PLANEARY ROLLER SCREWS

ENDURANCE TECHNOLOGY™
A Tolomatic Design Principle

LINEAR SOLUTIONS MADE EASY
Planetary Roller Screws

PLANETARY ROLLER SCREW OVERVIEW
Roller screws are designed to provide high force and efficient operation in a compact package. This unique design offers higher forces and longer life in a smaller package compared to ball screws, increasing a machine designer’s ability to create compact machine concepts. Tolomatic roller screws are manufactured using state-of-the-art equipment to ensure strict tolerances and the highest quality standards confirming that each roller screw provides top-tier performance.

Tolomatic’s Planetary Roller Screws:
• Verified and tested extensively in Tolomatic’s research & development lab
• Proven long, reliable life in thousands of demanding applications world-wide through use in Tolomatic’s ERD, IMA, RSA, RSX and ServoWeld actuator platforms.
• Configurable stroke lengths
• Option to machine screw ends to OEM specifications
• Industry best lead times

Available Configurations

<table>
<thead>
<tr>
<th>SCREW SIZE</th>
<th>LEAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td>15</td>
<td>4.5, 10</td>
</tr>
<tr>
<td>20</td>
<td>4.5, 10</td>
</tr>
<tr>
<td>30</td>
<td>5, 10</td>
</tr>
<tr>
<td>36</td>
<td>5, 10</td>
</tr>
<tr>
<td>39</td>
<td>10</td>
</tr>
<tr>
<td>48</td>
<td>12</td>
</tr>
<tr>
<td>63</td>
<td>10</td>
</tr>
</tbody>
</table>

See page 6 for complete list of screw sizes, lead availability, dimensions and specifications

FAST DELIVERY,*
*Lead times are dependent on quantity and machined end specifications

TOLOMATIC’S ELECTRIC ROD-STYLE ACTUATORS

<table>
<thead>
<tr>
<th>ERD</th>
<th>RSH</th>
<th>RSA</th>
<th>GSA</th>
<th>RSX</th>
<th>IMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rod-Style Actuator</td>
<td>Hygienic Rod-Style Actuator</td>
<td>Red-Style Actuator</td>
<td>Guided Rod-Style Actuator</td>
<td>Rod-Style Actuator</td>
<td>Integrated Servo Actuator</td>
</tr>
<tr>
<td>Force up to:</td>
<td>Speed up to:</td>
<td>Stroke Length up to:</td>
<td>Screw/Nut Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.22 kN (500 lbf)</td>
<td>1473 mm/sec (58 in/sec)</td>
<td>609.6 mm (24 in)</td>
<td>Solid &amp; Ball</td>
<td>2190-4000</td>
<td></td>
</tr>
<tr>
<td>35.3 kN (7,943 lbf)</td>
<td>500 mm/sec (19.7 in/sec)</td>
<td>1200 mm (48 in)</td>
<td>Ball &amp; Roller</td>
<td>2100-4010</td>
<td></td>
</tr>
<tr>
<td>58 kN (13,039 lbf)</td>
<td>3,124 mm/sec (123 in/sec)</td>
<td>1,524 mm (60 in)</td>
<td>Solid, Ball &amp; Roller</td>
<td>3600-4166</td>
<td></td>
</tr>
<tr>
<td>4.23 kN (950 lbf)</td>
<td>3,124 mm/sec (123 in/sec)</td>
<td>914 mm (36 in)</td>
<td>Solid &amp; Ball</td>
<td>3600-4166</td>
<td></td>
</tr>
<tr>
<td>222.4 kN (50,000 lbf)</td>
<td>760 mm/sec (29.9 in/sec)</td>
<td>890 mm (35 in)</td>
<td>Roller</td>
<td>2171-4001</td>
<td></td>
</tr>
<tr>
<td>30.6 kN (6,875 lbf)</td>
<td>1,334 mm/sec (52.5 in/sec)</td>
<td>457 mm (18 in)</td>
<td>Ball &amp; Roller</td>
<td>2700-4000</td>
<td></td>
</tr>
</tbody>
</table>

For complete information see www.tolomatic.com or literature number:

(Not all models deliver maximum values listed, i.e.: Maximum thrust may not be available with maximum speed)
Roller Screws vs. Ball Screws

Roller Screw

Capable of handling heavy loads, planetary roller screws contain precision ground rollers engaged with a precision ground screw and nut. When compared with a ball screw of the same size and lead, the roller screw components are designed to increase points of contact and a larger contact radius. This results in less stress per point of contact and allows roller screws to carry higher loads.

- Higher DLR = longer life
- Higher loads per given size
- Allows for smaller, lighter weight designs and machine concepts
- Compact design allows for flexibility in machine design
- Quiet, efficient operation

Ball Screw

Capable of handling moderate loads, ball screw nut assemblies contain multiple ball bearings that cannot be made below a minimum size. When compared to a roller screw of similar size and lead, the ball bearings’ radius requires a coarser pitch resulting in fewer points of contact. Combined with the smaller contact radius and a design that allows the bearings to contact each other, limits the ball screw’s DLR leading to lower forces and shorter life.

 ballot

**ROLLER AND BALL SCREW PERFORMANCE COMPARISONS**

<table>
<thead>
<tr>
<th></th>
<th>Roller Screw</th>
<th>Ball Screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic load rating</td>
<td>Very High</td>
<td>Medium</td>
</tr>
<tr>
<td>Lifetime</td>
<td>Very long, many times greater than ball screw</td>
<td>Moderate</td>
</tr>
<tr>
<td>Shock Loads</td>
<td>Very high</td>
<td>Moderate</td>
</tr>
<tr>
<td>Relative Space Required</td>
<td>Minimal</td>
<td>Moderate</td>
</tr>
<tr>
<td>Acceleration</td>
<td>High</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

**DLR (Dynamic Load Rating)** is an industry standard term that represents an applicable constant load (in direction and magnitude) where a ball bearing device (or power screw) will achieve 1,000,000 revolutions of rated life or L10 life estimation at 90% reliability.

Industries & Applications

- Aerospace
- Ball Screw Replacement
- Clamping
- Defense
- Hydraulic Replacement
- Injection Molding
- Lifting
- Machine Tools
- Motion Simulators
- Pressing
- Pumping
- Punching
- Riveting
- Valve Control
Tolomatic planetary roller screws offer machine designers a robust, compact, high force linear motion solution. Long life, flexible design and efficient operation ensure minimal downtime and maximize ROI. Now available in standard sizes, leads, and lengths built-to-order.

**PLANETARY ROLLERS**
- Precision ground on state-of-the-art machines to high tolerances for smooth and efficient operation
- High dynamic load ratings for long life

**ROLLER SCREW**
State-of-the-art manufacturing coupled with extensive statistical testing methods ensures high performance within tight specifications

**ROLLER NUT**
Increased contact points for high load carrying capacity

**FAST DELIVERY**
*Lead times are dependent on quantity and machined end specifications

**ENDURANCE TECHNOLOGY**
A Tolomatic Design Principle
Endurance Technology features are designed for maximum durability to provide extended service life.
**HARDENED STEEL**
- Screw, nut and rollers are manufactured with specially hardened steel for maximum durability and long life
- Designed and tested for demanding applications
- High load capacities

**MACHINED ENDS**
- Screw ends and bearing journals custom machined to fit most application requirements
- Easy integration into machine designs and concepts

**PLANETARY GEARS**
High tech quality control & measurement lab assures superior performance for every component

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**SCREW SIZE | LEAD**

<table>
<thead>
<tr>
<th>mm</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>4, 5, 10</td>
</tr>
<tr>
<td>20</td>
<td>4, 5, 10</td>
</tr>
<tr>
<td>30</td>
<td>5, 10</td>
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<tr>
<td>36</td>
<td>5, 10</td>
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<tr>
<td>39</td>
<td>10</td>
</tr>
<tr>
<td>48</td>
<td>12</td>
</tr>
<tr>
<td>63</td>
<td>10</td>
</tr>
</tbody>
</table>

See page 6 for complete list of screw sizes, lead availability, dimensions and specifications.

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See page 6 for complete list of screw sizes, lead availability, dimensions and specifications.
### Dimensions & Specifications:

**Planetary Roller Screws**

#### Cylindrical

<table>
<thead>
<tr>
<th>Config. Code</th>
<th>Screw Size</th>
<th>Lead</th>
<th>Screw Diameter</th>
<th>Thread Length</th>
<th>Shaft Length</th>
<th>NUT O.D.</th>
<th>NUT LENGTH</th>
<th>Key Size</th>
<th>Lube Port</th>
<th>DLR (C)</th>
<th>SLR (Co)</th>
<th>DLR (C)</th>
<th>SLR (Co)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.4</td>
<td>15</td>
<td>4</td>
<td>15.29</td>
<td>743.9</td>
<td>990.6</td>
<td>34.983</td>
<td>44.88</td>
<td>4x4x14</td>
<td>2.0</td>
<td>41.1</td>
<td>38.7</td>
<td>9,240</td>
<td>8,700</td>
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<tr>
<td>15.5</td>
<td>15</td>
<td>5</td>
<td>15.29</td>
<td>743.9</td>
<td>990.6</td>
<td>34.983</td>
<td>44.88</td>
<td>4x4x14</td>
<td>2.0</td>
<td>53.6</td>
<td>34.9</td>
<td>12,050</td>
<td>7,846</td>
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<tr>
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<td>10</td>
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<td>990.6</td>
<td>34.983</td>
<td>44.88</td>
<td>4x4x14</td>
<td>2.0</td>
<td>47.2</td>
<td>47.3</td>
<td>10,611</td>
<td>10,633</td>
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<td>20</td>
<td>4</td>
<td>19.80</td>
<td>1101.1</td>
<td>1219.2</td>
<td>41.981</td>
<td>68.87</td>
<td>4x4x18</td>
<td>2.0</td>
<td>67.2</td>
<td>83.9</td>
<td>15,107</td>
<td>18,861</td>
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<tr>
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<td>20</td>
<td>5</td>
<td>19.80</td>
<td>1101.1</td>
<td>1219.2</td>
<td>41.981</td>
<td>68.87</td>
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<td>73.3</td>
<td>70.9</td>
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<td>5</td>
<td>19.80</td>
<td>1101.1</td>
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<td>41.981</td>
<td>68.87</td>
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<td>76.4</td>
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<td>16,636</td>
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<td>30.5</td>
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<td>5</td>
<td>30.37</td>
<td>1049.0</td>
<td>1219.2</td>
<td>61.976</td>
<td>88.85</td>
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<td>3.0</td>
<td>65.5</td>
<td>104.6</td>
<td>14,725</td>
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<td>30.10</td>
<td>30</td>
<td>10</td>
<td>30.71</td>
<td>1049.0</td>
<td>1219.2</td>
<td>61.976</td>
<td>88.85</td>
<td>5x5x22</td>
<td>3.0</td>
<td>116.1</td>
<td>105.0</td>
<td>26,100</td>
<td>23,605</td>
</tr>
<tr>
<td>36.5</td>
<td>36</td>
<td>5</td>
<td>36.32</td>
<td>1036.3</td>
<td>1219.2</td>
<td>74.983</td>
<td>81.85</td>
<td>5x5x22</td>
<td>3.0</td>
<td>96.6</td>
<td>175.3</td>
<td>21,717</td>
<td>39,409</td>
</tr>
<tr>
<td>36.10</td>
<td>36</td>
<td>10</td>
<td>36.75</td>
<td>1036.3</td>
<td>1219.2</td>
<td>74.983</td>
<td>81.85</td>
<td>5x5x22</td>
<td>3.0</td>
<td>160.8</td>
<td>160.1</td>
<td>36,149</td>
<td>35,992</td>
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</table>

#### Flanged

<table>
<thead>
<tr>
<th>Config. Code</th>
<th>Screw Size</th>
<th>Lead</th>
<th>Hole Diameter</th>
<th>Lube Port</th>
<th>Pilot</th>
<th>DLR (C)</th>
<th>SLR (Co)</th>
<th>DLR (C)</th>
<th>SLR (Co)</th>
</tr>
</thead>
<tbody>
<tr>
<td>39.10</td>
<td>39</td>
<td>10</td>
<td>11.50</td>
<td>1/4-28 x 4.6mm</td>
<td>Ø72.8</td>
<td>182.7</td>
<td>214.3</td>
<td>41,073</td>
<td>48,177</td>
</tr>
<tr>
<td>48.12</td>
<td>48</td>
<td>12</td>
<td>13.50</td>
<td>1/4-28 x 4.6mm</td>
<td>Ø78.0</td>
<td>269.3</td>
<td>485.6</td>
<td>60,541</td>
<td>109,167</td>
</tr>
<tr>
<td>63.10</td>
<td>63</td>
<td>10</td>
<td>16.27</td>
<td>1/4-28 x 4.6mm</td>
<td>Ø116.86</td>
<td>442.9</td>
<td>818.7</td>
<td>99,568</td>
<td>184,051</td>
</tr>
</tbody>
</table>

* For longer lengths, contact Tolomatic.

Lead Accuracy: 0.023 mm/300 mm  Backlash: 0.03 mm

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**Tolomatic**

EXCELLENCE IN MOTION

PRS.6  1-800-328-2174
DIMENSIONS & SPECIFICATIONS:
Tolomatic’s engineering, research & development, and test departments utilize modern design tools and test equipment to ensure each roller screw design is capable of meeting industry leading performance standards. Thousands of hours of design and testing stand behind each planetary roller screw design. Tolomatic roller screws have a record of proven performance in demanding applications as the key component in its many electric actuator platforms. (ERD, IMA, RSA, RSX, ServoWeld)

ORDERING

<table>
<thead>
<tr>
<th>MODEL</th>
<th>LEAD</th>
<th>STROKE LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRS</td>
<td>04 SM150</td>
<td>Enter desired stroke length in millimeters (round to nearest mm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See page 6 for maximum stroke length for DIAMETER and LEAD chosen</td>
</tr>
</tbody>
</table>

DIAMETER
15, 20, 30, 36, 39, 48, 63

Designed and Tested for Long Life
Tolomatic’s engineering, research & development, and test departments utilize modern design tools and test equipment to ensure each roller screw design is capable of meeting industry leading performance standards. Thousands of hours of design and testing stand behind each planetary roller screw design. Tolomatic roller screws have a record of proven performance in demanding applications as the key component in its many electric actuator platforms. (ERD, IMA, RSA, RSX, ServoWeld)
The Tolomatic Difference
Expect More From the Industry Leader:

- **INNOVATIVE PRODUCTS**
  Unique linear actuator solutions with Endurance Technology® to solve your challenging application requirements.

- **FAST DELIVERY**
  The fastest delivery of catalog products... Built-to-order with configurable stroke lengths and flexible mounting options.

- **ACTUATOR SIZING**
  Online sizing that is easy to use, accurate and always up-to-date. Find a Tolomatic electric actuator to meet your requirements.

- **YOUR MOTOR HERE**
  Match your motor with compatible mounting plates that ship with any Tolomatic electric actuator.

- **LIBRARY**
  Easy to access CAD files available in the most popular formats to place directly into your assembly.

- **TECHNICAL SUPPORT**
  Extensive motion control knowledge: Expect prompt, courteous replies to any application and product questions from Tolomatic’s industry experts.

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**ServoWeld® Actuators**

**Electric Linear Actuators**

**Pneumatic Actuators**

**Power Transmission Products**

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