

● **ENDURANCE TECHNOLOGY** ●<sup>SM</sup>

# ERD ELECTRIC ROD-STYLE ACTUATOR

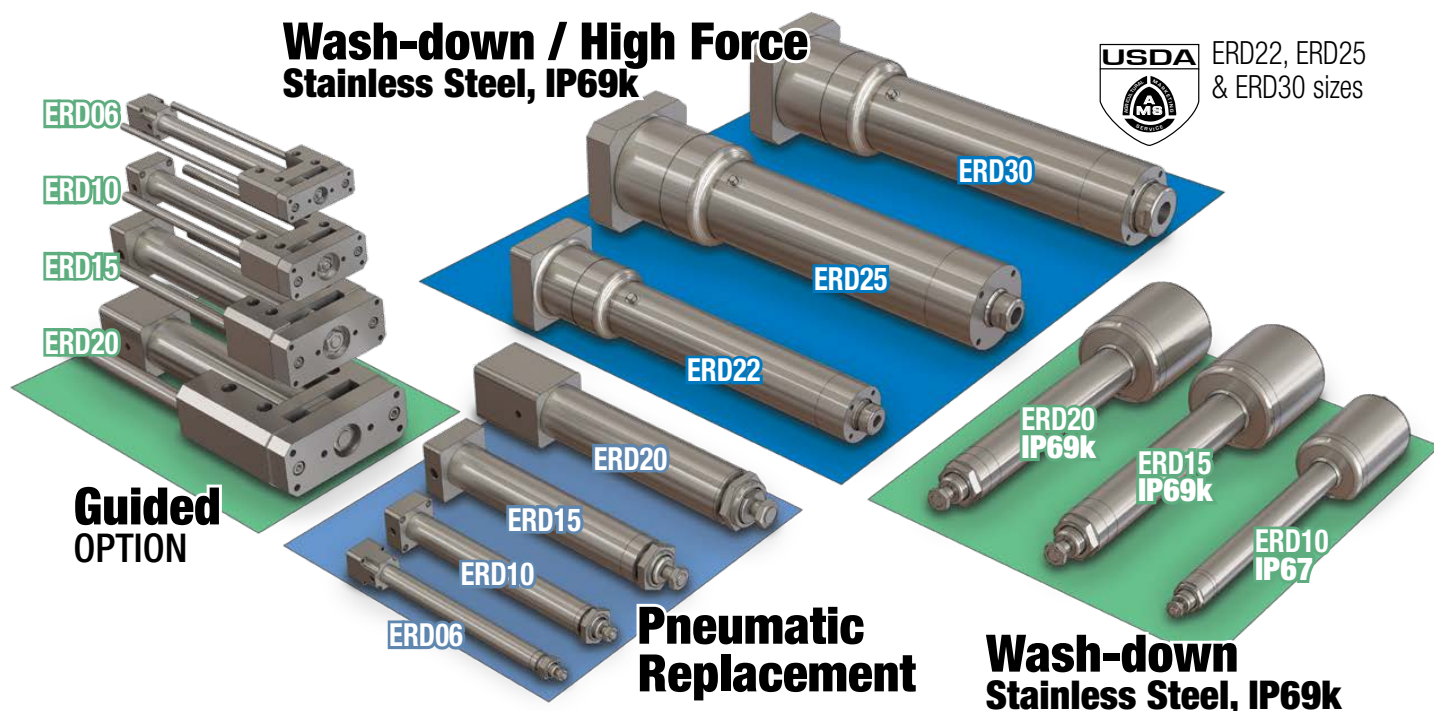
PATENT PENDING



**LINEAR SOLUTIONS MADE EASY**

# ERD – Electric Rod-Style Actuator

The ERD is an economical rod-style electric actuator designed as an alternative to pneumatic cylinders, a cost effective actuator for general automation and an option for automating manual processes. In addition, the ERD is available with all stainless steel and IP69k options which makes it the ideal hygienic actuator for the food & beverage processing environment.



## TOLOMATIC'S ELECTRIC ROD-STYLE ACTUATORS

|                                                                                                             | ERD                                                                                 | RSA                                                                                 | RSX                                                                                  | GSA                                                                                   | IMA                                                                                   |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                                             |  |  |  |  |  |
|                                                                                                             | Rod-Style Actuator                                                                  | Rod-Style Actuator                                                                  | Rod-Style Actuator                                                                   | Guided Rod-Style Actuator                                                             | Integrated Motor Rod-Style Actuator                                                   |
| <b>Thrust</b> up to:                                                                                        | 35 kN<br>(7,868 lbf)                                                                | 58 kN<br>(13,039 lbf)                                                               | 177.9 kN<br>(40,000 lbf)                                                             | 4.23 kN<br>(950 lbf)                                                                  | 30.6 kN<br>(6,875 lbf)                                                                |
| <b>Speed</b> up to:                                                                                         | 1473 mm/sec<br>(58 in/sec)                                                          | 3,124 mm/sec<br>(123 in/sec)                                                        | 760 mm/sec<br>(29.9 in/sec)                                                          | 3,124 mm/sec<br>(123 in/sec)                                                          | 1,334 mm/sec<br>(52.5 in/sec)                                                         |
| <b>Stroke Length</b> up to:                                                                                 | 1000 mm<br>(39.4 in)                                                                | 1,524 mm<br>(60 in)                                                                 | 1500 mm<br>(59 in)                                                                   | 914 mm<br>(36 in)                                                                     | 457 mm<br>(18 in)                                                                     |
| <b>Screw/Nut Type</b>                                                                                       | Solid, Ball & Roller                                                                | Solid, Ball & Roller                                                                | Roller                                                                               | Solid & Ball                                                                          | Ball & Roller                                                                         |
| For complete information see <a href="http://www.tolomatic.com">www.tolomatic.com</a> or literature number: |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| <b>Literature Number:</b>                                                                                   | 2190-4000                                                                           | 3600-4166                                                                           | 2171-4001                                                                            | 3600-4166                                                                             | 2700-4000                                                                             |

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

# ERD – Applications

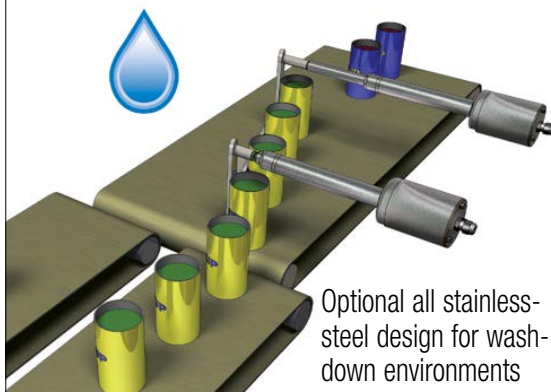
## Filling, Pumping



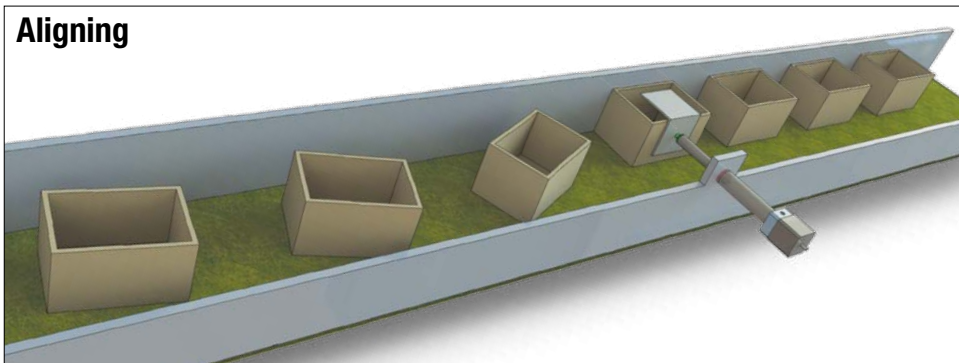
## Chopping, Press Fit, Pick & Place, Assembly



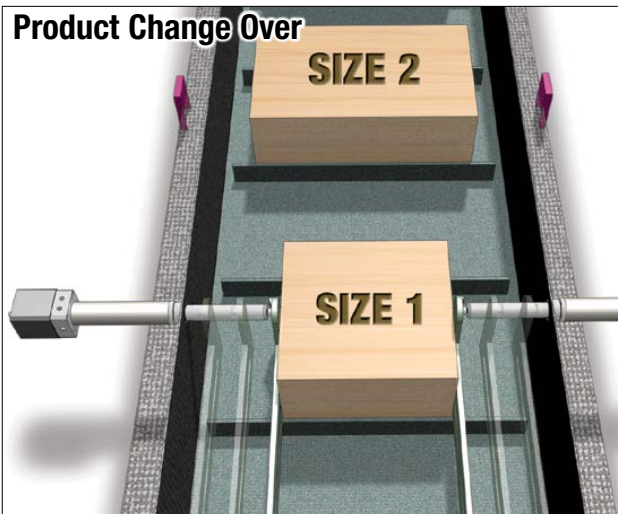
## Gating, Sorting, Diverting



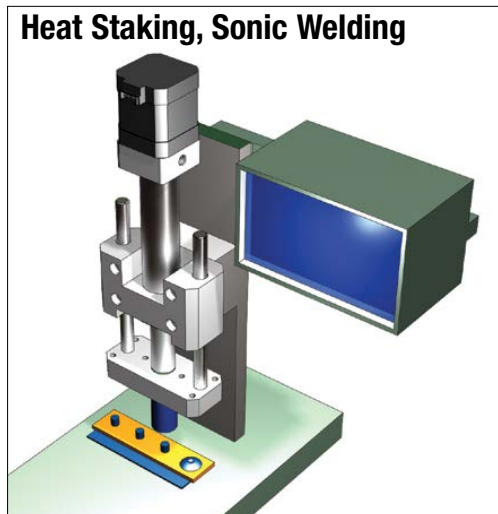
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## Product Change Over



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## Other Applications:

- Aligning
- Animation
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- Sorting
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- Web guidance
- Wire winding

# ERD – ELECTRIC ROD-STYLE ACTUATOR



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

The ERD is an economical rod-style electric actuator designed as an alternative to pneumatic cylinders and an option for automating manual processes. The ERD is compatible with many NEMA & metric mount stepper and servo motors to create a flexible, powerful electric actuator solution. Built-to-order in stroke lengths up to 1.219 m (48").

## **MULTIPLE SCREW TECHNOLOGIES**

### **YOU CAN CHOOSE:**

- Solid nuts of bronze (15, 20 sizes) Or engineered resins (06, 10, 15 sizes) offer quiet performance at the lowest cost
- Ball screws (10, 15, 20, 22, 25, 30 sizes) offer efficiency at a cost effective price; low-backlash available
- Roller screws provide the highest thrust and life ratings available (22, 25, 30 sizes only)



## **OVERSIZED MAIN BEARING**

- Oversized for long life
- Accommodates high thrust load

## **PATENTED**

## **THREADED NOSE MOUNT WITH JAM NUT**

- Metric threads
- Convenient mounting for many applications (06, 10, 15, 20 sizes)



## **THREADED ROD END**

- Compatible with many commercially available metric rod end accessories
- Standard metric threads
- 06, 10, 15, 20 male threads; 22, 25, 30 female threads

## **NOSE BEARING**

- Engineered resins for smooth operation
- Provides critical support of thrust rod

## **STAINLESS-STEEL THRUST TUBE**

- 300 series stainless-steel thrust tube provides high rigidity and corrosion resistance

## **INTERNAL MAGNET**

- This standard feature accommodates reed and solid state switches anywhere on the main tube

## **300 SERIES STAINLESS-STEEL MAIN TUBE**

- 300 Series stainless-steel main tube provides high rigidity and corrosion resistance

**MOTOR ORIENTATION & MOTOR CHOICES**

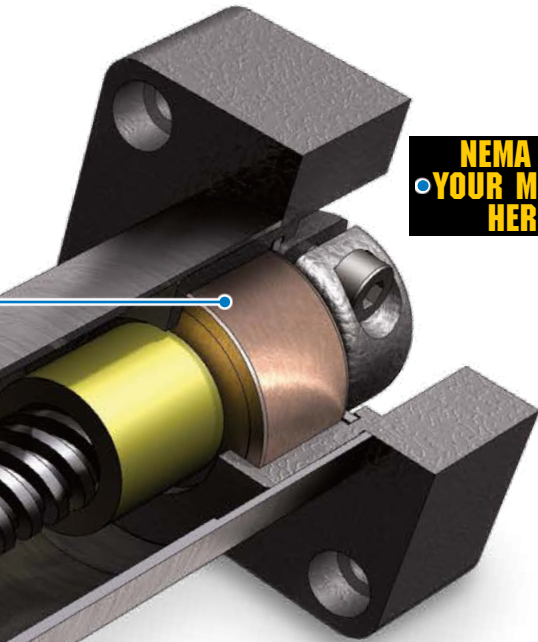
**LM1 – INLINE**

- Inline option directly couples the driving shaft and is typically a one-piece housing construction for optimum alignment and support of the motor

**RP – REVERSE PARALLEL**

- Reverse-parallel option minimizes the overall length and offers a belt reduction drive with a 1:1 or 2:1 ratio.

**NEMA OR  
YOUR MOTOR  
HERE**

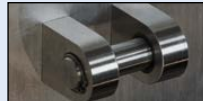


**OPTIONS**



**TRR – TRUNNION MOUNT**

For applications that require pivoting, 300 series stainless steel construction. Available on all sizes



**PCD – REAR CLEVIS MOUNT**

For applications that require rear pivot, (Available for 15, 20, 22, 25, 30 sizes with RP mounting only)



**FM2 – FOOT MOUNT\***

For applications that require bottom mounting, 300 series stainless steel construction. Available on all sizes



**FFG – FRONT FLANGE MOUNT\***

For front mounting applications, 300 series stainless steel construction. Available on all sizes



**SWITCHES\***

Choose from: Reed, Solid State PNP or NPN, all available in normally open. Available on all sizes

**ARI – INTERNAL ANTI-ROTATE**

When anti-rotation is required. For 15, 20, 22, 25, 30 sizes.

**IP67 & IP69K RATINGS**

An IP67 upgrade (static rating) for protection against water and dust ingress IP69k also protects from high pressure wash-down (see page ERD\_34 for ordering details)

**SS1 – STAINLESS STEEL**

Same ERD actuator made of all 300 series stainless steel for corrosion resistance. For 06, 10, 15, 20, 22, 25, 30 sizes.

**SS2 – STAINLESS STEEL**

SS1 option plus IP67 or IP69k and protective motor enclosure (see page ERD\_6) Available on 10, 15, 20 sizes

**GD2 – GUIDE**

For applications that require anti-rotation, or guidance and load bearing. Made of lightweight aluminum Available on 06, 10, 15, 20 sizes

**GUIDE (GD2 OPTION)**

- Load guidance, tooling plate and anti-rotate
- Made of aluminum (06, 10, 15, 20 sizes)



**INTEGRAL GUIDE RODS AND BEARINGS**

- Stainless-steel guide rods provide high rigidity and low deflection
- Four composite bearings support the load for smooth consistent motion



**\*NOTE:** Foot Mount, Front Flange Mount and Switches are shipped together with the actuator but are not installed by Tolomatic.

# SS2 OPTION – ERD10, 15 & 20

## ALL 300 SERIES STAINLESS STEEL, IP69K, MOTOR PROTECTION

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

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

The all 300 series stainless-steel ERD for 10, 15 & 20 sizes incorporates hygienic design principles and includes a protective enclosure for Tolomatic stepper/servo motors. (10 size: stepper motor only)  
The SS2 has an IP69k rating (static). The SS2 is built-to-order in stroke lengths up to 0.6 m (24").

#### FLEXIBLE CONNECTION

- Choice of cord grips (PVDF) or industry standard conduit threads



SS23

1 or 2 cord grips determined if encoder is selected

SS21

NPT 1/2" conduit thread

&

SS22

M20x1.5 conduit thread

#### SMOOTH EXTERIOR

- This primary design decision eases cleanup and helps to prevent bacterial growth

#### IP69K RATED

- To withstand high-pressure wash-down
- Clean-in-place compatible

#### MOTOR PROTECTION

- Motor enclosure made of stainless steel designed to protect motor with IP69k rating (static)

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

# ERD22, 25 & ERD30 STANDARD

## ALL 300 SERIES STAINLESS STEEL, IP69K

The all 300 series stainless-steel ERD incorporates hygienic design principles and has an IP69k rating (static). Available in 22, 25 & 30 sizes, the ERD is built-to-order in stroke lengths up to 1.219 m (48") with force up to 35 kN (7,868 lbf).



- **HYGI** Option: USDA approved hygienic design [NSF/ANIS3-A 14159-1-2010] (see #2190-4003 for usage details)

### BREATHER / PURGE PORT

- Helps prevent contaminants from entering into actuator

### WELDED SEAMS

- Leaving no gaps which eases cleanup and helps to prevent bacterial growth

### USDA SCRAPER

- Available with USDA certified option **HYGI**

### ALL 300 SERIES STAINLESS STEEL CONSTRUCTION

- 300 series stainless steel for corrosion resistance
- Simplifies and lowers cost of machine design by eliminating the need for protective guards around standard actuators

### DURABLE SEALS

- Polyurethane for IP69k ingress protection and resistance to caustic wash-down

### STAINLESS STEEL FASTENERS

- Standard metric threads
- Hex fasteners for sturdy construction without potential particle collection areas

### GREASE PORT

- Screw re-lubrication system provides extended screw life
- Convenient lubrication without disassembly

### THREADED ROD END

- Compatible with many commercially available metric rod end accessories
- Standard metric threads
- 06, 10, 15, 20 male threads; 22, 25, 30 female threads

# ERD – Electric Rod-Style Actuator

sizeit.tolomatic.com for fast,  
accurate actuator selection



SIZE: ALL

## SPECIFICATIONS

### SPECIFICATIONS (US conventional measurement)

| ERD SIZE | MAXIMUM STROKE* | SCREW CODE | LEAD   | LEAD ACCURACY | BACKLASH | MAXIMUM THRUST | DYNAMIC LOAD RATING | INERTIA            |                    |                    | WEIGHT   |          |         |         |             |          | WEIGHT (GD2 adder) |          |
|----------|-----------------|------------|--------|---------------|----------|----------------|---------------------|--------------------|--------------------|--------------------|----------|----------|---------|---------|-------------|----------|--------------------|----------|
|          |                 |            |        |               |          |                |                     | LMI                | RP                 |                    | LMI (AL) | LMI (SS) | RP (AL) | RP (SS) | (SS2 adder) |          |                    |          |
|          |                 |            |        |               |          |                |                     | Base               | Base               | Per Inch           | Base     | Base     | Base    | Base    | Base        | Per Inch | Base               | Per Inch |
|          | in              |            | in/rev | in/ft         | in       | lbf            | lbf                 | lb-in <sup>2</sup> | lb-in <sup>2</sup> | lb-in <sup>2</sup> | lb       | lb       | lb      | lb      | lb          | lb       | lb                 | lb       |
| 06       | 8               | SN02       | 0.500  | 0.005         | 0.007    | 20             | NA                  | 0.0018             | —                  | 0.0001             | 0.263    | —        | —       | —       | —           | 0.035    | 0.579              | 0.027    |
|          |                 | SN04       | 0.250  | 0.005         | 0.007    | 20             | NA                  | 0.0018             | —                  | 0.0001             | 0.263    | —        | —       | —       | —           | 0.035    | 0.579              | 0.027    |
|          |                 | SN16       | 0.063  | 0.005         | 0.007    | 20             | NA                  | 0.0018             | —                  | 0.0001             | 0.263    | —        | —       | —       | —           | 0.035    | 0.579              | 0.027    |
| 10       | 10              | SN01       | 1.000  | 0.007         | 0.007    | 40             | NA                  | 0.0022             | —                  | 0.0006             | 0.411    | —        | —       | —       | 2.280       | 0.069    | 1.028              | 0.061    |
|          |                 | SN02       | 0.500  | 0.007         | 0.007    | 40             | NA                  | 0.0022             | —                  | 0.0006             | 0.411    | —        | —       | —       | 2.280       | 0.069    | 1.028              | 0.061    |
|          |                 | SN05       | 0.200  | 0.007         | 0.007    | 40             | NA                  | 0.0022             | —                  | 0.0006             | 0.411    | —        | —       | —       | 2.280       | 0.069    | 1.028              | 0.061    |
|          |                 | BNM05      | 0.197  | 0.004         | 0.005    | 100            | 240                 | 0.0040             | —                  | 0.0014             | 0.607    | —        | —       | —       | 2.280       | 0.087    | 1.028              | 0.061    |
| 15       | 12              | SN01       | 1.000  | 0.006         | 0.007    | 75             | NA                  | 0.0104             | 0.2101             | 0.0017             | 1.079    | —        | 4.230   | 7.761   | 5.771       | 0.126    | 2.297              | 0.095    |
|          |                 | SN02       | 0.500  | 0.005         | 0.007    | 75             | NA                  | 0.0104             | 0.2101             | 0.0017             | 1.079    | —        | 4.230   | 7.761   | 5.771       | 0.126    | 2.297              | 0.095    |
|          |                 | SN05       | 0.200  | 0.006         | 0.007    | 75             | NA                  | 0.0104             | 0.2101             | 0.0017             | 1.079    | —        | 4.230   | 7.761   | 5.771       | 0.126    | 2.297              | 0.095    |
|          | 24              | BNM05      | 0.197  | 0.004         | 0.005    | 200            | 450                 | 0.0178             | 0.2208             | 0.0044             | 1.170    | —        | 4.230   | 7.761   | 5.771       | 0.159    | 2.297              | 0.095    |
|          |                 | BNM10      | 0.394  | 0.004         | 0.005    | 200            | 400                 | 0.0178             | 0.2208             | 0.0044             | 1.170    | —        | 4.230   | 7.761   | 5.771       | 0.159    | 2.297              | 0.095    |
|          |                 | BZ10       | 0.100  | 0.006         | 0.008    | 200            | NA                  | 0.0178             | 0.2208             | 0.0044             | 1.170    | —        | 4.230   | 7.761   | 5.771       | 0.159    | 2.297              | 0.095    |
| 20       | 24              | BNM05      | 0.197  | 0.004         | 0.005    | 500            | 900                 | 0.0628             | 0.4102             | 0.0263             | 7.575    | —        | 23 FRM  | 23 FRM  | 7.552       | 0.325    | 6.455              | 0.256    |
|          |                 | BNM10      | 0.394  | 0.004         | 0.005    | 500            | 900                 | 0.0628             | 0.4102             | 0.0263             | 7.575    | —        | 5.610   | 9.030   | 7.552       | 0.325    | 6.455              | 0.256    |
|          |                 | BNM20      | 0.788  | 0.004         | 0.004    | 500            | 2560                | 0.0628             | 0.4102             | 0.0105             | 7.575    | —        | 34 FRM  | 34 FRM  | 7.552       | 0.325    | 6.455              | 0.256    |
|          |                 | BZ10       | 0.100  | 0.006         | 0.008    | 500            | NA                  | 0.0628             | 0.4102             | 0.0105             | 7.575    | —        | 6.050   | 9.448   | 7.552       | 0.325    | 6.455              | 0.256    |
| 22       | 39.4            | BN02       | 0.500  | 0.004         | 0.015    | 1600           | 2836                | 0.4449             | 0.5489             | 0.0086             | -        | 11.05    | -       | 20.18   | -           | 0.43     |                    |          |
|          |                 | BN05       | 0.200  | 0.003         | 0.015    | 950            | 1624                | 0.4449             | 0.5489             | 0.0086             | -        | 11.05    | -       | 20.18   | -           | 0.43     |                    |          |
|          |                 | BNM05      | 0.197  | 0.002         | 0.004    | 1000           | 1958                | 0.4267             | 0.5307             | 0.0044             | -        | 10.81    | -       | 19.94   | -           | 0.40     |                    |          |
|          |                 | BNM10      | 0.394  | 0.002         | 0.004    | 900            | 1214                | 0.4267             | 0.5307             | 0.0044             | -        | 10.81    | -       | 19.94   | -           | 0.40     |                    |          |
|          |                 | BNM20      | 0.787  | 0.004         | 0.004    | 1000           | 2560                | 0.4527             | 0.5567             | 0.0105             | -        | 11.12    | -       | 20.25   | -           | 0.45     |                    |          |
|          | 24              | RNM04      | 0.157  | 0.0004        | 0.0012   | 1700           | 5577                | 0.4226             | 0.5266             | 0.0033             | -        | 10.79    | -       | 19.92   | -           | 0.39     |                    |          |
|          |                 | RNM05      | 0.197  | 0.0004        | 0.0012   | 1700           | 5577                | 0.4226             | 0.5266             | 0.0033             | -        | 10.79    | -       | 19.92   | -           | 0.39     |                    |          |
| 25       | 39.4            | BN01       | 1.000  | 0.004         | 0.002    | 711            | 2500                | 0.8634             | 0.7749             | 0.0277             | —        | 31.77    | —       | 53.85   | —           | 0.87     |                    |          |
|          |                 | BN02       | 0.500  | 0.004         | 0.015    | 1423           | 5418                | 0.8634             | 0.7749             | 0.0277             | —        | 31.73    | —       | 53.81   | —           | 0.87     |                    |          |
|          |                 | BN04       | 0.250  | 0.004         | 0.015    | 2846           | 5238                | 0.8634             | 0.7749             | 0.0277             | —        | 31.73    | —       | 53.81   | —           | 0.87     |                    |          |
|          |                 | BNM05      | 0.197  | 0.002         | 0.004    | 2000           | 3395                | 0.8550             | 0.7740             | 0.0260             | —        | 31.34    | —       | 53.42   | —           | 0.86     |                    |          |
|          |                 | BNM10      | 0.394  | 0.002         | 0.004    | 1750           | 3372                | 0.8550             | 0.7740             | 0.0260             | —        | 31.75    | —       | 53.83   | —           | 0.86     |                    |          |
|          |                 | BNM25      | 0.984  | 0.004         | 0.005    | 700            | 2537                | 0.8550             | 0.7740             | 0.0260             | —        | 31.50    | —       | 53.58   | —           | 0.86     |                    |          |
|          | 36              | RNM04      | 0.157  | 0.0004        | 0.0012   | 4159           | 12762               | 0.7734             | 0.7659             | 0.0106             | —        | 31.29    | —       | 53.37   | —           | 0.78     |                    |          |
|          |                 | RNM05      | 0.197  | 0.0004        | 0.0012   | 3878           | 12762               | 0.7734             | 0.7659             | 0.0106             | —        | 31.29    | —       | 53.37   | —           | 0.78     |                    |          |
|          |                 | RNM10      | 0.394  | 0.0004        | 0.0012   | 4159           | 12762               | 0.7734             | 0.7659             | 0.0106             | —        | 31.29    | —       | 53.37   | —           | 0.78     |                    |          |
| 30       | 48              | BN04       | 0.250  | 0.004         | 0.015    | 4500           | 7143                | 1.0872             | 2.1018             | 0.1401             | —        | 32.66    | —       | 54.73   | —           | 1.39     |                    |          |
|          |                 | BNM05      | 0.197  | 0.002         | 0.004    | 3000           | 6714                | 1.1232             | 2.1378             | 0.1702             | —        | 34.07    | —       | 56.14   | —           | 1.44     |                    |          |
|          |                 | BNM10      | 0.394  | 0.002         | 0.004    | 2950           | 7476                | 1.1233             | 2.1378             | 0.1702             | —        | 35.48    | —       | 57.55   | —           | 1.44     |                    |          |
|          |                 | BNM20      | 0.787  | 0.002         | 0.005    | 1845           | 5528                | 1.1232             | 2.1378             | 0.1702             | —        | 33.58    | —       | 55.65   | —           | 1.44     |                    |          |
|          | 36              | RNM05      | 0.197  | 0.0004        | 0.0012   | 7868           | 12762               | 0.632              | 1.201              | 0.0531             | —        | 31.45    | —       | 53.52   | —           | 1.20     |                    |          |
|          |                 | RNM10      | 0.394  | 0.0004        | 0.0012   | 7943           | 12762               | 0.632              | 1.201              | 0.0531             | —        | 31.45    | —       | 53.52   | —           | 1.20     |                    |          |

\*Longer stroke length modification available upon request.

|                              |                                                                                                           |
|------------------------------|-----------------------------------------------------------------------------------------------------------|
| **Standard Temperature range | 40° to 130° F<br>(4.4° to 54.4° C)                                                                        |
| IP rating                    | <b>40</b> (static) standard for 06, 10, 15, 20 sizes<br><b>69k</b> (static) standard for 22, 25, 30 sizes |

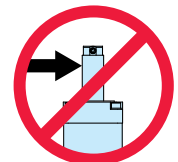
\*\*Contact Tolomatic to review application for operations outside the standard temperature range.

## SIDE LOAD CONSIDERATIONS

The standard ERD rod-style actuator is not meant to be used in applications where side loading occurs. If side loading exists in the application consider the GD2 guided option.

Loads must be guided and supported. Loads should be aligned with the line of motion of the thrust rod.

Side loading will affect the life of the actuator.



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

# ERD – Electric Rod-Style Actuator

sizeit.tolomatic.com for fast,  
accurate actuator selection



SIZE: ALL

## SPECIFICATIONS

### SPECIFICATIONS (metric measurement)

| ERD SIZE | MAXIMUM STROKE* | SCREW CODE | LEAD  | LEAD ACCURACY | BACKLASH | MAXIMUM THRUST | DYNAMIC LOAD RATING | INERTIA |        |          | WEIGHT   |          |         |                                      |                                      |                                      | WEIGHT (GD2 adder) |       |
|----------|-----------------|------------|-------|---------------|----------|----------------|---------------------|---------|--------|----------|----------|----------|---------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------|-------|
|          |                 |            |       |               |          |                |                     | LMI     | RP     | Per 25mm | LMI (AL) | LMI (SS) | RP (AL) | RP (SS)                              | (SS2 adder)                          | Per 25mm                             |                    |       |
|          |                 |            |       |               |          |                |                     |         |        |          |          |          |         |                                      |                                      |                                      | Base               | Base  |
|          |                 |            |       |               |          |                |                     | mm      | mm/rev | mm/300mm | mm       | N        | N       | kg-m <sup>2</sup> x 10 <sup>-6</sup> | kg-m <sup>2</sup> x 10 <sup>-6</sup> | kg-m <sup>2</sup> x 10 <sup>-6</sup> | kg                 | kg    |
| 06       | 203.2           | SN02       | 12.70 | 0.13          | 0.18     | 89             | NA                  | 0.53    | —      | 0.03     | 0.119    | —        | —       | —                                    | —                                    | 0.016                                | 0.263              | 0.012 |
|          |                 | SN04       | 6.35  | 0.13          | 0.18     | 89             | NA                  | 0.53    | —      | 0.03     | 0.119    | —        | —       | —                                    | —                                    | 0.016                                | 0.263              | 0.012 |
|          |                 | SN16       | 1.60  | 0.13          | 0.18     | 89             | NA                  | 0.53    | —      | 0.03     | 0.119    | —        | —       | —                                    | —                                    | 0.016                                | 0.263              | 0.012 |
| 10       | 254.0           | SN01       | 25.4  | 0.18          | 0.18     | 188            | NA                  | 0.64    | —      | 0.18     | 0.186    | —        | —       | —                                    | 1.034                                | 0.031                                | 0.466              | 0.028 |
|          |                 | SN02       | 12.7  | 0.18          | 0.18     | 188            | NA                  | 0.64    | —      | 0.18     | 0.186    | —        | —       | —                                    | 1.034                                | 0.031                                | 0.466              | 0.028 |
|          |                 | SN05       | 5.08  | 0.18          | 0.18     | 188            | NA                  | 0.64    | —      | 0.18     | 0.186    | —        | —       | —                                    | 1.034                                | 0.031                                | 0.466              | 0.028 |
|          |                 | BNM05      | 5.00  | 0.10          | 0.13     | 445            | 1068                | 1.16    | —      | 0.41     | 0.275    | —        | —       | —                                    | 1.034                                | 0.039                                | 0.466              | 0.028 |
| 15       | 304.8           | SN01       | 25.4  | 0.15          | 0.18     | 334            | NA                  | 3.04    | 61.48  | 0.50     | 0.489    | —        | 1.919   | 3.520                                | 2.618                                | 0.057                                | 1.042              | 0.043 |
|          |                 | SN02       | 12.7  | 0.13          | 0.18     | 334            | NA                  | 3.04    | 61.48  | 0.50     | 0.489    | —        | 1.919   | 3.520                                | 2.618                                | 0.057                                | 1.042              | 0.043 |
|          |                 | SN05       | 5.08  | 0.15          | 0.18     | 334            | NA                  | 3.04    | 61.48  | 0.50     | 0.489    | —        | 1.919   | 3.520                                | 2.618                                | 0.057                                | 1.042              | 0.043 |
|          | 609.6           | BNM05      | 5.00  | 0.10          | 0.13     | 890            | 2002                | 5.21    | 64.61  | 1.28     | 0.531    | —        | 1.919   | 3.520                                | 2.618                                | 0.072                                | 1.042              | 0.043 |
|          |                 | BNM10      | 10.00 | 0.10          | 0.13     | 890            | 1779                | 5.21    | 64.61  | 1.28     | 0.531    | —        | 1.919   | 3.520                                | 2.618                                | 0.072                                | 1.042              | 0.043 |
|          |                 | BZ10       | 2.54  | 0.15          | 0.20     | 890            | NA                  | 5.21    | 64.61  | 1.28     | 0.531    | —        | 1.919   | 3.520                                | 2.618                                | 0.072                                | 1.042              | 0.043 |
| 20       | 609.6           | BNM05      | 5.00  | 0.10          | 0.13     | 2224           | 4003                | 18.38   | 120.04 | 7.7      | 3.436    | —        | 23 FRM  | 23 FRM                               | 3.426                                | 0.147                                | 2.928              | 0.116 |
|          |                 | BNM10      | 10.00 | 0.10          | 0.13     | 2224           | 4003                | 18.38   | 120.04 | 7.7      | 3.436    | —        | 2.545   | 4.096                                | 3.426                                | 0.147                                | 2.928              | 0.116 |
|          |                 | BNM20      | 20.00 | 0.10          | 0.10     | 2224           | 11387               | 18.38   | 120.04 | 0.3073   | 3.436    | —        | 34 FRM  | 34 FRM                               | 3.426                                | 0.147                                | 2.928              | 0.116 |
|          |                 | BZ10       | 2.54  | 0.15          | 0.20     | 2224           | NA                  | 18.38   | 120.04 | 7.7      | 3.436    | —        | 2.744   | 4.286                                | 3.426                                | 0.147                                | 2.928              | 0.116 |
| 22       | 1000            | BN02       | 12.70 | 0.10          | 0.38     | 7117           | 12615               | 130.36  | 160.83 | 2.52     | -        | 5.01     | -       | 9.15                                 | -                                    | 0.20                                 |                    |       |
|          |                 | BN05       | 5.08  | 0.08          | 0.38     | 4226           | 7224                | 130.36  | 160.83 | 2.52     | -        | 5.01     | -       | 9.15                                 | -                                    | 0.20                                 |                    |       |
|          |                 | BNM05      | 5.00  | 0.05          | 0.10     | 4448           | 8710                | 125.03  | 155.50 | 1.29     | -        | 4.90     | -       | 9.04                                 | -                                    | 0.18                                 |                    |       |
|          |                 | BNM10      | 10.00 | 0.05          | 0.10     | 4003           | 5400                | 125.03  | 155.50 | 1.29     | -        | 4.90     | -       | 9.04                                 | -                                    | 0.18                                 |                    |       |
|          |                 | BNM20      | 20.00 | 0.10          | 0.10     | 4448           | 11387               | 132.65  | 163.12 | 3.08     | -        | 5.04     | -       | 9.19                                 | -                                    | 0.20                                 |                    |       |
|          | 609.6           | RNM04      | 4.00  | 0.01          | 0.03     | 7562           | 24808               | 123.83  | 154.30 | 0.97     | -        | 4.89     | -       | 9.04                                 | -                                    | 0.18                                 |                    |       |
|          |                 | RNM05      | 5.00  | 0.01          | 0.03     | 7562           | 24808               | 123.83  | 154.30 | 0.97     | -        | 4.89     | -       | 9.04                                 | -                                    | 0.18                                 |                    |       |
| 25       | 1000            | BN01       | 25.40 | 0.102         | 0.05     | 3163           | 11120               | 252.98  | 227.03 | 8.12     | —        | 14.41    | —       | 24.42                                | —                                    | 0.39                                 |                    |       |
|          |                 | BN02       | 12.70 | 0.102         | 0.05     | 6330           | 29100               | 252.98  | 227.03 | 8.12     | —        | 14.39    | —       | 24.41                                | —                                    | 0.39                                 |                    |       |
|          |                 | BN04       | 6.35  | 0.102         | 0.05     | 12660          | 23300               | 252.98  | 227.03 | 8.12     | —        | 14.39    | —       | 24.41                                | —                                    | 0.39                                 |                    |       |
|          |                 | BNM05      | 5.00  | 0.051         | 0.10     | 8896           | 15101               | 250.52  | 226.79 | 7.62     | —        | 14.22    | —       | 24.23                                | —                                    | 0.39                                 |                    |       |
|          |                 | BNM10      | 10.00 | 0.051         | 0.10     | 7784           | 15000               | 250.52  | 226.79 | 7.62     | —        | 14.40    | —       | 24.42                                | —                                    | 0.39                                 |                    |       |
|          |                 | BNM25      | 25.00 | 0.102         | 0.13     | 3114           | 11285               | 250.52  | 226.79 | 7.62     | —        | 14.29    | —       | 24.30                                | —                                    | 0.39                                 |                    |       |
|          | 914.4           | RNM04      | 4.00  | 0.0102        | 0.03     | 18500          | 56768               | 226.61  | 224.40 | 3.11     | —        | 14.19    | —       | 24.21                                | —                                    | 0.35                                 |                    |       |
|          |                 | RNM05      | 5.00  | 0.0102        | 0.03     | 17250          | 56768               | 226.61  | 224.40 | 3.11     | —        | 14.19    | —       | 24.21                                | —                                    | 0.35                                 |                    |       |
|          |                 | RNM10      | 10.00 | 0.0102        | 0.03     | 18500          | 56768               | 226.61  | 224.40 | 3.11     | —        | 14.19    | —       | 24.21                                | —                                    | 0.35                                 |                    |       |
|          |                 |            |       |               |          |                |                     |         |        |          |          |          |         |                                      |                                      |                                      |                    |       |
| 30       | 1219.2          | BN04       | 6.35  | 0.102         | 0.38     | 20017          | 31774               | 318.56  | 615.84 | 41.05    | —        | 14.81    | —       | 24.83                                | —                                    | 0.63                                 |                    |       |
|          |                 | BNM05      | 5.00  | 0.051         | 0.10     | 13345          | 29865               | 329.11  | 626.38 | 49.87    | —        | 15.45    | —       | 25.47                                | —                                    | 0.65                                 |                    |       |
|          |                 | BNM10      | 10.00 | 0.051         | 0.10     | 13122          | 33255               | 329.11  | 626.38 | 49.87    | —        | 16.09    | —       | 26.11                                | —                                    | 0.65                                 |                    |       |
|          |                 | BNM20      | 20.00 | 0.051         | 0.13     | 8207           | 24590               | 329.11  | 626.38 | 49.87    | —        | 15.23    | —       | 25.24                                | —                                    | 0.65                                 |                    |       |
|          | 914.4           | RNM05      | 5.00  | 0.010         | 0.03     | 34999          | 56768               | 184.94  | 351.46 | 1.55     | -        | 14.27    | -       | 24.28                                | -                                    | 0.54                                 |                    |       |
|          |                 | RNM10      | 10.00 | 0.010         | 0.03     | 35332          | 56768               | 184.94  | 351.46 | 1.55     |          | 14.27    | -       | 24.28                                | -                                    | 0.54                                 |                    |       |

#### What is an IP Rating?

The IP Code (or Ingress Protection Rating) consists of the letters IP followed by two digits and an optional letter. As defined in international standard IEC 60529, it classifies the degrees of protection provided against the intrusion of solid objects (including body parts like hands and fingers), dust, accidental contact, and water in electrical enclosures.

The IP69K test specifies a spray nozzle that is fed with 80°C water at 8–10MPa (80–100bar) and a flow rate of 14–16L/min. The nozzle is held 10–5 cm from the tested device at angles of 0°, 30°, 60° and 90° for 30s each. The test device sits on a turntable that rotates once every 12s (5rpm).

#### SOLIDS, FIRST DIGIT:

|   |            |                                                                        |
|---|------------|------------------------------------------------------------------------|
| 4 | >1 mm      | Most wires, screws, etc.                                               |
| 6 | Dust tight | No ingress of dust; complete protection against solid object intrusion |

#### LIQUIDS, SECOND DIGIT (static rating)

|    |                                     |                                                                                                                                                                             |
|----|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0  | Not protected                       |                                                                                                                                                                             |
| 7  | Immersion up to 1 m                 | Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion). |
| 9K | High pressure, high temp. wash-down | As above, plus ingress of water in harmful quantity shall not be possible when the enclosure is subject to high pressure, high temperature wash-down.                       |

#### What Does IP69K mean?

German standard DIN 40050-9 extends the IEC 60529 rating system described above with an IP69K rating for high-pressure, high-temperature wash-down applications.[4] Such enclosures must not only be dust tight (IP6X), but also able to withstand high-pressure and steam cleaning.

**The first digit** indicates the level of protection that the enclosure provides against access to hazardous parts (e.g., electrical conductors, moving parts) and the ingress of solid foreign objects.

**The second digit** indicates the level of protection that the enclosure provides against harmful ingress of water.

# ERD – Electric Rod-Style Actuator

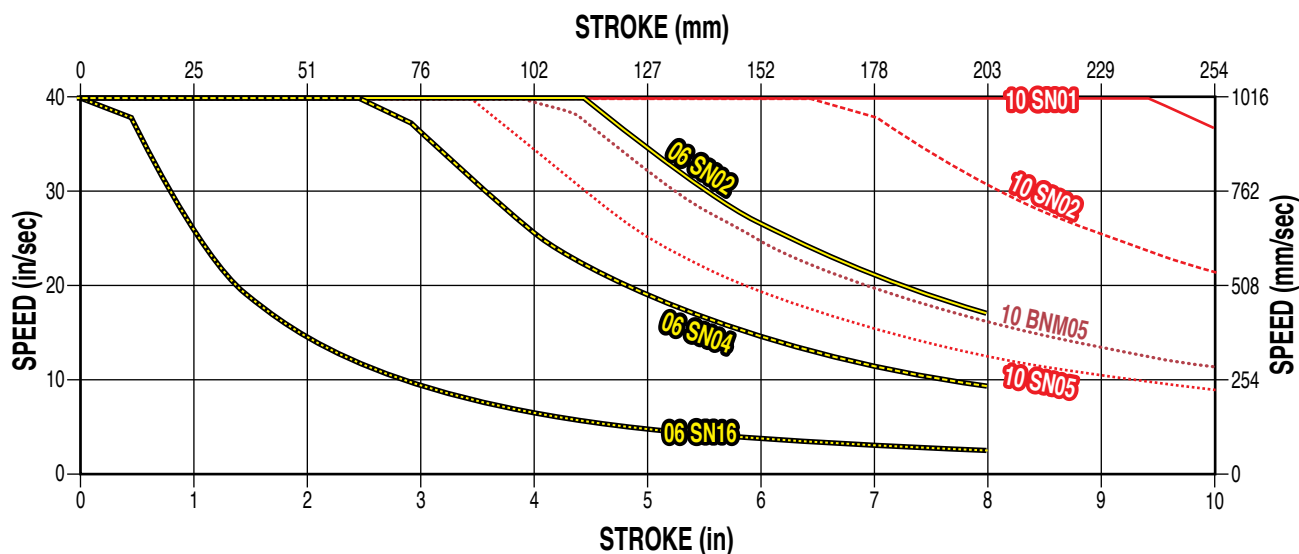
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accurate actuator selection



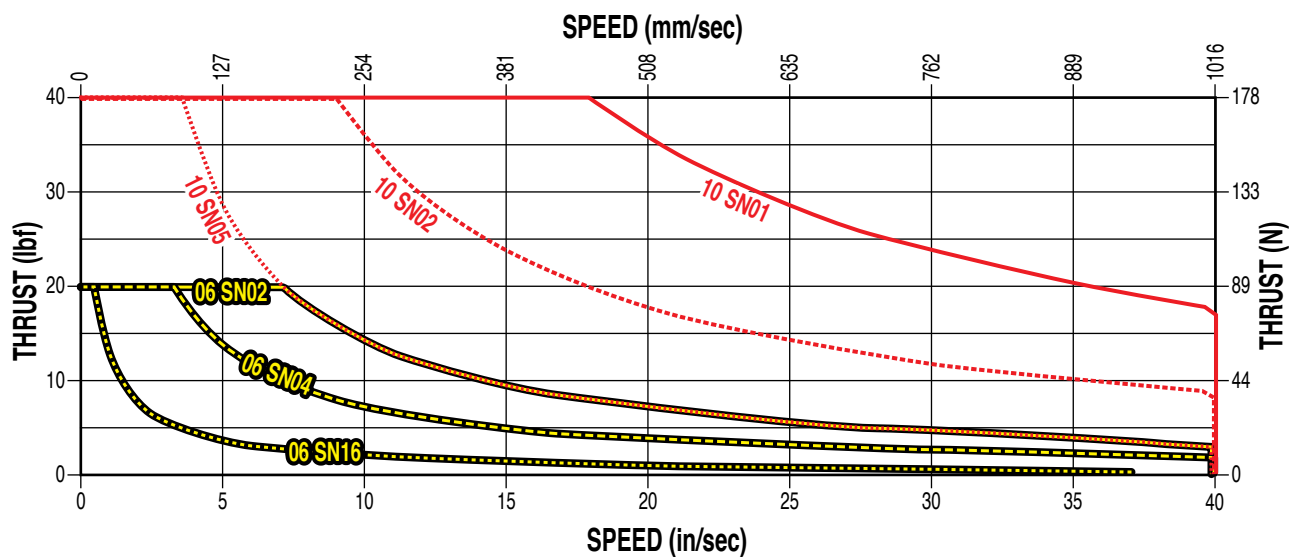
SIZE: ERD06, ERD10

PERFORMANCE

## CRITICAL SPEED CAPACITY



## PV LIMITS (ACME NUTS)



(Pressure Velocity of Acme Nut)

**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.

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

# ERD – Electric Rod-Style Actuator

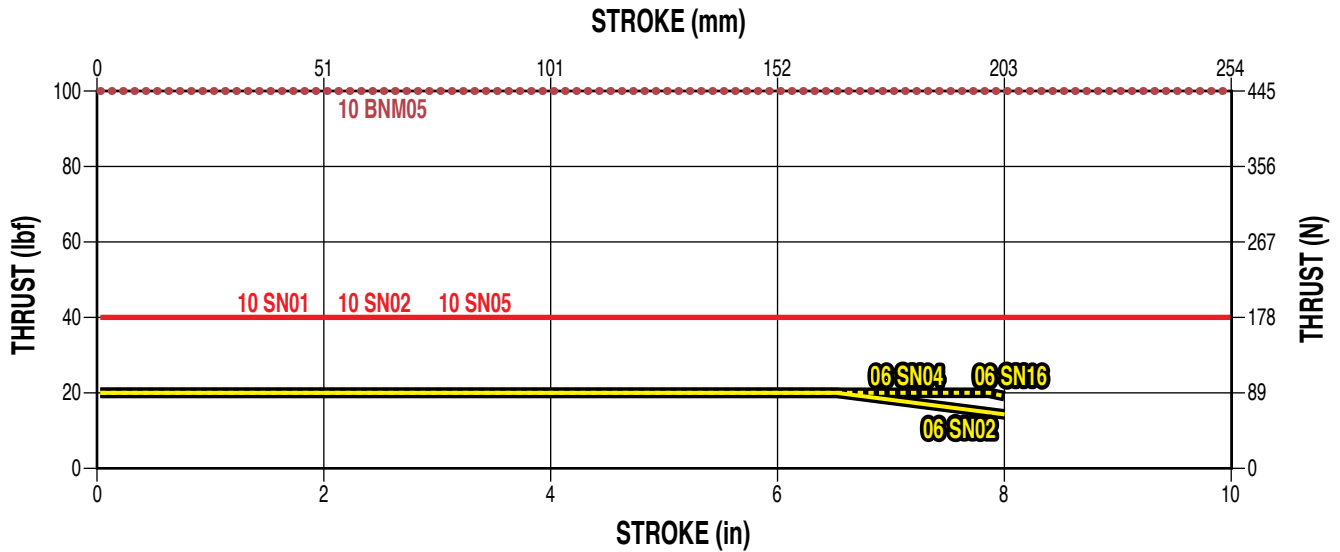
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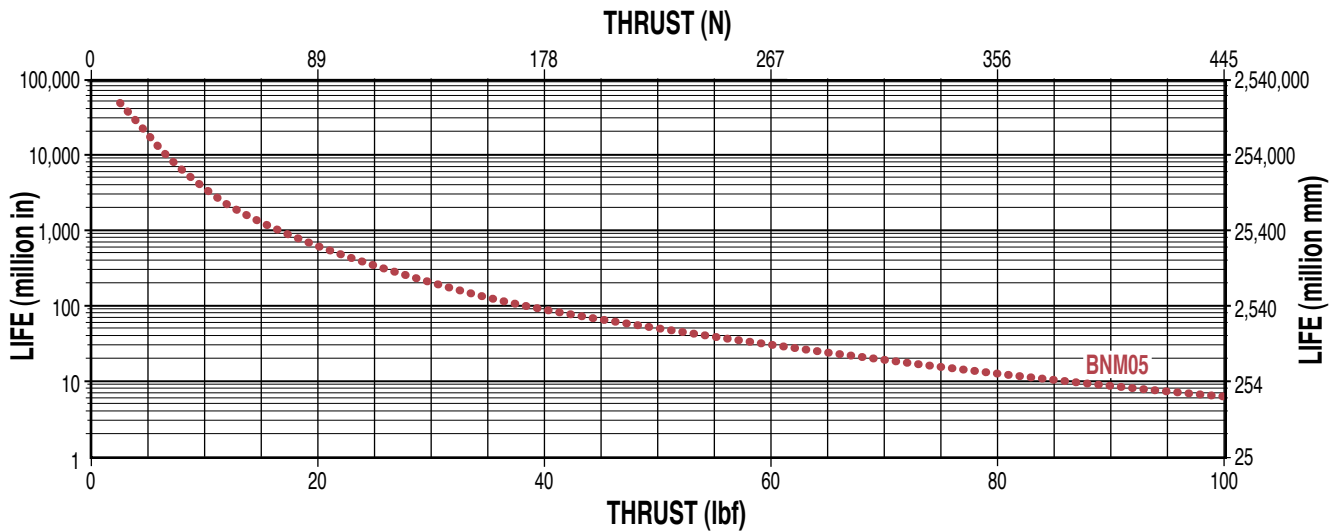
SIZE: ERD06, ERD10

PERFORMANCE

## MAXIMUM THRUST vs STROKE



## SCREW LIFE (BALL NUTS)



**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:

$\ell$  = 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)

# ERD – Electric Rod-Style Actuator

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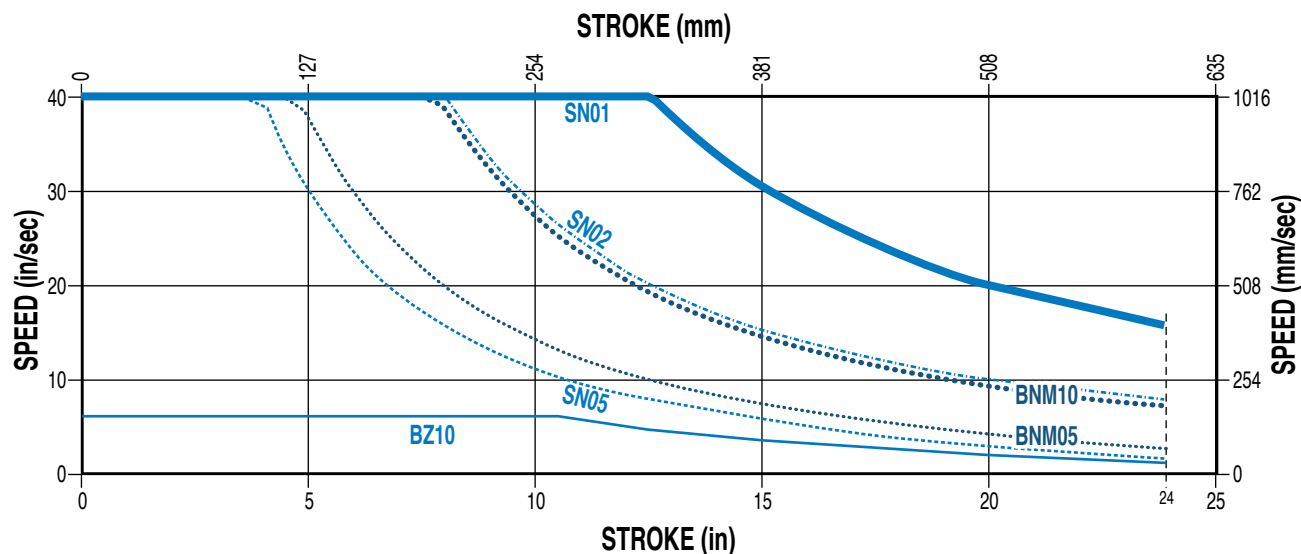


ACTUATOR  
SIZING

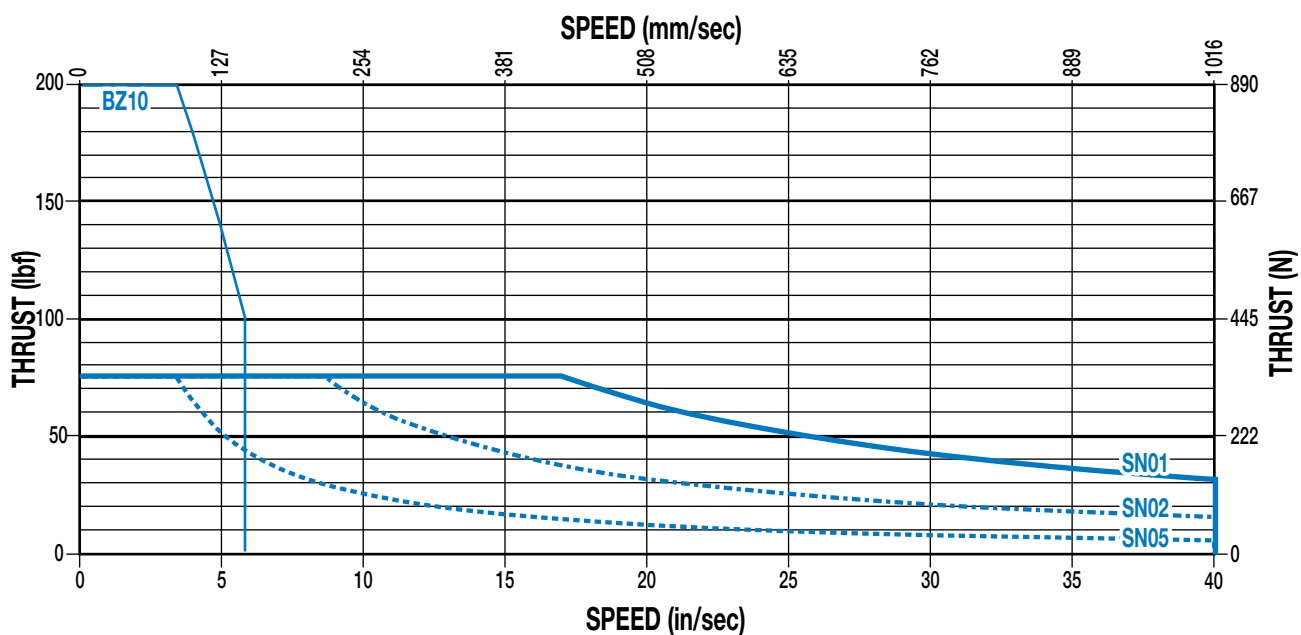
SIZE: **ERD15**

## PERFORMANCE

### CRITICAL SPEED CAPACITY



### PV LIMITS (ACME NUTS)



(Pressure Velocity of Acme Nut)

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

$$P \times V \leq 0.1$$

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

# ERD – Electric Rod-Style Actuator

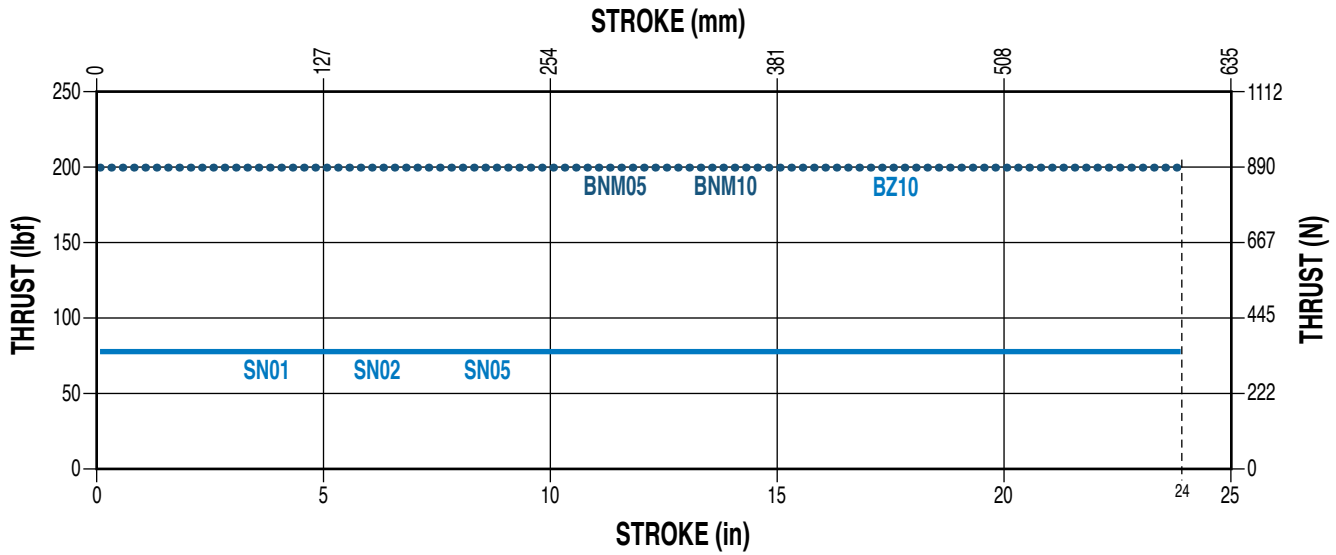
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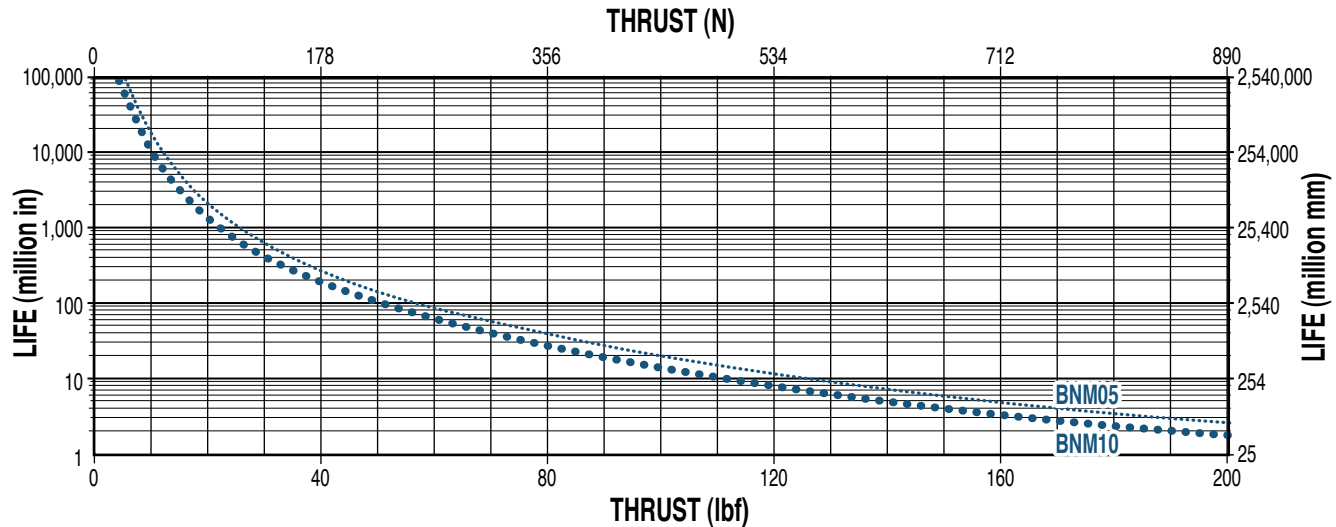
SIZE: **ERD15**

**PERFORMANCE**

## MAXIMUM THRUST vs STROKE



## SCREW LIFE (BALL NUTS)



*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:

$\ell$  = 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)

# ERD – Electric Rod-Style Actuator

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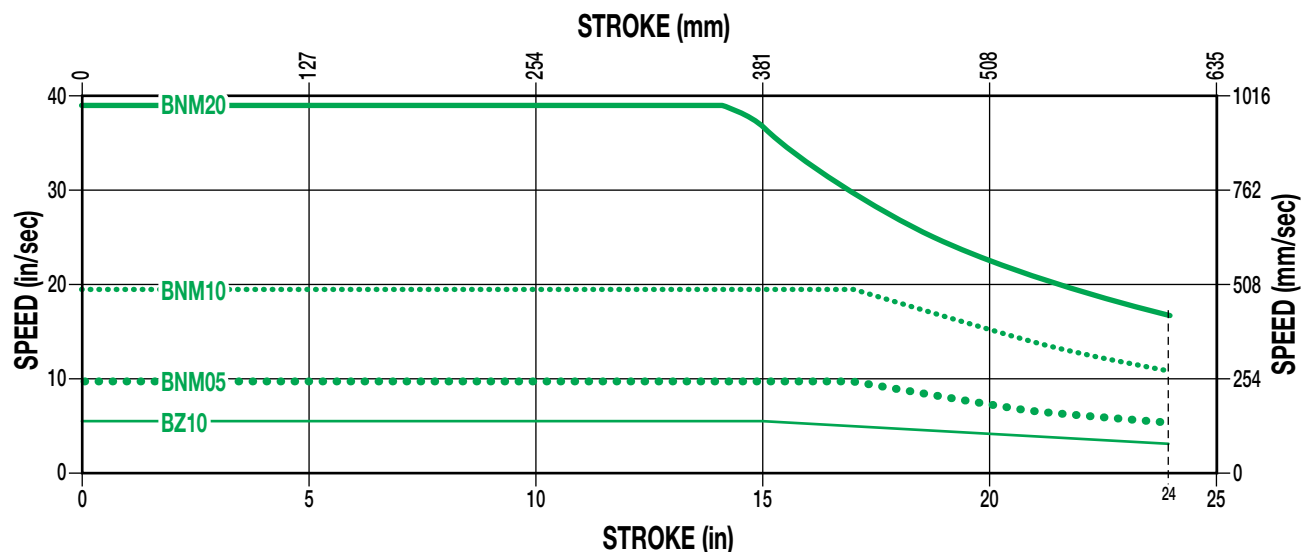


ACTUATOR  
SIZING

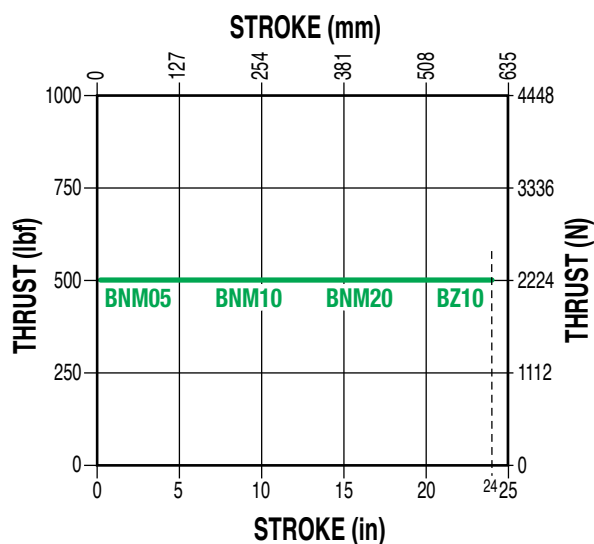
SIZE: **ERD20**

**PERFORMANCE**

## CRITICAL SPEED CAPACITY



## MAXIMUM THRUST vs STROKE



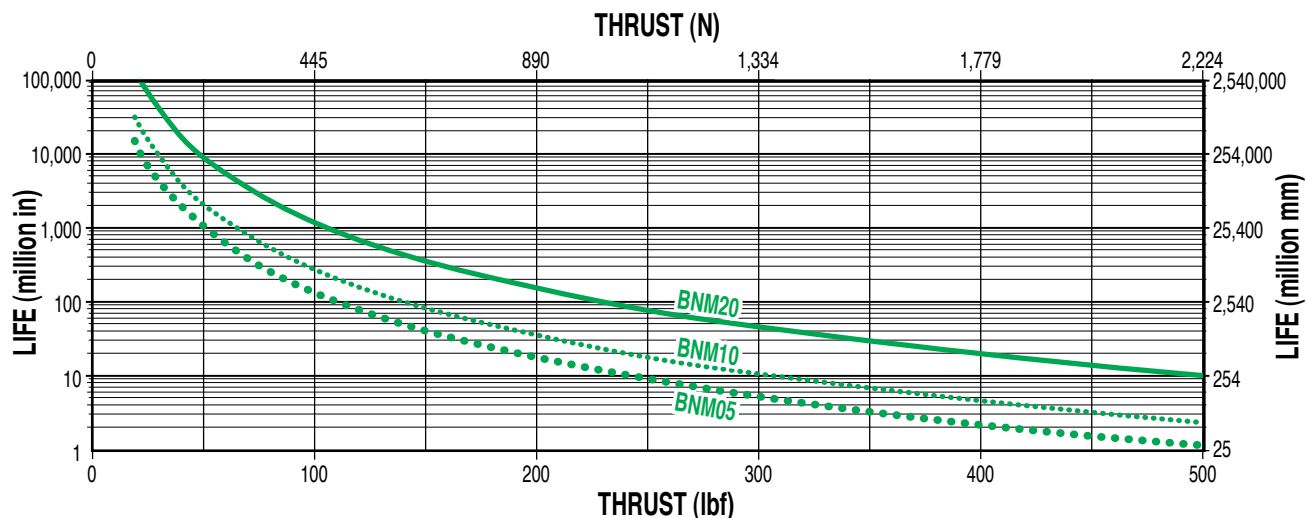
## PV LIMITS (BRONZE NUT)



## SCREW LIFE



NOTE: See L<sub>10</sub> expected life calculation on page ERD\_13



# ERD – Electric Rod-Style Actuator

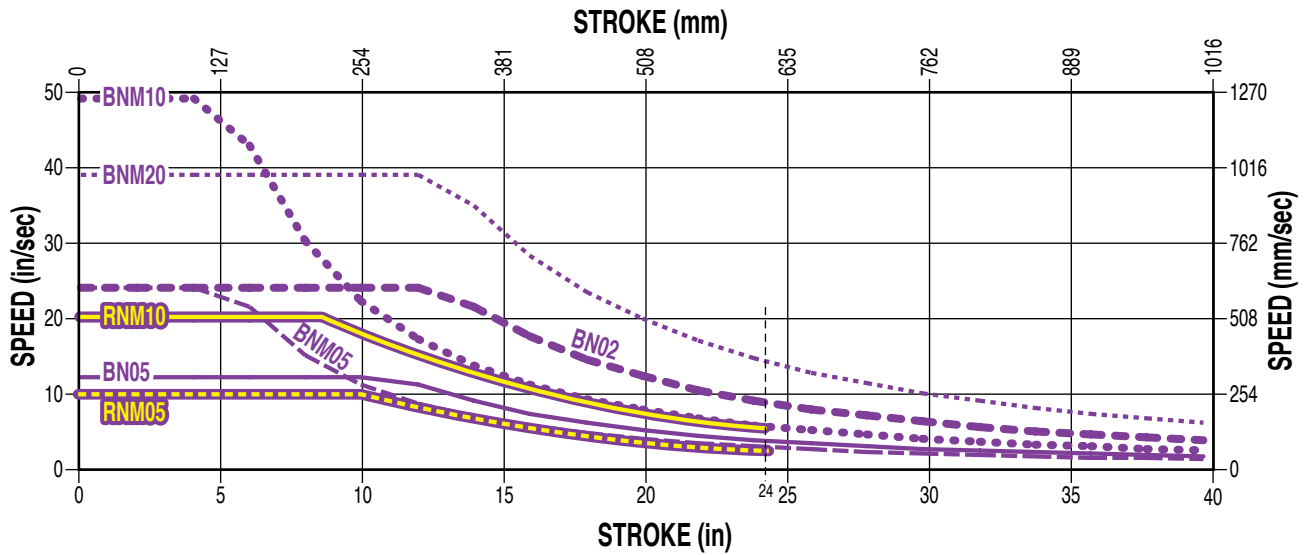
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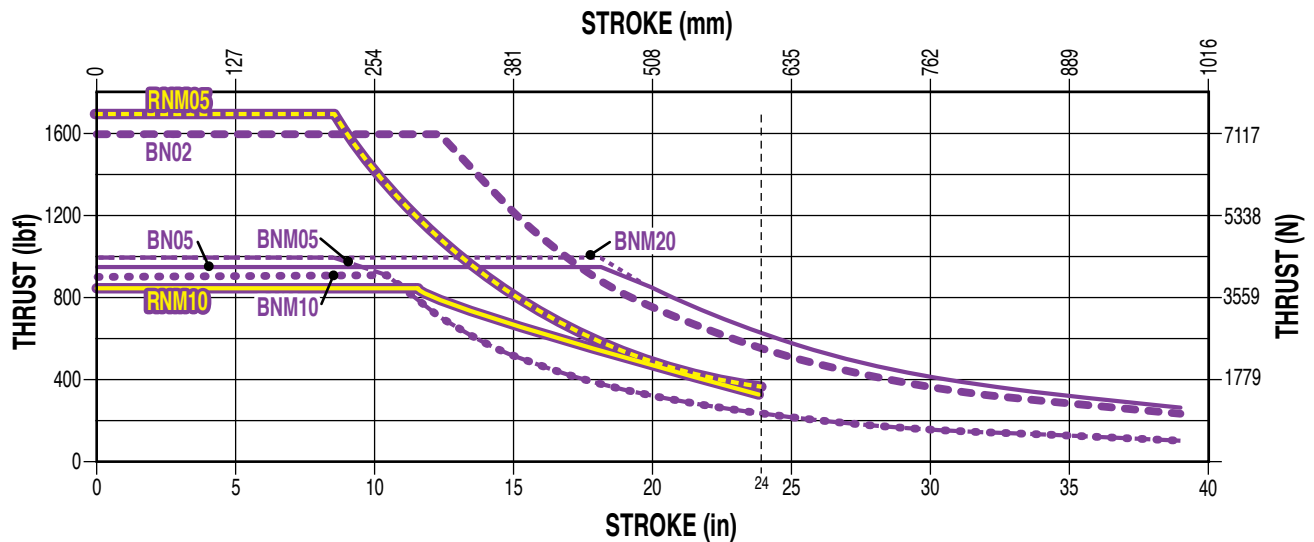
SIZE: **ERD22**

**PERFORMANCE**

## CRITICAL SPEED CAPACITY



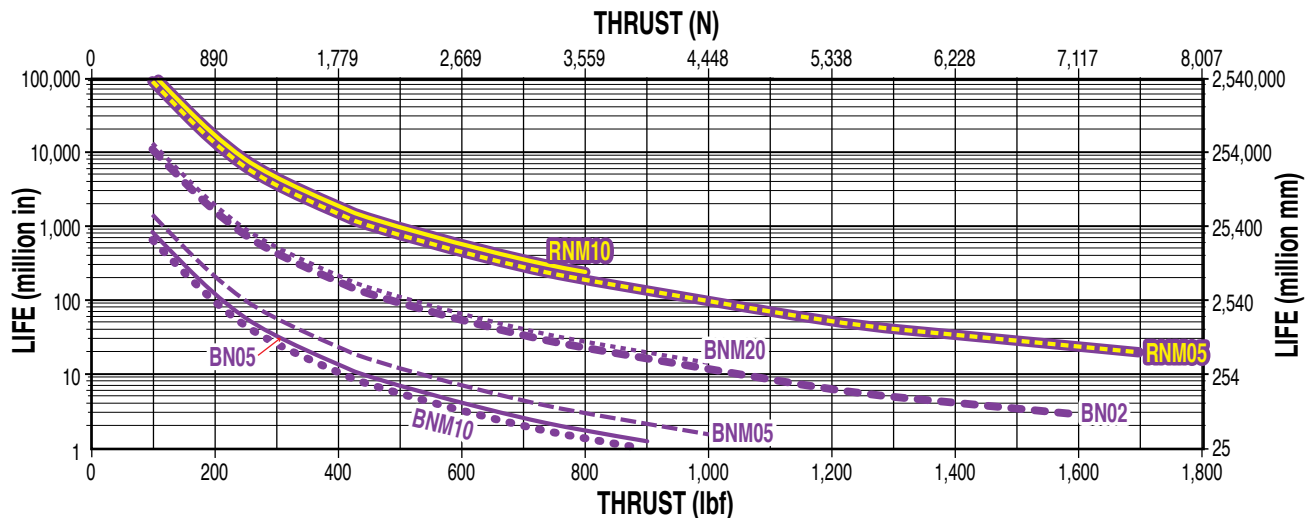
## MAXIMUM THRUST vs STROKE



## SCREW LIFE



NOTE: See L<sub>10</sub> expected life calculation on page ERD\_13



# ERD – Electric Rod-Style Actuator

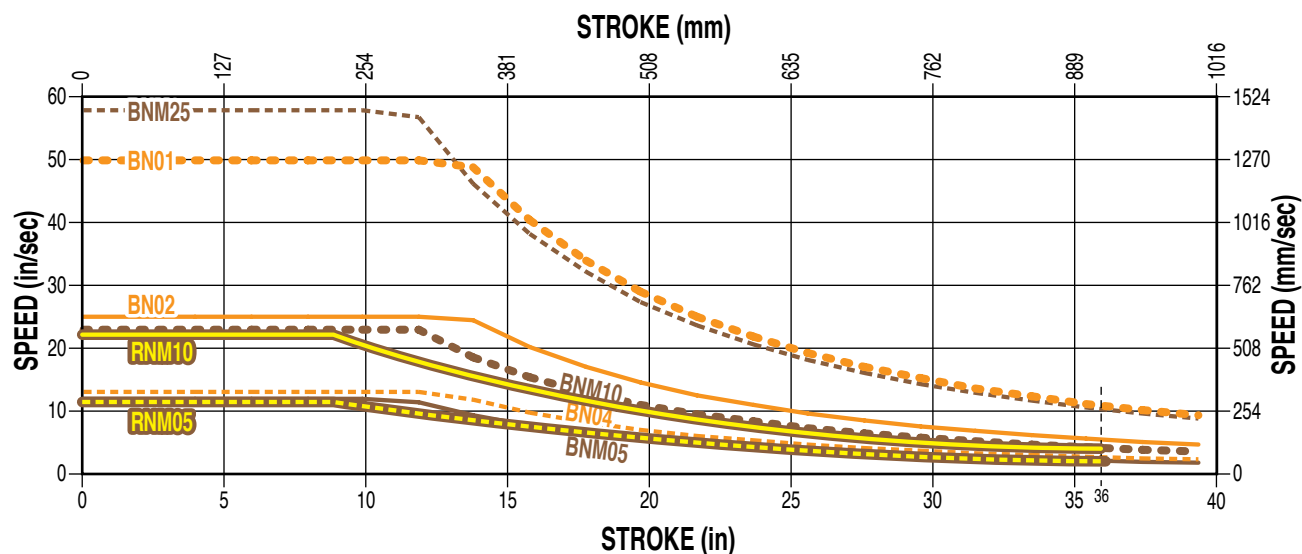
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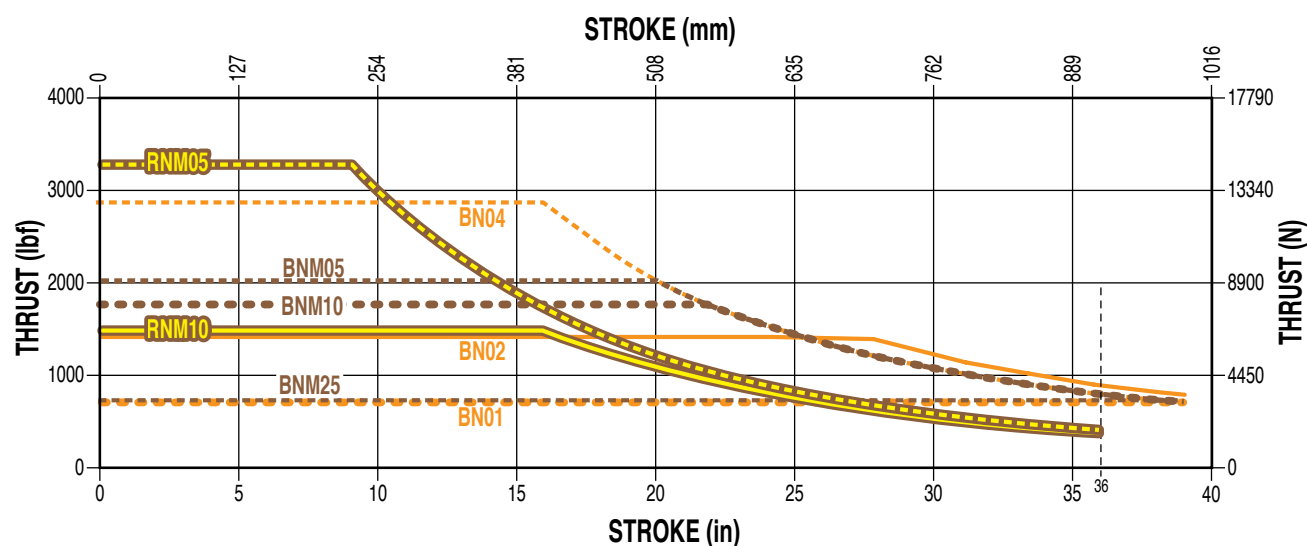
SIZE: **ERD25**

**PERFORMANCE**

## CRITICAL SPEED CAPACITY



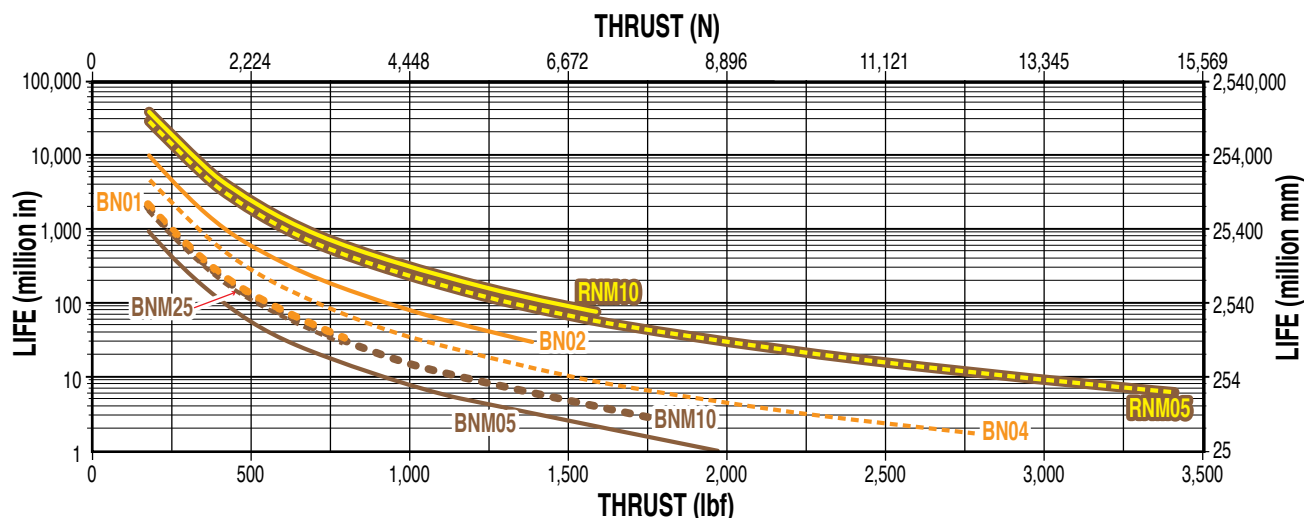
## MAXIMUM THRUST vs STROKE



## SCREW LIFE



NOTE: See L<sub>10</sub> expected life calculation on page ERD\_13



# ERD – Electric Rod-Style Actuator

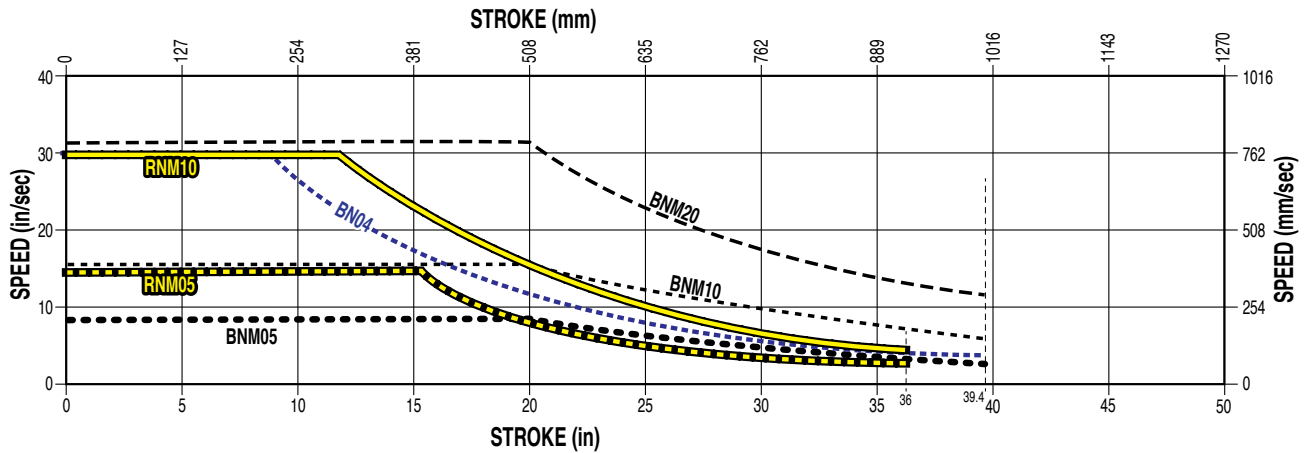
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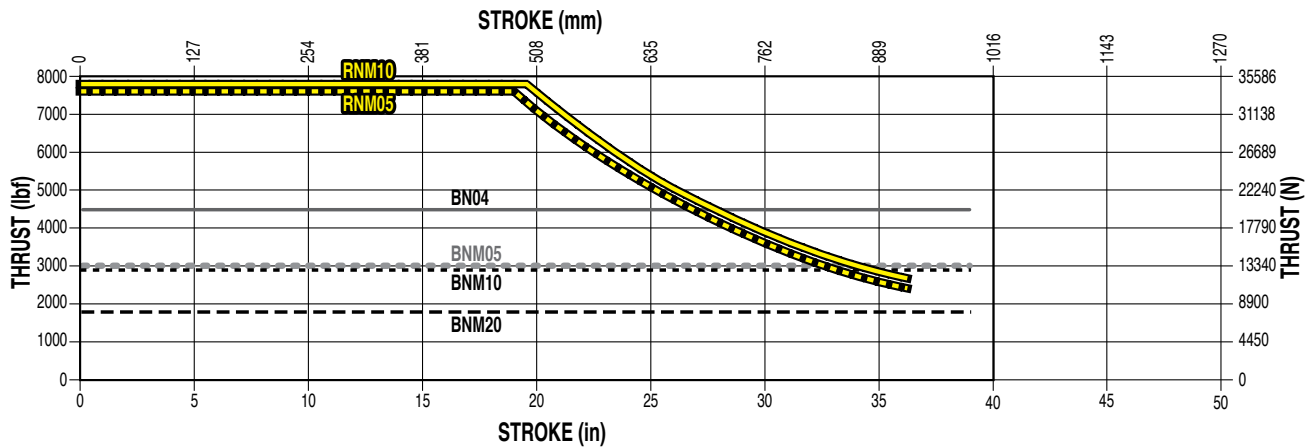
SIZE: **ERD30**

**PERFORMANCE**

## CRITICAL SPEED CAPACITY



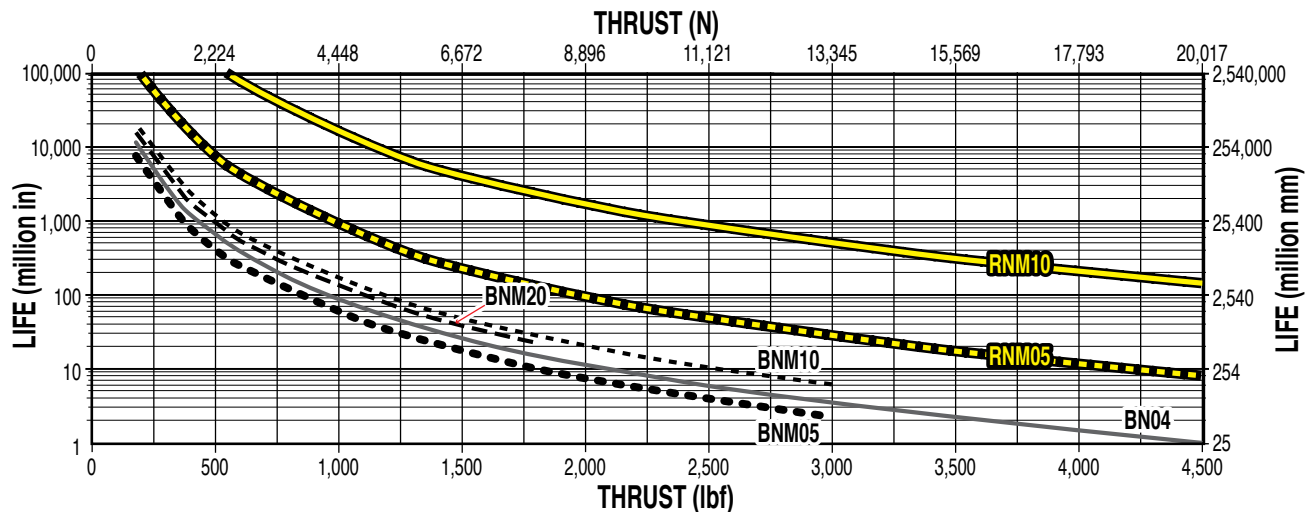
## MAXIMUM THRUST vs STROKE



## SCREW LIFE



NOTE: See L<sub>10</sub> expected life calculation on page ERD\_13



# ERD – Electric Rod-Style Actuator

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SIZE: **22, 25, 30**

**PERFORMANCE**

## RE-LUBRICATION RECOMMENDATION:

**ERD22, ERD25, ERD30:** ERD 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.

|      | ERD22                    | ERD25                    | ERD30                    |
|------|--------------------------|--------------------------|--------------------------|
| Qty. | 2.5g + (0.010x \$ mm)    | 4.8g + (0.010x \$ mm)    | 5.3g + (0.018x \$ mm)    |
| Qty. | 0.09 oz + (0.009x \$ in) | 0.17 oz + (0.009x \$ in) | 0.19 oz + (0.016x \$ in) |

\$ = Stroke length (mm or in)



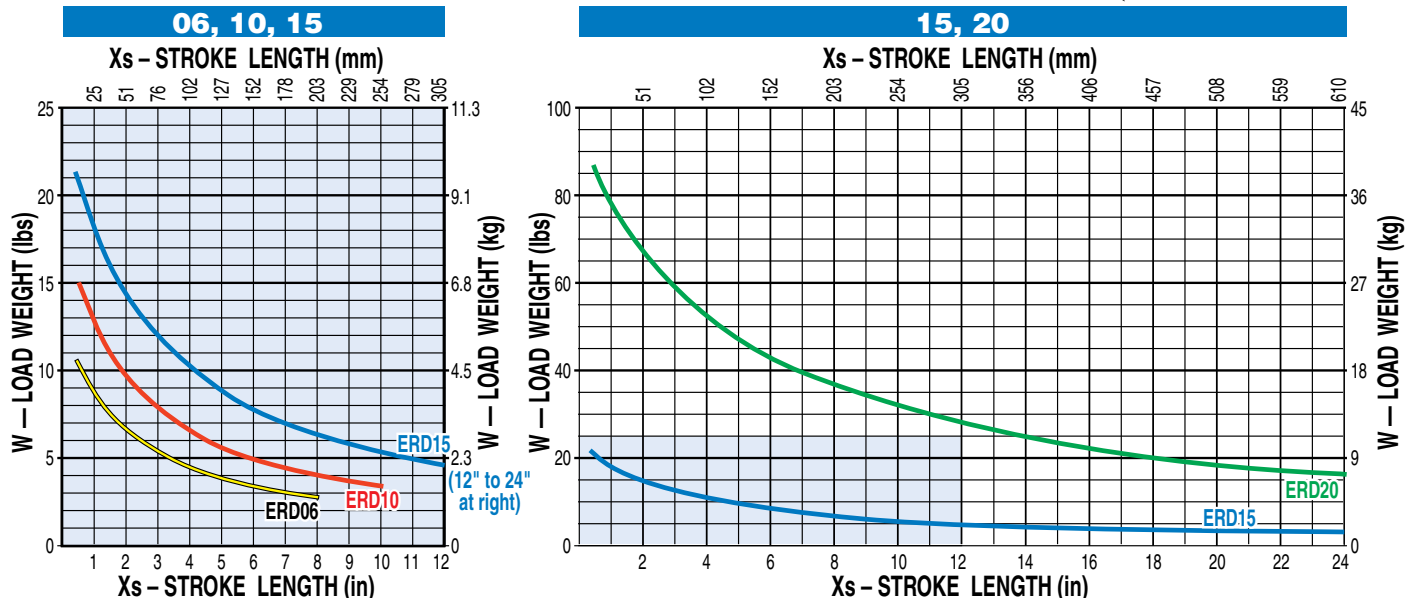
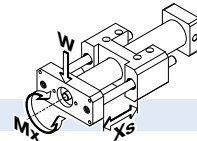
In some applications oil may leak from the grease zerk. In contamination sensitive applications replace grease zerk with plug.



**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.

## OPTION: **GD2 – GUIDED ERD**

### LOAD VS EXTENDED LENGTH



# ERD – Electric Rod-Style Actuator

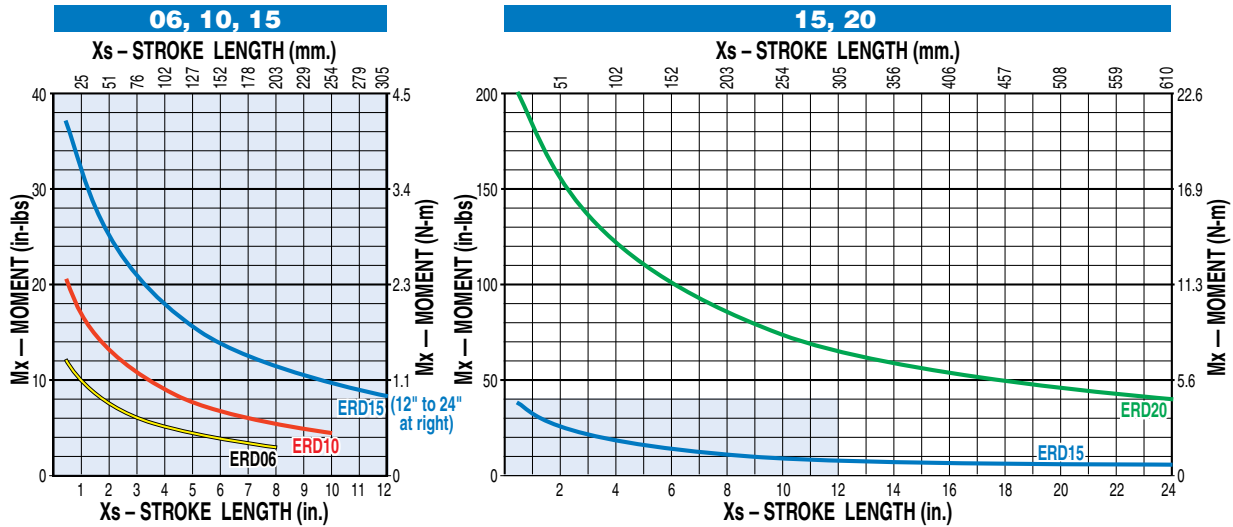
sizeit.tolomatic.com for fast,  
accurate actuator selection



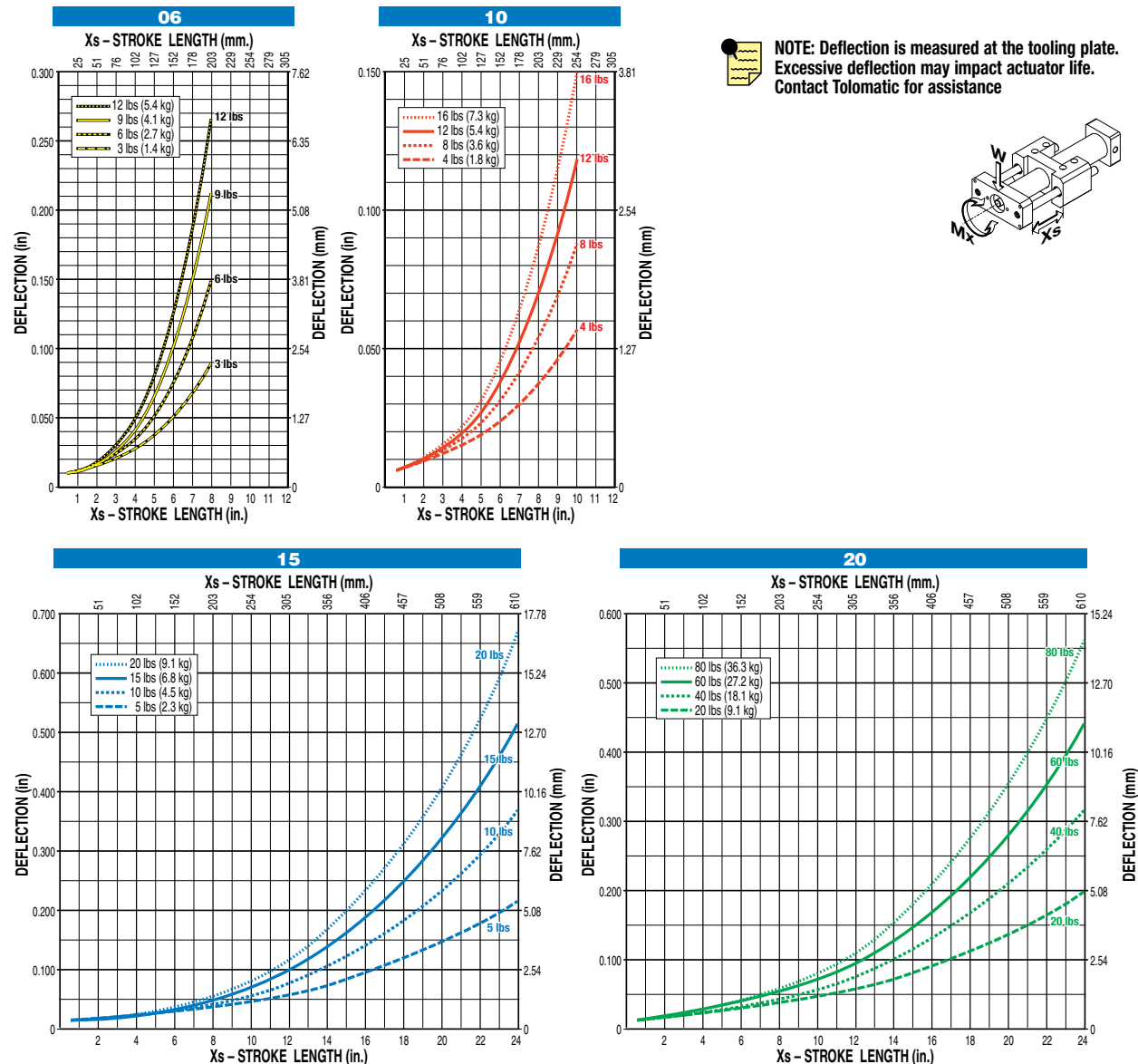
OPTION: **GD2 – GUIDED ERD**

**PERFORMANCE**

## BENDING MOMENTS



## GUIDE ROD DEFLECTION



# ERD – Electric Rod-Style Actuator

SIZE: 06, 10, 15, 20

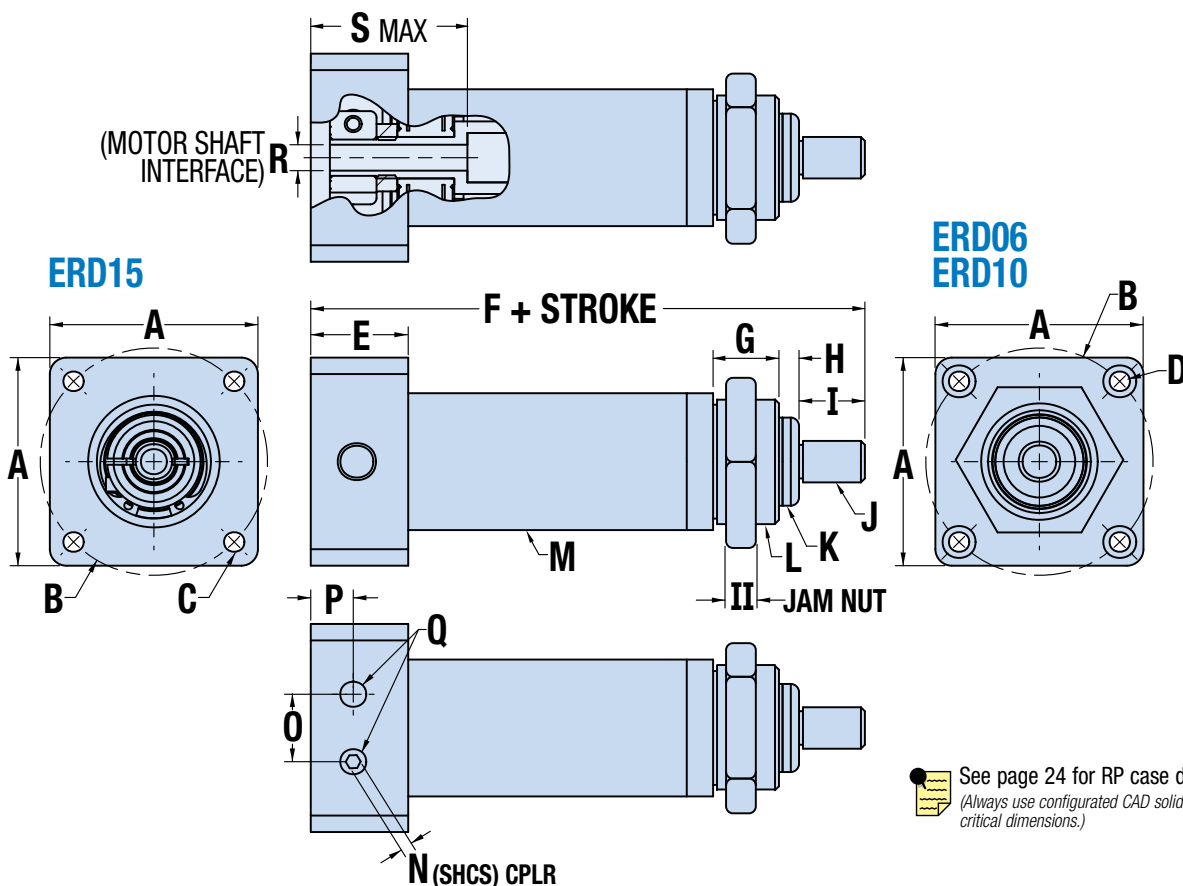
3D CAD available at [www.tolomatic.com](http://www.tolomatic.com)

Always use configured CAD solid model to determine critical dimensions



**DIMENSIONS**

## ACTUATOR



See page 24 for RP case dimensions.  
(Always use configured CAD solid model for critical dimensions.)

|     | ERD06    | ERD10     | ERD15      | ERD20     |
|-----|----------|-----------|------------|-----------|
| A   | 28.58    | 40.13     | 56.39*     | *         |
| B   | Ø32.69   | Ø43.82    | Ø66.68*    | *         |
| C   | -        | -         | M4 x 0.7*  | *         |
| D   | Ø3.45    | Ø3.91     | -          | *         |
| E   | 35.56    | 18.80     | 21.59*     | *         |
| F   | 98.5     | 106.7     | 137.2*     | *         |
| G   | 12.70    | 12.70     | 15.24      | 18.75     |
| H   | 3.89     | 3.89      | 3.89       | 3.89      |
| I   | 9.53     | 12.70     | 19.05      | 19.05     |
| J** | M6 x 1.0 | M8 x 1.25 | M12 x 1.75 | M16 x 2.0 |
| K   | Ø11.25   | Ø17.42    | Ø26.40     | Ø33.60    |

|    | ERD06             | ERD10             | ERD15              | ERD20              |
|----|-------------------|-------------------|--------------------|--------------------|
| L  | M16 x 1.5         | M24 x 1.5         | M34 x 1.5          | M44 x 1.5          |
| II | 6.00              | 6.00              | 8.00               | 8.00               |
| M  | Ø17.42            | Ø26.42            | Ø41.61             | Ø52.20             |
| N  | 2.50              | 2.50              | 2.50*              | *                  |
| O  | 13.00             | 13.00             | 13.00              | 23.37              |
| P  | 6.71              | 8.20              | 7.57*              | *                  |
| Q  | (2) M4 x 0.7 ±2.5 | (2) M6 x 1.0 ±7.9 | (2) M6 x 1.0 ±12.7 | (2) M6 x 1.0 ±12.7 |
| R  | Ø5.00             | Ø5.00             | Ø6.35*             | *                  |
| S  | 27.94             | 27.94             | 31.75*             | *                  |

Dimensions in millimeters

|     | ERD06    | ERD10     | ERD15      | ERD20     |
|-----|----------|-----------|------------|-----------|
| A   | 1.125    | 1.580     | 2.220*     | *         |
| B   | Ø1.287   | Ø1.725    | Ø2.625*    | *         |
| C   | -        | -         | M4 x 0.7*  | *         |
| D   | Ø.136    | Ø.154     | -          | *         |
| E   | 1.400    | 0.740     | 0.850*     | *         |
| F   | 3.88     | 4.20      | 5.40*      | *         |
| G   | 0.500    | 0.500     | 0.600      | 0.750     |
| H   | 0.153    | 0.153     | 0.153      | 0.153     |
| I   | 0.375    | 0.500     | 0.750      | 0.750     |
| J** | M6 x 1.0 | M8 x 1.25 | M12 x 1.75 | M16 x 2.0 |
| K   | Ø.443    | Ø.686     | Ø1.041     | Ø1.323    |

|    | ERD06             | ERD10             | ERD15             | ERD20             |
|----|-------------------|-------------------|-------------------|-------------------|
| L  | M16 x 1.5         | M24 x 1.5         | M34 x 1.5         | M44 x 1.5         |
| II | 0.236             | 0.236             | 0.315             | 0.315             |
| M  | Ø.686             | Ø1.040            | Ø1.638            | Ø2.051            |
| N  | 0.098             | 0.098             | 0.098*            | *                 |
| O  | 0.512             | 0.512             | 0.512             | 0.920             |
| P  | 0.264             | 0.323             | 0.298*            | *                 |
| Q  | (2) M4 x 0.7 ±.10 | (2) M6 x 1.0 ±.31 | (2) M6 x 1.0 ±.50 | (2) M6 x 1.0 ±.50 |
| R  | Ø.197             | Ø.197             | Ø.250*            | *                 |
| S  | 1.100             | 1.100             | 1.250*            | *                 |

Dimensions in inches

\* This dimension is determined by motor choice.

\*\* Note: If ordering as a replacement actuator for use with rod end options, order Code RA1 to receive M10x1.25 rod end thread on the ERD15  
Note: If ordering as a replacement actuator for use with rod end options, order Code RA1 to receive M16x1.5 rod end thread on the ERD20

# ERD – Electric Rod-Style Actuator

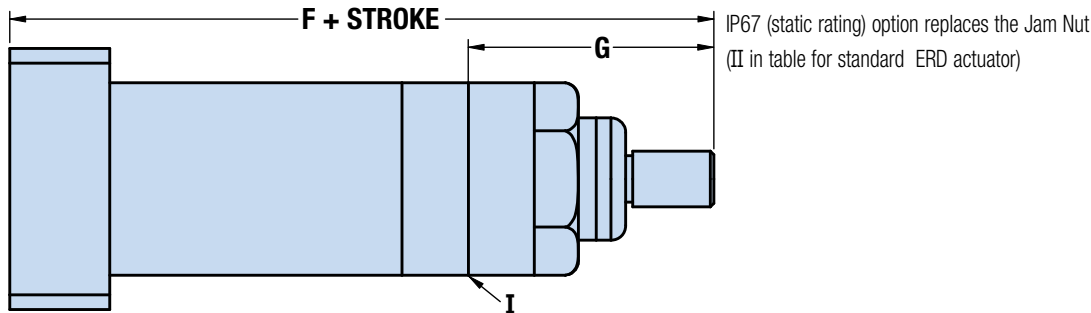
SIZE: 06, 10, 15, 20

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



**DIMENSIONS**

## IP67 - IP69K OPTION DIMENSIONS



### IP67 OPTION

|   | ERD06                        | ERD10 | ERD15  | ERD20  |
|---|------------------------------|-------|--------|--------|
| F | 116.6                        | 121.8 | 152.4* | 204.8* |
| G | 44.30                        | 44.17 | 53.0   | 72.5   |
| I | Surface for mounting options |       |        |        |

### IP67 OPTION

|   | ERD06                        | ERD10 | ERD15 | ERD20 |
|---|------------------------------|-------|-------|-------|
| F | 4.59                         | 4.79  | 6.00* | 8.06* |
| G | 1.744                        | 1.739 | 2.09  | 2.85  |
| I | Surface for mounting options |       |       |       |

### IP69K OPTION

|   | ERD06                        | ERD10 | ERD15 | ERD20  |
|---|------------------------------|-------|-------|--------|
| F | NA                           | 128.1 | 164.8 | 204.8* |
| G | NA                           | 50.52 | 65.7  | 72.5   |
| I | Surface for mounting options |       |       |        |

### IP69K OPTION

|   | ERD06                        | ERD10 | ERD15 | ERD20 |
|---|------------------------------|-------|-------|-------|
| F | NA                           | 5.04  | 6.49  | 8.06* |
| G | NA                           | 1.989 | 2.59  | 2.85  |
| I | Surface for mounting options |       |       |       |

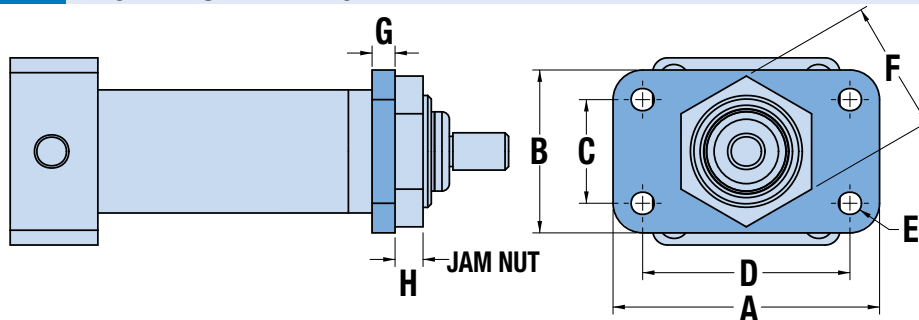
Dimensions in millimeters

Dimensions in inches



\*Dimension shown is with Tolomatic AMS1xx motor hardware YMH option will determine this dimension.

## FFG - FRONT FLANGE



|   | ERD06 | ERD10 | ERD15 | ERD20 |
|---|-------|-------|-------|-------|
| A | 44.45 | 57.15 | 63.50 | 88.90 |
| B | 25.40 | 34.93 | 44.45 | 57.15 |
| C | 12.70 | 22.23 | 31.75 | 44.45 |
| D | 31.75 | 44.45 | 50.80 | 76.20 |
| E | Ø3.91 | Ø4.93 | Ø5.61 | Ø7.14 |
| F | 18.00 | 28.00 | 40.00 | 48.08 |
| G | 4.93  | 4.93  | 4.93  | 4.93  |
| H | 6.00  | 6.00  | 8.00  | 8.00  |

Dimensions in millimeters

|   | ERD06 | ERD10 | ERD15 | ERD20 |
|---|-------|-------|-------|-------|
| A | 1.750 | 2.250 | 2.500 | 3.500 |
| B | 1.000 | 1.375 | 1.750 | 2.250 |
| C | 0.500 | 0.875 | 1.250 | 1.750 |
| D | 1.250 | 1.750 | 2.000 | 3.000 |
| E | Ø.154 | Ø.194 | Ø.221 | Ø.281 |
| F | 0.709 | 1.102 | 1.575 | 1.890 |
| G | 0.194 | 0.194 | 0.194 | 0.194 |
| H | 0.236 | 0.236 | 0.315 | 0.315 |

Dimensions in inches

# ERD – Electric Rod-Style Actuator

SIZE: 06, 10, 15, 20

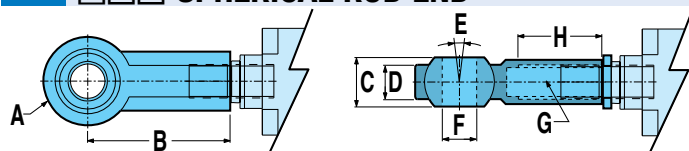
3D CAD available at [www.tolomatic.com](http://www.tolomatic.com)

Always use configured CAD solid model to determine critical dimensions



**DIMENSIONS**

## SRE SPHERICAL ROD END



| Size | A Ø  | B    | C    | D    | E   | F Ø  | G        | H    |
|------|------|------|------|------|-----|------|----------|------|
| 10   | 22.3 | 36.0 | 12.0 | 8.8  | 10° | 8.0  | M8x1.25  | 17.0 |
| 15   | 28.0 | 43.0 | 14.0 | 10.5 | 10° | 10.0 | M10x1.25 | 20.0 |
| 20   | 42.0 | 64.0 | 21.0 | 15.0 | 10° | 16.0 | M16x1.5  | 28.0 |

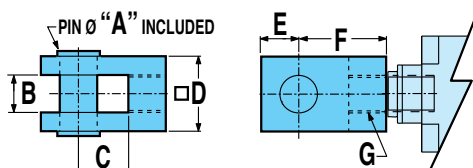
Dimensions in millimeters

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 Ø  | G        | H    |
|------|------|------|------|------|-----|------|----------|------|
| 10   | 0.88 | 1.42 | 0.47 | 0.34 | 10° | 0.31 | M8x1.25  | 0.67 |
| 15   | 1.10 | 1.69 | 0.55 | 0.41 | 10° | 0.39 | M10x1.25 | 0.79 |
| 20   | 1.65 | 2.52 | 0.83 | 0.59 | 10° | 0.63 | M16x1.5  | 1.10 |

Dimensions in inches

## CLV CLEVIS ROD END



| Size | A Ø  | B    | C    | D    | E    | F    | G        |
|------|------|------|------|------|------|------|----------|
| 06   | 6.0  | 6.0  | 12.0 | 12.0 | 9.5  | 24.0 | M6x1.0   |
| 10   | 8.0  | 8.0  | 16.0 | 16.0 | 10.0 | 32.0 | M8x1.25  |
| 15   | 10.0 | 10.0 | 20.0 | 20.0 | 12.0 | 40.0 | M10x1.25 |
| 20   | 16.0 | 16.0 | 32.0 | 32.0 | 19.0 | 64.0 | M16x1.5  |

Dimensions in millimeters

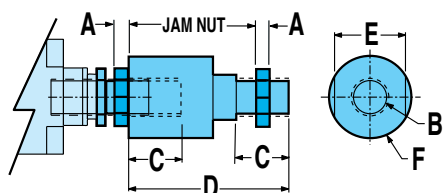
Used with the externally threaded rod end when the actuator has to compensate for misalignment or pivot about an axis.

\* Note: ERD15 rod end options use M10 X1.25 thread, not the standard M12 X 1.75 rod end thread. When ordering an attachment with the actuator the actuator will come with M10x1.25 thread.  
Note: ERD20 rod end options use M16 X1.5 thread, not the standard M16 X 2.0 rod end thread. When ordering an attachment with the actuator the actuator will come with M16x1.5 thread.

| Size | A Ø  | B    | C    | D    | E    | F    | G        |
|------|------|------|------|------|------|------|----------|
| 06   | 0.24 | 0.24 | 0.47 | 0.47 | 0.37 | 0.94 | M6x1.0   |
| 10   | 0.32 | 0.32 | 0.63 | 0.63 | 0.39 | 1.26 | M8x1.25  |
| 15   | 0.39 | 0.39 | 0.79 | 0.79 | 0.47 | 1.57 | M10x1.25 |
| 20   | 0.63 | 0.63 | 1.26 | 1.26 | 0.75 | 2.52 | M16x1.5  |

Dimensions in inches

## ALC ALIGNMENT COUPLER



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.

| Size | A   | B        | C    | D     | E    | F    |
|------|-----|----------|------|-------|------|------|
| 15   | 6.0 | M10x1.25 | 20.0 | 73.0  | 30.0 | 32.0 |
| 20   | 8.0 | M16x1.5  | 32.0 | 108.0 | 41.0 | 45.0 |

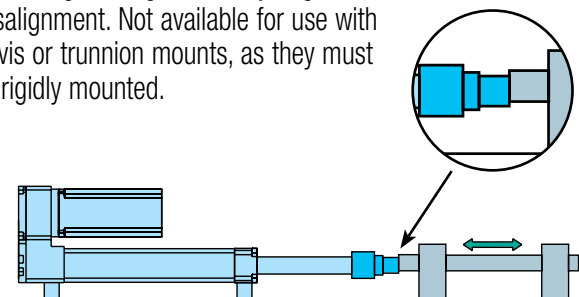
Dimensions in millimeters

| Size | A    | B        | C    | D    | E    | F    |
|------|------|----------|------|------|------|------|
| 15   | 0.24 | M10x1.25 | 0.79 | 2.87 | 1.18 | 1.26 |
| 20   | 0.31 | M16x1.5  | 1.26 | 4.25 | 1.61 | 1.77 |

Dimensions in inches

Note: ERD15 rod end options use M10 X1.25 thread, not the standard M12 X 1.75 rod end thread. When ordering an attachment with the actuator the actuator will come with M10x1.25 thread.

Note: ERD20 rod end options use M16 X1.5 thread, not the standard M16 X 2.0 rod end thread. When ordering an attachment with the actuator the actuator will come with M16x1.5 thread.



# ERD – Electric Rod-Style Actuator

SIZE: 06, 10, 15, 20

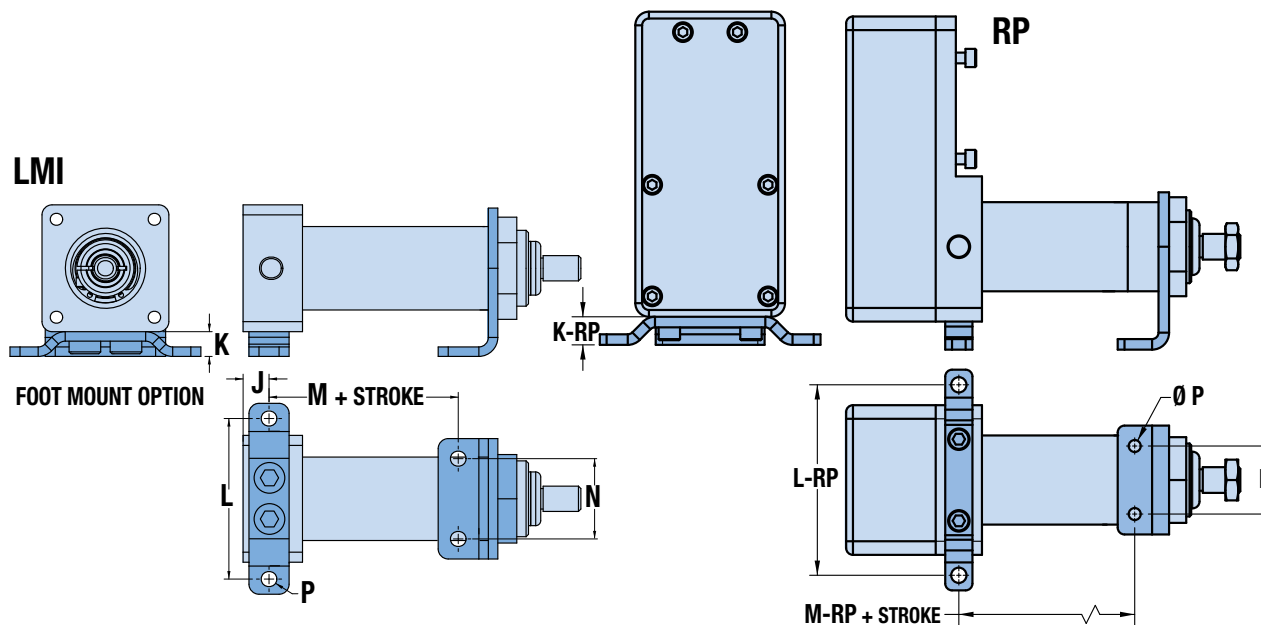
3D CAD available at [www.tolomatic.com](http://www.tolomatic.com)  
Always use configured CAD solid model  
to determine critical dimensions



**DIMENSIONS**

## FM2 - FOOT MOUNT

**LMI**



|      | ERD06 | ERD10 | ERD15 | ERD20 |        |
|------|-------|-------|-------|-------|--------|
|      |       |       |       | BNM20 |        |
| J    | 6.71  | 8.20  | 7.57  | —     |        |
| K    | 6.58  | 7.82  | 10.31 | 14.46 |        |
| L    | 44.45 | 50.80 | 66.04 | 82.55 |        |
| M    | 57.66 | 59.87 | 80.39 | 81.28 | 109.86 |
| N    | 15.88 | 25.4  | 31.75 | 31.75 |        |
| P    | Ø3.91 | Ø4.93 | Ø5.61 | Ø7.14 |        |
| K-RP | —     | —     | 13.11 | 12.70 |        |
| L-RP | —     | —     | 88.90 | 93.35 |        |
| M-RP | —     | —     | 77.15 | 66.95 |        |

Dimensions in millimeters

|      | ERD06 | ERD10 | ERD15 | ERD20 |       |
|------|-------|-------|-------|-------|-------|
|      |       |       |       | BNM20 |       |
| J    | 0.264 | 0.323 | 0.298 | —     |       |
| K    | 0.259 | 0.308 | 0.406 | 0.569 |       |
| L    | 1.750 | 2.00  | 2.600 | 3.250 |       |
| M    | 2.270 | 2.357 | 3.165 | 3.200 | 4.325 |
| N    | 0.625 | 1.00  | 1.250 | 1.25  |       |
| P    | Ø.154 | Ø.194 | Ø.221 | Ø.281 |       |
| K-RP | —     | —     | 0.516 | 0.500 |       |
| L-RP | —     | —     | 3.500 | 3.675 |       |
| M-RP | —     | —     | 3.038 | 2.636 |       |

Dimensions in inches

# ERD – Electric Rod-Style Actuator

SIZE: 06, 10, 15, 20

3D CAD available at [www.tolomatic.com](http://www.tolomatic.com)

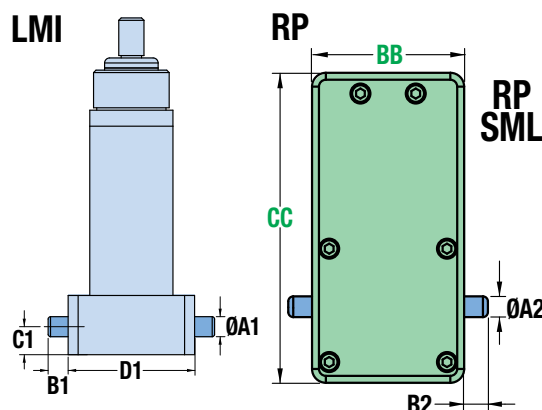
Always use configured CAD solid model to determine critical dimensions



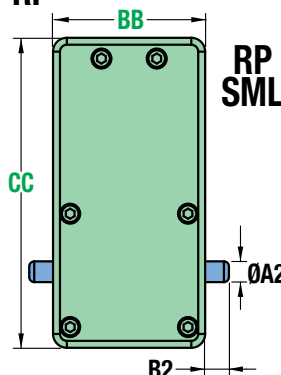
**DIMENSIONS**

## TRM/TRR - TRUNNION MOUNT

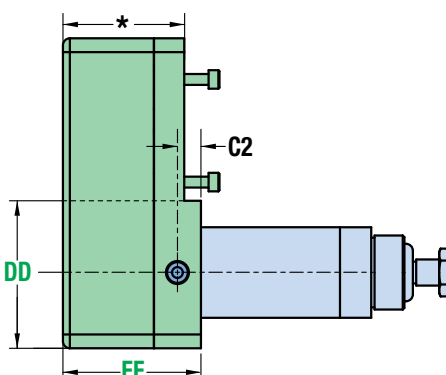
LMI



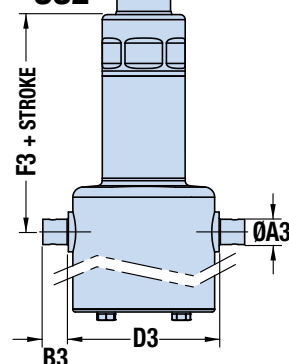
RP



RP SML

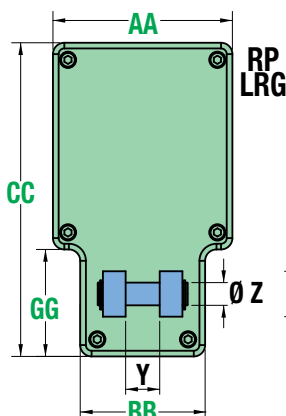


SS2

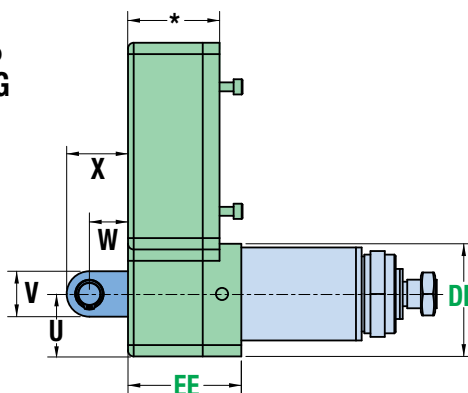


\*Dimension is variable dependent on YMH motor code.

## PCD - REAR CLEVIS (RP)



RP LRG



| TRM | ERD06                      | ERD10                      | ERD15                     | ERD20              |
|-----|----------------------------|----------------------------|---------------------------|--------------------|
| ØA1 | Ø6.000<br>+0.015<br>-0.006 | Ø8.000<br>+0.015<br>-0.006 | Ø9.525<br>+0.005<br>0.000 | Ø15.997<br>Ø15.982 |
| B1  | 6.4                        | 6.4                        | 10.9                      | 19.0               |
| C1  | 4.6                        | 9.9                        | 10.8                      | 25.1               |
| D1  | 28.6                       | 40.1                       | 56.4                      | 60.0               |

Dimensions in millimeters

| TRR | ERD06                       | ERD10                       | ERD15                        | ERD20            |
|-----|-----------------------------|-----------------------------|------------------------------|------------------|
| ØA1 | Ø.1875<br>+0.0002<br>0.0000 | Ø.2500<br>+0.0002<br>0.0000 | Ø.4724<br>+0.0007<br>+0.0003 | Ø.6245<br>Ø.6240 |
| B1  | 0.25                        | 0.25                        | 0.43                         | 0.75             |
| C1  | 0.18                        | 0.39                        | 0.43                         | 0.99             |
| D1  | 1.13                        | 1.58                        | 2.22                         | 2.36             |

Dimensions in inches

| TRM        | ERD15                       | ERD20              |
|------------|-----------------------------|--------------------|
| ØA2        | Ø12.000<br>+0.018<br>-0.007 | Ø16.00 /<br>Ø15.98 |
| ØA3        | Ø11.987 /<br>Ø11.975        | Ø15.98 /<br>Ø15.95 |
| B2         | 10.9                        | 19.1               |
| B3         | 12.7                        | 16.0               |
| C2         | 10.8                        | 10.8               |
| D3         | 93.4                        | 94.7               |
| F3         | 123.3                       | 136.4              |
| F3 (BNM20) | —                           | 165.1              |

Dimensions in millimeters

| TRR        | ERD15                        | ERD20              |
|------------|------------------------------|--------------------|
| ØA2        | Ø.3750<br>+0.0002<br>-0.0000 | Ø.6245 /<br>Ø.6240 |
| ØA3        | Ø.4719 /<br>Ø.4714           | Ø.629 /<br>Ø.628   |
| B2         | 0.43                         | 0.75               |
| B3         | 0.50                         | 0.63               |
| C2         | 0.43                         | 0.42               |
| D3         | 3.68                         | 3.73               |
| F3         | 4.85                         | 5.37               |
| F3 (BNM20) | —                            | 6.50               |

Dimensions in inches

|        | 15                 |                  | 20                 |                  | 22               | 25\30            |
|--------|--------------------|------------------|--------------------|------------------|------------------|------------------|
|        | PCD1               | PCD2             | PCD1               | PCD2             | PCD2             | PCD2             |
| U SML  | 34.93              | 34.93            | 34.93              | 34.93            | 50.17            | 65.33            |
| U LRG  | --                 | --               | 34.93              | 34.93            | 50.17            | 76.68            |
| V      | 25.40              | 24.00            | 25.40              | 24.00            | 24.00            | 40.01            |
| W      | 21.56              | 21.56            | 21.59              | 21.59            | 21.59            | 34.93            |
| X      | 34.26              | 33.55            | 34.29              | 33.58            | 33.58            | 54.91            |
| Y      | 19.05              | 27.99            | 19.05              | 27.99            | 27.99            | 59.99            |
| Z      | 12.687 /<br>12.675 | 11.99 /<br>11.97 | 12.687 /<br>12.675 | 11.99 /<br>11.97 | 11.99 /<br>11.97 | 19.99 /<br>19.97 |
| AA SML | 69.85              | 69.85            | 69.85              | 69.85            | 95.25            | 123.19           |
| AA LRG | --                 | --               | 100.33             | 100.33           | 117.48           | 146.05           |
| BB     | --                 | --               | 69.85              | 69.85            | 95.25            | 146.05           |
| CC SML | 142.37             | 142.37           | 142.37             | 142.37           | 208.00           | 250.55           |
| CC LRG | --                 | --               | 175.39             | 175.39           | 223.88           | 308.28           |
| DD SML | 58.72              | 58.72            | 62.36              | 62.36            | 91.44            | 123.75           |
| DD LRG | --                 | --               | 62.99              | 62.99            | 91.44            | 135.10           |
| EE     | 63.40              | 63.40            | 63.40              | 63.40            | 66.73            | 76.05            |
| GG     | --                 | --               | 59.82              | 59.82            | 76.43            | --               |

Dimensions in millimeters

|        | 15               |                  | 20               |                  | 22               | 25\30            |
|--------|------------------|------------------|------------------|------------------|------------------|------------------|
|        | PCD1             | PCD2             | PCD1             | PCD2             | PCD2             | PCD2             |
| U SML  | 1.375            | 1.375            | 1.375            | 1.375            | 1.975            | 2.572            |
| U LRG  | --               | --               | 1.375            | 1.375            | 1.975            | 3.019            |
| V      | 1.000            | 0.945            | 1.000            | 0.945            | 0.945            | 1.575            |
| W      | 0.849            | 0.849            | 0.850            | 0.850            | 0.850            | 1.375            |
| X      | 1.349            | 1.321            | 1.350            | 1.322            | 1.322            | 2.162            |
| Y      | 0.750            | 1.102            | 0.750            | 1.102            | 1.102            | 2.362            |
| Z      | .4995 /<br>.4990 | .4719 /<br>.4714 | .4995 /<br>.4990 | .4719 /<br>.4714 | .4719 /<br>.4714 | .7869 /<br>.7864 |
| AA SML | 2.750            | 2.750            | 2.750            | 2.750            | 3.750            | 4.850            |
| AA LRG | --               | --               | 3.950            | 3.950            | 4.625            | 5.750            |
| BB     | --               | --               | 2.750            | 2.750            | 3.750            | 5.750            |
| CC SML | 5.605            | 5.605            | 5.605            | 5.605            | 8.189            | 9.864            |
| CC LRG | --               | --               | 6.905            | 6.905            | 8.814            | 12.137           |
| DD SML | 2.312            | 2.312            | 2.455            | 2.455            | 3.600            | 4.872            |
| DD LRG | --               | --               | 2.480            | 2.480            | 3.600            | 5.319            |
| EE     | 2.496            | 2.496            | 2.496            | 2.496            | 2.627            | 2.994            |
| GG     | --               | --               | 2.355            | 2.355            | 3.009            | --               |

Dimensions in inches

# ERD – Electric Rod-Style Actuator

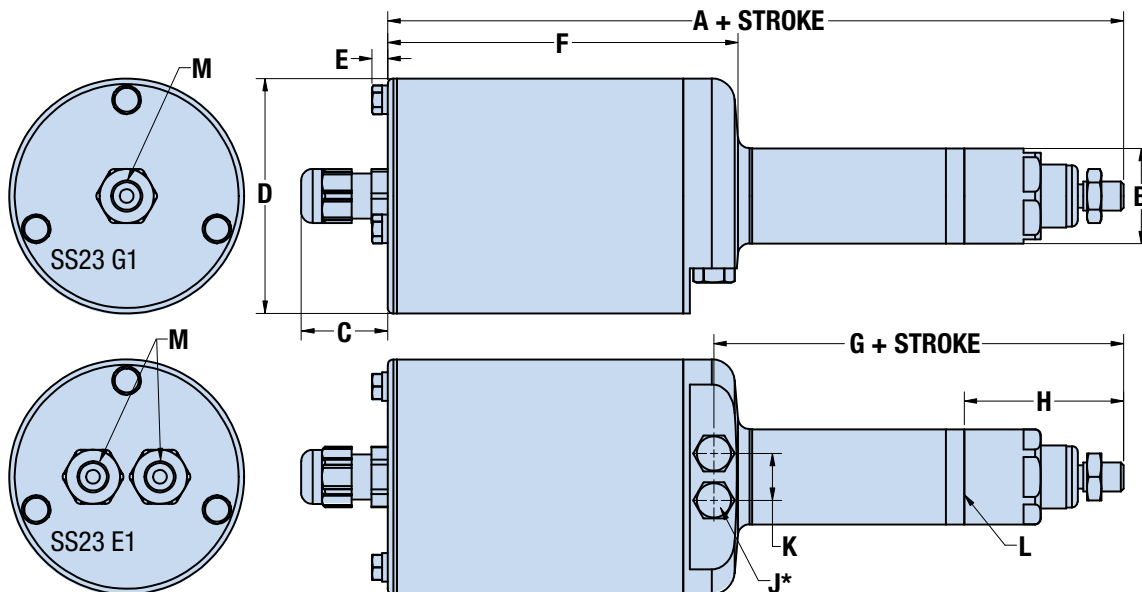
SIZE: 10, 15, 20

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



**DIMENSIONS**

## SS2 – STAINLESS-STEEL BODY WITH PROTECTIVE MOTOR COVER AND IP69K UPGRADE



|    | ERD10                        | ERD15    | ERD20    |        |
|----|------------------------------|----------|----------|--------|
|    |                              |          |          | BNM20  |
| A  | 204.0                        | 282.70   | 311.4    | 339.98 |
| B  | 26.42                        | 41.61    | 52.10    |        |
| C  | 24.00                        | 24.00    | 24.00    |        |
| D  | 65.10                        | 89.00    | 89.00    |        |
| E  | 4.39                         | 5.27     | 5.27     |        |
| F  | 100.99                       | 134.98   | 171.64   |        |
| G  | 113.56                       | 143.76   | 164.80   | 193.37 |
| H  | 44.17                        | 53.04    | 72.48    |        |
| J* | M6 x 1.0                     | M6 x 1.0 | M6 x 1.0 |        |
| K  | 13.00                        | 13.00    | 23.37    |        |
| L  | Surface for mounting options |          |          |        |

Dimensions in millimeters

|    | ERD10                        | ERD15    | ERD20    |        |
|----|------------------------------|----------|----------|--------|
|    |                              |          |          | BNM20  |
| A  | 8.03                         | 11.130   | 12.26    | 13.385 |
| B  | 1.040                        | 1.638    | 2.051    |        |
| C  | 0.945                        | 0.945    | 0.945    |        |
| D  | 2.563                        | 3.504    | 3.504    |        |
| E  | 0.173                        | 0.207    | 0.207    |        |
| F  | 3.976                        | 5.314    | 6.758    |        |
| G  | 4.471                        | 5.660    | 6.488    | 7.613  |
| H  | 1.739                        | 2.088    | 2.853    |        |
| J* | M6 x 1.0                     | M6 x 1.0 | M6 x 1.0 |        |
| K  | 0.512                        | 0.512    | 0.920    |        |
| L  | Surface for mounting options |          |          |        |

Dimensions in inches

| M | Encoder |       | Available cable exit options:       |
|---|---------|-------|-------------------------------------|
|   | Code    | Code  |                                     |
|   | SS21    | G1,E1 | no cord grips 1/2" NPT tapped hole  |
|   | SS22    | G1,E1 | no cord grips M20 x 1.5 tapped hole |
|   | SS23    | G1    | 1 cord grip (motor, no encoder)     |
|   |         | E1    | 2 cord grips (motor, with encoder)  |

\*Unit ships standard with hex bolts in these tapped holes

NOTE: IP67 is a static rating

✗ SS2 is not available for the 06, 22, 25, 30 size

# ERD – Electric Rod-Style Actuator

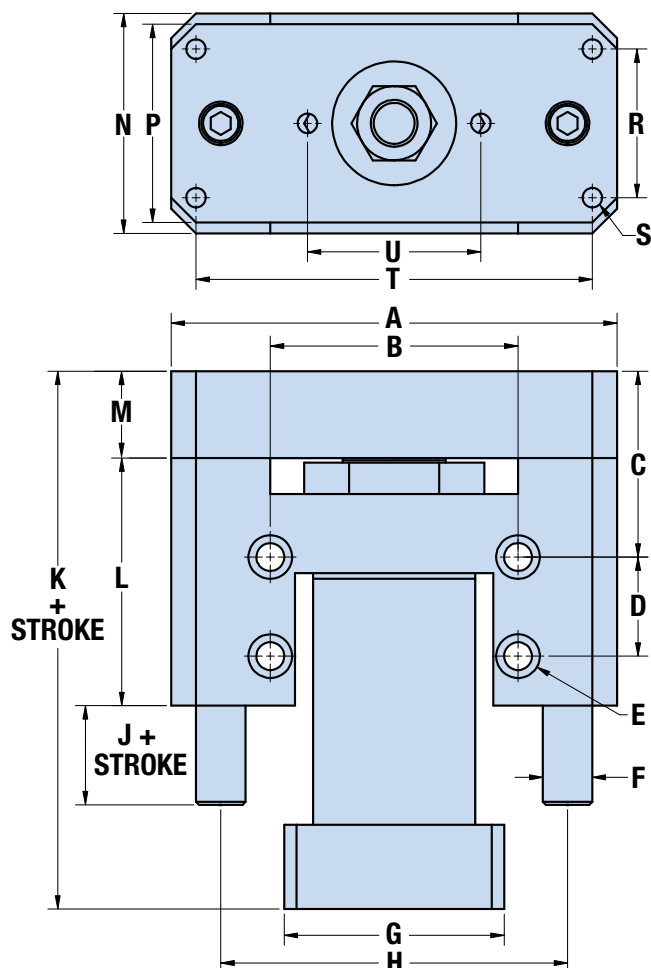
SIZE: 06, 10, 15, 20

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



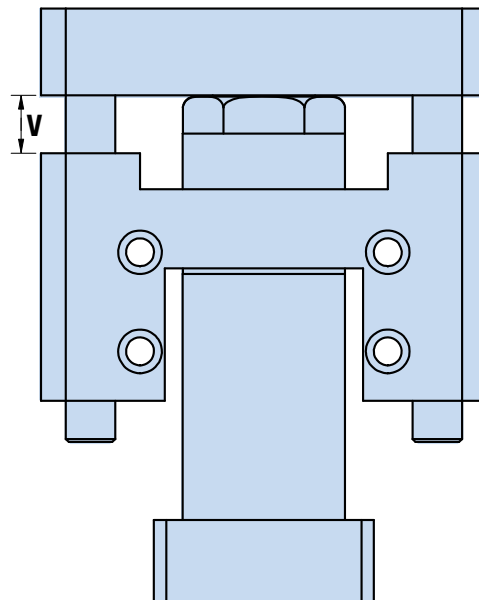
**DIMENSIONS**

## GD2 – GUIDED ERD



### GUIDED ERD WITH IP67 OPTION

ERD STROKE IS REDUCED BY  
DIMENSION "V"



|   | ERD06     | ERD10     | ERD15      | ERD20      |
|---|-----------|-----------|------------|------------|
| A | 76.20     | 88.90     | 114.30     | 149.86     |
| B | 41.28     | 50.80     | 63.50      | 82.55      |
| C | 28.58     | 31.75     | 47.63      | 63.50      |
| D | 25.40     | 25.40     | 25.40      | 50.8       |
| E | 4.93      | 5.61      | 7.14       | 8.74       |
| F | 7.9 x 4.8 | 9.7 x 5.6 | 11.2 x 7.1 | 13.5 x 8.6 |
| G | 6.35      | 9.53      | 12.70      | 19.05      |
| H | 28.58     | 40.13     | 56.39*     | *          |
| J | 57.15     | 69.85     | 88.90      | 117.48     |
| K | 25.40     | 25.40     | 25.40      | 38.10      |
| L | 99.31     | 107.80    | 137.87*    | *          |
| M | 50.80     | 50.80     | 63.50      | 127.00     |
| N | 12.70     | 15.88     | 22.23      | 25.40      |
| P | 28.58     | 40.13     | 56.39      | 60.96      |
| R | 25.40     | 38.10     | 50.80      | 58.42      |
| S | 15.88     | 25.40     | 38.10      | 38.10      |
| T | M4x0.7    | M5x0.8    | M6x1.0     | M8x1.25    |
| U | 66.68     | 76.20     | 101.60     | 127.00     |
| V | 25.40     | 34.93     | 44.45      | 57.15      |
| W | 18.19     | 14.91     | 14.86      | 30.47      |

Dimensions in millimeters

|   | ERD06       | ERD10       | ERD15       | ERD20       |
|---|-------------|-------------|-------------|-------------|
| A | 3.000       | 3.500       | 4.500       | 5.900       |
| B | 1.625       | 2.000       | 2.500       | 3.250       |
| C | 1.125       | 1.250       | 1.875       | 2.500       |
| D | 1.000       | 1.000       | 1.000       | 2.00        |
| E | 0.194       | 0.221       | 0.281       | 0.344       |
| F | 0.31 x 0.19 | 0.38 x 0.22 | 0.44 x 0.28 | 0.56 x 0.34 |
| G | 0.250       | 0.375       | 0.500       | 0.750       |
| H | 1.125       | 1.580       | 2.220*      | *           |
| J | 2.250       | 2.750       | 3.500       | 4.625       |
| K | 1.000       | 1.000       | 1.000       | 1.500       |
| L | 3.910       | 4.244       | 5.428*      | *           |
| M | 2.000       | 2.000       | 2.500       | 5.000       |
| N | 0.500       | 0.625       | 0.875       | 1.000       |
| P | 1.125       | 1.580       | 2.220       | 2.400       |
| R | 1.000       | 1.500       | 2.000       | 2.300       |
| S | 0.625       | 1.000       | 1.500       | 1.500       |
| T | M4x0.7      | M5x0.8      | M6x1.0      | M8x1.25     |
| U | 2.625       | 3.000       | 4.000       | 5.000       |
| V | 1.000       | 1.375       | 1.750       | 2.250       |
| W | 0.716       | 0.587       | 0.585       | 1.200       |

Dimensions in inches



\*This dimension is determined by motor choice.

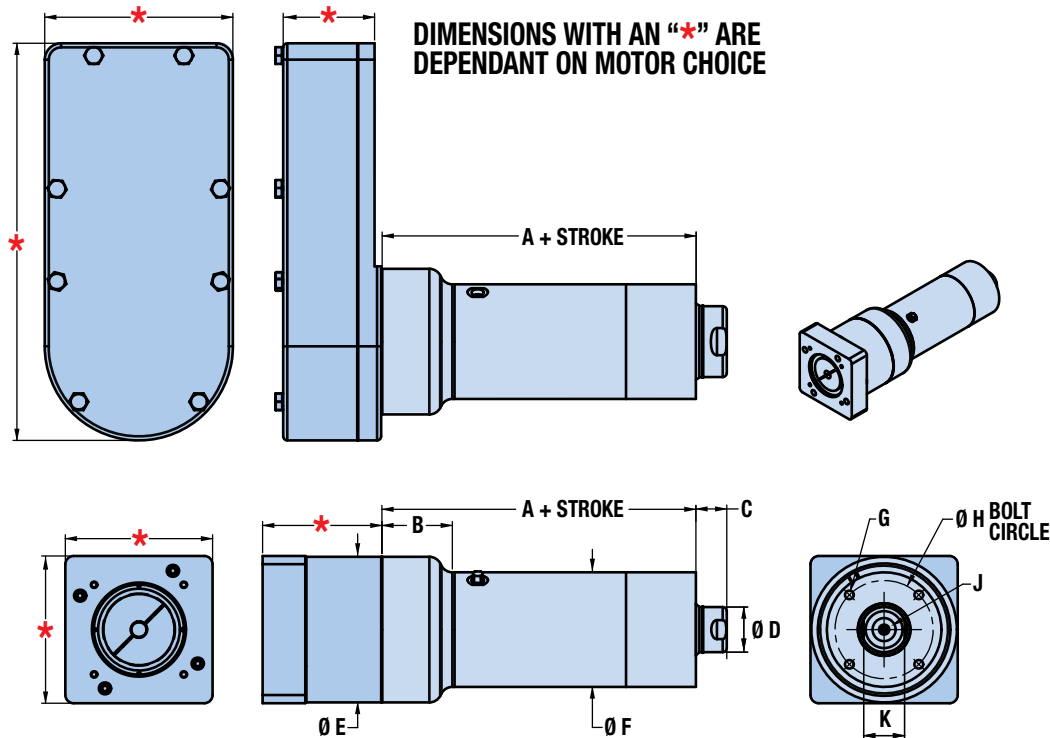
# ERD – Electric Rod-Style Actuator

SIZE: 22, 25, 30

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



**DIMENSIONS**



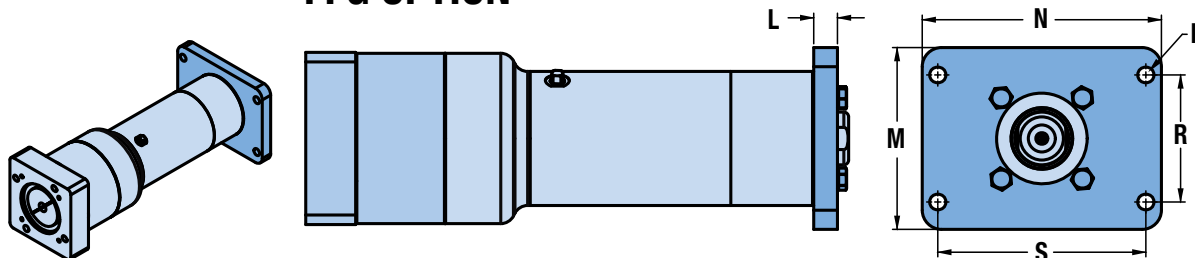
|       | A      | B     | C    | Ø D   | Ø E   | Ø F  | G                                | Ø H   | J                            | K     |
|-------|--------|-------|------|-------|-------|------|----------------------------------|-------|------------------------------|-------|
| ERD22 | 187.33 | 42.88 | 17.8 | 27.99 | 74.9  | 56.9 | M6 x 1.0 - 6H $\downarrow$ 12.0  | 45.49 | M12 x 1.25 $\downarrow$ 22.2 | 25.40 |
| ERD25 | 243.74 | 54.66 | 23.9 | 35.00 | 113.0 | 88.9 | M8 x 1.25 - 6H $\downarrow$ 16.0 | 76.20 | M20 x 1.5 $\downarrow$ 25.4  | 31.75 |
| ERD30 | 243.74 | 54.66 | 23.9 | 54.99 | 113.0 | 88.9 | M8 x 1.25 - 6H $\downarrow$ 16.0 | 76.20 | M27 x 2.0 $\downarrow$ 33.0  | 50.80 |

Dimensions in millimeters

|       | A     | B     | C    | Ø D   | Ø E  | Ø F  | G                                 | Ø H   | J                             | K     |
|-------|-------|-------|------|-------|------|------|-----------------------------------|-------|-------------------------------|-------|
| ERD22 | 7.375 | 1.688 | 0.70 | 1.102 | 2.95 | 2.24 | M6 x 1.0 - 6H $\downarrow$ 0.47"  | 1.791 | M12 x 1.25 $\downarrow$ 0.88" | 1.000 |
| ERD25 | 9.596 | 2.152 | 0.94 | 1.378 | 4.45 | 3.50 | M8 x 1.25 - 6H $\downarrow$ 0.63" | 3.000 | M20 x 1.5 $\downarrow$ 1.00"  | 1.250 |
| ERD30 | 9.596 | 2.152 | 0.94 | 2.165 | 4.45 | 3.50 | M8 x 1.25 - 6H $\downarrow$ 0.63" | 3.000 | M27 x 2.0 $\downarrow$ 1.30"  | 2.000 |

Dimensions in inches

## FFG OPTION



|       | L    | M     | N     | P    | R    | S     |
|-------|------|-------|-------|------|------|-------|
| ERD22 | 10.2 | 69.9  | 98.6  | 7.1  | 50.8 | 76.2  |
| ERD25 | 15.7 | 120.7 | 158.8 | 10.7 | 84.3 | 138.2 |
| ERD30 | 15.7 | 120.7 | 158.8 | 10.7 | 84.3 | 138.2 |

Dimensions in millimeters

|       | L    | M    | N    | P    | R    | S    |
|-------|------|------|------|------|------|------|
| ERD22 | 0.40 | 2.75 | 3.88 | 0.28 | 2.00 | 3.00 |
| ERD25 | 0.62 | 4.75 | 6.25 | 0.42 | 3.32 | 5.44 |
| ERD30 | 0.62 | 4.75 | 6.25 | 0.42 | 3.32 | 5.44 |

Dimensions in inches

# ERD – Electric Rod-Style Actuator

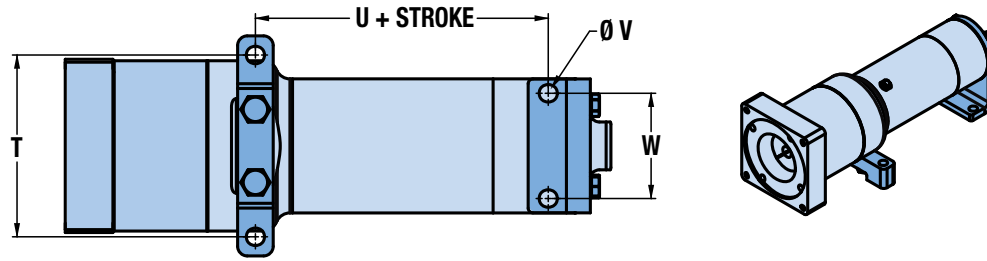
SIZE: 22, 25, 30

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



**DIMENSIONS**

## FM2 OPTION



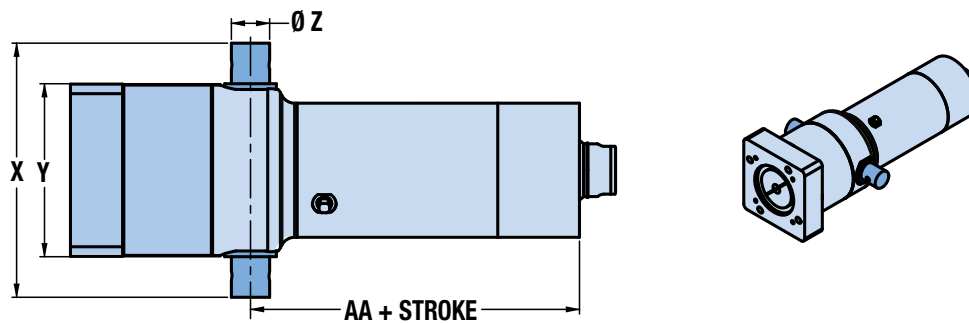
|       | T     | U     | Ø V   | W    |
|-------|-------|-------|-------|------|
| ERD22 | 88.9  | 145.0 | 7.11  | 44.5 |
| ERD25 | 120.7 | 194.3 | 11.99 | 69.9 |
| ERD30 | 120.7 | 194.3 | 11.99 | 69.9 |

Dimensions in millimeters

|       | T    | U    | Ø V   | W    |
|-------|------|------|-------|------|
| ERD22 | 3.50 | 5.71 | 0.280 | 1.75 |
| ERD25 | 4.75 | 7.65 | 0.472 | 2.75 |
| ERD30 | 4.75 | 7.65 | 0.472 | 2.75 |

Dimensions in inches

## TRR OPTION



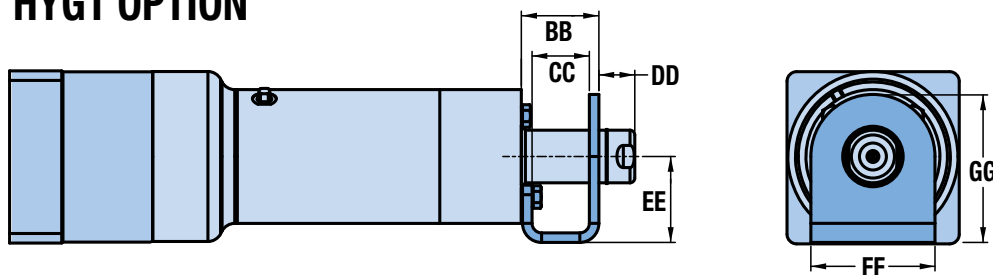
|       | X      | Y      | Ø Z   |       | AA     |
|-------|--------|--------|-------|-------|--------|
| ERD22 | 109.68 | 77.67  | 16.00 | 15.95 | 168.28 |
| ERD25 | 168.66 | 114.81 | 25.39 | 25.36 | 218.34 |
| ERD30 | 168.66 | 114.81 | 25.39 | 25.36 | 218.34 |

Dimensions in millimeters

|       | X     | Y     | Ø Z   |       | AA    |
|-------|-------|-------|-------|-------|-------|
| ERD22 | 4.318 | 3.058 | 0.630 | 0.629 | 6.625 |
| ERD25 | 6.640 | 4.520 | 1.000 | 0.999 | 8.596 |
| ERD30 | 6.640 | 4.520 | 1.000 | 0.999 | 8.596 |

Dimensions in inches

## HYG1 OPTION



|       | BB   | CC   | DD   | EE   | FF   | GG   |
|-------|------|------|------|------|------|------|
| ERD22 | 41.4 | 27.9 | 12.7 | 50.8 | 56.9 | 79.2 |
| ERD25 | 51.6 | 38.1 | 23.9 | 57.2 | 82.6 | 98.6 |
| ERD30 | 51.6 | 38.1 | 23.9 | 57.2 | 82.6 | 98.6 |

Dimensions in millimeters

|       | BB   | CC   | DD   | EE   | FF   | GG   |
|-------|------|------|------|------|------|------|
| ERD22 | 1.63 | 1.10 | 0.50 | 2.00 | 2.24 | 3.12 |
| ERD25 | 2.03 | 1.50 | 0.94 | 2.25 | 3.25 | 3.88 |
| ERD30 | 2.03 | 1.50 | 0.94 | 2.25 | 3.25 | 3.88 |

Dimensions in inches

# ERD – Electric Rod-Style Actuator

SIZE: 06, 10, 15

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



**DIMENSIONS**

## ALTERNATIVE MOTOR DIMENSIONS

### MOTOR DIMENSIONS – NEMA MOTOR MOUNT

The ERD 06, 10 & 15 sizes are designed to accommodate NEMA standard stepper and servo motors.

| ACTUATOR | SIZE   |
|----------|--------|
| ERD06    | NEMA11 |
| ERD10    | NEMA17 |
| ERD15    | NEMA23 |

The only limiting factors are the motor shaft diameter and length. NEMA standard motors from the companies in the table at right have been found to be compatible with the ERD actuator. (📄) \*NOT a complete listing)

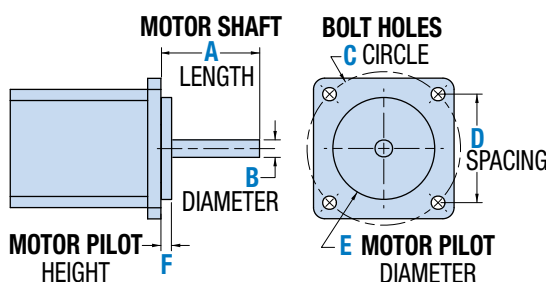
| ERD Compatible<br>NEMA Motor<br>Suppliers* |
|--------------------------------------------|
| Anaheim Automation                         |
| Animatics                                  |
| Applied Motion Products                    |
| Automation Direct                          |
| Cool Muscle                                |
| Electrocraft                               |
| Fastech                                    |
| IMS / Scheider Electric                    |
| JVL                                        |
| LIN Engineering                            |
| Nippon Pulse Motor                         |
| Omega                                      |
| Oriental Motor                             |
| Parker                                     |
| Sanyo Denki                                |
| + Others                                   |

**!** When any motor has been selected for use with the ERD actuator it is important to confirm the motor is compatible with the dimensions in the table below.

|                       |             |    | ERD06 | ERD10 | ERD15 | ERD06 | ERD10 | ERD15 |
|-----------------------|-------------|----|-------|-------|-------|-------|-------|-------|
|                       |             |    | MIN.  | MAX.  |       |       |       |       |
| MOTOR SHAFT           | LENGTH      | A  | 12.7  | 27.94 | 12.7  | 31.75 | 12.7  | 31.75 |
|                       |             | B  | 5.00  | 5.00  | 6.35  | 0.197 | 0.197 | 0.250 |
| MOTOR PILOT BOLT HOLE | CIRCLE      | ØC | 33.69 | 43.82 | 66.68 | 1.287 | 1.725 | 2.625 |
|                       |             | D  | 23.11 | 30.99 | 47.14 | 0.910 | 1.220 | 1.856 |
| MOTOR PILOT BOLT HOLE | SPACING     | D  | 23.11 | 30.99 | 47.14 | 0.910 | 1.220 | 1.856 |
|                       |             | E  | 24.90 | 24.90 | 39.37 | 0.980 | 0.980 | 1.550 |
| MOTOR PILOT BOLT HOLE | HEIGHT MAX. | F  | 2.29  | 3.30  | 3.30  | 0.090 | 0.130 | 0.130 |
|                       |             | F  | 2.29  | 3.30  | 3.30  | 0.090 | 0.130 | 0.130 |

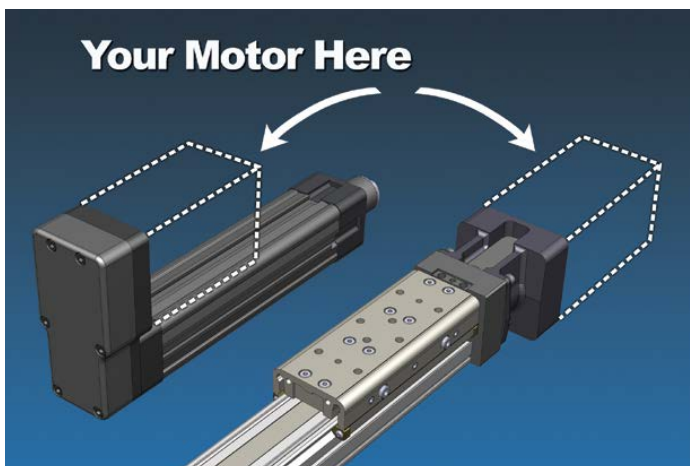
Dimensions in millimeters

Dimensions in inches



### MOTOR CHOICES - YOUR MOTOR HERE

SELECT A COMPLETE SYSTEM FROM TOLOMATIC OR ADD ANY MOTION SYSTEM TO OUR ACTUATORS



### "YOUR MOTOR HERE" MADE-TO-ORDER MOTOR MOUNTS. 15 DAYS.

- Select a high-performance Tolomatic electric actuator and we'll provide a motor-specific interface for your motor. With our online database, you can select from over 60 motor manufacturers and hundreds of models.

Visit [www.tolomatic.com/ymh](http://www.tolomatic.com/ymh) to find your motor/actuator match!

The ERD 15, 20, 22, 25 & 30 sizes utilize Tolomatic's YMH (Your Motor Here) program. See [www.tolomatic.com/ymh](http://www.tolomatic.com/ymh) or consult Tolomatic sales at 1-800-328-2174 for details.

Configure an actuator and a complete motion control system today using Tolomatic's easy-to-use on-line sizing & selection



Available FREE at [www.tolomatic.com](http://www.tolomatic.com)

# ERD – Electric Rod-Style Actuator

## SWITCHES



ERD actuators have 6 switch options: reed, solid state PNP (sourcing) or solid state NPN (sinking); normally open; with flying leads or quick-disconnect.

Commonly used for end-of-stroke positioning, these switches allow clamp-on installation anywhere along the entire actuator length. The internal magnet, located on the thrust tube, 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, IP67 rated and are RoHS compliant. Switches feature bright red or green LED signal indicators.



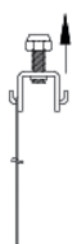
|             | Order Code | Lead | Switching Logic                 | Power LED                                                                           | Signal LED | Operating Voltage | **Power Rating (Watts) | Switching Current (mA max.) | Current Consumption | Voltage Drop | Leakage Current | Temp. Range   | Shock / Vibration | IP Rating |
|-------------|------------|------|---------------------------------|-------------------------------------------------------------------------------------|------------|-------------------|------------------------|-----------------------------|---------------------|--------------|-----------------|---------------|-------------------|-----------|
| REED        | <b>R Y</b> | 5m   | SPST<br>Normally Open           | —                                                                                   | Red        | 5 - 240 AC/DC     | **10.0                 | 100mA                       | —                   | 3.0 V max.   | —               | 14 to 158°F   | 30 G / 9 G        | 67        |
|             | <b>R K</b> | QD*  |                                 |    |            |                   |                        |                             |                     |              |                 |               |                   |           |
| SOLID STATE | <b>T Y</b> | 5m   | PNP (Sourcing)<br>Normally Open | —                                                                                   | Green      | 5 - 30 VDC        | **3.0                  | 200mA                       | 8 mA @ 24V          | 1.0 V max.   | 0.01 mA max.    | [-10 to 70°C] | 50 G / 9 G        |           |
|             | <b>T K</b> | QD*  |                                 |  |            |                   |                        |                             |                     |              |                 |               |                   |           |
|             | <b>K Y</b> | 5m   | NPN (Sinking)<br>Normally Open  | —                                                                                   | Red        |                   |                        |                             |                     |              |                 |               |                   |           |
|             | <b>K 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 - FIELD REPLACEMENT INSTRUCTIONS



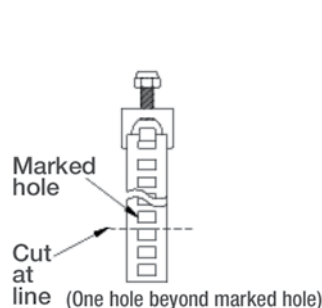
### STEP 1:

Loosen screw and nut.



### STEP 2:

Place sensor and wrap the band around the ERD cylinder. Position the hook with the nearest hole on the band and mark the hole with a permanent marker.



### STEP 3:

Remove mounting assembly. Cut the band at the nearest edge of the next hole. (The one that's furthest away from the mounting head.)



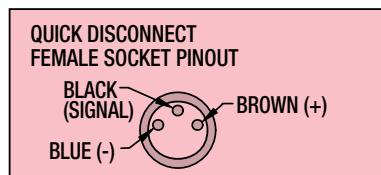
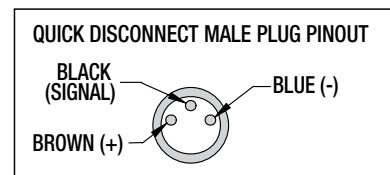
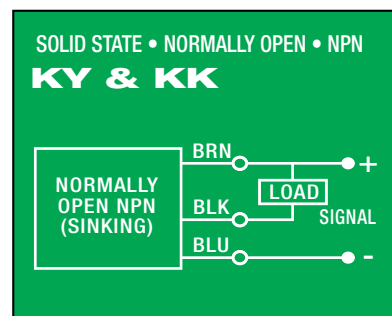
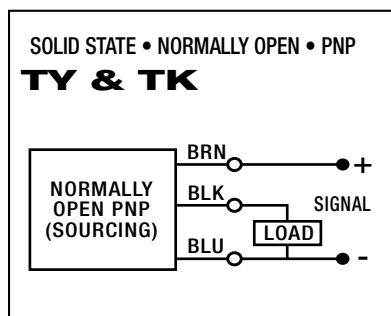
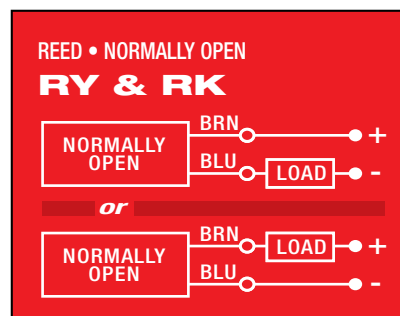
### STEP 4:

Replace the sensor and mounting assembly. Wrap the band and put the chosen hole on the hook. Position the switch and tighten. Tighten nut for steadying.

# ERD – Electric Rod-Style Actuator

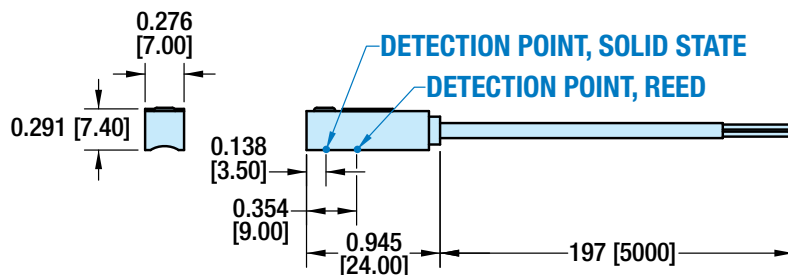
## SWITCHES

### WIRING DIAGRAMS

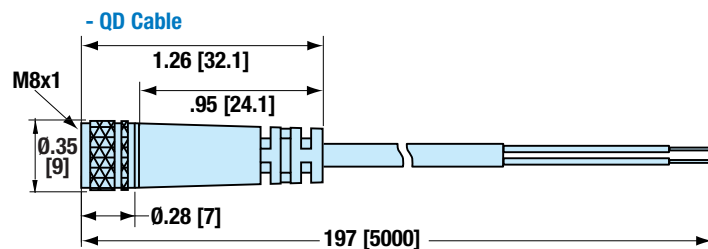
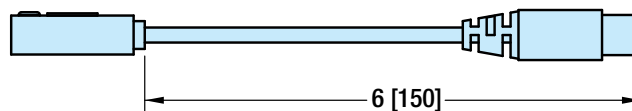


### SWITCH DIMENSIONS

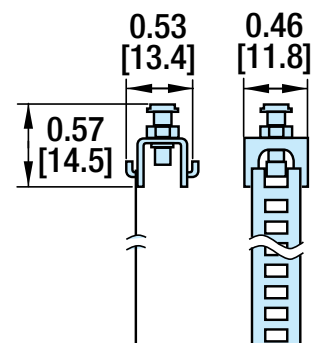
**Y** - direct connect



**K** - QD (Quick-disconnect) switch



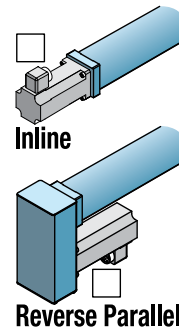
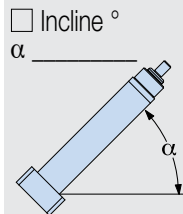
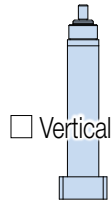
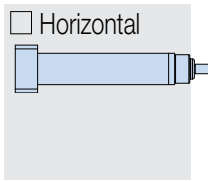
### SWITCH CLAMP



# APPLICATION DATA WORKSHEET

Fill in known data. Not all information is required for all applications

## ORIENTATION



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

## MOVE PROFILE

### EXTEND

Move Distance \_\_\_\_\_

☐ inch (US conventional) ☐ millimeters (Metric)

Move Time \_\_\_\_\_ sec

Max. Speed \_\_\_\_\_

☐ in/sec ☐ mm/sec

Dwell Time After Move \_\_\_\_\_ sec

### RETRACT

Move Distance \_\_\_\_\_

☐ inch ☐ millimeters

Move Time \_\_\_\_\_ sec

Max. Speed \_\_\_\_\_

☐ in/sec ☐ mm/sec

Dwell Time After Move \_\_\_\_\_ sec

**NO. OF CYCLES** \_\_\_\_\_

☐ per minute ☐ per hour

**HOLD POSITION?** ☐ Required ☐ Not Required

☐ After Move ☐ During Power Loss

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

### EXTEND

#### LOAD

☐ lb. (U.S. Standard) ☐ kg. (Metric)

#### FORCE

☐ lbf. (U.S. Standard) ☐ N (Metric)

### RETRACT

#### LOAD

☐ lb. (U.S. Standard) ☐ kg. (Metric)

#### FORCE

☐ lbf. (U.S. Standard) ☐ N (Metric)

## STROKE LENGTH

☐ inch (US conventional) ☐ millimeters (Metric)

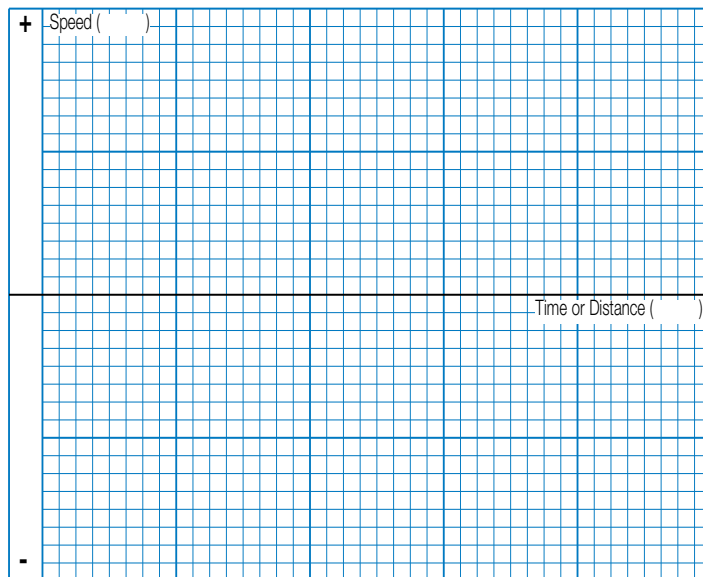
## PRECISION

Repeatability \_\_\_\_\_  
☐ inch ☐ millimeters

## OPERATING ENVIRONMENT

Temperature, Contamination, Water, etc.

## MOTION PROFILE



Graph your most demanding cycle, including accel/decel, velocity and dwell times. You may also want to indicate load variations and I/O changes during the cycle. Label axes with proper scale and units.

## CONTACT INFORMATION

Name, Phone, Email \_\_\_\_\_  
 Co. Name, Etc. \_\_\_\_\_



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**FAX 1-763-478-8080**

**EMAIL [help@tolomatic.com](mailto:help@tolomatic.com)**

# ERD – Electric Rod-Style Actuator

sizeit.tolomatic.com for fast,  
accurate actuator selection



## Selection Guidelines

### 1 ESTABLISH MOTION PROFILE

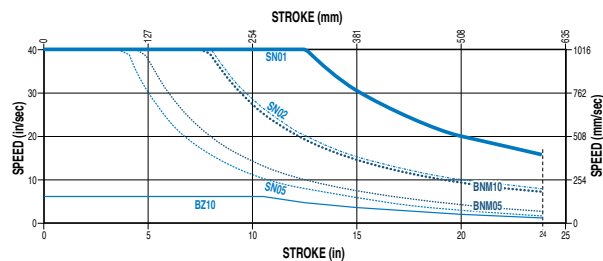
Using the application stroke length, desired cycle time, loads and forces, establish the motion profile details including linear velocity and thrust in each of its segments.

### 2 SELECT ACTUATOR SIZE AND SCREW TYPE

Based on the required velocities and thrust select a size and screw type and lead of the ERD actuator.

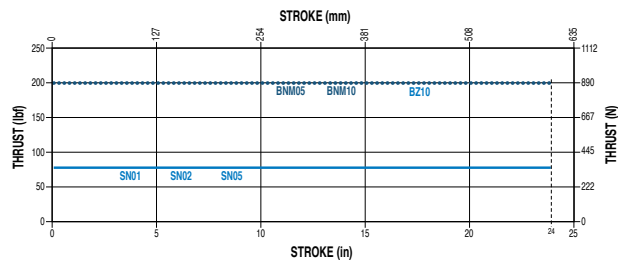
### 3 VERIFY CRITICAL SPEED OF THE SCREW

Verify that the application's peak linear velocity does not exceed the critical speed value for the size and lead of the screw selected.



### 4 VERIFY AXIAL BUCKLING STRENGTH OF THE SCREW

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

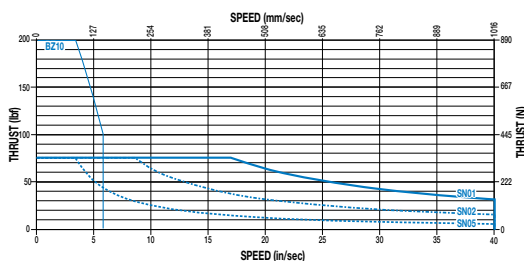


### 5 ESTABLISH TOTAL TORQUE REQUIREMENTS

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

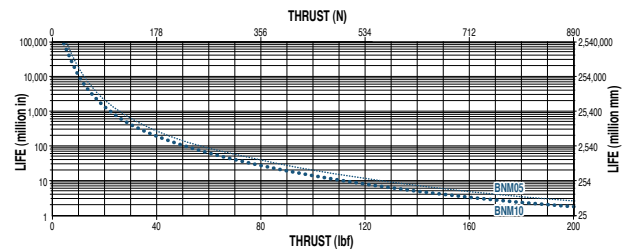
### 6 VERIFY PV VALUE (IF ACME)

Verify that the PV value does not exceed the PV value for the size of the screw selected.



### 7 CALCULATE LIFE (IF BALL SCREW)

Determine the practical load of the system to calculate the L10 estimated life.



### 8 DETERMINE IF LOAD GUIDANCE IS NEEDED

If application requires carrying a load, anti-rotate, a tooling plate or there is risk of side loading the rod, choose the guided option. (GD2) Available sizes: 06, 10, 15, 20

### 9 DETERMINE IF INGRESS PROTECTION AGAINST DUST AND WATER IS NEEDED.

If actuator is in contact with dust particulate, water or wash-down environment choose the IP67 or IP69k option.

(IP67) Available sizes: 06, 10, 15, 20;

(IP69k) Available sizes: [15 & 20 with SS2], 22, 25, 30

### 10 DETERMINE IF ENVIRONMENT IS CORROSIVE OR WASH DOWN

If corrosion resistance is required for 06-20 sizes, choose from two options of stainless steel components

- (SS1) ERD with all stainless steel components
- (SS2) ERD with all stainless steel components and protective motor enclosure.

For 22, 25 & 30 sizes choose (IP69k)

### 11 SELECT MOUNTING AND SENSOR CHOICES

Mounting options include: (TRR) trunnion mount, (FFG) front flange mount, (FM2) foot mount. 6 sensor choices include: reed, solid state PNP or NPN, all in normally open, with flying leads or quick-disconnect couplers.

### 12 SELECT ACTUATOR CONTROL SOLUTION

Add an extremely easy to use drive and motor combination to power the actuator.

# ERD – Electric Rod-Style Actuator

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accurate actuator selection



## SERVICE PARTS ORDERING

### ERD ACTUATOR REPLACEMENT KITS

| Code  | Description                 | ERD SIZE                                         |                     |                        |                        |
|-------|-----------------------------|--------------------------------------------------|---------------------|------------------------|------------------------|
|       |                             | 06                                               | 10                  | 15                     | 20                     |
| FFG   | Front Flange Mount Kit      | 2190-1025                                        | 2191-1025           | 2192-1025              | 2193-1025              |
| FM2   | Foot Mount Kit              | 2190-9001                                        | 2191-9001           | <sup>1</sup> 2192-9001 | <sup>2</sup> 2193-9001 |
| TRR   | <sup>3</sup> Trunnion Mount | 1820-1003 (order 2)                              | 0610-1044 (order 2) | 6000-1785 (order 2)    | 2193-1018 (order 2)    |
| IP67  | <sup>4</sup> IP67 Kit       | 2190-9201                                        | 2191-9201           | 2192-9201              | 2193-9201              |
| IP69K | <sup>4</sup> IP69K Kit      | –                                                | –                   | 2192-9221              | 2193-9202              |
| GD2   | Guide Kit                   | Order via configurator code: GD2ERD__ SM __ . __ |                     |                        |                        |

<sup>1</sup> REPLACEMENT ONLY: If ERD15 unit was built with SS2 option, foot mount kit 2192-9203 is required.

<sup>2</sup> REPLACEMENT ONLY: If ERD20 unit was built with RP SS1 option, foot mount kit 2193-9209 is required.

<sup>3</sup> REPLACEMENT ONLY: Trunnion mount option not available with SS2 option

<sup>4</sup> REPLACEMENT ONLY: If used on an actuator that was not originally built with the IP67 option the thrust rod will retract below the Cap/Seal and may damage the seal

| Code | Description                                                                                                                                                                                                | ERD SIZE |    |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|
|      |                                                                                                                                                                                                            | 15       | 20 |
| RA1  | If replacing an actuator with CLV, SRE or ALC rod end option and want to use existing rod end, add <b>RA1</b> to the end of the ordering code for thread compatibility. Do not reorder the rod end option. |          |    |

| Code | Description            | ERD SIZE            |                     |                     |
|------|------------------------|---------------------|---------------------|---------------------|
|      |                        | 22                  | 25                  | 30                  |
| FFG  | Front Flange Mount Kit | 2195-9052           | 2194-9052           | 2194-9052           |
| FM2  | **Foot Mount Kit       | 2195-9053           | 2194-9053           | 2194-9053           |
| TRR  | **Trunnion Mount       | 2195-1071 (order 2) | 1150-1411 (order 2) | 1150-1411 (order 2) |

\*\* REPLACEMENT ONLY

NOTE: IP69K replacement kit not available for ERD22, ERD+25 & ERD30 - return to Tolomatic for service

### ERD SWITCHES

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

EXAMPLE: **SWERD15KK**

KIT

ACTUATOR

SIZE

SWITCH CODE

| Code              | Lead             | Normally | Sensor Type     |
|-------------------|------------------|----------|-----------------|
| <b>R</b> <b>Y</b> | 5m (197 in)      | Open     | Reed            |
| <b>R</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 |          |                 |

The example is for 3 Solid State NPN, Normally Open Switches with Quick-disconnect couplers. Each switch is complete with Bracket, Set Screw, Switch and mating QD cable.

# ERD – Electric Rod-Style Actuator

3 WEEKS  
BUILT-TO-ORDER

## ORDERING

ERD 15 SN02 SM152-4 LMI ST1

| MODEL                  |
|------------------------|
| ERD Rod-Style Actuator |

| SIZE                       |
|----------------------------|
| 06, 10, 15, 20, 22, 25, 30 |

| NUT/SCREW COMBINATIONS |      |                    |
|------------------------|------|--------------------|
| SIZE                   | CODE | TURNS/in (TPI)     |
| 06                     | SN   | 02, 04, 16         |
| 10                     | SN   | 01, 02, 05         |
|                        | BNM  | 05 mm lead         |
| 15                     | SN   | 01, 02, 05         |
|                        | BNM  | 05, 10 mm lead     |
|                        | BZ   | 10                 |
| 20                     | BNM  | 05, 10, 20 mm lead |
|                        | BZ   | 10                 |
| 22                     | BN   | 02, 05             |
|                        | BNM  | 05, 10, 20 mm lead |
|                        | RNM  | 05, 10 mm lead     |
| 25                     | BN   | 01, 02, 04         |
|                        | BNM  | 05, 10, 25 mm lead |
|                        | RNM  | 05, 10 mm lead     |
| 30                     | BN   | 04                 |
|                        | BNM  | 05, 10, 20 mm lead |
|                        | RNM  | 05, 10 mm lead     |

# STROKE LENGTH

**SM \_ \_** Enter desired stroke length in millimeters (25.4mm = 1 inch)

| MAXIMUM STROKE |          |      |            |    |
|----------------|----------|------|------------|----|
| SIZE           | SN or BN |      | Roller Nut |    |
|                | mm       | in   | mm         | in |
| <b>06</b>      | 203.2    | 8    | —          | —  |
| <b>10</b>      | 254.0    | 10   | —          | —  |
| <b>15,20</b>   | 609.6    | 24   | —          | —  |
| <b>22</b>      | 1000.0   | 39.4 | 609.6      | 24 |
| <b>25</b>      | 1000.0   | 39.4 | 914.4      | 36 |
| <b>30</b>      | 1219.2   | 48   | 914.4      | 36 |

Contact Tolomatic with requests for longer strokes

| MOTOR MOUNTING |                                         |
|----------------|-----------------------------------------|
| LMI            | In-line motor mount                     |
| RP1*           | 1:1 ratio, Reverse Parallel motor mount |
| RP2*           | 2:1 ratio, Reverse Parallel motor mount |

✗ \*RP is not available for the 06 & 10 size

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

## OPTION ORDERING

ARI SS1 IP67 FFG KK2 YM \_ \_

| TORQUE                             |                                        |
|------------------------------------|----------------------------------------|
| ST1                                | Standard torque (LMI or RP)            |
| HT1                                | High torque (RP only)                  |
| 22, 25 & 30 size RP TORQUE CHOICES |                                        |
| ST                                 | Less than 60 in/lbs torque to actuator |
| HT                                 | More than 60 in/lbs torque to actuator |

| ACTUATOR GUIDE & ANTI-ROTATE |                                                        |
|------------------------------|--------------------------------------------------------|
| GD2                          | Guided unit with 2 guide shafts & tooling plate        |
| 🔧                            | GD2 is always aluminum even when ordered with SS1      |
| ✗                            | GD2 is not available for 22, 25, 30 size               |
| ARI                          | Internal Anti-Rotate for 15, 20, 22, 25, 30 sizes only |
| ✗                            | ARI not available for 22 BN02, BN05 or 30 RNM05, RNM10 |

| ENVIRONMENTAL PROTECTION |                                                                                                            |
|--------------------------|------------------------------------------------------------------------------------------------------------|
| SS1                      | Stainless steel actuator                                                                                   |
| SS2_*                    | Stainless steel actuator with protective motor enclosure                                                   |
| SS21                     | NPT 1/2" conduit thread                                                                                    |
| SS22                     | M20x1.5 conduit thread                                                                                     |
| SS23                     | Cord grip(s), 1 or 2 grips determined by encoder choice                                                    |
| IP67 & IP69K             | See chart below (IP ratings defined on pg. ERD_9)                                                          |
| HYG1                     | (ERD22, 25 & 30 only) IP69k Ingress protection rating (static), dust protection, high pressure water spray |
| LUB                      | Food grade grease                                                                                          |
| 🔧                        | *NOTE: Only Tolomatic motors are available with the SS2 option                                             |
| ✗                        | *SS2 is not available for 06, 22, 25, 30 size or with GD2 option                                           |
| 🔧                        | NOTE: ERD 10, 15 & 20: IP69K available only together with SS2 option                                       |

| ACTUATOR MOUNTING |                                             |
|-------------------|---------------------------------------------|
| FFG**             | Front Flange Mount                          |
| TRM               | Trunnion Mounting, Rear (metric)            |
| TRR               | Trunnion Mounting, Rear (US standard)       |
| FM2**             | Foot Mount                                  |
| \$PCD1            | Rear Clevis Mounting inch/Imperial pin size |
| \$PCD2            | Rear Clevis Mounting metric pin size        |

🔧 \*\*NOTE: Foot Mount and Front Flange Mount are shipped together with the actuator but are not installed by Tolomatic.

§ RP motor mount ONLY: 15, 20, 22, 25, 30 sizes

| ROD END                                                                                                                                               |                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Externally threaded rod end is standard                                                                                                               |                           |
| CLV                                                                                                                                                   | Clevis Rod End            |
| SRE                                                                                                                                                   | Spherical Rod End         |
| ALC                                                                                                                                                   | Alignment Coupler Rod End |
| NOTE: Rod End options above are not available for all ERD sizes. Stainless steel available for the above rod ends in limited sizes. Contact Tolomatic |                           |

For replacement actuator compatible with existing rod end options see RA1 code on pg. 34

| SWITCHES**  |       |          |                  |      |                                   |                                                            |
|-------------|-------|----------|------------------|------|-----------------------------------|------------------------------------------------------------|
| TYPE        | LOGIC | NORMALLY | QUICK-DISCONNECT | CODE | QUANTITY                          | LEAD LENGTH                                                |
| REED        | SPST  | Open     | No               | RY   | After code enter quantity desired | 5 m (16.4 feet)<br>6 in (152mm) to QD connector w/ 5m lead |
|             |       |          | Yes              | RK   |                                   |                                                            |
| SOLID STATE | PNP   | Open     | No               | TY   |                                   |                                                            |
|             |       |          | Yes              | TK   |                                   |                                                            |
|             | NPN   | Open     | No               | KY   |                                   |                                                            |
|             |       |          | Yes              | KK   |                                   |                                                            |

🔧 \*\*NOTE: Switches are shipped together with the actuator but are not installed by Tolomatic.

| YOUR MOTOR HERE |                                                                                               |
|-----------------|-----------------------------------------------------------------------------------------------|
| YM _ _ _        | Motor mount for non-Tolomatic motor. <a href="http://www.tolomatic.com">www.tolomatic.com</a> |
| AM _ _ _        | Tolomatic motor: contact factory                                                              |

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| IP RATING CHOICES AVAILABLE |      |      |       | USDA Approved Available | MOTOR ENCLOSURE AVAILABLE |
|-----------------------------|------|------|-------|-------------------------|---------------------------|
| Size                        | IP40 | IP67 | IP69k |                         |                           |
| 06                          | Std. | YES  | —     | —                       | —                         |
| 10                          | Std. | YES  | YES   | —                       | YES                       |
| 15                          | Std. | YES  | YES   | —                       | YES                       |
| 20                          | Std. | YES  | YES   | —                       | YES                       |
| 22                          | —    | —    | Std.  | YES                     | —                         |
| 25                          | —    | —    | Std.  | YES                     | —                         |
| 30                          | —    | —    | Std.  | YES                     | —                         |

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### Pneumatic Products

Rodless Cylinders: Band Cylinders, Cable Cylinders, Magnetically Coupled Cylinders/Slides; Guided Rod Cylinder Slides

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