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Available in British Columbia and selective Alberta markets.

This section contains product and technical information only.
For additional information and product pricing please contact your local ECCO Supply Sales Branch.

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ASHRAE
American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.
www.ashrae.org

HRAI
Heating, Refrigeration and Air Conditioning Institute of Canada
www.hrai.ca

HARDI
Heating, Airconditioning & Refrigeration Distributors International
www.hardinet.org

SMACNA
Sheet Metal and Air Conditioning Contractors’ National Association
www.smacna.org

SPIDA
Spiral Duct Manufacturers Association
www.spida.org

ECCO Supply
www.eccosupply.ca
INTRODUCTION

Kinetics offers the design and engineering assistance to integrate our line of silencers into a system solution. As a result, you may choose from a selection of standard or custom engineered silencers that will satisfy the requirements of each application.

Prime candidates for noise control measures are openings into and out of noisy environments. This includes the ventilation of buildings, enclosures, and equipment rooms. Integration of noise control measures such as silencers and louvers, into the system design requires careful consideration of space constraints, fan selection and aerodynamic pressure losses.
INTRODUCTION (cont’d)

Web-Based Silencer Selection and Duct System Acoustics Analysis Program

Kinetics Noise Control, Inc. and its subsidiary Vibron Products Group offers you, at no cost, their one-of-a-kind, Web-based, silencer selection program. The program incorporates the most up-to-date design analysis algorithms presented by ASHRAE. It dramatically reduces engineering time, while designing quiet duct systems.

The program provides a complete eight-octave band acoustical analysis. It takes into account natural attenuation of duct and fittings, sound power splits, end reflection, insertion loss of insulated duct and fittings, system component generated noise and critical space/room attenuation. It allows entry of fan sound power level data for any manufacturer’s equipment used in the system. It is a true, “model-all” program. The program produces a complete acoustical report displaying whether your design meets the required critical space sound levels. If not, the program will automatically choose a silencer based on your height, width, length and pressure loss restrictions. The program contains Kinetics complete line of rectangular and round, dissipative and reactive and elbow silencers.

Applications:
• Fan Inlet and Discharge
• Air Handling Units
• Cooling Towers
• Radiators
• HVAC Systems for Commercial, Institutional and Industrial Buildings
• HVAC Duct Systems
• Stacks, Blow-offs, Vents
• Safety and Relief Valves
• Enclosure Ventilation
• Turbine Enclosure Ventilation

Types: (Rectangular and Circular)
• Elbow Dissipative
• Straight Dissipative
• Reactive (No-Fill)
• Cross-Talk
• Custom Designs as Required
• Commercial and Industrial Grade Construction

Generators Enclosure Ventilation Silencers

Chiller Uplast Ventilation Silencer

Stack Insert Silencers, above and below
CIRCULAR SILENCERS

Features
• Cylindrical pressure-tight casing
• Streamlined acoustic core baffle
• Acoustic media protected by galvanized perforated sheet metal
• Spun head for reduced entrance pressure loss
• Tapered tail optimally designed for velocity pressure regain and insertion loss
• 3" slip flange on both ends

Specification
Silencers shall be fabricated from G90 galvanized steel. The casing shall have the following minimum thickness:
22 ga. (0.85 mm) for Diameter "D" between 12" and 24"
18 ga. (1.31 mm) for Diameter "D" greater than 24"
All silencers shall be airtight to a pressure differential of 10" Wg.
The acoustical absorption media shall be glass fiber packed under compression and protected by a minimum 22 ga.
galvanized perforated steel. The absorptive core baffle shall be centered in the casing and shall have a spun head on the inlet end. The tapered tail of the core baffle shall be optimally designed for pressure drop and insertion loss.
Vibron standard circular silencers are available in 10 different types and three standard lengths for a total choice of 30 different designs to cover most customer needs. Many non-standard variations are also available.

Selection Notes
1. Type CD-0,4 or 8 - B0 (CD-0, 102, or 203 - B0) circular silencers provide moderate insertion loss (IL) and impose negligible pressure drop (PD) on the system.
2. Higher IL may be obtained with least increase in PD by choosing a longer silencer. Choosing a different type of the same length is, in general, the more economical solution.

Insertion Loss
Insertion loss data is provided for standard silencer construction. If special designs are required, such as plastic film or glass fiber cloth covering for the acoustic media, consult your local ECCO Sales Branch for performance data.

Pressure Drop
The pressure drop across the silencer increases with the length of the silencer and with the insertion loss. For silencers with a core baffle, higher insertion losses are achieved by reducing the open area of silencer cross section. This constrains the flow and increases the pressure drop.
Pressure drop data is presented for a silencer inserted in a duct when neither end is near a bend, elbow, or transition.

System Noise Analysis
A manual on “HVAC System Noise Analysis”, detailing analysis procedures and methods are available from your local ECCO Sales Branch.

For more information please contact your local ECCO Supply Sales Branch.
CIRCULAR SILENCERS (cont’d)

Circular Silencer Types

Typical Silencer Model Designation

Options

- Blank or drilled angle iron ring flanges, single, or companion
- Fiberglass cloth on tedlar film between acoustic media and perforated interior and bullet shells
- Lifting lugs appropriate for horizontal or vertical orientation
- Stainless steel type 304 or 316, aluminum construction
- Mounting feet

For more information please contact your local ECCO Supply Sales Branch.
RECTANGULAR SILENCERS
Vibron Rectangular Silencers offer custom sizes at economical prices. Vibron Silencers, for reducing airborne noise in air moving systems, can be supplied for a range of applications.

Features
• Solid rounded noses shaped for minimum pressure drop
• Absorptive acoustic baffles in a duct-like casing, proportioned for optimum performance
• 1" slip flange standard (longer flanges available on request)

Available Options
• Square-to-round transitions
• Angle flanges with matching drilled holes
• Special designs as required

Configuring a Silencer
A silencer may consist of single or multiple silencer units (2 full units illustrated at right). Each full unit consists of two acoustic half-baffles and a central air passage. A silencer may be made up in several configurations using different unit sizes. A silencer with dimension “M” or 24” can be made from one 24” unit, or 12” units.

Special Designs Available

For more information please contact your local ECCO Supply Sales Branch.
RECTANGULAR SILENCERS (cont’d)

SELECTING A SILENCER

Step 1 – Determine System Parameters
The following information is needed to determine silencer Insertion Loss (IL) and Pressure Drop (PD) performance.

- Silencer IL requirements
- Unit size
- Forward (supply) or reverse (return) airflow direction
- Maximum allowable silencer PD
- Face velocity
- Length, width, and height restrictions

1.1 The IL requirements, quoted for octave bands 1 through 8, may be determined by:
   A. Comparison to an existing specification
   B. Duct system calculations using Kinetics web-based design program
   C. Application-dependent requirements, such as elimination of low frequency or tonal noise

Definition of Octave Bands

<table>
<thead>
<tr>
<th>Octave Band Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Frequency (Hz)</td>
<td>63</td>
<td>125</td>
<td>250</td>
<td>500</td>
<td>1000</td>
<td>2000</td>
<td>4000</td>
<td>8000</td>
</tr>
</tbody>
</table>

1.2 To identify unit sizes available for common duct sizes see Table 1 – Common Unit Sizes (below). If a duct dimension is an odd number, round up to the next even number.

1.3 IL data for airflow velocities available on request. Forward and reverse flow are defined as follows:
   - **Forward Flow**: airflow in the silencer is in the same direction as the noise propagation.
   - **Reverse Flow**: airflow in the silencer is in the opposite direction to the noise propagation.

Table 1 — Common Unit Sizes

<table>
<thead>
<tr>
<th>M or N (*)</th>
<th>AVAILABLE UNIT SIZES (*)</th>
<th>M or N (*)</th>
<th>AVAILABLE UNIT SIZES (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10, 20</td>
<td>30</td>
<td>10, 15, 30</td>
</tr>
<tr>
<td>12</td>
<td>12, 24</td>
<td>32</td>
<td>10, 16, 32</td>
</tr>
<tr>
<td>14</td>
<td>14, 28</td>
<td>34</td>
<td>11, 18, 34</td>
</tr>
<tr>
<td>16</td>
<td>16, 26</td>
<td>36</td>
<td>12, 18, 36</td>
</tr>
<tr>
<td>18</td>
<td>18, 28</td>
<td>38</td>
<td>12, 19, 38</td>
</tr>
<tr>
<td>20</td>
<td>10, 20</td>
<td>40</td>
<td>10, 13, 30</td>
</tr>
<tr>
<td>22</td>
<td>11, 22</td>
<td>42</td>
<td>10, 14, 21</td>
</tr>
<tr>
<td>24</td>
<td>12, 24</td>
<td>44</td>
<td>11, 14, 22</td>
</tr>
<tr>
<td>26</td>
<td>13, 26</td>
<td>46</td>
<td>11, 15, 23</td>
</tr>
<tr>
<td>28</td>
<td>14, 28</td>
<td>48*</td>
<td>12, 16, 24</td>
</tr>
</tbody>
</table>

* Silencers with M or N greater than 48” will be made in multiple pieces.

For more information please contact your local ECCO Supply Sales Branch.
**RECTANGULAR SILENCERS (cont’d)**

**SELECTING A SILENCER (cont’d)**

**Step 1 – Determine System Parameters (cont’d)**

1.4 The allowable PD may be determined by:
   A. Comparison to an existing specification
   B. Through consultation with the mechanical engineer

1.5 The face velocity is calculated using the following formula:

   \[
   \text{FACE VELOCITY} = \frac{\text{AIRFLOW RATE}}{\text{DUCT CROSS-SECTIONAL AREA}}
   \]

**Step 2 – Select IL Performance**

*Contact your local ECCO Supply Sales Branch for more information on selecting IL performance.

**Step 3 – Select PD Performance**

**Contact your local ECCO Supply Sales Branch for more information on selecting PD performance.

**SAMPLE SILENCER MODEL VS CONTRACTOR**

**TYPICAL SILENCER MODEL DESIGNATION**

12VRS/2 – L × M × N (305VRS/2 – L × M × N)

<table>
<thead>
<tr>
<th>U-Unit Size (&quot;)</th>
<th>Silencer Type</th>
<th>Length (&quot;)</th>
<th>Cross Section (&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 VRS/2</td>
<td>1/2 UNIT</td>
<td>A/F</td>
<td></td>
</tr>
<tr>
<td>1 UNIT</td>
<td>A/F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 UNITS</td>
<td>A/F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 UNITS</td>
<td>A/F</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Silencers with M and N under 48" will be made in one piece
- M is always perpendicular to the plane of the baffle
- Baffles shown here are vertical
- Baffles may be either vertical or horizontal

For more information please contact your local ECCO Supply Sales Branch.
NOISEBLOCK BARRIER WALL SYSTEMS
FOR UTILITIES, HIGHWAYS/TRANSPORTATION, ROOFTOP EQUIPMENT, AND RESIDENTIAL NOISE COMPLIANCE

The control of noise in every day life is very important. Unwanted noise can cause stress related illnesses and severe noise can cause hearing damage. To meet these requirements and to help solve many noise problems, Kinetics manufactures a complete line of acoustical barrier panels called NOISEBLOCK Barrier Panels. These panels can be quickly and easily assembled to provide complete or partial walls for utilities, transportation/highways, cooling towers, chillers, condensers, rooftop equipment and residential noise barriers. These panels are designed to be easily erected in the field and are also designed to provide optimum noise control through sound absorption and sound transmission loss.

Applications:
• Utilities
• Rooftop Equipment
• Residential Compliance
• HVAC Equipment Yards
• Industrial Processes

![Chiller Barrier Wall System, Before (right), After (above)](image)

Combination VAL Louver and STL Panel Barrier Wall System

![Combination VAL Louver and STL Panel Barrier Wall System](image)
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Applications:
- Utilities
- Rooftop Equipment
- Residential Compliance
- HVAC Equipment Yards
- Industrial Processes

Combination VAL Louver and STL Panel Barrier Wall System
INDUSTRIAL SILENCERS
COMMERCIAL (HVAC)/INDUSTRIAL/ENVIRONMENTAL ACOUSTIC ENCLOSURE SYSTEMS

Pressurized Plenums
The control of noise in modern buildings due to air-conditioning is a normal procedure in most projects. Kinetics designs and manufactures a complete line of pressure enclosures for heating, ventilating and air-conditioning installations. Designed to be erected in the field, Kinetics panel enclosures provide thermal and optimum noise control through sound absorption and sound transmission loss.

Applications:
• Built-up Air Handling Units
• Panel Duct Systems
• Outside and Discharge Air
• Supply and Return Air Handling Systems

Accessories:
• Acoustical Doors are equipped with heavy-duty hardware and seals to prevent noise leakage.
• Windows are double or single glazed, ¼” thick, laminated safety glass or wire reinforced including framing and sealing.
• Removable Panels for constant or intermittent access to equipment can be incorporated in the enclosure design.
• Ventilation Systems include intake and exhaust silencers as well as supply or exhaust fan system designs to meet the individual projects airflow requirements.
• Design & Engineering assistance including layout as well as determining acoustical, structural and ventilation requirements are included.
• AutoCAD submittal and piece-marked assembly drawings are also included with every project.

Industrial Acoustical Enclosures are designed and manufactured using standard NOISEBLOCK type “STL & HTL” tongue and groove panels. The panels are fabricated of solid galvanized steel outer skin, and solid or perforated galvanized inner skin. Panels are stiffened with pre-formed steel channels. Acoustic grade fill is packed under compression. The enclosures are available with doors, access panels, removable panels and ventilation packages.

Claims for hearing damage, safety and economic requirements make a noise reduction program essential for many industries. In the past, many manufacturing facilities were regulated by a government agency such as OSHA, but today insurance companies who seek to keep claims for hearing damage to a minimum for the facilities they insure drive the vast majority of noise regulation.

Kinetics offers complete design and engineering assistance including layout as well as providing acoustical, structural and ventilation requirements.

Applications:
• Compressors and Pumps
• Constant Power Generator Sets
• Grinding, Pulverizor, Chipper Processes
• Punch Presses
• Vacuum Pump and Positive Displacement Blowers Systems
• Outdoor Equipment
• Paint Booths
• In-Plant Offices
• Process Equipment
• Test Chambers
• Extrusion Processes
• Flame Spray Booths
INDUSTRIAL SILENCERS (cont’d)

Noise Control Solutions

• Ventilation of buildings
• Ventilation of enclosures
• Air Handlers
• Fans
• Blowers
• Radiators
• Cooling Towers

Control of Noise and Vibration ...

... is essential for health, safety, productivity, and the environment. Vibron's expertise will provide cost effective, practical solutions — standard or custom engineered.

Noise can be caused by radiating (vibrating) surfaces such as:

• Internal combustion engines
• Fan/Blower casings
• Pumps
• Compressors
• Turbines
• Gear reducers
• Material handling equipment
• Fabrication equipment
• Transformers
• Electric motors

Noise sources also result from high velocity air or gas discharges creating shearing forces which causes turbulence and hence noise. Noise sources include:

• Engine intakes and discharges
• Fan/Blower intakes and discharges
• Compressor intakes and discharges
• Turbine enclosure ventilation
• High velocity air exhausts
• High velocity gas discharge

Silencers control airborne noise in ducts and openings in buildings, enclosures, or equipment. Vibron's Industrial Silencers are custom engineered to satisfy the requirements of each application. Vibron offers design and engineering assistance to integrate their silencer designs into a system solution.

Openings into or out of noisy environments are prime candidates for noise control measures. This includes ventilation of buildings, enclosures, equipment, or rooms. Integration of noise control measures, such as silencers, into the system design requires careful consideration of space constraints, fan selection, and aerodynamic pressure losses.

For more information please contact your local ECCO Supply Sales Branch.
INDUSTRIAL SILENCERS (cont’d)

VIBRON offers a complete range of standard to custom engineered Industrial Silencers to suit your applications. Vibron optimizes their Engineered Noise Control Solution to ensure personal comfort, health and safety, while helping comply with environmental regulations and community standards.

Vibron's Industrial Silencers can be integrated into the system design using specific components, such as fans or dampers, selected by others. Or Vibron can provide complete noise control ventilation systems, including fans, dampers, actuators, louvers, filters, mounting supports and silencers. By designing and packaging a complete system, Vibron can offer an optimized solution with most components pre-assembled at the factory, reducing field installation and commissioning costs.

Industrial Silencer Options
- Galvanized, carbon, or stainless steel casing
- All welded construction
- Weather hood
- Birdscreen
- Duct extension
- Painted exterior
- Access doors/panels
- Filters
- Mounting/support flange
- Support brackets/legs
- Damper
- Actuator
- Fan

Specifications
1.0 General
Industrial absorptive silencers are shown on the contract drawings or as tabulated shall be installed to reduce sound transmission to occupied spaces. Silencers shall be as specified by customer and manufactured by Kinetics Noise Control – Vibron Products Group. Any changes to this specification must be approved by the customer and/or engineer and Vibron prior to manufacture.

2.0 Construction
Silencer shall be the sizes and lengths shown, shall be modular, and shall consist of galvanized, carbon, aluminum, or stainless steel outer and interior partitions. Silencers shall be custom designed and manufactured to remain airtight at the specified pressures.

Acoustic fill material shall be glass fiber of a density calculated to provide the published acoustical and aerodynamic performance. Fill material shall be class 1, as tested in accordance with ASTM E-84.

3.0 Acoustic Performance and Certification
Silencers shall exhibit a dynamic insertion loss not less than that shown in the specifications, pressure drop under design airflow shall not exceed that shown, as determined by the manufacturer.

Dynamic insertion loss and self noise power levels shall be determined and certified by using Vibron’s proprietary finite element analysis. Selected silencers are tested in Vibron’s static insertion loss facility, designed to BS4718 and in accordance with ASTME-477.

Submittals shall be supplied with Dynamic Insertion Loss, Self Noise Power Levels and Aerodynamic Performance for forward (supply air) and reverse (return air) flow conditions.

For more information please contact your local ECCO Supply Sales Branch.
WALL AND CEILING PANEL ABSORBERS

Kinetics Model KNP Panel Absorbers are functional, durable and aesthetically pleasing perforated panels which are used to control background and reverberant noise. Although primarily intended as an absorber, the panels will act as a barrier when a solid sheet metal back is added. KNP Panels are also useful as additions to existing barriers to reduce reverberation time and to lower reflected sound levels.

Kinetics Model KNP Panels are excellent sound absorbers over a wide frequency range. Their acoustic properties combined with their appearance and rugged durability make them a perfect choice for test chambers, class rooms, factories, auditoriums, mechanical equipment rooms, gymnasiums, theatres, garages, hallways and other spaces where reverberant noise is a problem. KNP panels are suitable for outdoor use and are ideal for installation over existing barrier walls.

KNP panels can be attached to walls, ceilings or other surfaces and can be located in a manner to achieve a pleasing appearance.

They are available with optional rear backing to increase their transmission loss and be used as a barrier. In addition, KNP Panels can be faced with perforated material on both sides and used as hanging absorptive baffles.

FIXED BLADE ACOUSTICAL LOUVERS MODEL VAL

Kinetics Acoustical Louvers are designed for maximum attenuation when space is limited. They are aesthetically pleasing and available in various material types.

Applications:

- Building Vents
- Generator Room Vent
- Barrier Wall Systems
- Acoustical Enclosure Ventilation
- Commercial and Industrial Duct Systems

Test Room Model KNP Wall Panels

Equipment Yard Louvered Barrier Wall System