RSX
EXTREME FORCE
HYDRAULIC CLASS
ELECTRIC ACTUATORS
WHAT IS THE RSX?
RSX actuators are an ideal choice for replacing hydraulic cylinders. These high force electric actuators are available for forces up to 50,000 lbf (222.4 kN). Designed for 100% duty cycle, rugged service and long life. The RSX utilizes planetary roller screws for long lasting consistent performance. Additionally, the RSX uses Tolomatic’s popular Your Motor Here program which allows RSX to easily mount many servo motor and gearboxes on the market.

TOLOMATIC’S ELECTRIC ROD-STYLE ACTUATORS

<table>
<thead>
<tr>
<th>ERD</th>
<th>RSA</th>
<th>RSX</th>
<th>GSA</th>
<th>IMA</th>
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<tbody>
<tr>
<td>Rod-Style Actuator</td>
<td>Rod-Style Actuator</td>
<td>Rod-Style Actuator</td>
<td>Guided Rod-Style Actuator</td>
<td>Integrated Servo Actuator</td>
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<tr>
<td><strong>Force up to:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 kN (7,868 lbf)</td>
<td>58 kN (13,039 lbf)</td>
<td>222.4 kN (50,000 lbf)</td>
<td>4.23 kN (950 lbf)</td>
<td>30.6 kN (6,875 lbf)</td>
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<tr>
<td><strong>Speed up to:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1473 mm/sec (58 in/sec)</td>
<td>3,124 mm/sec (123 in/sec)</td>
<td>760 mm/sec (29.9 in/sec)</td>
<td>3,124 mm/sec (123 in/sec)</td>
<td>1,334 mm/sec (52.5 in/sec)</td>
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<tr>
<td><strong>Stroke Length up to:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1000 mm (39.4 in)</td>
<td>1,524 mm (60 in)</td>
<td>890 mm (35 in)</td>
<td>914 mm (36 in)</td>
<td>457 mm (18 in)</td>
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<tr>
<td><strong>Screw/Nut Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid, Ball &amp; Roller</td>
<td>Solid, Ball &amp; Roller</td>
<td>Roller</td>
<td>Solid &amp; Ball</td>
<td>Ball &amp; Roller</td>
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</tbody>
</table>

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

| Literature Number: | 2190-4000 | 3600-4166 | 2171-4001 | 3600-4166 | 2700-4000 |

(Not all models deliver maximum values listed, i.e.: Maximum thrust may not be available with maximum speed)
RSX Extreme Force, Hydraulic Class Electric Actuator

Applications

Volumetric pumps
Injection molding

Motion simulators

Pressing
Punching
Piercing

Cut-Off & Other Timber Applications

Other Applications:
- Active Security Barrier
- Assembly machinery
- Automatic tool changers
- Automotive
- Clamping
- Converting
- Cycle testing
- Fillers
- Formers
- Hydraulic replacement
- Machine tools
- Open / close doors
- Parts clamping
- Piercing
- Precision grinders
- Product test simulations
- Pressing
- Punching
- Riveting / fastening / joining
- Sawmill equipment
- Stamping
- Tension control
- Test stands
- Tube bending
- Wave generation
- Web guidance
- Welding
- Wire winding
- and many more

CONTENTS
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RSX ELECTRIC ROD-STYLE ACTUATOR

Endurance Technology features are designed for maximum durability to provide extended service life.

The RSX series high force electric actuators with planetary roller screws are designed for rugged service, long life and are an ideal choice for replacing hydraulic cylinders.

### SUPERIOR CONSTRUCTION
- Steel parts are black or clear zinc plated for corrosion resistance
- Aluminum parts are Type III hardcoat black anodized for high surface hardness

### IP65 STANDARD
- Protection against dust and water spray (static)

### IP67 OPTION
- Resist water ingress 1m deep for up to 30 min (static)

### YOUR MOTOR HERE
- YOU CAN CHOOSE:
  - Specify the motor to be installed and actuator ships with proper mounting hardware
  - Specify and ship your device to Tolomatic for factory installation

### LUBE ACCESS PORT
- This re-lubrication system provides extended screw service life
- Convenient lubrication without disassembly
- Grease zerk fitting

### FIELD REPLACEABLE CARTRIDGE
- Scraper and dual seal design prevent contaminants from entering the housing for extended life of the actuator
- One piece assembly designed for easy field replacement

### HIGH POSITIONAL ACCURACY

<table>
<thead>
<tr>
<th>SCREW ACCURACY</th>
<th>Roller Nut</th>
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<tbody>
<tr>
<td>± 0.0102mm/300mm</td>
<td>± 0.0004&quot;/ft</td>
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</tbody>
</table>

### THRUST TUBE
- Steel thrust tube supports extremely high force capabilities
- Salt bath nitride treatment provides excellent corrosion resistance, surface hardness and is very resistant to adherence of potential contaminants

### NOSE BEARING
- Support the thrust tube and nut assembly through entire stroke length
- Unique nose bearing material allows for smooth operation

### HEAVY DUTY INTERNAL BUMPER
- Bumpers protect the screw and nut assembly from damage at both ends of stroke


**HIGH FORCE ANGULAR CONTACT BEARINGS**

- Four ball bearings to support high axial loads & forces for long life.

**HIGH POWER TIMING BELT**

- Carbon fiber tensile reinforced synchronous belt to ensure smooth transmission of high torques in a compact design.

**MOTOR ORIENTATION**

**YOU CAN CHOOSE:**
- Inline option directly couples the driving shaft.
- Reverse-parallel option minimizes the overall length and offers a belt reduction drive with a 1:1 or 2:1 ratio.

**BREATHER/PURGE PORTS**

- Standard feature on RSX actuators.
- Located on the opposite side of the actuator.
- Use as Breather Port: allows air flow into the interior of the actuator. Prevents additional load on the motor caused by air buildup due to fast cycling of the RSX.
- Use as Purge Port: positive pressure with air lines and filters ensure contaminants do not enter the interior of the actuator.

**INTERNAL ANTI-ROTATE**

- Composite bearings prevent rotation of the thrust tube.

**ROLLER SCREW TECHNOLOGY**

- Precision ground planetary roller screws provide the highest force and life ratings available.

**MOUNTING OPTIONS**

- Front Flange
- Extended Tie Rods
- Trunnion
- Mounting Plates
- Rear Clevis

**ROD END OPTIONS**

- Rod Clevis
- Threaded Rod (standard)
- Extended Rod

**SENSOR OPTIONS**

- Solid state NPN, PNP or reed
- Tie Rod Clip

**MAXIMUM DURABILITY**

- Standard feature on RSX actuators.
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- Use as Breather Port: allows air flow into the interior of the actuator. Prevents additional load on the motor caused by air buildup due to fast cycling of the RSX.
- Use as Purge Port: positive pressure with air lines and filters ensure contaminants do not enter the interior of the actuator.
RSX096P PRESS MODEL

ENDURANCE TECHNOLOGY
Endurance Technology features are designed for maximum durability to provide extended service life.

The RSX096P press actuator expands the extend force capability to 40,000 lbf (178 kN) making it well suited for applications such as pressing, riveting, clinching and many others. The RSX096P press model has all the features of the standard RSX on pages 4 & 5 plus oversized tie rods, a bearing system optimized for high force extend, and a high strength steel front flange.

OPTIMIZED BEARING SYSTEM
• Angular contact bearing system is designed to handle high axial forces and loads common to press applications

OVERSIZED TIE RODS
• Increased system strength to handle up to 40,000 lbf (177.9 kN) in extend; 15,000 lbf (66.7 kN) in retract

HIGH STRENGTH STEEL FRONT FLANGE
• Durability to meet the demands of high force and stress applications
The food grade RSX has all the features of the RSX shown on the previous pages plus additional features that are suited to challenging environments: 316 Stainless steel thrust rod, rod end, tie rods, fasteners; food grade white paint; IP67 rating; and food grade grease. The food grade RSX is a great option for the food & beverage processing environment. Contact Tolomatic for lead time and application review.
RSX Extreme Force, Hydraulic Class Electric Actuator

### Specifications

<table>
<thead>
<tr>
<th>RSX SIZE</th>
<th>SCREW CODE</th>
<th>MIN. STROKE</th>
<th>MAX. STROKE</th>
<th>SCREW LEAD</th>
<th>LEAD ACCURACY</th>
<th>BACK-LASH</th>
<th>MAX. FORCE</th>
<th>MAX. SPEED</th>
<th>DYNAMIC LOAD RATING</th>
<th>DYNAMIC TORQUE TO OVERCOME FRICTION</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>mm</td>
<td>mm</td>
<td>mm/rev</td>
<td>mm/300mm</td>
<td>mm</td>
<td>kN</td>
<td>mm/sec</td>
<td>kN</td>
<td>N-m</td>
</tr>
<tr>
<td>080</td>
<td>RN10</td>
<td>75</td>
<td>890</td>
<td>820</td>
<td>10.00</td>
<td>0.01</td>
<td>0.030</td>
<td>80.07</td>
<td>701</td>
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<tr>
<td>096</td>
<td>RN12</td>
<td>75</td>
<td>800</td>
<td>725</td>
<td>12.00</td>
<td>0.01</td>
<td>0.030</td>
<td>133.45†</td>
<td>759</td>
<td>269.3</td>
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<tr>
<td>096P</td>
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<td>75</td>
<td>450</td>
<td>—</td>
<td>12.00</td>
<td>0.01</td>
<td>0.030</td>
<td>177.93**</td>
<td>759</td>
<td>269.3</td>
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<tr>
<td>128</td>
<td>RN10</td>
<td>75</td>
<td>665</td>
<td>555</td>
<td>10.00</td>
<td>0.01</td>
<td>0.030</td>
<td>222.41</td>
<td>500</td>
<td>442.7</td>
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*NOTE: When using Trunnion Mount, (TRR) consider the stroke to be longer when determining Critical Speed and Buckling Load:

<table>
<thead>
<tr>
<th>RSX SIZE</th>
<th>SCREW CODE</th>
<th>INERTIA</th>
<th>WEIGHT</th>
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<tr>
<td></td>
<td></td>
<td>BASE ACTUATOR</td>
<td>PER UNIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>kg·m² x 10⁻⁴</td>
<td>kg·m² per mm</td>
</tr>
<tr>
<td>080</td>
<td>RN10</td>
<td>6.68</td>
<td>12.31</td>
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<td>128</td>
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<td>82.76</td>
<td>79.04</td>
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**NOTE:** When using Trunnion Mount, (TRR) consider the stroke to be longer when determining Critical Speed and Buckling Load:

<table>
<thead>
<tr>
<th>RSX SIZE</th>
<th>SCREW CODE</th>
<th>STROKE (mm)</th>
<th>CRITICAL SPEED CAPACITIES*</th>
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</thead>
<tbody>
<tr>
<td>080</td>
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<td>68.1</td>
<td>2.68</td>
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<tr>
<td>096</td>
<td>RN12</td>
<td>72.4</td>
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<tr>
<td>128</td>
<td>RN10</td>
<td>108.0</td>
<td>4.25</td>
</tr>
</tbody>
</table>

*Consult Tolomatic for longer strokes. TRR = Trunnion option **Requires HT1 Option **Max. force only in extend (retract force 15,000 lbf; 66.7 kN)

### PERFORMANCE

**SIZE:** ALL: CRITICAL SPEED CAPACITIES*

**SIZE:** ALL: SCREW BUCKLING LOAD*

*NOTE: When using Trunnion Mount, (TRR) consider the stroke to be longer when determining Critical Speed and Buckling Load:
ROLLER SCREW LIFE ESTIMATE

RSX Extreme Force, Hydraulic Class Electric Actuator

RSX Standard Screw Actuators Expected Life:

The underlying formula that defines this value is:

\[ L_{10} = \left( \frac{P_e}{P} \right)^3 \times L \]

where:
- \( L_{10} \): Travel life in millions of units (in or mm)
- \( P_e \): Equivalent load (lbf) or (N)
- \( P \): Actual load = equivalent load
- \( L \): Screw lead (in/rev) or (mm/rev)

Use the “Equivalent Load” calculation below, when the load is not constant throughout the entire stroke. In cases where there is only minor variation in loading, use greatest load for life calculations.

\[ P_e = \sqrt[3]{\sum (P_i)^3 \times L_i} \]

Where:
- \( P_i \): Each increment at different load (lbf) or (N)
- \( L_i \): Total distance traveled per cycle (extend + retract stroke)

RSX Press Application Expected Life:

An alternate method for estimating life is used for applications where the force is applied repeatedly over a short area of the stroke. If the distance at max force occurs within one revolution of the screw, contact Tolomatic for assistance determining a life estimate.

Example:

- Travel required is 200mm to load parts and apply the press.
- Contact is made at 190mm extended and continues to 200mm position. Total travel under load is 10mm.
- 10mm is less than the screw lead (distance traveled in one revolution).
- Contact Tolomatic for assistance determining the estimated life.

RE-LUBRICATION RECOMMENDATION:

Lubrication requirements for electric actuators depend on the motion cycle (velocity, force, duty cycle), type of application, ambient temperature, environmental surrounding and various other factors.

Tolomatic recommends to re-lubricate the actuator at least once per year or every 1,000,000 cycles, whichever comes first, to maximize service life. For more demanding applications such as pressing, high frequency or other highly stressed applications, the re-lubrication interval for these actuators will vary and will need to be more frequent. In these demanding applications, it is recommended to execute at least 5 full stroke moves every 5,000 cycles of operation (or more frequent if possible) to re-distribute the grease within the actuator.

Re-lubricate with Tolomatic Grease into the grease port located on the side of the actuator.

<table>
<thead>
<tr>
<th>RSX080</th>
<th>RSX096(P)</th>
<th>RSX128</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity (g)</td>
<td>8.0 + (0.020 x Stroke&lt;sub&gt;mm&lt;/sub&gt;)</td>
<td>9.5 + (0.025 x Stroke&lt;sub&gt;mm&lt;/sub&gt;)</td>
</tr>
<tr>
<td>Quantity (oz)</td>
<td>0.28 + (0.018 x Stroke&lt;sub&gt;in&lt;/sub&gt;)</td>
<td>0.34 + (0.022 x Stroke&lt;sub&gt;in&lt;/sub&gt;)</td>
</tr>
</tbody>
</table>

Stroke<sub>mm</sub> = Stroke length in millimeters  Stroke<sub>in</sub> = Stroke length in inches

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<th>RSX128</th>
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<tr>
<td>Quantity (g)</td>
<td>8.0 + (0.020 x Stroke&lt;sub&gt;mm&lt;/sub&gt;)</td>
<td>9.5 + (0.025 x Stroke&lt;sub&gt;mm&lt;/sub&gt;)</td>
</tr>
<tr>
<td>Quantity (oz)</td>
<td>0.28 + (0.018 x Stroke&lt;sub&gt;in&lt;/sub&gt;)</td>
<td>0.34 + (0.022 x Stroke&lt;sub&gt;in&lt;/sub&gt;)</td>
</tr>
</tbody>
</table>

Stroke<sub>mm</sub> = Stroke length in millimeters  Stroke<sub>in</sub> = Stroke length in inches
RSX Extreme Force, Hydraulic Class Electric Actuator

**SIZE:** ALL

**DIMENSIONS**

Always use configurated CAD solid model to determine critical dimensions.

3D CAD available at www.tolomatic.com

## LMI & RP ACTUATOR DIMENSIONS

<table>
<thead>
<tr>
<th>Size</th>
<th>LMI</th>
<th>RP</th>
</tr>
</thead>
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</tr>
<tr>
<td>128</td>
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</tr>
</tbody>
</table>

### Dimensions in millimeters

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<tbody>
<tr>
<td>A</td>
<td>135.0</td>
<td>150.0</td>
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<td>67.5</td>
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<td>C</td>
<td>150.00</td>
<td>170.00</td>
<td>250.00</td>
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<td>D</td>
<td>110.00</td>
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<td>E</td>
<td>88.9</td>
<td>104.8</td>
<td>142.9</td>
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<tr>
<td>F</td>
<td>272.9</td>
<td>304.8</td>
<td>422.9</td>
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<td>G</td>
<td>271.1</td>
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<tr>
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<td>60.0</td>
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### Dimensions in inches

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<td>2.66</td>
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<tr>
<td>M</td>
<td>14.00</td>
<td>16.13</td>
<td>23.00</td>
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**Notes:**

- Dimensions in millimeters
- Dimensions in inches
- Always use configurated CAD solid model to determine critical dimensions
- 3D CAD available at www.tolomatic.com

**Legal:**

RSX 10 1-800-328-2174

Tolomatic  EXCELLENCE IN MOTION
RSX Extreme Force, Hydraulic Class Electric Actuator

**SIZE:** ALL

**DIMENSIONS**

**CLEVIS OPTION (CLV)**

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**MAX**

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<td>1.77</td>
</tr>
<tr>
<td><strong>E</strong></td>
<td>1.38</td>
<td>1.38</td>
<td>2.44</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td>1.104</td>
<td>1.420</td>
<td>1.774</td>
</tr>
</tbody>
</table>

**Dimensions in millimeters**

**Dimensions in inches**

**FRONT FLANGE OPTION (FFG)**

**REAR CLEVIS OPTION (PCD)**

**EXTENDED TIE ROD OPTION (XT)**

**IMPERIAL THREAD OPTION (SRI)**

Dimensions in millimeters

Dimensions in inches

A = Customer Specified Length
RSX Extreme Force, Hydraulic Class Electric Actuator

SIZE: **ALL**

3D CAD available at www.tolomatic.com

Always use configurated CAD solid model to determine critical dimensions

**MOUNTING PLATE OPTION (MP2) DIMENSIONS**

![Diagram of Mounting Plate Option (MP2) Dimensions]

<table>
<thead>
<tr>
<th>Dimension</th>
<th>080</th>
<th>096</th>
<th>128</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>30.0</td>
<td>30.0</td>
<td>40.0</td>
</tr>
<tr>
<td>B</td>
<td>12.5</td>
<td>15.0</td>
<td>22.5</td>
</tr>
<tr>
<td>C</td>
<td>55.0</td>
<td>60.0</td>
<td>85.0</td>
</tr>
<tr>
<td>D</td>
<td>12.7</td>
<td>16.7</td>
<td>21.0</td>
</tr>
<tr>
<td>E</td>
<td>210.9</td>
<td>282.4</td>
<td>369.0</td>
</tr>
<tr>
<td>F</td>
<td>352.7</td>
<td>469.2</td>
<td>605.8</td>
</tr>
<tr>
<td>G</td>
<td>5.5</td>
<td>7.3</td>
<td>12.5</td>
</tr>
</tbody>
</table>

**TRUNNION OPTION (TRR) DIMENSIONS**

![Diagram of Trunnion Option (TRR) Dimensions]

<table>
<thead>
<tr>
<th>Dimension</th>
<th>080</th>
<th>096</th>
<th>128</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>447.8</td>
<td>568.6</td>
<td>746.7</td>
</tr>
<tr>
<td>B</td>
<td>420.8</td>
<td>541.6</td>
<td>713.7</td>
</tr>
<tr>
<td>C</td>
<td>171.5</td>
<td>212.1</td>
<td>268.1</td>
</tr>
<tr>
<td>D</td>
<td>214.0</td>
<td>245.0</td>
<td>340.0</td>
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<tr>
<td>E</td>
<td>150.0</td>
<td>165.0</td>
<td>240.0</td>
</tr>
<tr>
<td>F</td>
<td>32.0</td>
<td>40.0</td>
<td>50.0</td>
</tr>
<tr>
<td>G</td>
<td>39.98</td>
<td>49.98</td>
<td>62.97</td>
</tr>
</tbody>
</table>

**OPTIONAL ROD EXTENSION (XR)**

![Diagram of Optional Rod Extension (XR)]

The thrust rod length can be extended by specifying the rod extension option. This does not increase the working stroke, only the length of the thrust rod.

**NOTE:** Please consult Tolomatic if your application requires rod extension length greater than 100 mm (3.9 in).
RSX Extreme Force, Hydraulic Class Electric Actuator

SWITCHES

RSX actuators offer a wide range of sensing choices. There are 12 switch choices: reed, solid state PNP (sourcing) or solid state NPN (sinking); in normally open or normally closed; with flying leads or quick-disconnect.

Commonly used for end-of-stroke positioning, these switches allow installation anywhere along the entire actuator length. The internal magnet is a standard feature. Switches can be installed in the field at any time.

Switches are used to send digital signals to PLC (programmable logic controller), TTL, CMOS circuit or other controller device. Switches contain reverse polarity protection. Solid state QD cables are shielded; shield should be terminated at flying lead end.

All switches are CE rated and are RoHS compliant. Switches feature bright red or yellow LED signal indicators; solid state switches also have green LED power indicators.

---

<table>
<thead>
<tr>
<th>Switching Logic</th>
<th>Power LED</th>
<th>Signal LED</th>
<th>Operating Voltage</th>
<th>Power Rating (Watts)</th>
<th>Switching Current (mA max.)</th>
<th>Current Consumption Voltage Drop</th>
<th>Leakage Current</th>
<th>Temp Range</th>
<th>Shock / Vibration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REED</strong></td>
<td></td>
<td></td>
<td>5 - 240 AC/DC</td>
<td><strong>10.0</strong></td>
<td>100mA</td>
<td>3.0 V max.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5m SPST Normally Open</td>
<td>Red</td>
<td>—</td>
<td>5 - 110 AC/DC</td>
<td>5m SPST Normally Closed</td>
<td>Yellow</td>
<td>5 - 110 AC/DC</td>
<td>10 - 30 VDC</td>
<td><strong>3.0</strong></td>
<td>100mA</td>
</tr>
<tr>
<td>5m NPN (Sourcing) Normally Open</td>
<td>Green</td>
<td>Yellow</td>
<td>10 - 30 VDC</td>
<td>5m NPN (Sinking) Normally Closed</td>
<td>Green</td>
<td>Red</td>
<td>100mA</td>
<td>20 mA @ 24 V</td>
<td>2.0 V max.</td>
</tr>
</tbody>
</table>

*QD = Quick-disconnect  
Enclosure classification IEC 529 IP67 (NEMA 6)  
CABLES: Robotic grade, oil resistant polyurethane jacket, PVC insulation

**WARNING:** Do not exceed power rating (Watt = Voltage x Amperage). Permanent damage to sensor will occur.

---

**SWITCH INSTALLATION**

Place switch bracket onto any one of the four tie rods that run the length of the extruded tube. Insert the switch with set screw and the word “Tolomatic” facing up and slide into the mating slot on the bracket. Position the bracket with the switch to the exact location desired, with the bracket tight to the surface of the extrusion, then lock the bracket securely into place by tightening the set screw with the Allen wrench provided. Then tighten the switch into the bracket with a small slotted screwdriver.
SWITCHES

WIRING DIAGRAMS

RY • RK
REED • NORMALLY OPEN

TY • TK
SOLID STATE • NORMALLY OPEN • PNP

KY • KK
SOLID STATE • NORMALLY OPEN • NPN

NY • NK
REED • NORMALLY CLOSED

PY • PK
SOLID STATE • NORMALLY CLOSED • PNP

HY • HK
SOLID STATE • NORMALLY CLOSED • NPN

QUICK DISCONNECT MALE PLUG PINOUT

QUICK DISCONNECT FEMALE SOCKET PINOUT

SWITCH DIMENSIONS

OUNTRY/US

SWITCH MOUNTING

The switch bracket and switch does not extend beyond the profile of the RSX heads.

The switch bracket and switch does not extend beyond the profile of the RSX heads.

CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

M8x1

1.50 [38.2]

This screw secures switch to bracket

This screw secures bracket to actuator

CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

M8x1

1.26 [32.1]

0.35 [9]

0.28 [7]

197 [5000]
APPLICATION DATA WORKSHEET

ORIENTATION
☐ RSX  ☐ Horizontal  ☐ Vertical

☐ Load supported by actuator  OR  ☐ Load supported by other mechanism

STROKE LENGTH _____________
☐ inch  ☐ millimeters
(US Standard)  (Metric)

PRECISION
Repeatability ____________________
☐ inch  ☐ millimeters

OPERATING ENVIRONMENT
Temperature, Contamination, Water, etc.

CONTACT INFORMATION
Name, Phone, Email
Co. Name, Etc.

FAX 1-763-478-8080  EMAIL help@tolomatic.com

FREE: On-line sizing and selection at sizeit.tolomatic.com
Or Call 1-800-328-2174 for Excellent Customer Service & Technical Support

NOTE: If load or force changes during cycle, use the highest numbers for calculations

USE THE TOLOMATIC SIZING AND SELECTION SOFTWARE AVAILABLE ON-LINE AT www.tolomatic.com OR... CALL TOLOMATIC AT 1-800-328-2174. We will provide any assistance needed to determine the proper actuator for the job.

FAX 1-763-478-8080  EMAIL help@tolomatic.com
Selection Guidelines

1 ESTABLISH MOTION PROFILE
Using the application stroke length, desired cycle time, loads and forces, establish the motion profile details including linear velocity and force in each of its segments.

2 SELECT ACTUATOR SIZE AND SCREW TYPE
Based on the required velocities and forces, select an actuator size including the lead of the roller screw assembly.

3 VERIFY CRITICAL SPEED OF THE SCREW
Verify that the application’s peak linear velocity does not exceed the critical speed value for the size and lead of the screw selected.

4 VERIFY AXIAL BUCKLING STRENGTH OF THE SCREW
Verify that the peak force does not exceed the critical buckling force for the size of the screw selected.

5 COMPARE APPLICATION’S PEAK PARAMETERS TO PEAK CAPACITY (PEAK REGION) OF SELECTED ACTUATOR
Calculate the application’s required peak force and peak velocity and compare to the graphs. The selection must satisfy the application’s peak requirements.

6 CONSIDER LUBRICATION INTERVAL
Evaluate the recommended lubrication interval with respect to the application motion profile. See page RSX_7 for complete lubrication information.

7 TEMPERATURE CONSIDERATIONS
If the application’s ambient temperature lies outside of the standard range (see page RSX_8), contact Tolomatic.

8 SELECT A MOTOR-ACTUATOR CONFIGURATION
Select an inline or a reverse-parallel motor configuration.

9 ESTABLISH TOTAL TORQUE REQUIREMENTS
Calculate total system inertia, the peak and the RMS torque required from the motor to overcome internal friction, external forces and accelerate/decelerate the load.

10 SELECT A MOTOR
Use the obtained total torque value to select a motor and a reduction device (if required). Verify that the peak torque value is below the motor’s peak torque curve, and that the continuous torque value is below the motor’s continuous torque curve. Verify the minimum torque margin (15%). Verify the inertia match.

11 SELECT OPTIONAL POSITION SENSORS
12 sensor choices include: reed, solid state PNP or NPN, all in normally open or normally closed, with flying leads or quick-disconnect couplers.

12 SELECT ACTUATOR MOUNTING
Mounting options include: TRN trunnion mount, FFG front flange mount, MP2 mounting plates, PCD clevis mount.

13 SELECT ROD END OPTIONS
Rod end options include: CLV clevis end.

The above guidelines are for reference only. Use Tolomatic online sizing software for best results.
RSX Extreme Force, Hydraulic Class Electric Actuator

**Ordering**

### ACTUATOR

<table>
<thead>
<tr>
<th>MODEL &amp; MOUNTING</th>
<th>RSX Rod-Style Actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>080, 096, 128</td>
</tr>
<tr>
<td>096P</td>
<td>Press Model</td>
</tr>
</tbody>
</table>

### OPTIONS

#### MOTOR MOUNTING

- **LMI** - In-line motor mount
- **RP1** - 1:1 ratio, reverse parallel motor mount
- **RP2** - 2:1 ratio, reverse parallel motor mount

#### STANDARD OR HIGH TORQUE

- **ST1** - Standard Actuator
- **HT1** - High Torque Option

*Only available with RP option on RSX096

**Use sizing software to determine if HT1 is required for torque and motor specifications

#### IP67

**Ingress protection (Note: if not specified standard IP65 actuator will be built)**

#### TRUNNION MOUNT

**TRR** - Trunnion mount

*NOTE: Trunnion mount is not available for field retrofit, contact Tolomatic for details

*Not available for RSX096P

#### ROD END

- **Extremely threaded rod end is standard**
- **CLV** - Clevis Rod End
- **SR1** - Imperial Thread

*Not available for RSX096P

#### ROD EXTENSION

**XR** - Enter desired rod extension in millimeters

*NOTE: XR option does not increase the working stroke, only the length of the thrust rod

*NOTE: Please consult Tolomatic if your application requires rod extension length greater than 100 mm (3.9 in).

#### STROKE LENGTH

**SM** - Enter desired stroke length in millimeters

Minimum Stroke: 75mm (2.95 in)

### SIZE

<table>
<thead>
<tr>
<th>SIZE</th>
<th>MAX. STROKE</th>
<th>TRR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td>080</td>
<td>890</td>
<td>820</td>
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<tr>
<td>096</td>
<td>800</td>
<td>725</td>
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<tr>
<td>096P</td>
<td>450</td>
<td></td>
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<tr>
<td>128</td>
<td>665</td>
<td>555</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>in</td>
</tr>
<tr>
<td>080</td>
<td>35.03</td>
<td>32.28</td>
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<tr>
<td>096</td>
<td>31.49</td>
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<td>096P</td>
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<tr>
<td>128</td>
<td>26.18</td>
<td>21.85</td>
</tr>
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</table>

*TRR = Trunnion Option

#### NUT/SCREW

<table>
<thead>
<tr>
<th>SIZE</th>
<th>CODE</th>
<th>LEAD (mm/rev)</th>
</tr>
</thead>
<tbody>
<tr>
<td>080</td>
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<tr>
<td>096</td>
<td>RN</td>
<td>12</td>
</tr>
<tr>
<td>128</td>
<td>RN</td>
<td>10</td>
</tr>
</tbody>
</table>

#### ACTUATOR MOUNTING

- **FFG** - Front Flange Mount
- **MP2** - Mounting Plates (2 required)
- **XT** - Extended Tie Rods (min. 50mm, max. 100mm)
- **PCD** - Clevis Mount

*For RP motor mounting only:

*Not available for RSX096P

#### SWITCHES

<table>
<thead>
<tr>
<th>TYPE</th>
<th>LOGIC</th>
<th>NORMALLY</th>
<th>QUICK-DISCONNECT</th>
<th>CODE</th>
<th>QUANTITY</th>
<th>LEAD LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>REED</td>
<td>SPST</td>
<td>Open</td>
<td>no</td>
<td>RK</td>
<td>yes</td>
<td>5 meters (16.4 feet)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed</td>
<td>yes</td>
<td>NY</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>PNP</td>
<td>Open</td>
<td>no</td>
<td>yes</td>
<td>TK</td>
<td>no</td>
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<tr>
<td></td>
<td>Closed</td>
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<td>no</td>
<td>KY</td>
<td>yes</td>
<td></td>
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<td></td>
<td>Closed</td>
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<td>no</td>
<td>KK</td>
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<td></td>
<td>Closed</td>
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<td>yes</td>
<td>PK</td>
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<tr>
<td></td>
<td>Closed</td>
<td>no</td>
<td>yes</td>
<td>HY</td>
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</table>

*Also code enter quantity desired

#### YOUR MOTOR HERE

**YM** - Motor mount for non-Tolomatic motor.

www.tolomatic.com

Contact Tolomatic for food grade option lead time and application review.

Not all codes listed are compatible with all options. Contact Tolomatic with any questions.
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.

Also Consider These Other Tolomatic Products:

**Electric Products**
- Rod & Guided Rod Style Actuators, High Force Actuators, Screw & Belt Drive Rodless Actuators, Motors, Drives and Controllers
- “Foldout” Brochure #9900-9074

**Pneumatic Products**
- Rodless Cylinders; Band Cylinders, Cable Cylinders, Magnetically Coupled Cylinders/Slides; Guided Rod Cylinder Slides
- “Foldout” Brochure #9900-9075

**Power Transmission Products**
- Gearboxes: Float-A-Shaft®, Slide-Rite®; Caliper Disc Brakes; Planetary Roller Screws
- “Foldout” Brochure #9900-9076

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