VB/VR/VS SERIES
High Precision Positioning Stages
Inch & Metric Versions
Del-Tron’s VB, VR and VS High Precision Positioning Stages take positional accuracy, performance and actuator flexibility to a new level. Utilizing Del-Tron’s proven ball and crossed roller technology and more than three decades of experience manufacturing linear slides and stages we offer three new model numbers and you can choose the method of actuation best suited for your application. Build your own High Precision Stage by simply picking out the ball or crossed roller stage that meets your applications needs and choosing one of the 4 methods of actuation, Micrometer head, Fine thread adjustment, Lead screw or Motorized actuator. Solid models for all of our High Precision Positioning Stages are available on our website. Please visit us at www.deltron.com.

**VB Series**

Our VB High Precision Positioning Stages utilize our proven ball bearing and shaft technology. They are factory preloaded to provide smooth, accurate positioning and performance. These units are spring loaded to provide a positive load on the actuator tip eliminating backlash. They require no lubrication and are available in travels ranging from .5” (12.5 mm) to 2” (50 mm). Actuator mounting brackets are available in both a center line or side drive configurations. A locking mechanism (Posi-Lock) is also available and can be set to hold a desired position when necessary. The aluminum carriage and base of each stage are machined and ground. Stainless steel is used for the internal components and all mounting actuator brackets are machined from aluminum. Carbide inserts are used where the actuator and stage make contact.

**VR Series**

The VR High Precision Positioning Stages employ crossed roller bearings and steel shafts with flats ground onto them. These hardened shafts with flats provide a greater surface contact for the crossed roller bearings increasing load and rigidity while maintaining the smallest possible footprint. These units are spring loaded to provide a positive load on the actuator tip eliminating backlash. They require no lubrication and are available in travels ranging from .5” (12.5 mm) to 2” (50 mm). Actuator mounting brackets are available in both a center line or side drive configurations. A locking mechanism (Posi-Lock) is also available and can be set to hold a desired position when necessary. The aluminum carriage and base of each stage are machined and ground. Stainless steel is used for the internal components and all mounting actuator brackets are machined from aluminum. Carbide inserts are used where the actuator and stage make contact.

**VS Series**

The VS High Precision Positioning Stages incorporate V grooved rails and crossed roller bearings offering ultra-smooth linear motion. These hardened rails and crossed roller bearings are machined and ground, and provide excellent load carrying capability while maintaining low linear friction and excellent rigidity. They are available in travels ranging from .5” (12.5 mm) to 2” (50 mm). Actuator mounting brackets are available in both a center line or side drive configurations. A locking mechanism (Posi-Lock) is also available and can be set to hold a desired position when necessary. The aluminum carriage, base and actuator mounting brackets of each stage are machined. Carbide inserts are used where the actuator and stage make contact.
Actuator Options

Micrometer Head:

Micrometer heads are available in .001” graduations for the inch version and metric micrometer heads are available in .01mm graduations.

Fine Adjustment Screw:

Standard fine adjustment screw is supplied with 100 threads per inch.

Lead screw:

Lead screw assembly is supplied with an anti-backlash nut and a .050” lead for the inch version and a 1mm lead for the metric version.

Motorized Actuator:

Our motorized DC Servo motor is available on all .5” (12.5mm) and 1” (25mm) travel High Precision Positioning Stages.

**Motorized Actuator Specifications:**
- Minimum Incremental Motion ($\mu$m) 0.2
- Uni-directional Repeatability ($\mu$m) 2
- Bi-directional Repeatability ($\mu$m) 3 or +/- 1.5
- Backlash ($\mu$m) 10
- On-Axis Accuracy ($\mu$m) 10 or +/- 5
- Maximum Speed ($\mu$m/s) 0.4
- Axial Load Capacity (N) 60

Note: All stages are also available as plain models if no method of actuation is needed.
# High Precision Positioning Stages

## Nomenclature - INCH

### Nomenclature (example for part # VR3SD-.5-D-PL)

<table>
<thead>
<tr>
<th>SERIES</th>
<th>TYPE</th>
<th>WORK SURFACE</th>
<th>DRIVE</th>
<th>TRAVEL INCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>R</td>
<td>3</td>
<td>SD</td>
<td>.5</td>
</tr>
</tbody>
</table>

- **V**: High Precision Positioning Stage
- **R**: Crossed Roller Slide
- **3**: 3 x 3
- **SD**: Blank = Center Drive
- **.5**: .5 or 1

<table>
<thead>
<tr>
<th>ACTUATOR</th>
<th>POSI-LOCK</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>PL</td>
</tr>
</tbody>
</table>

- **D**: Blank = Micrometer
- **PL**: Blank = Yes

*Lead Screw Travel is 2” For All

## Nomenclature - METRIC

### Nomenclature (example for part # VRM3-12.5-T-PL)

<table>
<thead>
<tr>
<th>SERIES</th>
<th>TYPE</th>
<th>THREAD TYPE</th>
<th>WORK SURFACE</th>
<th>DRIVE</th>
<th>TRAVEL MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>R</td>
<td>M</td>
<td>3</td>
<td></td>
<td>12.5</td>
</tr>
</tbody>
</table>

- **V**: High Precision Positioning Stage
- **R**: Crossed Roller Slide
- **M**: Metric
- **3**: 76 x 76, 76 x 102, 76 x 152
- **SD**: Blank = Center Drive
- **12.5**: 12.5 or 25, 25 or 50

<table>
<thead>
<tr>
<th>ACTUATOR</th>
<th>POSI-LOCK</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>PL</td>
</tr>
</tbody>
</table>

- **T**: Blank = Micrometer
- **PL**: Blank = Yes

*Lead Screw Travel is 50MM For All
## Load Ratings - INCH

<table>
<thead>
<tr>
<th>SERIES</th>
<th>POUNDS LOAD CAPACITY</th>
<th>LB-IN</th>
<th>LB-IN</th>
<th>LB-IN</th>
<th>*/&quot; ACCURACY</th>
<th>&quot;&quot;&quot;&quot; REPEATABILITY</th>
<th>COEFFICIENT OF FRICTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>VB3</td>
<td>58</td>
<td>32.28</td>
<td>26.60</td>
<td>28.18</td>
<td>0.00004</td>
<td>0.00002</td>
<td>0.002</td>
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<tr>
<td>VB4</td>
<td>67</td>
<td>48.98</td>
<td>65.86</td>
<td>69.15</td>
<td>0.00004</td>
<td>0.00002</td>
<td>0.002</td>
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<tr>
<td>VB6</td>
<td>105</td>
<td>76.98</td>
<td>162.62</td>
<td>170.75</td>
<td>0.00004</td>
<td>0.00002</td>
<td>0.002</td>
</tr>
<tr>
<td>VR3</td>
<td>176</td>
<td>126.61</td>
<td>105.18</td>
<td>110.44</td>
<td>0.00004</td>
<td>0.00002</td>
<td>0.002</td>
</tr>
<tr>
<td>VR4</td>
<td>200</td>
<td>144.40</td>
<td>179.94</td>
<td>188.94</td>
<td>0.00004</td>
<td>0.00002</td>
<td>0.002</td>
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<tr>
<td>VR6</td>
<td>312</td>
<td>266.39</td>
<td>464.64</td>
<td>487.87</td>
<td>0.00004</td>
<td>0.00002</td>
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<tr>
<td>VS3</td>
<td>116</td>
<td>37.04</td>
<td>99.76</td>
<td>104.72</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.002</td>
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<tr>
<td>VS6</td>
<td>158</td>
<td>75.84</td>
<td>325.12</td>
<td>341.44</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.002</td>
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</table>

Plain model shown in all drawings for work surface and mounting dimensions. Refer to actuators for dimensions of actuator desired.

## Load Ratings - METRIC

<table>
<thead>
<tr>
<th>SERIES</th>
<th>kgf LOAD CAPACITY</th>
<th>N-m</th>
<th>N-m</th>
<th>N-m</th>
<th>mm/25mm ACCURACY</th>
<th>mm REPEATABILITY</th>
<th>COEFFICIENT OF FRICTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBM3</td>
<td>26</td>
<td>3.65</td>
<td>2.85</td>
<td>3.18</td>
<td>0.001</td>
<td>0.0005</td>
<td>0.002</td>
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<td>VBM4</td>
<td>30</td>
<td>5.54</td>
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<td>7.82</td>
<td>0.001</td>
<td>0.0005</td>
<td>0.002</td>
</tr>
<tr>
<td>VBM6</td>
<td>48</td>
<td>8.70</td>
<td>18.38</td>
<td>19.30</td>
<td>0.001</td>
<td>0.0005</td>
<td>0.002</td>
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<tr>
<td>VRM3</td>
<td>80</td>
<td>14.30</td>
<td>11.88</td>
<td>12.48</td>
<td>0.001</td>
<td>0.0005</td>
<td>0.002</td>
</tr>
<tr>
<td>VRM4</td>
<td>91</td>
<td>16.31</td>
<td>20.33</td>
<td>21.34</td>
<td>0.001</td>
<td>0.0005</td>
<td>0.002</td>
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<tr>
<td>VRM6</td>
<td>142</td>
<td>30.10</td>
<td>52.50</td>
<td>55.12</td>
<td>0.001</td>
<td>0.0005</td>
<td>0.002</td>
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<tr>
<td>VSM3</td>
<td>52</td>
<td>4.18</td>
<td>11.27</td>
<td>11.83</td>
<td>0.0025</td>
<td>0.0025</td>
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<tr>
<td>VSM6</td>
<td>71</td>
<td>8.57</td>
<td>36.74</td>
<td>38.58</td>
<td>0.0025</td>
<td>0.0025</td>
<td>0.002</td>
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</tbody>
</table>

Plain model shown in all drawings for work surface and mounting dimensions. Refer to actuators for dimensions of actuator desired.
Ball or Crossed Roller - INCH

VB3-P, VR3-P

Ball or Crossed Roller - METRIC

VBM3-P, VRM3-P
Ball or Crossed Roller - INCH

VB4-P, VR4-P

POSI-LOCK FEATURE CAN BE ADDED TO EITHER SIDE

Ball or Crossed Roller - METRIC

VBM4-P, VRM4-P

POSI-LOCK FEATURE CAN BE ADDED TO EITHER SIDE
High Precision Positioning Stages

Ball or Crossed Roller - INCH

VB6-P, VR6-P

Ball or Crossed Roller - METRIC

VBM6-P, VRM6-P
Rail Set - INCH

VS3-P

Rail Set - METRIC

VSM3-P
High Precision Positioning Stages

Rail Set - INCH

VS6-P

Rail Set - METRIC

VSM6-P

VS6-PL

POSI-LOCK FEATURE CAN BE ADDED TO EITHER SIDE
Actuators - INCH & METRIC

Center Drive Micrometer Options

- CENTER DRIVE 5" (12.5MM) MICROMETER
- CENTER DRIVE 1" (25MM) MICROMETER
- CENTER DRIVE 2" (50MM) MICROMETER

Side Drive Micrometer Options

- SIDE DRIVE 5" (12.5MM) MICROMETER
  (Dimensions shown with VB3/VR3, VBM3/VRM3)
- SIDE DRIVE 1" (25MM) MICROMETER
  (Dimensions shown with VB3/VR3, VBM3/VRM3)
- SIDE DRIVE 2" (50MM) MICROMETER
  (Dimensions shown with VB6/VR6, VBM6/VRM6)

Center Drive 100 TPI Adjustment Options

- CENTER DRIVE 5" (12.5MM) 100 TPI ADJUSTMENT
- CENTER DRIVE 1" (25MM) 100 TPI ADJUSTMENT
- CENTER DRIVE 2" (50MM) 100 TPI ADJUSTMENT

Side Drive 100 TPI Adjustment Options

- SIDE DRIVE 5" (12.5MM) 100 TPI ADJUSTMENT
  (Dimensions shown with VB3/VR3, VBM3/VRM3)
- SIDE DRIVE 1" (25MM) 100 TPI ADJUSTMENT
  (Dimensions shown with VB3/VR3, VBM3/VRM3)
- SIDE DRIVE 2" (50MM) 100 TPI ADJUSTMENT
  (Dimensions shown with VB6/VR6, VBM6/VRM6)
**Actuators - INCH & METRIC**

**Center Motorized Actuator Options**

![Center Drive Motorized Actuator Options](image1)

**Side Drive Motorized Actuator Options**

![Side Drive Motorized Actuator Options](image2)

**Lead Screw Options - Direct Drive**

![Lead Screw Options - Direct Drive](image3)

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**Del-Tron Precision, Inc.**

“Simple — Smooth — Straight line design”

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