High Performance Noise Control For HVAC
And Industrial Ventilation Equipment

Advantages:

• Predictable acoustic and aerodynamic (pressure loss) performance
• Source and path control
• Suitable for new and retrofit applications
• Available in round, rectangular, oval and custom configurations
• Durable galvanized steel construction (other materials also available)
• Special designs for hospital, pharmaceutical and food processing
• Standard lab tested designs available
• Can be customized with flanges, brackets, transitions, etc.
• Spot weld construction for low pressure applications and continuous weld construction for high pressure service over 15” w.g.

Applications:

• Building ventilation systems
• Laboratory hood exhaust systems
• Process/industrial fans, blowers and compressors
• Dust collectors
• Incinerator systems
• Atmospheric vents
• Enclosure and mechanical space ventilation systems (louvers)
• Clean air emissions control systems
• Induced draft and forced draft fans
• Highway tunnel ventilation systems
• Glass tempering/quenching operations
• Fan powered VAV boxes
• Fan inlet box silencers
• Fan filter silencers
About BRD HUSH DUCT Silencers:

BRD silencers consist of parallel baffles or bullets constructed of perforated metal with rounded aerofoil design. The baffles are filled with sound absorptive material. A durable outside casing (solid sheet) provides the structural integrity of the unit while acting as a barrier to contain and reflect sound waves into the packed sections. Controlling the baffle and air flow passage thickness and spacing allows HUSH DUCT™ silencers to be tuned to reduce the most offending tones or frequencies. BRD sales engineers have the experience and knowledge to help you determine the requirements of your project and select the most cost-effective standard or custom design for the application. Thin profile acoustical louvers (4” to 12”) are available for building ventilation applications to/from mechanical equipment rooms.

Selecting Your HUSH DUCT™ Ventilation Silencer:

1) **IDENTIFY** desired performance for noise reduction and aerodynamic pressure loss that is allowable for the silencer. BRD can help you identify the noise reduction criteria if we are supplied with
   a) published and/or measured decibel levels by frequency and overall for the air moving equipment.
   b) the targeted overall silenced noise level or criteria.
2) **VERIFY** size of duct or air flow opening.
3) **DETERMINE** air flow velocity in feet per minute (FPM) where FPM = total air flow
4) **REFER** to the following application guides for rectangular and round HUSH DUCT™ silencers.
5) **SELECT** the appropriate HUSH DUCT™ silencer model/type to concurrently meet the noise reduction, pressure loss and self-generated noise requirements.
6) **CONSULT** BRD for pricing, confirmation of selection and further assistance on custom applications.
### Pressure Loss Types
- **XL** = extra low
- **L** = low
- **M** = medium
- **R** = regular
- **H** = high

Data listed is for 3’ long models only. Consult BRD for 5’, 7’, and 10’ long performance data.

### Nomenclature Example:
```
3  R  L - 1 2 2 4
   L  Rectangular Silencer Type  Low Pressure Loss  Height
   Length (foot)
```

### Table: Model Types and Performance Data
<table>
<thead>
<tr>
<th>Model Type</th>
<th>Recommended Velocity In (FPM)</th>
<th>Noise Reduction Range In Decibels (dB)</th>
<th>Pressure Loss Type</th>
<th>Pressure Loss At 1500 FPM In Inches Water Column</th>
<th>See Figure</th>
<th>Standard Lengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>RXL</td>
<td>≤ 2,500</td>
<td>7 to 9 dB</td>
<td>XL</td>
<td>0.14&quot;</td>
<td>1</td>
<td>3’, 5’, 7’ &amp; 10’</td>
</tr>
<tr>
<td>RL</td>
<td>≤ 2,500</td>
<td>8 to 10 dB</td>
<td>L</td>
<td>0.15&quot;</td>
<td>1</td>
<td>3’, 5’, 7’ &amp; 10’</td>
</tr>
<tr>
<td>RM</td>
<td>≤ 2,500</td>
<td>7 to 9 dB</td>
<td>M</td>
<td>0.18&quot;</td>
<td>1</td>
<td>3’, 5’, 7’ &amp; 10’</td>
</tr>
<tr>
<td>RR</td>
<td>≤ 2,000</td>
<td>9 to 11 dB</td>
<td>R</td>
<td>0.24&quot;</td>
<td>1</td>
<td>3’, 5’, 7’ &amp; 10’</td>
</tr>
<tr>
<td>RH</td>
<td>≤ 1,500</td>
<td>14 to 16 dB</td>
<td>H</td>
<td>0.71&quot;</td>
<td>1</td>
<td>3’, 5’, 7’ &amp; 10’</td>
</tr>
</tbody>
</table>

1 Pressure loss types: XL = extra low, L = low, M = medium, R = regular, H = high
2 Data listed is for 3’ long models only. Consult BRD for 5’, 7’, and 10’ long performance data.

### Special Models:
- XXX - MS - XXXX  Mylar and spacer for acoustic insulation
- XXX - FS - XXXX  Fiberglass cloth and spacer for acoustic insulation
- XXX - LF - XXXX  Low frequency design; best performance in first three octave bands
- XXX - FF - XXXX  Fiber-free packless no-fill design

Consult BRD for acoustic performance and pressure loss ratings on all special models.
## Product Data Section

### General Information
### Technical Information
### Application Details
### New Products
### Installation Guidelines
### Accessories
### Selection Information

### Nomenclature Example:

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Recommended Velocity In. (FPM)</th>
<th>Noise Reduction Range In Decibels (dB)</th>
<th>Pressure Loss Type</th>
<th>Pressure Loss at 1500 FPM in Inch-Waviness Column</th>
<th>See Figure</th>
<th>Standard Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL4</td>
<td>≤ 4,000</td>
<td>10 to 12 dB</td>
<td>L</td>
<td>0.19”</td>
<td>2</td>
<td>12&quot; TO 60&quot;</td>
</tr>
<tr>
<td>CM4</td>
<td>≤ 4,000</td>
<td>14 to 16 dB</td>
<td>M</td>
<td>0.20”</td>
<td>2</td>
<td>12&quot; TO 60&quot;</td>
</tr>
<tr>
<td>CH4</td>
<td>≤ 4,000</td>
<td>16 to 18 dB</td>
<td>H</td>
<td>0.40”</td>
<td>2</td>
<td>12&quot; TO 60&quot;</td>
</tr>
<tr>
<td>CL8</td>
<td>≤ 4,000</td>
<td>18 to 20 dB</td>
<td>L</td>
<td>0.18”</td>
<td>2</td>
<td>12&quot; TO 60&quot;</td>
</tr>
<tr>
<td>CM8</td>
<td>≤ 4,000</td>
<td>22 to 24 dB</td>
<td>M</td>
<td>0.20”</td>
<td>2</td>
<td>12&quot; TO 60&quot;</td>
</tr>
<tr>
<td>CH8</td>
<td>≤ 4,000</td>
<td>22 to 24 dB</td>
<td>H</td>
<td>0.40”</td>
<td>2</td>
<td>12&quot; TO 60&quot;</td>
</tr>
<tr>
<td>CL0</td>
<td>≤ 4,000</td>
<td>8 to 10 dB</td>
<td>L</td>
<td>0.25”</td>
<td>3</td>
<td>12&quot; TO 60&quot;</td>
</tr>
<tr>
<td>CH0</td>
<td>≤ 4,000</td>
<td>12 to 14 dB</td>
<td>H</td>
<td>0.40”</td>
<td>3</td>
<td>12&quot; TO 60&quot;</td>
</tr>
</tbody>
</table>

1. Pressure loss types: L = low, M = medium, H = high

### Special Models:

- **HUSH DUCT™**
- **Ventilation Silencers**

### Nomenclature Example:  

**C** - Circular Silencer Type  
**L** - Low Pressure Loss  
**4** - Shell Thickness (Inches)  
**12** - D1 Diameter (Inside)  
**36** - Length (Inches)

**XXX - MS - XXXX**  
Mylar and spacer for acoustic insulation

**XXX - FS - XXXX**  
Fiberglass cloth and spacer for acoustic insulation

**XXX - LF - XXXX**  
Low frequency design; best performance in first three octave bands

**XXX - FM - XXXX**  
Stainless steel fibermetal acoustic insulation

Consult BRD for acoustic performance and pressure loss ratings on all special/custom models.
Treatment Options for HVAC Condenser Fans

**Unitary™ Perimeter System**
Most economical solution supported around the top perimeter of the unit. Overall height ranges from 2' to 4' depending on desired performance. Perimeter panels are HUSH GUARD™ model HGU-400. Not recommended when receiver locations are at elevations higher than the fans. Panels are supported by the top of the HVAC unit or by an independent steel structure. Minimal pressure loss rating. Can be upgraded to a parallel baffle or silencer bank system.

**Parallel Baffle System**
High performance treatment using parallel acoustic baffles or splitters supported above the unit. Baffle thickness and spacing are determined by desired performance. The dept of baffles and plenum space above the unit are other variables used to balance acoustic performance and aerodynamic pressure loss requirements. Easily integrated with HUSH GUARD™ modular barrier walls and air intake HUSH DUCT™ model HDAL acoustical louvers for maximum overall reductions on critical projects.

**Silencer Bank System**
High performance solution installed directly above the footprint of the HVAC unit. Preferred method when perimeter barrier walls do not extend above the height of the condenser fans or where barrier walls are too far away from the equipment for the preferred Parallel Baffle System (see above). Requires plenum depth of 2' to 4' for best aerodynamic results. HUSH DUCT™ low frequency ventilation silencer modules are assembled together to form the larger silencer bank. Typical silencer bank height is 6' to 8' total from top of the unit.

**Silencer Stack System**
Individual circular silencer stacks can be used above each individual condenser fan if there is sufficient clearance between fans and if equipment operating conditions have a higher tolerance for pressure loss. Excellent performance in heights of 24" to 30". Heights up to 48" can be used for critical applications. Best suited for condensing units and condensing sections on packaged air handling units. Uses HUSH DUCT™ model CM2 or CM4 design. Balance of height to diameter ratio is critical for optimum performance.
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Ventilation Silencers

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Let Us Design A Custom HUSH DUCT™ Silencer For Your Air Moving Equipment Or System

1-610-863-6300
Noise and Vibration Control, Inc.
HUSH DUCT™ Model HDAL Acoustical Louvers

Models HDAL-1206/HDAL-1209

HUSH DUCT™ model HDAL acoustical louvers are manufactured from galvanized steel with a standard mill finish. The HDAL-1206 and HDAL-1209 are both 12” thick designs manufactured in sizes from a minimum of 24” x 24” up to as large as 72” wide x 96” high. For shipping and handling reasons, a series of more economical module sizes are banked together to fill a specific opening size. Mullions and flashing are used to trim off as needed. Edge framing options are standard (SE) shown at left, flat edge (FE) and flanged (FL). Flanged edge options are specified as FLI for FLO depending on whether the flange is mounted on the inlet or outlet side of the louver. HUSH DUCT™ Acoustical Louvers are also available in 4”, 6” & 8” thicknesses. Noise reduction values (NR) and pressure loss ratings for the HDAL-1206/1209 models are listed below.

Specifications:

Frame: 16 gauge galvanized steel channel
Blades: 16 gauge galvanized steel
Finish: Mill finish standard

Sizes
Dimensions: 45” w x 48” h
Depth: 12” frame standard

TYPICAL APPLICATIONS

Close-up view of HUSH DUCT™ HDAL-1206 banked modules.

Blower building air intakes with HDAL-1209 Acoustical Louvers

Dade County Compliant Hurricane Grade HUSH DUCT™ HDAL Louvers