

# Sound Attenuator



Commercial Acoustics  
5960 W. WASHINGTON STREET  
PHOENIX, ARIZONA 85043-3523  
(602) 233-2322 FAX 233-2033

A DIVISION OF METAL FORM MANUFACTURING

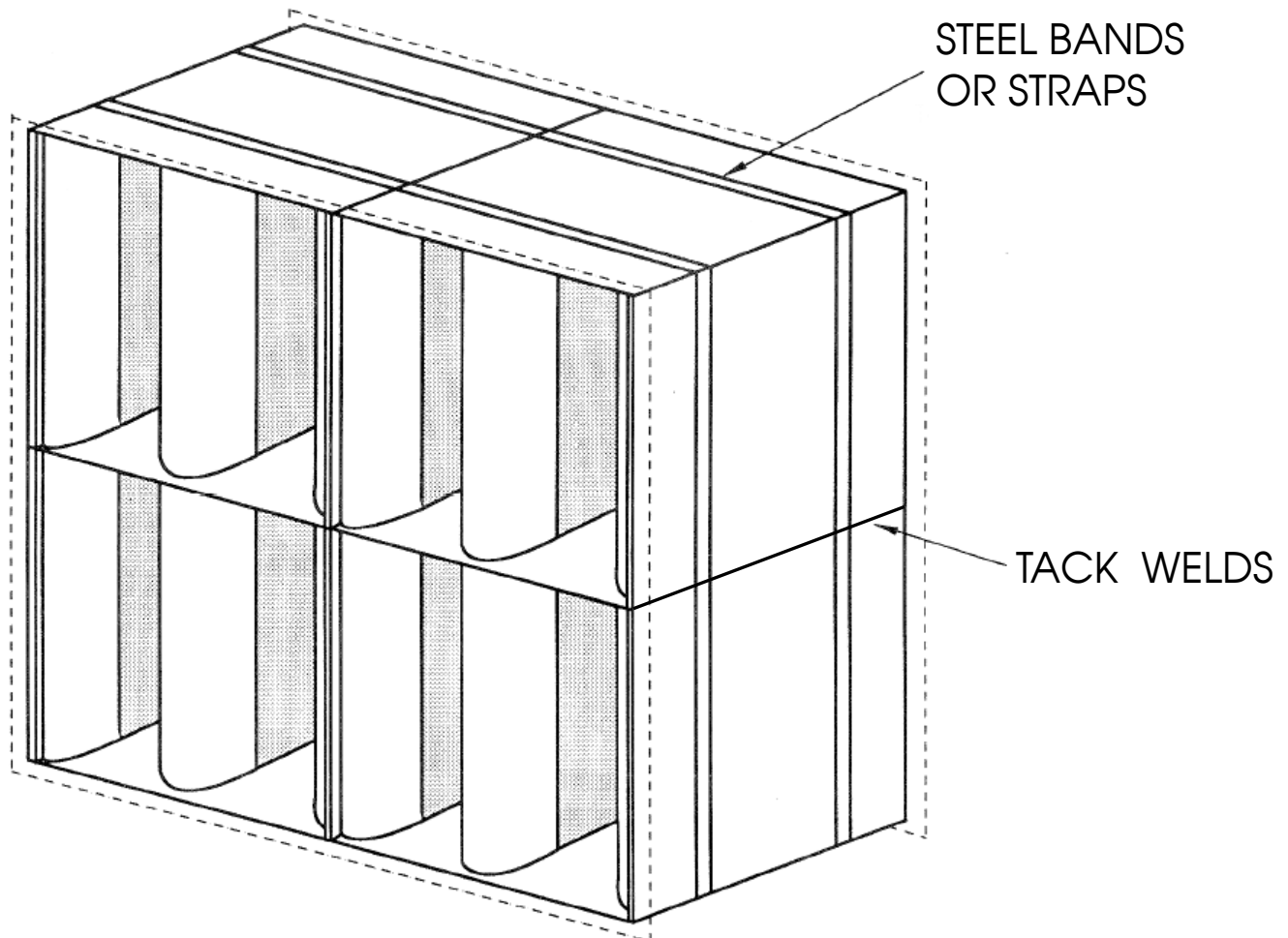
## ENGINEERING DATA SHEET

### INSTALLATION GUIDELINES

Commercial Acoustics rectangular sound attenuators are supplied in multiple modules of many different sizes for convenience and economy in shipping, handling and installation. When sound attenuator banks are large, multiple modules are shipped loose for erection at the job site. To avoid possible leaks and damage, two factors need to be considered. The first, fastening the individual sound attenuator modules together, and second, sealing the joints between assembled modules to prevent leakage. There are many methods of assembling and sealing multiple modules. The best of which should be determined by the installing contractor.

#### SUGGESTED OR OPTIONAL ASSEMBLY (diagram 1)

The multiple modules should be drawn together using at least two steel bands or straps. Lightweight structural angles can be used as a frame and also facilitate attachment to the duct. Tack welds, made along each adjoining surface, will provide added structural rigidity.



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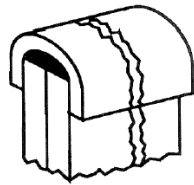
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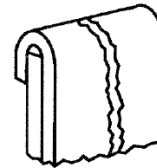
### INSTALLATION GUIDELINES

#### SEALING

Multiple modules must be properly sealed together at each end to prevent leakage. Separate nose clips can be fabricated which can be slipped over adjacent sound attenuator module shells. These clips can be button punched, tack welded, or crimped (D1). An alternate method would be to cut back one flange on one module then the adjoining flange bent over the cut back surface of the first module (D2).



(D1)

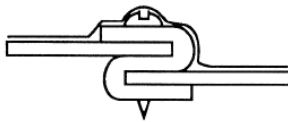


(D2)

#### ATTACHMENT TO DUCTWORK (Diagram 3)

Attachment to ductwork can be achieved by one or more of the following methods:

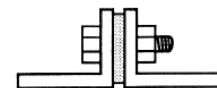
1. S-clip with sheet metal screws and tape. Also known as "S" & Drive.
2. Slip or lap joint with sheet metal screws and tape.
3. Angle flanges with gaskets and bolts.



1.



2.



3.

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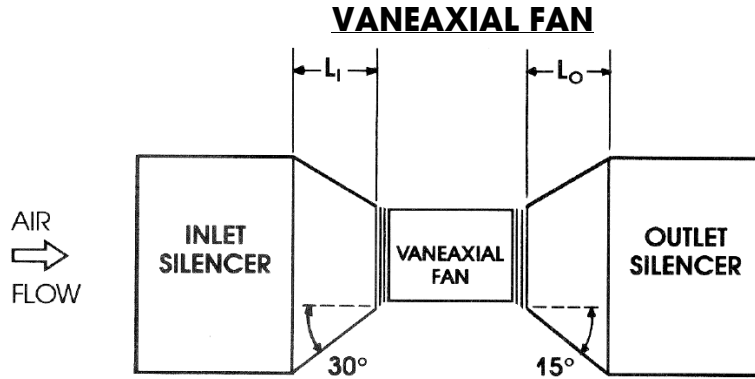


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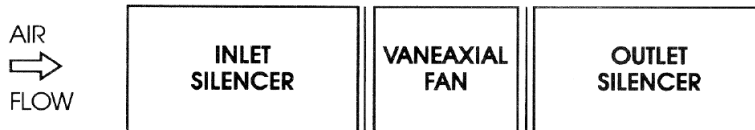
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### INSTALLATION GUIDELINES



	$L_1$	$L_0$	$\Delta P$ FACTOR
<b>RECTANGULAR SILENCER</b>	Not Less Than $0.75 \times D_{eq}$	Not Less Than $1 \times D_{eq}$ For Every 1000 fpm Duct Velocity	1.0



	$L_1$	$L_0$	$\Delta P$ FACTOR
<b>Circular or Conical Silencer With Center Body Diameter Equal To Fan Hub Size</b>	0	0	1.0

Notes:

1. For Circular Ducts,  $D_{eq}$  = Duct Diameter. For square or rectangular Ducts,  $D_{eq} = \sqrt{(4/\pi) \times \text{area}}$ .
2.  $\Delta P$  Factor is multiplier relative to silencer laboratory tested pressure drop area.
3. Unless noted otherwise,  $\Delta P$  Factors do not include pressure losses of other components (transitions, elbows, dump losses, etc.) which must be calculated separately.
4. The  $\Delta P$  Factors shown are subject to minimum Duct runs of  $5 \times D_{eq}$  after outlet silencers and  $2.5 \times D_{eq}$  before inlet silencers.

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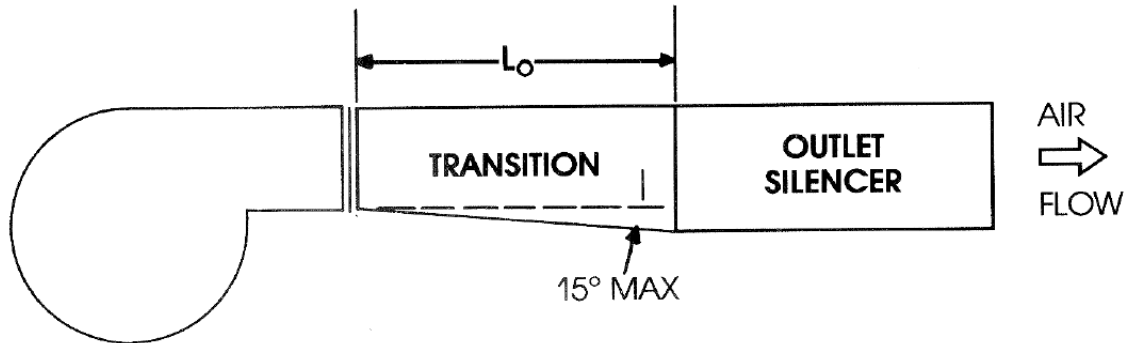
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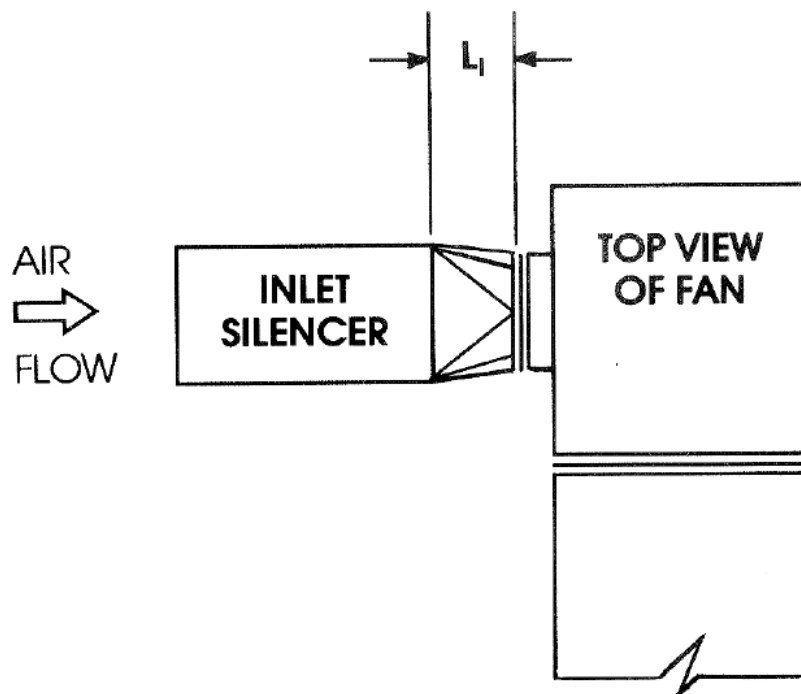
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### INSTALLATION GUIDELINES

#### CENTRIFUGAL FAN



$L_o = 1$  fan wheel diameter for every 1000 fpm of exit velocity.



$L_i$  not less than  $0.75 \times D_{eq}$  of the inlet silencer.

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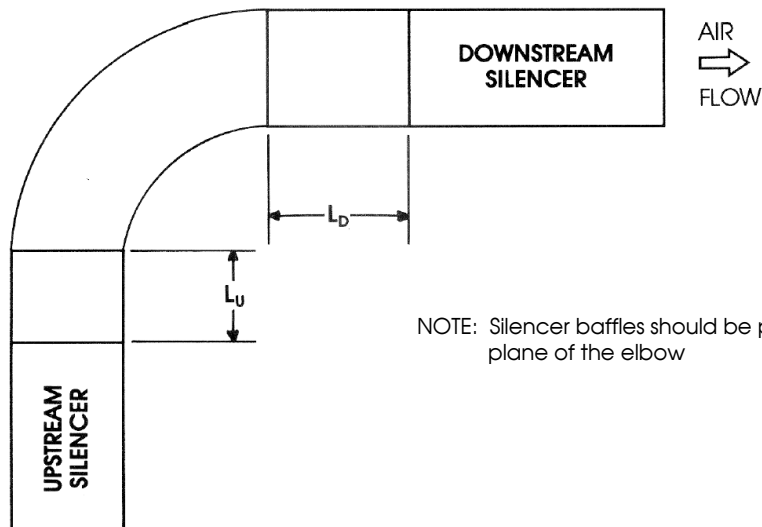
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### INSTALLATION GUIDELINES

#### ELBOWS



NOTE: Silencer baffles should be parallel to the plane of the elbow

	<b><math>L_u</math> &amp; <math>L_d</math></b>	<b><math>\Delta P</math> FACTOR</b>
Radius Elbows and Square Elbows with Turning Vanes	$D_{eq} \times 3$ $D_{eq} \times 2$ $D_{eq} \times 1$ $D_{eq} \times 0.5$ Directly Connected	1.0 1.25 1.75 3.0 Not Advised
Radius Elbows Without Turning Valves	$D_{eq} \times 3$ $D_{eq} \times 2$ $D_{eq} \times 1$	1.0 1.5 2.0

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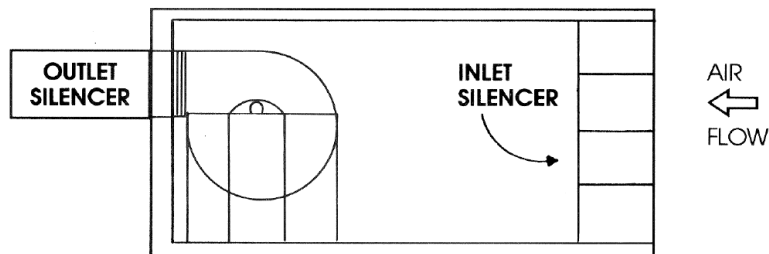
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### INSTALLATION GUIDELINES

#### SILENCERS AT INTAKE AND DISCHARGE OF MECHANICAL EQUIPMENT ROOMS



	$\Delta P$ FACTOR	
	INLET	OUTLET
SDS-LP	2.0	5.0
SS-LP	2.0	4.0
MP	1.5	3.5
DS-HP, SDS-HP, SS-HP, LP	1.5	3.0
SP, SP-18	1.5	2.0
HP, HP-EE, HP-MD	1.5	1.5

NOTE: These factors include atmospheric dump losses.

Pressure drop factors for silencers at the entrance to the system can be reduced by use of a smooth converging bellmouth.

