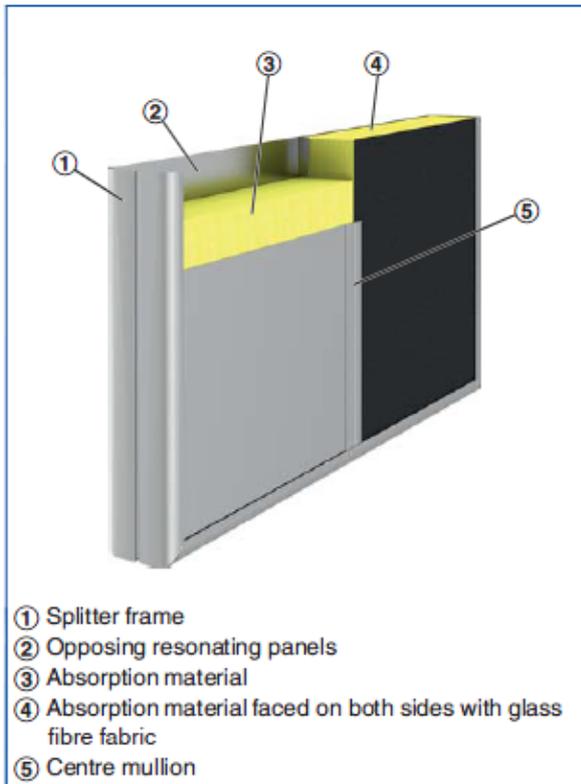
$A = 0.8 \times 0.9 = 0.72 \text{ m}^2$   
 $v = V / A = 2900 / 0.72 (/1000) = 4 \text{ m/sn}$   
 $\Delta P_{st} = 12 \text{ Pa}$   
LWA = 21 dB(A)



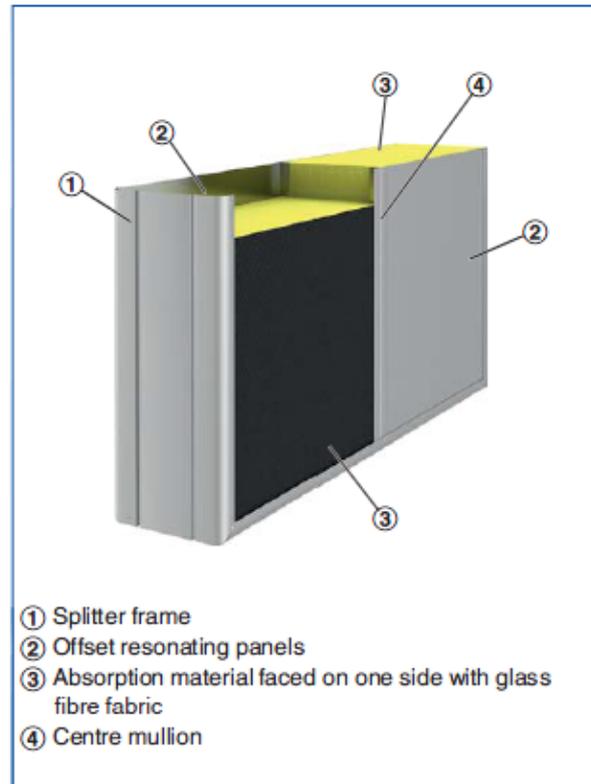
**FUNCTIONAL DESCRIPTION**



**Schematic illustration of RSA100**



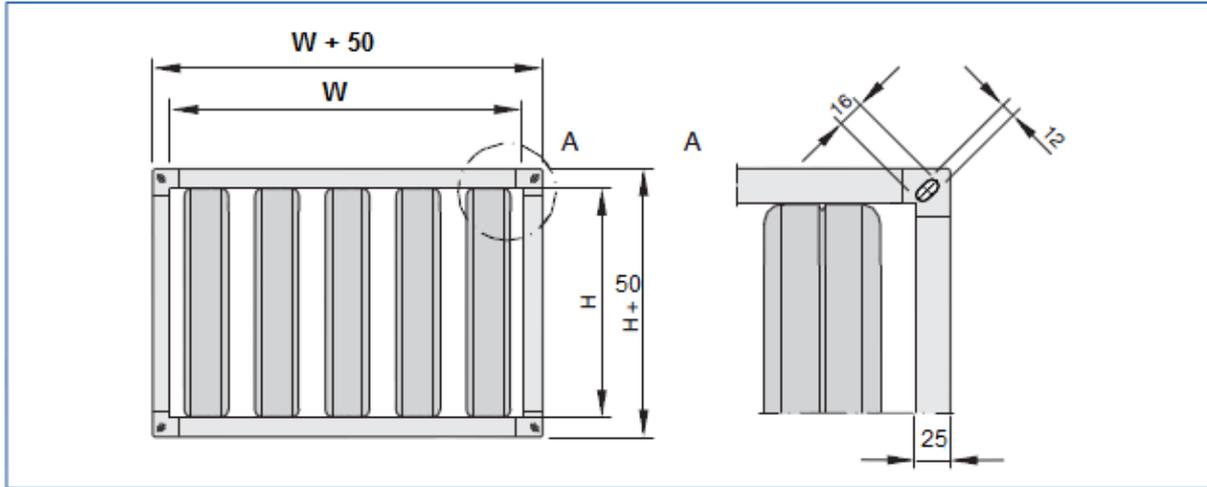
**Schematic illustration of RSA200**



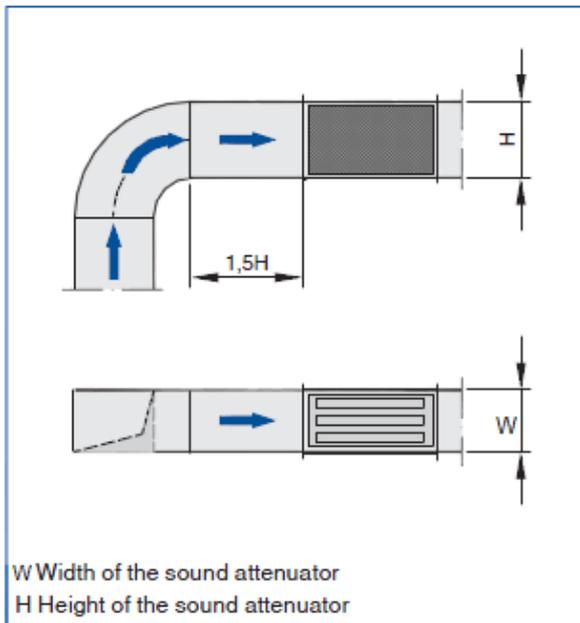


**INSTALLATION AND COMMISSIONING**

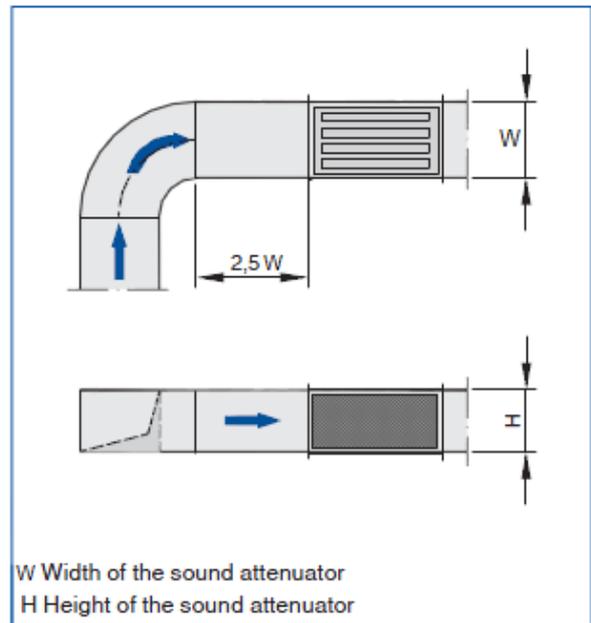
**Splitter sound attenuator with standard flange**



**Upstream conditions after bends, junctions or a narrowing or widening of the duct, vertical upstream section, splitters upright**

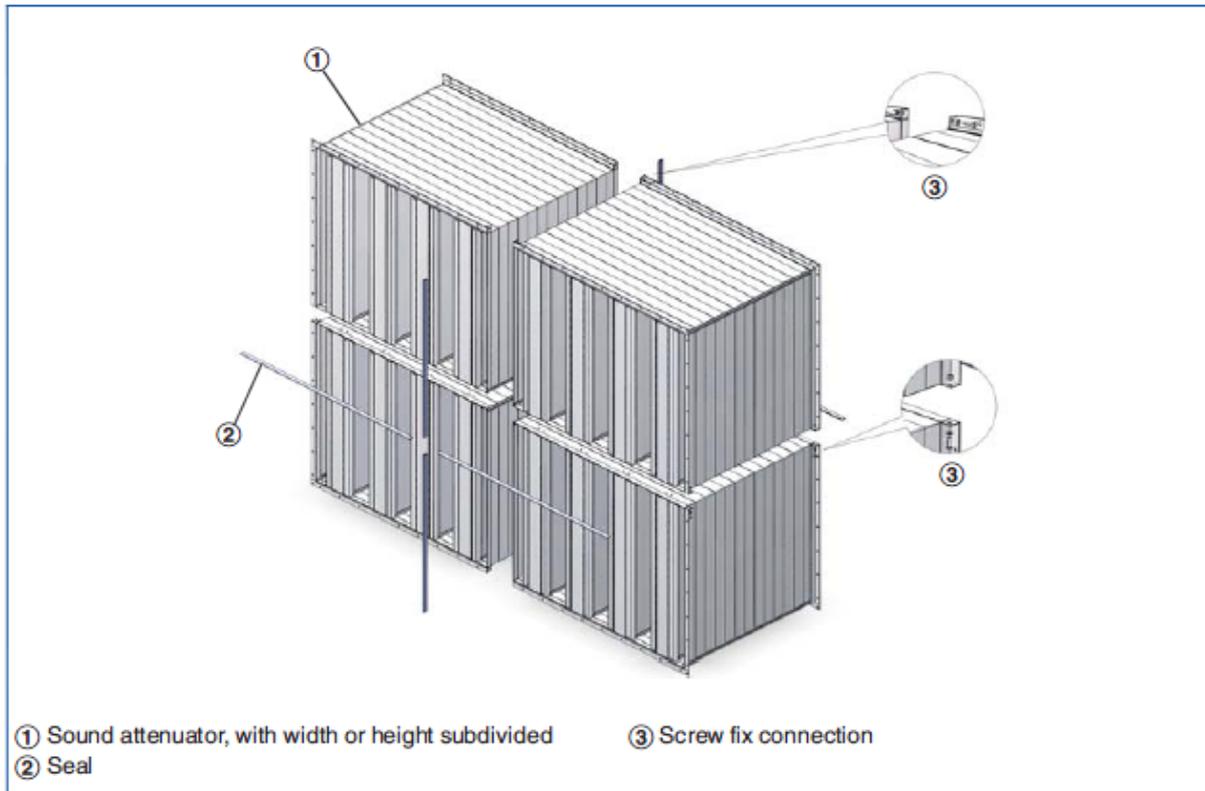


**Upstream conditions after bends, junctions or a narrowing or widening of the duct, vertical upstream section, splitters horizontal**



Horizontal installation only for splitters up to height 1200 mm

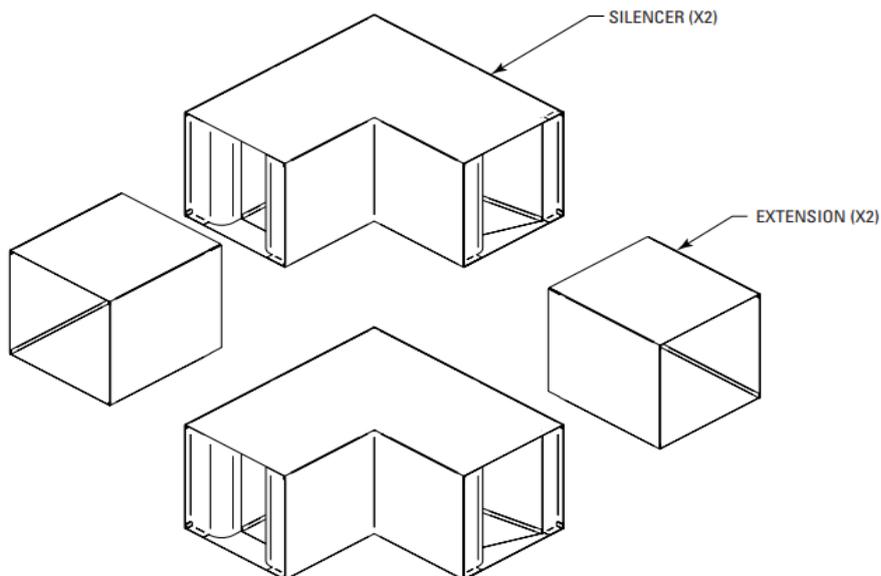
Schematic illustration of subdivided sound attenuators



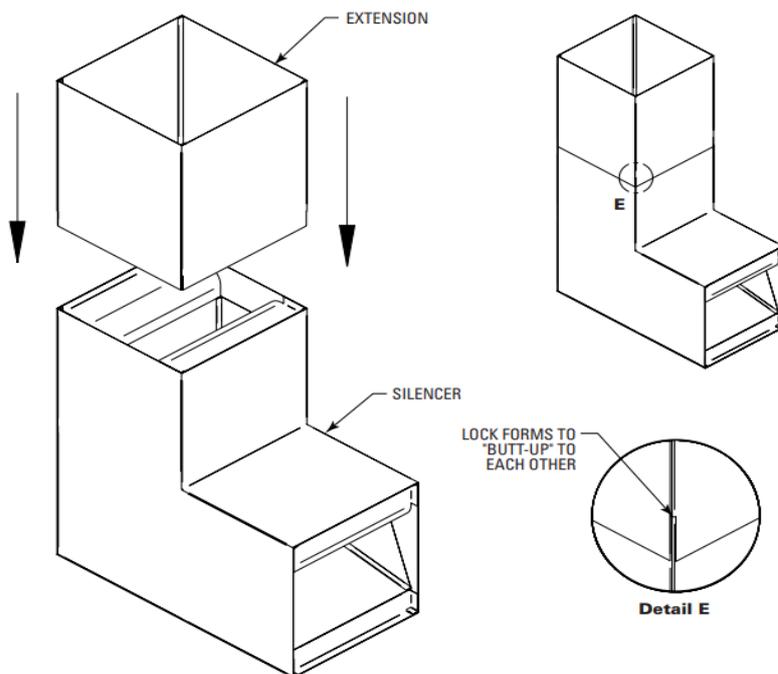


**Nested Elbow Silencer**

All silencer components that make up a nested elbow bank are constructed identically. To make the duct connection of the silencer components line up, duct extension pieces for the inlet and outlet of the silencer component are provided separately



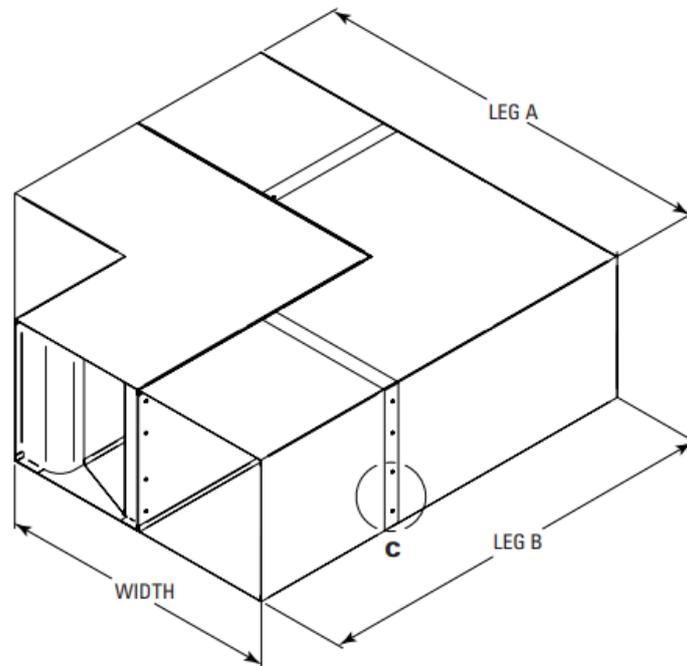
Install a duct extension on both the inlet and outlet of one of the silencer components, creating the outer silencer component. When assembling larger silencer components, it may be easier to slip the duct extension on with the inlet or outlet facing upwards.



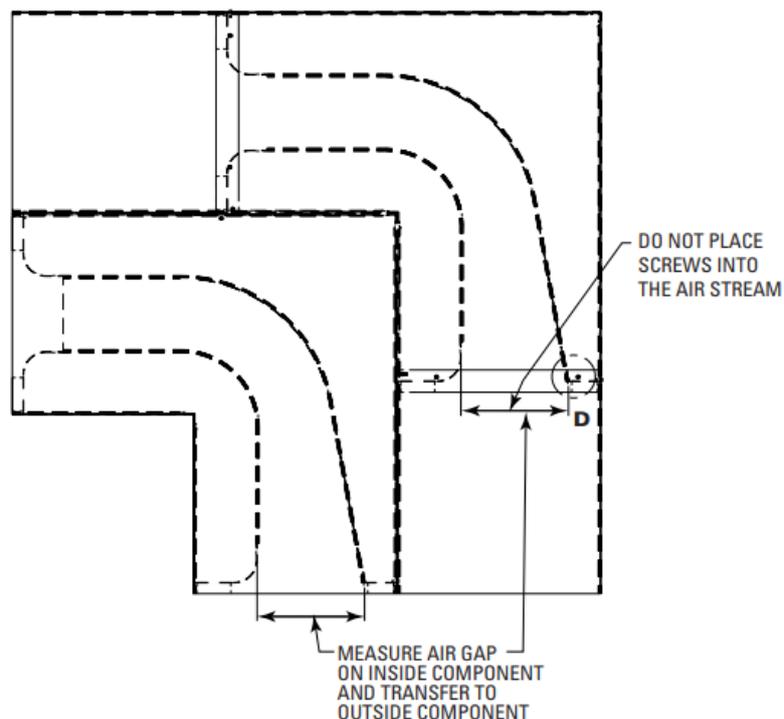




Measure the overall length of Leg A and Leg B from the outside corner to the edge of the extension and check that it is within tolerance. Insert sheet metal screws along the slip connection of the outer silencer into the side of the duct extensions (Detail C).

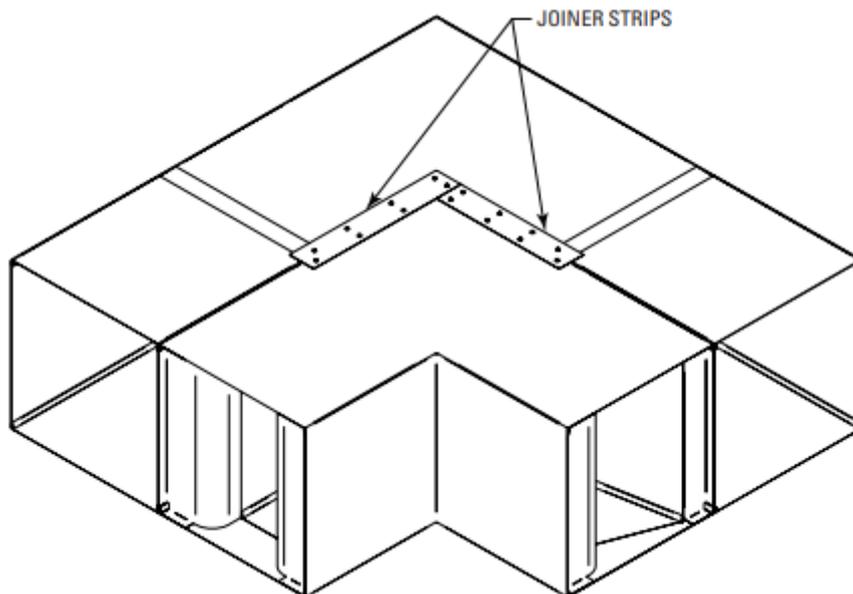


Measure air gaps on the inner elbow silencer component and transfer measurements to outer elbow silencer component. Place screws along the top edge of the duct extension into the top panel of the silencer component, ensuring not to place any screws into the air stream. The screws should be inserted through the top panel of the silencer into the baffle of the silencer. Repeat this process on the opposite leg





Using joiner strips, fasten the corner of the inner component to the inside corner of the outer component



### Summary

The quality of a silencer's installation is a critical component in the overall performance of the unit. It is essential to avoid excess generated noise and air leaks to achieve the best possible installed performance and to ensure the silencer is effective. Silencers are often supplied in multiple components for the ease and convenience of manufacturing, shipping and installation. When elbow silencer banks are large, multiple elbow components are shipped separately and assembled into banks at the job site. To ensure optimal performance from the silencer bank, care must be taken to ensure that there are no air leaks coming from the connection joints. The appropriate installation method for a particular silencer application should be determined by the best judgment of the installing contractor.

# RSA-RECTANGULAR SOUND ATTENUATORS RECTANGULAR SILENCER



## ORDER CODE

RSA	100	01	3	P	800x900x1000
		Case Type			Duct Size
					W x H x L Duct Size (mm)
Splitter thicknees 100mm 200mm					Splitter Surface F: Glass Fibre Fabric P : Glass Fibre Fabric and perforated sheet metal
					No of splitters
01: Galvanized Sheet Steel					
02: Stainless Steel					
03: Aluminum					