Enidine Wire Rope Isolators

Wire Rope Isolators

Solutions in Energy Absorption and Vibration Isolation.
**Typical Wire Rope Isolator Applications**

### Electronic Enclosures

### Medi-vac Equipment

### Radar Systems

### Power Units

### Mobile Electronic Equipment

### Other Wire Rope Isolator Applications
- Avionics
- Carts, Transporters & Gurneys
- Chemical Processing Equipment
- Chimneys, Scrubbers & Vessels
- Electronic Cabinets
- Military Equipment
- Navigation Equipment
- Over-the-road Transport
- Power Plant Piping Suspension
- Pump, Generator & Compressor Isolation
- Seismic Isolation
- Shipboard Electronics
- Shipping Cases, Skids & Containers
- Transportable Shelters
Introducing Wire Rope Isolators

Enidine, a preferred source for energy absorption and vibration isolation solutions, offers a full range of Wire Rope and Compact Wire Rope Isolator products, each designed to reduce the harmful effects of shock and vibration.

Wire Rope Isolators

Wire Rope Isolators are comprised of stainless steel stranded cable, threaded through aluminum alloy retaining bars, crimped and mounted for effective vibration isolation. With their corrosion resistant, all-metal construction, Enidine Wire Rope Isolators are environmentally stable, high-performance shock and vibration isolators that are unaffected by temperature extremes, chemicals, oils, ozone and abrasives.

Featuring a patented crimping pattern, versatile mounting options and a variety of sizes, these helical isolator products can help ensure that your systems can effectively meet performance requirements in commercial, industrial, and defense industries, including MIL-STD-810, MIL-STD-167, MIL-STD-901, MIL-E-5400, STANAG-042, BV43-44 and DEF-STND 0755. For more information, please refer to our "Wire Rope Isolator Selection Guide" on pages 2-3 to assist in selecting a model for your application.

Compact Wire Rope Isolators

For the best in vibration isolation capabilities, choose Enidine’s Compact Wire Rope Isolators. Smaller than traditional wire ropes, these unique isolators provide cost-effective, simultaneous shock and vibration attenuation where package space is at a premium.

Enidine Compact Wire Rope Isolators feature an easy, single-point installation, which allows them to be installed in virtually any application. Their small size also permits the isolation of individual system components, making them ideal for use in sensitive equipment and electronics. Just as with our standard Enidine Wire Rope Isolators, Enidine Compact Wire Rope Isolators feature a patented, all-metal design and components that ensure maximum reliability, regardless of temperature or substrate requirement, and that can help meet MIL-SPECS similar to those of our Wire Rope Isolator series. Please refer to our "Compact Wire Rope Isolator Selection Guide" on pages 32-33 for more information.

If your application is outside the standard Compact Wire Rope Isolator product range, please consult the standard Wire Rope Isolator portions of this catalog. If a standard solution is still not available, Enidine engineers can design an isolator to suit your specifications.

For further information on Enidine Wire Rope and Compact Wire Rope Isolator products, technical assistance and pricing, please contact Enidine or your nearest authorized distributor. A list of Enidine distributors can be found by visiting our website at www.enidine.com.
Selecting an Enidine Wire Rope Isolator

**SIZING INSTRUCTIONS - VIBRATION ISOLATION**

If the desired system natural frequency is known, refer to the appropriate Load vs. Natural Frequency curves to determine the recommended Wire Rope Isolator model. If the preferred system natural frequency is unknown, follow the steps below to achieve a recommended Wire Rope Isolator selection.

**STEP 1:** Fill out Part I and Part III of the Application Worksheet.

**STEP 2:** Refer to the Load vs. Natural Frequency curves for the desired loading orientation. Use the System Natural Frequency (f_n) calculated from the worksheet to select the smallest WR series model capable of the static load (W).

**STEP 3:** Specify the required mounting option suffix to complete the part number. (Please refer to available mounting options as indicated on each WR series data page.)

If the desired system natural frequency is unknown, follow the steps below to achieve a recommended Wire Rope Isolator selection.

**STEP 1:** Fill out Part I and Part II of the Application Worksheet.

**STEP 2:** Refer to the Load vs. Natural Frequency curves for the required loading orientation. Use the System Natural Frequency (f_n) calculated from the worksheet to select the smallest WR series model capable of the static load (W).

**STEP 3:** Specify the required mounting option suffix to complete the part number. (Please refer to available mounting options as indicated on each WR series data page.)

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**APPLICATION WORKSHEET - INPUTS IMPERIAL/METRIC**

**PART I: SYSTEM DATA**

1. Total Load (W): W = ____ lbs. W = ____ Kg x 9.81 = ____ N
2. Number of Isolators (n): n = __________
3. Static Load per Isolator (W): W = ____ lbs. W = ____ N
4. Load Axis: Compression, Shear or Roll

**PART II: VIBRATION SIZING**

1. Input Excitation Frequency (f_i) = ____ Hz (= rpm)
2. System Natural Frequency for 80% isolation: f_n = ____ Hz

*The System Natural Frequency (f_n) must lie on a published curve. The published natural frequencies are based on a 1G input condition. Random Vibration inputs: Consult Enidine for recommendations.

**PART III: SHOCK SIZING**

1. Maximum Allowable Transmitted G Load (G): __________ G's
2. Shock Input Velocity: V = ____ in./sec.2 or ____ m/sec.2
   a) Free Fall Impact: g = 386 in./sec.2 or 9.81 m/sec.2
      h = Drop Height (in. or m)
      V = \[\frac{2g}{h}\] h = Drop Height (in. or m)
   b) Half-Sine Acceleration Input: A_0 = Peak Acceleration (G's)
      t_0 = Duration (seconds)
      V = \[\frac{2g}{A_0 t_0}\] A_0 = Peak Acceleration (G's)
5. Average Deflection: D_{avg} = \[\frac{W V^2}{2g (D_{min})}\] D_{avg} = ____ in. D_{avg} = ____ mm

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**Ordering Information**

Fax, phone, or mail your order to the nearest Enidine/distributor location, Attention: Sales Department (see back cover for listing of Enidine locations).

**EXAMPLE:**

1. Select Quantity
2. WR Series
3. Select Dash Number
4. Specify Mounting Option
5. Select “M” for Metric Model

**Please refer to available mounting options as indicated on each WR series data page.**

If you have special requirements, send us your application and Enidine will contact you with recommendations for a solution.
VIBRATION ISOLATION:

A 1,400-lb. pump is rotating at 1,725 rpm, transmitting vibration to adjoining equipment. To control the damaging effects of unwanted vibration, the pump shall be isolated using four (4) isolators mounted in the compression load axis with imperial, flat head cap screws. The isolators shall be located symmetrically about the pump’s center of gravity.

Step 1: From Part I and Part II of the Application Worksheet.

\[ WT = 1,400 \text{ lbs.} \]
\[ F_i = \frac{1,725}{80} = 21.56 \text{ Hz} \]
\[ W = \frac{1,400}{4} = 350 \text{ lbs.} \]
\[ F_n = \frac{2,875}{3} = 9.6 \text{ Hz} \]

Step 2: Referring to the Compression Load vs. Natural Frequency curves for an isolator capable of a maximum static load of 350 lbs., and a System Natural Frequency of approximately 9.6 Hz, yields a recommended isolator selection of WR16-206-06.

Step 3: From the Available Mounting Options column, verify that a “B” mounting style is available (for flat head cap screws in both mount bars). Adding the mounting option suffix to the model number gives the complete part number of WR16-206-06-B.

SHOCK ISOLATION:

Sensitive electronic equipment weighing 164 lbs. must withstand a 9-inch drop shock when packaged inside of its shipping container. The electronics shall be suspended inside of the container’s shell using eight (8) isolators (4 per side) in the roll loading axis. The equipment can withstand a maximum shock response of 15G’s. The isolators shall be installed symmetrically about the equipment’s center of gravity. Threaded metric holes is the desired mounting option.

Step 1: From Part I and Part III of the Application Worksheet.

\[ V = \sqrt{\frac{2(386)(9)}{83.42}} = 83.4 \text{ inches per second} \]
\[ F_{avg} = \frac{(20.5)(83.42)}{2(386)(1.29)} = 143 \text{ lbs.} \]
\[ d_{avg} = \frac{1.29}{2} = .65 \text{ inches} \]

Step 2: Referring to the Shear/Roll Load vs. Deflection curves for an isolator capable of a maximum deflection of 1.29 inches or greater, and a curve point that is at or slightly below a force of 143 lbs. at .65 inches of deflection, yields a recommended isolator selection of WR12-506-06.

Step 3: From the Available Mounting Options column, verify that a “D” mounting style is available (for threaded holes in both mount bars). Adding the mounting option suffix to the model number, and metric designation (M) gives the complete part number of WR12-506-06-D-M.

Performance Considerations

The following should be considered when selecting Enidine Wire Rope Isolator products:

Damping:
• Typically 5-15%, depending on size and input level. For specific damping considerations, please consult Enidine.

Stabilizers:
• Consider the use of stabilizers when the Height vs. Width ratio is greater than 2.

Natural Frequency Curve Basis:
• Published natural frequency curves are based on a 1G input condition. Natural frequency shifts may result from various input levels.

Severe Input Considerations:
• Increase diameter of the wire rope cable.
• Increase height of the Wire Rope Isolators.
• Consult Enidine.
# WR2 Series

**Imperial**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR2-100-10</td>
<td>B, D, E</td>
<td>0.70 x 1.00</td>
<td>0.05</td>
</tr>
<tr>
<td>WR2-200-10</td>
<td>S, A, B, C, D, E</td>
<td>0.80 x 1.10</td>
<td>0.05</td>
</tr>
<tr>
<td>WR2-600-10</td>
<td>S, A, B, C, D, E</td>
<td>1.10 x 1.30</td>
<td>0.07</td>
</tr>
<tr>
<td>WR2-700-10</td>
<td>S, A, B, C, D, E</td>
<td>1.20 x 1.40</td>
<td>0.07</td>
</tr>
<tr>
<td>WR2-800-10</td>
<td>S, A, B, C, D, E</td>
<td>1.30 x 1.50</td>
<td>0.07</td>
</tr>
</tbody>
</table>

**Metric**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR2-100-10</td>
<td>BM, DM, EM</td>
<td>18 x 22</td>
<td>0.02</td>
</tr>
<tr>
<td>WR2-200-10</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>20 x 28</td>
<td>0.03</td>
</tr>
<tr>
<td>WR2-600-10</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>25 x 30</td>
<td>0.03</td>
</tr>
<tr>
<td>WR2-700-10</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>28 x 33</td>
<td>0.03</td>
</tr>
<tr>
<td>WR2-800-10</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>30 x 36</td>
<td>0.03</td>
</tr>
</tbody>
</table>

**Mounting Options**

- **S**: Thru Hole
- **A(M)**: Thru Hole Countersunk Hole
- **B(M)**: Countersunk Hole
- **C(M)**: Thru Hole Threaded
- **D(M)**: Threaded Countersunk Hole
- **E(M)**: Threaded Hole

**Operating Temperature Range**

-150°F to 500°F (-100°C to 260°C)

**Standard Materials & Finishes**

- **Cable**: Stranded 300 Series Stainless Steel
- **Retaining Bars**: Aluminum Alloy, treated per MIL-C-5541

**Maximum recommended torque for threaded insert is 6 in-lbs. (0.7 Nm)**

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*
WR2 Series

Load vs. Deflection

Load vs. Natural Frequency

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
### Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR3-100-10-[]</td>
<td>B, D, E</td>
<td>0.90</td>
<td>1.10</td>
</tr>
<tr>
<td>WR3-200-10-[]</td>
<td>S, A, B, C, D, E</td>
<td>1.00</td>
<td>1.20</td>
</tr>
<tr>
<td>WR3-400-10-[]</td>
<td>S, A, B, C, D, E</td>
<td>1.30</td>
<td>1.50</td>
</tr>
<tr>
<td>WR3-600-10-[]</td>
<td>S, A, B, C, D, E</td>
<td>1.60</td>
<td>1.80</td>
</tr>
<tr>
<td>WR3-700-10-[]</td>
<td>S, A, B, C, D, E</td>
<td>1.90</td>
<td>2.10</td>
</tr>
<tr>
<td>WR3-800-10-[]</td>
<td>S, A, B, C, D, E</td>
<td>2.20</td>
<td>2.40</td>
</tr>
</tbody>
</table>

### Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR3-100-10-[]</td>
<td>BM, DM, EM</td>
<td>23</td>
<td>28</td>
</tr>
<tr>
<td>WR3-200-10-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>WR3-400-10-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>28</td>
<td>33</td>
</tr>
<tr>
<td>WR3-600-10-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>33</td>
<td>38</td>
</tr>
<tr>
<td>WR3-700-10-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>36</td>
<td>41</td>
</tr>
<tr>
<td>WR3-800-10-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>38</td>
<td>43</td>
</tr>
</tbody>
</table>

### MOUNTING OPTIONS

- **S**: Thru Hole
- **A(M)**: Thru Hole Countersunk Hole
- **B(M)**: Countersunk Hole
- **C(M)**: Thru Hole Threaded
- **D(M)**: Threaded Countersunk Hole
- **E(M)**: Threaded

### MOUNTING HARDWARE

- **IMPERIAL**: 4-40-72
- **METRIC**: M5 x 0.8
- **90° COUNTERSINK**: 90° COUNTERSINK

Maximum recommended torque for threaded insert is 8 in.-lbs. (0.9 Nm)

- **Standard Materials & Finishes**
  - Cable: Stranded 300 Series Stainless Steel
  - Retaining Bars: Aluminum Alloy, treated per MIL-C-5541

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*

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**WR3 Series**

Note: Dimensions are in inches (mm).

Beachten Sie die Befestigungsoptionen (100,3)

View Rotated 90º CW for clarity

Maximum operating temperature range is -150ºF to 500ºF (-100ºC to 260ºC)

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**U.S. Patent 5,549,285**
WR3 Series

Load vs. Deflection

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
**WR4 Series**

Note: Dimensions are in inches (mm).

### Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR4-100-10</td>
<td>B, D, E</td>
<td>H: 1.10 W: 1.40</td>
<td>0.26</td>
</tr>
<tr>
<td>WR4-200-10</td>
<td>B, D, E</td>
<td>H: 1.20 W: 1.50</td>
<td>0.26</td>
</tr>
<tr>
<td>WR4-400-10</td>
<td>S, A, B, C, D, E</td>
<td>H: 1.30 W: 1.80</td>
<td>0.29</td>
</tr>
<tr>
<td>WR4-500-10</td>
<td>S, A, B, C, D, E</td>
<td>H: 1.40 W: 1.80</td>
<td>0.29</td>
</tr>
<tr>
<td>WR4-600-10</td>
<td>S, A, B, C, D, E</td>
<td>H: 1.50 W: 1.80</td>
<td>0.29</td>
</tr>
<tr>
<td>WR4-700-10</td>
<td>S, A, B, C, D, E</td>
<td>H: 1.60 W: 1.90</td>
<td>0.30</td>
</tr>
<tr>
<td>WR4-800-10</td>
<td>S, A, B, C, D, E</td>
<td>H: 1.70 W: 2.00</td>
<td>0.30</td>
</tr>
</tbody>
</table>

### Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR4-100-10</td>
<td>BM, DM, EM</td>
<td>H: 28 W: 36</td>
<td>0.12</td>
</tr>
<tr>
<td>WR4-200-10</td>
<td>BM, DM, EM</td>
<td>H: 30 W: 38</td>
<td>0.12</td>
</tr>
<tr>
<td>WR4-400-10</td>
<td>S, AM, BM, CH, DM, EM</td>
<td>H: 33 W: 41</td>
<td>0.13</td>
</tr>
<tr>
<td>WR4-500-10</td>
<td>S, AM, BM, CH, DM, EM</td>
<td>H: 36 W: 43</td>
<td>0.13</td>
</tr>
<tr>
<td>WR4-600-10</td>
<td>S, AM, BM, CH, DM, EM</td>
<td>H: 38 W: 46</td>
<td>0.13</td>
</tr>
<tr>
<td>WR4-700-10</td>
<td>S, AM, BM, CH, DM, EM</td>
<td>H: 41 W: 48</td>
<td>0.14</td>
</tr>
<tr>
<td>WR4-800-10</td>
<td>S, AM, BM, CH, DM, EM</td>
<td>H: 43 W: 51</td>
<td>0.14</td>
</tr>
</tbody>
</table>

### MOUNTING OPTIONS

- **S**: Thru Hole
- **A(M)**: Thru Hole Countersunk Hole
- **B(M)**: Countersunk Hole
- **C(M)**: Thru Hole Threaded
- **D(M)**: Countersunk Hole
- **E(M)**: Threaded Countersunk Hole

### Operating Temperature Range

- -150°F to 500°F (-100°C to 260°C)

### Standard Materials & Finishes*

- Cable: Stranded 300 Series Stainless Steel
- Retaining Bars: Aluminum Alloy, treated per MIL-C-5541

* Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.

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Beachten Sie die Befestigungsoptionen (114,3) (7,9) (14,2) (3,2) (127,0) (14,2) (31,7,9)

U.S. Patent 5,549,285

Internet: www.enidine.com Phone: 1-800-852-8508 Fax: 1-716-662-1909
Load vs. Deflection

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
## WR5 Series

### Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR5-200-10 [ ]</td>
<td>B, D, E</td>
<td>H: 1.20 W: 1.60</td>
<td>0.33</td>
</tr>
<tr>
<td>WR5-400-10 [ ]</td>
<td>S, A, B, C, D, E</td>
<td>H: 1.30 W: 1.70</td>
<td>0.33</td>
</tr>
<tr>
<td>WR5-600-10 [ ]</td>
<td>S, A, B, C, D, E</td>
<td>H: 1.80 W: 2.10</td>
<td>0.38</td>
</tr>
<tr>
<td>WR5-800-10 [ ]</td>
<td>S, A, B, C, D, E</td>
<td>H: 2.10 W: 2.50</td>
<td>0.39</td>
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</tbody>
</table>

### Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR5-200-10 [ ]</td>
<td>BM, DM, EM</td>
<td>H: 30 W: 41</td>
<td>0.15</td>
</tr>
<tr>
<td>WR5-400-10 [ ]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>H: 33 W: 43</td>
<td>0.20</td>
</tr>
<tr>
<td>WR5-600-10 [ ]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>H: 38 W: 48</td>
<td>0.16</td>
</tr>
<tr>
<td>WR5-800-10 [ ]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>H: 46 W: 53</td>
<td>0.17</td>
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<tr>
<td>WR5-900-10 [ ]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>H: 53 W: 64</td>
<td>0.18</td>
</tr>
</tbody>
</table>

### Mounting Options

- **S**: Thru Hole
- **A(M)**: Thru Hole Countersunk Hole
- **B(M)**: Countersunk Hole
- **C(M)**: Thru Hole Threaded
- **D(M)**: Threaded Countersunk Hole
- **E(M)**: Threaded

### Mounting Hardware

<table>
<thead>
<tr>
<th>IMPERIAL</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4-20</td>
<td>M6 (x 1.0)</td>
</tr>
<tr>
<td>3/8-20</td>
<td>M8 (x 1.0)</td>
</tr>
</tbody>
</table>

### Standard Materials & Finishes

- Cable: Stranded 300 Series Stainless Steel Retaining Bars: Aluminum Alloy, treated per MIL-C-5541

### Operating Temperature Range

- -100°C to 260°C

### Additional Information

- Note: Dimensions are in inches (mm).
- Operating Temperature Range: -150°F to 500°F (-100°C to 260°C)

* Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.
**WR5 Series**

**Load vs. Deflection**

### Compression

- **KEY**
  - WR5-200-10
  - WR5-400-10
  - WR5-600-10
  - WR5-800-10
  - WR5-900-10

**Natural Frequency**

- **KEY**
  - WR5-200-10
  - WR5-400-10
  - WR5-600-10
  - WR5-800-10
  - WR5-900-10

**45° Compression / Roll**

- **KEY**
  - WR5-200-10
  - WR5-400-10
  - WR5-600-10
  - WR5-800-10
  - WR5-900-10

**Shear / Roll**

- **KEY**
  - WR5-200-10
  - WR5-400-10
  - WR5-600-10
  - WR5-800-10
  - WR5-900-10

**Notes:**

A. Natural frequency curves based on 1G input.

B. Do not extrapolate plotted curves.

C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
WR6 Series

### Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR6-200-10-</td>
<td>D</td>
<td>W 1.20</td>
<td>H 1.40</td>
</tr>
<tr>
<td>WR6-300-10-</td>
<td>D</td>
<td>W 1.30</td>
<td>H 1.50</td>
</tr>
<tr>
<td>WR6-400-10-</td>
<td>B, D, E</td>
<td>W 1.40</td>
<td>H 1.60</td>
</tr>
<tr>
<td>WR6-600-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 1.50</td>
<td>H 1.70</td>
</tr>
<tr>
<td>WR6-700-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 1.60</td>
<td>H 1.80</td>
</tr>
<tr>
<td>WR6-800-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 1.70</td>
<td>H 1.90</td>
</tr>
<tr>
<td>WR6-850-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 1.80</td>
<td>H 2.00</td>
</tr>
<tr>
<td>WR6-900-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 2.00</td>
<td>H 2.10</td>
</tr>
<tr>
<td>WR6-950-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 2.45</td>
<td>H 2.65</td>
</tr>
</tbody>
</table>

### Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR6-200-10-</td>
<td>D</td>
<td>W 32.3</td>
<td>H 38.6</td>
</tr>
<tr>
<td>WR6-300-10-</td>
<td>D</td>
<td>W 36.0</td>
<td>H 41.0</td>
</tr>
<tr>
<td>WR6-400-10-</td>
<td>B, D, E</td>
<td>W 38.3</td>
<td>H 43.0</td>
</tr>
<tr>
<td>WR6-600-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 41.0</td>
<td>H 46.0</td>
</tr>
<tr>
<td>WR6-700-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 43.8</td>
<td>H 48.6</td>
</tr>
<tr>
<td>WR6-800-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 51.0</td>
<td>H 58.0</td>
</tr>
<tr>
<td>WR6-850-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 54.0</td>
<td>H 76.0</td>
</tr>
<tr>
<td>WR6-900-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 62.0</td>
<td>H 88.0</td>
</tr>
<tr>
<td>WR6-950-10-</td>
<td>S, A, B, C, D, E</td>
<td>W 81.0</td>
<td>H 107.0</td>
</tr>
</tbody>
</table>

### Mounting Options

- **S**
  - Through Hole
- **A(M)**
  - Through Hole
  - Countersunk
- **B(M)**
  - Countersunk

- **C(M)**
  - Through Hole
  - Countersunk
- **D(M)**
  - Through Hole
- **E(M)**
  - Threaded

### Mounting Hardware

- **IMPERIAL**
  - 1/4-20 M6 (x 1,0)
- **METRIC**
  - 62° COUNTERSINK
  - 90° COUNTERSINK

Maximum recommended torque for threaded insert is 32 in.-lbs. (4,3 Nm)

### Standard Materials & Finishes*

- **Cable**
  - Stranded 300 Series Stainless Steel
- **Retaining Bars**
  - Aluminum Alloy, treated per MIL-C-5541

* Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.

### Operating Temperature Range

- -150°F to 500°F (-100°C to 260°C)

*U.S. Patent 5,549,285*
WR6 Series

Load vs. Deflection

Load vs. Natural Frequency

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
# WR8 Series

Note: Dimensions are in inches (mm).

## Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR8-200-08</td>
<td>S, A, B, C, D, E</td>
<td>2.90 2.20</td>
<td>0.84</td>
</tr>
<tr>
<td>WR8-400-08</td>
<td>S, A, B, C, D, E</td>
<td>2.13 2.50</td>
<td>0.90</td>
</tr>
<tr>
<td>WR8-500-08</td>
<td>S, A, B, C, D, E</td>
<td>2.31 2.80</td>
<td>0.94</td>
</tr>
<tr>
<td>WR8-600-08</td>
<td>S, A, B, C, D, E</td>
<td>2.50 3.13</td>
<td>1.04</td>
</tr>
<tr>
<td>WR8-700-08</td>
<td>S, A, B, C, D, E</td>
<td>2.50 3.50</td>
<td>1.14</td>
</tr>
<tr>
<td>WR8-800-08</td>
<td>S, A, B, C, D, E</td>
<td>2.63 3.75</td>
<td>1.20</td>
</tr>
<tr>
<td>WR8-850-08</td>
<td>S, A, B, C, D, E</td>
<td>2.63 3.95</td>
<td>1.25</td>
</tr>
<tr>
<td>WR8-900-08</td>
<td>S, A, B, C, D, E</td>
<td>2.83 4.25</td>
<td>1.30</td>
</tr>
</tbody>
</table>

## Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR8-200-08</td>
<td>S, M, B(M), C(M), D(M), E(M)</td>
<td>48 56</td>
<td>0.38</td>
</tr>
<tr>
<td>WR8-400-08</td>
<td>S, M, B(M), C(M), D(M), E(M)</td>
<td>54 64</td>
<td>0.41</td>
</tr>
<tr>
<td>WR8-500-08</td>
<td>S, M, B(M), C(M), D(M), E(M)</td>
<td>59 71</td>
<td>0.42</td>
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<tr>
<td>WR8-600-08</td>
<td>S, M, B(M), C(M), D(M), E(M)</td>
<td>64 80</td>
<td>0.47</td>
</tr>
<tr>
<td>WR8-700-08</td>
<td>S, M, B(M), C(M), D(M), E(M)</td>
<td>64 89</td>
<td>0.52</td>
</tr>
<tr>
<td>WR8-800-08</td>
<td>S, M, B(M), C(M), D(M), E(M)</td>
<td>67 95</td>
<td>0.54</td>
</tr>
<tr>
<td>WR8-850-08</td>
<td>S, M, B(M), C(M), D(M), E(M)</td>
<td>67 100</td>
<td>0.57</td>
</tr>
<tr>
<td>WR8-900-08</td>
<td>S, M, B(M), C(M), D(M), E(M)</td>
<td>83 108</td>
<td>0.59</td>
</tr>
</tbody>
</table>

## MOUNTING OPTIONS

**S**: Thru Hole

**A(M)**: Thru Hole Countersunk Hole

**B(M)**: Countersunk Hole

**C(M)**: Thru Hole

**D(M)**: Thru Hole Countersunk

**E(M)**: Threaded

## MOUNTING HARDWARE

**IMPERIAL**

<table>
<thead>
<tr>
<th>Threaded Insert</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-40 (3.78 mm)</td>
<td>M6 (x 1.0)</td>
</tr>
</tbody>
</table>

**MIL-C-5541**

- 6-32: Countersink 90º for clarity
- 4-40: Countersink 90º for clarity

## Standard Materials & Finishes

- Cable: Stranded 300 Series Stainless Steel
- Retaining Bars: Aluminum Alloy, treated per MIL-C-5541

## Operating Temperature Range

- -150°F to 500°F (-100°C to 260°C)

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*

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**Internet: www.endine.com**

**Phone: 1-800-852-8508**

**Fax: 1-716-662-1909**

---
Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
# WR12 Series 6 LOOP

## Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR12-206-06-</td>
<td>5, A, B, C, D, E</td>
<td>2.80 x 3.31</td>
<td>1.82</td>
</tr>
<tr>
<td>WR12-306-06-</td>
<td>5, A, B, C, D, E</td>
<td>2.90 x 3.50</td>
<td>1.90</td>
</tr>
<tr>
<td>WR12-406-06-</td>
<td>5, A, B, C, D, E</td>
<td>3.00 x 4.13</td>
<td>1.99</td>
</tr>
<tr>
<td>WR12-506-06-</td>
<td>5, A, B, C, D, E</td>
<td>3.25 x 4.25</td>
<td>2.07</td>
</tr>
<tr>
<td>WR12-606-06-</td>
<td>5, A, B, C, D, E</td>
<td>3.50 x 4.25</td>
<td>2.15</td>
</tr>
<tr>
<td>WR12-706-06-</td>
<td>5, A, B, C, D, E</td>
<td>4.33 x 4.75</td>
<td>2.36</td>
</tr>
<tr>
<td>WR12-806-06-</td>
<td>5, A, B, C, D, E</td>
<td>4.33 x 5.50</td>
<td>2.48</td>
</tr>
</tbody>
</table>

## Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR12-206-06-</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>71 x 84</td>
<td>0.83</td>
</tr>
<tr>
<td>WR12-306-06-</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>74 x 89</td>
<td>0.85</td>
</tr>
<tr>
<td>WR12-406-06-</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>76 x 105</td>
<td>0.90</td>
</tr>
<tr>
<td>WR12-506-06-</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>83 x 108</td>
<td>0.95</td>
</tr>
<tr>
<td>WR12-606-06-</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>89 x 108</td>
<td>0.98</td>
</tr>
<tr>
<td>WR12-706-06-</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>105 x 121</td>
<td>1.07</td>
</tr>
<tr>
<td>WR12-806-06-</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>108 x 140</td>
<td>1.13</td>
</tr>
</tbody>
</table>

### MOUNTING OPTIONS

- **S(M)** Thru Hole
- **A(M)** Thru Hole Countersunk Hole
- **B(M)** Countersunk Hole
- **C(M)** Thru Hole Threaded
- **D(M)** Threaded
- **E(M)** Countersunk Hole

### MOUNTING HARDWARE

#### IMPERIAL

- 1/4-28 M6 x 1.0
- 60° COUNTERSINK 90° COUNTERSINK
- Maximum recommended torque for threaded bar is 100 in.-lbs. (10 Nm)

#### METRIC

- M6 x 1.0

### Standard Materials & Finishes

- Cable: Stranded 300 Series Stainless Steel
- Retaining Bars: Aluminum Alloy, treated per MIL-C-5541
- Assembly Hardware (WR12 – WR40): Alloy Steel, Zinc Plated

**Operating Temperature Range**

- 150°F to 500°F (-100°C to 260°C)

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*
Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
### WR12 Series

Note: Dimensions are in inches (mm).

#### Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [   ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR12-200-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>H (in.)</td>
<td>W (in.)</td>
</tr>
<tr>
<td>WR12-300-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>2.80</td>
<td>3.31</td>
</tr>
<tr>
<td>WR12-400-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>2.90</td>
<td>3.50</td>
</tr>
<tr>
<td>WR12-500-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>3.00</td>
<td>4.13</td>
</tr>
<tr>
<td>WR12-600-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>3.25</td>
<td>4.25</td>
</tr>
<tr>
<td>WR12-700-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>3.50</td>
<td>4.25</td>
</tr>
<tr>
<td>WR12-800-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>4.25</td>
<td>5.50</td>
</tr>
</tbody>
</table>

#### Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [   ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR12-200-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>H (mm)</td>
<td>W (mm)</td>
</tr>
<tr>
<td>WR12-300-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>74</td>
<td>88</td>
</tr>
<tr>
<td>WR12-400-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>76</td>
<td>105</td>
</tr>
<tr>
<td>WR12-500-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>83</td>
<td>108</td>
</tr>
<tr>
<td>WR12-600-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>89</td>
<td>108</td>
</tr>
<tr>
<td>WR12-700-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>105</td>
<td>121</td>
</tr>
<tr>
<td>WR12-800-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>108</td>
<td>140</td>
</tr>
</tbody>
</table>

#### MOUNTING OPTIONS

- **S(M)**: Thru Hole
- **A(M)**: Thru Hole Countersunk
- **B(M)**: Countersunk
- **C(M)**: Thru Hole Threaded
- **D(M)**: Threaded
- **E(M)**: Countersunk

#### MOUNTING HARDWARE

- **IMPERIAL**: 1/8-28
- **METRIC**: M8 x 1.25

**Operating Temperature Range**: -150°F to 500°F (-100°C to 260°C)

### Standard Materials & Finishes

- **Cable**: Stranded 300 Series Stainless Steel
- **Retaining Bars**: Aluminum Alloy, treated per MIL-C-5541
- **Assembly Hardware (WR12 – WR40)**: Alloy Steel, Zinc-Plated

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*
WR12 Series

**Load vs. Deflection**

- **Compression**
- **45° Compression / Roll**
- **Shear / Roll**

**Load vs. Natural Frequency**

**Notes:**
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.

Internet: www.enidine.com  Phone: 1-800-852-8508  Fax: 1-716-662-1909
**WR16 Series**  6 LOOP

**Imperial**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR16-206-06-{ }</td>
<td>S, A, B, C, D, E</td>
<td>3.00</td>
<td>6.53</td>
</tr>
<tr>
<td>WR16-306-06-{ }</td>
<td>S, A, B, C, D, E</td>
<td>3.25</td>
<td>4.00</td>
</tr>
<tr>
<td>WR16-406-06-{ }</td>
<td>S, A, B, C, D, E</td>
<td>3.50</td>
<td>4.13</td>
</tr>
<tr>
<td>WR16-606-06-{ }</td>
<td>S, A, B, C, D, E</td>
<td>4.25</td>
<td>5.25</td>
</tr>
<tr>
<td>WR16-806-06-{ }</td>
<td>S, A, B, C, D, E</td>
<td>5.90</td>
<td>6.65</td>
</tr>
<tr>
<td>WR16-856-06-{ }</td>
<td>S, A, B, C, D, E</td>
<td>5.40</td>
<td>6.13</td>
</tr>
<tr>
<td>WR16-906-06-{ }</td>
<td>S, A, B, C, D, E</td>
<td>6.10</td>
<td>7.20</td>
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</tbody>
</table>

**Metric**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR16-206-06-{ }</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>74</td>
<td>92</td>
</tr>
<tr>
<td>WR16-306-06-{ }</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>83</td>
<td>102</td>
</tr>
<tr>
<td>WR16-406-06-{ }</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>89</td>
<td>105</td>
</tr>
<tr>
<td>WR16-606-06-{ }</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>95</td>
<td>121</td>
</tr>
<tr>
<td>WR16-706-06-{ }</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>108</td>
<td>133</td>
</tr>
<tr>
<td>WR16-806-06-{ }</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>124</td>
<td>144</td>
</tr>
<tr>
<td>WR16-856-06-{ }</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>137</td>
<td>156</td>
</tr>
<tr>
<td>WR16-906-06-{ }</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>155</td>
<td>180</td>
</tr>
</tbody>
</table>

**Mounting Options**

- **S(M)**: Thru Hole
- **A(M)**: Thru Hole Countersunk Hole
- **B(M)**: Countersunk Hole
- **C(M)**: Thru Hole Threaded
- **D(M)**: Threaded Countersunk Hole
- **E(M)**: Threaded

**Mounting Hardware**

**IMPERIAL**

- 1/4-20 (Thru Screw Only): MS (x 1.25)
- 5/16-24 (All Others): MS (x 1.25)
- 82° COUNTERSINK: 82° COUNTERSINK

**METRIC**

- M4-0.7 (Thru Screw Only): 6H (x 1.25)
- M5-0.8 (All Others): 6H (x 1.25)
- 82° COUNTERSINK: 82° COUNTERSINK

Maximum recommended torque for threaded bar is 115 in.-lbs. (20 Nm)

**Operating Temperature Range**

- -150°F to 500°F (-100°C to 260°C)

**Standard Materials & Finishes**

- Cable: Stranded 300 Series Stainless Steel
- Retaining Bars: Aluminum Alloy, treated per MIL-C-5541
- Assembly Hardware (WR12 – WR40): Stainless Steel, Zinc Plated

**Note:** Dimensions are in inches (mm).

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*
WR16 Series 6 LOOP

Load vs. Deflection

Load (N)

Deflection (mm)

0 20 40 60 80 100

0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4

Load (N)

Deflection (mm)

0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4

Load vs. Natural Frequency

Natural Frequency (Hz)

0, 5, 10, 15, 20

Load (N)

Natural Frequency (Hz)

0, 5, 10, 15, 20

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
## WR16 Series

### Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR16-200-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>3.00 3.63</td>
<td>4.00</td>
</tr>
<tr>
<td>WR16-300-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>3.25 4.00</td>
<td>4.20</td>
</tr>
<tr>
<td>WR16-400-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>3.50 4.13</td>
<td>4.40</td>
</tr>
<tr>
<td>WR16-600-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>3.75 4.75</td>
<td>4.90</td>
</tr>
<tr>
<td>WR16-800-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>4.25 5.65</td>
<td>5.95</td>
</tr>
<tr>
<td>WR16-850-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>4.50 6.13</td>
<td>6.40</td>
</tr>
<tr>
<td>WR16-900-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>5.40 7.10</td>
<td>6.80</td>
</tr>
</tbody>
</table>

### Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR16-200-08-[]</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>7.69 9.27</td>
<td>1.01</td>
</tr>
<tr>
<td>WR16-300-08-[]</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>83 102</td>
<td>1.91</td>
</tr>
<tr>
<td>WR16-400-08-[]</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>89 105</td>
<td>2.00</td>
</tr>
<tr>
<td>WR16-600-08-[]</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>95 111</td>
<td>2.22</td>
</tr>
<tr>
<td>WR16-800-08-[]</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>108 133</td>
<td>2.40</td>
</tr>
<tr>
<td>WR16-850-08-[]</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>124 144</td>
<td>2.70</td>
</tr>
<tr>
<td>WR16-900-08-[]</td>
<td>SM, AM, BM, CM, DM, EM</td>
<td>137 156</td>
<td>2.90</td>
</tr>
</tbody>
</table>

### MOUNTING OPTIONS

- **S(M)**: Thru Hole
- **A(M)**: Countersunk Hole
- **B(M)**: Countersunk Hole
- **C(M)**: Thru Hole
- **D(M)**: Threaded
- **E(M)**: Countersunk Hole

### MOUNTING HARDWARE

- **IMPERIAL**
  - 1/4-20 Thru-Hole: M6 (x 1.25)
  - 5/16-24 (All Others): MB (x 1.25)
- **METRIC**
  - 5/16-24 Thru-Hole: M6 (x 1.25)
  - 9/32 COUNTERSINK: 80º COUNTERSINK

Maximum recommended torque for threaded bar is 115 in.-lbs. (20 Nm)

### Standard Materials & Finishes*

- Cable: Braided 300 Series Stainless Steel Retaining Bars: Aluminum Alloy, treated per MIL-C-5541
- Assembly Hardware (WR12 – WR40): Alloy Steel, Zinc Plated

### Operating Temperature Range

- -150ºF to 500ºF (-100ºC to 260ºC)

* Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.

---

**Note:** Dimensions are in inches (mm).
Load vs. Deflection

Deflection (mm)

Load (N)

Load vs. Natural Frequency

Natural Frequency (Hz)

45° Compression / Roll

Key:

1. WR16-200-08
2. WR16-300-08
3. WR16-400-08
4. WR16-600-08
5. WR16-700-08
6. WR16-800-08
7. WR16-850-08
8. WR16-900-08

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
### WR20 Series

**Imperial**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
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</thead>
<tbody>
<tr>
<td>WR20-200-08-[ ]</td>
<td>C, D</td>
<td>3.50</td>
<td>4.00</td>
</tr>
<tr>
<td>WR20-300-08-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>3.90</td>
<td>4.40</td>
</tr>
<tr>
<td>WR20-400-08-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>4.00</td>
<td>4.75</td>
</tr>
<tr>
<td>WR20-600-08-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>4.30</td>
<td>5.31</td>
</tr>
<tr>
<td>WR20-700-08-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>4.70</td>
<td>6.00</td>
</tr>
<tr>
<td>WR20-800-08-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>5.00</td>
<td>6.50</td>
</tr>
<tr>
<td>WR20-900-08-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>5.30</td>
<td>7.00</td>
</tr>
</tbody>
</table>

**Metric**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR20-200-08-[ ]</td>
<td>C, D</td>
<td>89</td>
<td>102</td>
</tr>
<tr>
<td>WR20-300-08-[ ]</td>
<td>S, A, B, C, D, E, EM</td>
<td>99</td>
<td>112</td>
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<tr>
<td>WR20-400-08-[ ]</td>
<td>S, A, B, C, D, E, EM</td>
<td>102</td>
<td>121</td>
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<tr>
<td>WR20-600-08-[ ]</td>
<td>S, A, B, C, D, E, EM</td>
<td>109</td>
<td>135</td>
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<tr>
<td>WR20-700-08-[ ]</td>
<td>S, A, B, C, D, E, EM</td>
<td>119</td>
<td>152</td>
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<tr>
<td>WR20-800-08-[ ]</td>
<td>S, A, B, C, D, E, EM</td>
<td>127</td>
<td>165</td>
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</tbody>
</table>

### Mounting Options

- **S**: Thru Hole
- **A(M)**: Thru Hole Countersunk
- **B(M)**: Countersunk Hole
- **C(M)**: Thru Hole Threaded
- **D(M)**: Threaded Countersunk
- **E(M)**: Threaded Countersunk

### Operating Temperature Range

- -150°F to 500°F (-100°C to 260°C)

*Note: Dimensions are in inches (mm).*

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*

---

**MOUNTING HARDWARE**

**IMPERIAL**

- 3/8-24 M10 x 1.5

**METRIC**

- 8/32 COUNTERSINK
- 9/32 COUNTERSINK

Maximum recommended torque for threaded bar is 415 in.-lbs. (50 Nm)

**Standard Materials & Finishes**

- Cable: Stranded 300 Series Stainless Steel
- Retaining Bars: Aluminum Alloy, treated per MIL-C-5541
- Assembly Hardware (WR12 – WR40): Alloy Steel, Zinc-Plated

---

**View Rotated 90º CW for clarity**

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**Enidine**

Internet: www.endine.com Phone: 1-800-852-8508 Fax: 1-716-662-1909
Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
# WR28 Series

## Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [   ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR28-200-08-[]</td>
<td>S, C, D</td>
<td>H: 5.25</td>
<td>W: 5.50</td>
</tr>
<tr>
<td>WR28-400-08-[]</td>
<td>S, A, B, C, D, C</td>
<td>H: 6.00</td>
<td>W: 6.50</td>
</tr>
<tr>
<td>WR28-600-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>H: 6.25</td>
<td>W: 7.00</td>
</tr>
<tr>
<td>WR28-800-08-[]</td>
<td>S, A, B, C, D, E</td>
<td>H: 7.50</td>
<td>W: 8.25</td>
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## Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [   ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
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<tbody>
<tr>
<td>WR28-200-08-[]</td>
<td>C, M, DM</td>
<td>H: 133</td>
<td>W: 140</td>
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<tr>
<td>WR28-800-08-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>H: 191</td>
<td>W: 210</td>
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</tbody>
</table>

## MOUNTING OPTIONS

- **S**: Thru Hole
- **A(M)**: Thru Hole Countersunk Hole
- **B(M)**: Countersunk Hole
- **C(M)**: Thru Hole Threaded
- **D(M)**: Threaded Countersunk Hole
- **E(M)**: Threaded Countersunk Hole

## Operating Temperature Range

-150°F to 50°F (-100°C to 260°C)

## Standard Materials & Finishes*

- **Cable**: Stranded 300 Series Stainless Steel
- **Retaining Bars**: Aluminum Alloy, treated per MIL-C-5541
- **Assembly Hardware (WR12 – WR40)**: Alloy Steel, Zinc Plated

* Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.
Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
WR36 Series

Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [   ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR36-200-08- [   ] S, A, B, C, D, E</td>
<td>H (in.)</td>
<td>W (in.)</td>
<td>(lbs.)</td>
</tr>
<tr>
<td>WR36-400-08- [   ] S, A, B, C, D, E</td>
<td>7.00</td>
<td>8.50</td>
<td>46</td>
</tr>
<tr>
<td>WR36-600-08- [   ] S, A, B, C, D, E</td>
<td>8.50</td>
<td>9.50</td>
<td>53</td>
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</table>

Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [   ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR36-200-08- [   ] S, A, B, C, D, E</td>
<td>H (mm)</td>
<td>W (mm)</td>
<td></td>
</tr>
<tr>
<td>WR36-400-08- [   ] S, A, B, C, D, E</td>
<td>216</td>
<td>241</td>
<td>24.0</td>
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<tr>
<td>WR36-600-08- [   ] S, A, B, C, D, E</td>
<td>235</td>
<td>260</td>
<td>25.0</td>
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</tbody>
</table>

MOUNTING OPTIONS

S Thru Hole
A(M) Thru Hole Countersunk Hole
B(M) Countersunk Hole
C(M) Thru Hole Threaded
D(M) Threaded
E(M) Threaded Countersunk Hole

MOUNTING HARDWARE

IMPERIAL METRIC
M18 x 2.0 M18 x 2.0
82° COUNTERSINK 90° COUNTERSINK

Maximum recommended torque for threaded bar is 300 ft.-lbs. (300 Nm)

Standard Materials & Finishes*
Cable: Stranded 300 Series Stainless Steel
Retaining Bars: Aluminum Alloy, treated per MIL-C-5541
Assembly Hardware (WR12 – WR40): Alloy Steel, Zinc Plated

Operating Temperature Range
-150°F to 500°F (-100°C to 260°C)

* Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.
WR36 Series

Load vs. Deflection

Load vs. Natural Frequency

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
### WR40 Series

**Imperial**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR-40-200-08 [ ]</td>
<td>S, A, B, C, D, E</td>
<td>H: 7.00 W: 8.25</td>
<td>53</td>
</tr>
<tr>
<td>WR-40-400-08 [ ]</td>
<td>S, A, B, C, D, E</td>
<td>H: 8.50 W: 9.75</td>
<td>60</td>
</tr>
</tbody>
</table>

**Metric**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (Kg)</th>
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</thead>
<tbody>
<tr>
<td>WR-40-400-08 [ ]</td>
<td>S, A, B, C, D, E</td>
<td>H: 216 W: 248</td>
<td>27.2</td>
</tr>
</tbody>
</table>

**MOUNTING OPTIONS**

- **S**: Thru Hole
- **A (M)**: Thru Hole Countersunk Hole
- **B (M)**: Countersunk Hole
- **C (M)**: Thru Hole Threaded
- **D (M)**: Threaded
- **E (M)**: Threaded

**MOUNTING HARDWARE**

- **IMPERIAL**: 3/8-10 M16 (or 3.0)
- **METRIC**: 90º COUNTERSINK 90º COUNTERSINK

Maximum recommended torque for threaded bar is 300 ft.-lbs. (300 Nm)

**Standard Materials & Finishes**

- Cable: Stranded 300 Series Stainless Steel
- Retaining Bars: Aluminum Alloy, treated per MIL-C-5541
- Assembly Hardware (WR12 – WR40): Alloy Steel, Zinc Plated

**Operating Temperature Range**

-150°F to 500°F (-100°C to 260°C)

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*
Notes:  
A. Natural frequency curves based on 1G input.  
B. Do not extrapolate plotted curves.  
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
Selecting An Enidine Compact Wire Rope Isolator

**SIZING INSTRUCTIONS - VIBRATION ISOLATION**

Selecting appropriate isolators for shock is based on the Compact Wire Rope Isolator’s average stiffness at the required dynamic deflection (\(D_{\text{min}}\)). Follow the steps below to achieve a recommended Compact Wire Rope Isolator selection.

**STEP 1:**
Fill out Part I and Part III of the Application Worksheet.

**STEP 2:**
Refer to the Load vs. Natural Frequency curves for the required loading orientation. Locate curves capable of the Minimum Dynamic Deflection (\(D_{\text{min}}\)) calculated from the worksheet. Find a curve that is on or slightly under the Average Force (\(F_{\text{avg}}\)) at the Average Deflection (\(d_{\text{avg}}\)) calculated from the worksheet.

**STEP 3:**
Specify the required mounting option suffix to complete the part number. (Please refer to available mounting options as indicated on each Compact Wire Rope Isolator series data page.)

**SIZING INSTRUCTIONS - SHOCK ISOLATION**

If the desired system natural frequency is known, refer to the appropriate Load vs. Deflection curves for the desired loading orientation. Locate curves capable of the Minimum Dynamic Deflection (\(D_{\text{min}}\)) calculated from the worksheet. Find a curve that is on or slightly under the Average Force (\(F_{\text{avg}}\)) at the Average Deflection (\(d_{\text{avg}}\)) calculated from the worksheet.

**STEP 1:**
Fill out Part I and Part III of the Application Worksheet.

**STEP 2:**
Refer to the Load vs. Deflection curves for the desired loading orientation. Locate curves capable of the Minimum Dynamic Deflection (\(D_{\text{min}}\)) calculated from the worksheet. Find a curve that is on or slightly under the Average Force (\(F_{\text{avg}}\)) at the Average Deflection (\(d_{\text{avg}}\)) calculated from the worksheet.

**STEP 3:**
Specify the required mounting option suffix to complete the part number. (Please refer to available mounting options as indicated on each Compact Wire Rope Isolator series data page.)

**APPLICATION WORKSHEET - INPUTS IMPERIAL/METRIC**

**PART I: SYSTEM DATA**
1. Total Load (\(W\)): \(W = \) ______ lbs.
   \(W = \) ______ Kg x 9.81 = ______ N
2. Number of Isolators (\(n\)): \(n = \) ______
3. Static Load per Isolator (\(W\)): \(W = \) ______ lbs.
   * Assumes a central CG
4. Load Axis: Compression, Shear or Roll
   ** 45º Compression/Roll ___________________

**PART II: VIBRATION SIZING**
1. Input Excitation Frequency (\(f_i\)) = ______ Hz (= rpm)
2. System Natural Frequency for 80% isolation: \(f_n = \frac{f_i}{3.0}\) Hz

* The System Natural Frequency \(f_n\) must be on a published curve. The published natural frequencies are based on a 1G input condition. Random Vibration inputs: Consult Enidine for recommendations.

**PART III: SHOCK SIZING**
1. Maximum Allowable Transmitted G Load: \(G_T\) = ______ G's
2. Shock Input Velocity: \(V = \frac{2gh}{g}\) in./sec. or \(V = \frac{2gh}{9.81}\) m/sec.2
   a) Free Fall Impact: \(g = 386\) in./sec.2 or \(g = 9.81\) m/sec.2
   \(h = \) Drop Height (in. or m)
   \(V = \frac{2gh}{g}\) in./sec.
   \(V = \frac{2gh}{9.81}\) m/sec.2
   b) Half-Sine Acceleration Input: \(A_0 = \) Peak Acceleration (G's)
   \(t_0 = \) Duration (seconds)
   \(V = \frac{2gA_0}{\pi t_0}\)

3. Min. Response Deflection: \(D_{\text{min}} = \frac{V^2}{g (G_T - 1)}\) in.
   \(D_{\text{min}} = \frac{V^2}{9.81 (G_T - 1)}\) mm
4. Average Force: \(F_{\text{avg}} = \frac{W V^2}{2g D_{\text{min}}}\) lbs.
   \(F_{\text{avg}} = \frac{W V^2}{2g D_{\text{min}}}\) N
   \(F_{\text{avg}} = \) ______ lbs.
   \(F_{\text{avg}} = \) ______ N
5. Average Deflection: \(d_{\text{avg}} = \frac{D_{\text{min}}}{2}\) in.
   \(d_{\text{avg}} = \) ______ in.
   \(d_{\text{avg}} = \) ______ mm

60 \(D_{\text{min}} = \frac{V^2}{g (G_T - 1)}\) • 1000

<table>
<thead>
<tr>
<th>IMPERIAL</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>(D_{\text{min}} = \frac{V^2}{g (G_T - 1)}) • 1000</td>
<td>(D_{\text{min}} = \frac{V^2}{9.81 (G_T - 1)}) • 1000</td>
</tr>
<tr>
<td>(F_{\text{avg}} = \frac{W V^2}{2g D_{\text{min}}}) lbs.</td>
<td>(F_{\text{avg}} = \frac{W V^2}{2g D_{\text{min}}}) N</td>
</tr>
<tr>
<td>(d_{\text{avg}} = \frac{D_{\text{min}}}{2}) in.</td>
<td>(d_{\text{avg}} = ) ______ in.</td>
</tr>
</tbody>
</table>

**Ordering Information**
Fax, phone, or mail your order to the nearest Enidine/distributor location, Attention: Sales Department (see back cover for listing of Enidine locations).

**EXAMPLE:**
20 CR6 — 100 — * — * — *
1. Select Quantity
2. CR Series
3. Select Dash Number
4. Specify Mounting Option
5. Select “M” For Metric Model

* * Please refer to available mounting options as indicated on each CR series data page.

If you have special requirements, send us your application and Enidine will contact you with recommendations for a solution.
VIBRATION ISOLATION:

A 6-lb. electronics box is failing due to a 40 Hz vibration input. Only .75 inches of space exists around the unit for an isolator. To control the damaging effects of vibration, the box shall be isolated using four (4) isolators mounted in the compression load axis with imperial, socket head cap screws. The isolators shall be located symmetrically about the pump’s center of gravity.

Step 1: From Part I and Part II of the Application Worksheet.

\[ W_f = 6 \text{ lbs.} \quad F_i = 40 \text{ Hz} \]

\[ W = \frac{6}{4} = 1.50 \text{ lbs.} \quad F_n = \frac{40}{3} = 13.3 \text{ Hz} \]

Step 2: Determine which isolators match the desired height requirement. The CR1-100, CR2-200, and the CR3-100 each have a height of .75 inches.

Step 3: Referring to the Compression Load vs. Natural Frequency curves for an isolator capable of a maximum static load of 1.5 lbs., and a System Natural Frequency of approximately 13.3 Hz, yields a recommended isolator of CR2-200.

Step 4: From the Available Mounting Options column, verify that a “D” mounting style is available (for threaded holes in both mount bars). Adding the mounting option suffix to the model number gives the complete part number of CR2-200-D.

SHOCK ISOLATION:

A 1.31-lb. computer hard drive is mounted inside a vehicle and must withstand a half-sine shock input of 30G’s, 5 ms. The hard drive shall be suspended inside of the vehicle using four (4) isolators (2 per side) in a roll loading axis with imperial, socket head cap screws. The hard drive can withstand a maximum shock response of 10G’s. The isolators shall be installed symmetrically about the equipment’s center of gravity.

Step 1: From Part I and Part III of the Application Worksheet.

\[ V = \frac{2(386)}{\pi(30)(.005)} = 36.86 \text{ in./sec.} \quad F_{avg} = \frac{(33)(36.86)^2}{2(386)(38)} = 1.49 \text{ lbs.} \]

\[ D_{min} = \frac{36.86}{.39} = .39 \text{ inches} \quad d_{avg} = \frac{.39}{.195} = .195 \text{ inches} \]

Step 2: Referring to the Shear/Roll Load vs. Deflection curves for an isolator capable of a maximum deflection of .39 inches or greater, and a curve point that is at or slightly below a force of 1.49 lbs., at .195 inches of deflection, yields a recommended isolator selection of CR3-300.

Step 3: From the Available Mounting Options column, verify that a “D” mounting style is available (for threaded holes in both mount bars). Adding the mounting option suffix to the model number gives the complete part number of CR3-300-D.

Performance Considerations

The following should be considered when selecting Enidine Wire Rope Isolator products:

Damping:
• Typically 5-15%, depending on size and input level. For specific damping considerations, please consult Enidine.

Stabilizers:
• Consider use of stabilizers when Height vs. Width ratio is greater than 2.

Natural Frequency Curve Basis:
• Published natural frequency curves are based on a 1G input condition. Natural frequency shifts may result from various input levels.

Severe Input Considerations:
• Increase diameter of the wire rope cable.
• Increase height of the Compact Wire Rope Isolators.
• Consult Enidine.
### CR1 Series

Note: Dimensions are in inches (mm).

#### Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (oz.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR1-100-[]</td>
<td>S, A, B, C, D, E</td>
<td>0.66</td>
<td>0.11</td>
</tr>
<tr>
<td>CR1-200-[]</td>
<td>S, A, B, C, D, E</td>
<td>0.75</td>
<td>0.11</td>
</tr>
<tr>
<td>CR1-300-[]</td>
<td>S, A, B, C, D, E</td>
<td>0.90</td>
<td>0.12</td>
</tr>
<tr>
<td>CR1-400-[]</td>
<td>S, A, B, C, D, E</td>
<td>1.04</td>
<td>0.12</td>
</tr>
</tbody>
</table>

#### Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR1-100-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>3.7</td>
<td>3.1</td>
</tr>
<tr>
<td>CR1-200-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>CR1-300-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>CR1-400-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>26</td>
<td>26</td>
</tr>
</tbody>
</table>

#### Mounting Options

- **S**: Thru Hole
- **A(M)**: Countersunk Hole
- **B(M)**: Countersunk Hole
- **C(M)**: Threaded
- **D(M)**: Threaded
- **E(M)**: Countersunk Hole

#### Mounting Hardware

- **IMPERIAL**: #4-40
- **METRIC**: M3 (x 0.5)

- **82° COUNTERSINK**: 90° COUNTERSINK

Maximum recommended torque for threaded bar is 10 in.-lbs. (1.2 Nm)

- **Cable**: Stranded 300 Series Stainless Steel
- **Retaining Bar**: Aluminum Alloy, treated per MIL-C-5541

#### Operating Temperature Range

- -150°F to 500°F (-100°C to 260°C)

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*
CR1 Series

Load vs. Deflection

Load vs. Natural Frequency

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
### CR2 Series

**Imperial**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>MOUNTING OPTION [ S, A, B, C, D, E ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR2-100-[,]</td>
<td>S, A, B, C, D, E</td>
<td>0.64 in.</td>
<td>0.13 lb</td>
</tr>
<tr>
<td>CR2-200-[,]</td>
<td>S, A, B, C, D, E</td>
<td>0.78 in.</td>
<td>0.14 lb</td>
</tr>
<tr>
<td>CR2-300-[,]</td>
<td>S, A, B, C, D, E</td>
<td>0.83 in.</td>
<td>0.15 lb</td>
</tr>
<tr>
<td>CR2-400-[,]</td>
<td>S, A, B, C, D, E</td>
<td>0.94 in.</td>
<td>0.16 lb</td>
</tr>
</tbody>
</table>

**Metric**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>MOUNTING OPTION [ S, AM, BM, CM, DM, EM ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR2-100-[,]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>16 mm</td>
<td>3.7 g</td>
</tr>
<tr>
<td>CR2-200-[,]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>20 mm</td>
<td>4.0 g</td>
</tr>
<tr>
<td>CR2-300-[,]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>24 mm</td>
<td>4.3 g</td>
</tr>
<tr>
<td>CR2-400-[,]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>27 mm</td>
<td>4.5 g</td>
</tr>
</tbody>
</table>

**MOUNTING OPTIONS**

- **S**: Thru Hole
- **A(M)**: Countersunk Hole
- **B(M)**: Countersunk Hole
- **C(M)**: Threaded
- **D(M)**: Threaded
- **E(M)**: Threaded

**MOUNTING HARDWARE**

- **IMPERIAL**
  - #4-40
  - M3 (x 0.5)
- **METRIC**
  - 60º COUNTERSINK
  - 90º COUNTERSINK

Maximum recommended torque for threaded bar is 10 in-lbs. (1.2 Nm)

**Standard Materials & Finishes**

- Cable: Stranded 300 Series Stainless Steel
- Retaining Bars: Aluminum Alloy, treated per MIL-C-5541

* Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.

**Operating Temperature Range**

- -150°F to 500°F (-100°C to 260°C)

---

CR2 Series

Note: Dimensions are in inches (mm).

U.S. Patent 6,290,217

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View Rotated 90º CW for clarity
CR2 Series

Load vs. Deflection

Natural Frequency

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
# CR3 Series

**Imperial**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR3-100-[]</td>
<td>S, A, B, C, D, E</td>
<td>H (in)</td>
<td>W (in)</td>
</tr>
<tr>
<td>CR3-200-[]</td>
<td>S, A, B, C, D, E</td>
<td>0.75</td>
<td>0.88</td>
</tr>
<tr>
<td>CR3-300-[]</td>
<td>S, A, B, C, D, E</td>
<td>0.90</td>
<td>0.95</td>
</tr>
<tr>
<td>CR3-400-[]</td>
<td>S, A, B, C, D, E</td>
<td>1.06</td>
<td>1.06</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR3-100-[]</td>
<td>S, A, B, C, D, E</td>
<td>H (in)</td>
<td>W (in)</td>
</tr>
<tr>
<td>CR3-200-[]</td>
<td>S, A, B, C, D, E</td>
<td>0.90</td>
<td>0.95</td>
</tr>
<tr>
<td>CR3-300-[]</td>
<td>S, A, B, C, D, E</td>
<td>1.06</td>
<td>1.06</td>
</tr>
<tr>
<td>CR3-400-[]</td>
<td>S, A, B, C, D, E</td>
<td>1.28</td>
<td>1.20</td>
</tr>
</tbody>
</table>

**Metric**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [ ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR3-100-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>H (mm)</td>
<td>W (mm)</td>
</tr>
<tr>
<td>CR3-200-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>CR3-300-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>CR3-400-[]</td>
<td>S, AM, BM, CM, DM, EM</td>
<td>33</td>
<td>30</td>
</tr>
</tbody>
</table>

**MOUNTING HARDWARE**

**IMPERIAL**

<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>#4-40</td>
<td>M3 (x 0,5)</td>
</tr>
</tbody>
</table>

**Operating Temperature Range**

-150°F to 500°F (-100°C to 260°C)

*Note: Dimensions are in inches (mm).*

U.S. Patent 6,290,217

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**MOUNTING OPTIONS**

- **S** Thru Hole
- **A(M)** Countersunk Hole
- **B(M)** Thru Hole
- **C(M)** Threaded
- **D(M)** Thru Hole
- **E(M)** Countersunk Hole

**Standard Materials & Finishes**

- Cable: Stranded 300 Series Stainless Steel
- Retaining Bars: Aluminum Alloy, treated per MIL-C-5541

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*

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[View Rotated 90º CW for clarity]

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* View Rotated 90º CW for clarity

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[Image 154x807 to 316x924]
[Image 334x797 to 334x884]
[Image 351x834 to 385x924]
[Image 334x894 to 334x945]
[Image 537x830 to 537x933]
[Image 570x886 to 570x950]
[Image 570x814 to 570x877]
[Image 505x886 to 505x950]
[Image 563x856 to 563x883]
[Image 558x871 to 558x902]
[Image 517x871 to 517x902]
[Image 506x816 to 506x891]
[Image 249x875 to 249x945]
[Image 581x978 to 653x1029]
Notes: A. Natural frequency curves based on 1G input.
   B. Do not extrapolate plotted curves.
   C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
**CR4 Series**

**Imperial**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION (L)</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR4-100</td>
<td>S, A, B, C, D, E</td>
<td>H: 1.66</td>
<td>W: 1.87</td>
</tr>
<tr>
<td>CR4-200</td>
<td>S, A, B, C, D, E</td>
<td>H: 2.10</td>
<td>W: 2.12</td>
</tr>
<tr>
<td>CR4-300</td>
<td>S, A, B, C, D, E</td>
<td>H: 2.37</td>
<td>W: 2.34</td>
</tr>
<tr>
<td>CR4-400</td>
<td>S, A, B, C, D, E</td>
<td>H: 2.96</td>
<td>W: 2.67</td>
</tr>
</tbody>
</table>

**Metric**

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION (L)</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR4-100</td>
<td>SM, AM, BM, CR, DM, EM</td>
<td>H: 42</td>
<td>W: 48</td>
</tr>
<tr>
<td>CR4-200</td>
<td>SM, AM, BM, CR, DM, EM</td>
<td>H: 53</td>
<td>W: 54</td>
</tr>
<tr>
<td>CR4-300</td>
<td>SM, AM, BM, CR, DM, EM</td>
<td>H: 60</td>
<td>W: 59</td>
</tr>
<tr>
<td>CR4-400</td>
<td>SM, AM, BM, CR, DM, EM</td>
<td>H: 75</td>
<td>W: 68</td>
</tr>
</tbody>
</table>

**Mounting Options**

- **S:** Thru Hole
- **A:** Thru Hole
- **C:** Thru Hole
- **B:** Countersunk Hole
- **D:** Threaded
- **E:** Threaded

**Operating Temperature Range**

-50°F to 500°F (-15°C to 260°C)

Notes:
1. Dimensions are in inches (mm).
2. Top and Bottom Mount Bars are identical.

U.S. Patent 6,244,579

**MOUNTING HARDWARE**

- **Imperial:** #10-32
- **Metric:** M6 (x 1.0)

B2° COUNTERSINK, 90° COUNTERSINK

Maximum recommended torque for threaded bar is 40 in.-lbs. (7.5 Nm)

**Standard Materials & Finishes**

- Cable: Stranded 300 Series Stainless Steel
- Retaining Bars: Aluminum Alloy, treated per MIL-C-5541

*Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.*
CR4 Series

Load vs. Deflection

Load (lbs.) vs. Deflection (in.)

Load vs. Natural Frequency

Load (lbs.) vs. Natural Frequency (Hz)

Notes:
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.

Internet: www.enidine.com  Phone: 1-800-852-8508  Fax: 1-716-662-1909
CR5 Series

Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION (e)</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (oz.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR5-100-</td>
<td>S, A, B, C, D, E</td>
<td>1.60</td>
<td>1.6</td>
</tr>
<tr>
<td>CR5-200-</td>
<td>S, A, B, C, D, E</td>
<td>2.09</td>
<td>1.7</td>
</tr>
<tr>
<td>CR5-300-</td>
<td>S, A, B, C, D, E</td>
<td>2.36</td>
<td>1.8</td>
</tr>
<tr>
<td>CR5-400-</td>
<td>S, A, B, C, D, E</td>
<td>2.99</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION (e)</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR5-100-</td>
<td>S, A, B, C, D, E</td>
<td>41</td>
<td>45</td>
</tr>
<tr>
<td>CR5-200-</td>
<td>S, A, B, C, D, E</td>
<td>53</td>
<td>48</td>
</tr>
<tr>
<td>CR5-300-</td>
<td>S, A, B, C, D, E</td>
<td>60</td>
<td>51</td>
</tr>
<tr>
<td>CR5-400-</td>
<td>S, A, B, C, D, E</td>
<td>76</td>
<td>57</td>
</tr>
</tbody>
</table>

Notes:
1. Dimensions are in inches (mm).
2. Top and Bottom Mount Bars are identical.

Operating Temperature Range
-150°F to 500°F (-100°C to 260°C)

Maximum recommended torque for threaded bar is 40 in.-lbs. (7.5 Nm)

U.S. Patent 6,244,579
**Notes:**
A. Natural frequency curves based on 1G input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.
## CR6 Series

### MOUNTING OPTIONS

Beachten Sie die Befestigungsoptionen

![View Rotated 90º CW for clarity](image)

Notes: 1. Dimensions are in inches (mm).
2. Top and Bottom Mount Bars are identical.

### Imperial

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [   ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (oz.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR6-100-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>1.83</td>
<td>1.11</td>
</tr>
<tr>
<td>CR6-200-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>2.15</td>
<td>1.31</td>
</tr>
<tr>
<td>CR6-300-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>2.51</td>
<td>1.50</td>
</tr>
<tr>
<td>CR6-400-[ ]</td>
<td>S, A, B, C, D, E</td>
<td>3.09</td>
<td>2.86</td>
</tr>
</tbody>
</table>

### Metric

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SPECIFY MOUNTING OPTION [   ]</th>
<th>DIMENSIONS</th>
<th>UNIT WEIGHT (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR6-100-[ ]</td>
<td>SM, AM, BM, CM, DN, EM</td>
<td>47</td>
<td>54</td>
</tr>
<tr>
<td>CR6-200-[ ]</td>
<td>SM, AM, BM, CM, DN, EM</td>
<td>55</td>
<td>59</td>
</tr>
<tr>
<td>CR6-300-[ ]</td>
<td>SM, AM, BM, CM, DN, EM</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>CR6-400-[ ]</td>
<td>SM, AM, BM, CM, DN, EM</td>
<td>79</td>
<td>73</td>
</tr>
</tbody>
</table>

### MOUNTING HARDWARE

<table>
<thead>
<tr>
<th>MODEL</th>
<th>IMPERIAL</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>#10-32</td>
<td>M6 x 1.00</td>
<td>82º COUNTERSINK 90º COUNTERSINK</td>
</tr>
</tbody>
</table>

Maximum recommended torque for threaded bar is 40 in.-lbs. (7.5 Nm)

### Standard Materials & Finishes*

- **Cable:** Stranded 300 Series Stainless Steel
- **Retaining Bars:** Aluminum Alloy, treated per MIL-C-5541

* Non-standard materials and finishes are available. Contact Enidine to meet your specific requirements.

### Operating Temperature Range

-150ºF to 500ºF (-100ºC to 260ºC)

---

U.S. Patent 6,244,579
Load vs. Deflection

Natural Frequency

Notes:
A. Natural frequency curves based on 1g input.
B. Do not extrapolate plotted curves.
C. Keys apply to both Load vs. Deflection and Load vs. Natural Frequency curves.

KEY
1 CR6-100
2 CR6-200
3 CR6-300
4 CR6-400
Selecting appropriate isolators for shock is based on the Wire Rope Isolator’s average stiffness at the required dynamic deflection ($D_{\text{min}}$). Follow the steps below to achieve a recommended Wire Rope Isolator product selection.

**SIZING INSTRUCTIONS - SHOCK ISOLATION**

**STEP 1:** Fill out Part I and Part III of the Application Worksheet.

**STEP 2:** Refer to the Load vs. Deflection curves for the desired loading orientation. Locate curves capable of the Minimum Dynamic Deflection ($D_{\text{min}}$) calculated from the worksheet. Find a curve that is on or slightly under the Average Force ($F_{\text{avg}}$) at the Average Deflection ($d_{\text{avg}}$) calculated from the worksheet.

**STEP 3:** Specify the required mounting option suffix to complete the part number. (Please refer to available mounting options as indicated on each Wire Rope and Compact Wire Rope Isolator series data page.)

If the desired system natural frequency is known, refer to the appropriate Load vs. Natural Frequency curves to determine the recommended Wire Rope or Compact Wire Rope Isolator model. If the preferred system natural frequency is unknown, follow the steps below to achieve a recommended Wire Rope Isolator product selection.

**STEP 1:** Fill out Part I and Part II of the Application Worksheet.

**STEP 2:** Refer to the Load vs. Natural Frequency curves for the required loading orientation. Use the System Natural Frequency ($f_n$) calculated from the worksheet to select the smallest Wire Rope Isolator model capable of the static load ($W$).

**STEP 3:** Specify the required mounting option suffix to complete the part number. (Please refer to available mounting options as indicated on each Wire Rope and Compact Wire Rope Isolator series data page.)

-----

**Application Worksheet**

**PART I: SYSTEM DATA**

1. Total Load ($W_T$): $W_T = ________$ lbs.
2. Number of Isolators ($n$): $n = ________$
3. Static Load per Isolator ($W$): $W = ________$ lbs.
4. Load Axis: Compression
5. Shear or Roll

**PART II: VIBRATION SIZING**

1. Input Excitation Frequency ($f_i$): $f_i = ________$ Hz
2. System Natural Frequency for 80% isolation: $f_n = ________$ Hz
3. Minimum Response Deflection ($D_{\text{min}}$): $D_{\text{min}} = ________$ in. $D_{\text{min}} = ________$ mm
4. Average Force: $F_{\text{avg}} = ________$ lbs. $F_{\text{avg}} = ________$ N
5. Average Deflection: $d_{\text{avg}} = ________$ in. $d_{\text{avg}} = ________$ mm

**PART III: SHOCK SIZING**

1. Maximum Allowable Transmitted G Load: $G_T = ________$ G's
2. Shock Input Velocity:
   - Free Fall Impact: $V = ________$ m/sec.
   - Half-Sine Acceleration Input: $V = 2gA_0t_0$
3. Min. Response Deflection: $D_{\text{min}} = ________$ in. $D_{\text{min}} = ________$ mm
4. Average Force: $F_{\text{avg}} = ________$ lbs. $F_{\text{avg}} = ________$ N
5. Average Deflection: $d_{\text{avg}} = ________$ in. $d_{\text{avg}} = ________$ mm

**Ordering Information**

Fax, phone, or mail your order to the nearest Enidine/distributor location, Attention: Sales Department (see back cover for listing of Enidine locations).

**EXAMPLE:**

20 WR8 or CR6 - 600-08 - 
1. Select Quantity
2. WR or CR Series
3. Select Dash Number
4. Specify Mounting Option
5. Select “M” for Metric Model

**Ordering Information**

If you have special requirements, send us your application and Enidine will contact you with recommendations for a solution.
Typical Compact Wire Rope Isolator Applications

CD-ROM Drives

Laboratory Centrifuges

Medical Ventilators

Computer Hardware

Other Compact Wire Rope Isolator Applications
- Audio/Visual Equipment
- Avionics
- Catering Carts
- Communications Packages
- Medical Devices
- Sensitive Electronic Equipment

U.S. Patents 6,290,217 6,244,579