

# RSA ELECTRIC ROD-STYLE ACTUATORS

**ENDURANCE TECHNOLOGY**<sup>SM</sup>  
A Tolomatic Design Principle



**RSA-HT**



**RSA-ST**

**LINEAR SOLUTIONS MADE EASY**

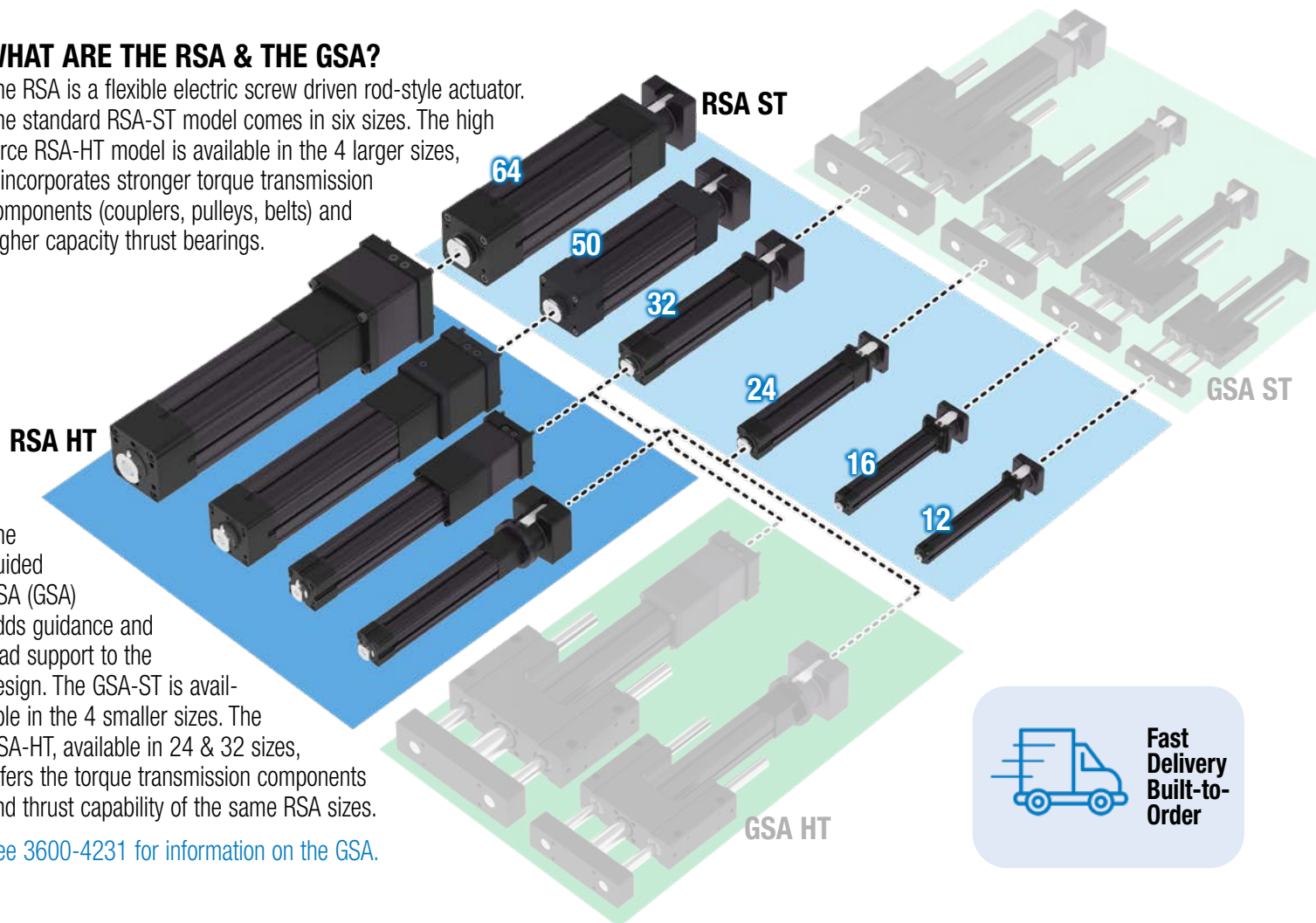
# RSA Electric Rod-Style Actuators

## WHAT ARE THE RSA & THE GSA?

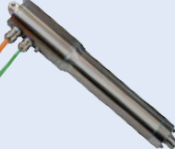
The RSA is a flexible electric screw driven rod-style actuator. The standard RSA-ST model comes in six sizes. The high force RSA-HT model is available in the 4 larger sizes, it incorporates stronger torque transmission components (couplers, pulleys, belts) and higher capacity thrust bearings.

The guided RSA (GSA) adds guidance and load support to the design. The GSA-ST is available in the 4 smaller sizes. The GSA-HT, available in 24 & 32 sizes, offers the torque transmission components and thrust capability of the same RSA sizes.

See 3600-4231 for information on the GSA.



## TOLOMATIC'S ELECTRIC ROD-STYLE ACTUATORS

|                             | ERD                                                                                 | RSH                                                                                 | RSA                                                                                 | RSX                                                                                 | GSA                                                                                  | Combined Actuator & Motor                                                             |                                                                                       |
|-----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      | IMA                                                                                   | IMAS                                                                                  |
|                             |  |  |  |  |  |  |  |
|                             | Rod-Style Actuator                                                                  | Hygienic Rod-Style Actuator                                                         | Rod-Style Actuator                                                                  | High Force Rod-Style Actuator                                                       | Guided Rod-Style Actuator                                                            | Integrated Servo Actuator                                                             | Hygienic Integrated Servo Actuator                                                    |
| <b>Force</b> up to:         | 2 kN<br>(500 lbf)                                                                   | 35 kN<br>(7,900 lbf)                                                                | 58 kN<br>(13,000 lbf)                                                               | 294 kN<br>(66,000 lbf)                                                              | 18 kN<br>(4,100 lbf)                                                                 | 36 kN<br>(8,000 lbf)                                                                  | 11 kN<br>(2,500 lbf)                                                                  |
| <b>Speed</b> up to:         | 1.0 m/sec<br>(40 in/sec)                                                            | 0.5 m/sec<br>(20 in/sec)                                                            | 3.1 m/sec<br>(120 in/sec)                                                           | 0.8 m/sec<br>(30 in/sec)                                                            | 3.1 m/sec<br>(120 in/sec)                                                            | 1.3 m/sec<br>(50 in/sec)                                                              | 0.5 m/sec<br>(20 in/sec)                                                              |
| <b>Stroke Length</b> up to: | 0.6 m<br>(24 in)                                                                    | 1.2 m<br>(48 in)                                                                    | 1.5 m<br>(60 in)                                                                    | 1.5 m<br>(59 in)                                                                    | 0.9 m<br>(36 in)                                                                     | 0.5 m<br>(18 in)                                                                      | 0.5 m<br>(18 in)                                                                      |
| <b>Screw/Nut Type</b>       | Solid & Ball                                                                        | Ball & Roller                                                                       | Solid, Ball & Roller                                                                | Ball & Roller                                                                       | Solid, Ball & Roller                                                                 | Ball & Roller                                                                         | Ball & Roller                                                                         |

For complete information see [www.tolomatic.com](http://www.tolomatic.com) or literature number:

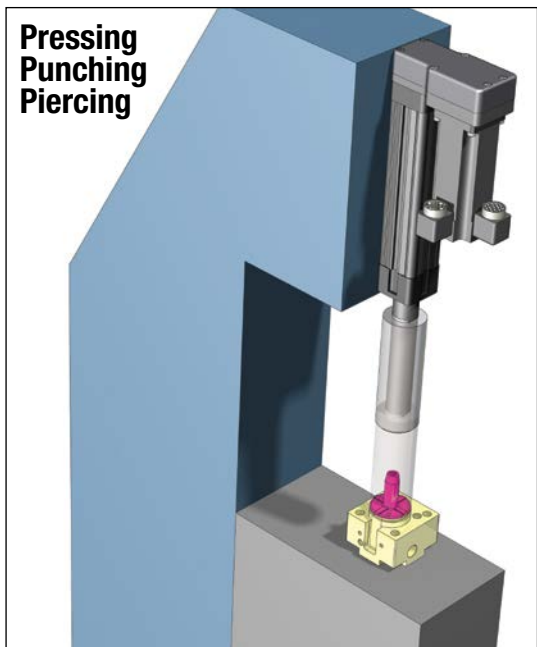
Literature Number: [2190-4000](#) [2100-4010](#) [3600-4233](#) [2171-4001](#) [3600-4231](#) [2700-4000](#) [2700-4014](#)

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

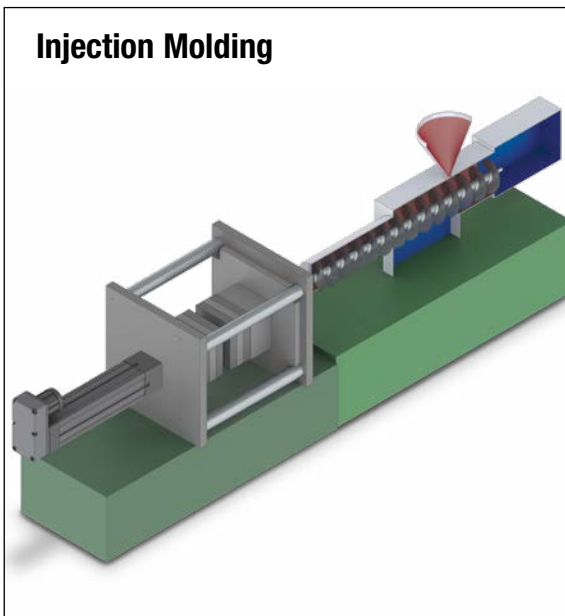
# RSA Electric Rod-Style Actuators

## Applications

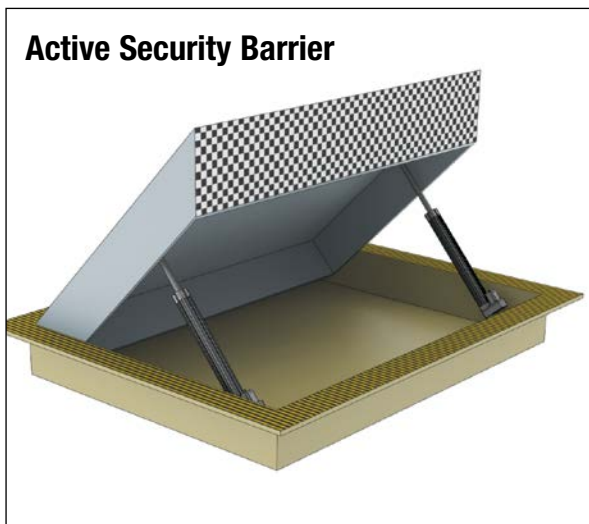
**Pressing  
Punching  
Piercing**



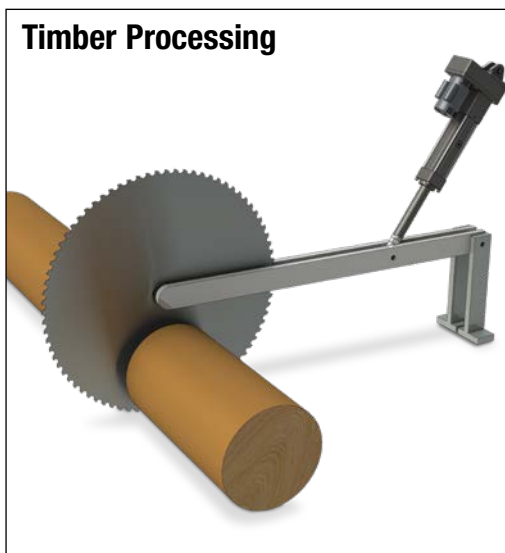
**Injection Molding**



**Active Security Barrier**



**Timber Processing**



### Other Applications:

- Animation
- Assembly machinery
- Automatic tool changers
- Automotive
- Clamping
- Converting
- Conveyors
- Cycle testing
- Fillers
- Formers
- Hydraulic replacement
- Laser positioning
- Machine tools
- Material handling
- Medical equipment
- Molding
- Motion simulators
- Open / close doors
- Packaging equipment
- Parts clamping
- Patient lifts
- Pick & place
- Pneumatic replacement
- Precision grinders
- Product test simulations
- Riveting / fastening / joining
- Robot manipulator arms
- Sawmill equipment
- Semiconductor
- Stage motion control
- Stamping
- Table positioning
- Tension control
- Test stands
- Tube bending
- Volumetric pumps
- Water jet control
- Wave generation
- Web guidance
- Welding
- Wire winding
- and many more

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# RSA-ST ROD-STYLE ACTUATOR

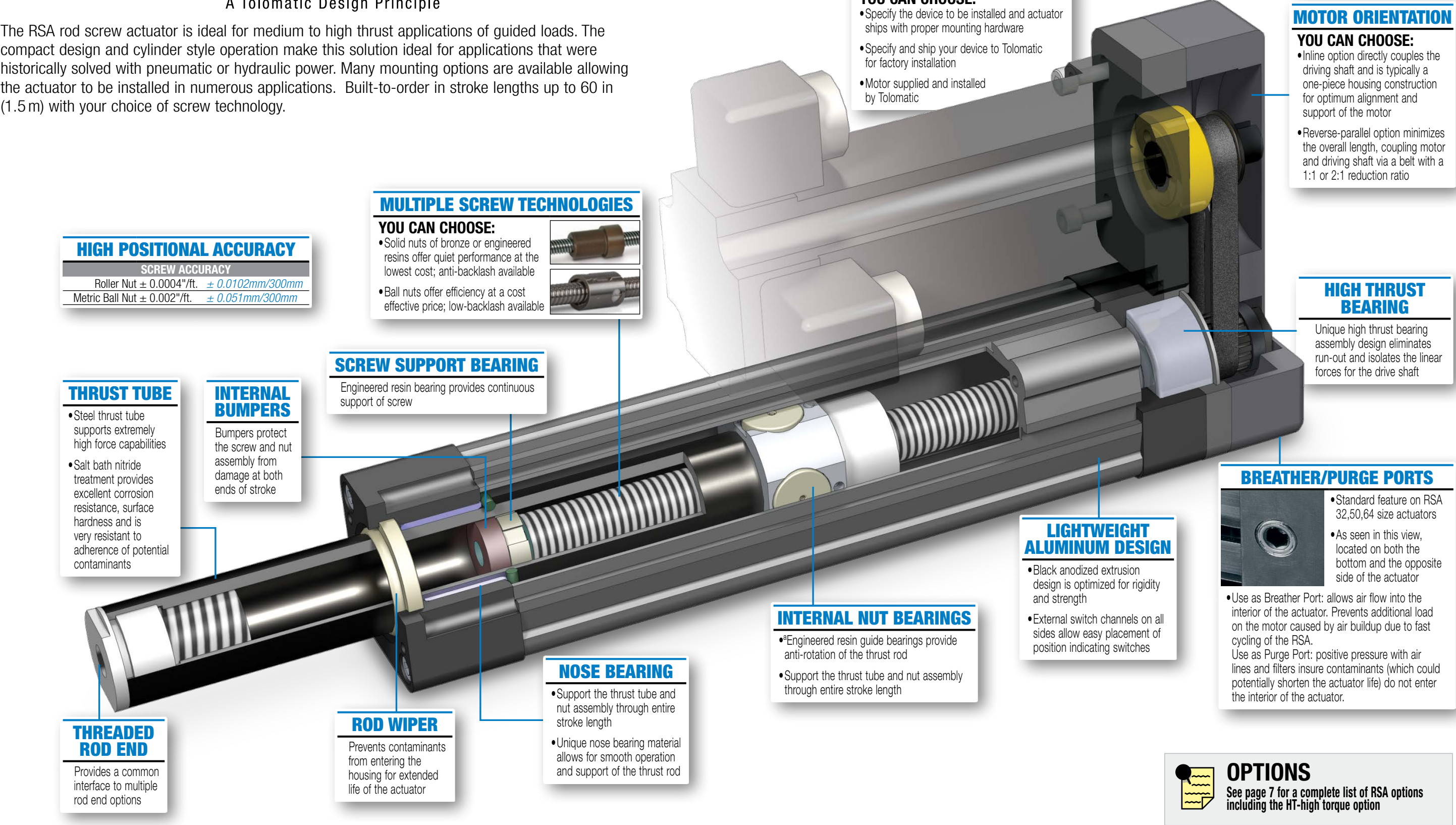
**Tolomatic**... MAXIMUM DURABILITY  
EXCELLENCE IN MOTION

## ENDURANCE TECHNOLOGY<sup>SM</sup>

A Tolomatic Design Principle

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

The RSA rod screw actuator is ideal for medium to high thrust applications of guided loads. The compact design and cylinder style operation make this solution ideal for applications that were historically solved with pneumatic or hydraulic power. Many mounting options are available allowing the actuator to be installed in numerous applications. Built-to-order in stroke lengths up to 60 in (1.5 m) with your choice of screw technology.



# RSA-HT OPTION

## ENDURANCE TECHNOLOGY<sup>SM</sup>

A Tolomatic Design Principle

The HT option is a higher thrust option for the 24, 32, 50 and 64 sizes of the RSA family. RSA actuators with roller nuts are always HT option actuators. Use Tolomatic's online sizing software to determine if the HT Option is right for your application

### STANDARD FEATURES

See page 4 for a complete list of RSA standard features

### REDESIGNED LMI & RP HOUSING

Specially designed to accommodate larger motors & gearboxes with higher torques and larger bolt circles (up to 6.5", 165mm)

### DURABLE BELT MATERIAL

High torque polyurethane timing belt with carbon tensile cords resists stretching

### ENHANCED HIGH THRUST BEARING

RSA HT actuators come with high thrust angular contact ball bearing in matched pair assembly design which eliminates run-out and isolates the linear forces from the drive shaft

### MULTIPLE SCREW TECHNOLOGIES

#### YOU CAN CHOOSE:

- Bronze solid nuts offer quiet performance at the lowest cost; anti-backlash available
- Ball nuts offer efficiency at a cost effective price; low-backlash available
- Roller nuts provide the highest thrust and life ratings available (HT option)



## WHY CHOOSE THE HT OPTION?

- Higher strength components transfer torque from the gearhead/motor through the actuator
- Grease zerk allows convenient relubrication for extended screw service life
- Accommodates mounting large motors with up to 165mm bolt circle pattern

### YOUR MOTOR HERE (Standard Feature)

#### YOU CAN CHOOSE:

- Specify the device to be installed and actuator ships with proper mounting hardware
- Specify and ship your device to Tolomatic for factory installation
- Motor or gearbox supplied and installed by Tolomatic

### IP67 OPTION

Resist water ingress 1m deep for up to 30 min

### HEAVY DUTY INTERNAL BUMPERS

Bumpers protect the screw and nut assembly from damage at both ends of stroke

## Tolomatic... MAXIMUM DURABILITY

EXCELLENCE IN MOTION

### OPTIONS (Available for all RSA actuators unless noted)

#### • METRIC OPTION

Provides metric tapped holes for mounting of load to rod end and of actuator to mating surfaces



#### • SWITCHES

Choose from: Reed, Solid State PNP or NPN, all available normally open or normally closed

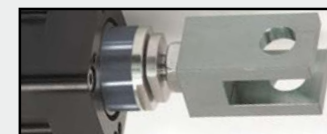
#### • IP67

Static: special gaskets for basic protection against water and dust ingress  
32,50,64 sizes only: HT actuator (LMI and RP); ST actuator (RP motor mount only)

### ROD END



- MET: External Threads male threads



- CLV: Clevis Rod End for pivoting mount



- SRE: Spherical Rod End for pivoting mount



- ALC: Alignment Coupler Rod End to compensate for mounting alignment



- XR: Rod Extension to separate load from the actuator

### MOUNTING



- MP2: Mounting Plates for surface mounting



- FFG: Front Flange for mounting near rod end



- TRR: Trunnion Mount for pivoting mount

Below are for RP Motor mounting only



- BFG: Rear Flange for mounting opposite the rod end



- PCD: Clevis Mount for pivoting mount

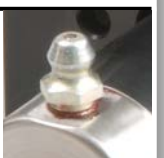
### GREASE ZERK

- This relubrication system provides extended screw service life

- Convenient lubrication without disassembly

- Standard with all HT option RSA actuators

- Grease zerk orientation is not pre-defined. Custom orientation can be requested as a product modification



### THREADED ROD END

Provides a common interface to multiple rod end options

# RSA ST Electric Rod-Style Actuator

SIZE: ALL

units: US standard

SPECIFICATIONS



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for fast, accurate  
actuator selection

| RSA SIZE | MAX STROKE<br>in | SCREW TYPE | SCREW LEAD<br>turns/in | MAX THRUST*<br>lbf | DYNAMIC LOAD RATING**<br>lbf | LEAD ACCURACY†<br>in/ft | BACKLASH<br>in | SCREW DIAMETER<br>in | BASE ACTUATOR INERTIA<br>lb-in <sup>2</sup> | INERTIA PER in OF STROKE<br>lb-in <sup>2</sup> | MAXIMUM DYNAMIC FRICTION TORQUE<br>lb-in |
|----------|------------------|------------|------------------------|--------------------|------------------------------|-------------------------|----------------|----------------------|---------------------------------------------|------------------------------------------------|------------------------------------------|
| 12       | 12               | SN01       | 1.00                   | 70                 | N/A                          | 0.0100                  | 0.0070         | 0.375                | 0.007                                       | 0.002                                          | 0.7                                      |
|          | 12               | SN02       | 2.00                   | 70                 | N/A                          | 0.0060                  | 0.0070         | 0.375                | 0.004                                       | 0.001                                          | 0.6                                      |
|          | 12               | SN05       | 5.00                   | 70                 | N/A                          | 0.0060                  | 0.0070         | 0.375                | 0.003                                       | 0.001                                          | 0.7                                      |
|          | 12               | BZ10       | 10.00                  | 70                 | N/A                          | 0.0060                  | 0.0080         | 0.375                | 0.003                                       | 0.001                                          | 0.8                                      |
|          | 12               | BN(L)08    | 8.00                   | 130                | 300                          | 0.0030                  | 0.0150         | 0.375                | 0.003                                       | 0.001                                          | 0.5                                      |
| 16       | 18               | SN01       | 1.00                   | 70                 | N/A                          | 0.0100                  | 0.0070         | 0.375                | 0.009                                       | 0.002                                          | 1.4                                      |
|          | 18               | SN02       | 2.00                   | 70                 | N/A                          | 0.0060                  | 0.0070         | 0.375                | 0.004                                       | 0.001                                          | 0.9                                      |
|          | 18               | SN05       | 5.00                   | 70                 | N/A                          | 0.0060                  | 0.0070         | 0.375                | 0.003                                       | 0.001                                          | 0.8                                      |
|          | 18               | BZ10       | 10.00                  | 70                 | N/A                          | 0.0060                  | 0.0080         | 0.375                | 0.003                                       | 0.001                                          | 1.2                                      |
|          | 18               | BN(L)08    | 8.00                   | 130                | 300                          | 0.0030                  | 0.0150         | 0.375                | 0.003                                       | 0.001                                          | 0.5                                      |
| 24       | 24               | SN02       | 2.00                   | 200                | N/A                          | 0.0050                  | 0.0070         | 0.625                | 0.082                                       | 0.005                                          | 1.9                                      |
|          | 24               | SN04       | 4.00                   | 200                | N/A                          | 0.0100                  | 0.0070         | 0.625                | 0.077                                       | 0.004                                          | 2.1                                      |
|          | 24               | SN08       | 8.00                   | 200                | N/A                          | 0.0100                  | 0.0070         | 0.625                | 0.075                                       | 0.004                                          | 2.3                                      |
|          | 24               | BZ10       | 10.00                  | 603                | N/A                          | 0.0060                  | 0.0080         | 0.625                | 0.075                                       | 0.004                                          | 3.7                                      |
|          | 24               | BN(L)05    | 5.00                   | 825                | 1,411                        | 0.0030                  | 0.0150         | 0.625                | 0.076                                       | 0.004                                          | 2.4                                      |
|          | 24               | BN(L)02    | 2.00                   | 342                | 1,071                        | 0.0030                  | 0.0150         | 0.500                | 0.082                                       | 0.003                                          | 2.4                                      |
|          | 24               | BNM05      | 5.08                   | 868                | 2,697                        | 0.0040                  | 0.0030         | 0.630                | 0.076                                       | 0.004                                          | 2.5                                      |
|          | 24               | BNM10      | 2.54                   | 434                | 1,911                        | 0.0040                  | 0.0030         | 0.630                | 0.075                                       | 0.004                                          | 2.2                                      |
| 32       | 36               | BZ10       | 10.00                  | 785                | N/A                          | 0.0060                  | 0.0080         | 0.750                | 0.123                                       | 0.009                                          | 4.6                                      |
|          | 36               | BN(L)02    | 2.00                   | 534                | 3,364                        | 0.0040                  | 0.0150         | 0.750                | 0.131                                       | 0.010                                          | 3.1                                      |
|          | 36               | BN(L)05    | 5.00                   | 950                | 1,624                        | 0.0030                  | 0.0150         | 0.750                | 0.124                                       | 0.009                                          | 2.8                                      |
|          | 36               | BNM05      | 5.08                   | 1,357              | 3,080                        | 0.0040                  | 0.0030         | 0.787                | 0.124                                       | 0.011                                          | 3.0                                      |
|          | 36               | BNM10      | 2.54                   | 678                | 4,721                        | 0.0040                  | 0.0030         | 0.787                | 0.128                                       | 0.012                                          | 2.9                                      |
|          | 36               | BNM20      | 1.27                   | 339                | 2,560                        | 0.0020                  | 0.0050         | 0.787                | 0.143                                       | 0.013                                          | 3.2                                      |
| 50       | 48               | BZ10       | 10.00                  | 1,784              | N/A                          | 0.0060                  | 0.0080         | 1.000                | 0.551                                       | 0.028                                          | 13.0                                     |
|          | 48               | BN(L)01    | 1.00                   | 758                | 2,300                        | 0.0040                  | 0.0150         | 1.000                | 0.640                                       | 0.035                                          | 6.4                                      |
|          | 48               | BN(L)02    | 2.00                   | 1,517              | 5,355                        | 0.0040                  | 0.0150         | 1.000                | 0.572                                       | 0.030                                          | 6.3                                      |
|          | 48               | BN(L)04    | 4.00                   | 3,034              | 5,159                        | 0.0040                  | 0.0150         | 1.000                | 0.555                                       | 0.028                                          | 7.0                                      |
|          | 48               | BNM05      | 5.08                   | 2,347              | 4,035                        | 0.0020                  | 0.0040         | 0.984                | 0.553                                       | 0.028                                          | 7.0                                      |
|          | 48               | BNM10      | 2.54                   | 1,926              | 3,372                        | 0.0020                  | 0.0040         | 0.984                | 0.564                                       | 0.029                                          | 9.1                                      |
|          | 48               | BNM25      | 1.02                   | 771                | 2,537                        | 0.0040                  | 0.0050         | 0.984                | 0.637                                       | 0.035                                          | 9.4                                      |
| 64       | 60               | BZ10       | 10.00                  | 1,781              | N/A                          | 0.0060                  | 0.0080         | 1.500                | 2.208                                       | 0.139                                          | 33.3                                     |
|          | 60               | BN(L)53    | 0.53                   | 538                | 5,961                        | 0.0040                  | 0.0150         | 1.500                | 2.851                                       | 0.174                                          | 14.0                                     |
|          | 60               | BN(L)02    | 2.00                   | 2,019              | 11,402                       | 0.0040                  | 0.0150         | 1.500                | 2.252                                       | 0.141                                          | 11.7                                     |
|          | 60               | BN(L)04    | 4.00                   | 4,028              | 6,746                        | 0.0040                  | 0.0150         | 1.500                | 2.218                                       | 0.139                                          | 12.6                                     |
|          | 60               | BNM05      | 5.08                   | 2,033              | 6,714                        | 0.0020                  | 0.0040         | 1.575                | 2.214                                       | 0.139                                          | 10.0                                     |
|          | 60               | BNM10      | 2.54                   | 2,033              | 7,476                        | 0.0020                  | 0.0040         | 1.575                | 2.235                                       | 0.140                                          | 15.7                                     |
|          | 60               | BNM20      | 1.27                   | 1,282              | 5,528                        | 0.0020                  | 0.0050         | 1.575                | 2.320                                       | 0.145                                          | 16.1                                     |

| SCREW CODE | DESCRIPTION           |
|------------|-----------------------|
| BN         | Ball Nut              |
| BNH        | Ball Nut H-series     |
| BNL        | Low-Backlash Ball Nut |
| BNM        | Ball Nut Metric       |
| BZ         | Bronze Nut            |
| RN         | Roller Nut            |
| SN         | Solid Nut             |



Contact Tolomatic for higher accuracy and lower backlash options.  
† (L) for low backlash ball screws: backlash = 0.0020" (0.05 mm)

\* For SN & BZ screws, maximum continuous dynamic thrust subject to Thrust x Velocity limitation.

\*\* For RN, BN & BNL screws, dynamic load rating reflects 90% reliability for 1 million revolutions.

# RSA ST Electric Rod-Style Actuator



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for fast, accurate  
actuator selection

SIZE: **ALL**

units: **metric\*\***

## SPECIFICATIONS

\*\* RSA metric actuators use the same leadscrew as the RSA inch actuators. Threaded mounting and dowel pin holes are metric.

| RSA SIZE | MAX STROKE<br>mm | SCREW TYPE | SCREW LEAD<br>mm/rev | MAX THRUST*<br>N | DYNAMIC LOAD RATING**<br>N | LEAD ACCURACY†<br>mm/300mm | BACKLASH<br>mm | SCREW DIAMETER<br>mm | BASE ACTUATOR INERTIA<br>kg-cm <sup>2</sup> | INERTIA PER mm OF STROKE<br>kg-cm <sup>2</sup> | MAXIMUM DYNAMIC FRICTION TORQUE<br>N-m |
|----------|------------------|------------|----------------------|------------------|----------------------------|----------------------------|----------------|----------------------|---------------------------------------------|------------------------------------------------|----------------------------------------|
| 12       | 304.8            | SN01       | 25.40                | 311              | N/A                        | 0.25                       | 0.18           | 9.5                  | 0.02                                        | 0.0002                                         | 0.08                                   |
|          | 304.8            | SN02       | 12.70                | 311              | N/A                        | 0.15                       | 0.18           | 9.5                  | 0.01                                        | 0.0001                                         | 0.07                                   |
|          | 304.8            | SN05       | 5.08                 | 311              | N/A                        | 0.15                       | 0.18           | 9.5                  | 0.01                                        | 0.0001                                         | 0.08                                   |
|          | 304.8            | BZ10       | 2.54                 | 311              | N/A                        | 0.15                       | 0.20           | 9.5                  | 0.01                                        | 0.0001                                         | 0.09                                   |
|          | 304.8            | BN(L)08    | 3.18                 | 578              | 1,334                      | 0.08                       | 0.38           | 9.5                  | 0.01                                        | 0.0001                                         | 0.06                                   |
| 16       | 457.2            | SN01       | 25.40                | 311              | N/A                        | 0.25                       | 0.18           | 9.5                  | 0.03                                        | 0.0002                                         | 0.16                                   |
|          | 457.2            | SN02       | 12.70                | 311              | N/A                        | 0.15                       | 0.18           | 9.5                  | 0.01                                        | 0.0001                                         | 0.10                                   |
|          | 457.2            | SN05       | 5.08                 | 311              | N/A                        | 0.15                       | 0.18           | 9.5                  | 0.01                                        | 0.0001                                         | 0.09                                   |
|          | 457.2            | BZ10       | 2.54                 | 311              | N/A                        | 0.15                       | 0.20           | 9.5                  | 0.01                                        | 0.0001                                         | 0.14                                   |
|          | 457.2            | BN(L)08    | 3.18                 | 578              | 1,334                      | 0.08                       | 0.38           | 9.5                  | 0.01                                        | 0.0001                                         | 0.06                                   |
| 24       | 609.6            | SN02       | 12.70                | 890              | N/A                        | 0.13                       | 0.18           | 15.9                 | 0.24                                        | 0.0006                                         | 0.21                                   |
|          | 609.6            | SN04       | 6.35                 | 890              | N/A                        | 0.25                       | 0.18           | 15.9                 | 0.23                                        | 0.0005                                         | 0.24                                   |
|          | 609.6            | SN08       | 3.18                 | 890              | N/A                        | 0.25                       | 0.18           | 15.9                 | 0.22                                        | 0.0005                                         | 0.26                                   |
|          | 609.6            | BZ10       | 2.54                 | 2,682            | N/A                        | 0.15                       | 0.20           | 15.9                 | 0.22                                        | 0.0005                                         | 0.42                                   |
|          | 609.6            | BN(L)05    | 5.08                 | 3,670            | 6,276                      | 0.08                       | 0.38           | 15.9                 | 0.22                                        | 0.0005                                         | 0.27                                   |
|          | 609.6            | BN(L)02    | 12.70                | 1,521            | 4,764                      | 0.08                       | 0.38           | 12.7                 | 0.24                                        | 0.0003                                         | 0.27                                   |
|          | 609.6            | BNM05      | 5.00                 | 3,861            | 11,997                     | 0.10                       | 0.08           | 16.0                 | 0.22                                        | 0.0005                                         | 0.28                                   |
|          | 609.6            | BNM10      | 10.00                | 1,931            | 8,501                      | 0.10                       | 0.08           | 16.0                 | 0.22                                        | 0.0005                                         | 0.25                                   |
| 32       | 914.4            | BZ10       | 2.54                 | 3,492            | N/A                        | 0.15                       | 0.20           | 19.1                 | 0.36                                        | 0.0010                                         | 0.52                                   |
|          | 914.4            | BN(L)02    | 12.70                | 2,375            | 14,964                     | 0.10                       | 0.38           | 19.1                 | 0.38                                        | 0.0011                                         | 0.35                                   |
|          | 914.4            | BN(L)05    | 5.08                 | 4,226            | 7,224                      | 0.08                       | 0.38           | 19.1                 | 0.36                                        | 0.0010                                         | 0.32                                   |
|          | 914.4            | BNM05      | 5.00                 | 6,036            | 13,701                     | 0.10                       | 0.08           | 20.0                 | 0.36                                        | 0.0013                                         | 0.34                                   |
|          | 914.4            | BNM10      | 10.00                | 3,016            | 21,000                     | 0.10                       | 0.08           | 20.0                 | 0.38                                        | 0.0013                                         | 0.33                                   |
|          | 914.4            | BNM20      | 20.00                | 1,508            | 11,387                     | 0.05                       | 0.13           | 20.0                 | 0.42                                        | 0.0015                                         | 0.36                                   |
| 50       | 1219.2           | BZ10       | 2.54                 | 7,936            | N/A                        | 0.15                       | 0.20           | 25.4                 | 1.61                                        | 0.0032                                         | 1.47                                   |
|          | 1219.2           | BN(L)01    | 25.40                | 3,372            | 10,231                     | 0.10                       | 0.38           | 25.4                 | 1.88                                        | 0.0041                                         | 0.72                                   |
|          | 1219.2           | BN(L)02    | 12.70                | 6,748            | 23,820                     | 0.10                       | 0.38           | 25.4                 | 1.68                                        | 0.0034                                         | 0.71                                   |
|          | 1219.2           | BN(L)04    | 6.35                 | 13,496           | 22,948                     | 0.10                       | 0.38           | 25.4                 | 1.63                                        | 0.0033                                         | 0.79                                   |
|          | 1219.2           | BNM05      | 5.00                 | 10,440           | 17,949                     | 0.05                       | 0.10           | 25.0                 | 1.62                                        | 0.0032                                         | 0.79                                   |
|          | 1219.2           | BNM10      | 10.00                | 8,567            | 14,999                     | 0.05                       | 0.10           | 25.0                 | 1.65                                        | 0.0033                                         | 1.03                                   |
|          | 1219.2           | BNM25      | 24.90                | 3,430            | 11,285                     | 0.10                       | 0.13           | 25.0                 | 1.87                                        | 0.0040                                         | 1.06                                   |
| 64       | 1524             | BZ10       | 2.54                 | 7,922            | N/A                        | 0.15                       | 0.20           | 38.1                 | 6.47                                        | 0.0160                                         | 3.76                                   |
|          | 1524             | BN(L)53    | 47.92                | 2,393            | 26,516                     | 0.10                       | 0.38           | 38.1                 | 8.35                                        | 0.0201                                         | 1.58                                   |
|          | 1524             | BN(L)02    | 12.70                | 8,981            | 50,719                     | 0.10                       | 0.38           | 38.1                 | 6.60                                        | 0.0163                                         | 1.32                                   |
|          | 1524             | BN(L)04    | 6.35                 | 17,917           | 30,008                     | 0.10                       | 0.38           | 38.1                 | 6.50                                        | 0.0161                                         | 1.42                                   |
|          | 1524             | BNM05      | 5.00                 | 9,043            | 29,865                     | 0.05                       | 0.10           | 40.0                 | 6.49                                        | 0.0161                                         | 1.13                                   |
|          | 1524             | BNM10      | 10.00                | 9,043            | 33,255                     | 0.05                       | 0.10           | 40.0                 | 6.55                                        | 0.0162                                         | 1.77                                   |
|          | 1524             | BNM20      | 20.00                | 5,703            | 24,590                     | 0.05                       | 0.13           | 40.0                 | 6.80                                        | 0.0167                                         | 1.82                                   |

| SCREW CODE | DESCRIPTION           |
|------------|-----------------------|
| BN         | Ball Nut              |
| BNH        | Ball Nut H-series     |
| BNL        | Low-Backlash Ball Nut |
| BNM        | Ball Nut Metric       |
| BZ         | Bronze Nut            |
| RN         | Roller Nut            |
| SN         | Solid Nut             |



Contact Tolomatic for higher accuracy and lower backlash options.  
† (L) for low backlash ball screws: backlash = 0.0020" (0.05 mm)

\* For SN & BZ screws, maximum continuous dynamic thrust subject to Thrust x Velocity limitation.

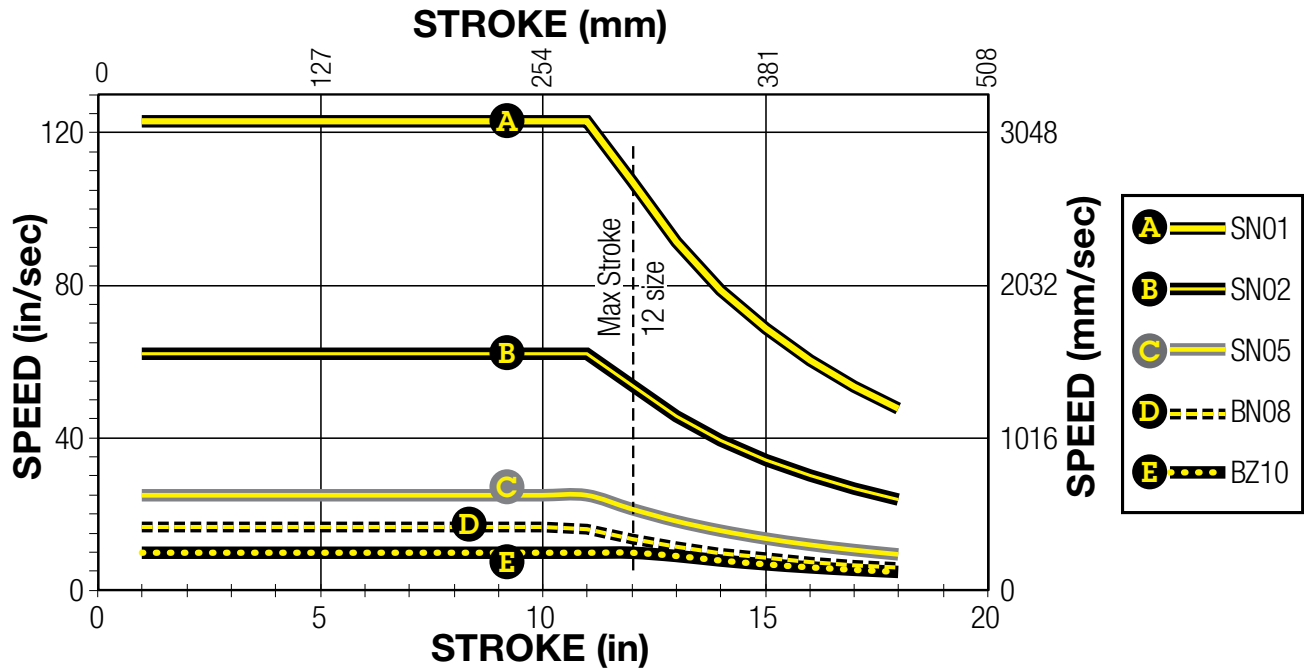
\*\* For RN, BN & BNL screws, dynamic load rating reflects 90% reliability for 1 million revolutions.

# RSA ST Electric Rod-Style Actuator

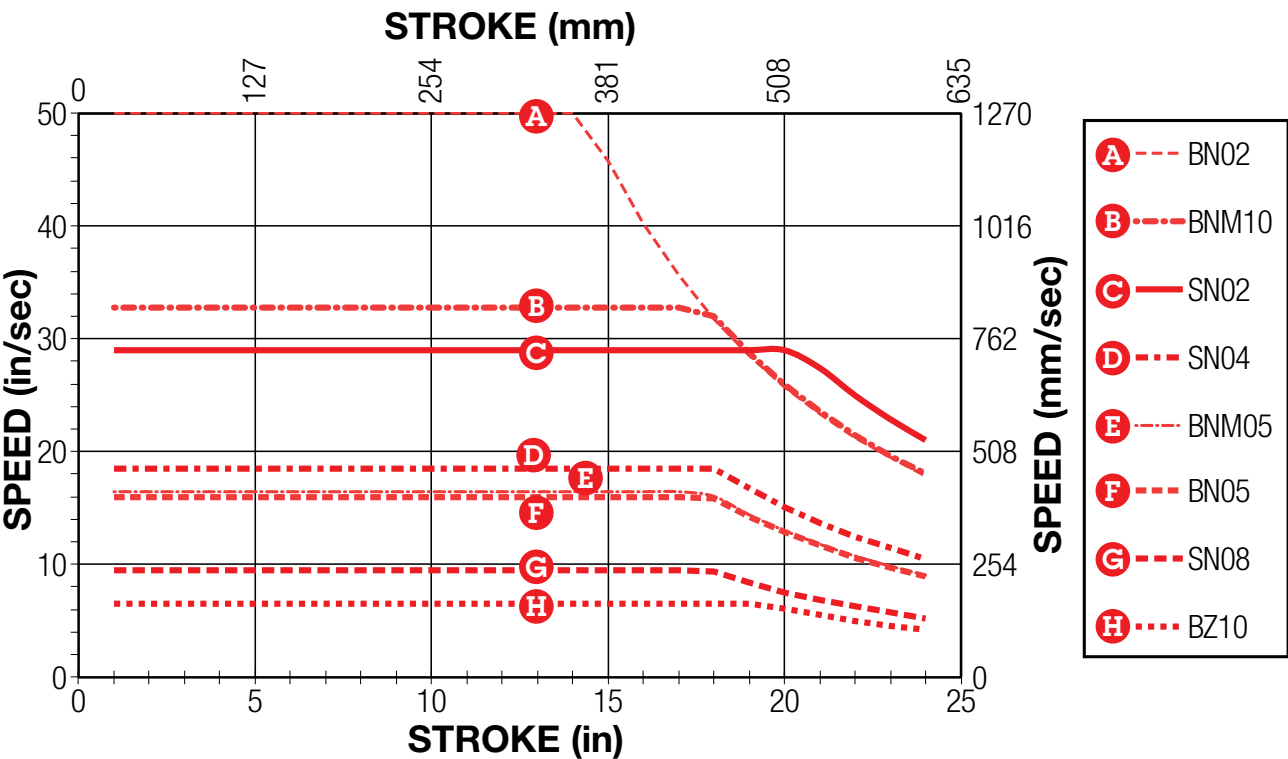
SIZE: 12,16: CRITICAL SPEED CAPACITIES

SPECIFICATIONS

[sizeit.tolomatic.com](http://sizeit.tolomatic.com)  
for fast, accurate  
actuator selection



SIZE: 24: CRITICAL SPEED CAPACITIES



| SCREW CODE | DESCRIPTION           | SCREW CODE | DESCRIPTION |
|------------|-----------------------|------------|-------------|
| BN         | Ball Nut              | BZ         | Bronze Nut  |
| BNH        | Ball Nut H-series     | RN         | Roller Nut  |
| BNL        | Low-Backlash Ball Nut | SN         | Solid Nut   |
| BNM        | Ball Nut Metric       |            |             |

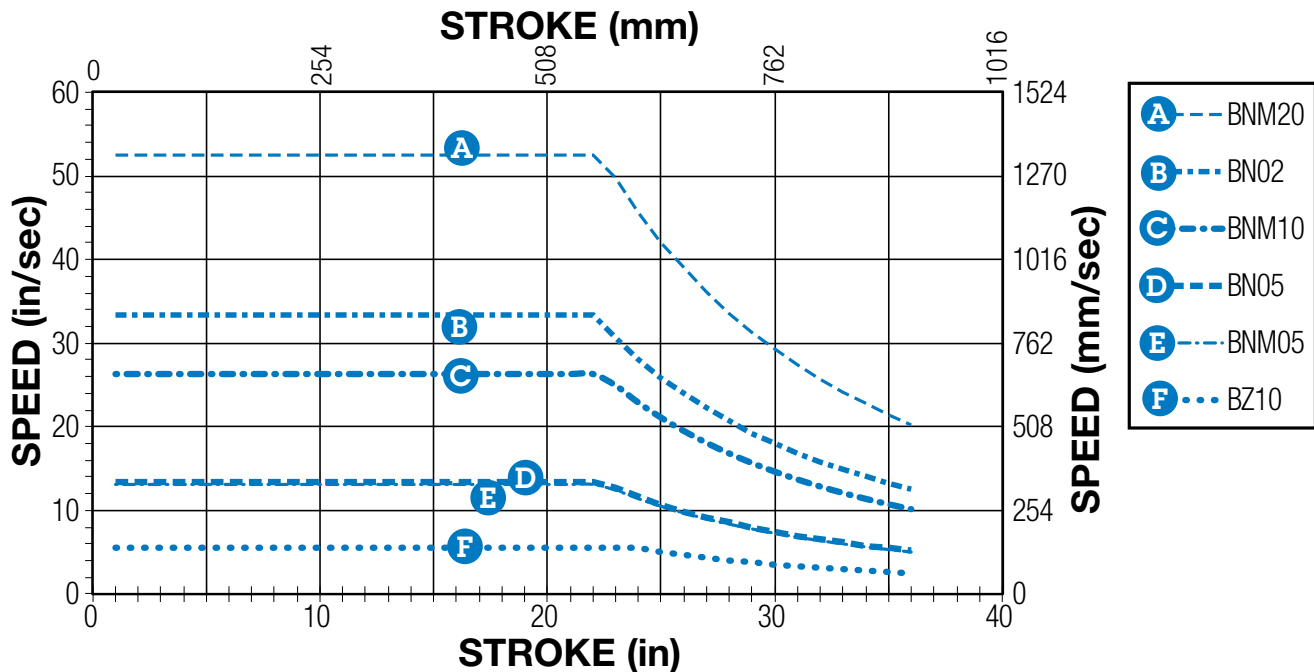
# RSA ST Electric Rod-Style Actuator

SIZE: **32: CRITICAL SPEED CAPACITIES**

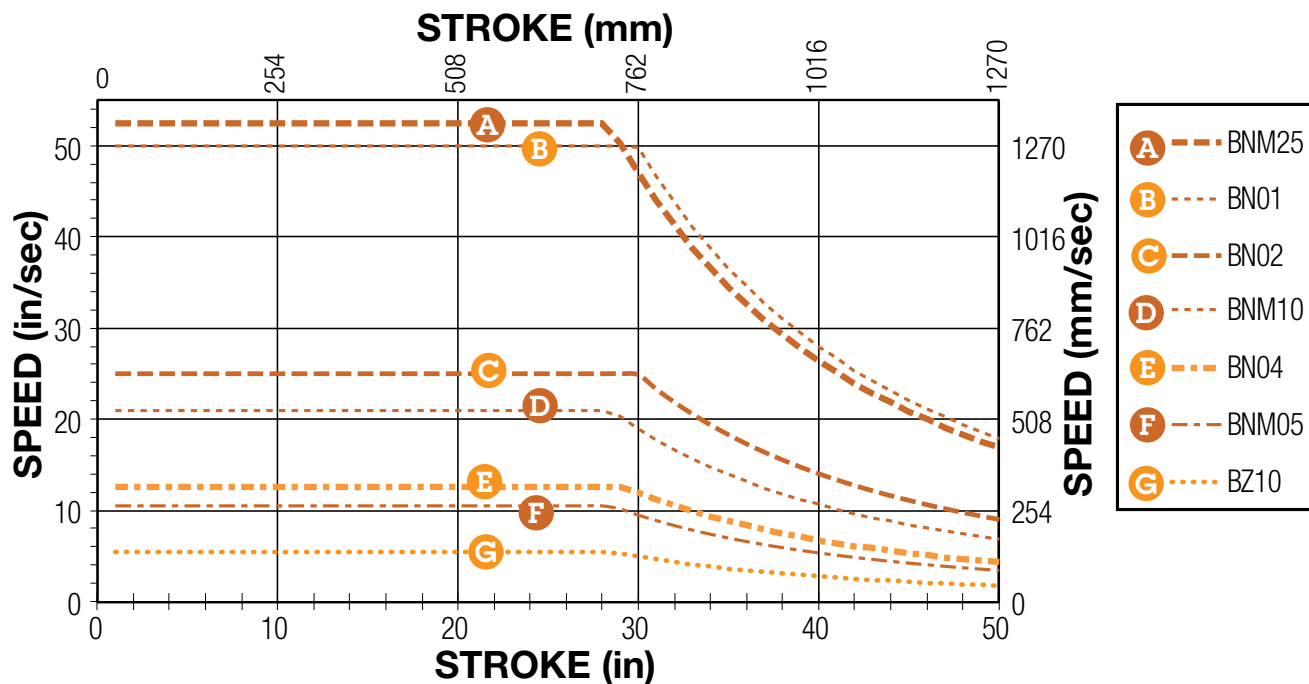
**SPECIFICATIONS**



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actuator selection



SIZE: **50: CRITICAL SPEED CAPACITIES**



| SCREW CODE | DESCRIPTION           | SCREW CODE | DESCRIPTION |
|------------|-----------------------|------------|-------------|
| BN         | Ball Nut              | BZ         | Bronze Nut  |
| BNH        | Ball Nut H-series     | RN         | Roller Nut  |
| BNL        | Low-Backlash Ball Nut | SN         | Solid Nut   |
| BNM        | Ball Nut Metric       |            |             |

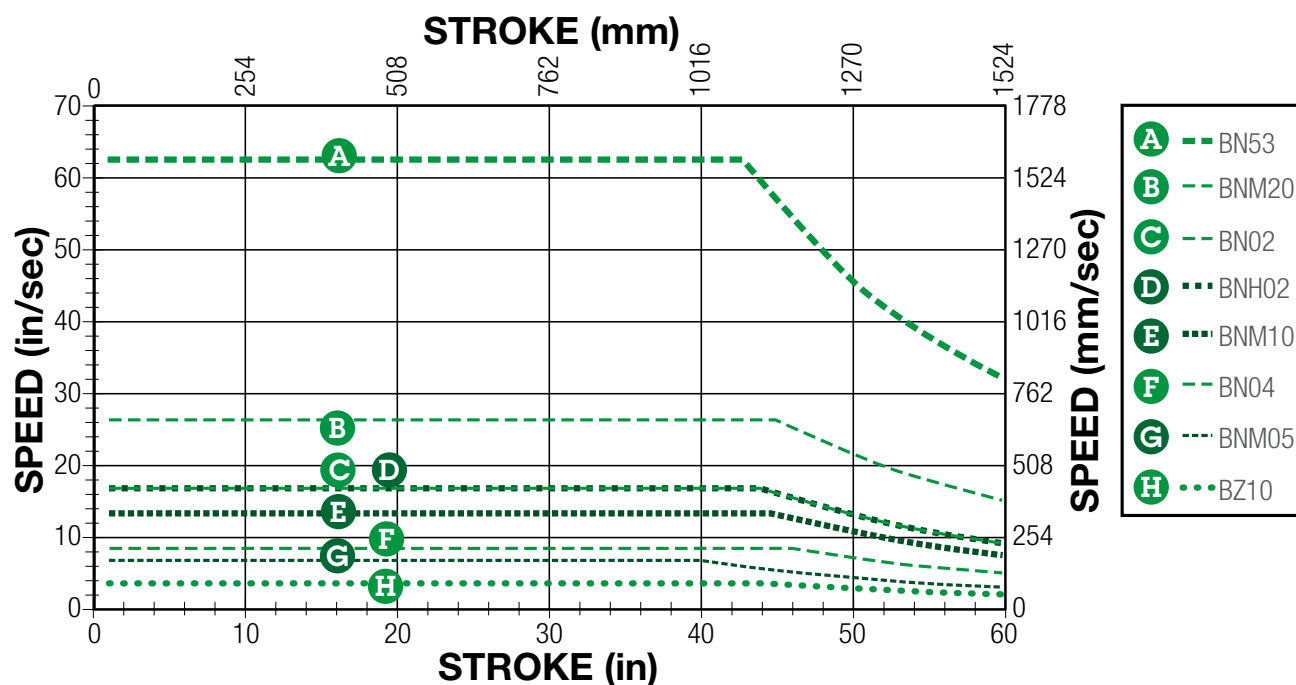
# RSA ST Electric Rod-Style Actuator

SIZE: 64: CRITICAL SPEED CAPACITIES

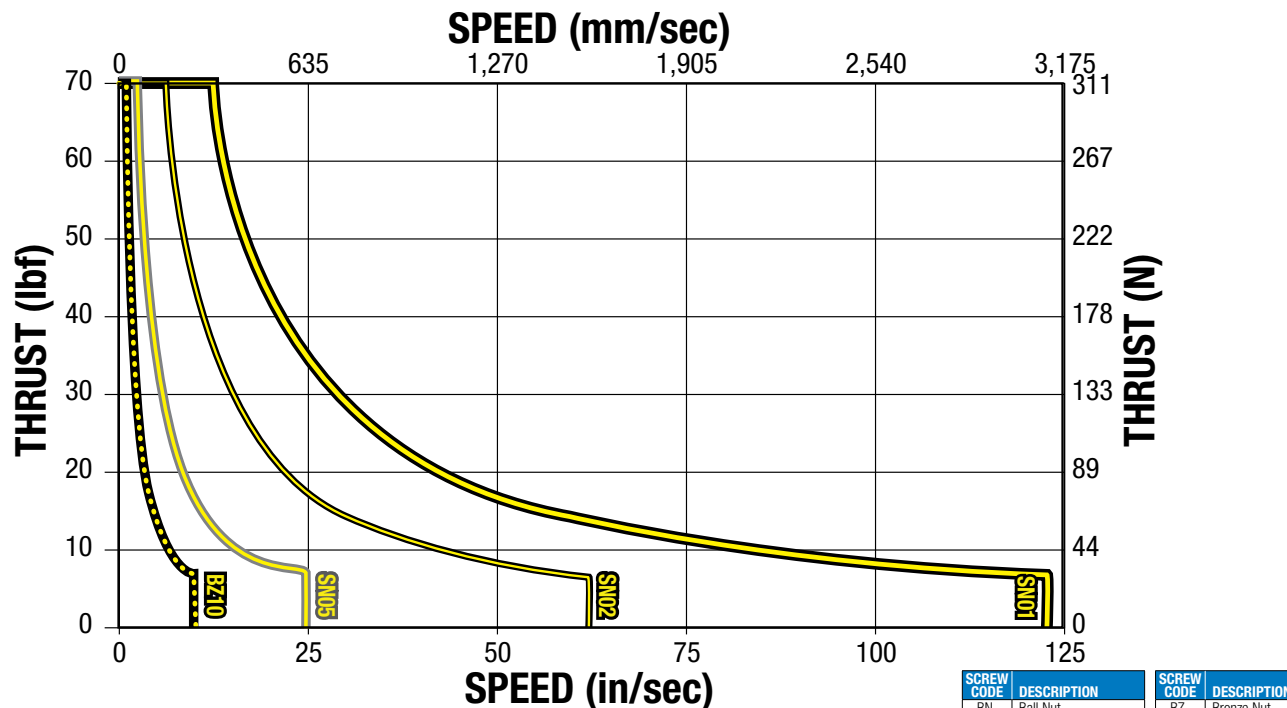
SPECIFICATIONS



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actuator selection



SIZE: 12,16: PV LIMITS (Solid Nuts)



## PV LIMITS

**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.

$$\frac{P}{\left(\frac{\text{Thrust}}{\text{Max. Thrust Rating}}\right)} \times \frac{V}{\left(\frac{\text{Speed}}{\text{Max. Speed Rating}}\right)} \leq 0.1$$

# RSA ST Electric Rod-Style Actuator

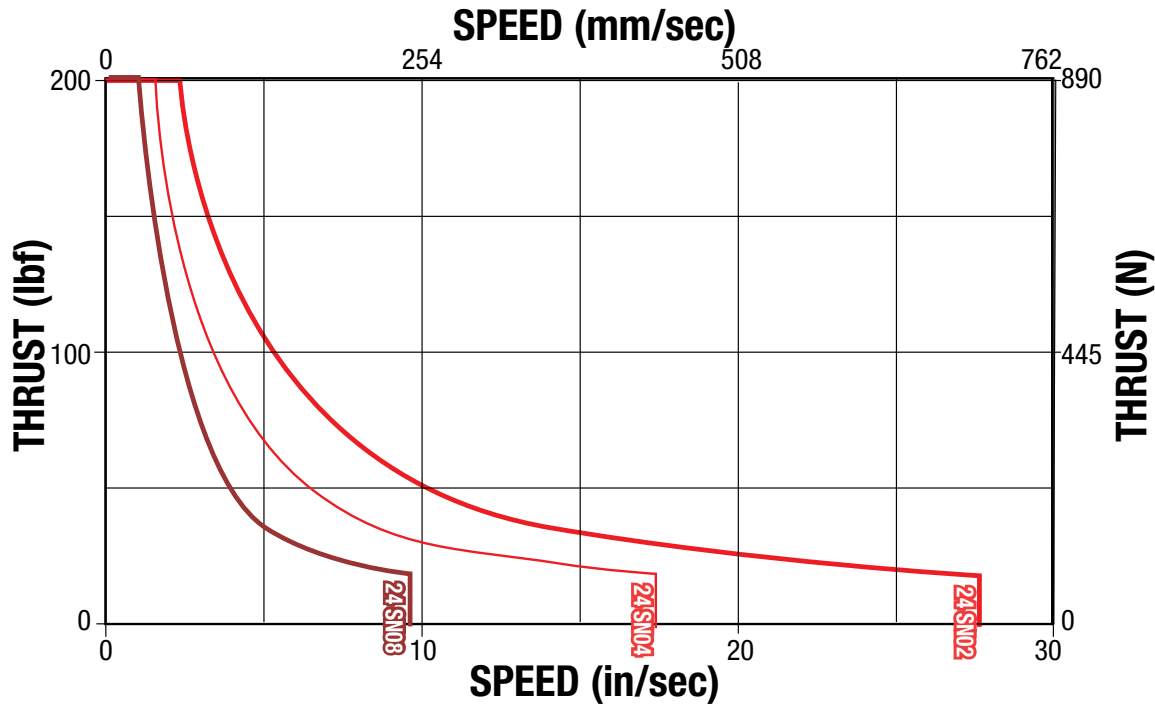
SIZE: 24 (SN): PV LIMITS (Solid Nuts)

SPECIFICATIONS

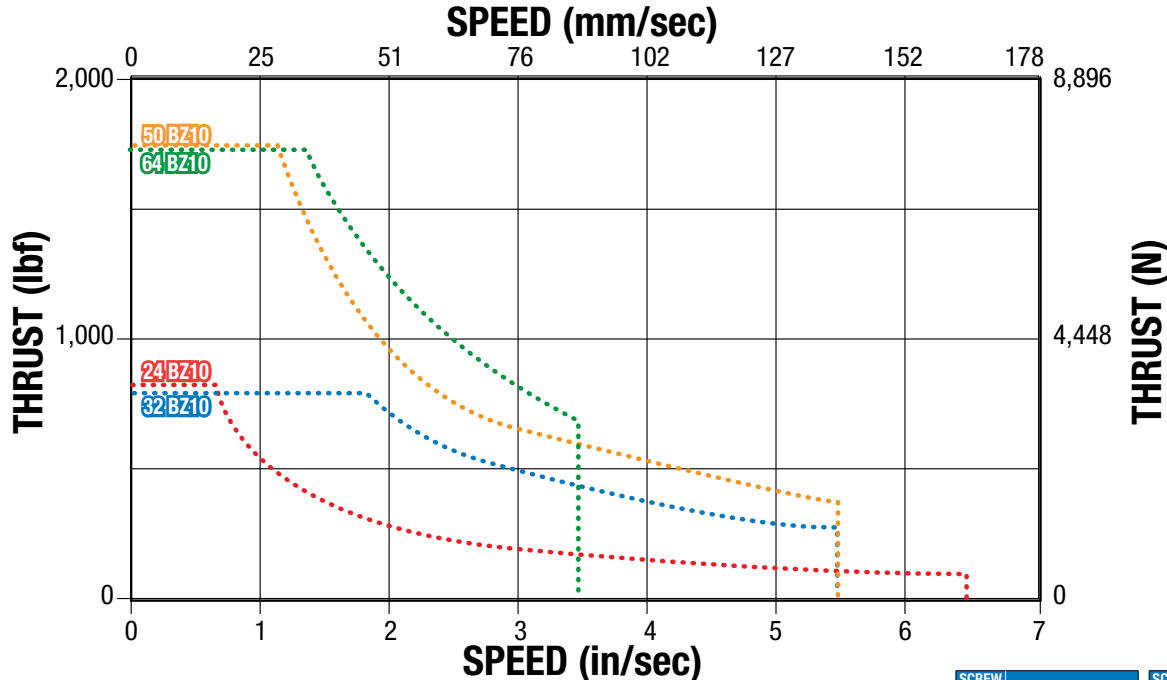


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actuator selection

RSA-ST



SIZE: 24,32,50,64 (BZ): PV LIMITS (Bronze Nuts)



| SCREW CODE | DESCRIPTION           | SCREW CODE | DESCRIPTION |
|------------|-----------------------|------------|-------------|
| BN         | Ball Nut              | BZ         | Bronze Nut  |
| BNH        | Ball Nut H-series     | RN         | Roller Nut  |
| BNL        | Low-Backlash Ball Nut | SN         | Solid Nut   |
| BNM        | Ball Nut Metric       |            |             |

## PV LIMITS

**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.

$$\left( \frac{\text{Thrust}}{(\text{Max. Thrust Rating})} \right) \times \left( \frac{\text{Speed}}{(\text{Max. Speed Rating})} \right) \leq 0.1$$

# RSA ST Electric Rod-Style Actuator

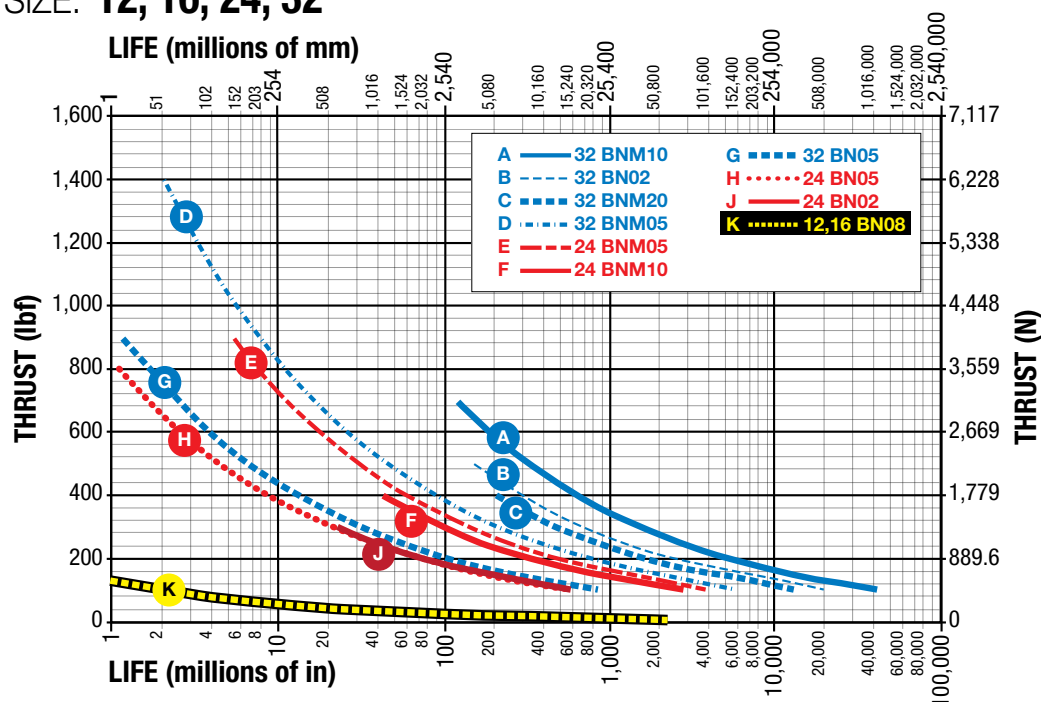
## BALL SCREW LIFE GRAPHS

SIZE: 12, 16, 24, 32

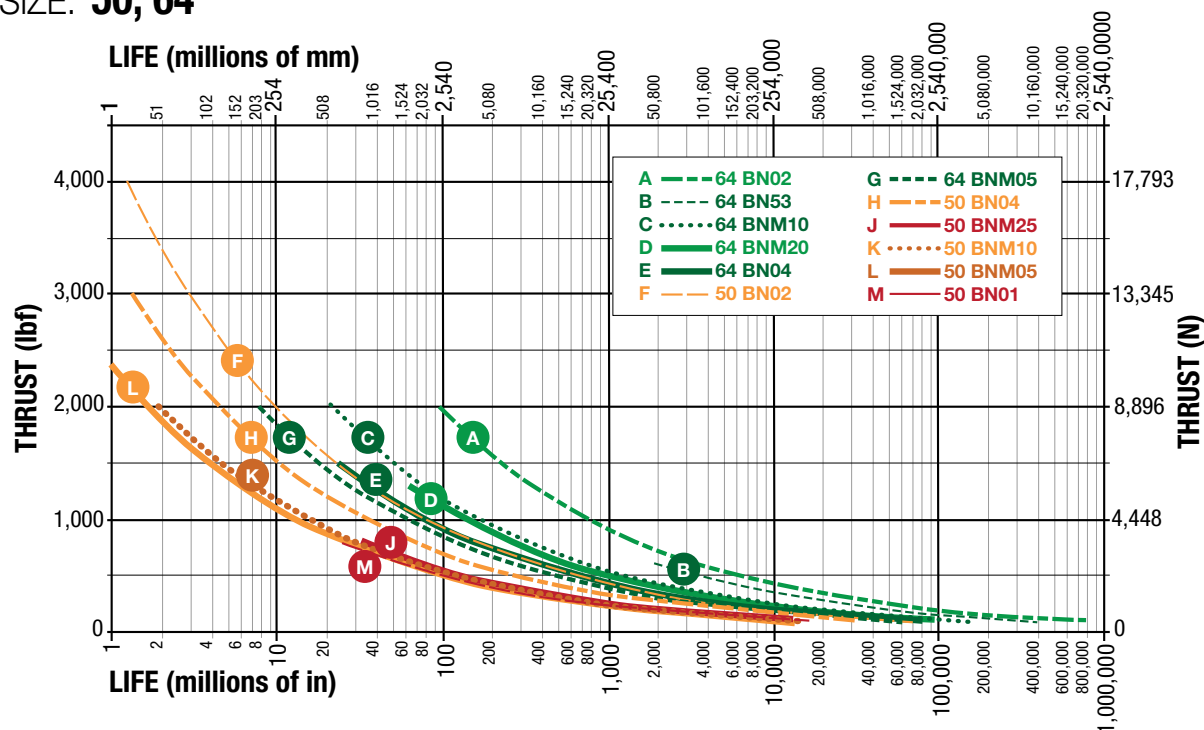
## SPECIFICATIONS



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SIZE: 50, 64



**NOTE:** The  $L_{10}$  expected life of a ball screw linear actuator is expressed as the linear travel distance that 90% of properly maintained ball screw manufactured are expected to meet or exceed. This is not a guarantee and this graph should be used for estimation purposes only.

The underlying formula that defines this value is:

$$L_{10} = \left( \frac{C}{P_e} \right)^3 \cdot \ell =$$

$L_{10}$  Travel life in millions of units (in or mm), where:

$C$  = Dynamic load rating (lbf) or (N)

$P_e$  = Equivalent load (lbf) or (N)

If load is constant across all movements then:

actual load = equivalent load

$\ell$  = Screw lead (in/rev) (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.

$$P_e = \sqrt[3]{\frac{L_1(P_1)^3 + L_2(P_2)^3 + L_3(P_3)^3 + L_n(P_n)^3}{L}}$$

Where:

$P_e$  = Equivalent load (lbf) or (N)

$P_n$  = Each increment at different load (lbf) or (N)

$L$  = Total distanced traveled per cycle (extend + retract stroke)  
[ $L = L_1 + L_2 + L_3 + L_n$ ]

$L_n$  = Each increment of stroke at different load (in) or (mm)

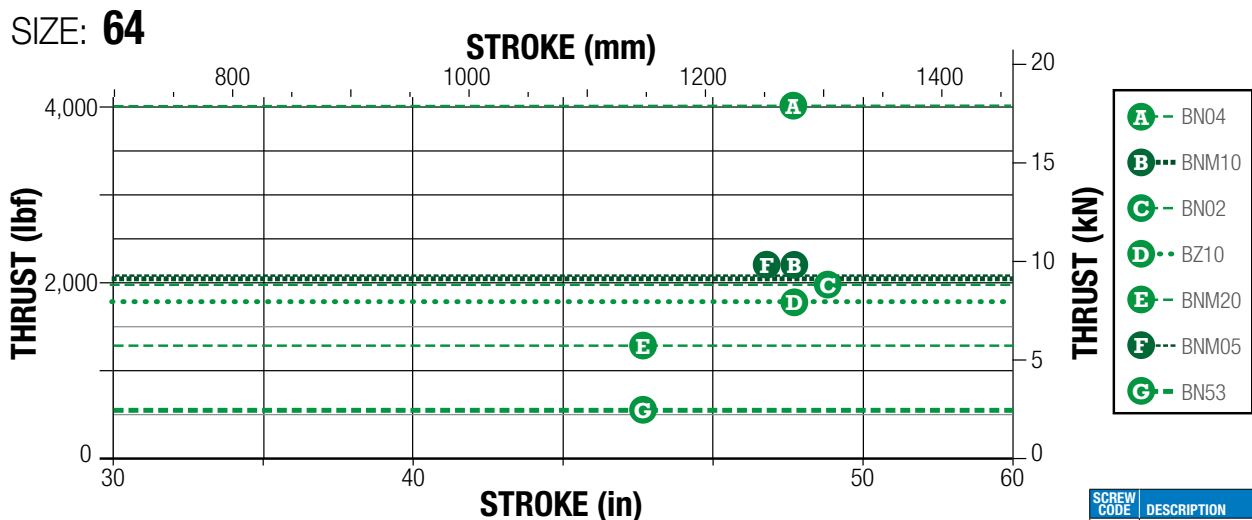
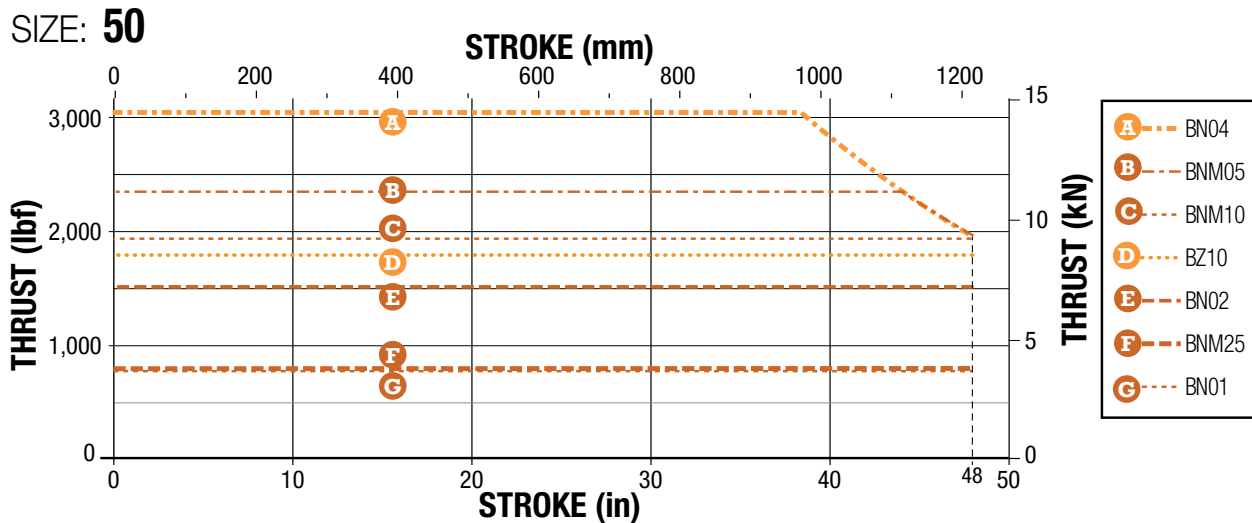
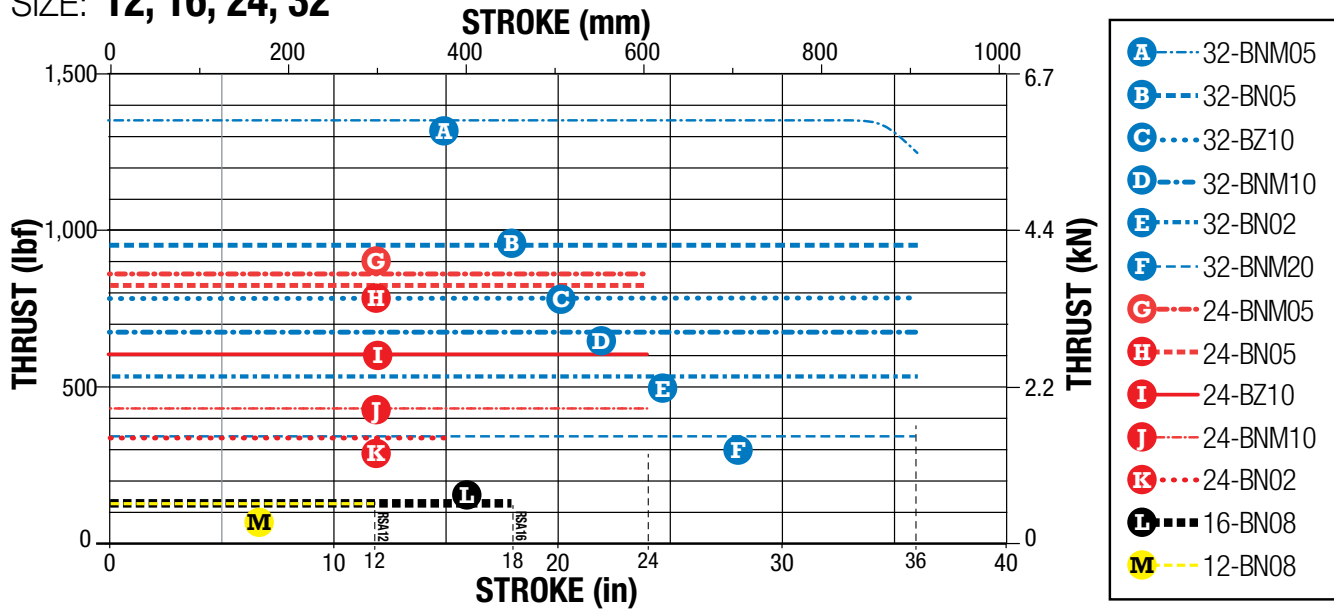
# RSA ST Electric Rod-Style Actuator

## SCREW BUCKLING LOAD

SIZE: 12, 16, 24, 32

## SPECIFICATIONS

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actuator selection



**NOTE:** Buckling load limits shown assume perfect alignment. It is recommended to use additional safety margin, particularly in high thrust applications

| SCREW CODE | DESCRIPTION           |
|------------|-----------------------|
| BN         | Ball Nut              |
| BNH        | Ball Nut H-series     |
| BNL        | Low-Backlash Ball Nut |
| BNM        | Ball Nut Metric       |
| BZ         | Bronze Nut            |
| RN         | Roller Nut            |
| SN         | Solid Nut             |

# RSA ST Electric Rod-Style Actuator

SIZE: ALL

## SPECIFICATIONS



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actuator selection

### U.S. Standard

| RSA<br>SIZE | WEIGHT |     |     |      |                        | REDUCTION INERTIA  |                    |                    |
|-------------|--------|-----|-----|------|------------------------|--------------------|--------------------|--------------------|
|             | BASE   | LMI | RP1 | RP2  | per in<br>of<br>stroke | LMI                | RP1                | RP2                |
|             | lb     | lb  | lb  | lb   | lb/in                  | lb-in <sup>2</sup> | lb-in <sup>2</sup> | lb-in <sup>2</sup> |
| 12          | 0.5    | 0.9 | 0.7 | N/A  | 0.10                   | 0.03               | 0.15               | N/A                |
| 16          | 0.6    | 0.9 | 0.8 | N/A  | 0.16                   | 0.03               | 0.15               | N/A                |
| 24          | 2.8    | 0.9 | 1.7 | 2.2  | 0.34                   | 0.03               | 0.15               | 0.12               |
| 32          | 5.3    | 1.4 | 2.8 | 3.2  | 0.48                   | 0.18               | 0.16               | 0.16               |
| 50          | 12.2   | 2.2 | 4.9 | 5.2  | 0.84                   | 0.56               | 0.68               | 0.40               |
| 64          | 30.8   | 5.6 | 8.7 | 11.5 | 1.45                   | 0.56               | 0.82               | 1.92               |

\*Temperature Range (°F): Standard: 40 to 130 Extended: -40 to 140

### Metric

| RSA<br>SIZE | WEIGHT |      |      |      |                        | REDUCTION INERTIA  |                    |                    |
|-------------|--------|------|------|------|------------------------|--------------------|--------------------|--------------------|
|             | BASE   | LMI  | RP1  | RP2  | per mm<br>of<br>stroke | LMI                | RP1                | RP2                |
|             | kg     | kg   | kg   | kg   | g/mm                   | kg-cm <sup>2</sup> | kg-cm <sup>2</sup> | kg-cm <sup>2</sup> |
| 12          | 0.23   | 0.41 | 0.32 | N/A  | 1.79                   | 0.0879             | 0.4395             | N/A                |
| 16          | 0.27   | 0.41 | 0.36 | N/A  | 2.86                   | 0.0879             | 0.4395             | N/A                |
| 24          | 1.27   | 0.41 | 0.77 | 1.00 | 6.07                   | 0.0879             | 0.4395             | 0.3516             |
| 32          | 2.40   | 0.64 | 1.27 | 1.45 | 8.57                   | 0.5274             | 0.4688             | 0.4688             |
| 50          | 5.53   | 1.00 | 2.22 | 2.36 | 15.00                  | 1.6408             | 1.9924             | 1.1720             |
| 64          | 13.97  | 2.54 | 3.95 | 5.22 | 25.89                  | 1.6408             | 2.4026             | 5.6256             |

\*Temperature Range (°C): Standard: 4 to 54 Extended -40 to 60

Gasket Kit providing ingress protection against dust and splashing water available upon request



Contact Tolomatic if operation in the extended range is required.

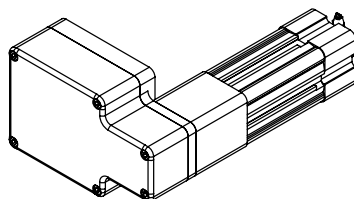
**⚠** \* Heat generated by the motor and drive should be taken into consideration as well as linear velocity and work cycle time. For applications that require operation outside of the recommended temperature range, contact Tolomatic.

**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.

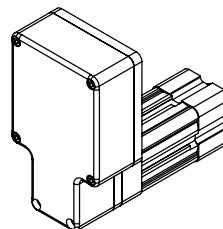
**SIDE LOADING CONSIDERATIONS:** Rod screw actuators are designed to push guided and supported loads and are not meant for applications that require substantial side loading. Please contact Tolomatic for details regarding side loading capabilities.

## REVERSE PARALLEL MOUNTING ORDER CODES

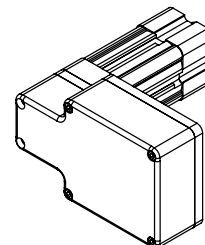
Note that these configurations all are shown with the tapped mounting holes at the bottom of the actuator



RPL



RP



RPR



When selecting your motor for reverse parallel mounting, please note:

Brakes mounted on reverse parallel motor mounts (especially in vertically positioned actuators) will not prevent back driving of the screw and the load falling under gravity in the event of a timing belt failure. An inline motor mount with a fail-safe brake mounted directly to the actuator shaft or a special geared or thru-shaft reverse parallel construction should be considered if a brake is required in a safety critical application. Contact Tolomatic for alternate reverse parallel brake mounting options.

Gearheads may be used with RSA ST or GSA ST reverse parallel motor mounts. However, the torque on the belt and internal ST RP components must remain below the capabilities of the assembly to prevent belt slipping or premature failure. Contact Tolomatic for additional information if required.



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Technical support  
before and after  
purchase

# RSA ST Electric Rod-Style Actuator

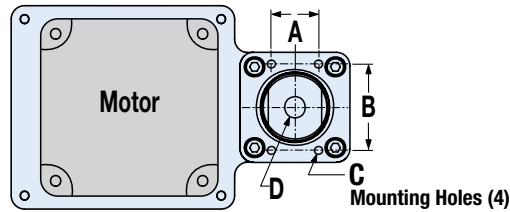
tolomatic.com/CAD Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



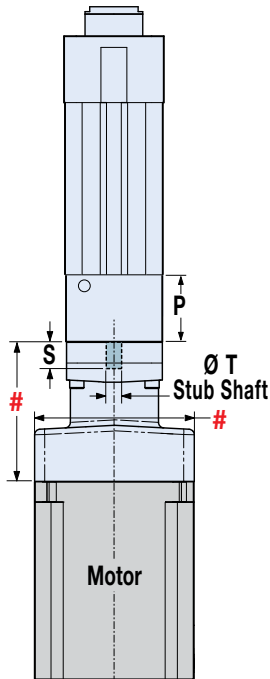
SIZE: ALL

## DIMENSIONS

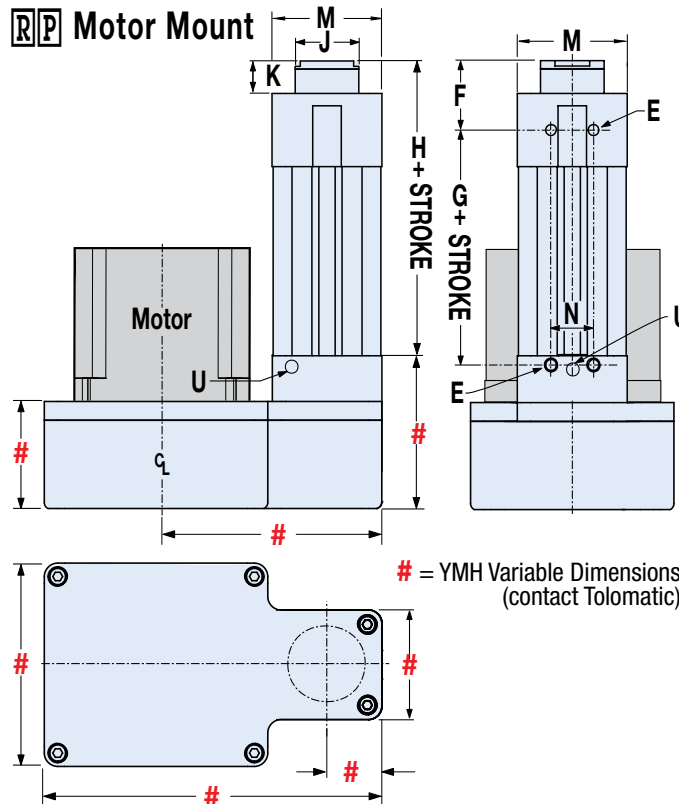
### ST ACTUATOR DIMENSIONS



**LMI** Motor Mount



**RP** Motor Mount



∞NOTE: YM code may  
change this dimension.  
Always use configured  
CAD model to determine  
critical dimensions

### ST ACTUATOR DIMENSIONS

| Size |       |       |                     |               |               |      | ACME NUT |      | BALL NUT |       |      |      |      |      |      |      |       |             |
|------|-------|-------|---------------------|---------------|---------------|------|----------|------|----------|-------|------|------|------|------|------|------|-------|-------------|
|      | A     | B     | C <sup>†</sup> [4x] | D             | E [4x]        | F    | G        | H    | G        | H     | J Ø  | K    | M    | N    | P    | S    | T     | U           |
| 12   | 0.906 | 0.391 | 5-40 ∇0.50          | 1/4-28 ∇0.75  | 8-32 ∇0.25    | 0.81 | 2.17     | 2.76 | 2.17     | 2.76  | 0.56 | 0.31 | 1.13 | 0.50 | 0.72 | 0.61 | 0.188 | —           |
| 16   | 0.500 | 1.063 | 8-32 ∇0.50          | 5/16-24 ∇0.75 | 8-32 ∇0.25    | 1.06 | 2.13     | 2.99 | 2.13     | 2.99  | 0.69 | 0.43 | 1.38 | 0.50 | 0.72 | 0.61 | 0.188 | —           |
| 24   | 0.875 | 1.603 | 10-24 ∇0.79         | 7/16-20 ∇1.00 | 1/4-20 ∇0.31  | 1.11 | 2.90     | 3.84 | 3.36     | 4.30  | 1.18 | 0.43 | 2.04 | 0.79 | 1.42 | 0.55 | 0.315 | —           |
| 32   | 1.181 | 1.969 | 1/4-20 ∇0.71        | 7/16-20 ∇1.13 | 5/16-18 ∇0.47 | 1.43 | 3.87     | 5.05 | 5.05     | 6.23  | 1.25 | 0.50 | 2.58 | 0.95 | 1.79 | 0.69 | 0.394 | 1/16-27 NPT |
| 50   | 1.969 | 3.000 | 5/16-18 ∇1.00       | 3/4-16 ∇1.50  | 3/8-16 ∇0.68  | 1.95 | 4.78     | 6.44 | 5.78     | 7.44  | 1.75 | 0.70 | 3.71 | 1.18 | 2.13 | 1.36 | 0.500 | 1/8-27 NPT  |
| 64   | 1.969 | 3.500 | 7/16-14 ∇1.50       | 3/4-16 ∇1.50  | 7/16-14 ∇0.88 | 2.37 | 6.94     | 8.90 | 8.94     | 10.90 | 2.25 | 0.68 | 4.58 | 1.97 | 3.48 | 1.36 | 0.750 | 1/8-27 NPT  |

Dimensions in inches

| Size |       |       |                     |                |                |      | ACME NUT |       | BALL NUT |       |      |      |       |      |      |      |       |             |
|------|-------|-------|---------------------|----------------|----------------|------|----------|-------|----------|-------|------|------|-------|------|------|------|-------|-------------|
|      | A     | B     | C <sup>†</sup> [4x] | D              | E [4x]         | F    | G        | H     | G        | H     | J Ø  | K    | M     | N    | P    | S    | T     | U           |
| 12   | 23.01 | 9.93  | M3x0.5 ∇12.0        | M6x1.0 ∇15     | M4x0.7 ∇6.4    | 20.7 | 55.1     | 70.1  | 55.1     | 70.1  | 14.2 | 7.8  | 28.6  | 12.7 | 18.3 | 15.5 | 4.78  | —           |
| 16   | 12.70 | 27.00 | M4x0.7 ∇8.0         | M8x1.25 ∇16    | M4x0.7 ∇6.4    | 26.9 | 54.2     | 75.9  | 54.2     | 75.9  | 17.5 | 10.9 | 35.0  | 12.7 | 18.3 | 15.5 | 4.78  | —           |
| 24   | 22.23 | 40.72 | M5x0.8 ∇20.0        | M10x1.25 ∇25.4 | M6x1.0 ∇8.6    | 28.2 | 73.7     | 97.5  | 85.4     | 109.2 | 30.0 | 10.9 | 51.8  | 20.0 | 36.0 | 14.0 | 8.00  | —           |
| 32   | 30.00 | 50.00 | M6x1.0 ∇18.0        | M16x1.5 ∇26.6  | M8x1.25 ∇12.0  | 36.3 | 98.4     | 128.3 | 128.3    | 158.2 | 31.8 | 12.7 | 65.5  | 24.1 | 45.4 | 17.5 | 10.00 | 1/16-27 NPT |
| 50   | 50.00 | 76.20 | M8x1.25 ∇25.4       | M20x1.5 ∇40    | M10x1.5 ∇17.3  | 49.5 | 121.5    | 163.6 | 146.9    | 189.0 | 44.5 | 17.8 | 94.1  | 30.0 | 54.0 | 34.5 | 12.70 | 1/8-27 NPT  |
| 64   | 50.00 | 88.90 | M12x1.75 ∇38.1      | M27x2.0 ∇38.1  | M12x1.75 ∇22.2 | 60.2 | 176.2    | 226.1 | 227.0    | 276.9 | 57.2 | 17.3 | 116.3 | 50.0 | 88.3 | 34.5 | 19.05 | 1/8-27 NPT  |

Dimensions in millimeters

# RSA ST Rod End Options

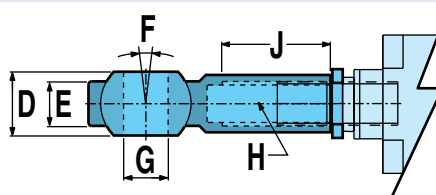
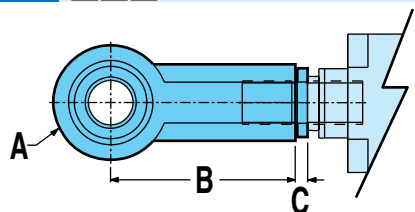
tolomatic.com/CAD Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



SIZE: ALL

## DIMENSIONS

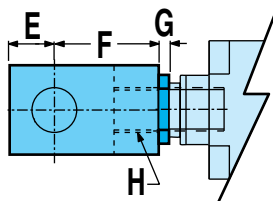
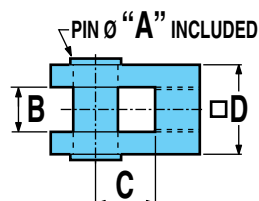
### SRE SPHERICAL ROD END



Allows for slight misalignment between the load and the actuator (radial and angular). Uses an industry-standard bearing.

| Size |    | A Ø   | B      | C    | D     | E     | F   | G Ø   | H        | J    |
|------|----|-------|--------|------|-------|-------|-----|-------|----------|------|
| 12   | in | 0.750 | 1.312  | 0.10 | 0.375 | 0.281 | 10° | 0.250 | 1/4-28   | 0.75 |
|      | mm | 18.00 | 30.00  | 2.5  | 9.00  | 6.80  |     | 6.00  | M6x1     | 12.0 |
| 16   | in | 0.875 | 1.375  | 0.10 | 0.437 | 0.344 |     | 0.312 | 5/16-24  | 0.75 |
|      | mm | 24.00 | 36.00  | 2.5  | 12.00 | 9.00  |     | 8.00  | M8x1.25  | 16.0 |
| 24   | in | 1.125 | 1.812  | 0.15 | 0.560 | 0.437 |     | 0.438 | 7/16-20  | 1.06 |
|      | mm | 28.00 | 43.00  | 3.8  | 14.00 | 10.50 |     | 10.00 | M10x1.25 | 20.0 |
| 32   | in | 1.125 | 1.812  | 0.15 | 0.560 | 0.437 |     | 0.437 | 7/16-20  | 1.06 |
|      | mm | 42.00 | 64.00  | 4.8  | 21.00 | 15.00 |     | 16.00 | M16x1.5  | 28.0 |
| 50   | in | 1.750 | 2.875  | 0.19 | 0.875 | 0.687 |     | 0.750 | 3/4-16   | 1.75 |
|      | mm | 50.00 | 77.00  | 4.8  | 25.00 | 18.00 |     | 20.00 | M20x1.5  | 33.0 |
| 64   | in | 1.750 | 2.875  | 0.19 | 0.875 | 0.687 |     | 0.750 | 3/4-16   | 1.75 |
|      | mm | 70.00 | 110.00 | 6.4  | 37.00 | 25.00 |     | 30.00 | M27x2.0  | 51.0 |

### CLV CLEVIS ROD END



Used with the externally threaded rod end when the actuator has to compensate for misalignment or pivot about an axis.

| Size |    | A Ø         | B           | C    | D    | E    | F      | G    | H        |
|------|----|-------------|-------------|------|------|------|--------|------|----------|
| 12   | in | 0.250       | 0.250       | 0.50 | 0.50 | 0.25 | 0.812  | 0.10 | 1/4-28   |
|      | mm | 6.10 / 6.07 | 6.01 / 6.14 | 12.0 | 12.0 | 9.5  | 24.00  | 2.5  | M6x1.0   |
| 16   | in | 0.375       | 0.375       | 0.50 | 0.75 | 0.38 | 0.875  | 0.10 | 5/16-24  |
|      | mm | 8.10 / 8.07 | 6.01 / 6.14 | 16.0 | 16.0 | 13.0 | 32.00  | 2.5  | M8x1.25  |
| 24   | in | 0.50        | 0.51        | 0.75 | 1.00 | 0.50 | 1.375  | 0.15 | 7/16-20  |
|      | mm | 10.0        | 10.0        | 20.0 | 20.0 | 16.0 | 40.00  | 3.8  | M10x1.25 |
| 32   | in | 0.50        | 0.51        | 0.75 | 1.00 | 0.50 | 1.375  | 0.15 | 7/16-20  |
|      | mm | 16.0        | 16.0        | 32.0 | 32.0 | 19.0 | 64.00  | 4.8  | M16x1.5  |
| 50   | in | 0.75        | 0.75        | 1.00 | 1.50 | 0.75 | 1.750  | 0.19 | 3/4-16   |
|      | mm | 20.0        | 20.0        | 40.0 | 40.0 | 25.0 | 80.00  | 4.8  | M20x1.5  |
| 64   | in | 0.75        | 0.75        | 1.00 | 1.50 | 0.75 | 1.750  | 0.19 | 3/4-16   |
|      | mm | 30.0        | 30.0        | 54.0 | 55.0 | 45.0 | 110.00 | 6.4  | M27x2.0  |

#### KEY TO SYMBOLS

⚠ Indicates a note of high importance

✗ Indicates incompatibility with option(s) or size(s)

📝 Make note of this item



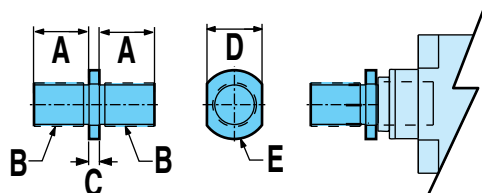
SIZE: ALL

## DIMENSIONS

### MET EXTERNALLY THREADED ROD END



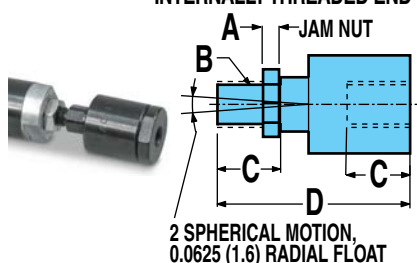
An alternative to the standard internally threaded end.



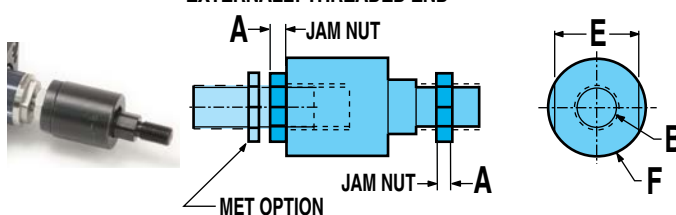
| Size |    | A    | B        | C    | D     | E Ø  |
|------|----|------|----------|------|-------|------|
| 12   | in | 0.50 | 1/4-28   | 0.10 | 0.315 | 0.42 |
|      | mm | 12.7 | M6x1.0   | 2.5  | 8.00  | 10.7 |
| 16   | in | 0.50 | 5/16-24  | 0.10 | 0.375 | 0.48 |
|      | mm | 12.7 | M8x1.25  | 2.5  | 10.00 | 12.2 |
| 24   | in | 0.87 | 7/16-20  | 0.15 | 0.750 | 0.97 |
|      | mm | 22.1 | M10x1.25 | 3.8  | 19.00 | 24.6 |
| 32   | in | 0.87 | 7/16-20  | 0.15 | 0.750 | 0.97 |
|      | mm | 28.0 | M16x1.5  | 4.8  | 19.00 | 24.6 |
| 50   | in | 1.50 | 3/4-16   | 0.19 | 1.250 | 1.48 |
|      | mm | 38.1 | M-20x1.5 | 4.8  | 32.00 | 37.6 |
| 64   | in | 1.50 | 3/4-16   | 0.19 | 1.250 | 1.48 |
|      | mm | 38.1 | M27x2    | 6.4  | 32.00 | 38.1 |

### ALC ALIGNMENT COUPLER

INTERNALLY THREADED END



EXTERNALLY THREADED END



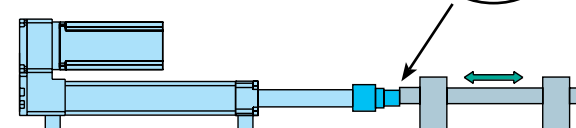
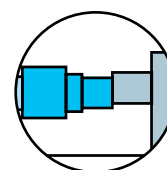
THE ALIGNMENT COUPLER COMES WITH AN INTERNAL THREAD. IF AN EXTERNAL THREAD IS PREFERRED, THE ADDITION OF THE "MET" OPTION IS REQUIRED.

| Size |    | A    | B        | C    | D     | E    | F    |
|------|----|------|----------|------|-------|------|------|
| 12   | in | 0.16 | 1/4-28   | 0.63 | 1.88  | 0.81 | 0.88 |
|      | mm | —    | —        | —    | —     | —    | —    |
| 16   | in | 0.20 | 5/16-24  | 0.63 | 1.88  | 0.81 | 0.88 |
|      | mm | —    | —        | —    | —     | —    | —    |
| 24   | in | 0.25 | 7/16-20  | 0.75 | 2.75  | 1.13 | 1.25 |
|      | mm | 6.4  | M10x1.25 | 24.0 | 77.0  | 19.0 | 30.0 |
| 32   | in | 0.25 | 7/16-20  | 0.75 | 2.75  | 1.13 | 1.25 |
|      | mm | 8.0  | M16x1.5  | 32.0 | 106.0 | 30.0 | 42.0 |
| 50   | in | 0.45 | 3/4-16   | 1.13 | 3.44  | 1.50 | 1.75 |
|      | mm | 10.0 | M20x1.5  | 42.0 | 122.0 | 30.0 | 42.0 |
| 64   | in | 0.45 | 3/4-16   | 1.13 | 3.44  | 1.50 | 1.75 |
|      | mm | 13.5 | M27x2.0  | 54.0 | 147.0 | 32.0 | 55.0 |

Used in combination with the externally threaded rod end to provide smooth motion and extends actuator life by preventing binding caused by angular or axial misalignment. Not available for use with clevis or trunnion mounts, as they must be rigidly mounted.



If you need external thread, be sure to also order the **MET** external rod end



# RSA ST Mounting Options

[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



SIZE: ALL

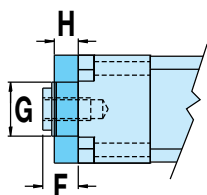
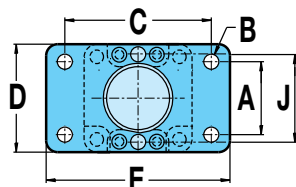
## DIMENSIONS

### FFG FRONT FLANGE MOUNT



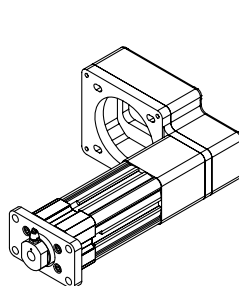
Used when a bottom-tapped mount is not an option or where bottom support mechanisms are not feasible.

Flange can be mounted directly to framework or a bulkhead

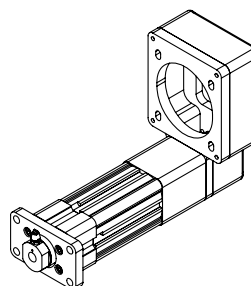


| Size |    | A     | B Ø   | C      | D     | E     | F    | G Ø  | H    | J |
|------|----|-------|-------|--------|-------|-------|------|------|------|---|
| 12   | in | 0.500 | 0.157 | 1.500  | 1.12  | 2.00  | 0.31 | 0.72 | 0.25 | — |
|      | mm | 12.70 | 4.00  | 38.10  | 28.5  | 50.8  | 7.8  | 18.3 | 6.3  | — |
| 16   | in | 0.945 | 0.18  | 1.896  | 1.38  | 2.39  | 0.43 | 0.81 | 0.37 | — |
|      | mm | 24.00 | 4.5   | 48.16  | 35.1  | 60.7  | 11.0 | 20.5 | 9.3  | — |
| 24   | in | 1.430 | 0.31  | 2.750  | 2.00  | 3.37  | 0.43 | 1.34 | 0.37 | — |
|      | mm | 32.00 | 7.2   | 64.00  | 47.0  | 80.0  | 11.0 | 34.0 | 10.0 | — |
| 32   | in | 1.840 | 0.37  | 3.375  | 2.50  | 4.12  | 0.50 | 1.50 | 0.37 | — |
|      | mm | 45.00 | 9.2   | 90.00  | 65.0  | 113.0 | 12.7 | 34.0 | 12.0 | — |
| 50   | in | 2.760 | 0.43  | 4.687  | 3.75  | 5.50  | 0.70 | 1.90 | 0.62 | — |
|      | mm | 63.00 | 12.2  | 126.00 | 97.0  | 153.0 | 17.7 | 48.3 | 16.0 | — |
| 64   | in | 3.320 | 0.45  | 5.437  | 4.50  | 6.25  | 0.68 | 2.40 | 0.62 | — |
|      | mm | 84.33 | 14.2  | 150.00 | 111.0 | 186.0 | 17.3 | 61.0 | 16.0 | — |

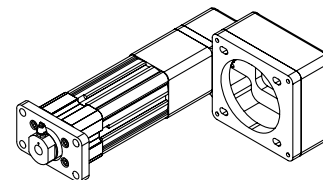
### ADDITIONAL FFG MOUNT ORDER CODES



FFG RPR

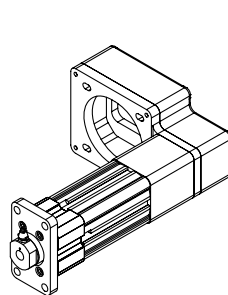


FFG RP

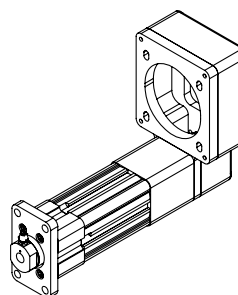


FFG RPL

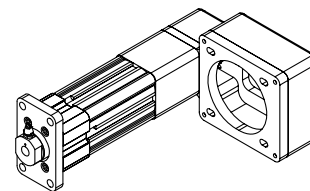
Note that these configurations all are shown with the tapped mounting holes at the bottom of the actuator (These additional ordering codes are unnecessary if the tapped mounting holes are not used)



FFGR RPR



FFGR RP



FFGR RPL

# RSA ST Mounting Options

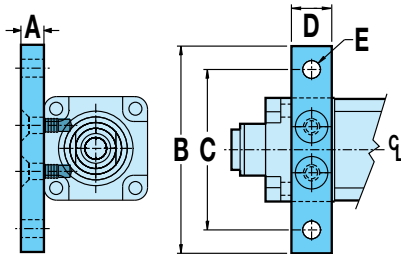
tolomatic.com/CAD Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



SIZE: ALL

## DIMENSIONS

### MP2 MOUNTING PLATE

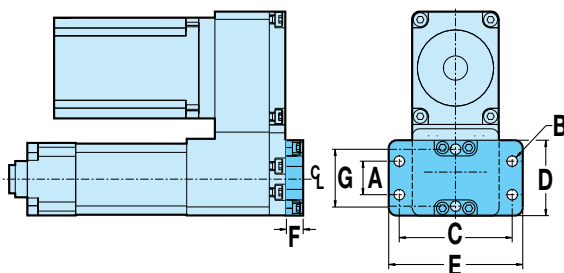


Used for mountings other than flush.

| Size                   |    | A    | B    | C    | D    | E Ø  |
|------------------------|----|------|------|------|------|------|
| 12                     | in | 0.50 | 2.25 | 1.75 | 0.40 | 0.19 |
| 17 FRAME               | mm | 12.7 | 57.2 | 44.4 | 10.2 | 4.8  |
| 12                     | in | 0.63 | 2.50 | 2.00 | 0.40 | 0.19 |
| 23 FRAME or YMH option | mm | 16.0 | 63.5 | 50.8 | 10.2 | 4.8  |
| 16                     | in | 0.63 | 2.50 | 2.00 | 0.40 | 0.19 |
|                        | mm | 16.0 | 63.5 | 50.8 | 10.2 | 4.8  |

| Size |    | A    | B     | C     | D    | E Ø  |
|------|----|------|-------|-------|------|------|
| 24   | in | 0.50 | 3.50  | 2.75  | 1.50 | 0.44 |
|      | mm | 12.0 | 78.0  | 62.0  | 25.4 | 6.7  |
| 32   | in | 0.50 | 4.00  | 3.25  | 1.50 | 0.44 |
|      | mm | 12.0 | 104.0 | 84.0  | 31.8 | 8.70 |
| 50   | in | 0.75 | 5.75  | 4.75  | 1.75 | 0.56 |
|      | mm | 20.0 | 144.0 | 120.0 | 30.5 | 11.0 |
| 64   | in | 0.75 | 6.50  | 5.50  | 1.75 | 0.56 |
|      | mm | 20.0 | 180.0 | 150.0 | 57.2 | 12.8 |

### BFG BACK FLANGE MOUNT

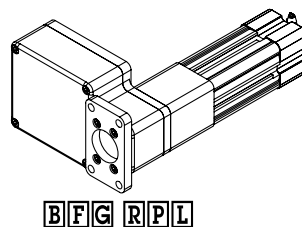


Used when a bottom-tapped mount is not an option or where bottom support mechanisms are not feasible. Flange can be mounted directly to framework or a bulkhead

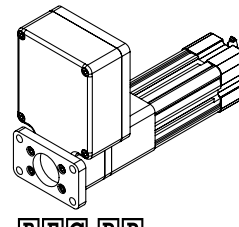
⊗ Not available with LMI (inline) motor mounting

| Size |    | A     | B Ø   | C      | D     | E     | F    | G |
|------|----|-------|-------|--------|-------|-------|------|---|
| 12   | in | 0.500 | 0.157 | 1.500  | 1.12  | 2.00  | 0.25 | — |
|      | mm | 12.70 | 4.00  | 38.10  | 28.5  | 50.8  | 6.35 | — |
| 16   | in | 0.945 | 0.18  | 1.896  | 1.38  | 2.39  | 0.37 | — |
|      | mm | 24.00 | 4.5   | 48.16  | 35.1  | 60.7  | 9.40 | — |
| 24   | in | 1.430 | 0.31  | 2.750  | 2.00  | 3.37  | 0.37 | — |
|      | mm | 32.00 | 7.2   | 64.00  | 47.0  | 80.0  | 9.40 | — |
| 32   | in | 1.840 | 0.37  | 3.375  | 2.50  | 4.12  | 0.37 | — |
|      | mm | 45.00 | 9.2   | 90.00  | 65.0  | 113.0 | 9.40 | — |
| 50   | in | 2.760 | 0.43  | 4.687  | 3.75  | 5.50  | 0.62 | — |
|      | mm | 63.00 | 12.2  | 126.00 | 97.0  | 153.0 | 15.7 | — |
| 64   | in | 3.320 | 0.43  | 5.437  | 4.50  | 6.25  | 0.62 | — |
|      | mm | 75.00 | 14.2  | 150.00 | 111.0 | 186.0 | 15.7 | — |

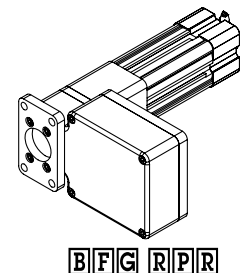
### ADDITIONAL BFG MOUNT ORDER CODES



BFG RPL



BFG RP



BFG RPR

Note that these configurations all are shown with the tapped mounting holes at the bottom of the actuator (These additional ordering codes are unnecessary if the tapped mounting holes are not used)

# RSA ST Mounting Options

[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



SIZE: ALL

## DIMENSIONS

### P C S EYE MOUNT & P C D CLEVIS MOUNT



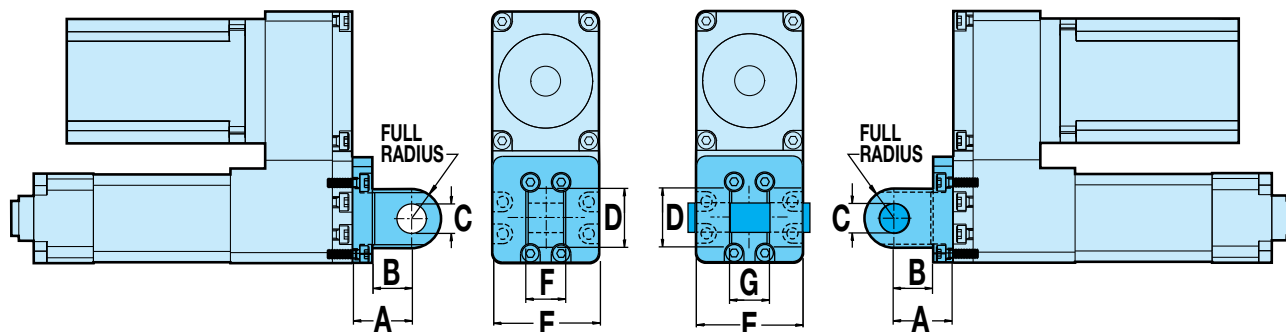
Used when the actuator has to compensate for misalignment or pivot about an axis when free movement is available in the back of the actuator.

✗ Not available with LMI (inline) motor mounting



Used when the actuator has to compensate for misalignment or pivot about an axis when free movement is available in the back of the actuator.

✗ Not available with LMI (inline) motor mounting.



| Size |    | A     | B     | C Ø             | D    | E     | F             | G             |
|------|----|-------|-------|-----------------|------|-------|---------------|---------------|
| 12   | in | 0.750 | 0.500 | 0.3761 / 0.3751 | 0.75 | 1.34  | 0.447 / 0.442 | 0.453 / 0.448 |
|      | mm | 19.05 | 12.70 | 10.018 / 10.000 | 19.0 | 34.0  | 11.35 / 11.22 | 11.51 / 11.38 |
| 16   | in | 0.750 | 0.500 | 0.3761 / 0.3751 | 0.75 | 1.34  | 0.447 / 0.442 | 0.453 / 0.448 |
|      | mm | 19.05 | 12.70 | 10.018 / 10.000 | 19.0 | 34.0  | 11.35 / 11.22 | 11.51 / 11.38 |
| 24   | in | 1.062 | 0.687 | 0.501 / 0.500   | 1.00 | 1.98  | 0.750 / 0.745 | 0.755 / 0.751 |
|      | mm | 22.00 | 12.00 | 10.03 / 10.00   | 20.0 | 50.2  | 25.80 / 25.60 | 26.12 / 26.01 |
| 32   | in | 1.062 | 0.687 | 0.501 / 0.500   | 1.00 | 2.58  | 0.750 / 0.745 | 0.755 / 0.751 |
|      | mm | 27.00 | 15.00 | 12.03 / 12.00   | 26.0 | 65.5  | 31.80 / 31.60 | 32.12 / 32.01 |
| 50   | in | 1.875 | 1.375 | 0.751 / 0.750   | 1.50 | 3.60  | 1.250 / 1.245 | 1.255 / 1.251 |
|      | mm | 36.00 | 20.00 | 16.03 / 16.00   | 40.0 | 91.5  | 49.80 / 49.60 | 50.12 / 50.01 |
| 64   | in | 1.875 | 1.375 | 0.751 / 0.750   | 1.50 | 4.48  | 1.250 / 1.245 | 1.255 / 1.251 |
|      | mm | 44.00 | 26.00 | 20.03 / 20.00   | 40.0 | 113.7 | 59.80 / 59.60 | 60.12 / 60.01 |

### KEY TO SYMBOLS

▲ Indicates a note of high importance

✗ Indicates incompatibility with option(s) or size(s)

📝 Make note of this item

# RSA ST Mounting Options

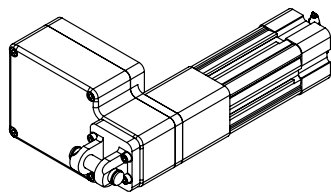
[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



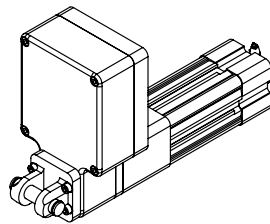
SIZE: ALL

## DIMENSIONS

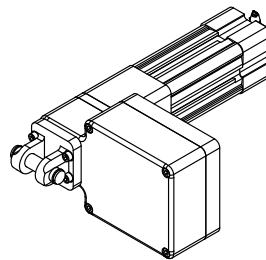
### ADDITIONAL PCS and PCD MOUNT ORDER CODES



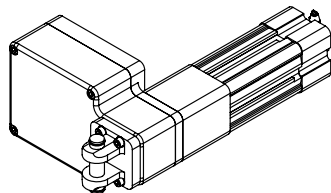
PCD RPL



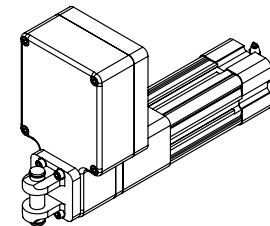
PCD RP



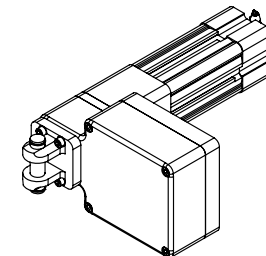
PCD RPR



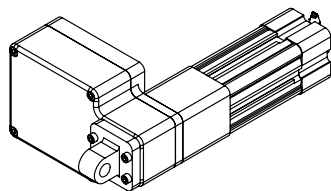
PCDR RPL



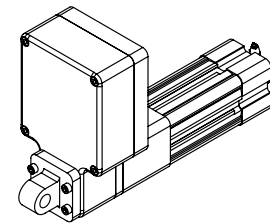
PCDR RP



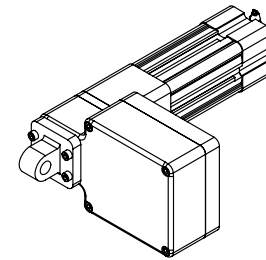
PCDR RPR



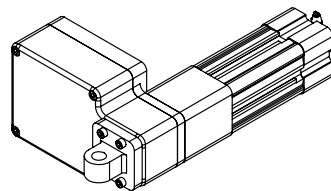
PCS RPL



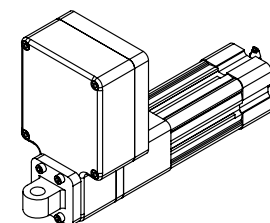
PCS RP



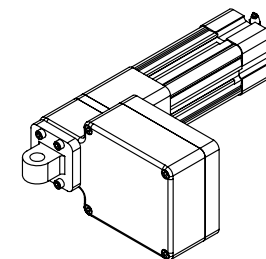
PCS RPR



PCSR RPL



PCSR RP



PCSR RPR

Note that these configurations all are shown with the tapped mounting holes at the bottom of the actuator (These additional ordering codes are unnecessary if the tapped mounting holes are not used)

RSA-ST

# RSA ST Mounting Options

[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



SIZE: ALL

## DIMENSIONS

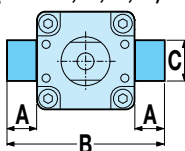
### T R R TRUNNION MOUNT



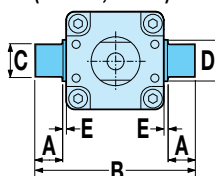
Used where space is limited in the rear of the actuator and when pivoting about an axis is required.

⊗ Not available with 12 or 16 size LMI (inline) motor mounting

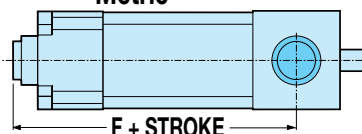
US standard  
(Sizes: 24, 32, 50, 64)



Metric  
(+RSA12, RSA16)



Both US standard  
Metric



| US standard | Size |    | A    | B    | C Ø           | D Ø   | E     | F (LMI)  |          |            | F (RP)   |          |            |
|-------------|------|----|------|------|---------------|-------|-------|----------|----------|------------|----------|----------|------------|
|             |      |    |      |      |               |       |       | ACME NUT | BALL NUT | ROLLER NUT | ACME NUT | BALL NUT | ROLLER NUT |
|             |      |    |      |      |               |       |       |          |          |            |          |          |            |
|             | 12   | in | 0.38 | 2.25 | 0.4374/0.4368 | 0.562 | 0.078 | NA       | NA       | NA         | 3.09     | 3.09     | NA         |
|             | 16   | in | 0.38 | 2.25 | 0.4374/0.4368 | 0.562 | 0.078 | NA       | NA       | NA         | 3.30     | 3.30     | NA         |
|             | 24   | in | 1.04 | 4.12 | 0.9999/0.9993 | NA    | NA    | 4.46     | 4.94     | 6.33       | 4.30     | 4.73     | 6.33       |
|             | 32   | in | 1.00 | 4.58 | 0.9999/0.9993 | NA    | NA    | 6.06     | 7.24     | 7.42       | 5.65     | 6.83     | 7.42       |
|             | 50   | in | 1.06 | 5.83 | 0.9999/0.9993 | NA    | NA    | 7.44     | 8.44     | NA         | 7.14     | 8.14     | NA         |
|             | 64   | in | 1.06 | 7.92 | 0.9999/0.9993 | NA    | NA    | 9.90     | 11.90    | NA         | 9.80     | 11.80    | NA         |

| Metric | Size |    | A    | B     | C Ø           | D Ø  | E    | F (LMI)  |          |            | F (RP)   |          |            |
|--------|------|----|------|-------|---------------|------|------|----------|----------|------------|----------|----------|------------|
|        |      |    |      |       |               |      |      | ACME NUT | BALL NUT | ROLLER NUT | ACME NUT | BALL NUT | ROLLER NUT |
|        |      |    |      |       |               |      |      |          |          |            |          |          |            |
|        | 12   | mm | 9.5  | 57.2  | 11.981/11.999 | 14.3 | 2.0  | NA       | NA       | NA         | 78.5     | 78.5     | NA         |
|        | 16   | mm | 9.5  | 57.2  | 11.981/11.999 | 14.3 | 2.0  | NA       | NA       | NA         | 83.8     | 83.8     | NA         |
|        | 24   | mm | 8.6  | 75.7  | 11.96/11.99   | 18.0 | 3.3  | 113.4    | 125.5    | 160.8      | 109.1    | 120.2    | 160.8      |
|        | 32   | mm | 16.0 | 107.0 | 15.95/15.98   | 25.0 | 4.74 | 153.8    | 183.8    | 188.5      | 143.5    | 173.5    | 188.5      |
|        | 50   | mm | 20.1 | 150.1 | 19.95/19.98   | 30.0 | 7.9  | 191.0    | 214.4    | NA         | 181.3    | 206.7    | NA         |
|        | 64   | mm | 24.9 | 181.9 | 24.97/24.99   | 40.0 | 7.9  | 251.6    | 302.4    | NA         | 248.9    | 299.7    | NA         |

# RSA ST Mounting Options

SIZE: ALL

## DIMENSIONS

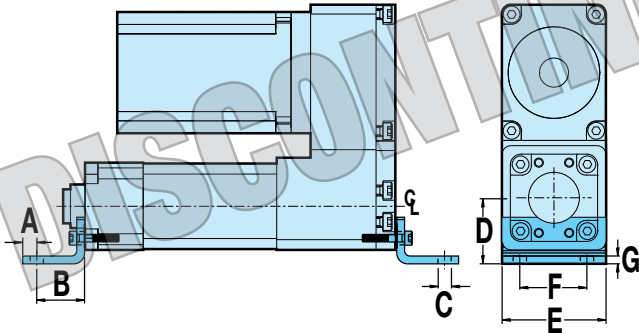
 **FM2 FOOT MOUNTS DISCONTINUED** (FOR REFERENCE ONLY)



Used when mounting holes on bottom of actuator are not accessible.

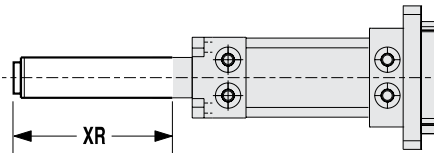
Not available with LMI (inline) motor mounting

Not available with HT option



| Size |    | A    | B    | C Ø  | D    | E     | F    | G    |
|------|----|------|------|------|------|-------|------|------|
| 12   | in | 0.16 | 0.55 | 0.15 | 0.75 | 1.13  | 0.77 | 0.09 |
|      | mm | 4.1  | 14.0 | 3.9  | 19.1 | 28.6  | 19.7 | 2.3  |
| 16   | in | 0.16 | 0.55 | 0.15 | 0.77 | 1.34  | 1.00 | 0.09 |
|      | mm | 4.1  | 14.0 | 3.9  | 19.7 | 34.0  | 25.4 | 2.3  |
| 24   | in | 0.37 | 1.00 | 0.33 | 1.19 | 2.04  | 1.25 | 0.12 |
|      | mm | 7.1  | 23.9 | 7.0  | 29.9 | 51.8  | 32.2 | 3.0  |
| 32   | in | 0.37 | 1.00 | 0.41 | 1.43 | 2.58  | 1.75 | 0.13 |
|      | mm | 9.5  | 32.0 | 9.0  | 36.3 | 64.0  | 45.0 | 3.2  |
| 50   | in | 0.50 | 1.25 | 0.46 | 1.93 | 3.70  | 2.75 | 0.12 |
|      | mm | 16.5 | 41.0 | 12.0 | 49.1 | 96.0  | 63.0 | 3.2  |
| 64   | in | 0.50 | 1.25 | 0.46 | 2.32 | 4.58  | 3.50 | 0.12 |
|      | mm | 19.0 | 41.0 | 14.0 | 59.0 | 113.0 | 75.0 | 3.2  |

 **OPTIONAL ROD EXTENSION**



In **vertical applications only**, 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:** the XR dimension in the configurator string (extension + stroke) should not exceed the maximum stroke of the specified actuator. Consult Tolomatic for extensions greater than the maximum stroke length.

Maximum Stroke Length

| Size |    | All Screws |
|------|----|------------|
| 12   | in | 12         |
|      | mm | 305        |
| 16   | in | 18         |
|      | mm | 457        |
| 24   | in | 24         |
|      | mm | 610        |
| 32   | in | 36         |
|      | mm | 914        |
| 50   | in | 48         |
|      | mm | 1219       |
| 64   | in | 60         |
|      | mm | 1524       |

# RSA HT Electric Rod-Style Actuator

SIZE: **24, 32, 50, 64**

units: **US standard**

## SPECIFICATIONS



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actuator selection

| RSA SIZE | MAX STROKE | SCREW TYPE | SCREW LEAD | MAX THRUST* | DYNAMIC LOAD RATING** | LEAD ACCURACY† | BACKLASH | SCREW DIAMETER | BASE ACTUATOR INERTIA | INERTIA PER in OF STROKE | MAXIMUM DYNAMIC FRICTION TORQUE |
|----------|------------|------------|------------|-------------|-----------------------|----------------|----------|----------------|-----------------------|--------------------------|---------------------------------|
|          | in         |            | turns/in   | lbf         | lbf                   | in/ft          |          | in             | lb-in <sup>2</sup>    | lb-in <sup>2</sup>       | lb-in                           |
| 24       | 24         | RN04       | 6.35       | 1,700       | 5,577                 | 0.0004         | 0.0012   | 0.591          | 0.086                 | 0.004                    | 5.8                             |
|          | 24         | RN05       | 5.08       | 1,700       | 5,577                 | 0.0004         | 0.0012   | 0.591          | 0.087                 | 0.004                    | 4.2                             |
|          | 24         | RN10       | 2.54       | 1,556       | 5,577                 | 0.0004         | 0.0012   | 0.591          | 0.092                 | 0.004                    | 6.3                             |
| 32       | 36         | BZ10       | 10.00      | 2,500       | N/A                   | 0.0060         | 0.0080   | 0.750          | 0.144                 | 0.009                    | 4.1                             |
|          | 36         | BN(L)02    | 2.00       | 2,500       | 3,364                 | 0.0040         | 0.0150   | 0.750          | 0.152                 | 0.010                    | 3.1                             |
|          | 36         | BN(L)05    | 5.00       | 950         | 1,624                 | 0.0030         | 0.0150   | 0.750          | 0.145                 | 0.009                    | 3.3                             |
|          | 36         | BNM05      | 5.08       | 1,792       | 3,080                 | 0.0040         | 0.0030   | 0.787          | 0.145                 | 0.011                    | 2.5                             |
|          | 36         | BNM10      | 2.54       | 2,473       | 4,721                 | 0.0040         | 0.0030   | 0.787          | 0.149                 | 0.012                    | 2.6                             |
|          | 36         | BNM20      | 1.27       | 2,364       | 2,560                 | 0.0020         | 0.0050   | 0.787          | 0.165                 | 0.013                    | 2.8                             |
|          | 36         | RN04       | 6.35       | 4,159       | 12,761                | 0.0004         | 0.0012   | 0.787          | 1.166                 | 0.011                    | 8.7                             |
|          | 36         | RN05       | 5.08       | 3,878       | 12,761                | 0.0004         | 0.0012   | 0.787          | 1.167                 | 0.011                    | 9.0                             |
|          | 36         | RN10       | 2.54       | 4,159       | 12,761                | 0.0004         | 0.0012   | 0.787          | 1.177                 | 0.011                    | 10.9                            |
| 50       | 48         | BZ10       | 10.00      | 3,500       | N/A                   | 0.0060         | 0.0080   | 1.000          | 0.611                 | 0.028                    | 13.0                            |
|          | 48         | BN(L)01    | 1.00       | 2,300       | 2,300                 | 0.0040         | 0.0150   | 1.000          | 0.701                 | 0.035                    | 5.6                             |
|          | 48         | BN(L)02    | 2.00       | 4,250       | 5,355                 | 0.0040         | 0.0150   | 1.000          | 0.633                 | 0.030                    | 5.7                             |
|          | 48         | BN(L)04    | 4.00       | 3,250       | 5,159                 | 0.0040         | 0.0150   | 1.000          | 0.616                 | 0.028                    | 7.0                             |
|          | 48         | BNM05      | 5.08       | 2,347       | 4,035                 | 0.0020         | 0.0040   | 0.984          | 0.614                 | 0.028                    | 8.3                             |
|          | 48         | BNM10      | 2.54       | 2,471       | 3,372                 | 0.0020         | 0.0040   | 0.984          | 0.625                 | 0.029                    | 6.7                             |
|          | 48         | BNM25      | 1.02       | 2,524       | 2,537                 | 0.0040         | 0.0050   | 0.984          | 0.698                 | 0.035                    | 6.9                             |
|          | 36         | RN05       | 5.08       | 7,868       | 16,245                | 0.0004         | 0.0012   | 1.181          | 1.861                 | 0.058                    | 18.5                            |
|          | 36         | RN10       | 2.54       | 7,868       | 16,245                | 0.0004         | 0.0012   | 1.181          | 1.885                 | 0.059                    | 17.0                            |
| 64       | 60         | BZ10       | 10.00      | 7,000       | N/A                   | 0.0060         | 0.0080   | 1.500          | 5.368                 | 0.139                    | 33.1                            |
|          | 60         | BN(L)53    | 0.53       | 3,500       | 5,961                 | 0.0040         | 0.0150   | 1.500          | 6.285                 | 0.174                    | 17.6                            |
|          | 60         | BN(L)02    | 2.00       | 9,050       | 11,402                | 0.0040         | 0.0150   | 1.500          | 5.431                 | 0.141                    | 20.8                            |
|          | 60         | BN(L)04    | 4.00       | 4,250       | 6,746                 | 0.0040         | 0.0150   | 1.500          | 5.382                 | 0.139                    | 25.0                            |
|          | 60         | BNM05      | 5.08       | 3,906       | 6,714                 | 0.0020         | 0.0040   | 1.575          | 5.376                 | 0.139                    | 12.0                            |
|          | 60         | BNM10      | 2.54       | 5,479       | 7,476                 | 0.0020         | 0.0040   | 1.575          | 5.406                 | 0.140                    | 34.7                            |
|          | 60         | BNM20      | 1.27       | 5,105       | 5,528                 | 0.0020         | 0.0050   | 1.575          | 5.527                 | 0.145                    | 32.6                            |
|          | 60         | BNH(L)02   | 2.00       | 12,900      | 16,253                | 0.0040         | 0.0020   | 1.500          | 5.431                 | 0.141                    | 31.9                            |
|          | 36         | RN05       | 5.08       | 13,039      | 23,954                | 0.0004         | 0.0012   | 1.417          | 5.379                 | 0.118                    | 30.3                            |
|          | 36         | RN10       | 2.54       | 11,997      | 23,954                | 0.0004         | 0.0012   | 1.417          | 5.421                 | 0.119                    | 33.3                            |

| SCREW CODE | DESCRIPTION           |
|------------|-----------------------|
| BN         | Ball Nut              |
| BNH        | Ball Nut H-series     |
| BNL        | Low-Backlash Ball Nut |
| BNM        | Ball Nut Metric       |
| BZ         | Bronze Nut            |
| RN         | Roller Nut            |
| SN         | Solid Nut             |



Contact Tolomatic for higher accuracy and lower backlash options.

† (L) for low backlash ball screws: backlash = 0.0020" (0.05 mm)

\* For SN & BZ screws, maximum continuous dynamic thrust subject to Thrust x Velocity limitation.

\*\* For RN, BN & BNL screws, dynamic load rating reflects 90% reliability for 1 million revolutions.

§ RSA50 & RSA64 extended stroke length 48" (1219 mm) available for roller screws, contact Tolomatic for production time

# RSA HT Electric Rod-Style Actuator



sizeit.tolomatic.com  
for fast, accurate  
actuator selection

SIZE: **24, 32, 50, 64** units: **metric\*\***

## SPECIFICATIONS

\*\* RSA metric actuators use the same leadscrew as the RSA inch actuators. Threaded mounting and dowel pin holes are metric.

| RSA SIZE | MAX STROKE<br>mm | SCREW TYPE | SCREW LEAD<br>mm/rev | MAX THRUST*<br>N | DYNAMIC LOAD RATING**<br>N | LEAD ACCURACY†<br>mm/300mm | BACKLASH<br>mm | SCREW DIAMETER<br>mm | BASE ACTUATOR INERTIA<br>kg-cm <sup>2</sup> | INERTIA PER mm OF STROKE<br>kg-cm <sup>2</sup> | MAXIMUM DYNAMIC FRICTION TORQUE<br>N-m |
|----------|------------------|------------|----------------------|------------------|----------------------------|----------------------------|----------------|----------------------|---------------------------------------------|------------------------------------------------|----------------------------------------|
| 24       | 609.6            | RN04       | 4.00                 | 7,562            | 24,808                     | 0.01                       | 0.03           | 15.0                 | 0.25                                        | 0.0004                                         | 0.66                                   |
|          | 609.6            | RN05       | 5.00                 | 7,562            | 24,808                     | 0.01                       | 0.03           | 15.0                 | 0.25                                        | 0.0004                                         | 0.47                                   |
|          | 609.6            | RN10       | 10.00                | 6,921            | 24,808                     | 0.01                       | 0.03           | 15.0                 | 0.27                                        | 0.0005                                         | 0.71                                   |
| 32       | 914.4            | BZ10       | 2.54                 | 11,121           | N/A                        | 0.15                       | 0.20           | 19.1                 | 0.42                                        | 0.0010                                         | 0.46                                   |
|          | 914.4            | BN(L)02    | 12.70                | 11,121           | 14,964                     | 0.10                       | 0.38           | 19.1                 | 0.45                                        | 0.0011                                         | 0.35                                   |
|          | 914.4            | BN(L)05    | 5.08                 | 4,226            | 7,224                      | 0.08                       | 0.38           | 19.1                 | 0.42                                        | 0.0010                                         | 0.37                                   |
|          | 914.4            | BNM05      | 5.00                 | 7,971            | 13,701                     | 0.10                       | 0.08           | 20.0                 | 0.42                                        | 0.0013                                         | 0.28                                   |
|          | 914.4            | BNM10      | 10.00                | 11,000           | 21,000                     | 0.10                       | 0.08           | 20.0                 | 0.44                                        | 0.0013                                         | 0.29                                   |
|          | 914.4            | BNM20      | 20.00                | 10,516           | 11,387                     | 0.05                       | 0.13           | 20.0                 | 0.48                                        | 0.0015                                         | 0.32                                   |
|          | 914.4            | RN04       | 4.00                 | 18,500           | 56,764                     | 0.01                       | 0.03           | 20.0                 | 3.41                                        | 0.0012                                         | 0.98                                   |
|          | 914.4            | RN05       | 5.00                 | 17,250           | 56,764                     | 0.01                       | 0.03           | 20.0                 | 3.42                                        | 0.0012                                         | 1.02                                   |
|          | 914.4            | RN10       | 10.00                | 18,500           | 56,764                     | 0.01                       | 0.03           | 20.0                 | 3.45                                        | 0.0013                                         | 1.23                                   |
| 50       | 1219.2           | BZ10       | 2.54                 | 15,569           | N/A                        | 0.15                       | 0.20           | 25.4                 | 1.79                                        | 0.0032                                         | 1.47                                   |
|          | 1219.2           | BN(L)01    | 25.40                | 10,231           | 10,231                     | 0.10                       | 0.38           | 25.4                 | 2.05                                        | 0.0041                                         | 0.63                                   |
|          | 1219.2           | BN(L)02    | 12.70                | 18,905           | 23,820                     | 0.10                       | 0.38           | 25.4                 | 1.85                                        | 0.0034                                         | 0.64                                   |
|          | 1219.2           | BN(L)04    | 6.35                 | 14,457           | 22,948                     | 0.10                       | 0.38           | 25.4                 | 1.81                                        | 0.0033                                         | 0.79                                   |
|          | 1219.2           | BNM05      | 5.00                 | 10,440           | 17,949                     | 0.05                       | 0.10           | 25.0                 | 1.80                                        | 0.0032                                         | 0.94                                   |
|          | 1219.2           | BNM10      | 10.00                | 10,992           | 14,999                     | 0.05                       | 0.10           | 25.0                 | 1.83                                        | 0.0033                                         | 0.76                                   |
|          | 1219.2           | BNM25      | 24.90                | 11,227           | 11,285                     | 0.10                       | 0.13           | 25.0                 | 2.04                                        | 0.0040                                         | 0.78                                   |
|          | 914.4            | RN05       | 5.00                 | 34,999           | 72,261                     | 0.01                       | 0.03           | 30.0                 | 5.45                                        | 0.0066                                         | 2.09                                   |
|          | 914.4            | RN10       | 10.00                | 34,999           | 72,261                     | 0.01                       | 0.03           | 30.0                 | 5.52                                        | 0.0067                                         | 1.92                                   |
| 64       | 1524             | BZ10       | 2.54                 | 31,138           | N/A                        | 0.15                       | 0.20           | 38.1                 | 15.73                                       | 0.0160                                         | 3.74                                   |
|          | 1524             | BN(L)53    | 47.92                | 15,569           | 26,516                     | 0.10                       | 0.38           | 38.1                 | 18.42                                       | 0.0201                                         | 1.99                                   |
|          | 1524             | BN(L)02    | 12.70                | 40,256           | 50,719                     | 0.10                       | 0.38           | 38.1                 | 15.91                                       | 0.0163                                         | 2.35                                   |
|          | 1524             | BN(L)04    | 6.35                 | 18,905           | 30,008                     | 0.10                       | 0.38           | 38.1                 | 15.77                                       | 0.0161                                         | 2.82                                   |
|          | 1524             | BNM05      | 5.00                 | 17,375           | 29,865                     | 0.05                       | 0.10           | 40.0                 | 15.75                                       | 0.0160                                         | 1.36                                   |
|          | 1524             | BNM10      | 10.00                | 24,372           | 33,255                     | 0.05                       | 0.10           | 40.0                 | 15.84                                       | 0.0162                                         | 3.92                                   |
|          | 1524             | BNM20      | 20.00                | 22,708           | 24,590                     | 0.05                       | 0.13           | 40.0                 | 16.20                                       | 0.0167                                         | 3.68                                   |
|          | 1524             | BNH(L)02   | 12.70                | 57,382           | 72,297                     | 0.10                       | 0.05           | 38.1                 | 15.91                                       | 0.0163                                         | 3.60                                   |
|          | 914.4            | RN05       | 5.00                 | 58,000           | 106,553                    | 0.01                       | 0.03           | 36.0                 | 15.76                                       | 0.0136                                         | 3.42                                   |
|          | 914.4            | RN10       | 10.00                | 53,365           | 106,553                    | 0.01                       | 0.03           | 36.0                 | 15.88                                       | 0.0137                                         | 3.76                                   |

| SCREW CODE | DESCRIPTION           |
|------------|-----------------------|
| BN         | Ball Nut              |
| BNH        | Ball Nut H-series     |
| BNL        | Low-Backlash Ball Nut |
| BNM        | Ball Nut Metric       |
| BZ         | Bronze Nut            |
| RN         | Roller Nut            |
| SN         | Solid Nut             |



Contact Tolomatic for higher accuracy and lower backlash options.

† (L) for low backlash ball screws: backlash = 0.0020" (0.05 mm)

\* For SN & BZ screws, maximum continuous dynamic thrust subject to Thrust x Velocity limitation.

\*\* For RN, BN & BNL screws, dynamic load rating reflects 90% reliability for 1 million revolutions.

§ RSA50 & RSA64 extended stroke length 48" (1219 mm) available for roller screws, contact Tolomatic for production time

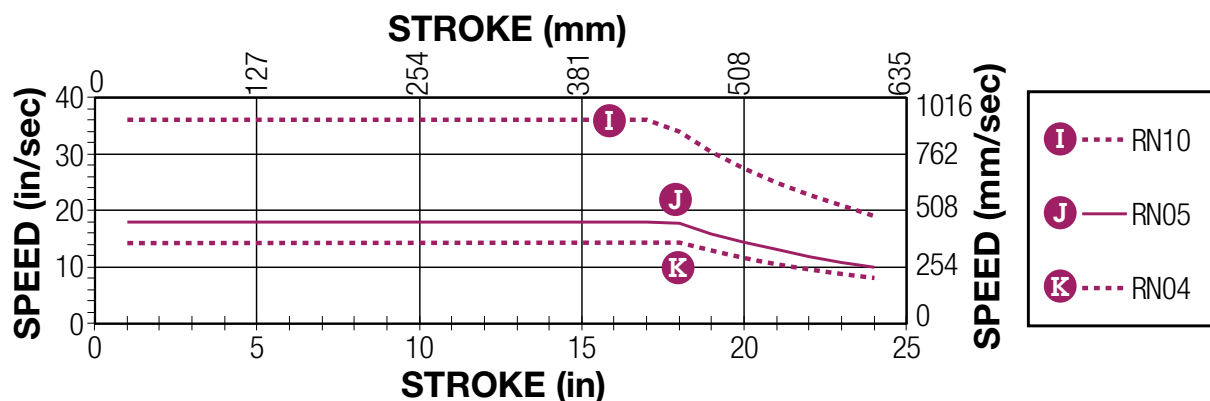
RSA-HT

# RSA HT Electric Rod-Style Actuator

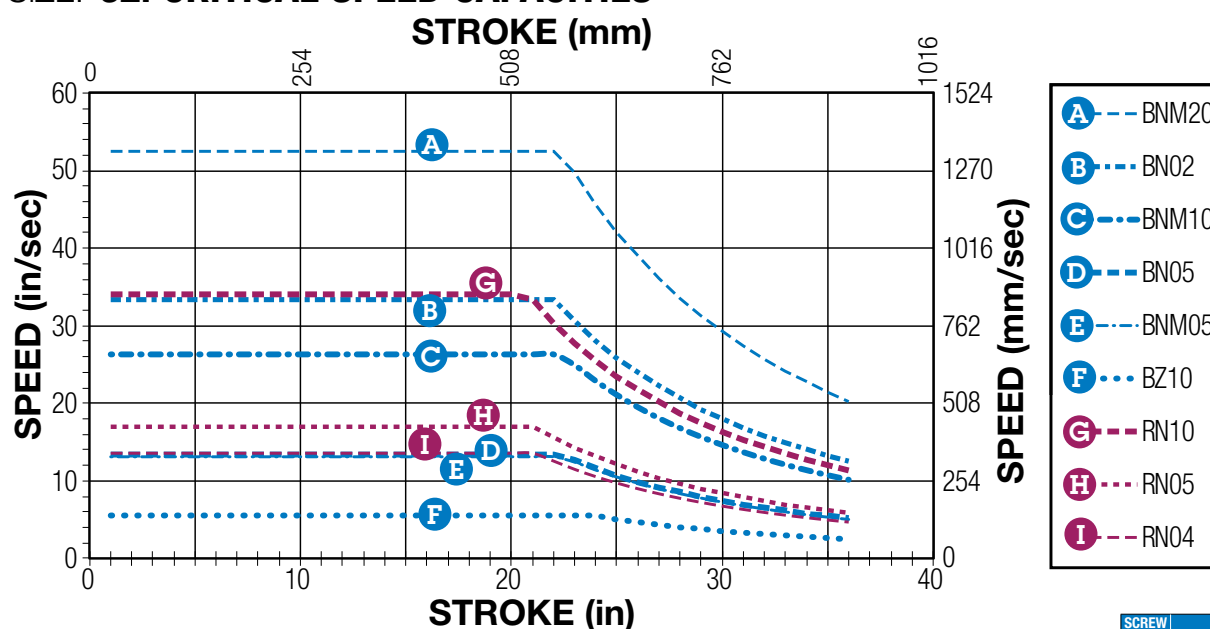
SIZE: 24: CRITICAL SPEED CAPACITIES

SPECIFICATIONS

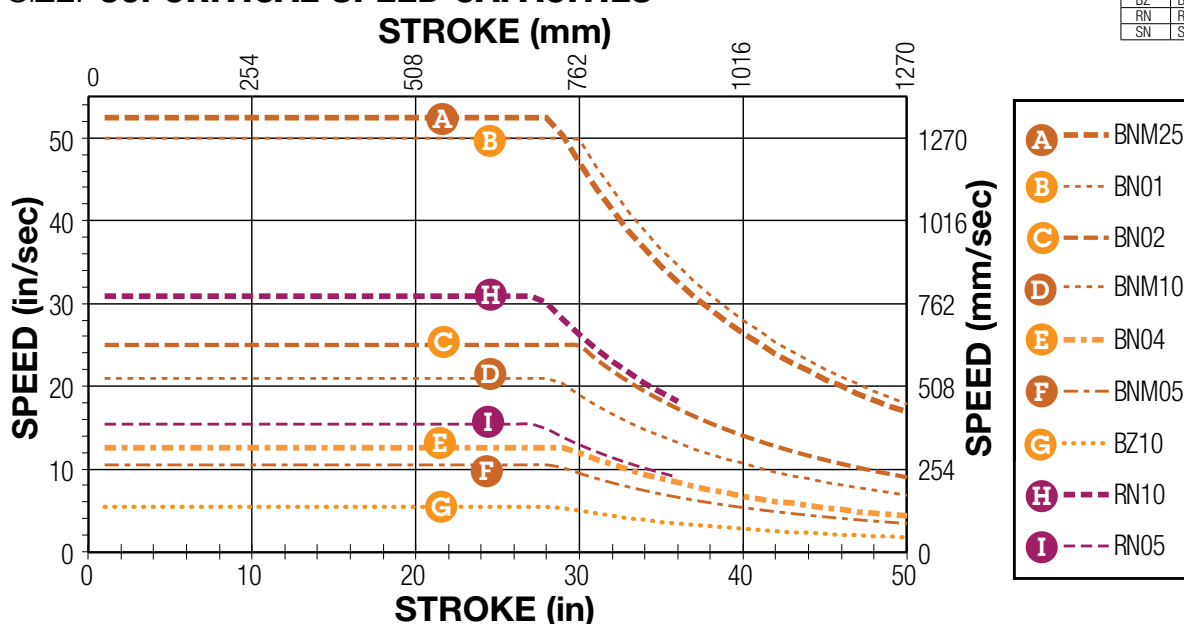
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SIZE: 32: CRITICAL SPEED CAPACITIES



SIZE: 50: CRITICAL SPEED CAPACITIES



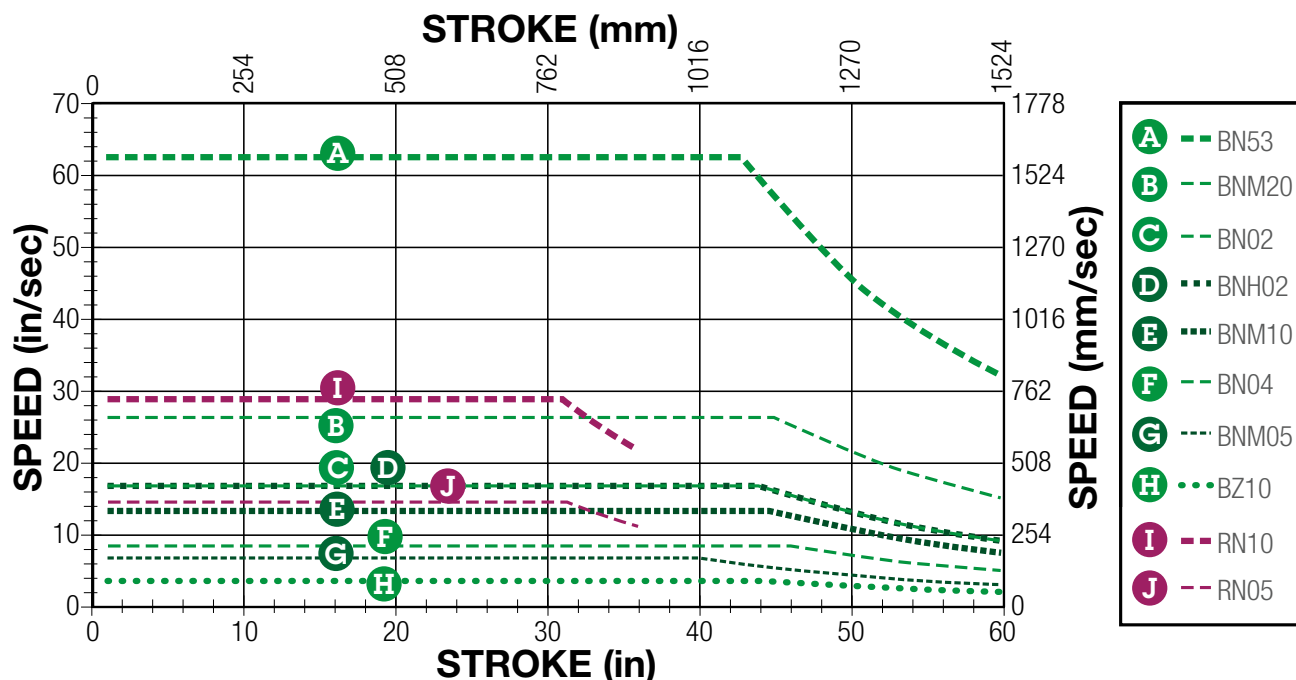
| SCREW CODE | DESCRIPTION           |
|------------|-----------------------|
| BN         | Ball Nut              |
| BNH        | Ball Nut H-series     |
| BNL        | Low-Backlash Ball Nut |
| BNM        | Ball Nut Metric       |
| BZ         | Bronze Nut            |
| RN         | Roller Nut            |
| SN         | Solid Nut             |

# RSA HT Electric Rod-Style Actuator

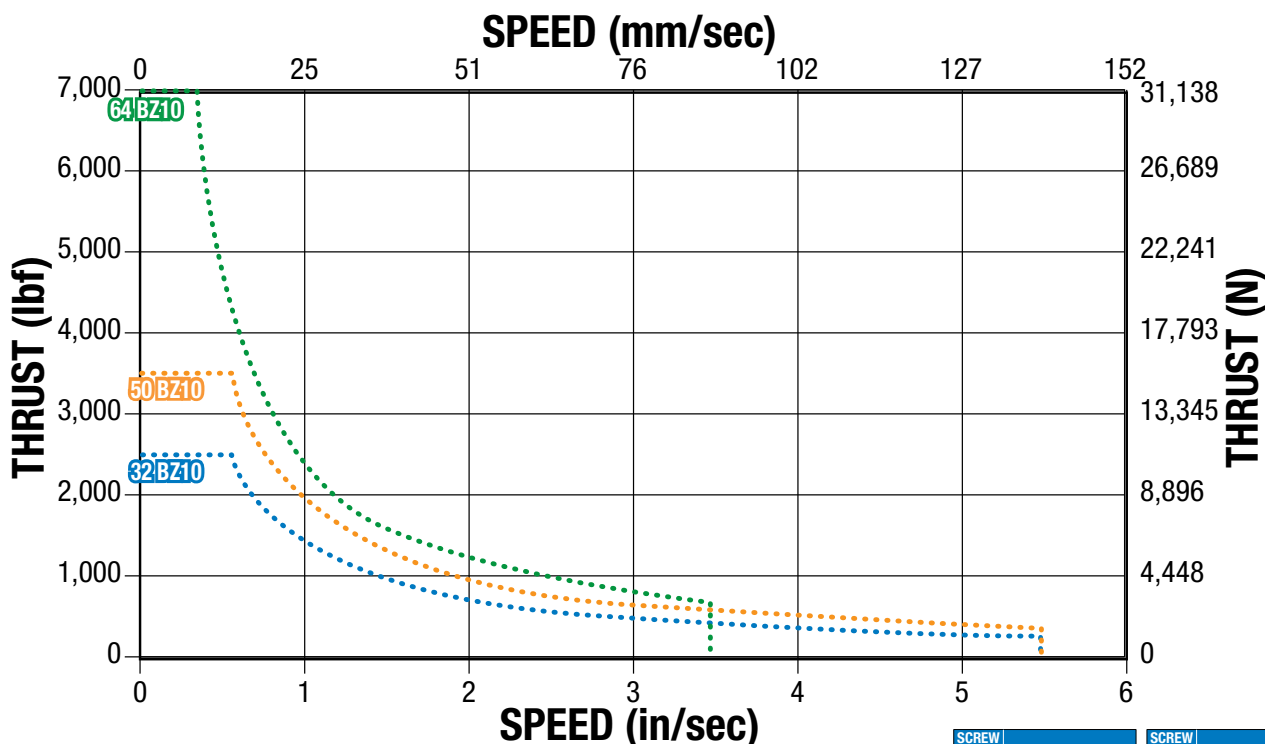
SIZE: **64: CRITICAL SPEED CAPACITIES**

**SPECIFICATIONS**

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actuator selection



SIZE: **32,50,64 (BZ): PV LIMITS (Bronze Nuts)**



## PV LIMITS

**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.

$$\left( \frac{\text{Thrust}}{\text{(Max. Thrust Rating)}} \right) \times \left( \frac{\text{Speed}}{\text{(Max. Speed Rating)}} \right) \leq 0.1$$

| SCREW CODE | DESCRIPTION           | SCREW CODE | DESCRIPTION |
|------------|-----------------------|------------|-------------|
| BN         | Ball Nut              | BZ         | Bronze Nut  |
| BNH        | Ball Nut H-series     | RN         | Roller Nut  |
| BNL        | Low-Backlash Ball Nut | SN         | Solid Nut   |
| BNM        | Ball Nut Metric       |            |             |

# RSA HT Electric Rod-Style Actuator

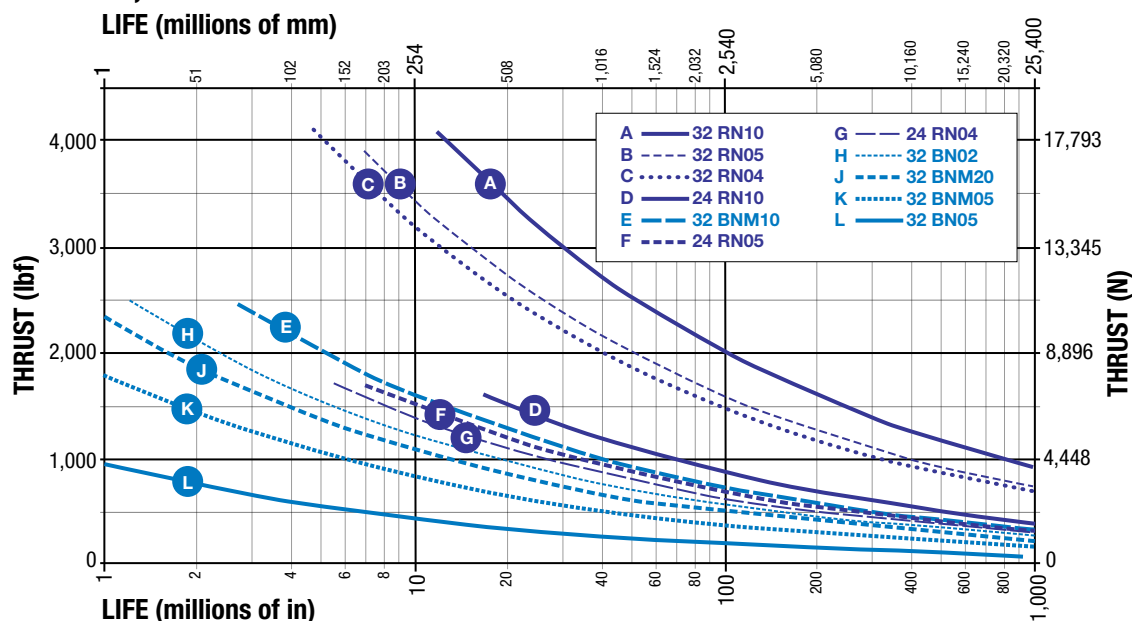
## BALL & ROLLER SCREW LIFE GRAPHS

SIZE: 24, 32

## SPECIFICATIONS

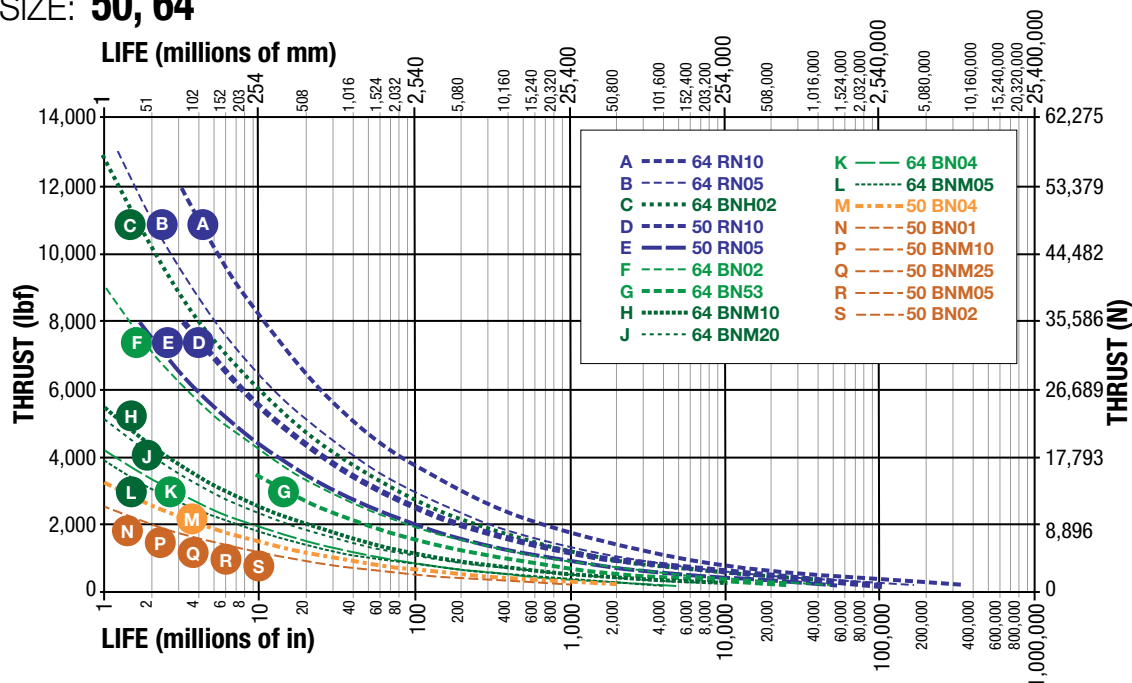


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| SCREW CODE | DESCRIPTION           |
|------------|-----------------------|
| BN         | Ball Nut              |
| BNH        | Ball Nut H-series     |
| BNL        | Low-Backlash Ball Nut |
| BNM        | Ball Nut Metric       |
| BZ         | Bronze Nut            |
| RN         | Roller Nut            |
| SN         | Solid Nut             |

SIZE: 50, 64



**NOTE:** The  $L_{10}$  expected life of a ball screw linear actuator is expressed as the linear travel distance that 90% of properly manufactured are expected to meet or exceed. This is not a guarantee and this graph should be used for estimation purposes only.

The underlying formula that defines this value is:

$$L_{10} = \left( \frac{C}{P_e} \right)^3 \cdot \ell =$$

$L_{10}$  Travel life in millions of units (in or mm), where:

$C$  = Dynamic load rating (lbf) or (N)

$P_e$  = Equivalent load (lbf) or (N)

If load is constant across all movements then:

actual load = equivalent load

$\ell$  = Screw lead (in/rev) (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.

$$P_e = \sqrt[3]{\frac{L_1(P_1)^3 + L_2(P_2)^3 + L_3(P_3)^3 + L_n(P_n)^3}{L}}$$

Where:

$P_e$  = Equivalent load (lbf) or (N)

$P_n$  = Each increment at different load (lbf) or (N)

$L$  = Total distanced traveled per cycle (extend + retract stroke)  
[ $L = L_1 + L_2 + L_3 + L_n$ ]

$L_n$  = Each increment of stroke at different load (in) or (mm)

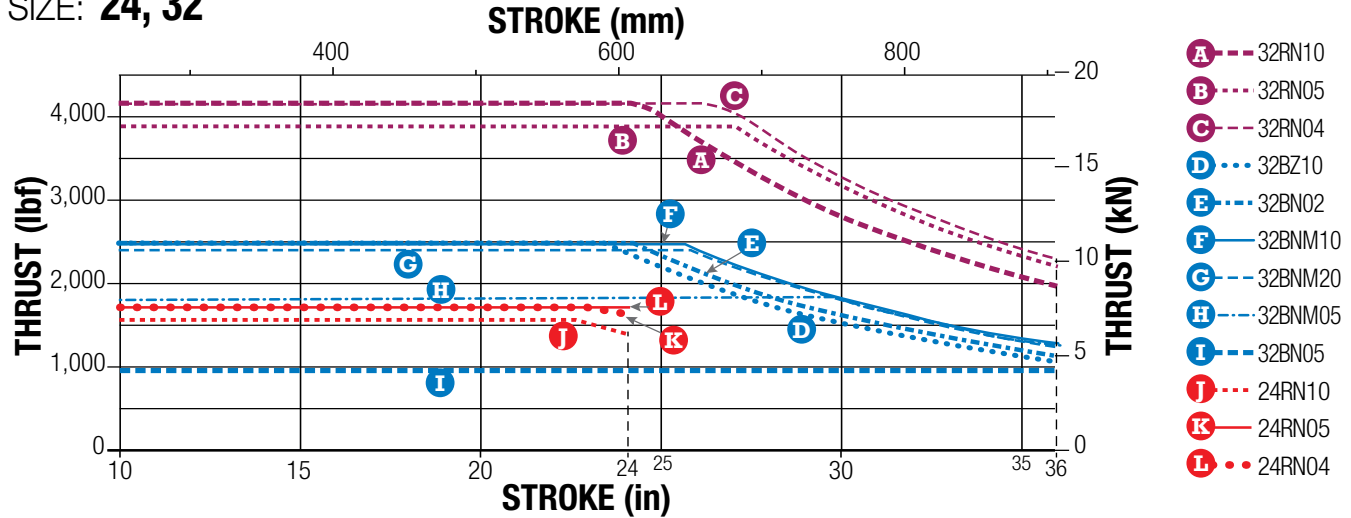
# RSA HT Electric Rod-Style Actuator

## SCREW BUCKLING LOAD

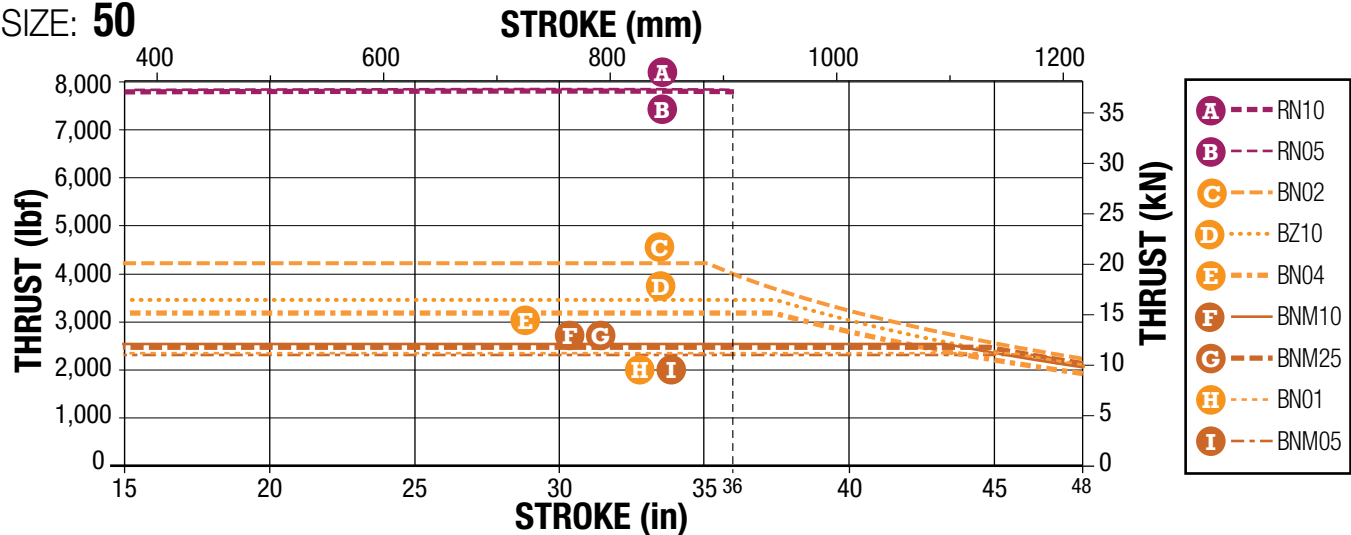
## SPECIFICATIONS

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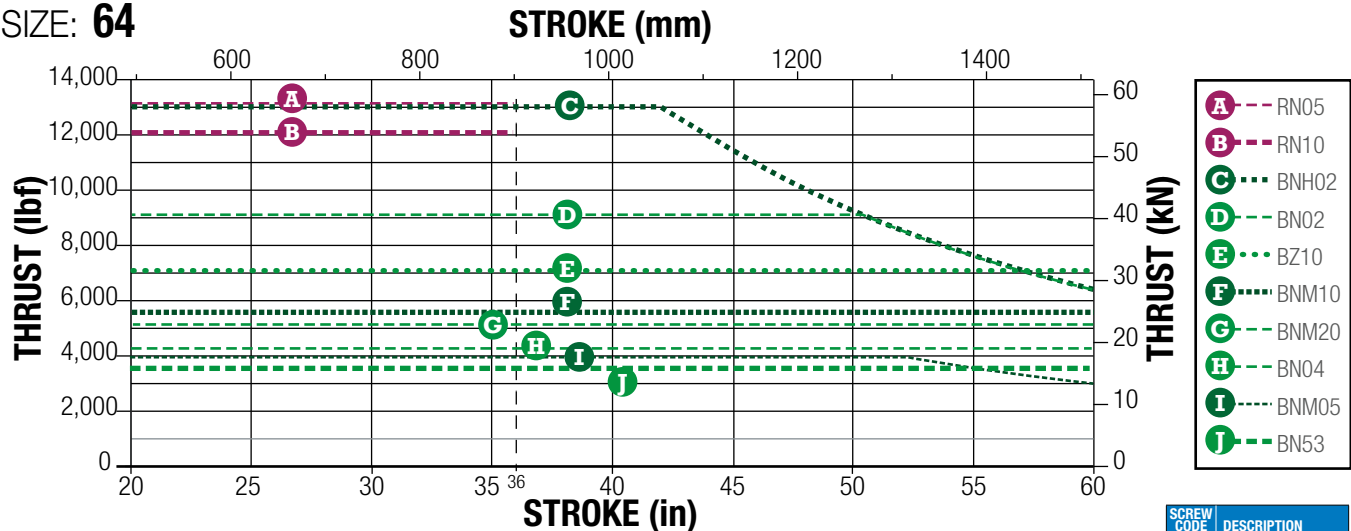
SIZE: 24, 32



SIZE: 50



SIZE: 64



**NOTE:** Buckling load limits shown assume perfect alignment. It is recommended to use additional safety margin, particularly in high thrust applications

| SCREW CODE | DESCRIPTION           |
|------------|-----------------------|
| BN         | Ball Nut              |
| BNH        | Ball Nut H-series     |
| BNL        | Low-Backlash Ball Nut |
| BNM        | Ball Nut Metric       |
| BZ         | Bronze Nut            |
| RN         | Roller Nut            |
| SN         | Solid Nut             |

# RSA HT Electric Rod-Style Actuator

SIZE: 24, 32, 50, 64

## SPECIFICATIONS



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### U.S. Standard

| RSA<br>SIZE | WEIGHT |      |      |      |                        | REDUCTION INERTIA  |                    |                    |
|-------------|--------|------|------|------|------------------------|--------------------|--------------------|--------------------|
|             | BASE   | LMI  | RP1  | RP2  | per in<br>of<br>stroke | LMI                | RP1                | RP2                |
|             | lb     | lb   | lb   | lb   | lb/in                  | lb-in <sup>2</sup> | lb-in <sup>2</sup> | lb-in <sup>2</sup> |
| 24          | 3.8    | 2.4  | 2.5  | 2.2  | 0.33                   | 0.56               | 0.38               | 0.11               |
| 32 BN       | 5.3    | 5.4  | 2.9  | 3.3  | 0.48                   | 2.35               | 0.25               | 0.18               |
| 32 RN       | 10.1   | 5.2  | 5.7  | 6.0  | 1.18                   | 2.35               | 1.38               | 0.66               |
| 50 BN       | 12.6   | 9.1  | 5.7  | 5.9  | 0.84                   | 6.36               | 1.47               | 0.73               |
| 50 RN       | 21.5   | 11.9 | 16.3 | 16.8 | 0.98                   | 6.36               | 8.72               | 4.09               |
| 64          | 39.6   | 17.7 | 23.7 | 24.6 | 1.42                   | 13.55              | 13.67              | 6.95               |

\*Temperature Range (°F): Standard: 40 to 130 Extended: -40 to 140

### Metric

| RSA<br>SIZE | WEIGHT |      |       |       |                        | REDUCTION INERTIA  |                    |                    |
|-------------|--------|------|-------|-------|------------------------|--------------------|--------------------|--------------------|
|             | BASE   | LMI  | RP1   | RP2   | per mm<br>of<br>stroke | LMI                | RP1                | RP2                |
|             | kg     | kg   | kg    | kg    | g/mm                   | kg-cm <sup>2</sup> | kg-cm <sup>2</sup> | kg-cm <sup>2</sup> |
| 24          | 1.73   | 1.09 | 1.13  | 1.00  | 5.93                   | 1.641              | 1.113              | 0.322              |
| 32 BN       | 2.40   | 2.45 | 1.32  | 1.50  | 8.50                   | 6.886              | 0.733              | 0.527              |
| 32 RN       | 4.59   | 2.36 | 2.59  | 2.72  | 21.01                  | 6.886              | 4.043              | 1.934              |
| 50 BN       | 5.73   | 4.13 | 2.59  | 2.68  | 14.98                  | 18.635             | 4.307              | 2.139              |
| 50 RN       | 9.74   | 5.40 | 7.39  | 7.62  | 17.50                  | 18.635             | 25.550             | 11.984             |
| 64          | 17.97  | 8.03 | 10.75 | 11.16 | 25.30                  | 39.702             | 40.053             | 20.364             |

\*Temperature Range (°C): Standard: 4 to 54 Extended -40 to 60

Gasket Kit providing ingress protection against dust and splashing water available upon request



Contact Tolomatic if operation in the extended range is required.

**⚠ \* 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.**

**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.

**SIDE LOADING CONSIDERATIONS:** Rod screw actuators are designed to push guided and supported loads and are not meant for applications that require substantial side loading. Please contact Tolomatic for details regarding side loading capabilities.



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# RSA HT Electric Rod-Style Actuator

SIZE: 24, 32, 50, 64

## SPECIFICATIONS



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### RE-LUBRICATION RECOMMENDATION:

RSA-HT 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.

For many general purpose applications, Tolomatic ball screw actuators are typically considered lubricated for life unless otherwise specified, such as those actuator models outfitted with a re-lubrication feature. For roller screw or ball screw actuators outfitted with a re-lubrication feature, 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,

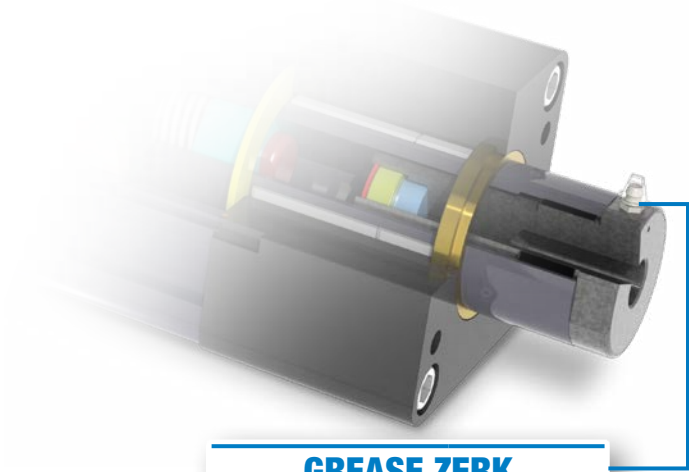
high frequency or other highly stressed applications, the re-lubrication interval for these actuators will vary and will need to be more frequent. In these demanding applications, it is recommended to execute at least 5 full stroke moves every 5,000 cycles of operation (or more frequent if possible) to re-distribute the grease within the actuator.

Re-lubricate with Tolomatic Grease into the grease zerk located on the rod end.

|      | RSA24                    | RSA32                    | RSA50                    | RSA64                    |
|------|--------------------------|--------------------------|--------------------------|--------------------------|
| Qty. | 2.5 g + (0.010 x § mm)   | 4.8 g + (0.010 x § mm)   | 5.3 g + (0.018 x § mm)   | 6.6 g + (0.018 x § mm)   |
| Qty. | 0.09 oz + (0.009 x § in) | 0.17 oz + (0.009 x § in) | 0.19 oz + (0.016 x § in) | 0.23 oz + (0.016 x § in) |

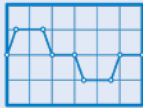
§ = Stroke length (mm or in)

 In some applications oil may leak from the grease zerk. In contamination sensitive applications replace grease zerk with plug.



### GREASE ZERK

- This relubrication system provides extended screw service life
- Convenient lubrication without disassembly
- Standard with all HT option RSA actuators
- Grease zerk orientation is not pre-defined. Custom orientation can be requested as a product modification



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RSA-HT

# RSA HT Electric Rod-Style Actuator

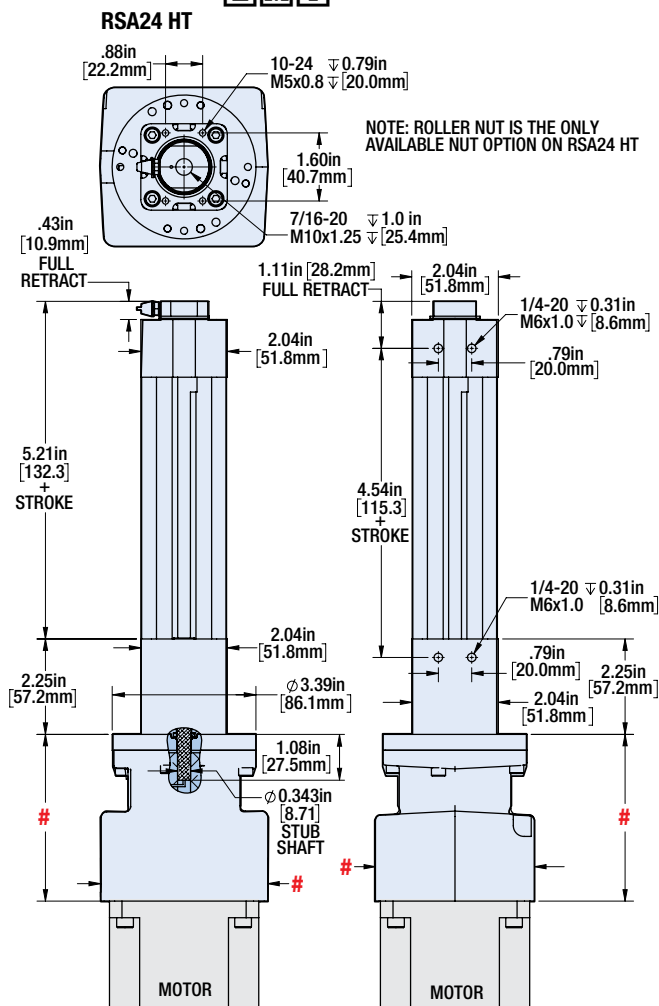
SIZE: 24,32,50,64

[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



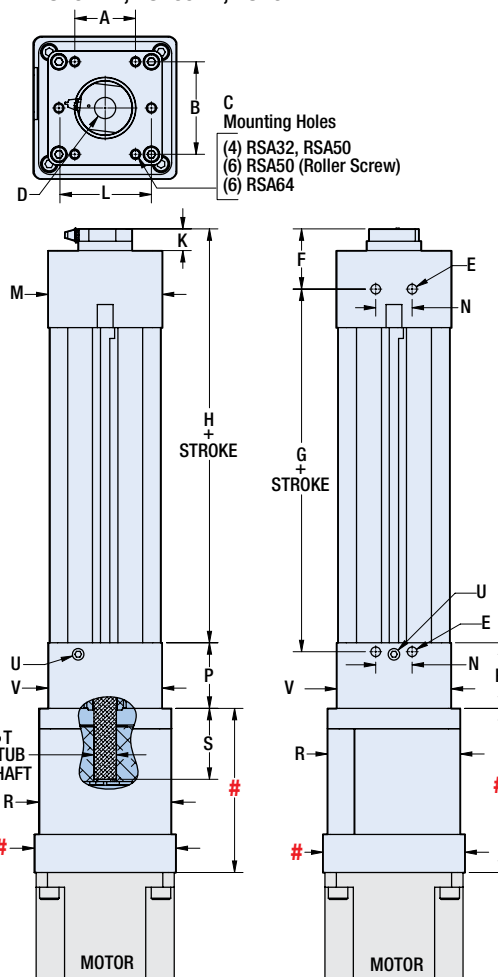
## DIMENSIONS

### HT ACTUATOR **LMI** Motor Mount



# = YMH Variable Dimensions

### RSA32 HT, RSA50 HT, RSA64 HT



# = YMH Variable Dimensions



NOTE: See next page for additional dimensions and RP drawing

|       |    | A  | B    | C    | D                      | E                      |
|-------|----|----|------|------|------------------------|------------------------|
| RSA32 | RN | in | 1.18 | 1.97 | 1/4-20 $\nabla$ 0.70   | 7/16-20 $\nabla$ 1.13  |
|       |    | mm | 30.0 | 50.0 | M6x1.0 $\nabla$ 18.0   | M8x1.25 $\nabla$ 11.9  |
|       | BN | in | 1.18 | 1.97 | 1/4-20 $\nabla$ 0.70   | 7/16-20 $\nabla$ 1.13  |
|       |    | mm | 30.0 | 50.0 | M6x1.0 $\nabla$ 18.0   | M8x1.25 $\nabla$ 11.9  |
|       | BZ | in | 1.18 | 1.97 | 1/4-20 $\nabla$ 0.70   | 7/16-20 $\nabla$ 1.13  |
|       |    | mm | 30.0 | 50.0 | M6x1.0 $\nabla$ 18.0   | M8x1.25 $\nabla$ 11.9  |
| RSA50 | RN | in | 1.97 | 3.00 | 5/16-18 $\nabla$ 0.47  | 3/4-16 $\nabla$ 1.50   |
|       |    | mm | 50.0 | 76.2 | M8x1.25 $\nabla$ 12.0  | M10x1.5 $\nabla$ 15.0  |
|       | BN | in | 1.97 | 3.00 | 5/16-18 $\nabla$ 0.47  | 3/4-16 $\nabla$ 1.50   |
|       |    | mm | 50.0 | 76.2 | M8x1.25 $\nabla$ 12.0  | M10x1.5 $\nabla$ 15.0  |
|       | BZ | in | 1.97 | 3.00 | 5/16-18 $\nabla$ 0.47  | 3/4-16 $\nabla$ 1.50   |
|       |    | mm | 50.0 | 76.2 | M8x1.25 $\nabla$ 12.0  | M10x1.5 $\nabla$ 15.0  |
| RSA64 | RN | in | 1.97 | 3.50 | 1/2-13 $\nabla$ 0.75   | 1-1/4-12 $\nabla$ 2.50 |
|       |    | mm | 50.0 | 88.9 | M12x1.75 $\nabla$ 18.0 | M27x2.0 $\nabla$ 63.5  |
|       | BN | in | 1.97 | 3.50 | 1/2-13 $\nabla$ 0.75   | 1-1/4-12 $\nabla$ 2.50 |
|       |    | mm | 50.0 | 88.9 | M12x1.75 $\nabla$ 18.0 | M27x2.0 $\nabla$ 63.5  |
|       | BZ | in | 1.97 | 3.50 | 1/2-13 $\nabla$ 0.75   | 1-1/4-12 $\nabla$ 2.50 |
|       |    | mm | 50.0 | 88.9 | M12x1.75 $\nabla$ 18.0 | M27x2.0 $\nabla$ 63.5  |

# RSA HT Electric Rod-Style Actuator

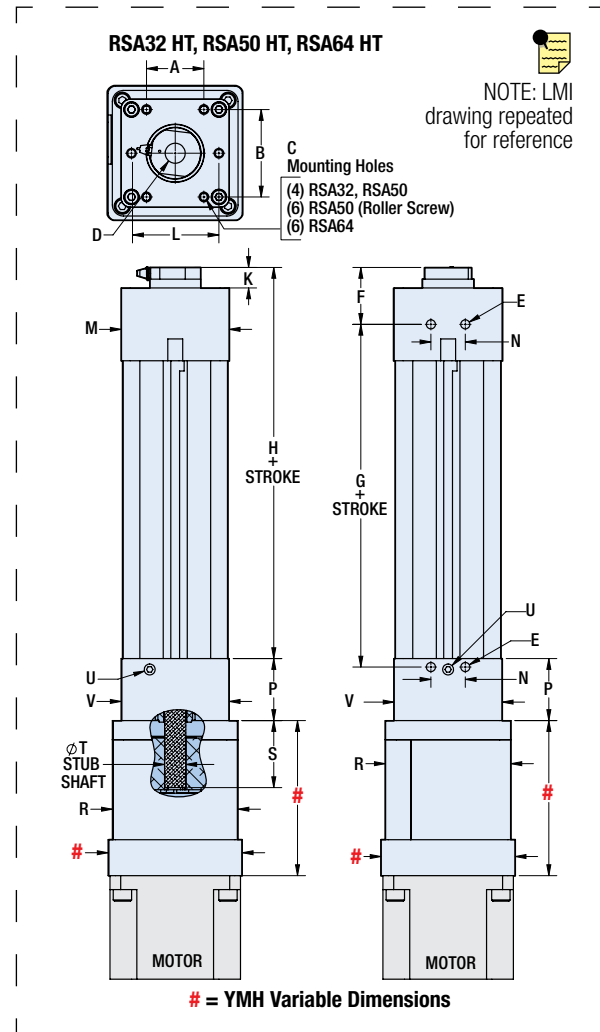
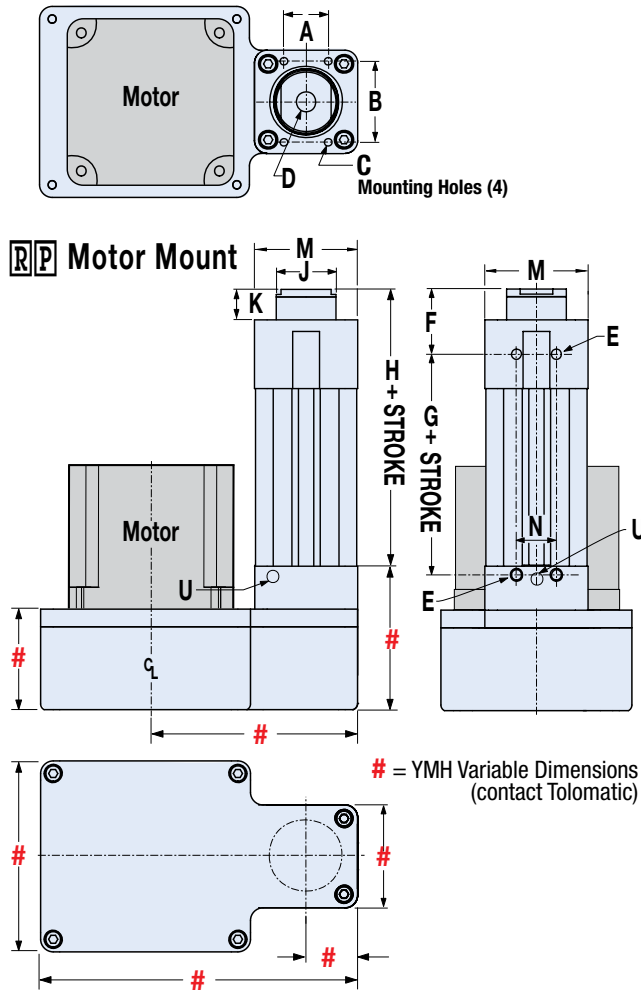
SIZE: 24,32,50,64

## DIMENSIONS

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CAD Always use CAD solid model  
to determine critical dimensions



### HT ACTUATOR DIMENSIONS



|       |    |    | F    | G     | H     | K    | L    | M     | N    | P     | R     | S    | T     | U           | V     |
|-------|----|----|------|-------|-------|------|------|-------|------|-------|-------|------|-------|-------------|-------|
| RSA32 | RN | in | 1.44 | 5.92  | 6.24  | 0.50 | --   | 2.58  | 0.95 | 3.50  | 3.25  | 1.70 | 0.625 | 1/16-27 NPT | 3.25  |
|       |    | mm | 36.5 | 150.4 | 158.4 | 12.7 | --   | 65.5  | 24.1 | 88.9  | 82.6  | 43.2 | 15.88 | 1/16-27 NPT | 82.6  |
|       | BN | in | 1.44 | 5.05  | 6.24  | 0.50 | --   | 2.58  | 0.95 | 1.79  | 3.25  | 1.75 | 0.530 | 1/16-27 NPT | 2.58  |
|       |    | mm | 36.5 | 128.3 | 158.4 | 12.7 | --   | 65.5  | 24.1 | 45.4  | 82.6  | 44.5 | 13.46 | 1/16-27 NPT | 65.5  |
|       | BZ | in | 1.44 | 3.87  | 5.06  | 0.50 | --   | 2.58  | 0.95 | 1.79  | 3.25  | 1.75 | 0.530 | 1/16-27 NPT | 2.58  |
|       |    | mm | 36.5 | 96.4  | 128.4 | 12.7 | --   | 65.5  | 24.1 | 45.4  | 82.6  | 44.5 | 13.46 | 1/16-27 NPT | 65.5  |
| RSA50 | RN | in | 1.95 | 7.21  | 8.41  | 0.70 | 3.00 | 3.71  | 1.18 | 3.80  | 4.31  | 2.31 | 0.729 | 1/8-27 NPT  | 3.71  |
|       |    | mm | 49.5 | 183.1 | 213.6 | 17.8 | 76.2 | 94.1  | 30.0 | 96.5  | 109.5 | 58.7 | 18.52 | 1/8-27 NPT  | 94.2  |
|       | BN | in | 1.95 | 5.78  | 7.44  | 0.70 | --   | 3.71  | 1.18 | 2.13  | 4.31  | 2.30 | 0.730 | 1/8-27 NPT  | 3.71  |
|       |    | mm | 49.5 | 146.9 | 189.0 | 17.8 | --   | 94.1  | 30.0 | 54.0  | 109.5 | 58.4 | 18.54 | 1/8-27 NPT  | 94.2  |
|       | BZ | in | 1.95 | 4.78  | 6.44  | 0.70 | --   | 3.71  | 1.18 | 2.13  | 4.31  | 2.30 | 0.730 | 1/8-27 NPT  | 3.71  |
|       |    | mm | 49.5 | 121.5 | 163.6 | 17.8 | --   | 94.1  | 30.0 | 54.0  | 109.5 | 58.4 | 18.54 | 1/8-27 NPT  | 94.2  |
| RSA64 | RN | in | 2.37 | 7.80  | 9.29  | 0.68 | 3.50 | 4.58  | 1.97 | 4.25  | 5.60  | 2.67 | 0.999 | 1/8-27 NPT  | 4.58  |
|       |    | mm | 60.1 | 196.0 | 235.9 | 17.3 | 88.9 | 116.3 | 50.0 | 108.0 | 142.2 | 67.9 | 25.38 | 1/8-27 NPT  | 116.3 |
|       | BN | in | 2.37 | 10.25 | 11.74 | 0.68 | 3.50 | 4.58  | 1.97 | 4.25  | 5.60  | 2.67 | 0.999 | 1/8-27 NPT  | 4.58  |
|       |    | mm | 60.1 | 260.3 | 298.2 | 17.3 | 88.9 | 116.3 | 50.0 | 108.0 | 142.2 | 67.9 | 25.38 | 1/8-27 NPT  | 116.3 |
|       | BZ | in | 2.37 | 7.80  | 9.29  | 0.68 | 3.50 | 4.58  | 1.97 | 4.25  | 5.60  | 2.67 | 0.999 | 1/8-27 NPT  | 4.58  |
|       |    | mm | 60.1 | 198.0 | 235.9 | 17.3 | 88.9 | 116.3 | 50.0 | 108.0 | 142.2 | 67.9 | 25.38 | 1/8-27 NPT  | 116.3 |



NOTE: See previous page for additional dimensions



See page 16 for additional RP mounting codes

# RSA HT Rod End Options

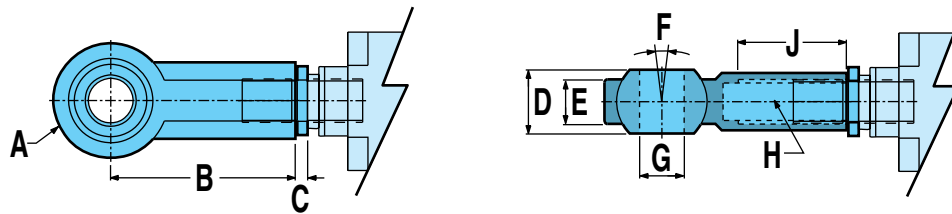
SIZE: 24, 32, 50, 64

## DIMENSIONS

[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



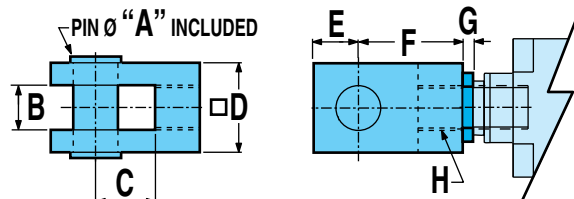
### SRE SPHERICAL ROD END



Allows for slight misalignment between the load and the actuator (radial and angular). Uses an industry-standard bearing.

| Size |    | A Ø   | B      | C    | D     | E     | F   | G Ø   | H        | J    |
|------|----|-------|--------|------|-------|-------|-----|-------|----------|------|
| 24   | in | 1.125 | 1.812  | 0.15 | 0.560 | 0.437 | 10° | 0.438 | 7/16-20  | 1.06 |
|      | mm | 28.00 | 43.00  | 3.8  | 14.00 | 10.50 |     | 10.00 | M10x1.25 | 20.0 |
| 32   | in | 1.125 | 1.812  | 0.15 | 0.560 | 0.437 |     | 0.437 | 7/16-20  | 1.06 |
|      | mm | 42.00 | 64.00  | 4.8  | 21.00 | 15.00 |     | 16.00 | M16x1.5  | 28.0 |
| 50   | in | 1.750 | 2.875  | 0.19 | 0.875 | 0.687 |     | 0.750 | 3/4-16   | 1.75 |
|      | mm | 50.00 | 77.00  | 4.8  | 25.00 | 18.00 |     | 20.00 | M20x1.5  | 33.0 |
| 64   | in | 2.750 | 4.125  | 0.19 | 1.375 | 1.000 |     | 1.00  | 1-1/4-12 | 2.13 |
|      | mm | 70.00 | 110.00 | 6.4  | 37.00 | 25.00 |     | 30.00 | M27x2.0  | 51.0 |

### CLV CLEVIS ROD END



Used with the externally threaded rod end when the actuator has to compensate for misalignment or pivot about an axis.

| Size |    | A Ø   | B    | C    | D    | E    | F      | G    | H        |
|------|----|-------|------|------|------|------|--------|------|----------|
| 24   | in | 0.50  | 0.51 | 0.75 | 1.00 | 0.50 | 1.375  | 0.15 | 7/16-20  |
|      | mm | 10.0  | 10.0 | 20.0 | 20.0 | 16.0 | 40.00  | 3.8  | M10x1.25 |
| 32   | in | 0.50  | 0.51 | 0.75 | 1.00 | 0.50 | 1.375  | 0.15 | 7/16-20  |
|      | mm | 16.0  | 16.0 | 32.0 | 32.0 | 19.0 | 64.00  | 4.8  | M16x1.5  |
| 50   | in | 0.75  | 0.75 | 1.00 | 1.50 | 0.75 | 1.750  | 0.19 | 3/4-16   |
|      | mm | 20.0  | 20.0 | 40.0 | 40.0 | 25.0 | 80.00  | 4.8  | M20x1.5  |
| 64   | in | 1.375 | 2.03 | 1.75 | 4.03 | 1.38 | 3.750  | 0.19 | 1-1/4-12 |
|      | mm | 30.0  | 30.0 | 54.0 | 55.0 | 45.0 | 110.00 | 6.4  | M27x2.0  |

#### KEY TO SYMBOLS

⚠ Indicates a note of high importance

✗ Indicates incompatibility with option(s) or size(s)

📝 Make note of this item

# RSA HT Rod End Options

tolomatic.com/CAD Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



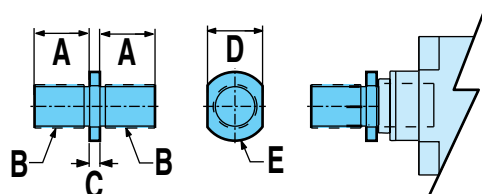
SIZE: 24, 32, 50, 64

## DIMENSIONS

### **MET** EXTERNALLY THREADED ROD END

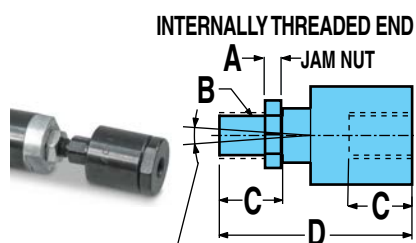


An alternative to the standard internally threaded end.

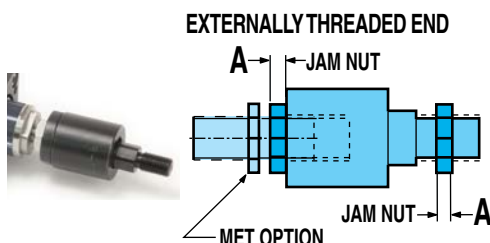
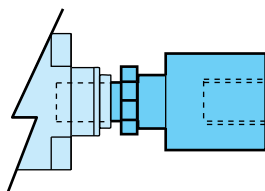


| Size |    | A    | B        | C    | D     | E Ø  |
|------|----|------|----------|------|-------|------|
| 24   | in | 0.87 | 7/16-20  | 0.15 | 0.750 | 0.97 |
|      | mm | 22.1 | M10x1.25 | 3.8  | 19.00 | 24.6 |
| 32   | in | 0.87 | 7/16-20  | 0.15 | 0.750 | 0.97 |
|      | mm | 28.0 | M16x1.5  | 4.8  | 19.00 | 24.6 |
| 50   | in | 1.50 | 3/4-16   | 0.19 | 1.250 | 1.48 |
|      | mm | 38.1 | M-20x1.5 | 4.8  | 32.00 | 37.6 |
| 64   | in | 2.13 | 1-1/4-12 | 0.19 | 1.313 | 1.60 |
|      | mm | 50.8 | M27x2    | 6.4  | 32.00 | 38.1 |

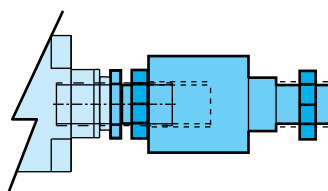
### **ALC** ALIGNMENT COUPLER



2 SPHERICAL MOTION,  
0.0625 (1.6) RADIAL FLOAT



MET OPTION



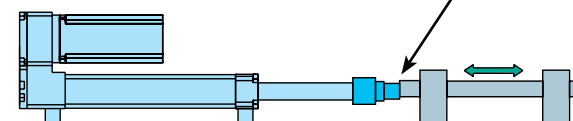
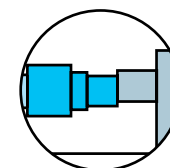
THE ALIGNMENT COUPLER  
COMES WITH AN INTERNAL  
THREAD. IF AN EXTERNAL  
THREAD IS PREFERRED,  
THE ADDITION OF THE  
"MET" OPTION IS REQUIRED.

| Size |    | A    | B        | C    | D     | E    | F    |
|------|----|------|----------|------|-------|------|------|
| 24   | in | 0.25 | 7/16-20  | 0.75 | 2.75  | 1.13 | 1.25 |
|      | mm | 6.4  | M10x1.25 | 24.0 | 77.0  | 19.0 | 30.0 |
| 32   | in | 0.25 | 7/16-20  | 0.75 | 2.75  | 1.13 | 1.25 |
|      | mm | 8.0  | M16x1.5  | 32.0 | 106.0 | 30.0 | 42.0 |
| 50   | in | 0.45 | 3/4-16   | 1.13 | 3.44  | 1.50 | 1.75 |
|      | mm | 10.0 | M20x1.5  | 42.0 | 122.0 | 30.0 | 42.0 |
| 64   | in | 0.50 | 1-1/4-12 | 1.63 | 4.56  | 2.25 | 2.50 |
|      | mm | 13.5 | M27x2.0  | 54.0 | 147.0 | 32.0 | 55.0 |

Used in combination with the externally threaded rod end to provide smooth motion and extends actuator life by preventing binding caused by angular or axial misalignment. Not available for use with clevis or trunnion mounts, as they must be rigidly mounted.



If you need external thread,  
be sure to also order the  
**MET** external rod end



# RSA HT Mounting Options

[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



SIZE: 24, 32, 50, 64

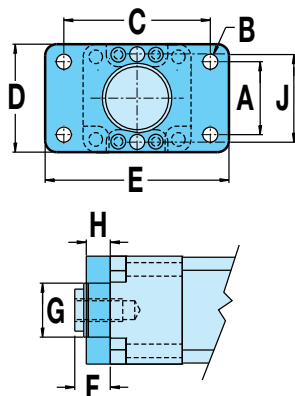
## DIMENSIONS

### FFG FRONT FLANGE MOUNT



Used when a bottom-tapped mount is not an option or where bottom support mechanisms are not feasible.

Flange can be mounted directly to framework or a bulkhead

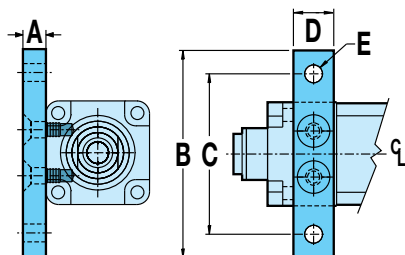


| Size |    | A     | B Ø  | C      | D     | E     | F    | G Ø  | H    | J    |
|------|----|-------|------|--------|-------|-------|------|------|------|------|
| 24   | in | 1.430 | 0.31 | 2.750  | 2.00  | 3.37  | 0.80 | 1.34 | 0.37 | —    |
|      | mm | 32.00 | 7.2  | 64.00  | 47.0  | 80.0  | 20.4 | 34.0 | 10.0 | —    |
| 32   | in | 1.840 | 0.37 | 3.375  | 2.50  | 4.12  | 0.87 | 1.50 | 0.37 | —    |
|      | mm | 45.00 | 9.2  | 90.00  | 65.0  | 113.0 | 22.1 | 34.0 | 12.0 | —    |
| 50   | in | 2.760 | 0.43 | 4.687  | 3.75  | 5.50  | 1.32 | 1.90 | 0.62 | —    |
|      | mm | 63.00 | 12.2 | 126.00 | 97.0  | 153.0 | 33.5 | 48.3 | 16.0 | —    |
| 64   | in | 3.320 | 0.58 | 8.000  | 4.50  | 9.00  | 1.48 | 2.40 | 0.80 | 3.50 |
|      | mm | 84.33 | 14.7 | 203.2  | 114.3 | 228.6 | 37.6 | 61.0 | 20.3 | 88.9 |



See page 20 for additional  
FFG mount codes

### MP2 MOUNTING PLATE



Used for mountings other than flush.

| Size  |    | A    | B     | C     | D    | E Ø  |
|-------|----|------|-------|-------|------|------|
| 24    | in | 0.50 | 3.50  | 2.75  | 1.50 | 0.44 |
|       | mm | 12.0 | 78.0  | 62.0  | 25.4 | 6.7  |
| 32 BN | in | 0.50 | 4.00  | 3.25  | 1.50 | 0.44 |
|       | mm | 12.0 | 104.0 | 84.0  | 31.8 | 8.7  |
| 32 RN | in | 0.50 | 4.00  | 3.25  | 1.50 | 0.44 |
|       | mm | 12.0 | 104.0 | 84.0  | 31.8 | 8.7  |
| 50 BN | in | 0.75 | 5.75  | 4.75  | 1.75 | 0.56 |
|       | mm | 20.0 | 144.0 | 120.0 | 30.5 | 11.0 |
| 50 RN | in | 1.25 | 5.75  | 4.75  | 1.75 | 0.56 |
|       | mm | 31.8 | 146.1 | 120.0 | 44.5 | 11.0 |
| 64    | in | 1.25 | 6.50  | 5.50  | 1.75 | 0.56 |
|       | mm | 31.8 | 180.0 | 150.0 | 44.5 | 12.8 |

#### KEY TO SYMBOLS

- Indicates a note of high importance
- Indicates incompatibility with option(s) or size(s)
- Make note of this item

# RSA HT Mounting Options

[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



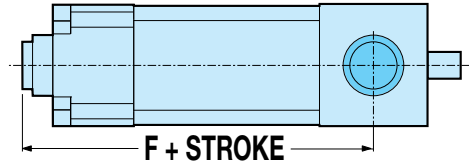
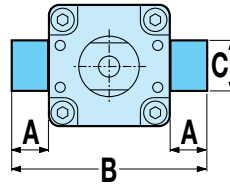
SIZE: 24, 32, 50, 64

## DIMENSIONS

### T R R TRUNNION MOUNT



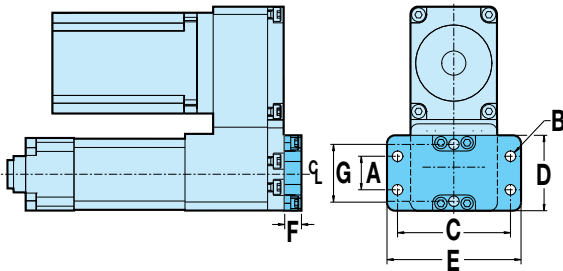
Used where space is limited in the rear of the actuator and when pivoting about an axis is required.



| US standard | Size |    | A    | B    | C Ø           | D Ø  | E    | F (LMI)  |          |            | F (RP)   |          |            |
|-------------|------|----|------|------|---------------|------|------|----------|----------|------------|----------|----------|------------|
|             |      |    |      |      |               |      |      | ACME NUT | BALL NUT | ROLLER NUT | ACME NUT | BALL NUT | ROLLER NUT |
|             | 24   | in | 1.04 | 4.12 | 0.9999/0.9993 | NA   | NA   | 4.46     | 4.94     | 6.33       | 4.30     | 4.73     | 6.33       |
|             | 32   | in | 1.00 | 4.88 | 0.9999/0.9993 | NA   | NA   | 6.06     | 7.24     | 7.42       | 5.65     | 6.83     | 7.42       |
|             | 50   | in | 1.06 | 5.83 | 0.9999/0.9993 | NA   | NA   | 7.44     | 8.44     | 9.07       | 7.14     | 8.14     | 9.07       |
|             | 64   | in | 1.25 | 7.92 | 0.9999/0.9993 | 1.50 | 0.42 | 10.29    | 12.74    | 10.29      | 10.29    | 12.74    | 10.29      |

| Metric | Size |    | A    | B     | C Ø         | D Ø  | E    | F (LMI)  |          |            | F (RP)   |          |            |
|--------|------|----|------|-------|-------------|------|------|----------|----------|------------|----------|----------|------------|
|        |      |    |      |       |             |      |      | ACME NUT | BALL NUT | ROLLER NUT | ACME NUT | BALL NUT | ROLLER NUT |
|        | 24   | mm | 8.6  | 75.7  | 11.96/11.99 | 18.0 | 3.3  | 113.4    | 125.5    | 160.8      | 109.1    | 120.2    | 160.8      |
|        | 32   | mm | 16.0 | 124.0 | 15.95/15.98 | 25.0 | 4.74 | 153.8    | 183.8    | 188.5      | 143.5    | 173.5    | 188.5      |
|        | 50   | mm | 20.1 | 150.1 | 19.95/19.98 | 30.0 | 7.9  | 191.0    | 214.4    | 230.3      | 181.3    | 206.7    | 230.3      |
|        | 64   | mm | 24.9 | 181.9 | 24.97/24.99 | 40.0 | 7.9  | 261.3    | 323.6    | 261.3      | 261.3    | 323.6    | 261.3      |

### B F G BACK FLANGE MOUNT



Used when a bottom-tapped mount is not an option or where bottom support mechanisms are not feasible. Flange can be mounted directly to framework or a bulkhead

✗ Not available with LMI (inline) motor mounting

| Size  |    | A     | B Ø  | C      | D     | E     | F    | G    |
|-------|----|-------|------|--------|-------|-------|------|------|
| 24    | in | 1.430 | 0.31 | 2.750  | 2.00  | 3.37  | 0.37 | —    |
|       | mm | 32.00 | 7.2  | 64.00  | 47.0  | 80.0  | 9.40 | —    |
| 32    | in | 1.840 | 0.37 | 3.375  | 2.50  | 4.12  | 0.37 | —    |
|       | mm | 45.00 | 9.2  | 90.00  | 65.0  | 113.0 | 9.40 | —    |
| 32 RN | in | 1.840 | 0.37 | 4.000  | 2.50  | 4.75  | 0.37 | —    |
|       | mm | 45.00 | 9.2  | 101.60 | 65.0  | 120.7 | 9.40 | —    |
| 50    | in | 2.760 | 0.43 | 4.687  | 3.75  | 5.50  | 0.62 | —    |
|       | mm | 63.00 | 12.2 | 126.00 | 97.0  | 153.0 | 15.7 | —    |
| 50 RN | in | 2.760 | 0.43 | 7.000  | 3.75  | 8.00  | 0.62 | 3.00 |
|       | mm | 63.00 | 12.2 | 177.80 | 97.0  | 203.2 | 15.7 | 76.2 |
| 64    | in | 3.320 | 0.58 | 8.000  | 4.50  | 9.00  | 0.62 | 3.50 |
|       | mm | 75.00 | 14.7 | 203.2  | 114.3 | 228.6 | 15.7 | 88.9 |



See page 21 for additional BFG mount codes

# RSA HT Mounting Options

SIZE: 24, 32, 50, 64

## DIMENSIONS

[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



### PCS EYE MOUNT & PCD CLEVIS MOUNT



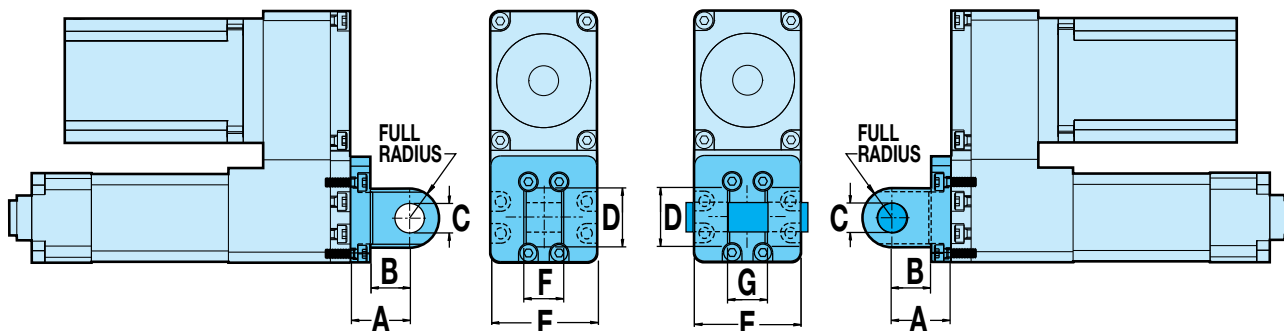
Used when the actuator has to compensate for misalignment or pivot about an axis when free movement is available in the back of the actuator.

✗ Not available with LMI (inline) motor mounting



Used when the actuator has to compensate for misalignment or pivot about an axis when free movement is available in the back of the actuator.

✗ Not available with LMI (inline) motor mounting.



| Size |    | A     | B     | C Ø           | D    | E     | F             | G             |
|------|----|-------|-------|---------------|------|-------|---------------|---------------|
| 24   | in | 1.062 | 0.687 | 0.501 / 0.500 | 1.00 | 1.98  | 0.750 / 0.745 | 0.755 / 0.751 |
|      | mm | 22.00 | 12.00 | 10.03 / 10.00 | 20.0 | 50.2  | 25.80 / 25.60 | 26.12 / 26.01 |
| 32   | in | 1.062 | 0.687 | 0.501 / 0.500 | 1.00 | 2.58  | 0.750 / 0.745 | 0.755 / 0.751 |
|      | mm | 27.00 | 15.00 | 12.03 / 12.00 | 26.0 | 65.5  | 31.80 / 31.60 | 32.12 / 32.01 |
| 50   | in | 1.875 | 1.375 | 0.751 / 0.750 | 1.50 | 3.60  | 1.250 / 1.245 | 1.255 / 1.251 |
|      | mm | 36.00 | 20.00 | 16.03 / 16.00 | 40.0 | 91.5  | 49.80 / 49.60 | 50.12 / 50.01 |
| 64   | in | 2.335 | 1.535 | 1.003 / 1.002 | 2.00 | 4.48  | 1.500 / 1.495 | 1.505 / 1.501 |
|      | mm | 59.31 | 38.99 | 28.03 / 28.00 | 50.8 | 113.7 | 39.90 / 39.80 | 40.10 / 40.00 |



See page 23 for additional PCS and PCD mount codes

### KEY TO SYMBOLS

- ⚠ Indicates a note of high importance
- ✗ Indicates incompatibility with option(s) or size(s)
- 📝 Make note of this item

# RSA HT Mounting Options

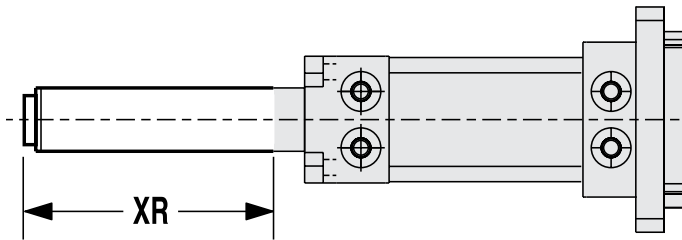
SIZE: 24, 32, 50, 64

## DIMENSIONS

[tolomatic.com/CAD](http://tolomatic.com/CAD) Download 3D  
CAD Always use CAD solid model  
to determine critical dimensions



### **XR** OPTIONAL ROD EXTENSION



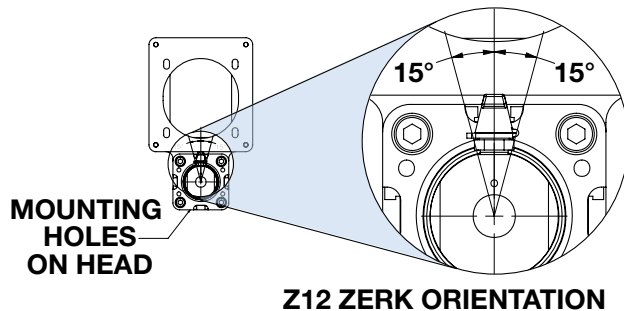
In **vertical applications only**, the thrust rod length can be extended by specifying the rod extension option. This does not increase the working stroke, only the length of the thrust rod.

**NOTE:** the XR dimension in the configurator string (extension + stroke) should not exceed the maximum stroke of the specified actuator. Consult Tolomatic for extensions greater than the maximum stroke length.

Maximum  
Stroke  
Length

| Size | All Screws |        |
|------|------------|--------|
| 24   | in         | 24     |
|      | mm         | 609.6  |
| 32   | in         | 36     |
|      | mm         | 914.4  |
| 50   | in         | 48     |
|      | mm         | 1219.2 |
| 64   | in         | 60     |
|      | mm         | 1524   |

### **Z12** ZERK ORIENTATION



The orientation of the zerk is unspecified unless the Z12 ordering code included in the configuration string



RSA & GSA products 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.

RoHS  
COMPLIANT



|             | Order Code | Lead | Switching Logic                                                                     | Power LED                                                                           | Signal LED | Operating Voltage | **Power Rating (Watts) | Switching Current (mA max.) | Current Consumption | Voltage Drop | Leakage Current | Temp. Range                  | Shock / Vibration |
|-------------|------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------|-------------------|------------------------|-----------------------------|---------------------|--------------|-----------------|------------------------------|-------------------|
| REED        | <b>R Y</b> | 5m   | SPST Normally Open                                                                  | —                                                                                   | Red        | 5 - 240 AC/DC     | **10.0                 | 100mA                       | —                   | 3.0 V max.   | —               | 14 to 158°F<br>[-10 to 70°C] | 50 G / 9 G        |
|             | <b>R K</b> | QD*  |                                                                                     |    |            |                   |                        |                             |                     |              |                 |                              |                   |
|             | <b>N Y</b> | 5m   | SPST Normally Closed                                                                | —                                                                                   | Yellow     | 5 - 110 AC/DC     |                        |                             |                     |              |                 |                              |                   |
|             | <b>N K</b> | QD*  |                                                                                     |  |            |                   |                        |                             |                     |              |                 |                              |                   |
| SOLID STATE | <b>T Y</b> | 5m   | PNP (Sourcing)                                                                      | Green                                                                               | Yellow     | 10 - 30 VDC       | **3.0                  | 100mA                       | 20 mA @ 24V         | 2.0 V max.   | 0.05 mA max.    |                              |                   |
|             | <b>T K</b> | QD*  |  |                                                                                     |            |                   |                        |                             |                     |              |                 |                              |                   |
|             | <b>K Y</b> | 5m   | NPN (Sinking)                                                                       | Green                                                                               | Red        |                   |                        |                             |                     |              |                 |                              |                   |
|             | <b>K K</b> | QD*  |  |                                                                                     |            |                   |                        |                             |                     |              |                 |                              |                   |
|             | <b>P Y</b> | 5m   | PNP (Sourcing)                                                                      | Green                                                                               | Yellow     |                   |                        |                             |                     |              |                 |                              |                   |
|             | <b>P K</b> | QD*  |  |                                                                                     |            |                   |                        |                             |                     |              |                 |                              |                   |
|             | <b>H Y</b> | 5m   | NPN (Sinking)                                                                       | Green                                                                               | Red        |                   |                        |                             |                     |              |                 |                              |                   |
|             | <b>H K</b> | QD*  |  |                                                                                     |            |                   |                        |                             |                     |              |                 |                              |                   |

\*QD = Quick-disconnect Enclosure classification IEC 529 IP67 (NEMA 6)

CABLES: Robotic grade, oil resistant polyurethane jacket, PVC insulation

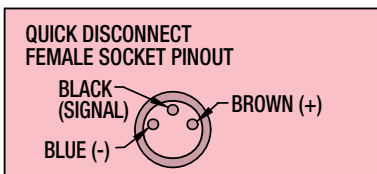
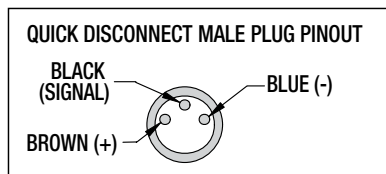
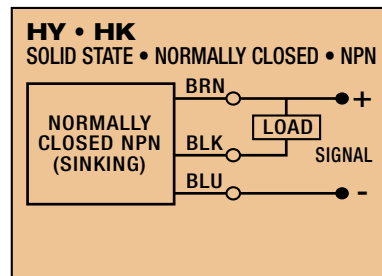
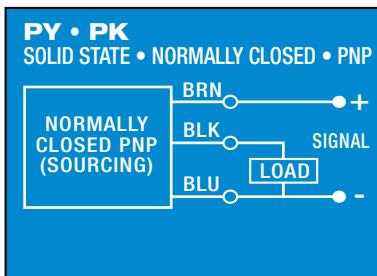
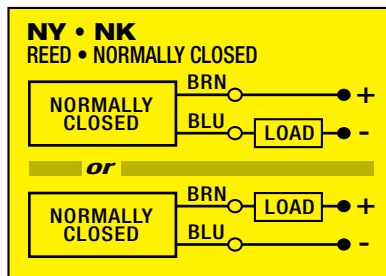
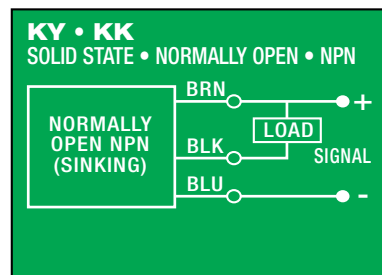
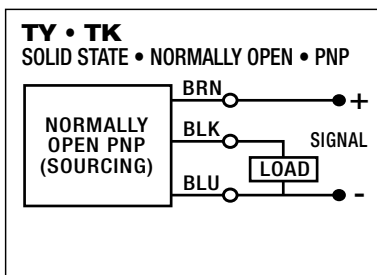
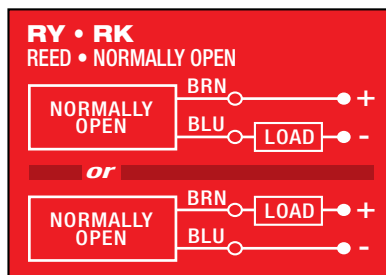
**⚠ \*\*WARNING:** Do not exceed power rating (Watt = Voltage x Amperage). Permanent damage to sensor will occur.

## SWITCH INSTALLATION



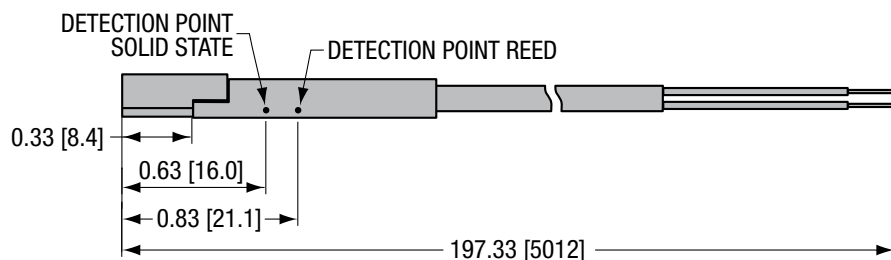
Place switch bracket into one of the four slots that run the length of the extruded tube. Note that there is a cutout on the actuator head (RSA) or tube (GSA) to allow insertion of the bracket. Insert the switch with the word "Tolomatic" facing up and slide it under the bracket. Position the bracket with the switch to the exact location desired, then lock them securely into place by tightening both set screws on the bracket.

### WIRING DIAGRAMS

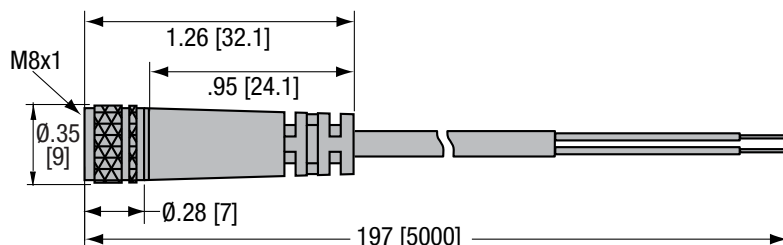
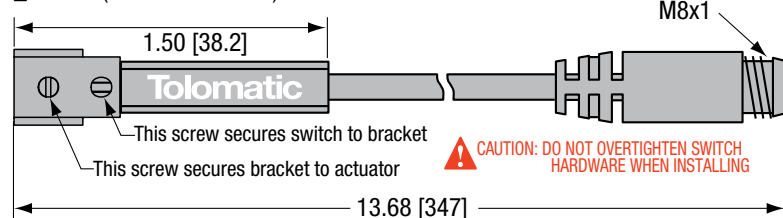


### SWITCH DIMENSIONS

\_ Y - direct connect

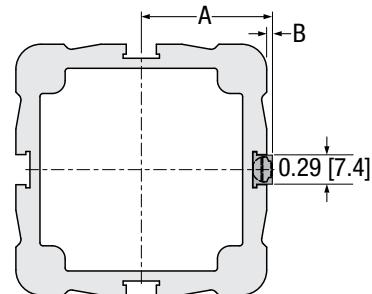


\_ K - QD (Quick-disconnect) switch



Dimensions shown in inches [dimensions in brackets millimeters]

### MOUNTING DIMENSIONS



| Size | A    |      | B    |     |
|------|------|------|------|-----|
|      | in   | mm   | in   | mm  |
| 12   | 0.68 | 17.2 | 0.13 | 3.3 |
| 16   | 0.77 | 19.6 | 0.11 | 2.9 |
| 24   | 1.06 | 26.9 | 0.06 | 1.5 |
| 32   | 1.31 | 33.2 |      |     |
| 50   | 1.87 | 47.5 |      |     |
| 64   | 2.31 | 58.6 |      |     |

# RSA Electric Rod-Style Actuators

## Application Data Worksheet

USE THE TOLOMATIC SIZING AND SELECTION SOFTWARE AVAILABLE ON-LINE AT [www.tolomatic.com](http://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.

### ACTUATOR ORIENTATION

☐ Horizontal

☐ Vertical-Motor End Up

☐ Angled

☐ Vertical-Motor End Down



Angle: \_\_\_\_\_ degrees

### ACTUATOR REQUIREMENTS

Stroke Length: \_\_\_\_\_ ☐ inches ☐ millimeters

No. of Cycles: \_\_\_\_\_ ☐ per minute ☐ per hour

Actuator to Hold Position: ☐ required ☐ not required

If Hold Required: ☐ after move ☐ during power loss

Motor: ☐ Third Party Motor ☐ Tolomatic Motor

### APPLICATION ENVIRONMENT

Ambient Temperature: \_\_\_\_\_ ☐ °F ☐ °C

Actuator Environment Description and Ingress Protection Requirements:

### MOTION & FORCES

#### Extend

Move Distance: \_\_\_\_\_ ☐ in ☐ mm

Move Time: \_\_\_\_\_ seconds

Max. Speed: \_\_\_\_\_ ☐ in/s ☐ mm/s

Dwell Time After Move: \_\_\_\_\_ seconds

#### Retract

Move Distance: \_\_\_\_\_ ☐ in ☐ mm

Move Time: \_\_\_\_\_ seconds

Max. Speed: \_\_\_\_\_ ☐ in/s ☐ mm/s

Dwell Time After Move: \_\_\_\_\_ seconds

#### Force

Force: \_\_\_\_\_ ☐ lb<sub>f</sub> ☐ N

Force Direction: ☐ Toward ☐ Away

Direction of Applied Force: ☐ F<sub>x</sub> ☐ F<sub>y</sub> ☐ F<sub>z</sub>

Center of Applied Force:

D<sub>x</sub>: \_\_\_\_\_ ☐ in ☐ mm

D<sub>y</sub>: \_\_\_\_\_ ☐ in ☐ mm

D<sub>z</sub>: \_\_\_\_\_ ☐ in ☐ mm

Assign to Moves: ☐ Extend ☐ Retract

[tolomatic.com/ask](http://tolomatic.com/ask)  
Technical support  
before and after  
purchase



[sizeit.tolomatic.com](http://sizeit.tolomatic.com)  
for fast, accurate  
actuator selection

# RSA Electric Rod-Style Actuators

## 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 thrust in each of its segments.

### 2 SELECT ACTUATOR TYPE

If side (radial) loads are present, select GSA.

### 3 SELECT ACTUATOR SIZE AND SCREW TYPE

Based on the required velocities and thrust select an actuator size and type and lead of screw drive.

### 4 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.

### 5 VERIFY AXIAL BUCKLING STRENGTH OF THE SCREW

Verify that the peak thrust does not exceed the critical buckling force for the size of the screw selected.

### 6 COMPARE APPLICATION'S PEAK PARAMETERS TO PEAK CAPACITY (PEAK REGION) OF SELECTED ACTUATOR (ROLLER SCREW)

When a roller screw is selected, calculate the application's required peak thrust and peak velocity and compare to the graphs. The selection must satisfy the application's peak requirements.

### 7 CALCULATE LUBRICATION INTERVAL (ROLLER SCREW)

When a roller screw is selected, calculate the recommended lubrication interval. See page RSA\_33 and parts sheets for complete lubrication information for the RSA24, RSA32, RSA50 and RSA64 HT option.



The above guidelines are for reference only. Use Tolomatic online sizing software for best results.

### 8 TEMPERATURE CONSIDERATIONS

If the application's ambient temperature lies outside of the allowed range [roller screw: 50° to 122°F (10° to 50°C), all others 40° to 130°F (4° to 54°C)], contact the factory. Note that in aggressive applications where roller screw is used, outside temperature of the actuator's body can approach 180°F (82°C), and adequate clearance to avoid overheating of other system components should be allowed.

### 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 AND A CONTROLLER

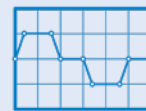
Use the obtained total torque value to select a motor and a reduction device (if required). Verify that the peak torque value is below the motor's peak torque curve, and that the continuous torque value is below the motor's continuous torque curve. Verify the minimum torque margin (15%). Verify the inertia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

### 11 SELECT A MOTOR-ACTUATOR CONFIGURATION AND SENSORS IF REQUIRED

Select an inline or a reverse-parallel motor configuration. Select mounting and rod end options. Select position sensors (if required). 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 ROD END OPTIONS AND MOUNTING OPTIONS

Rod end options include: CLV clevis rod end, SRE spherical rod end, MET externally threaded rod end, ALC alignment coupler, XR rod extension. Mounting options include: TRN trunnion mount, FFG front flange mount, MP2 mounting plates, PCD clevis mount, PCS eye mount, BFG back flange mount.



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purchase

# RSA Electric Rod-Style Actuators

## SERVICE PARTS ORDERING

### RSA ACTUATOR MOUNTING REPLACEMENT KITS

| Code                       | Size               | 12         |            | 16                                                                      |           | 24        |           | 32        |           | 50        |           | 64ST      |           | 64HT      |           |
|----------------------------|--------------------|------------|------------|-------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                            | Description        | U.S.       | Metric     | U.S.                                                                    | Metric    | U.S.      | Metric    | U.S.      | Metric    | U.S.      | Metric    | U.S.      | Metric    | U.S.      | Metric    |
| For all motor mounts       |                    |            |            |                                                                         |           |           |           |           |           |           |           |           |           |           |           |
| FFG                        | Front Flange Mount | 1107-9013  | 2107-9013  | 1112-9013                                                               | 2112-9013 | 1124-9022 | 2124-9032 | 1132-9022 | 2132-9042 | 1150-9022 | 2150-9042 | 1164-9022 | 2164-9022 | 1164-9484 | 2164-9484 |
| MP2                        | Mounting Plate     | 1107-9015  | 2107-9015  | 1112-9014                                                               | 2112-9014 | 1124-9023 | 2124-9033 | 1132-9023 | 2132-9043 | 1150-9023 | 2150-9043 | 1164-9023 | 2164-9023 | 1164-9375 | 2164-9375 |
|                            |                    | 1112-9014* | 2112-9014* | *Mounting Plate with 23 frame motor or YMH Option (for RSA12 size only) |           |           |           |           |           |           |           |           |           |           |           |
| For RP motor mounting only |                    |            |            |                                                                         |           |           |           |           |           |           |           |           |           |           |           |
| BFG                        | Back Flange Mount  | 1107-9014  | 2107-9014  | 1112-9025                                                               | 2112-9025 | 1124-9022 | 2124-9032 | 1132-9022 | 2132-9042 | 1150-9022 | 2150-9042 | 1164-9022 | 2164-9022 | 1164-9484 | 2164-9484 |
| PCS                        | Eye Mount          | 1107-9016  | 2107-9016  | 1107-9016                                                               | 2107-9016 | 1124-9024 | 2124-9034 | 1132-9024 | 2132-9044 | 1150-9024 | 2150-9044 | 1164-9024 | 2164-9024 | 1164-9344 | 2164-9344 |
| PCD                        | Clevis Mount       | 1107-9017  | 2107-9017  | 1107-9017                                                               | 2107-9017 | 1124-9025 | 2124-9035 | 1132-9025 | 2132-9045 | 1150-9025 | 2150-9045 | 1164-9025 | 2164-9025 | 1164-9345 | 2164-9345 |

### RSA ROD END REPLACEMENT KITS

#### U.S. MODELS

| Code | Size              | 12        | 16        | 24ST      | 24HT      | 32ST      | 32HT      | 50ST      | 50HT      | 64ST      | 64HT      |
|------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| CLV  | Clevis End        | 1107-9021 | 1112-9020 | 1124-9029 | 1124-9396 | 1124-9029 | 1124-9396 | 1150-9029 | 1150-9396 | 1150-9029 | 1164-9386 |
| SRE  | Spherical Rod Eye | 1107-9020 | 1112-9019 | 1124-9028 | 1124-9397 | 1124-9028 | 1124-9397 | 1150-9028 | 1150-9397 | 1150-9028 | 1164-9028 |
| MET  | External Threaded | 1107-1073 | 1112-1058 | 1124-1057 | 1124-1815 | 1124-1057 | 1124-1815 | 1150-1057 | 1150-1815 | 1150-1057 | 1164-1035 |
| ALC* | Alignment Coupler | 1107-1076 | 1112-1061 | 1124-9004 | 1124-9004 | 1124-9004 | 1124-9004 | 1150-9009 | 1150-9009 | 1150-9009 | 1164-9385 |

#### METRIC MODELS

| Code | Size              | 12        | 16        | 24ST      | 24HT      | 32ST      | 32HT      | 50ST      | 50HT      | 64ST      | 64HT      |
|------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| CLV  | Clevis End        | 2107-9021 | 2112-9020 | 2124-9039 | 2124-9396 | 2132-9049 | 2132-9396 | 2150-9049 | 2150-9396 | 2164-9029 | 2164-9386 |
| SRE  | Spherical Rod Eye | 2107-9020 | 2112-9019 | 2124-9038 | 2124-9397 | 2132-9048 | 2132-9397 | 2150-9048 | 2150-9397 | 2164-9028 | 2164-9387 |
| MET  | External Threaded | 2107-1073 | 2112-1058 | 2124-1067 | 2124-1815 | 2132-1057 | 2132-1815 | 2150-1057 | 2150-1815 | 2164-1057 | 2164-1546 |
| ALC* | Alignment Coupler | NA        | NA        | 2124-1070 | 2132-1060 | 2132-1060 | 2132-1060 | 2150-1060 | 2150-1060 | 2164-1060 | 2164-1060 |

\*NOTE: Alignment coupler is internally threaded, if external thread is desired order MET also

NA = Not Available

### RSA SWITCHES

To order switch kit use configuration code for switch preceded by SW and actuator code.

EXAMPLE: **SWRSA24KK**

|     |          |      |             |
|-----|----------|------|-------------|
| KIT | ACTUATOR | SIZE | SWITCH CODE |
|     |          |      |             |

The example is for Solid State NPN, Normally Open Switch with Quick-disconnect couplers. Each switch kit is complete with Bracket, Set Screw, Switch and mating QD cable. Note that the bracket/switch size is common and may be used on any size RSA.

**!** NOTE: Refer to parts sheets to replace switches on actuators manufactured before 5-10-2010.

| Code              | Lead             | Normal | Sensor Type     |
|-------------------|------------------|--------|-----------------|
| <b>R</b> <b>Y</b> | 5m (197 in)      | Open   | Reed            |
| <b>R</b> <b>K</b> | Quick-disconnect |        |                 |
| <b>N</b> <b>Y</b> | 5m (197 in)      | Closed | Reed            |
| <b>N</b> <b>K</b> | Quick-disconnect |        |                 |
| <b>T</b> <b>Y</b> | 5m (197 in)      | Open   | Solid State PNP |
| <b>T</b> <b>K</b> | Quick-disconnect |        |                 |
| <b>K</b> <b>Y</b> | 5m (197 in)      | Open   | Solid State NPN |
| <b>K</b> <b>K</b> | Quick-disconnect |        |                 |
| <b>P</b> <b>Y</b> | 5m (197 in)      | Closed | Solid State PNP |
| <b>P</b> <b>K</b> | Quick-disconnect |        |                 |
| <b>H</b> <b>Y</b> | 5m (197 in)      | Closed | Solid State NPN |
| <b>H</b> <b>K</b> | Quick-disconnect |        |                 |

| RSA Reverse-Parallel Tensioning Tool Kit | 24ST      | 24HT / 32 all | 50 all & 64 all |
|------------------------------------------|-----------|---------------|-----------------|
| order by part number                     | 1124-9430 | 1132-9430     | 1150-9430       |

# RSA ST & HT Electric Rod-Style Actuator

## ORDERING

**ACTUATOR** RSA 50 BN02 SK35 RPL1 ST1 **OPTIONS** FFG XR6 ALC MET KK2 YM

### MODEL & MOUNTING

RSA Rod-Style Screw-Drive Actuator

### SIZE

12, 16, 24, 32, 50, 64

### NUT/SCREW

| SIZE | CODE    | CODE NUMBER |
|------|---------|-------------|
| 12   | SN      | 01,02,05    |
|      | BZ      | 10          |
|      | BN, BNL | 08          |
| 16   | SN      | 01,02,05    |
|      | BZ      | 10          |
|      | BN, BNL | 08          |
| 24   | SN      | 02,04,08    |
|      | BZ      | 10          |
|      | BN, BNL | 02,05       |
|      | BNM     | 05,10       |
|      | RN      | 04,05,10    |
| 32   | BZ      | 10          |
|      | BN, BNL | 02,05       |
|      | BNM     | 05,10,20    |
|      | RN      | 04,05,10    |
|      | BZ      | 10          |
| 50   | BN, BNL | 01,02,04    |
|      | BNM     | 05,10,25    |
|      | RN      | 05,10       |
|      | BZ      | 10          |
| 64   | BN, BNL | 02,04,53    |
|      | BNM     | 05,10,20    |
|      | BNH     | 02          |
|      | RN      | 05,10       |

### STROKE LENGTH

SK \_\_\_ Enter desired stroke length in decimal inches

SM† \_\_\_ (Metric Mounting)  
Enter desired stroke length in millimeters

† The metric version provides metric tapped rod end, actuator mounting and dowel pins

**NOTE:** Actuator mounting threads and mounting fasteners will be either inch or metric; depending on how stroke length is indicated SK=inch mounting

SM= metric mounting

### MAXIMUM STROKE

| SIZE | BN, BZ, SN |         | RN               |                     |
|------|------------|---------|------------------|---------------------|
|      | in         | mm      | in               | mm                  |
| 12   | 12         | 304.8   | 12               | 304.8               |
| 16   | 18         | 457.2   | 18               | 457.2               |
| 24   | 24         | 609.6   | 24               | 609.6               |
| 32   | 36         | 914.4   | 36               | 914.4               |
| 50   | 48         | 1,219.2 | 36 <sup>\$</sup> | 914.4 <sup>\$</sup> |
| 64   | 60         | 1,524.0 | 36 <sup>\$</sup> | 914.4 <sup>\$</sup> |

<sup>\$</sup> RSA50 & RSA64 extended stroke length 48" (1219 mm) available for roller screws, contact Tolomatic for production time

### MOTOR MOUNTING

|      |                                                                                |
|------|--------------------------------------------------------------------------------|
| LMI  | In-line motor mount                                                            |
| RP1  | 1:1 ratio, reverse parallel motor mount                                        |
| RPL1 | 1:1 ratio, reverse parallel motor mount, left or right see page 16 for details |
| RPR1 | 1:1 ratio, reverse parallel motor mount, left or right see page 16 for details |
| RP2  | 2:1 ratio, reverse parallel motor mount                                        |
| RPL2 | 2:1 ratio, reverse parallel motor mount, left or right see page 16 for details |
| RPR2 | 2:1 ratio, reverse parallel motor mount, left or right see page 16 for details |

⊗ RP2 not available on 12 or 16 size

### RP BELT TENSIONING

TEN Belt tensioning tool for RP motor mounting

### STANDARD OR HIGH TORQUE

ST1 Standard RS Actuator  
HT\* High Torque Option  
\*requires keyed motor

⊗ HT not available on 12 or 16 size  
NOTE: RN always requires HT option

### TRUNNION MOUNT

TRR Trunnion mount  
⊗ Not available on 12 or 16 size with LMI motor mount  
NOTE: Trunnion mount is not available for field retrofit, contact Tolomatic for details

### ACTUATOR MOUNTING

For all motor mounts:  
FFG Front Flange Mount  
FFGR Front Flange Mount rotated 90° (see pg. 20)  
MP2 Mounting Plates (2 required)  
For RP motor mounting only:  
PCD Clevis Mount  
PCDR Clevis Mount rotated 90° (see pg. 23)  
PCS Eye Mount  
PCSR Eye Mount rotated 90° (see pg. 23)  
BFG Back Flange Mount

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

### ROD EXTENSION

XR \_\_\_ Enter desired rod extension in inches (SK) or millimeters (SM)

(Same unit of measure as stroke length is required)

⚠ For vertical applications only.

NOTE: The XR extension + stroke should not exceed the max. stroke of the specified actuator. (See MAX. STROKE table) Consult Tolomatic for extensions greater than the max. stroke length.

### ROD END

Internally threaded rod end is standard

CLV Clevis Rod End  
SRE Spherical Rod End  
MET Externally Threaded Rod End  
ALC Alignment Coupler Rod End\*  
Z12 Grease Zerk at 12 O'clock position (see page 41)

\*NOTE: Alignment coupler is internally threaded, if external thread is desired order MET also

### ENVIRONMENTAL PROTECTION

Standard actuator IP54  
IP67 Basic ingress protection (RSA32, 50, 64 only)  
LUB Grease, Food/Drug

### SWITCHES

| TYPE        | LOGIC  | NORMALLY | QUICK-DISCONNECT | CODE | QUANTITY                          | LEAD LENGTH          |
|-------------|--------|----------|------------------|------|-----------------------------------|----------------------|
| REED        | SPST   | Open     | no               | RY   | After code enter quantity desired | 5 meters (16.4 feet) |
|             |        | Closed   | yes              | RK   |                                   |                      |
| SOLID STATE | PNP    | Open     | no               | TY   |                                   |                      |
|             |        | Closed   | yes              | TK   |                                   |                      |
|             | NPN    | Open     | no               | KY   |                                   |                      |
|             |        | Closed   | yes              | KK   |                                   |                      |
|             | PNP    | Closed   | no               | PY   |                                   |                      |
|             |        | Closed   | yes              | PK   |                                   |                      |
| NPN         | Closed | no       | yes              | HY   |                                   |                      |
|             |        | Closed   | yes              | HK   |                                   |                      |

### YOUR MOTOR HERE

YM \_\_\_ Motor mount for non-Tolomatic motor. [www.tolomatic.com](http://www.tolomatic.com)

Brakes mounted on reverse parallel motor mounts (especially in vertically positioned actuators) will not prevent back driving of the screw and the load falling under gravity in the event of a timing belt failure. An inline motor mount with a fail-safe brake mounted directly to the actuator shaft or a special geared or thru-shaft reverse parallel construction should be considered if a brake is required in a safety critical application. Contact Tolomatic for alternate reverse parallel brake mounting options.

Gearheads may be used with RSA ST or GSA ST reverse parallel motor mounts. However, the torque on the belt and internal ST RP components must remain below the capabilities of the assembly to prevent belt slipping or premature failure. Contact Tolomatic for additional information if required.

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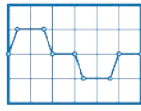
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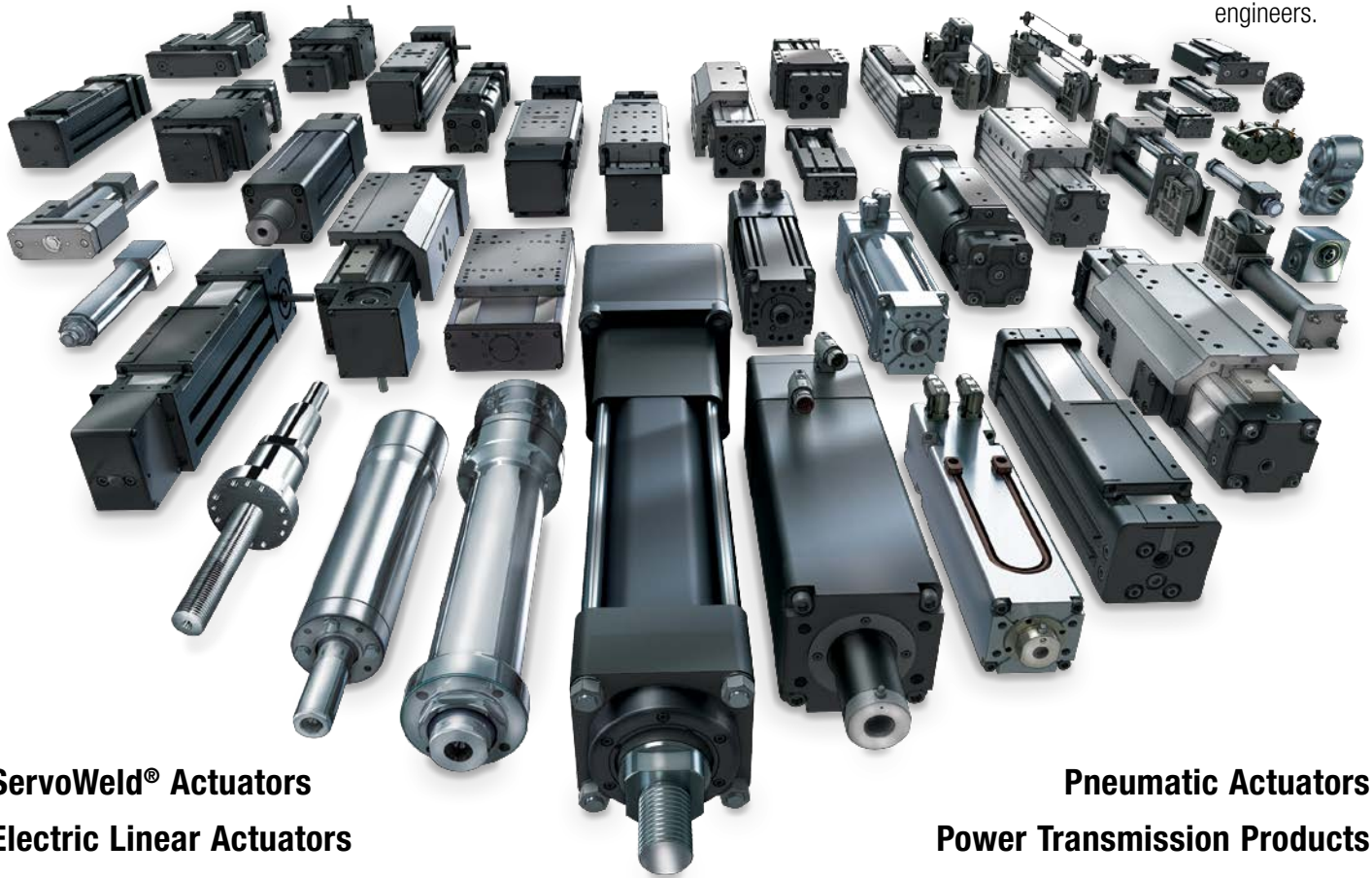
## CAD LIBRARY

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### USA - Headquarters

#### Tolomatic Inc.

3800 County Road 116  
Hamel, MN 55340, USA  
**Phone:** (763) 478-8000  
Toll-Free: **1-800-328-2174**  
sales@tolomatic.com  
[www.tolomatic.com](http://www.tolomatic.com)

### MEXICO

#### Centro de Servicio

Parque Tecnológico Innovación  
Int. 23, Lateral Estatal 431,  
Santiago de Querétaro,  
El Marqués, México, C.P. 76246  
**Phone:** +1 (763) 478-8000  
help@tolomatic.com

### EUROPE

#### Tolomatic Europe GmbH

Elisabethenstr. 20  
65428 Rüsselsheim  
Germany  
**Phone:** +49 6142 17604-0  
help@tolomatic.eu  
[www.tolomatic.com/de-de](http://www.tolomatic.com/de-de)

### CHINA

#### Tolomatic Automation Products (Suzhou) Co. Ltd.

No. 60 Chuangye Street, Building 2  
Huqiu District, SND Suzhou  
Jiangsu 215011 - P.R. China  
**Phone:** +86 (512) 6750-8506  
Tolomatic\_China@tolomatic.com

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