Self-Lubricating Linear Plane Bearing and Shafting
- Oil-free - maintenance free
- Dampens vibration & shock loads
- Engineered-to-match shafting, pillow blocks and support rails

Self-Lubricating Miniature Linear Guides
- No rolling elements
- Lengths up to 3600 mm (12 ft.)
- No lubrication required
- Tolerates extreme temperatures

Redi-Rail Linear Guides, Drawer Slides and V-Guide Systems
- Ideal for long travel and harsh environment applications
- Precision tolerances +/- .025 mm over entire rail length
- Simple design for fast, easy installation
- Lightweight, durable construction

Modular Guides, Slides, Tables and Stage Assemblies
- Dampens vibration & shock loads
- Customize with ball or lead screws, belt drives & more
- No lubrication required
- Tolerates temperature extremes

Heavy-Duty Rolling Element Bearings and Rails
- Extremely high load capacity up to 4.6 US Ton-force
- Longer service life for bearings and profiles
- Unlimited rail lengths available

6402 E. Rockton Road
Roscoe, Illinois 61073 USA
Phone: 815.389.5600
800.962.8979
Fax: 815.389.5790
www.pbclinear.com
Linear Shafting
Engineered for Maximum Linear Bearing Performance

Introducing Simplicity® 60 Plus Shafting

Only certified Simplicity 60 Plus Shafting provides maximum bearing performance.

Linear Ball Bearings
The right amount of microscopic surface texture holds lubrication for consistent smooth ball rotation minimizing the effects of metal-to-metal contact.

- Excellent rigidity while providing smooth, quiet operation
- Extremely low friction, rolling elements provide consistent ant-friction movement
- Outer shell - Available with steel jacket or self-aligning super bearing shell.

Simplicity® Plain Bearings
The Frelon® break-in and transfer process operates at maximum efficiency with Simplicity 60 Plus Shafting resulting in true self-lubrication and the longest life possible.

- Self-lubricating - maintenance-free, additional lubrication optional
- Wide temperatures range (-400°F/+400°F), (-240°C/+204°C)
- Vibration damping – eliminates fretting corrosion
PBC Linear's bearings and shafting product information has been updated! Compiled into a new catalog, you will find technical specifications, application examples, and ordering details for this product family.
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<td>D125 (Large)</td>
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## Uni-Guide - Slides, Tables & Stages

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<tr>
<td>D075 (Small)</td>
<td>196</td>
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<tr>
<td>D100 (Medium)</td>
<td>197</td>
</tr>
<tr>
<td>D125 (Large)</td>
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<td>208</td>
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<td>RR45 Rail</td>
<td>209</td>
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<td>RRS65 Slide</td>
<td>210</td>
</tr>
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<td>RR65 Slide</td>
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</table>

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<th>Section</th>
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</tr>
<tr>
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<td>202</td>
</tr>
<tr>
<td>RR14 Rail</td>
<td>203</td>
</tr>
<tr>
<td>RRS18 Slide</td>
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<td>RR18 Rail</td>
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</tbody>
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Click here to open the new Round Shaft Technology catalog. Get product details on Simplicity® self-lubricating plain bearings, linear ball bearings, Simplicity® 60 Plus™ Shafting, square bearings, and linear slides.
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Click here to open the new Round Shaft Technology catalog. Get product details on Simplicity® self-lubricating plain bearings, linear ball bearings, Simplicity® 60 Plus™ Shafting, square bearings, and linear slides.
PRODUCT OVERVIEW

An economical alternative to conventional miniature linear guides, Mini-Rail requires no maintenance, is fully interchangeable with industry standard sizes and is maintained in stock for quick delivery.

Mini-Rail miniature linear guides are available in five sizes: 7, 9, 12, 15 and 20mm - in lengths up to 3600mm, meaning no cumbersome butt joints. These guides are precision manufactured out of lightweight aluminum alloys to ensure long life and corrosion resistance.

- No rolling elements
- Self-lubricating Frelon GOLD® Liner
- Withstands vibration and shock
- Corrosion-resistant - ideal in harsh environments
- Ceramic coated, aluminum rail
- Compact design - small footprint

CARRIAGE CONFIGURATIONS

Precision Series: Ceramic coated rails and carriages are corrosion resistant. Frelon GOLD® self-lubricating liner delivers the best overall performance, the highest loads, the best wear life, and speeds. Most precise running clearance for high precision applications.

Compensated Precision Series: Same as Precision Series except with additional clearance provided to tolerate misalignment.

APPLICATIONS

- Medical Precision
- Food Processing
- Automation
- Electronics
- Mobile Home Components
- Packaging
- Product Movement
- Printing
- Semi-conductor

ORDERING INFORMATION

EXAMPLE: MRC20C
MR20R

See following page for Mini-Rail full assembly ordering.
**MINI-RAIL - MR**

**NOTES:**

- Cut-to-length rails are available up to 3600mm.
- Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.
- All carriage mounting holes are through tapped except MR20 12.5mm of thread.
- The "Y" dimension will remain constant at one end unless requested otherwise.
- Add the overall length of the rail to the part number (EX: "MR12-0220" for a Precision Series assembly with a 220mm rail)

### ORDERING INFORMATION

**EXAMPLE:** MR12-0220-2

---

**Materials:** 6061-T6 aluminum rail and carriage, Frelon GOLD® or Frelon® J liner

**Max V:** 300 sfm for Frelon GOLD, 140 sfm for Felon J

**Max P:** 3000 psi for Frelon GOLD, 1500 psi for Frelon J

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>RUNNING CLEARANCE</th>
<th>BASE WIDTH (mm)</th>
<th>OVERALL HEIGHT</th>
<th>RAIL HEIGHT</th>
<th>CARRIAGE WIDTH</th>
<th>CARRIAGE LENGTH</th>
<th>CARRIAGE MGT. HOLE SIZE</th>
<th>CARRIAGE MGT. HOLE DEPTH</th>
<th>RAIL MGT. HOLE SIZE</th>
<th>RAIL MGT. HOLE TO QUALIFIED EDGE</th>
<th>RAIL MGT. HOLE TO END</th>
<th>RAIL HOLE CTR. TO CTR.</th>
<th>CARRIAGE HEIGHT</th>
<th>RAIL WT. (gram/mm)</th>
<th>CARRIAGE WT. (gram)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR7-XXX</td>
<td>.025 - .051</td>
<td>7</td>
<td>8</td>
<td>6.1</td>
<td>17</td>
<td>24</td>
<td>M2 x 0.4</td>
<td>8</td>
<td>12</td>
<td>4.2</td>
<td>2.4</td>
<td>2.3</td>
<td>6.2</td>
<td>3.5</td>
<td>5</td>
</tr>
<tr>
<td>MRC7-XXX</td>
<td>.064 - .089</td>
<td>12</td>
<td>13</td>
<td>8.0</td>
<td>27</td>
<td>34</td>
<td>M3 x 0.5</td>
<td>THRU</td>
<td>13</td>
<td>15</td>
<td>4.5</td>
<td>2.6</td>
<td>3</td>
<td>8.0</td>
<td>4.5</td>
</tr>
<tr>
<td>MR9-XXX</td>
<td>.025 - .051</td>
<td>9</td>
<td>10</td>
<td>7.1</td>
<td>20</td>
<td>30</td>
<td></td>
<td>15</td>
<td>20</td>
<td>6</td>
<td>3.5</td>
<td>10.7</td>
<td>6</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>MRC9-XXX</td>
<td>.064 - .089</td>
<td>15</td>
<td>16</td>
<td>9.2</td>
<td>32</td>
<td>42</td>
<td></td>
<td></td>
<td>20</td>
<td>25</td>
<td>4.5</td>
<td>14.1</td>
<td>7.5</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>MR12-XXX</td>
<td>.025 - .051</td>
<td>20</td>
<td>25</td>
<td>13.4</td>
<td>46</td>
<td>62</td>
<td>M4 x 0.7</td>
<td>12.5</td>
<td>38</td>
<td>38</td>
<td>9.5</td>
<td>6</td>
<td>8.5</td>
<td>21.2</td>
<td>10</td>
</tr>
</tbody>
</table>

**NOTES:**

- Cut-to-length rails are available up to 3600mm.
- Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.
- All carriage mounting holes are through tapped except MR20 12.5mm of thread.
- The "Y" dimension will remain constant at one end unless requested otherwise.
- Add the overall length of the rail to the part number (EX: "MR12-0220" for a Precision Series assembly with a 220mm rail)

---

**EXAMPLE: MR12-0220-2**

**ASSEMBLY**

- **Mini-Rail**
  - Miniature Linear Guide

**Series**

- Blank = Precision Series
- C = Compensated Precision Series
- FrelonGOLD® bearing material on RC70 ceramic-coated rail

**Length of Rail in mm**

- EX: 50mm = 0050

**Nominal Sizes**

- (7, 9, 12, 15, 20mm)
**CANTILEVERED LOADS**

Binding of the carriage will occur if the 2:1 ratio for cantilevered loads and drive forces is exceeded. This principle is not load or force dependent. It is a product of the coefficient of frictions associated with plane bearings. Contact factory or website for additional information.

**LOAD/MOMENT CONVERSION**

- \( N = 4.45 \times (\text{lfs.}) \)
- \( N\text{-m} = 0.113 \times (\text{in.-lbs.}) \)
**Low Profile Mini-Rail® - LPM**

- Low profile for small spaces
- Low cost polymer slider
- Molded SS threaded Inserts
- Double rail track
- Ideal in harsh environments
- Available in four sizes

**Materials:** SimGlide™-J Polymer slider (UL 94 HB flammability rating)
Molded-in stainless steel thread inserts
Anodized aluminum rails

**Operating Temperatures:** -35°C to 65°C (-30°F to 150°F)
**Chemical Resistance:** Resistant to lubricants, fuels, dyes, weak acids
**Maximum Velocity:** 10 m/s
**Load Reduction Factor:** 0.7-1.0 for low speed application; 0.4-0.7 for medium speed application; 0.1-0.4 for high speed application

---

**ORDERING INFORMATION**

**EXAMPLE:** LPMXX-XXXX-X

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>A1 (mm)</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>H (C'BORE)</th>
<th>L1 (mm)</th>
<th>L2 (mm)</th>
<th>L3 (mm)</th>
<th>Y (mm)</th>
<th>X (mm)</th>
<th>CAR-RIAGE WT. (g)</th>
<th>RAIL UNIT WT. (g/mm)</th>
<th>LOAD CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(N)</td>
<td>(lbs.)</td>
<td>(N-m) (lbs.-in.)</td>
</tr>
<tr>
<td>LPM17</td>
<td>14.6</td>
<td>17</td>
<td>6</td>
<td>9.6</td>
<td>25</td>
<td>M3 x 0.5</td>
<td>14</td>
<td>M3 SHCS</td>
<td>8.5</td>
<td>N/A</td>
<td>N/A</td>
<td>20</td>
<td>60</td>
<td>1.1</td>
<td>0.15</td>
<td>35</td>
</tr>
<tr>
<td>LPM27</td>
<td>24</td>
<td>27</td>
<td>9.5</td>
<td>14</td>
<td>40</td>
<td>M4 x 0.7</td>
<td>20</td>
<td>M4 SHCS</td>
<td>13.5</td>
<td>N/A</td>
<td>N/A</td>
<td>20</td>
<td>60</td>
<td>4.8</td>
<td>0.33</td>
<td>130</td>
</tr>
<tr>
<td>LPM40</td>
<td>36</td>
<td>40</td>
<td>9.5</td>
<td>23</td>
<td>50</td>
<td>M4 x 0.7</td>
<td>20</td>
<td>M4 SHCS</td>
<td>20</td>
<td>N/A</td>
<td>N/A</td>
<td>20</td>
<td>60</td>
<td>9.8</td>
<td>0.38</td>
<td>270</td>
</tr>
<tr>
<td>LPM80</td>
<td>75.2</td>
<td>80</td>
<td>12.0</td>
<td>57</td>
<td>80</td>
<td>M4 x 0.7</td>
<td>56</td>
<td>M4 SHCS</td>
<td>20</td>
<td>40</td>
<td>45</td>
<td>25</td>
<td>150</td>
<td>32.3</td>
<td>1.07</td>
<td>515</td>
</tr>
</tbody>
</table>

**NOTE:** Apply a load reduction factor 0.25 on Fy rating if the system is used inverted.
MINI-RAIL® LS - LEAD SCREW DRIVEN

- Right hand rolled thread
- 304 stainless steel screw with PTFE coating
- Self-lubricating Polyacetal, anti-backlash nut
- Lengths up to 640 mm
- Eight (8) leads available
- Optional hand brake

**NOTES:** Maximum length for lead screw driven MR is 640 mm. Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Mini-Rail</th>
<th>XX</th>
<th>LS</th>
<th>XXX</th>
<th>XX</th>
<th>XX</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Size of Base in mm</td>
<td>15 mm</td>
<td>20 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead Screw</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of Rail in mm</td>
<td>Cut to length (Max. of 640 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Carriages</td>
<td>1 = One carriage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical Brake</td>
<td>ØØ = No brake</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BL = With brake lever mounted on carriage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving Mechanism</td>
<td>ØØ = No knob</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SK = With screw knob</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 = NEMA 17 motor mount</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screw Lead Option</td>
<td>AH = 1 mm (0.039 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BG = 6 mm (0.236 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AG = 2 mm (0.079 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BH = 8 mm (0.315 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AR = 4 mm (0.157 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AJ = 10 mm (0.394 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AX = 5 mm (0.197 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BD = 12 mm (0.472 in.)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
**MINI-RAIL® MS - LEAD SCREW DRIVEN**

- 304 stainless steel screw with PTFE coating
- Robust design - outstanding reliability
- Fewer parts - less maintenance
- Preloaded Polyacetal, anti-backlash nut
- High torque stepper motor 42 mm (NEMA 17)
- Low cost
- Lengths up to 640 mm
- Ball bearing supports
- Integral screw for MR20 (coupling used for MR15)
- Eight (8) leads available

**MR20MS**

MOUNTING HOLES FOR MS SCREWS

NOTES: Maximum length for lead screw driven MR is 640 mm.
Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Mini-Rail</th>
<th>Nominal Size of Base in mm</th>
<th>Lead Screw</th>
<th>Length of Rail in mm</th>
<th>Nominal Size of Stepper Motor</th>
<th>Screw Lead Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR</td>
<td>15 mm</td>
<td>MS</td>
<td>Cut to length (Max. of 640 mm)</td>
<td>M42 = 42 mm (NEMA 17)</td>
<td>AH = 1 mm (0.039 in.)</td>
</tr>
<tr>
<td></td>
<td>20 mm</td>
<td>XXX</td>
<td></td>
<td></td>
<td>BG = 6 mm (0.236 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>XX</td>
<td></td>
<td></td>
<td>AG = 2 mm (0.079 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AR = 4 mm (0.157 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AX = 5 mm (0.197 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BD = 12 mm (0.472 in.)</td>
</tr>
</tbody>
</table>

**Number of Carriages**

1 = One carriage

* Contact an application engineer before ordering, if more than one (1) carriage is needed.
**STATIC LOAD DATA**

The numbers below are for rails in a static condition. Refer to the calculations below to establish dynamic parameters.

<table>
<thead>
<tr>
<th>F (N)</th>
<th>MSL (N)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>3559</td>
<td>6005</td>
</tr>
<tr>
<td>578</td>
<td></td>
</tr>
</tbody>
</table>

**PERFORMANCE RATINGS FOR LINEAR MOTION**

Plane bearings are rated by their limiting PV, which is a combination of load over a given surface area and the velocity.

\[
PV = \text{Performance measurement of plane bearings}
\]

\[
PV = P \times V \text{ where } P = \text{pressure (load) in psi (kgf/cm}^2\text{)}
\]

\[
V = \text{velocity (speed) in sfm (m/min.)}
\]

**NOTE:** All three parameters must be met by an application for the bearing to perform properly.

**CANTILEVERED LOADS**

Binding of the carriage will occur if the 2:1 ratio for cantilevered loads and drive forces is exceeded. This principle is not load or force dependent. It is a product of the coefficient of frictions associated with plane bearings. Contact factory or website for additional information.

**LOAD/MOMENT CONVERSION**

\[
N = 4.45 \times \text{(lbs.)}
\]

\[
N\cdot m = 0.113 \times \text{(in-lbs.)}
\]

**SIZE 17 STEPPER MOTOR WITH 6 MM (0.236") SCREW**

![Graph showing recommended loads and linear travel per step](image-url)

**LEAD**

**LEAD CODE**

**LINEAR TRAVEL PER STEP**

<table>
<thead>
<tr>
<th>mm</th>
<th>Inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mm</td>
<td>0.005</td>
</tr>
<tr>
<td>2 mm</td>
<td>0.010</td>
</tr>
<tr>
<td>4 mm</td>
<td>0.020</td>
</tr>
<tr>
<td>5 mm</td>
<td>0.025</td>
</tr>
<tr>
<td>6 mm</td>
<td>0.030</td>
</tr>
<tr>
<td>8 mm</td>
<td>0.040</td>
</tr>
<tr>
<td>10 mm</td>
<td>0.050</td>
</tr>
<tr>
<td>12 mm</td>
<td>0.060</td>
</tr>
</tbody>
</table>

Note: 1.8° = 200 steps per revolution
**PRODUCT OVERVIEW**

Based on proven Simplicity® linear bearing technology, the Uni-Guide contain Frelon GOLD® self-lubricating bearing material. This material results in no metal to metal contact, while dampening vibrations and shock loads. The Uni-Guide unique two-piece assembly eliminates tolerance stack up and the integrated lightweight packages can drop into existing applications making installation easy. Ideal for low cost automation, positioning tables and packaging equipment.

**FEATURES & BENEFITS**

- Two-piece assembly - lightweight and eliminates tolerance stack
- Self-lubricating - Frelon GOLD® provides low wear, low friction, and high strength
- Lengths up to 10’ - butt-joinable for longer lengths
- Mounting Flexibility
  - Pre-drilled rails
  - T-slots & mounting holes on carriages
  - Side or top mounting
- Easy drop in unit - no alignment needed
- Drive options
  - Ball
  - Lead screw (includes motor and drive)
  - Belt Driven
- Corrosion-Resistant - ideal in washdown environments
- Pre-engineered - ready to use

**ACCESSORIES**

- Hand Brake & Crank
- Vise Block
- Ratchet Pin
- Motor Mount
- End Block
- Pin Lock Clamp

**APPLICATION EXAMPLES** (Application examples require accessories. Contact manufacturer for availability)

* Optional configurations and special carriages are available. Contact manufacturer for availability.
**STATIC LOADS WITH NO DRIVE MECHANISM**

The numbers below are for guides only in a static condition. The drive mechanism selected (lead screw, ball screw, cylinder, etc.) becomes the limiting factor when calculating maximum load and speed capacities. The user is responsible for determining the maximum capacity for the complete system based on the manufacturer’s data for their drive configuration.

<table>
<thead>
<tr>
<th>SIZE</th>
<th>(F_y) MAX LOAD (lbs.)</th>
<th>(F_y) MAX LOAD (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D075</td>
<td>500</td>
<td>2,224</td>
</tr>
<tr>
<td>D100</td>
<td>750</td>
<td>3,336</td>
</tr>
<tr>
<td>D125</td>
<td>1,000</td>
<td>4,448</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SIZE</th>
<th>(F_y) (inverted) MAX LOAD (lbs.)</th>
<th>(F_y) (inverted) MAX LOAD (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D075</td>
<td>125</td>
<td>556</td>
</tr>
<tr>
<td>D100</td>
<td>190</td>
<td>845</td>
</tr>
<tr>
<td>D125</td>
<td>250</td>
<td>1,112</td>
</tr>
</tbody>
</table>

Designs must also operate within the following dynamic parameters:
- Maximum Loads \((P)\) = from charts above
- Maximum Speed Dry \((V)\) = 300 ft./min. (1.524 m/s)
- Maximum PV (pressure x velocity) = 20,000 (0.70 N/mm² x m/s)

**NOTE:** Frelon GOLD® bearing material coefficient of friction is 0.125.

**ORDERING INFORMATION**

- **Series**
  - D - Standard Uni-Guide

- **Carriage Options**
  - No Entry - Standard Carriage
  - L - Extended Length Carriage

- **Nominal Size**
  - 075mm, 100mm, 125mm
  - Based on mm from shaft center-to-center

- **Drive Options**
  - No Entry - No Drive Mechanism
  - M - Right Hand Lead Screw with Standard Pitch
  - M1 - Right Hand Lead Screw with Optional Pitch
  - Notes: Screw options require attaching collar.
  - Call the factory for other optional drive mechanisms.

- **Metric Mounting Hole Option Retired - Click Here for Product Migration Matrix**

- **Data Entry Option**
  - No Entry - No Options
  - M - Optional MMI Keypad
  (Man-to-Machine Interface)

- **Power and Control Options**
  - No Entry - No Power Options
  - P - Standard Motor with Motor Mount, Programmable Drive, Cables and Software (must have “N” in Drive Mounting Option)
  - Note: Kits available for NEMA motor

- **Overall Rail Length**
  - “D” Series - enter length of rail in inches xxx.xxx (EX: 6” = 006.000)

- **Drive Mounting Options**
  - No Entry - No Drive Mounting Options
  - H - Hand Crank
  - N - NEMA Standard Motor Mount
  - HB - Handbrake (requires handcrank and screw)
  - CHB - Carriage Handbrake (not offered with screw driven options)
### STANDARD INCH SERIES WITH NO DRIVE MECHANISM (inches)

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>R</th>
<th>R1</th>
<th>R2</th>
<th>X</th>
<th>Y</th>
<th>H</th>
<th>C</th>
<th>C1 STANDARD</th>
<th>C2 STANDARD</th>
<th>C1 EXTENDED</th>
<th>C2 EXTENDED</th>
<th>C3 BOLT SIZE</th>
<th>M1</th>
<th>M</th>
<th>MAX-FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>D075-xxx</td>
<td>2.95</td>
<td>2</td>
<td>0.75</td>
<td>4</td>
<td>1/4</td>
<td>2</td>
<td>1.625</td>
<td>4.6</td>
<td>3.5</td>
<td>3</td>
<td>4.5</td>
<td>4</td>
<td>10-32</td>
<td>2.6</td>
<td>.819</td>
</tr>
<tr>
<td>D100-xxx</td>
<td>3.94</td>
<td>2.6</td>
<td>1</td>
<td>6</td>
<td>5/16</td>
<td>3</td>
<td>2.125</td>
<td>6.1</td>
<td>4.5</td>
<td>6</td>
<td>5.25</td>
<td>5.25</td>
<td>1/4-20</td>
<td>3.5</td>
<td>1.02</td>
</tr>
<tr>
<td>D125-xxx</td>
<td>4.92</td>
<td>3.3</td>
<td>1.25</td>
<td>6</td>
<td>3/8</td>
<td>3</td>
<td>2.625</td>
<td>7.6</td>
<td>6</td>
<td>7.5</td>
<td>6.75</td>
<td>6.75</td>
<td>5/16-18</td>
<td>4.33</td>
<td>1.30</td>
</tr>
</tbody>
</table>

### CARRIAGE TYPES

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DRILL</th>
<th>DEPTH</th>
<th>TAP</th>
<th>DEPTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>D075-xxx</td>
<td>.159</td>
<td>.534</td>
<td>10-32</td>
<td>.440</td>
</tr>
<tr>
<td>D100-xxx</td>
<td>.201</td>
<td>.750</td>
<td>1/4-20</td>
<td>.500</td>
</tr>
<tr>
<td>D125-xxx</td>
<td>.257</td>
<td></td>
<td>5/16-18</td>
<td>.625</td>
</tr>
</tbody>
</table>

### STANDARD LENGTHS CHART (inches)

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>8&quot;</th>
<th>12&quot;</th>
<th>16&quot;</th>
<th>18&quot;</th>
<th>24&quot;</th>
<th>28&quot;</th>
<th>30&quot;</th>
<th>32&quot;</th>
<th>36&quot;</th>
<th>40&quot;</th>
<th>42&quot;</th>
<th>48&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>D075-xxx</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D100-xxx</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D125-xxx</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### METRIC SERIES WITH NO DRIVE MECHANISM (mm)

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>R</th>
<th>R1</th>
<th>R2</th>
<th>X</th>
<th>R4 BOLT SIZE</th>
<th>Y</th>
<th>H</th>
<th>C</th>
<th>C1 STANDARD</th>
<th>C2 STANDARD</th>
<th>C1 EXTENDED</th>
<th>C2 EXTENDED</th>
<th>C3 BOLT SIZE</th>
<th>M</th>
<th>M1</th>
<th>MAX-FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM075-xxx</td>
<td>75</td>
<td>51</td>
<td>20</td>
<td>120</td>
<td>M 6</td>
<td>60</td>
<td>41.3</td>
<td>117</td>
<td>85</td>
<td>73</td>
<td>98</td>
<td>105</td>
<td>M 5</td>
<td>66</td>
<td>16.5</td>
<td>3.66m</td>
</tr>
<tr>
<td>DM100-xxx</td>
<td>100</td>
<td>66</td>
<td>30</td>
<td>180</td>
<td>10.6</td>
<td>105</td>
<td>36.7</td>
<td>137</td>
<td>125</td>
<td>110</td>
<td>135</td>
<td>145</td>
<td>M 6</td>
<td>89</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>DM125-xxx</td>
<td>125</td>
<td>84</td>
<td>40</td>
<td>230</td>
<td>15.0</td>
<td>150</td>
<td>45.0</td>
<td>152</td>
<td>150</td>
<td>130</td>
<td>145</td>
<td>155</td>
<td>M 8</td>
<td>110</td>
<td>33</td>
<td></td>
</tr>
</tbody>
</table>

### WEIGHTS

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>RAIL PER INCH</th>
<th>STANDARD CARRIAGE</th>
<th>EXTENDED CARRIAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>D075-xxx</td>
<td>0.19</td>
<td>0.98</td>
<td>1.26</td>
</tr>
<tr>
<td>D100-xxx</td>
<td>0.32</td>
<td>2.12</td>
<td>2.82</td>
</tr>
<tr>
<td>D125-xxx</td>
<td>0.48</td>
<td>4.56</td>
<td>5.7</td>
</tr>
</tbody>
</table>

### T-SLOT INFORMATION

**UPDATE PRODUCT INFORMATION**

**FOR THE PRODUCT MIGRATION MATRIX**

**T-SLOT INFORMATION**

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>T</th>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM075-xxx</td>
<td>15.0</td>
<td>6.5</td>
<td>6.0</td>
</tr>
<tr>
<td>DM100-xxx</td>
<td>16.8</td>
<td>8.1</td>
<td>6.8</td>
</tr>
</tbody>
</table>

**RAIL & APPROXIMATE**

- D075 = .470 = 12mm
- D100 = .630 = 16mm
- D125 = .820 = 22mm

**Straightness - ±.002”/ft**
Uni-Guide - D075
Slides, Tables & Stages

D075

Optional Hand Brake
Note: available only with optional hand crank

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>P</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>D075AHB</td>
<td>2.31</td>
<td>1.75</td>
</tr>
</tbody>
</table>

Optional Leads May Be Available - Consult Factory

Part No. P H
D075AHB 2.31 1.75

Load & Speed Data for Standard Lead Screw Driven (Horizontal Orientation)

<table>
<thead>
<tr>
<th>Maximum Load Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>D075A-xxx</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Speed Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>D075A-xxx</td>
</tr>
</tbody>
</table>
**D100**

**PART NO.** | **STROKE** | **L** | **L1** | **C1** | **NOMINAL SCREW DIA.** | **STANDARD LEAD** | **OPTIONAL LEAD** | **S** | **Y** | **T** | **R4** | **W** | **X** | **Z** | **H1** | **H2**
---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
D100xx-12 | 7.5 | 12 | 14.61 | | 4.5 | 12 mm | 6 mm | 12 mm | 0.314 | 3 | 6 | 5/16 | 0.5 | 1 | 4.56 | 2.5 | 2.500
D100xx-18 | 13.5 | 18 | 20.61 | | | | | | | | | | | | | |
D100xx-24 | 19.5 | 24 | 26.61 | | | | | | | | | | | | | |
D100xx-30 | 25.5 | 30 | 32.61 | | | | | | | | | | | | | |
D100xx-48 | 43.5 | 48 | 50.61 | | | | | | | | | | | | | |

**NOTE:** Optional leads may be available - consult factory.

**OPTIONAL HAND BRAKE**

NOTE: available only with optional hand crank

**OPTIONAL MOTOR MOUNT ATTACHMENT**

**LOAD & SPEED DATA FOR STANDARD LEAD SCREW DRIVEN (HORIZONTAL ORIENTATION)**

**D100A-xxx**

**Maximum Load Chart**

**Maximum Speed Chart**

NOTE: Optional drives are available: ball screws, cylinders, linear motors, and belt drives.
### Uni-Guide - D125

**Slides, Tables & Stages**

#### D125

**Optional Hand Brake**

NOTE: available only with optional hand crank

![Diagram of D125 with hand brake](image)

**Load & Speed Data for Standard Lead Screw (Horizontal Orientation)**

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>P</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>D0125AHB</td>
<td>2.31</td>
<td>1.75</td>
</tr>
</tbody>
</table>

**Maximum Load Chart**

![Graph of Maximum Load Chart](image)

**Maximum Speed Chart**

![Graph of Maximum Speed Chart](image)

**NOTE:** Optional drives are available: ball screws, cylinders, linear motors, and belt drives.

---

**Table:**

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>STROKE (L-C1)</th>
<th>L</th>
<th>L1</th>
<th>C1</th>
<th>NOMINAL SCREW DIA.</th>
<th>STANDARD LEAD</th>
<th>OPTIONAL LEAD</th>
<th>S</th>
<th>Y</th>
<th>T</th>
<th>R4</th>
<th>W</th>
<th>X</th>
<th>Z</th>
<th>H1</th>
<th>H2</th>
</tr>
</thead>
<tbody>
<tr>
<td>D125xx-12</td>
<td>6 12 14.85</td>
<td>6</td>
<td>16 mm</td>
<td>5 mm</td>
<td>12 mm</td>
<td>0.314</td>
<td>3</td>
<td>6</td>
<td>3/8</td>
<td>0.5</td>
<td>1</td>
<td>5.78</td>
<td>3.5</td>
<td>2.500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D125xx-18</td>
<td>12 18 20.85</td>
<td>24</td>
<td>30</td>
<td>32.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D125xx-24</td>
<td>18 24 26.85</td>
<td>30</td>
<td>36</td>
<td>38.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D125xx-30</td>
<td>24 30 32.85</td>
<td>42</td>
<td>48</td>
<td>50.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D125xx-36</td>
<td>30 36 38.85</td>
<td>54</td>
<td>60</td>
<td>62.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Optional leads may be available - consult factory.
PRODUCT OVERVIEW

- Sealed double row bearings provide maintenance free, smooth linear guidance
- Side adjusted preload makes greatly simplifies assembly and installation
- Withstands temperatures up to 180°F
- Butt-joinable for longer length applications
- Available in Inch or ISO Metric

ADJUSTING SLIDE PRELOAD

The preload of a slide should be properly set from the factory, but if you must adjust it yourself, here are some simple steps to follow.

1. To loosen the eccentric (center) roller, use an Allen wrench to loosen the screw that is on the side of the mounting block. Be sure to loosen the screw that is on the side of the direction you want the roller to move.
2. When it is loose, tighten the set screw on the opposite side of the block. This will move the roller and mounting stud.
3. Make a very small change, retighten the first set screw, and try it out. If the preload is too loose, you will feel the slider rock and you will hear a slight “clunk.” If it is too tight, the slider will roll rough, like riding a bicycle on a gravel road.
4. Move the slide along the length of the rail by hand. Adjust it so that it does not feel loose anywhere. It may take you several times to get the proper adjustment.
5. Make sure the rollers are tightened with the proper adjustment prior to operation.

SLIDER ORIENTATION

The 3-Roller slide should be installed in the rail so the load is shared on the two outside rollers. The orientation marks indicate how to align the slider with the load direction.

LUBRICATION - RAILS & BEARINGS

The rollers are internally lubricated for life, but the rails must always have a layer of grease. As a guideline, reapply fresh grease every 50,000 cycles.

SLIDER ORIENTATION

The 3-Roller slide should be installed in the rail so the load is shared on the two outside rollers. The orientation marks indicate how to align the slider with the load direction.

MOUNTING SLIDER BODY & MAX CAPACITY

Below are recommended bolt tightening torques for mounting to the slide body. Be sure to use bolts that are long enough to obtain full thread engagement.

MOUNTING TORQUE

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>IN-LBS. TORQUE</th>
<th>NM TORQUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RRS14</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>RRS30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRS18</td>
<td>70</td>
<td>8</td>
</tr>
<tr>
<td>RRS45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRS65</td>
<td>150</td>
<td>24</td>
</tr>
</tbody>
</table>
**LIFE CALCULATIONS**

Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

Conversions
- newton (N) × 0.2248 = lbs.
- (lbf) meter × 0.0397 = inch
- newton - meter (Nm) × 8.851 = in.-lbs.

To calculate an approximate life for Redi-Rail sliders, use the following equation.

**Inch Series**
The value of \( L_{RR} \) is in meters

\[
L_{RR} = 10^7 \times \left( \frac{Cd}{\text{LoadEquiv} \times RF} \right)^{3.0} \text{ (inches)}
\]

\( LC_{RRS} \) = Slider Life Capacity which is found in the table

\[
\text{LoadEquiv} = \text{Radial Load} \text{ found from the following equation:}
\]

\[
\text{LoadEquiv} = Cr \times \left( \frac{\text{LoadAxial}}{Ca} + \frac{M_x}{M_x \text{ Max}} + \frac{M_y}{M_y \text{ Max}} + \frac{M_z}{M_z \text{ Max}} + \text{LoadRadial} \right)
\]

### PART NO. | MAX SPEED (fpm) | MAX SPEED (ipm) | Cd (lbs.)
--- | --- | --- | ---
RRS14 | 500 | 6000 | 421
RRS18 | 800 | 9600 | 1032

**Metric Series**
The value of \( L_{RR} \) is in meters

\[
L_{RR} = \left( \frac{Cd}{\text{LoadEquiv} \times RF} \right)^{3.0} \times 100,000 \text{ meters}
\]

\( Cd \) = Slider Life Capacity which is found in the table

\[
\text{LoadEquiv} = \text{Equivalent Radial Load} \text{ found from the following equation:}
\]

\[
\text{LoadEquiv} = Cr \times \left( \frac{\text{LoadAxial}}{Ca} + \frac{M_x}{M_x \text{ Max}} + \frac{M_y}{M_y \text{ Max}} + \frac{M_z}{M_z \text{ Max}} + \text{LoadRadial} \right)
\]

### PART NUMBER | MAX SPEED (m/min) | MAX SPEED (m/s) | Cd (N)
--- | --- | --- | ---
RR30 | 300 | 5.0 | 1440
RR45 | 420 | 7.0 | 4404
RR65 | 480 | 8.0 | 10200

**NOTE:** Reduction factors apply to both inch and metric series

RF = Reduction Factor of the Application or Environment

- 1.0 to 1.5 for very clean, low speed (<30% Max), low shocks
- 1.5 to 2.0 for some dirtiness, moderate speed (30% Max to 75% Max), medium shocks and vibration
- 2.0 to 3.0 for heavy dirt & dust, high speeds (>75% Max) and heavy shocks & vibrations
**RRS14 Slide**
Redi-Rail® Linear Guides - Inch Series

**RRS14 Slide**

- Low cost precision
- Factory adjusted
- Sealed bearings
- Solid bearing mounting system
- Up to 19' lengths
- Gothic arch rollers
- Aluminum alloy body
- Rollers are 52100 steel, sealed against contamination, and are mounted with hardened steel mounting accessories
- Not available with seals
- Maximum temperature approximately 180°F

**ORDER INFORMATION**

**EXAMPLE:**
Slider size 14

```
RRS 14
```

- **Redi-Rail Slide**
- **Nominal Size**
  - 14 = Dimension
  - 18 = Dimension (page 204)

**NOTE:** Slide weight 0.25 lbs./ea.
RR14 Rail
Load Capacity to 340 lbs.

SUGGESTED RAIL LENGTHS & DIMENSIONS (Inches)

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LENGTH</th>
<th>HOLES</th>
<th>Y</th>
<th>WT. (lbs./ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RR14-12</td>
<td>12</td>
<td>4</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>RR14-24</td>
<td>24</td>
<td>7</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>RR14-36</td>
<td>36</td>
<td>11</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>RR14-48</td>
<td>48</td>
<td>14</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>RR14-60</td>
<td>60</td>
<td>17</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>RR14-72</td>
<td>72</td>
<td>21</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>RR14-84</td>
<td>84</td>
<td>24</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>RR14-96</td>
<td>96</td>
<td>28</td>
<td>0.75</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Suggested lengths can be cut and are available up to 19’ (6m).

LIFE CALCULATIONS

Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

Conversions
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (Nm) x 8.851 = in.-lbs.

ORDER INFORMATION

EXAMPLE: RR14-36
Rail size 14 cut to 36” long

800.962.8979 • www.pbclinear.com
**RRS18 SLIDE**

- Low cost precision
- Factory adjusted
- Sealed bearings
- Solid bearing mounting system
- Up to 5.79m lengths
- Gothic arch rollers
- Aluminum alloy body
- Rollers are 52100 steel, sealed against contamination, and are mounted with hardened steel mounting accessories
- Not available with seals
- Maximum temperature approximately 180°F

---

**ORDER INFORMATION**

EXAMPLE: RRS18

<table>
<thead>
<tr>
<th>Nominal Size</th>
<th>Redi-Rail Slide</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 = Dimension (page 202)</td>
<td>Redi-Rail Slide</td>
</tr>
<tr>
<td>18 = Dimension</td>
<td>Nominal Size</td>
</tr>
</tbody>
</table>

NOTE: Slide weight 0.50 lbs./ea.
**RR18 RAIL**

**SUGGESTED RAIL LENGTHS & DIMENSIONS (Inches)**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LENGTH</th>
<th>HOLES</th>
<th>Y</th>
<th>WT. (lbs./ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RR18-12</td>
<td>12</td>
<td>4</td>
<td>0.75</td>
<td>0.85</td>
</tr>
<tr>
<td>RR18-24</td>
<td>24</td>
<td>7</td>
<td>1.50</td>
<td>0.85</td>
</tr>
<tr>
<td>RR18-36</td>
<td>36</td>
<td>11</td>
<td>0.50</td>
<td>0.85</td>
</tr>
<tr>
<td>RR18-48</td>
<td>48</td>
<td>14</td>
<td>1.25</td>
<td>0.85</td>
</tr>
<tr>
<td>RR18-60</td>
<td>60</td>
<td>17</td>
<td>2.00</td>
<td>0.85</td>
</tr>
<tr>
<td>RR18-72</td>
<td>72</td>
<td>21</td>
<td>1.00</td>
<td>0.85</td>
</tr>
<tr>
<td>RR18-84</td>
<td>84</td>
<td>24</td>
<td>1.75</td>
<td>0.85</td>
</tr>
<tr>
<td>RR18-96</td>
<td>96</td>
<td>28</td>
<td>0.75</td>
<td>0.85</td>
</tr>
</tbody>
</table>

NOTE: Suggested lengths can be cut and are available up to 19’ (6m).

**LIFE CALCULATIONS**

Cd = Dynamic capacity (LC)  
Cr = Radial capacity  
Ca = Axial capacity  
Mx, My, Mz = Moment capacities

Conversions  
newton (N) x 0.2248 = lbs.  
(lbf) meter x 0.0397 = inch  
newton - meter (Nm) x 8.851 = in.-lbs.

**EXAMPLE:** RR18-36  
Rail size 18 cut to 36” long
RRS30 Slide
Redi-Rail® Linear Guides - ISO Metric

**RRS30 SLIDE**

- 5.79 Meter Lengths
- Sealed Bearings
- Integral Seals
- Easy Adjusting
- Gothic Arch Rollers
- Solid Roller Mounting
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.

**APPLICATIONS**

- Automation
- Assembly
- Material Handling
- Packaging

**ORDER INFORMATION**

**EXAMPLE:** RRS30U
Slide size 30 with UHMW seals

**NOTES:** Felt wipers have been replaced by low friction oil impregnated plastic wipers.
No entry in the part # results in use of oil impregnated wiper.
**RR30 RAIL**

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length

**LIFE CALCULATIONS**

Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

Conversions
- newton (N) x 0.2248 = lbs.
- (lbf) meter x 0.0397 = inch
- newton - meter (Nm) x 8.851 = in.-lbs.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>Cd (N)</th>
<th>Cr (N)</th>
<th>Ca (N)</th>
<th>Mx (Nm)</th>
<th>My (Nm)</th>
<th>Mz (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RRS30</td>
<td>1,440</td>
<td>1,000</td>
<td>330</td>
<td>1.8</td>
<td>5.5</td>
<td>12.5</td>
</tr>
</tbody>
</table>

**ORDER INFORMATION**

**EXAMPLE:** RR30-1200
Rail size 30 cut to 1200mm long

Customer specifies "Y" dimension

NOTE: Rail weight 0.868 kg/m
**RRS45 Slide**  
**Redi-Rail® Linear Guides**

**RRS45 SLIDE**

- 5.79 Meter Lengths
- Sealed Bearings
- Integral Seals
- Easy Adjusting
- Gothic Arch Rollers
- Solid Roller Mounting
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.

**APPLICATIONS**

- Automation
- Assembly
- Material Handling
- Packaging

**ROLLER/SHAFT INTERFACE**

![Diagram of Roller/Shaft Interface]

- Gothic contact for smooth, high speed performance

**ORDER INFORMATION**

**EXAMPLE: RRS45U**  
Slider size 45 with UHMW seals

**NOTES:** Felt wipers have been replaced by low friction oil impregnated plastic wipers.  
No entry in the part # results in use of oil impregnated wiper.
**RR45 Rail**

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length

**RR45 Rail**

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length

**LIFE CALCULATIONS**

Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

**Conversions**

newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (Nm) x 8.851 = in.-lbs.

**ORDER INFORMATION**

**EXAMPLE:** RR45-1200
Rail size 45 cut to 1200mm long
RRS65 Slide
Redi-Rail® Linear Guides

**RRS65 SLIDE**

- 5.79 Meter Lengths
- Sealed Bearings
- Integral Seals
- Easy Adjusting
- Gothic Arch Rollers
- Solid Roller Mounting
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentric.

**APPLICATIONS**

- Automation
- Assembly
- Material Handling
- Packaging

**ORDER INFORMATION**

**EXAMPLE:** RRS65U
Slider size 65 with UHMW seals

**NOTES:** Felt wipers have been replaced by low friction oil impregnated plastic wipers. No entry in the part # results in use of oil impregnated wiper.
**RR65 Rail**

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length

**LIFE CALCULATIONS**

\[ \begin{align*}
Cd &= \text{Dynamic capacity (LC)} \\
Cr &= \text{Radial capacity} \\
Ca &= \text{Axial capacity} \\
Mx, My, Mz &= \text{Moment capacities}
\end{align*} \]

**Conversions**

\[ \begin{align*}
\text{newton (N)} \times 0.2248 &= \text{lbs. (lbf)} \\
\text{meter (m)} \times 0.0397 &= \text{inch} \\
\text{newton - meter (Nm)} \times 8.851 &= \text{in.-lbs.}
\end{align*} \]

**ORDER INFORMATION**

**EXAMPLE:** RR65-1200
Rail size 65 cut to 1200mm long
PRODUCT OVERVIEW

V-Guide System components provide an excellent alternative for linear motion applications in harsh environments with medium accuracy requirements, and high speed capabilities.

FEATURES & BENEFITS

V-Guide systems are an industry standard for linear motion, and offer features that make them an ideal solution for a wide range of motion control applications.

V-Guide Rail:
• Has shoulder for simple mounting and alignment
• Available in long lengths
• Induction hardened way surface
• 1045 Carbon Steel or 400 Series Stainless Steel
• Optional black oxide finish
• Choose predrilled rail from stock, or custom cut and drilled to your specification

V-Guide Wheels:
• Four (4) sizes
• Permanently lubricated
• Precision dual row bearing construction
• Available in 52100 Bearing Steel or 420 Stainless Steel construction
• 304 Stainless Steel shields, or nitrile rubber seals

Wheel Bushings:
• 303 Stainless Steel
• Inch or metric hardware
• Adjustable bushings allow adjustable fit and preload
• Fixed bushings are used in the primary radial load direction
• Stainless Steel construction

APPLICATIONS

• Machine tool doors
• Vending machines
• Woodworking machinery
• Carpet and textile machinery
• Laboratory automation
• Paper converting equipment
• Packaging machinery

TECHNICAL SPECIFICATIONS

V-Guide Wheels:
V-Guide Wheels are precision ground dual row angular contact ball bearings with hardened outer way surfaces that provide low friction guidance for linear motion applications. V-Guide wheels can be used with internal or external 90-degree ways, or used with round shafts.

V-Guide Rails:
The rail V-Ways are induction or flame hardened, ground and polished. The track body is left soft for easy drilling of mounting holes. Available in (4) four sizes, which are designed for the corresponding size wheels.

Wheel Bushings:
Bushings allow for the wheels to be mounted with the appropriate fastener for the specific application.

Working Temperature Rating: ≈ 180°F
**V-Guide System - 20 mm (3/4")**

Radial Loads to 283 lbs. (1,260 N) per Wheel

**V-Guide Wheels**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Length</th>
<th>No. of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VW1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VWS1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VWSS1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Wheel Bushings**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VB1</td>
<td>Fixed Bushing</td>
</tr>
<tr>
<td>VBA1</td>
<td>Adjustable Bushing</td>
</tr>
</tbody>
</table>

**Metric Wheel Bushings**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVB1</td>
<td>Metric Fixed Bushing</td>
</tr>
<tr>
<td>MVBA1</td>
<td>Metric Adjustable Bushing</td>
</tr>
</tbody>
</table>

**V-Guide Rail**

**Carbon Steel**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Length</th>
<th>No. of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR1-xxx</td>
<td>Undrilled rail</td>
<td>max. length 21' (6400 mm)</td>
<td></td>
</tr>
<tr>
<td>VRD1-xxx</td>
<td>Drilled rail, see table</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Stainless Steel**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Length</th>
<th>No. of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRS1-xxx</td>
<td>Undrilled rail</td>
<td>max. length 21' (6400 mm)</td>
<td></td>
</tr>
<tr>
<td>VRSD1-xxx</td>
<td>Drilled rail, see table</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Non-heat treated rails available in all sizes, contact factory.

**Standard Drilled Rails**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Length</th>
<th>No. of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRD1-1250</td>
<td>12.5&quot; (317.5 mm)</td>
<td>7</td>
</tr>
<tr>
<td>VRD1-2450</td>
<td>24.5&quot; (622.3 mm)</td>
<td>13</td>
</tr>
<tr>
<td>VRD1-3650</td>
<td>36.5&quot; (927.1 mm)</td>
<td>19</td>
</tr>
<tr>
<td>VRD1-4850</td>
<td>48.5&quot; (1231.9 mm)</td>
<td>25</td>
</tr>
<tr>
<td>VRD1-6050</td>
<td>60.5&quot; (1536.7 mm)</td>
<td>31</td>
</tr>
<tr>
<td>VRD1-7250</td>
<td>72.5&quot; (1841.5 mm)</td>
<td>37</td>
</tr>
</tbody>
</table>

**Stainless Steel**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Length</th>
<th>No. of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRSD1-1250</td>
<td>12.5&quot; (317.5 mm)</td>
<td>7</td>
</tr>
<tr>
<td>VRSD1-2450</td>
<td>24.5&quot; (622.3 mm)</td>
<td>13</td>
</tr>
<tr>
<td>VRSD1-3650</td>
<td>36.5&quot; (927.1 mm)</td>
<td>19</td>
</tr>
<tr>
<td>VRSD1-4850</td>
<td>48.5&quot; (1231.9 mm)</td>
<td>25</td>
</tr>
<tr>
<td>VRSD1-6050</td>
<td>60.5&quot; (1536.7 mm)</td>
<td>31</td>
</tr>
<tr>
<td>VRSD1-7250</td>
<td>72.5&quot; (1841.5 mm)</td>
<td>37</td>
</tr>
</tbody>
</table>

**Rated for:**

Radial loads to 283 lbs. (1,260 N) per wheel

Axial loads to 67 lbs. (297 N) per wheel

**Metric Fixed Bushing**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Ref</th>
<th>THRU TYP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø3.96</td>
<td>.25</td>
<td>2.000 (50.8)</td>
</tr>
</tbody>
</table>

**Metric Adjustable Bushing**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Ref</th>
<th>THRU TYP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø3.96</td>
<td>.25</td>
<td>2.000 (50.8)</td>
</tr>
</tbody>
</table>

---

**Weight:** .42 oz. (12 g)
V-Guide System - 30 mm (1-1/4”)
Radial Loads to 614 lbs. (2,730 N) per Wheel

V-GUIDE WHEELS

<table>
<thead>
<tr>
<th>PART</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VW2</td>
<td>Shielded Bearing</td>
</tr>
<tr>
<td>VWS2</td>
<td>Sealed Bearing</td>
</tr>
<tr>
<td>VWSS2</td>
<td>Sealed Stainless Bearing</td>
</tr>
</tbody>
</table>

Radial loads to 614 lbs. (2,730 N) per wheel
Axial loads to 142 lbs. (632 N) per wheel

V-GUIDE RAIL

**Carbon Steel**

<table>
<thead>
<tr>
<th>PART</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR2-xxx</td>
<td>undrilled rail max. length 21’ (6400 mm)</td>
</tr>
<tr>
<td>VRD2-xxx</td>
<td>drilled rail, see table</td>
</tr>
</tbody>
</table>

**Stainless Steel**

<table>
<thead>
<tr>
<th>PART</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRS2-xxx</td>
<td>undrilled rail, max. length 21’ (6400 mm)</td>
</tr>
<tr>
<td>VRSD2-xxx</td>
<td>drilled rail, see table</td>
</tr>
</tbody>
</table>

NOTE: Non-heat treated rails available in all sizes, contact factory.

WEIGHT: 1.3 oz. (38 g)

WHEEL BUSHINGS

<table>
<thead>
<tr>
<th>PART</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VB2</td>
<td>Fixed Bushing</td>
</tr>
<tr>
<td>VBA2</td>
<td>Adjustable Bushing</td>
</tr>
</tbody>
</table>

METRIC WHEEL BUSHINGS

<table>
<thead>
<tr>
<th>PART</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVB2</td>
<td>Metric Fixed Bushing</td>
</tr>
<tr>
<td>MVBA2</td>
<td>Metric Adjustable Bushing</td>
</tr>
</tbody>
</table>

STANDARD DRILLED RAILS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LENGTH</th>
<th># OF HOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR2-1263</td>
<td>12.63” (320.8 mm)</td>
<td>5</td>
</tr>
<tr>
<td>VR2-2463</td>
<td>24.63” (625.6 mm)</td>
<td>9</td>
</tr>
<tr>
<td>VR2-3663</td>
<td>36.63” (930.4 mm)</td>
<td>13</td>
</tr>
<tr>
<td>VR2-4863</td>
<td>48.63” (1235.2 mm)</td>
<td>17</td>
</tr>
<tr>
<td>VR2-6063</td>
<td>60.63” (1540 mm)</td>
<td>21</td>
</tr>
<tr>
<td>VR2-7263</td>
<td>72.63” (1844.8 mm)</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LENGTH</th>
<th># OF HOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRSD2-1263</td>
<td>12.63” (320.8 mm)</td>
<td>5</td>
</tr>
<tr>
<td>VRSD2-2463</td>
<td>24.63” (625.6 mm)</td>
<td>9</td>
</tr>
<tr>
<td>VRSD2-3663</td>
<td>36.63” (930.4 mm)</td>
<td>13</td>
</tr>
<tr>
<td>VRSD2-4863</td>
<td>48.63” (1235.2 mm)</td>
<td>17</td>
</tr>
<tr>
<td>VRSD2-6063</td>
<td>60.63” (1540 mm)</td>
<td>21</td>
</tr>
<tr>
<td>VRSD2-7263</td>
<td>72.63” (1844.8 mm)</td>
<td>25</td>
</tr>
</tbody>
</table>

NOTE: Non-heat treated rails available in all sizes, contact factory.

V-Guide - 30 mm (1-1/4”)
Radial Loads to 614 lbs. (2,730 N) per Wheel
V-Guide System - 45 mm (1-3/4”)
Radial Loads to 1,386 lbs. (6,166 N) per Wheel

V-Guide Wheels

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Length</th>
<th># of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR3-xxx</td>
<td>Undrilled rail max. length 21’ (6400 mm)</td>
<td></td>
</tr>
<tr>
<td>VRD3-xxx</td>
<td>Drilled rail, see table</td>
<td></td>
</tr>
<tr>
<td>VRS3-xxx</td>
<td>Undrilled rail, max. length 21’ (6400 mm)</td>
<td></td>
</tr>
</tbody>
</table>

V-Guide Rail

<table>
<thead>
<tr>
<th>Material</th>
<th>Part Number</th>
<th>Length</th>
<th># of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Steel</td>
<td>VR3-xxx</td>
<td>Undrilled rail max. length 21’ (6400 mm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VRD3-xxx</td>
<td>Drilled rail, see table</td>
<td></td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>VRS3-xxx</td>
<td>Undrilled rail, max. length 21’ (6400 mm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VRSD3-xxx</td>
<td>Drilled rail, see table</td>
<td></td>
</tr>
</tbody>
</table>

Weight: 4.6 oz. (131 g)

Wheel Bushings

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VB3</td>
<td>Fixed Bushing</td>
</tr>
<tr>
<td>VBA3</td>
<td>Adjustable Bushing</td>
</tr>
</tbody>
</table>

Metric Wheel Bushings

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVB3</td>
<td>Metric Fixed Bushing</td>
</tr>
<tr>
<td>MVBA3</td>
<td>Metric Adjustable Bushing</td>
</tr>
</tbody>
</table>

Standard Drilled Rails

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Length</th>
<th># of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR3-1275</td>
<td>12.75” (323.9 mm)</td>
<td>5</td>
</tr>
<tr>
<td>VR3-2475</td>
<td>24.75” (628.7 mm)</td>
<td>9</td>
</tr>
<tr>
<td>VR3-3675</td>
<td>36.75” (933.5 mm)</td>
<td>13</td>
</tr>
<tr>
<td>VR3-4875</td>
<td>48.75” (1238.3 mm)</td>
<td>17</td>
</tr>
<tr>
<td>VR3-6075</td>
<td>60.75” (1543.1 mm)</td>
<td>21</td>
</tr>
<tr>
<td>VR3-7275</td>
<td>72.75” (1847.9 mm)</td>
<td>25</td>
</tr>
</tbody>
</table>

Carbon Steel

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Length</th>
<th># of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRD3-1275</td>
<td>12.75” (323.9 mm)</td>
<td>5</td>
</tr>
<tr>
<td>VRD3-2475</td>
<td>24.75” (628.7 mm)</td>
<td>9</td>
</tr>
<tr>
<td>VRD3-3675</td>
<td>36.75” (933.5 mm)</td>
<td>13</td>
</tr>
<tr>
<td>VRD3-4875</td>
<td>48.75” (1238.3 mm)</td>
<td>17</td>
</tr>
<tr>
<td>VRD3-6075</td>
<td>60.75” (1543.1 mm)</td>
<td>21</td>
</tr>
<tr>
<td>VRD3-7275</td>
<td>72.75” (1847.9 mm)</td>
<td>25</td>
</tr>
</tbody>
</table>

Stainless Steel

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Length</th>
<th># of Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRSD3-1275</td>
<td>12.75” (323.9 mm)</td>
<td>5</td>
</tr>
<tr>
<td>VRSD3-2475</td>
<td>24.75” (628.7 mm)</td>
<td>9</td>
</tr>
<tr>
<td>VRSD3-3675</td>
<td>36.75” (933.5 mm)</td>
<td>13</td>
</tr>
<tr>
<td>VRSD3-4875</td>
<td>48.75” (1238.3 mm)</td>
<td>17</td>
</tr>
<tr>
<td>VRSD3-6075</td>
<td>60.75” (1543.1 mm)</td>
<td>21</td>
</tr>
<tr>
<td>VRSD3-7275</td>
<td>72.75” (1847.9 mm)</td>
<td>25</td>
</tr>
</tbody>
</table>
V-Guide System - 60 mm (2-1/4")
Radial Loads to 2,246 lbs. (9,991 N) per Wheel

**V-GUIDE WHEELS**

<table>
<thead>
<tr>
<th>V-WHEEL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VW4</td>
<td>Shielded Bearing</td>
</tr>
<tr>
<td>VWS4</td>
<td>Sealed Bearing</td>
</tr>
<tr>
<td>VWSS4</td>
<td>Sealed Stainless Bearing</td>
</tr>
</tbody>
</table>

| WEIGHT: | 10 oz. (281 g) |

**V-GUIDE RAIL**

**Carbon Steel**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LENGTH</th>
<th># OF HOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR4-xxx</td>
<td>undrilled rail max. length 21' (6400 mm)</td>
<td></td>
</tr>
<tr>
<td>VRD4-xxx</td>
<td>drilled rail, see table</td>
<td></td>
</tr>
</tbody>
</table>

**Stainless Steel**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LENGTH</th>
<th># OF HOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRS4-xxx</td>
<td>undrilled rail, max. length 21' (6400 mm)</td>
<td></td>
</tr>
<tr>
<td>VRSD4-xxx</td>
<td>drilled rail, see table</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Non-heat treated rails available in all sizes, contact factory.

**WHEEL BUSHINGS**

<table>
<thead>
<tr>
<th>V-Bushing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VB4</td>
<td>Fixed Bushing</td>
</tr>
<tr>
<td>VBA4</td>
<td>Adjustable Bushing</td>
</tr>
</tbody>
</table>

**METRIC WHEEL BUSHINGS**

<table>
<thead>
<tr>
<th>V-MBushing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVB4</td>
<td>Metric Fixed Bushing</td>
</tr>
<tr>
<td>MVBA4</td>
<td>Metric Adjustable Bushing</td>
</tr>
</tbody>
</table>

**STANDARD DRILLED RAILS**

**CARBON STEEL**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LENGTH</th>
<th># OF HOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRD4-1300</td>
<td>13.00&quot; (330.2 mm)</td>
<td>4</td>
</tr>
<tr>
<td>VRD4-2500</td>
<td>25.00&quot; (635 mm)</td>
<td>7</td>
</tr>
<tr>
<td>VRD4-3700</td>
<td>37.00&quot; (939.8 mm)</td>
<td>10</td>
</tr>
<tr>
<td>VRD4-4900</td>
<td>49.00&quot; (1244.6 mm)</td>
<td>13</td>
</tr>
<tr>
<td>VRD4-6100</td>
<td>61.00&quot; (1549.4 mm)</td>
<td>16</td>
</tr>
</tbody>
</table>

**Stainless Steel**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LENGTH</th>
<th># OF HOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRSD4-1300</td>
<td>13.00&quot; (330.2 mm)</td>
<td>4</td>
</tr>
<tr>
<td>VRSD4-2500</td>
<td>25.00&quot; (635 mm)</td>
<td>7</td>
</tr>
<tr>
<td>VRSD4-3700</td>
<td>37.00&quot; (939.8 mm)</td>
<td>10</td>
</tr>
<tr>
<td>VRSD4-4900</td>
<td>49.00&quot; (1244.6 mm)</td>
<td>13</td>
</tr>
<tr>
<td>VRSD4-6100</td>
<td>61.00&quot; (1549.4 mm)</td>
<td>16</td>
</tr>
</tbody>
</table>
**LOAD CALCULATIONS**

\[ L = \text{applied load} / \text{number of wheel pairs} \]

\[ L_R = \text{wheel radial load} \]

\[ L_O = \text{wheel load from moment} \]

\[ A = \text{load offset dimension} \]

\[ B = \text{track width dimension} \]

\[ F_A = 0.5 \text{ for light duty, well lubricated use} \]

\[ F_A = 1 \text{ for normal lubricated use} \]

\[ F_A = 2 \text{ for dry, or harsh environments} \]

**LOAD CONDITION A**

\[ L_O_1 = \frac{L \times (B - A) \times F_A}{B} \]

\[ L_O_2 = (L \times F_A) - L_O_1 \]

Compare the greater of these loads to the rated moment and radial load capacities.

**Example:**

Load is 100 lbs on 4 wheel carriage,
\[ L = \frac{100}{2 \text{ pair wheels}} = 50 \text{ lbs.} \]

\[ A = 4", B = 10", F_A = 1 \]

\[ L_O_1 = \frac{50 \times (10 - 4) \times 1}{10} = 30 \text{ lbs.} \]

\[ L_O_2 = 50 - 30 = 20 \text{ lbs.} \]

**LOAD CONDITION B**

\[ L_O_1 = \frac{L \times A \times F_A}{B} \]

\[ L_O_2 = (L \times F_A) + L_O_1 \]

Compare the greater of these loads to the rated moment and radial load capacities.

**Example:**

Load is 100 lbs. on 4 wheel carriage,
\[ L = 100 / 2 \text{ pair wheels} = 50 \text{ lbs.} \]

\[ A = 4", B = 6", F_A = 1 \]

\[ L_O_1 = \frac{50 \times 4 \times 1}{6} = 33 \text{ lbs.} \]

\[ L_O_2 = 50 + 33 = 83 \text{ lbs.} \]

**LOAD CONDITION C**

\[ L_O_1 = \frac{L \times A \times F_A}{B} \]

\[ L_R = (L \times F_A) + L_O_1 \]

\[ L_O_1 = L_O_2 \]

Compare the greater of these loads to the rated moment and radial load capacities.

**Example:**

Load is 100 lbs. on 4 wheel carriage,
\[ L = 100 / 2 \text{ pair wheels} = 50 \text{ lbs.} \]

\[ A = 4", B = 6", F_A = 1 \]

\[ L_O_1 = \frac{50 \times 4 \times 1}{6} = 33 \text{ lbs.} \]

\[ L_R = (50 \times 1) + 33 = 83 \text{ lbs.} \]
MOUNTING AND ADJUSTMENT

Use the recommended fasteners for the specified track and wheel bushings.

Use the following table, and the center distance formulas in the next column, to configure the appropriate wheel mounting dimensions.

<table>
<thead>
<tr>
<th>V-RAIL SIZE</th>
<th>IV (in.)</th>
<th>OV (in.)</th>
<th>IV (mm)</th>
<th>OV (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.874</td>
<td>0.934</td>
<td>22.2</td>
<td>23.7</td>
</tr>
<tr>
<td>2</td>
<td>1.374</td>
<td>1.436</td>
<td>34.9</td>
<td>36.5</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>2.124</td>
<td>50.8</td>
<td>53.9</td>
</tr>
<tr>
<td>4</td>
<td>2.624</td>
<td>2.75</td>
<td>66.6</td>
<td>69.9</td>
</tr>
</tbody>
</table>

The fixed bushing should be used to carry the heaviest loading. Preload the adjustable bushing so that the wheel can just be turned by hand. Over-tightening the preload will cause premature wear of the components.

LUBRICATION

The V-Guide wheels are grease lubricated, and will not require any additional lube. The track should be lubricated for optimum performance and service life. Suggested lubricants are Mobil Vactra #2 Way Oil, or Mobil Polyrex EP 2 Extreme Pressure Grease.

SUGGESTED FASTENERS

<table>
<thead>
<tr>
<th>BUSHINGS</th>
<th>INCH</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>VB1</td>
<td>#6</td>
<td>MVB1</td>
</tr>
<tr>
<td>VB2</td>
<td>1/4&quot;</td>
<td>MVB2</td>
</tr>
<tr>
<td>VB3</td>
<td>5/16&quot;</td>
<td>MVB3</td>
</tr>
<tr>
<td>VB4</td>
<td>3/8&quot;</td>
<td>MVB4</td>
</tr>
<tr>
<td>VR1</td>
<td>#6, M3</td>
<td>VR3</td>
</tr>
<tr>
<td>VR2</td>
<td>#10, M6</td>
<td>VR4</td>
</tr>
</tbody>
</table>

CENTER DISTANCE FORMULA

\[ A = B + IV \]

\[ A = C - IV \]

\[ A = D - OV \]

WHEEL / BUSHING ASSEMBLY

Use SAE series N flat washers and lock washers to secure the wheel bushing assemblies.
Product Overview

Commercial Rail is a simple and cost effective linear motion solution with high load capacity and corrosion resistance.
- Roll formed rails made of steel/stainless steel sheet for low cost and corrosion resistance application
- Zinc plated rail length up to 6,000 mm
- Machined slider body made of aluminum alloy and anodized for corrosion resistance
- Steel rollers are made of 52100 chrome steel, hardened and ground, lubricated for life and sealed against contamination
- Stainless steel rollers made of 440C stainless steel for better corrosion resistance, lubricated for life and sealed against contamination
- Rollers made with thread integrated inner ring for ease of assembly and adjustment of pre-load
- Custom polymer wipers can be designed and manufactured to improve the smoothness of motion and service life
- Maximum operating temperature 100°C or 212°F
- Consult with factory for special hole spacing
- Speed up to 1.5 m/s
- Moment loads should be carried by two slides or two parallel rollers

Slide Orientation

The 3-roller slide should be installed in the rail so that the load is shared among the two outside rollers. The orientation marks indicate how to align the slider with the load direction.

Lubrication – Rails & Bearings

The rollers are internally lubricated for life, but the rails must always have a layer of grease. As a guideline, reapply fresh grease every 50,000 cycles.

Preload Adjustment

- To loosen the center roller, use an Allen wrench to un-tighten the screw while holding the roller still with an open-end wrench
- Turn the center roller to a position to achieve the desired pre-load
- Move the slide along the length of the rail by hand. Adjust it so that it does not feel loose anywhere.
- Tighten the screw while holding the roller flat with an open-end wrench

Applications

- Automation
- Packaging, material handling, etc
- Environmental, energy, HVAC, etc.
- Medical
- Office equipment

Material & Finish Specifications

<table>
<thead>
<tr>
<th>Material &amp; Finish Specifications</th>
<th>CR Series</th>
<th>SS Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail</td>
<td>Carbon steel, Zinc plated</td>
<td>Stainless steel 304 sheet</td>
</tr>
<tr>
<td>Slide</td>
<td>Aluminum alloy anodized</td>
<td>Aluminum alloy anodized</td>
</tr>
<tr>
<td>Rollers</td>
<td>Chrome steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Hardware</td>
<td>Steel zinc plated</td>
<td>Stainless steel 18-8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rail Mount</th>
<th>CR20/CRSS20</th>
<th>CR30/CRSS30</th>
<th>CR45/CRSS45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slide mount screws (Socket head cap)</td>
<td>M5</td>
<td>M6</td>
<td>M8</td>
</tr>
<tr>
<td>Tightening torque (lbs-in)</td>
<td>25</td>
<td>43</td>
<td>103</td>
</tr>
<tr>
<td>Tightening torque (N-m)</td>
<td>3</td>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slides</th>
<th>CR20/SS20</th>
<th>CR30/SS30</th>
<th>CR45/SS45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail mount screw (Button head cap)</td>
<td>M4</td>
<td>M6</td>
<td>M8</td>
</tr>
</tbody>
</table>
### CR20 SLIDE

![Diagram of CR20 Slide]

**Commercial Rail Slide**
- **Material**: Blank = Steel, SS = Stainless Steel
- **Rail Size**: 20 = 20 mm, 30 = 30 mm, 45 = 45 mm
- **Type of Body**: MCA = Machined Body

---

### CR20 RAIL

![Diagram of CR20 Rail]

**Commercial Rail**
- **Material**: Blank = Steel, SS = Stainless Steel
- **Rail Size**: 20 = 20 mm, 30 = 30 mm, 45 = 45 mm
- **Rail Length**: 160 - 6000 mm

---

### ORDER INFORMATION

**EXAMPLE**: CR20MCA / CR20R-XXXX

**DIMENSION**
- **LOAD RATINGS**
  - **CR20**
    - Static Radial: 210 N
    - Static Axial: 160 N
    - Dynamic Radial: 280 N
  - **CRSS20**
    - Static Radial: 210 N
    - Static Axial: 160 N
    - Dynamic Radial: 280 N

**CR20MCA Thread Pitch M5 x 0.8**
CR30 SLIDE

CR30 RAIL

ORDER INFORMATION

EXAMPLE: CR30MCA / CR30R-XXXX

Material
Blank = Steel
SS = Stainless Steel

Rail Size
20 = 20mm
30 = 30mm
45 = 45mm

Type of Body
MCA = Machined Body

Material
Blank = Steel
SS = Stainless Steel

Rail Size
20 = 20mm
30 = 30mm
45 = 45mm

Rail Length
160 - 6000mm
**Commercial Rail - CR45**

**Dynamic Radial Cr = 1,740 N**

### CR45 SLIDE

![Diagram of CR45 SLIDE]

**Order Information**

**EXAMPLE:** CR45MCA / CR45R-XXXX

#### Material
- Blank = Steel
- SS = Stainless Steel

#### Rail Size
- 20 = 20mm
- 30 = 30mm
- 45 = 45mm

#### Type of Body
- MCA = Machined Body

### CR45 RAIL

![Diagram of CR45 RAIL]

**Unit Weight = 1.31 lbs./ft.**

**Load Ratings**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Static Radial</th>
<th>Static Axial</th>
<th>Dynamic Radial</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR45</td>
<td>1330</td>
<td>930</td>
<td>1740</td>
</tr>
<tr>
<td>CRSS45</td>
<td>1330</td>
<td>930</td>
<td>1740</td>
</tr>
</tbody>
</table>

**CR45MCA Thread Pitch M8 x 1.25**
FEATURES & BENEFITS

- Low cost linear motion solution
- Precision rolling element bearing riding in a rail from Copper B-Line Series
- 9/16" Hex head for easier mounting
- Simple solution and setup for point-to-point applications
- Rollers provide self-alignment, durability and longevity
- MAX. bearing load - 300 lbs.
- MAX. bearing speed - 150 ft./ min. (30 in./sec.)
- Rails lengths available up to 10 ft.
  Contact manufacturer for longer lengths.

RAILS FINISHES:
- Bare steel
- Powder coated

ACCESSORIES AVAILABLE:
- Angle brackets (for welding to mounting rail)
- End stops

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAC3016</td>
<td>Hardened Crown Roller Bearing</td>
</tr>
<tr>
<td>PAC3016M</td>
<td>Hardened Crown Roller Bearing with metric thread</td>
</tr>
<tr>
<td>PAC2245</td>
<td>Rail System - unpainted (specify length - priced per foot)</td>
</tr>
<tr>
<td>PAC2247</td>
<td>Rail System - black powder coat finish</td>
</tr>
<tr>
<td></td>
<td>(specify length- price per foot)</td>
</tr>
<tr>
<td>PAC2244</td>
<td>Angle Brackets - 1&quot; Steel</td>
</tr>
<tr>
<td>PAC2246</td>
<td>End Stops for Rail System (bolt included)</td>
</tr>
</tbody>
</table>

NOTE: All metric dimensions are conversions from inch dimensions all parts are manufactured to inch standards.
Hevi-Rail® Linear Bearing Systems
Product Overview

PRODUCT OVERVIEW
The economical Hevi-Rail™ guide systems offer a lifetime of durability under continuous use. The easily interchangeable bearing components provide even dispersion of forces in the profile rails for longer system life and stability.

Linear Bearings:
• Outer ring made of case-hardened steel
• Handles very high axial and radial loads
• Easily interchangeable components for less down-time

Profile Rails:
• Standard length up to 6 meters
• Sand blasted or lightly oiled
• U-channel or I-channel available

Flange Plates:
• Simple mounting for bearings
• Can be ordered pre-welded to bearing
Ordering example: HVB-054/HVPO

Clamp Flanges:
• Adjustable
•Eliminates need for welding and straightening
• Easily adjustable parallelism

APPLICATIONS
• Telescoping applications (ex. overhead extending jib crane)
• Warehouse handling systems / other material handling
• Custom and standard lift units
• Large Shrink-wrap machinery
• Steel and coil handling
• Large variety of material handling
TECHNICAL SPECIFICATIONS

Linear Bearing for Axial & Radial Loads
Prior to welding, disassemble bearing components. To avoid cracks in welded joints, please use welding electrodes and core weld for unalloyed steel.

Materials:
- Outer ring - Case-hardened steel UNI 20 MnCr 5 hardened at 60+2 HRc
- Inner ring - Hardened steel En 31 - SAE 52100 hardened at 62-2 HRc
- Cylindrical rollers - Flat ground heads are hardened steel, En 31 - SAE 52100, hardened at 59-64 HRC

Bolt tolerance = 0.05 mm

Profile Rails: High quality steel, ASTM A 252 Gr.1, A 252 Gr.2, A 252 Gr.3, A 663 Gr.45-80, A 675 Gr. 45-90. Standard length (1024/1524 steel) of 6 m (19.7ft.). MnCr 5 with maximum contact pressure of 750 MPa (N/mm2). Optional sand blasted and/or lightly oiled. Rails are not hardened but have a Brinell hardness of 145-185. The guide ways in the rails should be lightly greased and not painted.

Clamp Flange: Low carbon steel, adjustable clamp

Flange Plate: Low carbon steel. Special designs available, contact manufacturer.

Seals: Bearings with fixed axial bearing (HVB-053 to HVB-063) - radial bearing has steel labyrinth and side guide roller with rubber seals

Bearings with eccentric adjustable axial bearing (HVBEA-454 to HVBEA-463) - Both radial and axial bearings utilize rubber seals (RS type)

Lubrication: Bearings are supplied lubricated with grease grade 3. Bearings from HVB-056 to HVB-063 can be relubricated with grease zerk. Adjustable bearings are not available with zerk.

Temperature: Resistant from -10°C to 80°C (14°F to 176°F)

Bearing Life Calculations:

L10 = \left(\frac{1666}{n}\right)\left(\frac{C}{P}\right)^{1/3} \text{ (Hours)}

C = Dynamic load rating (KN)
P = Automatic dynamic load (KN)
\(n\) = Revolutions per minute (rpm)

NOTE: Above calculation formula is for predicting life expectancy with 90% reliability level. Customers shall use their discretion to determine the reduction factor based on the actual operation needs and conditions such as reliability level, load, speed, impact and environments.

Adjusting Axial Bearing (HVBEA-454 to HVBEA-463)
1. Remove front screws.
2. Rotate axial bearing shaft
3. Check dimension A (repeat step 2, if needed)
4. Re-install front screws

SYSTEM DESIGN CLEARANCE

1. The overall system clearance should be 1.524 mm to 3.048 mm

INNER RAIL DISTANCE = SADDLE WIDTH + (1.524 mm to 3.048 mm)

2. Verify that the Axial bearing is aligned parallel to the rail; especially in vertical operations.

CALCULATION OF FMAX FOR CANTILEVERED LOADS

Formula: \[ F_{\text{max stat radial}} = \frac{Q \cdot L}{2 \cdot A} \]

\[ P_{\text{zul}} = 750 \text{ N/mm}^2 \] for all profile rails. Indicated here are \[ F_{\text{max stat radial + axial}} \] for each bearing.
**SELECTION GUIDE** (when used with Profile Rails HVR-S to HVR-6)

Use the following chart to select the bearings (fixed or adjustable), rails, flange plates and clamp flanges according to your system’s maximum static radial and axial loading. A “system” is defined as a bearing in the corresponding rail. For dimensional and detailed specifications for the system selected, simply refer to the corresponding pages.

<table>
<thead>
<tr>
<th>F (KN) MAX STAT RADIAL</th>
<th>F (KN) MAX STAT AXIAL</th>
<th>COMBINED BEARING AXIAL BEARING FIXED</th>
<th>COMBINED BEARING AXIAL BEARING ADJUSTABLE</th>
<th>PROFILE RAILS</th>
<th>CLAMP FLANGE</th>
<th>FLANGE PLATE</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2</td>
<td>1.7</td>
<td>HVB-053</td>
<td>–</td>
<td>HVR-S</td>
<td>–</td>
<td>HVPS-1</td>
<td>246</td>
</tr>
<tr>
<td>7.2</td>
<td>2.4</td>
<td>HVB-054</td>
<td>HVBEA-454</td>
<td>HVR-0</td>
<td>HVC-0</td>
<td>HVP0-1</td>
<td>244</td>
</tr>
<tr>
<td>8.6</td>
<td>2.8</td>
<td>HVB-055</td>
<td>HVBEA-455</td>
<td>HVR-1, HVRI-07</td>
<td>HVC-1</td>
<td>HVP1-1</td>
<td>248</td>
</tr>
<tr>
<td>8.9</td>
<td>3.0</td>
<td>HVB-056</td>
<td>HVBEA-456</td>
<td>HVR-2</td>
<td>HVC-2</td>
<td>HVP2-1</td>
<td>249</td>
</tr>
<tr>
<td>8.9</td>
<td>3.0</td>
<td>HVB-057</td>
<td>HVBEA-457</td>
<td>HVRI-08</td>
<td>–</td>
<td>HVP2-1</td>
<td>250</td>
</tr>
<tr>
<td>15.6</td>
<td>5.2</td>
<td>HVB-058</td>
<td>HVBEA-458</td>
<td>HVR-3, HVRI-09</td>
<td>HVC-3</td>
<td>HVP3-1</td>
<td>251</td>
</tr>
<tr>
<td>15.5</td>
<td>5.1</td>
<td>HVB-059</td>
<td>HVBEA-459</td>
<td>HVRI-10</td>
<td>–</td>
<td>–</td>
<td>252</td>
</tr>
<tr>
<td>16.5</td>
<td>5.5</td>
<td>HVB-060</td>
<td>HVBEA-460</td>
<td>HVRI-11</td>
<td>–</td>
<td>–</td>
<td>252</td>
</tr>
<tr>
<td>16.5</td>
<td>5.5</td>
<td>HVB-061</td>
<td>HVBEA-461</td>
<td>HVR-4</td>
<td>HVC-4</td>
<td>HVP4-1</td>
<td>253</td>
</tr>
<tr>
<td>23.5</td>
<td>7.8</td>
<td>HVB-062</td>
<td>–</td>
<td>HVR-5</td>
<td>–</td>
<td>HVP4-1</td>
<td>254</td>
</tr>
<tr>
<td>41.1</td>
<td>13.7</td>
<td>HVB-063</td>
<td>HVBEA-463</td>
<td>HVR-6</td>
<td>–</td>
<td>HVP6-1</td>
<td>255</td>
</tr>
</tbody>
</table>

**NOTE:** For cantilevered loads, static verification calculations can be found on page 244. *All dimensions in mm.

**MOUNTING CONFIGURATIONS**
Hevi-Rail® Linear Bearing System
0.6 US Ton-Force

**AXIAL BEARING - FIXED**

HVB-053

**WEIGHT** = 0.36 Kg

**BEARING RADIAL LOAD**
Max. dynamic load = 24 KN
Max. static load = 33 KN

**BEARING AXIAL LOAD**
Max. dynamic load = 10 KN
Max. static load = 14 KN

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

**PROFILE RAIL U-CHANNEL**

HVR-5

**WEIGHT** = 5.3 Kg/m

**MOMENT OF INERTIA**
Iₓ = 5.2 cm⁴, Iᵧ = 38.8 cm⁴

**MOMENT OF RESISTANCE**
Wₓ = 2.50 cm³, Wᵧ = 11.90 cm³

**RADIUS OF INERTIA**
ix = 0.80 cm, iy = 2.40 cm

**DIST. TO CENTER OF GRAVITY**
ey = 0.94 cm, ex = 32.50 cm

**FLANGE PLATE**

HVPS-1

**WEIGHT** = 0.36 Kg

**System Max. Static Radial Load = 5.2 KN / 0.6 US Ton-Force**

**System Max. Static Axial Load = 1.7 KN / 0.2 US Ton-Force**

**WHEN USED WITH SHOWN PROFILE RAILS**
Hevi-Rail® Linear Bearing Systems
0.8 US Ton-Force

AXIAL BEARING - FIXED

**HVB-054**

<table>
<thead>
<tr>
<th><strong>Weight</strong></th>
<th>0.53 Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bearing Radial Load</strong></td>
<td></td>
</tr>
<tr>
<td>Max. dynamic load = 39 KN</td>
<td></td>
</tr>
<tr>
<td>Max. static load = 65 KN</td>
<td></td>
</tr>
<tr>
<td><strong>Bearing Axial Load</strong></td>
<td></td>
</tr>
<tr>
<td>Max. dynamic load = 15 KN</td>
<td></td>
</tr>
<tr>
<td>Max. static load = 22 KN</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

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ECCENTRIC ADJUSTABLE

**HVBEA-454**

<table>
<thead>
<tr>
<th><strong>Weight</strong></th>
<th>0.53 Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bearing Radial Load</strong></td>
<td></td>
</tr>
<tr>
<td>Max. dynamic load = 39 KN</td>
<td></td>
</tr>
<tr>
<td>Max. static load = 65 KN</td>
<td></td>
</tr>
<tr>
<td><strong>Bearing Axial Load</strong></td>
<td></td>
</tr>
<tr>
<td>Max. dynamic load = 16 KN</td>
<td></td>
</tr>
<tr>
<td>Max. static load = 25 KN</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

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PROFILE RAIL U-CHANNEL

**HVR-0**

<table>
<thead>
<tr>
<th><strong>Weight</strong></th>
<th>10.5 Kg/m</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Moment of Inertia</strong></td>
<td></td>
</tr>
<tr>
<td>$I_x = 15.35 \text{ cm}^4$, $I_y = 137.05 \text{ cm}^4$</td>
<td></td>
</tr>
<tr>
<td><strong>Moment of Resistance</strong></td>
<td></td>
</tr>
<tr>
<td>$W_{x_{max}} = 6.64 \text{ cm}^3$, $W_{y_{max}} = 11.93 \text{ cm}^3$</td>
<td></td>
</tr>
<tr>
<td><strong>Radius of Inertia</strong></td>
<td></td>
</tr>
<tr>
<td>$r_{x} = 1.07 \text{ cm}$, $r_{y} = 3.20 \text{ cm}$</td>
<td></td>
</tr>
<tr>
<td><strong>Moment of Resistance</strong></td>
<td></td>
</tr>
<tr>
<td>$W_{y} = 31.69 \text{ cm}^3$</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**

*“h” refers to the depth of the axial bearing, so “h” depends on choice of HVB-054 or HVBEA-454.*

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FLANGE PLATE

**HVP0-1**

**CLAMP FLANGE**

**HVC-0**

**NOTE:**

System Max. Static Radial Load = 7.2 KN / 0.8 US Ton-Force
System Max. Static Axial Load = 2.4 KN / 0.3 US Ton-Force

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**WHEN USED WITH SHOWN PROFILE RAILS**

800.962.8979 • www.pbclinear.com
**Hevi-Rail® Linear Bearing Systems**

**0.9 US Ton-Force**

---

**AXIAL BEARING - FIXED**

**HVB-055**

- **WEIGHT** = 0.80 Kg
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 18 KN
  - Max. static load = 26 KN
- **NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

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**ECCENTRIC ADJUSTABLE**

**HVBEA-455**

- **WEIGHT** = 0.80 Kg
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 16 KN
  - Max. static load = 25 KN
- **NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

---

**PROFILE RAIL U-CHANNEL**

**HVR-1**

- **WEIGHT** = 14.8 Kg/m
- **MOMENT OF INERTIA**
  - \( I_x = 27.29 \text{ cm}^4 \), \( I_y = 273.50 \text{ cm}^4 \)
- **DIST. TO CENTER OF GRAVITY**
  - \( e_y = 1.50 \text{ cm} \), \( e_x = 5.16 \text{ cm} \)
- **RADIUS OF INERTIA**
  - \( i_x = 1.20 \text{ cm} \), \( i_y = 3.81 \text{ cm} \)
- **MOMENT OF RESISTANCE**
  - \( W_{x_{min}} = 10.91 \text{ cm}^3 \)
  - \( W_{x_{max}} = 18.20 \text{ cm}^3 \)
  - \( W_y = 53.00 \text{ cm}^3 \)

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**PROFILE RAIL I-CHANNEL**

**HVRI-07**

- **WEIGHT** = 19.4 Kg/m
- **MOMENT OF INERTIA**
  - \( I_x = 344.29 \text{ cm}^4 \), \( I_y = 57.63 \text{ cm}^4 \)
- **DIST. TO CENTER OF GRAVITY**
  - \( e_y = 4.90 \text{ cm} \), \( e_x = 3.25 \text{ cm} \)
- **RADIUS OF INERTIA**
  - \( i_x = 3.73 \text{ cm} \), \( i_y = 1.52 \text{ cm} \)
- **MOMENT OF RESISTANCE**
  - \( W_x = 70.26 \text{ cm}^3 \)
  - \( W_y = 17.73 \text{ cm}^3 \)

---

**FLANGE PLATE**

**HVP1-1**

- **CLAMP FLANGE**

**HVC-1**

- **WEIGHT** = 0.80 Kg
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 56 KN
  - Max. static load = 93 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 16 KN
  - Max. static load = 25 KN
- **NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

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* “h” refers to the depth of the axial bearing, so “h” depends on choice of HVB-055 or HVBEA-455.

---

**WHEN USED WITH SHOWN PROFILE RAILS**

**System Max. Static Radial Load = 8.6 KN / 0.9 US Ton-Force**

**System Max. Static Axial Load = 2.8 KN / 0.3 US Ton-Force**
**Hevi-Rail® Linear Bearing Systems**

**1.0 US Ton-Force**

### AXIAL BEARING - FIXED  
**HVB-056**

- **Weight**: 1.00 Kg
- **Bearing Radial Load**
  - Max. dynamic load = 59 KN
  - Max. static load = 102 KN
- **Bearing Axial Load**
  - Max. dynamic load = 20 KN
  - Max. static load = 32 KN

**Note**: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

### ECCENTRIC ADJUSTABLE  
**HVBEA-456**

- **Weight**: 1.00 Kg
- **Bearing Radial Load**
  - Max. dynamic load = 59 KN
  - Max. static load = 102 KN
- **Bearing Axial Load**
  - Max. dynamic load = 23 KN
  - Max. static load = 36 KN

**Note**: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

### PROFILE RAIL U-CHANNEL  
**HVR-2**

- **Weight**: 20.9 Kg/m
- **Moment of Inertia**
  - \( I_x = 37.92 \text{ cm}^4 \)
  - \( I_y = 493.58 \text{ cm}^4 \)
- **Dist. to Center of Gravity**
  - \( e_y = 1.54 \text{ cm} \)
  - \( e_x = 6.07 \text{ cm} \)

### FLANGE PLATE  
**HVP2-1**

### CLAMP FLANGE  
**HVC-2**

- **Weight**: 1.00 Kg
- **Bearing Radial Load**
  - Max. dynamic load = 59 KN
  - Max. static load = 102 KN
- **Bearing Axial Load**
  - Max. dynamic load = 23 KN
  - Max. static load = 36 KN

**Note**: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

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* "h" refers to the depth of the axial bearing, so “h” depends on choice of HVB-056 or HVBEA-456.

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**When used with shown profile rails**

- System Max. Static Radial Load = 8.9 KN / 1.0 US Ton-Force
- System Max. Static Axial Load = 3.0 KN / 0.3 US Ton-Force
### Hevi-Rail® Linear Bearing Systems

**1.0 US Ton-Force**

#### AXIAL BEARING - FIXED

**HVB-057**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>40.7</td>
</tr>
<tr>
<td>Width</td>
<td>20.3</td>
</tr>
<tr>
<td>Depth</td>
<td>23.4</td>
</tr>
</tbody>
</table>

**WEIGHT** = 0.90 Kg

**BEARING RADIAL LOAD**
- Max. dynamic load = 59 KN
- Max. static load = 102 KN

**BEARING AXIAL LOAD**
- Max. dynamic load = 20 KN
- Max. static load = 32 KN

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

#### ECCENTRIC ADJUSTABLE

**HVBEA-457**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>30.5</td>
</tr>
<tr>
<td>Width</td>
<td>13.5</td>
</tr>
<tr>
<td>Depth</td>
<td>3.5 - 5.0</td>
</tr>
</tbody>
</table>

**WEIGHT** = 0.87 Kg

**BEARING RADIAL LOAD**
- Max. dynamic load = 59 KN
- Max. static load = 102 KN

**BEARING AXIAL LOAD**
- Max. dynamic load = 23 KN
- Max. static load = 36 KN

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

#### PROFILE RAIL I-CHANNEL

**HVRI-08**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>40.7</td>
</tr>
<tr>
<td>Width</td>
<td>20.3</td>
</tr>
<tr>
<td>Depth</td>
<td>23.4</td>
</tr>
</tbody>
</table>

**WEIGHT** = 25.3 Kg/m

**MOMENT OF INERTIA**
- Ix = 597.54 cm³, Iy = 76.79 cm⁴

**DIST. TO CENTER OF GRAVITY**
- ey = 5.70 cm, ex = 3.30 cm

**RADIUS OF INERTIA**
- ix = 4.24 cm, iy = 1.54 cm

**MOMENT OF RESISTANCE**
- Wx = 104.92 cm³, Wy = 23.27 cm³

#### FLANGE PLATE

**HVP2-1**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>121.3</td>
</tr>
<tr>
<td>Width</td>
<td>9.0</td>
</tr>
<tr>
<td>Depth</td>
<td>4.0</td>
</tr>
</tbody>
</table>

**NOTE:**
- "h" refers to the depth of the axial bearing, so “h” depends on choice of HVB-057 or HVBEA-457.

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**WHEN USED WITH SHOWN PROFILE RAILS**

- System Max. Static Radial Load = 8.9 KN / 1.0 US Ton-Force
- System Max. Static Axial Load = 3.0 KN / 0.3 US Ton-Force

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Hevi-Rail® Linear Bearing Systems
1.7 US Ton-Force

**AXIAL BEARING - FIXED**  
**HVB-058**

- **WEIGHT** = 1.62 Kg
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 85 KN
  - Max. static load = 134 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 27 KN
  - Max. static load = 44 KN

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

**PROFILE RAIL U-CHANNEL**  
**HVR-3**

- **WEIGHT** = 28.6 Kg/m
- **RADIUS OF INERTIA**
  - \( I_x = 89.47 \text{ cm}^4, I_y = 865.23 \text{ cm}^4 \)
- **DIST. TO CENTER OF GRAVITY**
  - \( e_y = 1.99 \text{ cm}, e_x = 6.77 \text{ cm} \)

**PROFILE RAIL I-CHANNEL**  
**HVRI-09**

- **WEIGHT** = 34.1 Kg/m
- **MOMENT OF INERTIA**
  - \( I_x = 1037.22 \text{ cm}^4, I_y = 161.89 \text{ cm}^4 \)
- **DIST. TO CENTER OF GRAVITY**
  - \( e_y = 6.48 \text{ cm}, e_x = 4.05 \text{ cm} \)
- **RADIUS OF INERTIA**
  - \( i_x = 4.89 \text{ cm}, i_y = 1.93 \text{ cm} \)
- **MOMENT OF RESISTANCE**
  - \( W_{x_{max}} = 27.03 \text{ cm}^3, W_{y_{max}} = 44.96 \text{ cm}^3 \)
  - \( W_y = 127.80 \text{ cm}^3 \)

**FLANGE PLATE**  
**HVP3-1**

- **WEIGHT** = 1.62 Kg
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 85 KN
  - Max. static load = 134 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 23 KN
  - Max. static load = 36 KN

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

**CLAMP FLANGE**  
**HVC-3**

- **WEIGHT** = 1.62 Kg
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 85 KN
  - Max. static load = 134 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 23 KN
  - Max. static load = 36 KN

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

---

* "h" refers to the depth of the axial bearing, so “h” depends on choice of HVB-058 or HVBEA-458.

**WHEN USED WITH SHOWN PROFILE RAILS**

System Max. Static Radial Load = 15.6 KN / 1.7 US Ton-Force
System Max. Static Axial Load = 5.2 KN / 0.6 US Ton-Force
Hevi-Rail® Linear Bearing Systems
1.8 US Ton-Force

**AXIAL BEARING - FIXED**
**HVB-059**

WEIGHT = 1.80 Kg
BEARING RADIAL LOAD
Max. dynamic load = 92 KN
Max. static load = 153 KN
BEARING AXIAL LOAD
Max. dynamic load = 32 KN
Max. static load = 50 KN

**AXIAL BEARING - FIXED**
**HVB-060**

WEIGHT = 2.30 Kg
BEARING RADIAL LOAD
Max. dynamic load = 100 KN
Max. static load = 174 KN
BEARING AXIAL LOAD
Max. dynamic load = 39 KN
Max. static load = 66 KN

**ECCENTRIC ADJUSTABLE**
**HVBEA-459**

WEIGHT = 1.74 Kg
BEARING RADIAL LOAD
Max. dynamic load = 91 KN
Max. static load = 140 KN
BEARING AXIAL LOAD
Max. dynamic load = 32 KN
Max. static load = 50 KN

**ECCENTRIC ADJUSTABLE**
**HVBEA-460**

WEIGHT = 2.27 Kg
BEARING RADIAL LOAD
Max. dynamic load = 100 KN
Max. static load = 174 KN
BEARING AXIAL LOAD
Max. dynamic load = 32 KN
Max. static load = 50 KN

**PROFILE RAIL I-CHANNEL**
**HVRI-10**

WEIGHT = 30.9 Kg/m
MOMENT OF INERTIA
Ix = 1078.01 cm$^4$, Iy = 104.38 cm$^4$
DIST. TO CENTER OF GRAVITY
ey = 6.99 cm, ex = 3.49 cm
MOMENT OF RESISTANCE
Wx = 154.33 cm$^3$, Wy = 29.89 cm$^3$

**PROFILE RAIL I-CHANNEL**
**HVRI-11**

WEIGHT = 40.5 Kg/m
MOMENT OF INERTIA
Ix = 1670.08 cm$^4$, Iy = 184.52 cm$^4$
DIST. TO CENTER OF GRAVITY
ey = 7.62 cm, ex = 4.15 cm
RADIUS OF INERTIA
ix = 5.69 cm, iy = 1.91 cm
MOMENT OF RESISTANCE
Wx = 219.17 cm$^3$, Wy = 44.46 cm$^3$

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

**WHEN USED WITH SHOWN PROFILE RAILS**
System Max. Static Radial Load = 15.5 KN / 1.7 US Ton-Force
System Max. Static Axial Load = 5.1 KN / 0.6 US Ton-Force

**WHEN USED WITH SHOWN PROFILE RAILS**
System Max. Static Radial Load = 16.5 KN / 1.8 US Ton-Force
System Max. Static Axial Load = 5.5 KN / 0.6 US Ton-Force
Hevi-Rail® Linear Bearing Systems
1.8 US Ton-Force

**AXIAL BEARING - FIXED**  
**HVB-061**

- **WEIGHT = 2.82 Kg**
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 100 KN
  - Max. static load = 174 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 39 KN
  - Max. static load = 66 KN
- **NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

**ECCENTRIC ADJUSTABLE**  
**HVBEA-461**

- **WEIGHT = 2.82 Kg**
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 100 KN
  - Max. static load = 174 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 32 KN
  - Max. static load = 50 KN
- **NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

**PROFILE RAIL U-CHANNEL**  
**HVR-4**

- **WEIGHT = 35.9 Kg/m**
- **MOMENT OF INERTIA**
  - \( I_x = 150.98 \text{ cm}^4 \)
  - \( I_y = 1,494.32 \text{ cm}^4 \)
- **DIST. TO CENTER OF GRAVITY**
  - \( e_y = 2.25 \text{ cm}, \ e_x = 7.86 \text{ cm} \)
- **RADIUS OF INERTIA**
  - \( i_x = 1.82 \text{ cm}, \ i_y = 5.72 \text{ cm} \)
- **MOMENT OF RESISTANCE**
  - \( W_{x_{min}} = 39.00 \text{ cm}^3 \)
  - \( W_{x_{max}} = 67.13 \text{ cm}^3 \)
  - \( W_y = 190.12 \text{ cm}^3 \)

**FLANGE PLATE**  
**HVP4-1**

**CLAMP FLANGE**  
**HVC-4**

- **WEIGHT = 2.82 Kg**
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 100 KN
  - Max. static load = 174 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 32 KN
  - Max. static load = 50 KN

* “h” refers to the depth of the axial bearing, so “h” depends on choice of HVB-061 or HVBEA-461.

**WHEN USED WITH SHOWN PROFILE RAILS**

- System Max. Static Radial Load = 16.5 KN / 1.8 US Ton-Force
- System Max. Static Axial Load = 5.5 KN / 0.6 US Ton-Force
### Hevi-Rail® Linear Bearing Systems

#### 2.6 US Ton-Force

**AXIAL BEARING - FIXED**

**HVB-062**

- **WEIGHT** = 4.50 Kg
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 135 KN
  - Max. static load = 242 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 47 KN
  - Max. static load = 90 KN

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

**PROFILE RAIL U-CHANNEL**

**HVR-5**

- **WEIGHT** = 42.9 Kg/m
- **MOMENT OF INERTIA**
  - \( I_x = 205.84 \text{ cm}^4 \)
  - \( I_y = 2,185.32 \text{ cm}^4 \)
- **DIST. TO CENTER OF GRAVITY**
  - \( e_y = 2.37 \text{ cm} \), \( e_x = 8.75 \text{ cm} \)
- **RADIUS OF INERTIA**
  - \( i_x = 1.94 \text{ cm} \), \( i_y = 6.32 \text{ cm} \)
- **MOMENT OF RESISTANCE**
  - \( W_{x_{min}} = 48.42 \text{ cm}^3 \)
  - \( W_{x_{max}} = 86.89 \text{ cm}^3 \)
  - \( W_y = 249.75 \text{ cm}^3 \)

**FLANGE PLATE**

**HVP4-1**

- **WEIGHT** = 4.50 Kg
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 135 KN
  - Max. static load = 242 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 41 KN
  - Max. static load = 72 KN

**ECCENTRIC ADJUSTABLE**

**HVBEA-462**

- **WEIGHT** = 3.90 Kg
- **BEARING RADIAL LOAD**
  - Max. dynamic load = 135 KN
  - Max. static load = 242 KN
- **BEARING AXIAL LOAD**
  - Max. dynamic load = 41 KN
  - Max. static load = 72 KN

**NOTE:** Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

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* “h” refers to the depth of the axial bearing, so “h” depends on choice of HVB-062 or HVBEA-462.

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**WHEN USED WITH SHOWN PROFILE RAILS,**

- **System Max. Static Radial Load** = 23.5 KN / 2.6 US Ton-Force
- **System Max. Static Axial Load** = 7.8 KN / 0.9 US Ton-Force
Hevi-Rail® Linear Bearing Systems
4.6 US Ton-Force

**AXIAL BEARING - FIXED**

- **HVB-063**
  - **WEIGHT**: 6.52 Kg
  - **BEARING RADIAL LOAD**
    - Max. dynamic load = 183 KN
    - Max. static load = 353 KN
  - **BEARING AXIAL LOAD**
    - Max. dynamic load = 82 KN
    - Max. static load = 131 KN
  - **NOTE**: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

**PROFILE RAIL**

- **HVR-6**
  - **WEIGHT**: 52.3 Kg/m
  - **MOMENT OF INERTIA**
    - $I_x = 269.52$ cm$^4$
    - $I_y = 3,423.08$ cm$^4$
  - **DIST. TO CENTER OF GRAVITY**
    - $e_y = 2.40$ cm, $e_x = 10.08$ cm
  - **RADIUS OF INERTIA**
    - $i_x = 2.01$ cm, $i_y = 7.17$ cm
  - **MOMENT OF RESISTANCE**
    - $W_{x_{min}} = 57.15$ cm$^3$
    - $W_{x_{max}} = 112.11$ cm$^3$
    - $W_y = 339.76$ cm$^3$

**FLANGE PLATE**

- **HVP6-1**
  - **WEIGHT**: 6.50 Kg
  - **BEARING RADIAL LOAD**
    - Max. dynamic load = 183 KN
    - Max. static load = 353 KN
  - **BEARING AXIAL LOAD**
    - Max. dynamic load = 41 KN
    - Max. static load = 72 KN
  - **NOTE**: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

* “h” refers to the depth of the axial bearing, so “h” depends on choice of HVB-063 or HVBEA-463.

**WHEN USED WITH SHOWN PROFILE RAILS**

- System Max. Static Radial Load = 41.1 KN / 4.6 US Ton-Force
- System Max. Static Axial Load = 13.7 KN / 1.5 US Ton-Force
# Design & Layout Options

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