SECTION 15240
VIBRATION ISOLATORS

PART I - GENERAL

1.01 WORK INCLUDED

A. Types of vibration isolation products specified in this section include the following:

1. Spring Isolators
2. Spring Hangers
3. Pad Isolators
4. Seismic Snubbers

B. Vibration isolation products furnished as part of factory-fabricated equipment are specified as part of equipment assembly in other Division 15 sections.

1.02 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of vibration isolation products of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Design Criteria:

1. SMACNA Compliance: Provide isolation and seismic snubbing in accordance with standards of SMACNA.
2. Unless noted otherwise, all isolators shall be from single manufacturer.
3. Select isolation devices for uniform static deflections according to distribution of weight.
4. Select isolators to ensure against vibration and noise transmission from equipment to building structure through mounts and hangers. Coordinate weights and locations as required.

C. Reference Standards:

1. SMACNA - "Sheet Metal and Air Conditioning Contractors National Association, Inc."

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data including installation instructions for each type of vibration isolation product.

B. Include a tabulation of the design data on the isolators including outside diameter; free, operating, and solid heights of the springs; free and operating heights of the neoprene or fiberglass isolators; and isolation efficiency based on the lowest operating speed of the equipment supported.
PART II - PRODUCTS

2.01 SPRING ISOLATORS:

A. Spring isolators shall be free standing and stable, with minimum deflection of 1-1/2” and minimum outside diameter not less than spring operating height. Isolators shall be furnished with height-saving brackets welded to channel base frames, with leveling bolts and base plate with non-skid neoprene or 1” thick, pre-compressed fiberglass isolation pad. The springs shall have a minimum travel of 50% between the design height and the solid height. Isolator base plates shall be bolted to floor, with size and number of bolts as recommended by isolator manufacturer, but bolt shall have no less than ½” diameter.

B. Spring isolators shall be housed type, with minimum deflection of 1-1/2” and minimum outside diameter not less than spring operating height. Provide housing with screw-type adjustment at top of housing and with neoprene isolation material at all potential points of metal-to-metal contact. Isolators shall be furnished with height-saving brackets welded to channel base frames, with leveling bolts and base plate with non-skid neoprene or one inch thick pre-compressed fiberglass isolation pad. The springs shall have a minimum travel of 50% between the design height and the solid height. Isolator base plates shall be bolted to floor, with size and number of bolts as recommended by isolator manufacturer, but bolt shall have no less than ½” diameter.

C. Furnish channel base frame with one coat of shop-sprayed red lead primer, and field paint with one coat of equipment room finish paint at the completion of the job.

D. Manufacturers: Mason, Vibrex, or equal.

2.02 SPRING HANGERS

A. Support fans suspended from overhead and in-line circulating pumps with combination spring and rubber-in-shear hangers in the support rods. Provide hangers with a minimum of 1” of deflection, capable of moving through a 30º arc without any metal-to-metal contact.

B. Support piping and ductwork in mechanical equipment rooms and within 50’ of supply fans with combination spring and rubber-in-shear hangers in the support rods. Provide deflection at first point of support equal to deflection of isolated equipment, with remaining points of support equal to one-half the deflection of the isolated equipment.

C. Manufacturers: Mason Industries, Inc. Model 30N, Vibrex, or equal.

2.03 SEISMIC SNUBBERS

A. Provide all spring-isolated equipment or structures with adequate seismic snubbing. Design snubbers to restrict lateral movement in all directions and bolt to both the equipment and the floor or overhead structure. Design snubbers to allow ¼” motion in any horizontal direction, and provide adjustments to limit vertical or rocking motion to 0.1”. Provide snubbers with a minimum rating equal to the weight of the equipment and base divided by the number of snubbers (1 g rating). Arrest motion with resilient material designed for 500 psi min. at the 1 g load. Accommodate a 2 g load without distortion.

B. Vibration isolation manufacturer shall provide seismic snubbers as part of a complete package, including base frame and springs, or spring hangers.
2.04 PAD ISOLATORS:

A. Where indicated on the Drawings, isolate equipment located on grade from building slab with 1” thick, pre-compressed, molded fiberglass pads, with size as recommended by isolation manufacturer. Provide all anchor bolts with non-metallic grommets and washers.

B. Provide steel plate bonded to top surface of each pad, with oversized hole through center of unit.


PART III - EXECUTION

3.01 APPLICATION:

A. General: Except as otherwise indicated, apply the following types of vibration isolators at indicated locations. Selection is Installer's option where more than one type is indicated.

<table>
<thead>
<tr>
<th>Pad-Type Isolators:</th>
<th>Pumps</th>
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<tbody>
<tr>
<td>Chillers</td>
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<table>
<thead>
<tr>
<th>Spring Isolators:</th>
<th>Air Compressors</th>
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<td>Cooling towers</td>
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<table>
<thead>
<tr>
<th>Base and Spring Isolators:</th>
<th>Isolation Hangers:</th>
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<tbody>
<tr>
<td>Air handling units</td>
<td>Axial fans</td>
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<td></td>
<td>Centrifugal fans</td>
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<td></td>
<td>In-line circulating pumps</td>
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<tr>
<td></td>
<td>Pipe over 1” size in mechanical equipment rooms</td>
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<tr>
<td></td>
<td>Supply ductwork in mechanical rooms</td>
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3.02 INSTALLATION

A. Except as otherwise indicated, comply with manufacturer's instructions for installation and load application to vibration isolation materials and units. Adjust to ensure that units do not exceed rated operating deflections or bottom out under loading and are not short-circuited by other contacts or bearing points.

3.03 INSPECTION

A. Examine areas and conditions under which vibration isolation products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to installer.

END OF SECTION 15240