This rodless style actuator is designed for carrying light to moderate loads at an economical price. Based upon our BC2 pneumatic band cylinder, it utilizes a guidance system consisting of an adjustable carrier bracket with two solid bearing rods that transmit the load to the actuator body for superior load support. Built-to-order in stroke lengths up to 120 inches with multiple screw options available.

**YOU CAN CHOOSE:**
- Solid nuts of bronze or engineered resins offering quiet performance at the lowest cost; anti-backlash available
- Ball nuts offer positioning accuracy and repeatability with longer life; low-backlash available

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

- Adjustable Carrier Bracket
  - Allows for easy adjustment and replacement of the load bearings throughout the life of the actuator
  - Allows customizing the bearing tension and free play of the carrier to meet the applications requirements

- Formed End Cap Wipers
  - Prevent contaminants from entering the sealing band area to protect internal components

- Screw Support Bearings
  - High thrust bearing assembly design isolates the motor from axial forces

- Load-bearing Carrier Design
  - Engineered resin bearings provide guidance, low friction loss and long life
  - Load and moments are transmitted directly to the actuator body

- Multiple Screw Technologies
ToloMATIC...LINEAR SOLUTIONS MADE EASY

**EXTERNAL BUMPERS**
- Bumpers protect the screw and nut assembly from damage at end of stroke

**STAINLESS STEEL SEALING BAND**
- Prevents contaminants from entering the screw and nut area for prolonged life
- Fatigue resistant stainless steel bands are specifically made to offer long life and will not elongate

**LIGHTWEIGHT ALUMINUM DESIGN**
- Black anodized extrusion design is optimized for rigidity and strength
- External switch channels on both sides allow easy placement and adjustment of position indicating switches

**MOTOR ORIENTATION**
**YOU CAN CHOOSE:**
- Inline option directly couples the driving shafts and is a one-piece housing construction for optimum alignment and support of the motor
- Reverse-parallel option minimizes the overall length and offers a 1:1 or 2:1 belt ratio

**OPTIONS**

**CARRIER OPTIONS**
- **AUXILIARY CARRIER** doubles the load capacity and increases bending moments capacity significantly
- **FLOATING MOUNT** compensates for non-parallelogram between the actuator and an external support or guidance system

**MOUNTING OPTIONS**
- **SURFACE MOUNT** tapped holes are provided on the underside of the actuator heads, as a standard feature, for direct mounting
- **TUBE SUPPORTS** provide intermediate support of the actuator body throughout long stroke lengths
- **METRIC OPTION**
  Provides metric tapped holes for mounting of load to carrier and of actuator to mating surfaces
- **SWITCHES**
  Styles include: reed, hall-effect or triac. Select either 15ft potted cable with flying leads or 6in to quick-disconnect coupler with mating 15ft cable.

**YOUR MOTOR HERE**
**YOU CAN CHOOSE:**
- Motor or gearbox supplied and installed by Tolomatic
- Specify the device to be installed and actuator ships with proper mounting hardware
- Specify and ship your device to Tolomatic for factory installation
- LMI (inline) motor mount only

**Bumper Protect the Screw and Nut Assembly from Damage at End of Stroke**

**Stainless Steel Sealing Band**

**Lightweight Aluminum Design**
- Black anodized extrusion design is optimized for rigidity and strength
- External switch channels on both sides allow easy placement and adjustment of position indicating switches

**Motor Orientation**
**You Can Choose:**
- Inline option directly couples the driving shafts and is a one-piece housing construction for optimum alignment and support of the motor
- Reverse-parallel option minimizes the overall length and offers a 1:1 or 2:1 belt ratio

**Carriers Options**
- Auxiliar...
**ACME SCREW CRITICAL SPEED CAPACITIES**

---

**CRITICAL SPEED WITH US CONVENTIONAL ACME SCREW**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>NUT</th>
<th>TPI</th>
<th>MAX LEAD</th>
<th>MAX THRUST*</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCS20 SN 01</td>
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<td>100</td>
<td></td>
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<td>BCS15 SN 02</td>
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<td>BCS10 SN 01</td>
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<tr>
<td>BCS10 SN 05</td>
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**CRITICAL SPEED WITH METRIC ACME SCREW**

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<tr>
<th>MODEL</th>
<th>NUT/ SCREW</th>
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<tr>
<td>MCS15 SN12</td>
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<td>MCS15 SN25</td>
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<tr>
<td>MCS10 SN25</td>
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* Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.

Dotted lines represent maximum stroke for screw selections.

For Screw PV limits, refer to the individual charts located in the technical section for each actuator body size.
**BCS Rodless Screw Drive Actuators**

**BALL SCREW/NUT COMBINATIONS**

---

**BALL SCREW CRITICAL SPEED CAPACITIES**

### CRITICAL SPEED WITH US CONVENTIONAL BALL SCREW

<table>
<thead>
<tr>
<th>TPI</th>
<th>MAX MODEL NUT (turns/ THRUXT* in) (LBS)</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>BCS20 BN/L 02 2700</td>
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<tr>
<td>5</td>
<td>BCS20 BN/L 05 950</td>
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<tr>
<td>2</td>
<td>BCS15 BN/L 02 800</td>
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<td>BCS15 BN/L 05 800</td>
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<tr>
<td>8</td>
<td>BCS10 BN 08 130</td>
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### CRITICAL SPEED WITH METRIC BALL SCREW

<table>
<thead>
<tr>
<th>LEAD</th>
<th>MAX MODEL NUT/ (mm/ SCREW turn) (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>MCS20 BN05 5 11700</td>
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<tr>
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<tr>
<td>3.2</td>
<td>MCS10 BN08 3.2 578</td>
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</tbody>
</table>

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* Maximum thrust reflects 90% reliability for 1 million linear inches of travel.

Dotted lines represent maximum stroke for screw selections.

Refer to the technical section for each actuator body size for details on life calculations for individual screws.
**BALL SCREW LIFE CALCULATION**

**LIFE CAPACITIES WITH US CONVENTIONAL BALL SCREW**

<table>
<thead>
<tr>
<th>MODEL NUT/SCREW</th>
<th>TPI (turns in)</th>
<th>MAX THRUST* (lb)</th>
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</thead>
<tbody>
<tr>
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<td>BCS20 BN/BNL05</td>
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<td>950</td>
</tr>
<tr>
<td>BCS15 BN/BNL02</td>
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<tr>
<td>BCS15 BN/BNL05</td>
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<td>800</td>
</tr>
<tr>
<td>BCS10 BN08</td>
<td>8</td>
<td>130</td>
</tr>
</tbody>
</table>

**LIFE CAPACITIES WITH METRIC BALL SCREW**

<table>
<thead>
<tr>
<th>MODEL NUT/SCREW</th>
<th>LEAD (mm/turn)</th>
<th>MAX THRUST* (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCS20 BN05</td>
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<td>MCS15 BN05</td>
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<td>7300</td>
</tr>
<tr>
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<td>578</td>
</tr>
</tbody>
</table>

* Maximum thrust reflects 90% reliability for 1 million linear inches of travel.

Dotted lines represent maximum thrust for screw selections.

**Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.**
# BCS Rodless Screw Drive Actuators

## SPECIFICATIONS

### SPECIFICATIONS RELATED TO ACTUATOR SIZE AND SCREW SELECTION

#### US CONVENTIONAL LEAD SCREWS

<table>
<thead>
<tr>
<th>ACTUATOR SERIES</th>
<th>SCREW DIA. (in)</th>
<th>SCREW TYPE</th>
<th>TPI (turns/in)</th>
<th>LEAD ACCURACY (in/ft)</th>
<th>BACKLASH (in)</th>
<th>MAXIMUM THRUST* (lb)</th>
<th>MAXIMUM STROKE (in)</th>
<th>INERTIA (lb-in²)</th>
<th>BREAKAWAY TORQUE (lb-in)</th>
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<tbody>
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<td>1.000</td>
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<td>170</td>
<td>120</td>
<td>0.0190</td>
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<td>0.007</td>
<td>150</td>
<td>120</td>
<td>0.1241</td>
<td>2.188</td>
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</table>

#### METRIC LEAD SCREWS

<table>
<thead>
<tr>
<th>ACTUATOR SERIES</th>
<th>SCREW DIA. (mm)</th>
<th>SCREW TYPE</th>
<th>LEAD (mm/turn)</th>
<th>LEAD ACCURACY (mm/300)</th>
<th>BACKLASH (mm)</th>
<th>MAXIMUM THRUST* (N)</th>
<th>MAXIMUM STROKE (mm)</th>
<th>INERTIA (kg-m² x 10⁻⁶)</th>
<th>BREAKAWAY TORQUE (N-m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCS10</td>
<td>10</td>
<td>BN</td>
<td>3.2</td>
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<td>31.94</td>
<td>3.472</td>
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<td>BNL</td>
<td>3.2</td>
<td>0.13</td>
<td>0.05</td>
<td>578</td>
<td>1549</td>
<td>31.94</td>
<td>3.472</td>
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<td>12</td>
<td>SN</td>
<td>12</td>
<td>0.13</td>
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<td>11700</td>
<td>3048</td>
<td>38.61</td>
<td>3.102</td>
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</tbody>
</table>

#### SCREW CODE DESCRIPTION

- **SN**: Solid Nut
- **SNA**: Anti-backlash Solid Nut
- **BN**: Ball Nut
- **BNL**: Low-Backlash Ball Nut

Contact Tolomatic for higher accuracy and lower backlash options.

*For Acme screws, maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.*

For ball screws, maximum thrust reflects 90% reliability for 1 million linear inches of travel.
## GENERAL ACTUATOR SPECIFICATIONS

### BCS US CONVENTIONAL ACTUATORS

<table>
<thead>
<tr>
<th>ACTUATOR SERIES</th>
<th>CARRIER WEIGHT (lb)</th>
<th>BASE WEIGHT (lb) (Including Carrier)</th>
<th>WEIGHT PER/IN OF STROKE (lb)</th>
<th>TEMPERATURE RANGE* (°F)</th>
<th>IP RATING**</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCS10</td>
<td>0.69</td>
<td>2.91</td>
<td>0.176</td>
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<td>44</td>
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<tr>
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<td>BCS20</td>
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<td>14.59</td>
<td>0.666</td>
<td>40 - 130</td>
<td>44</td>
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</table>

### MCS METRIC ACTUATORS

<table>
<thead>
<tr>
<th>ACTUATOR SERIES</th>
<th>CARRIER WEIGHT (kg)</th>
<th>BASE WEIGHT (kg) (Including Carrier)</th>
<th>WEIGHT PER/mm OF STROKE (g)</th>
<th>TEMPERATURE RANGE* (°C)</th>
<th>IP RATING**</th>
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<tbody>
<tr>
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<td>6.62</td>
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<td>4 - 54</td>
<td>44</td>
</tr>
</tbody>
</table>

* Heat generated by the motor and drive should be taken into consideration as well as linear velocity and work cycle time. For applications that require operation outside of the recommended temperature range, contact Tolomatic.

** Protected against ingress of solid particles greater than .039 in (1mm) and splashing water.

LARGE FRAME MOTORS AND SMALLER SIZE ACTUATORS: Cantilevered motors need to be supported, if subjected to continuous rapid reversing duty and/or under dynamic conditions.

## BCS CARRIER BRACKET BOLT ADJUSTMENT (ALL SIZES)

BCS carrier bracket adjustment bolts should be adjusted to suit each individual application, depending on the degree of rigidity required. A good starting point is to tighten the nut on the bolt until there is no lateral movement of the bolt. Then, equally tighten each nut on the carrier bolt while moving the carrier by hand along the length of the stroke. When all lateral play in the carrier is eliminated and free movement along the length of the stroke is maintained, your carrier bracket is adjusted properly. Some applications may require fine tuning of this adjustment to gain more lateral play or a higher degree of rigidity. In demanding applications, carrier adjustments should be done periodically.

⚠️ CAUTION:
Over-tightening increases drive torque of motor and drive.

### FRICTION FORCE

<table>
<thead>
<tr>
<th>LOAD WEIGHT (lb)</th>
<th>FRICTION FORCE (lb)</th>
<th>MAX DISTANCE BETWEEN SUPPORTS (mm) &quot;L&quot;</th>
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</thead>
<tbody>
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<td>0</td>
</tr>
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<td>100</td>
<td>111.9</td>
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<td>120</td>
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<td>622.7</td>
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<td>200</td>
<td>217.5</td>
<td>533.5</td>
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### SUPPORT RECOMMENDATIONS

<table>
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<tr>
<th>MAX DISTANCE BETWEEN SUPPORTS (in) &quot;L&quot;</th>
<th>LOAD WEIGHT (lb)</th>
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<tbody>
<tr>
<td>0</td>
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<td>168</td>
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*CAUTION:
Over-tightening increases drive torque of motor and drive.
### Dynamic Bending Moments and Loads

**Maximum Bending Moments and Loads**

<table>
<thead>
<tr>
<th>Component</th>
<th>Standard Carrier</th>
<th>Auxiliary Carrier: Increases rigidity, load-carrying capacity and moments</th>
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</thead>
<tbody>
<tr>
<td>Mx Moment (Roll)</td>
<td><strong>US Conventional</strong></td>
<td><strong>Metric</strong></td>
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<tr>
<td></td>
<td>BCS10</td>
<td>BCS15</td>
</tr>
<tr>
<td>(lb-in : N·m)</td>
<td>55</td>
<td>275</td>
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<tr>
<td>My Moment (Pitch)</td>
<td>100</td>
<td>500</td>
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<td>(lb-in : N·m)</td>
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<td>200</td>
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<tr>
<td>Mz Moment (Yaw)</td>
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<td>180</td>
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<td>(lb-in : N·m)</td>
<td><em>(lb-in : N·m)</em></td>
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<td>Fz Load (Lateral)</td>
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<td>1453</td>
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<tr>
<td>(lb : N)</td>
<td>287</td>
<td>1453</td>
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<tr>
<td>Minimum Dimension 'D'</td>
<td><strong>US Conventional</strong></td>
<td><strong>Metric</strong></td>
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<tr>
<td>(in : mm)</td>
<td>5.10</td>
<td>6.50</td>
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*Loads shown in table are at minimum “D” dimension, for ratings with longer “D” dimension see graph below.*

---

**AUXILIARY CARRIER: BENDING MOMENT AT ‘D’ DISTANCE**

Rates shown on charts were calculated with these assumptions:
1.) Coupling between carriers is rigid.
2.) Load is equally distributed between carriers.
3.) Coupling device applies no misalignment loads to carriers.

*Customer must specify Dimension "D" (Distance between carrier center lines) in configuration string.*

---

**Notes:**
- Breakaway torque will increase when using the Auxiliary carrier option. When ordering, determine your working stroke and enter this value into the configuration string. Overall actuator length will automatically be calculated.
- Please see BCS Carrier Bracket Bolt Adjustment on page BCS_6.
BCS10 Rodless Screw Drive Actuator

ACME SCREW SPECIFICATIONS

**BCS10/MCS10 ACME SCREW CRITICAL SPEED AND PV LIMITS**

### Critical Speed with 1/2" US Conventional Acme Screw

- **MAX THRUST:** 170 lb
- **SPEED (in/sec):** 2 - 140
- **STROKE (in):** 0 - 140

### Critical Speed with 12mm Metric Acme Screw

- **MAX THRUST:** 3000 N
- **SPEED (mm/sec):** 1 - 1549
- **STROKE (mm):** 0 - 3048

### PV Limits: 1/2" 1 TPI US Conventional Acme Screw

- **MAX THRUST:** 130 lb
- **MAX THRUST:** 170 lb
- **SPEED (in/sec):** 0.1 - 10
- **STROKE (in):** 30

### PV Limits: 12mm Acme Metric Screw w/25mm Lead

- **MAX THRUST:** 800 N
- **MAX THRUST:** 800 N
- **SPEED (mm/sec):** 0 - 5100
- **STROKE (mm):** 0 - 3048

### PV Limits: 12mm Acme Metric Screw w/12mm Lead

- **MAX THRUST:** 1500 N
- **MAX THRUST:** 1500 N
- **SPEED (mm/sec):** 0 - 3048
- **STROKE (mm):** 0 - 3048

### PV Limits: 1/2" 2 TPI US Conventional Acme Screw

### PV Limits: 1/2" 5 TPI US Conventional Acme Screw

- **SN = Solid Nut
  SNA = Solid Anti-backlash Nut

*Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.

**PV LIMITS:** Any material which carries a sliding load is limited by heat buildup. The factors that affect heat generation rate in an application are the pressure on the nut in pounds per square inch and the surface velocity in feet per minute. The product of these factors provides a measure of the severity of an application.

\[
P \times V \leq 0.1
\]

\[
\left(\frac{\text{Max. Thrust Rating}}{\text{Max. Speed Rating}}\right) \times \left(\frac{\text{Max. Speed Rating}}{\text{Speed}}\right) \leq 0.1
\]
BCS10 Rodless Screw Drive Actuator

BALL SCREW SPECIFICATIONS

**BCS/MCS10 BALL SCREW SPECIFICATIONS**

**CRITICAL SPEED WITH 3/8” US CONVENTIONAL BALL SCREW**

![Critical Speed Graph](image1)

**CRITICAL SPEED WITH 10mm METRIC BALL SCREW**

![Critical Speed Graph](image2)

**LIFE CALCULATION: 3/8” 8TPI US CONVENTIONAL BALL SCREW**

![Life Calculation Graph](image3)

**LIFE CALCULATION: 10mm METRIC BALL SCREW w/3.2mm LEAD**

![Life Calculation Graph](image4)

BN = Ball Nut

* Maximum thrust reflects 90% reliability for 1 million linear inches of travel.

**Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.**
BCS10 Rodless Screw Drive Actuator

**DIMENSIONS**

### BCS10/MCS10 ACTUATOR AND OPTIONS

#### TOP VIEW

- L: 2.14 (54.4)
- H: 0.95 (24.1)
- D1: 0.500 (12.7)
- D2: 1.000 (25.4)
- Q: 1.31 (33.3)
- S: 1.61 (40.0)
- T: 0.63 (16.0)
- Ø: 0.15 (3.8)

#### SIDE VIEW

- L: 2.06 (52.3)
- H: 0.80 (20.3)
- D: 2.18 (55.4)
- T: 4.08 (103.8)
- R: 1.575 (39.9)
- S: 3.150 (80.0)
- T: 0.25 (6.4)

#### BOTTOM VIEW

- L: 2.30 (58.4)
- H: 0.50 (12.7)
- D: 2.38 (60.5)
- T: 4.08 (103.8)
- R: 2.18 (55.4)
- S: 1.31 (33.3)

#### END VIEW

- L: 1.100 (27.9)
- H: 1.000 (25.4)
- D: 0.550 (14.0)

#### MOTOR MOUNTING

- Ø: 158/160 x 4.01/4.66mm x 0.30 (7.6) DP [1]
- Ø: 0.800 (20.72)
- Ø: 0.935 (23.75)
- Ø: 1.000 (25.40)

#### OPTIONAL SWITCH MOUNTING

- Ø: 0.114 (2.90)
- Ø: 0.125 (3.18)
- Ø: 0.22 (5.6)

#### OPTIONAL MOUNTING PLATES

- Ø: 0.22 Thru C Bore Ø: 0.38 x 0.22 DP [2]
- Ø: 0.56 Thru C Bore Ø: 0.75 x 0.56 DP [2]
- Ø: 0.38 (9.7)
- Ø: 0.45 (11.4)

#### OPTIONAL FLOATING MOUNT

- Ø: 0.22 (5.6)

#### SHAFT LENGTH

- In-line mounting: 0.30 (7.6)
- Extended shaft for FP 3/8 frame motor: 1.80 (45.72)
- Extended shaft for FP 3/4 frame motor: 2.10 (53.3)

- Extended shaft for purchases prior to 6/24/02: 1.53 (38.9)

---

**CAUTION:** DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

**NOTE:** Some actuators require switch mounting on a specific side of the actuator. Call Tolomatic 1-800-328-2174 for details.

The scored face of the switch indicates the sensing surface and must face toward the magnet.

Unless otherwise noted, all dimensions shown are in inches (Dimensions in parenthesis are in millimeters).
BCS10 Rodless Screw Drive Actuator

DIMENSIONS

**BCS/MCS10: IN-LINE MOUNT FOR MOTORS OR GEARHEADS**

For gearhead dimensions and specifications, refer to literature #3600-4161

NOTE: MRB & MRV motors are discontinued contact Tolerance for information on YMH (Your Motor Here)

**BCS/MCS10: REVERSE PARALLEL MOUNTING**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>WEIGHT OF REDUCTION DRIVE</th>
<th>REDUCTION INERTIA AT MOTOR SHAFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td>2:1</td>
</tr>
<tr>
<td><strong>lbs</strong></td>
<td><strong>kg</strong></td>
</tr>
<tr>
<td>2.06</td>
<td>0.9344</td>
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<tr>
<td><strong>lbs</strong></td>
<td><strong>kg</strong></td>
</tr>
<tr>
<td>2.06</td>
<td>0.9344</td>
</tr>
<tr>
<td><strong>lb-in²</strong></td>
<td><strong>kg-cm²</strong></td>
</tr>
<tr>
<td>0.070</td>
<td>0.2043</td>
</tr>
<tr>
<td><strong>lb-in²</strong></td>
<td><strong>kg-cm²</strong></td>
</tr>
<tr>
<td>0.070</td>
<td>0.2043</td>
</tr>
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</table>

REDUCTION EFFICIENCY: 0.95

**DIMENSIONS**

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<thead>
<tr>
<th>Size</th>
<th>H*</th>
<th>J</th>
<th>K</th>
<th>L</th>
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<td>120.7</td>
<td>39.1</td>
<td>1.83</td>
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<tr>
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<tr>
<td>23</td>
<td>6.75</td>
<td>171.5</td>
<td>39.1</td>
<td>1.83</td>
</tr>
</tbody>
</table>

*H: Typical Motor Length
**BCS15 US CONVENTIONAL ACME SCREW SPECIFICATIONS**

**CRITICAL SPEED WITH 5/8” US CONVENTIONAL ACME SCREW**

- **MAX THRUST**: 200 LB
- **MAXIMUM STROKE**: 120

**CRITICAL SPEED WITH 3/4” US CONVENTIONAL ACME SCREW**

- **MAX THRUST**: 300 LB
- **MAXIMUM STROKE**: 120

**PV LIMITS: 5/8” 2TPI US CONVENTIONAL ACME SCREW**

**PV LIMITS: 3/4” 1TPI US CONVENTIONAL ACME SCREW**

- **SN = Solid Nut**
- **SNA = Solid Anti-backlash Nut**

*Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.*

**PV LIMITS**: Any material which carries a sliding load is limited by heat buildup. The factors that affect heat generation rate in an application are the pressure on the nut in pounds per square inch and the surface velocity in feet per minute. The product of these factors provides a measure of the severity of an application.

\[
\frac{P}{\text{(Max. Thrust Rating)}} \times \frac{V}{\text{(Max. Speed Rating)}} \leq 0.1
\]
BCS15 Rodless Screw Drive Actuator

ACME SCREW SPECIFICATIONS

MCS15 METRIC ACME SCREW SPECIFICATIONS

CRITICAL SPEED WITH 15mm METRIC ACME SCREW

CRITICAL SPEED WITH 19mm METRIC ACME SCREW

PV LIMITS: 15mm METRIC ACME SCREW w/12mm LEAD

PV LIMITS: 19mm METRIC ACME SCREW w/25mm LEAD

SN = Solid Nut

* Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.

PV LIMITS: Any material which carries a sliding load is limited by heat buildup. The factors that affect heat generation rate in an application are the pressure on the nut in pounds per square inch and the surface velocity in feet per minute. The product of these factors provides a measure of the severity of an application.

\[
\left( \frac{P}{\text{Thrust (Max. Thrust Rating)}} \right) \cdot \left( \frac{V}{\text{Speed (Max. Speed Rating)}} \right) \leq 0.1
\]
BCS15 Rodless Screw Drive Actuator

BALL SCREW SPECIFICATIONS

BCS/MCS15 BALL SCREW SPECIFICATIONS

CRITICAL SPEED WITH 1/2” US CONVENTIONAL BALL SCREW

CRITICAL SPEED WITH 5/8” US CONVENTIONAL BALL SCREW

CRITICAL SPEED WITH 16mm METRIC BALL SCREW

LIFE CALCULATION: 16mm METRIC BALL SCREW w/5mm LEAD

LIFE CALCULATION: 1/2” w/2TPI & 5/8” w/5TPI US CONVENTIONAL BALL SCREW

**LIFE indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.

* Maximum thrust reflects 90% reliability for 1 million linear inches of travel.

BN = Ball Nut
BNL = Ball Nut with Low-Backlash
**BCS15 Rodless Screw Drive Actuator**

**DIMENSIONS**

**BCS15/MCS15 ACTUATOR AND OPTIONS**

**TOP VIEW**

**SIDE VIEW**

**BOTTOM VIEW**

**END VIEW**

**OPTIONAL FLOATING MOUNT**

**OPTIONAL SWITCH MOUNTING**

**OPTIONAL MOUNTING PLATES**

**MOTOR MOUNTING**

**OPTIONAL TUBE SUPPORTS**

**Shaft Length**

- 1/4-20 x 0.50 DP (M6-1.0 x 12.0 DP)
- 0.63 (16.0)
- 0.25

**FOR 1/2" 2TPI BALL-SCREW STYLE ONLY**

**NOTE:** The scored face of the switch indicates the sensing surface and must face toward the magnet

**CAUTION:** DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

**NOTE:** Some actuators require switch mounting on a specific side of the actuator. Call Tolomatic 1-800-328-2174 for details

Unless otherwise noted, all dimensions shown are in inches (Dimensions in parenthesis are in millimeters)
BCS15 Rodless Screw Drive Actuator

DIMENSIONS

BCS/MCS15: IN-LINE MOUNT FOR MOTORS AND GEARHEADS

For gearhead dimensions and specifications, refer to literature #3600-4161

NOTE: MRB & MRV motors are discontinued contact Tolomatic for information on YMH (Your Motor Here)

BCS/MCS15: REVERSE PARALLEL MOUNTING

SPECIFICATIONS

WEIGHT OF REDUCTION DRIVE

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<tr>
<th></th>
<th>1:1</th>
<th>2:1</th>
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<tbody>
<tr>
<td><strong>lbs</strong></td>
<td><strong>kg</strong></td>
<td><strong>lbs</strong></td>
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<tr>
<td><strong>NEMA 23 Frame</strong></td>
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<tr>
<td>21</td>
<td>4.75</td>
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REDUCTION INERTIA AT MOTOR SHAFT

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REDUCTION EFFICIENCY: 0.95

DIMENSIONS

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<td><strong>in.</strong></td>
<td><strong>mm</strong></td>
<td><strong>in.</strong></td>
<td><strong>mm</strong></td>
<td><strong>in.</strong></td>
<td><strong>mm</strong></td>
<td><strong>in.</strong></td>
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<tr>
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<td>101.6</td>
<td>1.05</td>
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</tr>
</tbody>
</table>

*H: Typical Motor Length

www.tolomatic.com

1-800-328-2174
BCS20 Rodless Screw Drive Actuator

ACME SCREW SPECIFICATIONS

**BCS/MCS20 ACME SCREW SPECIFICATIONS**

**Critical Speed with 3/4" US Conventional ACME Screw**

- MAX THRUST*: 300LB

**Critical Speed with 19mm Metric ACME Screw**

- MAX THRUST*: 1400N

**PV Limits: 3/4" 1TPi US Conventional ACME Screw**

**PV Limits: 19mm Metric ACME Screw w/25mm Lead**

**PV Limits: 3/4" 2TPi US Conventional ACME Screw**

**PV Limits: 19mm Metric ACME Screw w/12mm Lead**

- SN = Solid Nut
- SNA = Solid Anti-backlash Nut

* Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.

PV LIMITS: Any material which carries a sliding load is limited by heat buildup. The factors that affect heat generation rate in an application are the pressure on the nut in pounds per square inch and the surface velocity in feet per minute. The product of these factors provides a measure of the severity of an application.

\[
\frac{P}{\text{Max. Thrust Rating}} \times \frac{V}{\text{Max. Speed Rating}} \leq 0.1
\]
BCS20 Rodless Screw Drive Actuator

BALL SCREW SPECIFICATIONS

**BCS20/MCS20 BALL SCREW SPECIFICATIONS**

**CRITICAL SPEED WITH 3/4” US CONVENTIONAL BALL SCREW, 2TPI**

- Speed vs. Stroke (in)
- Maximum Thrust: 2700 LB

**LIFE CALCULATION: 3/4” US CONVENTIONAL BALL SCREW, 5TPI**

- Life vs. Thrust (lbs)
- Maximum Thrust: 1700 N

**LIFE CALCULATION: 3/4” US CONVENTIONAL BALL SCREW, 2TPI**

- Life vs. Thrust (lbs)

**CRITICAL SPEED WITH 20mm METRIC BALL SCREW**

- Speed vs. Stroke (mm)
- Maximum Thrust: 11700 N

**LIFE CALCULATION: 20mm METRIC BALL SCREW w/5mm LEAD**

- Life vs. Thrust (N)

**BN = Ball Nut**
**BNL = Ball Nut with Low-Backlash**

* Maximum thrust reflects 90% reliability for 1 million linear inches of travel.
**Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.**
BCS20 Rodless Screw Drive Actuator

DIMENSIONS

<table>
<thead>
<tr>
<th>BCS20 ACTUATOR AND OPTIONS</th>
</tr>
</thead>
</table>

**TOP VIEW**

- 3.75 (95.3)
- 1.44 (36.6)
- 1.250 (31.8)
- 2.500 (63.5)
- 3/8-16 x 0.44 DP (M10-1.5 x 11.2 DP)
- 2.31 (58.7)
- MOTOR MOUNTING
  - Ø.189/.190 x .30 DP (4.78/4.83 x 7.6 DP)

**SIDE VIEW**

- 1.69 (42.9)
- 5.88 (149.4)
- 3.62 (92.0)
- 1/4-20 x 0.62 DP (M6-1.0 x 16.0 DP)
- 4.44 (112.8)
- 2.250 (57.2)

**BOTTOM VIEW**

- 0.72 (18.3)
- 4.44 (112.8)
- 3.68 (93.5)
- 15 (38.1)
- 7.37 (187.2)
- 3.75 (95.3)

**END VIEW**

- 5/16-18 x 0.875 DP (M8-1.25 x 22.2 DP)
- 2.250 (57.2)
- 1.250 (31.8)
- MOTOR MOUNTING
  - Ø.189/.190 x .30 DP (4.78/4.83 x 7.6 DP)
- #10-24 x 0.50DP (M5x.8 x 12.7DP) [4]

**OPTIONAL FLOTTING MOUNT**

- Ø .36 (9.1)
- 3.24 (82.3)

**OPTIONAL SWITCH MOUNTING**

- 0.73 (18.6)
- 0.34 (8.7)
- 0.45 (11.4)
- SENSING SURFACE

**OPTIONAL TUBE SUPPORTS**

- 0.87 (22.1)
- 4.44 (112.8)
- 0.15 (3.8)

**OPTIONAL MOUNTING PLATES**

- 0.35 (8.9)
- Ø.28 THRU, C BORE
- Ø .43 X 0.22 DP (7.1 THRU, C BORE)
- Ø (10.9) X (5.6) DP [2]

**NOTE:** Some actuators require switch mounting on a specific side of the actuator. Call Tolomatic 1-800-328-2174 for details.

**SHARFT LENGTH**

- 0.28 (7.1)
- Thru (2)
- 1.25 (31.8)
- 3.55 (89.2)
- 0.63 (15.9)

**CAUTION:** DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING.

- Shaft length
  - Ø.36 (9.1)
  - 3.24 (82.3)
  - 3.15 (80.0)

**NOTE:** The scored face of the switch indicates the sensing surface and must face toward the magnet.

**Coordinates:**

- Unless otherwise noted, all dimensions shown are in inches (Dimensions in parenthesis are in millimeters)

www.tolomatic.com
**BCS20 Rodless Screw Drive Actuator**

**DIMENSIONS**

**BCS/MCS20: IN-LINE MOUNT FOR MOTORS AND GEARHEADS**

**BCS/MCS20: REVERSE PARALLEL MOUNTING**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>WEIGHT OF REDUCTION DRIVE</th>
<th>REDUCTION INERTIA AT MOTOR SHAFT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1:1</td>
</tr>
<tr>
<td></td>
<td>lbs</td>
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<tr>
<td></td>
<td>lb-in^2</td>
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<tr>
<td>NEMA 23 Frame</td>
<td>3.11</td>
</tr>
<tr>
<td></td>
<td>0.118</td>
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<tr>
<td>NEMA 34 Frame</td>
<td>3.18</td>
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<td>0.118</td>
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**REDUCTION EFFICIENCY: 0.95**

**DIMENSIONS**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>G</th>
<th>H*</th>
<th>J</th>
<th>K</th>
<th>L</th>
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<tbody>
<tr>
<td>in.</td>
<td>mm</td>
<td>in.</td>
<td>mm</td>
<td>in.</td>
<td>mm</td>
<td>in.</td>
<td>mm</td>
<td>in.</td>
<td>mm</td>
</tr>
<tr>
<td>----</td>
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<td>-----</td>
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<td>----</td>
</tr>
<tr>
<td>NEMA 23 Frame</td>
<td>1.44</td>
<td>36.6</td>
<td>9.31</td>
<td>236.5</td>
<td>2.38</td>
<td>60.3</td>
<td>4.00</td>
<td>101.6</td>
<td>2.44</td>
</tr>
<tr>
<td>NEMA 34 Frame</td>
<td>1.96</td>
<td>49.7</td>
<td>9.83</td>
<td>249.6</td>
<td>2.38</td>
<td>60.3</td>
<td>4.00</td>
<td>101.6</td>
<td>1.79</td>
</tr>
<tr>
<td>Size</td>
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<td>in.</td>
<td>mm</td>
<td>in.</td>
<td>mm</td>
<td>in.</td>
<td>mm</td>
<td>in.</td>
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<tr>
<td>21</td>
<td>4.75</td>
<td>120.7</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>22</td>
<td>5.75</td>
<td>146.1</td>
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<td></td>
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<tr>
<td>23</td>
<td>6.75</td>
<td>171.5</td>
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<tr>
<td>24</td>
<td>7.75</td>
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<td>31</td>
<td>6.11</td>
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<td>32</td>
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<td>33</td>
<td>6.61</td>
<td>218.7</td>
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</tr>
</tbody>
</table>

*H: Typical Motor Length

For gearhead dimensions and specifications, refer to literature #3600-4161

NOTE: MRB & MRV motors are discontinued contact Tolomatic for information on YMH (Your Motor Here)
BCS Rodless Screw Drive Actuators

SWITCHES

There are 10 sensing choices: DC reed, form A (open) or form C (open or closed); AC reed (Triac, open); Hall-effect, sourcing, PNP (open); Hall-effect, sinking, NPN (open); each with either flying leads or QD (quick disconnect). Commonly used to send analog signals to PLC (programmable logic controllers), TLL, CMOS circuit or other controller device. These switches are activated by the actuator’s magnet.

Switches contain reverse polarity protection. QD cables are shielded; shield should be terminated at flying lead end.

If necessary to remove factory installed switches, be sure to reinstall on the same side of actuator with scored face of switch toward internal magnet.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>ORDER CODE</th>
<th>REED DC</th>
<th>REED AC</th>
<th>HALL-EFFECT DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PART NUMBER</td>
<td>3600-9082</td>
<td>3600-9083</td>
<td>3600-9084</td>
</tr>
<tr>
<td>LEAD</td>
<td>5m</td>
<td>5m</td>
<td>5m</td>
</tr>
<tr>
<td>CABLE SHIELDING</td>
<td>Unshielded</td>
<td>Shielded†</td>
<td>Unshielded</td>
</tr>
<tr>
<td>SWITCHING LOGIC</td>
<td><em>A</em> Normally Open</td>
<td><em>C</em> Normally Open or Closed</td>
<td>Traic Normally Open</td>
</tr>
<tr>
<td>COIL DIRECT</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>POWER LED</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>SIGNAL LED</td>
<td>Red</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>OPERATING VOLTAGE</td>
<td>200 Vdc max.</td>
<td>120 Vdc max.</td>
<td>120 Vac max.</td>
</tr>
<tr>
<td>OUTPUT RATING</td>
<td>—</td>
<td>—</td>
<td>25 Vdc, 200mA dc</td>
</tr>
<tr>
<td>OPERATING TIME</td>
<td>0.6 msec max. (including bounce)</td>
<td>0.7 msec max. (including bounce)</td>
<td>—</td>
</tr>
<tr>
<td>OPERATING TEMPERATURE</td>
<td>-40°F [-40°C] to 158°F [70°C]</td>
<td>—</td>
<td>0°F [-18°C] to 150°F [66°C]</td>
</tr>
<tr>
<td>RELEASE TIME</td>
<td>1.0 msec. max.</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>ON TRIP POINT</td>
<td>—</td>
<td>—</td>
<td>150 Gauss maximum</td>
</tr>
<tr>
<td>OFF TRIP POINT</td>
<td>—</td>
<td>—</td>
<td>40 Gauss minimum</td>
</tr>
<tr>
<td><strong>POWER RATING (WATTS)</strong></td>
<td>10.0 §</td>
<td>3.0 §</td>
<td>10.0</td>
</tr>
<tr>
<td>VOLTAGE DROP</td>
<td>2.6 V typical at 100 mA</td>
<td>NA</td>
<td>5.0</td>
</tr>
<tr>
<td>RESISTANCE</td>
<td>0.1 Ω Initial (Max.)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>CURRENT CONSUMPTION</td>
<td>—</td>
<td>1 Amp at 86°F [30°C]</td>
<td>0.5 Amp at 140°F [60°C]</td>
</tr>
<tr>
<td>FREQUENCY</td>
<td>—</td>
<td>47 - 63 Hz</td>
<td>200 mA at 25 Vdc</td>
</tr>
<tr>
<td>CABLE MIN. BEND RADIUS</td>
<td>STATIC</td>
<td>0.630&quot; [16mm]</td>
<td>DYNAMIC</td>
</tr>
</tbody>
</table>

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

**CAUTION:** Do not over tighten switch hardware when installing!

**REPLACEMENT OF QD SWITCHES MANUFACTURED BEFORE JULY 1, 1997:** It will be necessary to replace or rewire the female end coupler.

1 Shielded from the female quick disconnect coupler to the flying leads. Shield should be terminated at flying lead end.

2 Maximum current 500mA (not to exceed 10VA) Refer to Temperature vs. Current graph and Voltage Derating graph

3 Maximum current 250mA (not to exceed 3VA) Refer to Temperature vs. Current graph and Voltage Derating graph
**BCS Rodless Screw Drive Actuators**

**PERFORMANCE**

**WIRING DIAGRAMS**

**RT & RM DC Reed, Form A**

**CT & CM AC Reed, TRIAC**

**BT & BM DC Reed, Form C**

**TT & TM Hall-Effect, Sourcing, PNP**

**KT & KM Hall-Effect, Sinking, NPN**

**INSTALLATION INFORMATION**

The notched face of the switch indicates the sensing surface and must face toward the magnet.
## Compile Application Requirements

### Orientation
- [ ] Horizontal
- [ ] Vertical
- [ ] Horizontal Down
- [ ] Side

- Load attached to carrier OR [ ] Load supported by other mechanism

### Distance from Center of Carrier to Load Center of Gravity
- [ ] inch (U.S. Standard)
- [ ] millimeter (Metric)

### Stroke Length
- [ ] inch (U.S. Standard)
- [ ] millimeters (Metric)

### Load
- [ ] lb. (U.S. Standard)
- [ ] Kg. (Metric)

### Thrust Required
- [ ] lbf. (U.S. Standard)
- [ ] N (Metric)

### Bending Moments
- [ ] in.-lbs.
- [ ] N-m

### Precision
- [ ] inch
- [ ] millimeters

### Operating Environment
- Temperature, Contamination, etc.

### Motion Profile

#### Move Profile
- Move Distance
  - [ ] inch
  - [ ] millimeters
- Dwell Time After Move
- Max. Speed
  - [ ] in/sec
  - [ ] mm/sec

#### Move Time
- [ ] sec

#### No. of Cycles
- [ ] per minute
- [ ] per hour

### Contact Information
Name, Phone, Email
Co. Name, Etc.

---

**Use the Tolomatic Sizing and Selection Software Available On-Line at www.tolomatic.com OR... Call Tolomatic 1-800-328-2174** with the above information. We will provide any assistance needed to determine the proper MX actuator for the job.

**Fax 1-763-478-8080**
SELECTION GUIDELINES

The process of selecting a load bearing actuator for a given application can be complex. It is highly recommended that you contact Tolomatic or a Tolomatic Distributor for assistance in selecting the best actuator for your application. The following overview of the selection guidelines are for educational purposes only.

1 CHOOSE ACTUATOR SIZE
Choose an actuator that has the thrust, speed and moment load capacity to move the load. Use the Critical Speed graphs (page BCS.4-5) for the screw and the Moment and Load Capacity table (pg. BCS.9) for the actuator.

2 COMPARE LOAD TO MAXIMUM LOAD CAPACITIES
Calculate the application load (combination of load mass and forces applied to the carrier) and application bending moments (sum of all moments Mx, My, and Mz applied to the carrier). Be sure to evaluate the magnitude of dynamic inertia moments. When a rigidly attached load mass is accelerated or decelerated, its inertia induces bending moments on the carrier. Careful attention to how the load is decelerated at the end of the stroke is required for extended actuator performance and application safety. If either load or any of your moments exceed figures indicated in the Moment and Load Capacity table (pg. BCS.9) for the actuator consider:

1) Higher capacity bearing style
2) A larger actuator size
3) Auxiliary carrier
4) External guide system

3 CALCULATE LOAD FACTOR LF
For loads with a center of gravity offset from the carrier account for both applied (static) and dynamic loads. The load factor (Lf) must not exceed the value of 1.

\[ Lf = \frac{Fy + Fz}{Mx + My + Mz} \leq 1 \]

If Lf does exceed the value of 1, consider the four choices listed in step #2.

4 ESTABLISH YOUR MOTION PROFILE AND CALCULATE ACCELERATION RATE
Using the application stroke length and maximum carrier velocity (or time to complete the linear motion), establish the motion profile. Select either triangular (accel-decel) or trapezoidal (accel-constant speed-decel) profile. Now calculate the maximum acceleration and deceleration rates of the move. Speed should not exceed critical speed value as shown on graphs (page BCS.4-5) for the screw/nut combination chosen.

5 SELECT THE LEAD SCREW
Based on the application requirements for accuracy, backlash, quiet operation, life, etc. select the appropriate lead screw type (Acme screw with a solid nut or ball screw with a standard or anti-backlash nut) and the pitch (lead). For additional information on screw selection, consult “Which Screw? Picking the Right Technology” (#9900-4644) available at www.tolomatic.com.

6 SELECT MOTOR (GEARHEAD IF NECESSARY) AND DRIVE
To help select a motor and drive, use the sizing equations located in the Engineering Resources section [ENGR] to calculate the application thrust and torque requirements. Refer to Motor sections [MVR] & [MRS] to determine the motor and drive.

7 DETERMINE TUBE SUPPORT/ MOUNTING PLATE REQUIREMENTS
- Consult the Support Recommendations graph for the model selected (page BCS.8)
- Cross reference the application load and maximum distance between supports
- Select the appropriate number of tube supports, and mounting plates if required for motor and adapter clearance.

8 CONSIDER OPTIONS
- Choose metric or inch (US conventional) load mounting.
- Switches - Reed, Solid State PNP or NPN, all available normally open or normally closed
- Floating mount bracket - used when lack of parallelism occurs between the actuator and an externally guided and supported load
BCS Rodless Screw Drive Actuators

ORDERING

BASE MODEL SPECIFICATIONS

 MODEL TYPE
 BCS  BCS Series US Conventional Screw Drive
 MCS  MCS Series Metric Screw Drive

 TUBE BORE DIAMETER
 10  1-inch (25 mm) bore
 15  1-1/2-inch (40 mm) bore
 20  2-inch (50 mm) bore

NUT/SCREW CONFIGURATION

INCH (US Conventional) MODELS

<table>
<thead>
<tr>
<th>INCH</th>
<th>BCS10</th>
<th>BCS15</th>
<th>BCS20</th>
</tr>
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<tbody>
<tr>
<td>SN01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN02</td>
<td>BCS10</td>
<td>BCS15</td>
<td>BCS20</td>
</tr>
<tr>
<td>SNA02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN05</td>
<td>BCS10</td>
<td></td>
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</table>

| BALL NUT / PITCH (turn/in) SERIES
| BNC0 | BCS10, 20 |
| BNC02 | BCS10, 20 |
| BNC05 | BCS15, 20 |
| BNC08 | BCS10 |
| BNC08 | BCS10 |

METRIC MODELS

| LEAD (mm/turn) SERIES
| MCT10 | MCT15 | MCT20 |
| SN12  |       |       |
| SN25  | MCT10 | MCT15 |

| BALL NUT / LEAD (mm/turn) SERIES
| BMN08 | MCT10 |
| BMN08 | MCT10 |
| BMN05 | MCT15, 20 |
| BMN05 | MCT15, 20 |

STROKE LENGTH

SK  Stroke, then enter desired stroke length in decimal inches

STROKE LENGTH

A motor size and code must be selected when specifying a reverse-parallel mounting configuration.

RPL1  1:1 Reverse-Parallel mount left
RPR1  1:1 Reverse-Parallel mount right
RPB1  1:1 Reverse-Parallel mount bottom
RPT1  1:1 Reverse-Parallel mount top
RPL2  2:1 Reverse-Parallel mount left
RPR2  2:1 Reverse-Parallel mount right
RPB2  2:1 Reverse-Parallel mount bottom
RPT2  2:1 Reverse-Parallel mount top

SMOOTH SELECTIONS

(both may be selected)

TS  Tube Supports plus quantity desired
MP  Mounting Plates plus quantity desired

SWITCHES

RM  Reed Switch (Form A) with 5-meter lead/OD (quick-disconnect), & quantity
RT  Reed Switch (Form A) with 5-meter lead, and quantity desired
BM  Reed Switch (Form C) with 5-meter lead/OD, and quantity desired
BT  Reed Switch (Form C) with 5-meter lead, and quantity desired
KM  Hall-effect Sinking Switch with 5-meter lead/OD, and quantity desired
KT  Hall-effect Sinking Switch with 5-meter lead, and quantity desired
TM  Hall-effect Sourcing Switch with 5-meter lead/OD, and quantity desired
TT  Hall-effect Sourcing Switch with 5-meter lead, and quantity desired
CM  TRIAC Switch with 5-meter lead/OD, and quantity desired
CT  TRIAC Switch with 5-meter lead, and quantity desired

AUXILIARY CARRIER

DC  _ Auxiliary Carrier, then center-to-center spacing desired in decimal inches. Center-to-Center spacing will add to overall dead length and will not subtract from the stroke length

Not all codes listed are compatible with all options.

Use the Sizing Software to determine available options and accessories based on your application requirements.

FIELD RETROFIT KITS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>B3S10</th>
<th>B3S15</th>
<th>B3S20</th>
<th>M3S10</th>
<th>M3S15</th>
<th>M3S20</th>
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<tbody>
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<td>Tube Supports</td>
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<td>4515-1010</td>
<td>4520-1010</td>
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<td>Mounting Plates</td>
<td>0910-9133</td>
<td>0915-9135</td>
<td>0920-9038</td>
<td>0510-9105</td>
<td>0515-9138</td>
<td>0520-9105</td>
</tr>
</tbody>
</table>

1-800-328-2174  www.tolomatic.com

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Online sizing that is easy to use, accurate and always up-to-date. Input your application data and the software will determine a Tolomatic electric actuator to meet your requirements.

3D MODELS & 2D DRAWINGS AVAILABLE ON THE WEB
Easy to access CAD files are available in many popular formats.

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- POWER TRANSMISSION PRODUCTS

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