Tolomatic™
EXCELLENCE *IN MOTION*

RSA & GSA
ELECTRIC ROD-STYLE ACTUATORS

ENDURANCE TECHNOLOGY℠
A Tolomatic Design Principle

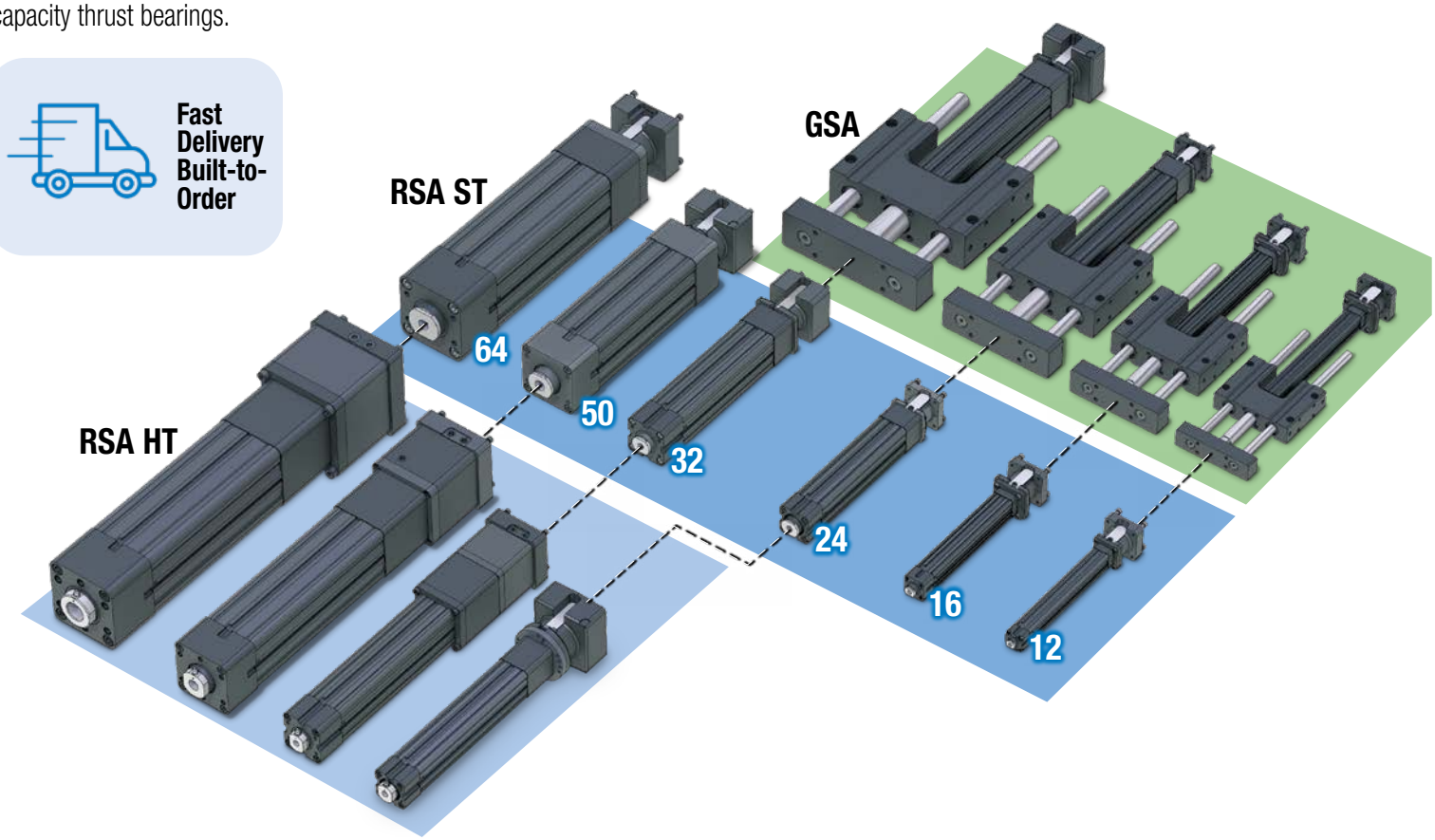
LINEAR SOLUTIONS MADE EASY

RSA & GSA Electric Rod-Style Actuators

WHAT ARE THE RSA & THE GSA?

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

Fast Delivery Built-to-Order



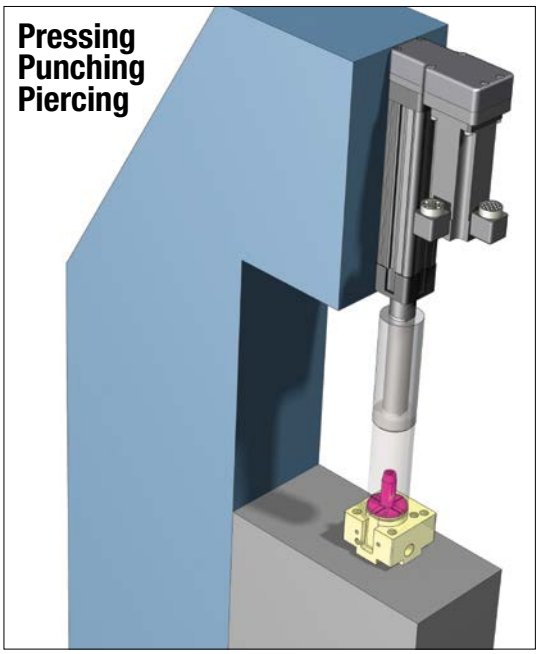
TOLOMATIC'S ELECTRIC ROD-STYLE ACTUATORS

	ERD	RSH	RSA	RSX	GSA	IMA
						
	Rod-Style Actuator	**Hygienic Rod-Style Actuator**	**Rod-Style Actuator**	**Rod-Style Actuator**	**Guided Rod-Style Actuator**	**Integrated Servo Actuator**
Force up to:	2.2 kN *(500 lbf)*	35 kN *(7,943 lbf)*	58 kN *(13,039 lbf)*	294 kN *(66,000 lbf)*	4.2 kN *(950 lbf)*	35.8 kN *(8,044 lbf)*
Speed up to:	1,016 mm/sec *(40 in/sec)*	498 mm/sec *(19.6 in/sec)*	3,124 mm/sec *(123 in/sec)*	760 mm/sec *(29.9 in/sec)*	3,124 mm/sec *(123 in/sec)*	1,334 mm/sec *(52.5 in/sec)*
Stroke Length up to:	609 mm *(24 in)*	1,219 mm *(48 in)*	1,524 mm *(60 in)*	1,500 mm *(59 in)*	914 mm *(36 in)*	457 mm *(18 in)*
Screw/Nut Type	Solid & Ball	Ball & Roller	Solid, Ball & Roller	Ball & Roller	Solid & Ball	Ball & Roller
	For complete information see www.tolomatic.com or literature number:					
Literature Number:	2190-4000	2100-4010	3600-4166	2171-4001	3600-4166	2700-4000

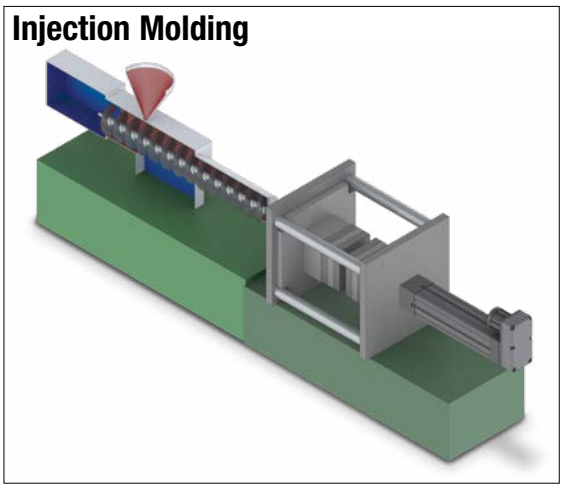
(Not all models deliver maximum values listed, i.e.: Maximum thrust may not be available with maximum speed)

Applications

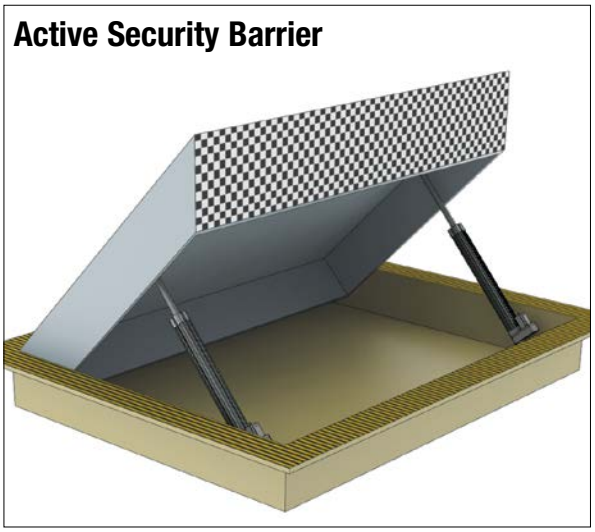
Pressing Punching Piercing



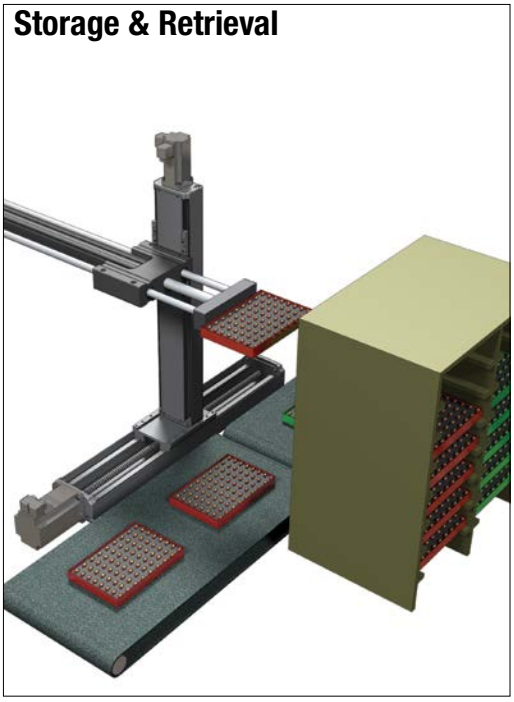
Injection Molding



Active Security Barrier



Storage & Retrieval



Other Applications:

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

CONTENTS

RSA-ST ROD-STYLE ACTUATOR

ENDURANCE TECHNOLOGY℠

A Tolomatic Design Principle

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

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

HIGH POSITIONAL ACCURACY

SCREW ACCURACY	
Roller Nut ± 0.0004"/ft.	*± 0.0102mm/300mm*
Metric Ball Nut ± 0.002"/ft.	*± 0.051mm/300mm*

MULTIPLE SCREW TECHNOLOGIES

YOU CAN CHOOSE:

- Solid nuts of bronze or engineered resins offer quiet performance at the lowest cost; anti-backlash available
- Ball nuts offer efficiency at a cost effective price; low-backlash available

SCREW SUPPORT BEARING

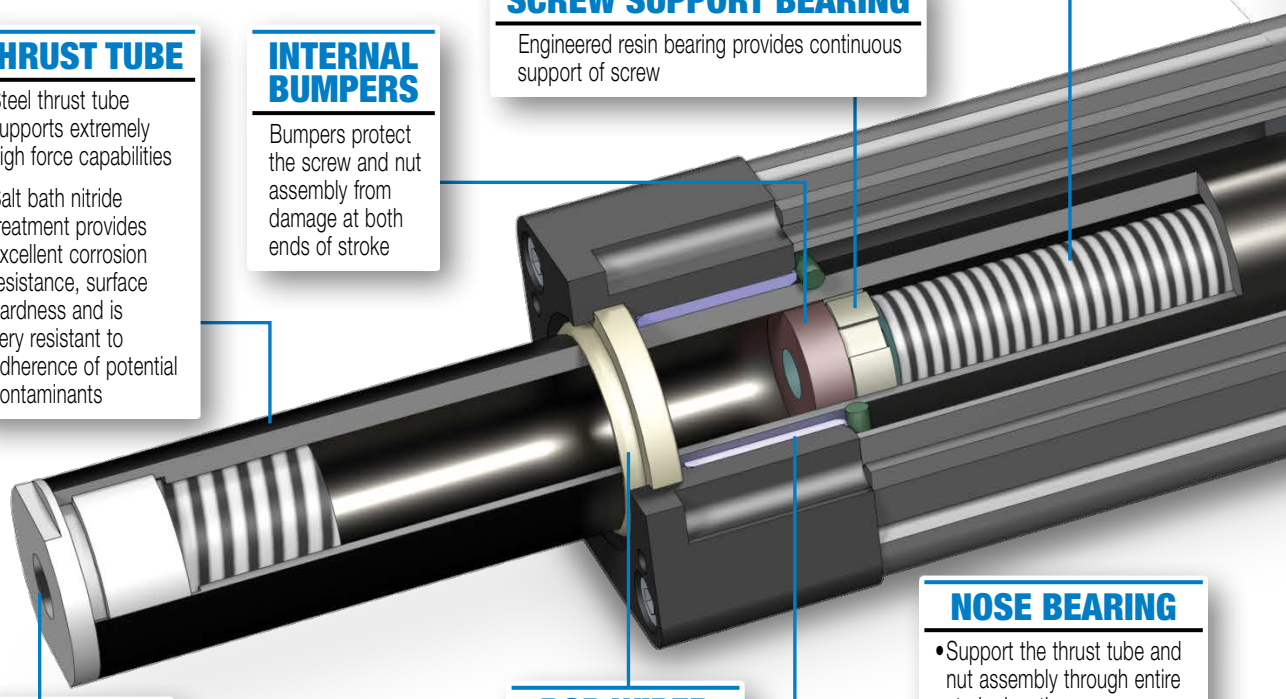
Engineered resin bearing provides continuous support of screw

THRUST TUBE

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

INTERNAL BUMPERS

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



NOSE BEARING

- Support the thrust tube and nut assembly through entire stroke length
- Unique nose bearing material allows for smooth operation and support of the thrust rod

ROD WIPER

Prevents contaminants from entering the housing for extended life of the actuator

THREADED ROD END

Provides a common interface to multiple rod end options

YOUR MOTOR HERE

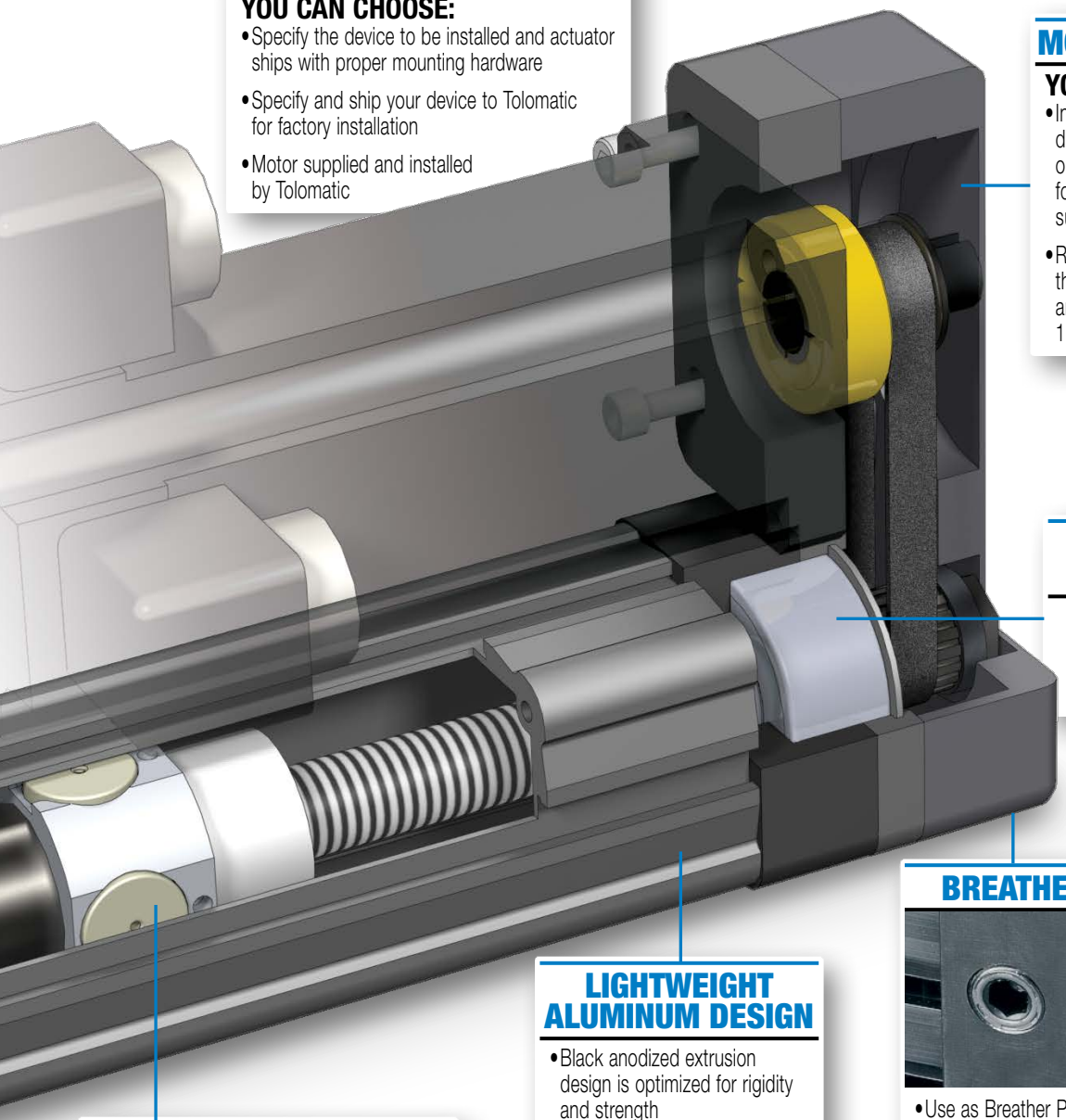
YOU CAN CHOOSE:

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

MOTOR ORIENTATION

YOU CAN CHOOSE:

- Inline option directly couples the driving shaft and is typically a one-piece housing construction for optimum alignment and support of the motor
- Reverse-parallel option minimizes the overall length, coupling motor and driving shaft via a belt with a 1:1 or 2:1 reduction ratio



HIGH THRUST BEARING

Unique high thrust bearing assembly design eliminates run-out and isolates the linear forces for the drive shaft

BREATHER/PURGE PORTS

- Standard feature on RSA 32,50,64 size actuators
- As seen in this view, located on both the bottom and the opposite side of the actuator
- Use as Breather Port: allows air flow into the interior of the actuator. Prevents additional load on the motor caused by air buildup due to fast cycling of the RSA.
  Use as Purge Port: positive pressure with air lines and filters insure contaminants (which could potentially shorten the actuator life) do not enter the interior of the actuator.

LIGHTWEIGHT ALUMINUM DESIGN

- Black anodized extrusion design is optimized for rigidity and strength
- External switch channels on all sides allow easy placement of position indicating switches

INTERNAL NUT BEARINGS

- [a]Engineered resin guide bearings provide anti-rotation of the thrust rod
- Support the thrust tube and nut assembly through entire stroke length

OPTIONS

See page 7 for a complete list of RSA options including the HT-high torque option

RSA-HT OPTION

ENDURANCE TECHNOLOGY℠

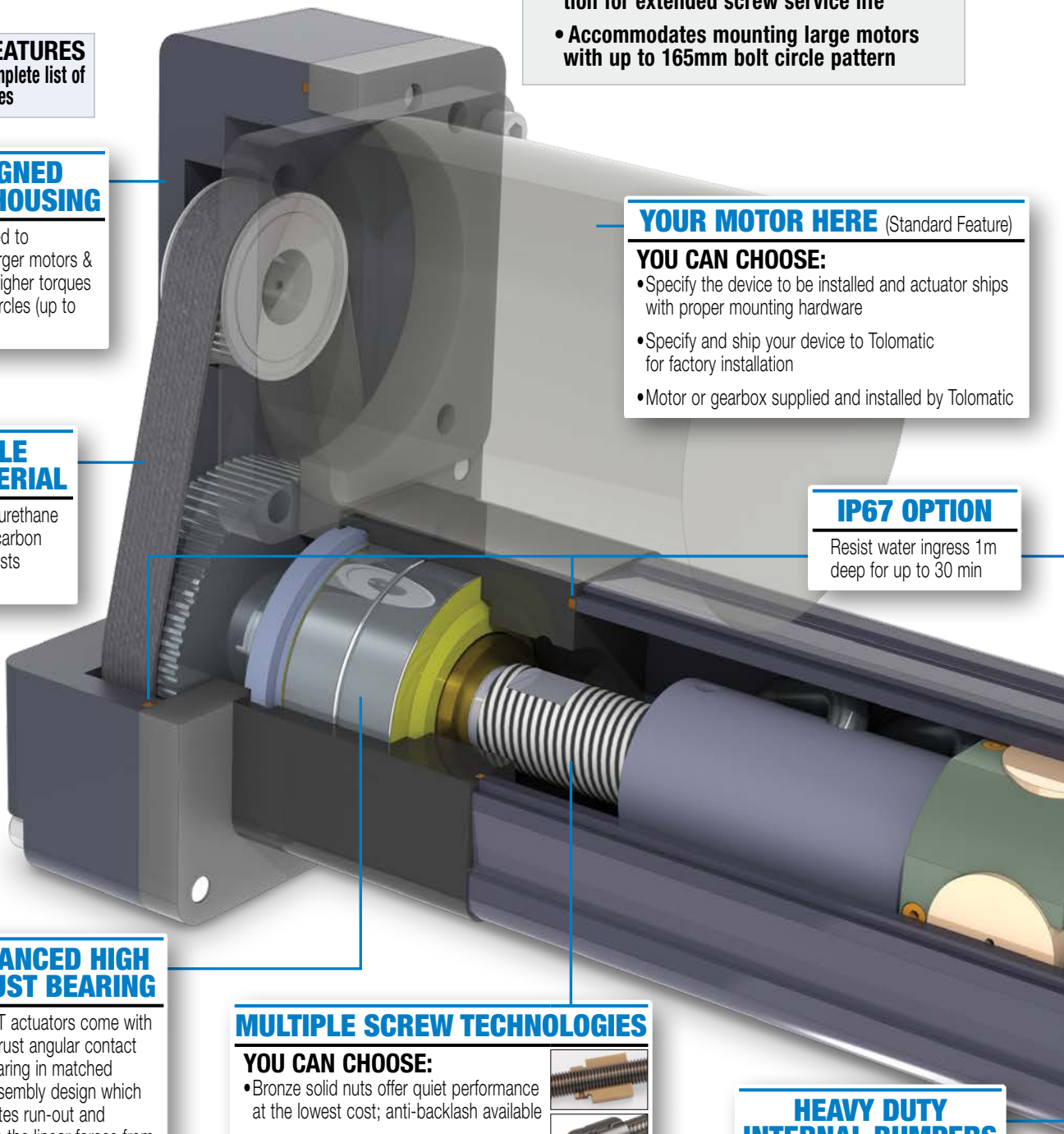
A Tolomatic Design Principle

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

WHY CHOOSE THE HT OPTION?

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

STANDARD FEATURES
See page 4 for a complete list of RSA standard features



REDESIGNED LMI & RP HOUSING

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

YOUR MOTOR HERE (Standard Feature)

YOU CAN CHOOSE:

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

DURABLE BELT MATERIAL

High torque polyurethane timing belt with carbon tensile cords resists stretching

IP67 OPTION

Resist water ingress 1m deep for up to 30 min

ENHANCED HIGH THRUST BEARING

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

MULTIPLE SCREW TECHNOLOGIES

YOU CAN CHOOSE:

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

HEAVY DUTY INTERNAL BUMPERS

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

OPTIONS (Available for all RSA actuators unless noted)

• METRIC OPTION

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

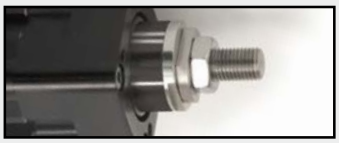
• SWITCHES

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

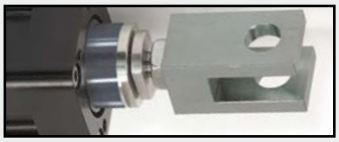
• IP67

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

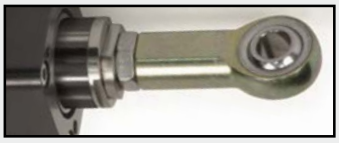
ROD END



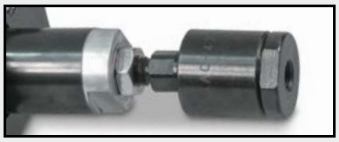
• MET: External Threads male threads



• CLV: Clevis Rod End for pivoting mount



• SRE: Spherical Rod End for pivoting mount



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

• XR: Rod Extension to separate load from the actuator

MOUNTING

• MP2: Mounting Plates for surface mounting

• FFG: Front Flange for mounting near rod end

• TRR: Trunnion Mount for pivoting mount

Below are for RP Motor mounting only

• BFG: Rear Flange for mounting opposite the rod end

• PCD: Clevis
• PCS: Eye Mount for pivoting mount

THREADED ROD END

Provides a common interface to multiple rod end options

GREASE ZERK

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

GSA GUIDED ROD-STYLE ACTUATOR

ENDURANCE TECHNOLOGY℠

A Tolomatic Design Principle

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

The GSA guided screw actuator is ideal for medium thrust applications. The self-contained guided rod design and cylinder slide style operation make this solution ideal for applications requiring guidance and support of the load. A robust, wide tooling plate allows easy mounting of the required end effectors for many applications. Built-to-order in stroke lengths up to 36 in (914 mm) with your choice of screw technology.

MULTIPLE SCREW TECHNOLOGIES

YOU CAN CHOOSE:

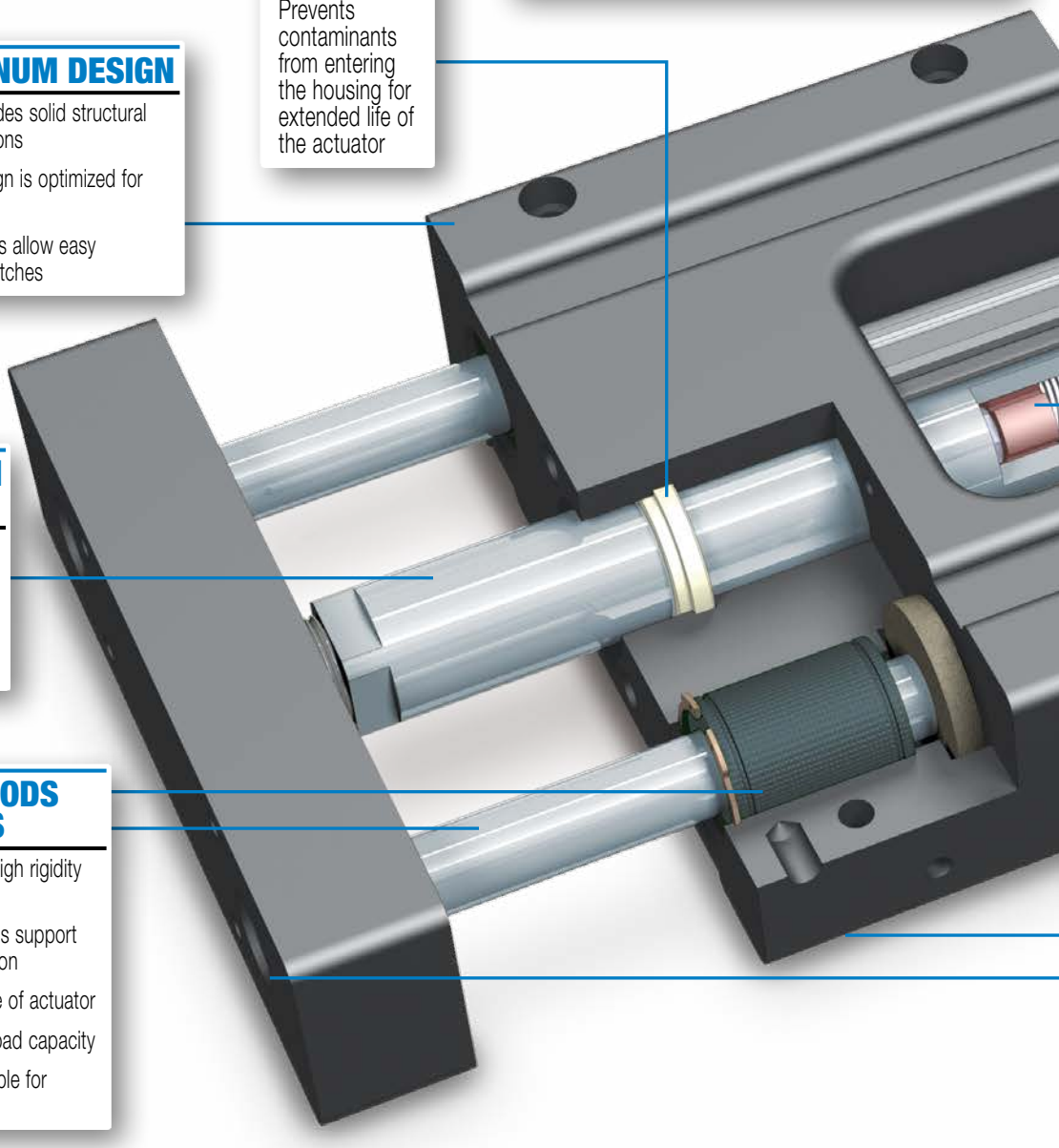
- Solid nuts of bronze or engineered resins offer quiet performance at the lowest cost; anti-backlash available
- Ball nuts offer efficiency at a cost effective price; low-backlash available

ROD WIPER

Prevents contaminants from entering the housing for extended life of the actuator

LIGHTWEIGHT ALUMINUM DESIGN

- Black anodized bearing block provides solid structural support and multiple mounting options
- Black anodized tube extrusion design is optimized for rigidity and strength
- External switch channels on all sides allow easy placement of position indicating switches



ANODIZED ALUMINUM THRUST TUBE

- Lightweight design directly provides thrust with minimal additional inertia
- Corrosion resistant plating provides excellent protection from many chemicals

INTEGRAL GUIDE RODS AND BEARINGS

- Hardened steel guide rods provide high rigidity and low deflection
- Four composite or linear ball bearings support the load for smooth, consistent motion
- Lubrication wick supplies lube for life of actuator
- Oversized rods available for higher load capacity
- Stainless steel shafting option available for corrosion resistance

YOUR MOTOR HERE

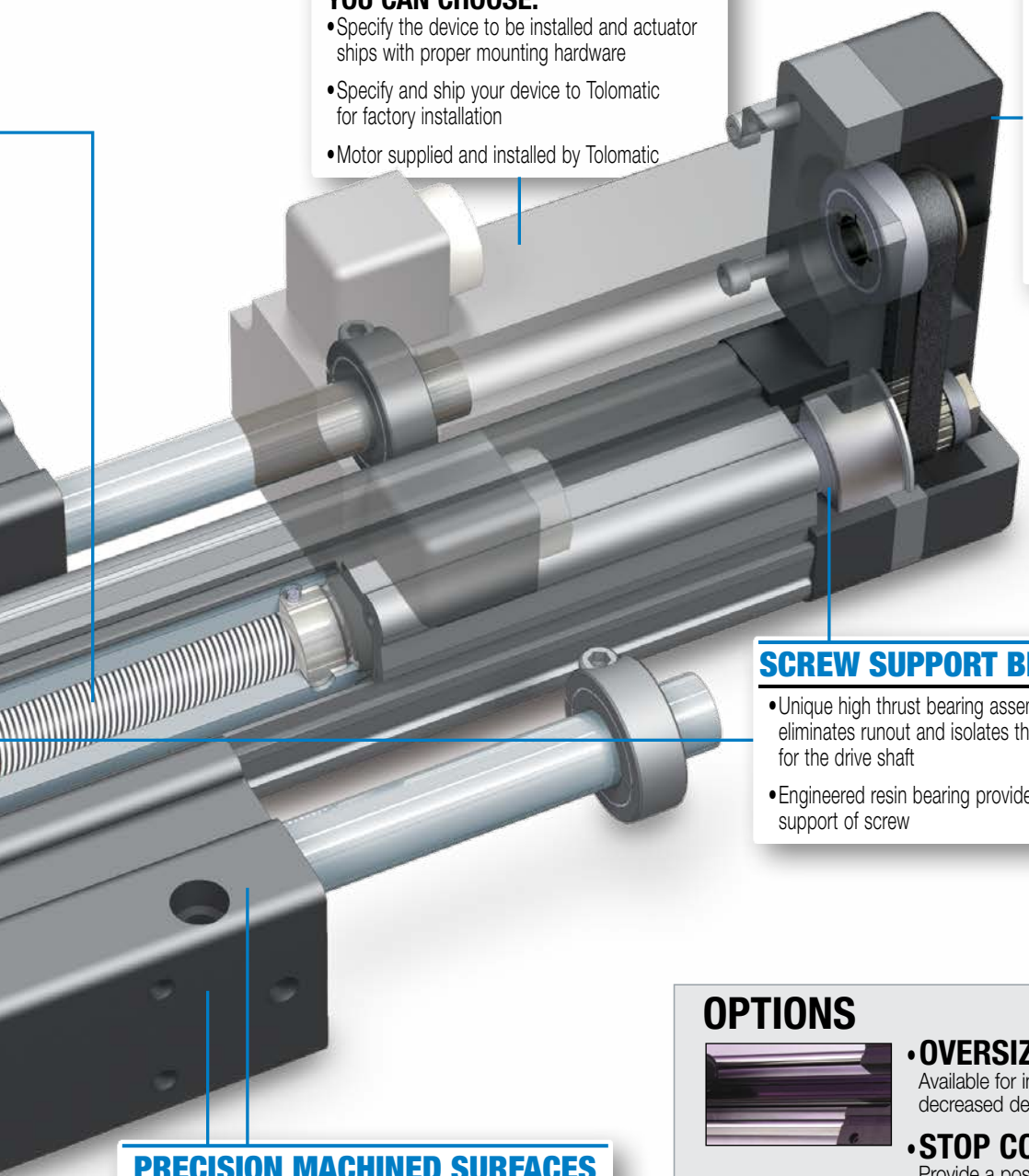
YOU CAN CHOOSE:

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

MOTOR ORIENTATION

YOU CAN CHOOSE:

- Inline option directly couples the driving shaft and is typically a one-piece housing construction for optimum alignment and support of the motor
- Reverse-parallel option minimizes the overall length, coupling motor and driving shaft via a belt with a 1:1 or 2:1 reduction ratio



SCREW SUPPORT BEARINGS

- Unique high thrust bearing assembly design eliminates runout and isolates the linear forces for the drive shaft
- Engineered resin bearing provides continuous support of screw

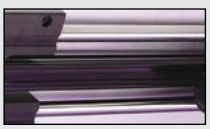
PRECISION MACHINED SURFACES

- Extruded bearing housing is precision machined on two surfaces for true and easily aligned linear motion
- Tooling plate is aligned and assembled to provide a precise mounting surface

OPTIONS

- **OVERSIZED GUIDE RODS**
  Available for increased load capacity or decreased deflection

- **STOP COLLARS**
  Provide a positive stop mechanism when required



- **CORROSION RESISTANCE**
  Includes 316 stainless steel guide rods and fasteners for better environmental protection
- **METRIC OPTION**
  Provides metric tapped holes for mounting of load to tooling plate and of actuator to mating surfaces

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

GSA

RSA ST Electric Rod-Style Actuator

SIZE: **ALL** units: **US standard**

SPECIFICATIONS

sizeit.tolomatic.com for fast, accurate actuator selection

RSA-ST

RSA SIZE	MAX. STROKE	SCREW CODE	TPI	LEAD ACCUR-ACY	BACK-LASH †	MAX. THRUST*	DYNAMIC LOAD RATING**	BASE ACTUATOR INERTIA			INERTIA PER/in OF STROKE	DYNAMIC TORQUE TO OVERCOME FRICTION
								In Line	Reverse Parallel 1:1	Reverse Parallel 2:1		
	in		turns/in	in/ft	in	lbf	lbf	lb-in^2	lb-in^2	lb-in^2	lb-in^2	lb-in
12	12	SN01	1.00	0.0100	0.0070	70	NA	0.004	0.005	NA	0.002	0.63
	12	SN02	2.00	0.0060	0.0070	70	NA	0.002	0.003	NA	0.001	0.56
	12	SN05	5.00	0.0060	0.0070	70	NA	0.002	0.002	NA	0.001	0.50
	12	BZ10	10.00	0.0060	0.0080	70	NA	0.002	0.002	NA	0.001	0.50
	12	BN(L)08	8.00	0.0030	0.0150	130	260	0.002	0.002	NA	0.001	0.50
16	18	SN01	1.00	0.0100	0.0070	70	NA	0.006	0.007	NA	0.002	1.31
	18	SN02	2.00	0.0060	0.0070	70	NA	0.003	0.003	NA	0.001	1.13
	18	SN05	5.00	0.0060	0.0070	70	NA	0.002	0.002	NA	0.001	1.06
	18	BZ10	10.00	0.0060	0.0080	70	NA	0.002	0.002	NA	0.001	1.06
	18	BN(L)08	8.00	0.0030	0.0150	130	260	0.002	0.002	NA	0.001	1.00
24	24	SN02	2.00	0.0050	0.0070	200	NA	0.116	0.117	0.071	0.005	1.81
	24	SN04	4.00	0.0100	0.0070	200	NA	0.116	0.117	0.071	0.004	1.69
	24	SN08	8.00	0.0100	0.0070	200	NA	0.116	0.117	0.071	0.004	1.63
	24	BZ10	10.00	0.0060	0.0080	603	NA	0.116	0.117	0.071	0.004	1.63
	24	BN(L)05	5.00	0.0030	0.0150	825	1,411	0.116	0.117	0.071	0.004	2.19
	24	BN(L)02	2.00	0.0030	0.0150	342	1,071	0.116	0.117	0.071	0.003	2.50
	24	BNM05	5.08	0.0040	0.0030	868	2,697	0.116	0.117	0.071	0.004	3.00
	24	BNM10	2.54	0.0040	0.0030	434	1,911	0.116	0.117	0.071	0.004	3.00
32	36	BZ10	10.00	0.0060	0.0080	785	NA	0.235	0.179	0.147	0.009	3.13
	36	BN(L)02	2.00	0.0040	0.0150	534	3,364	0.235	0.179	0.147	0.010	2.44
	36	BN(L)05	5.00	0.0030	0.0150	950	1,624	0.235	0.179	0.147	0.009	2.31
	36	BNM05	5.08	0.0040	0.0030	1357	3,080	0.235	0.179	0.147	0.010	5.60
	36	BNM10	2.54	0.0040	0.0030	678	4,721	0.235	0.179	0.147	0.010	5.60
	36	BNM20	1.27	0.0020	0.0050	339	2,560	0.235	0.179	0.147	0.011	5.60
50	48	BZ10	10.00	0.0060	0.0080	1,784	NA	0.654	1.104	0.458	0.035	4.13
	48	BN(L)01	1.00	0.0040	0.0150	758	2,300	0.654	1.104	0.458	0.035	4.13
	48	BN(L)02	2.00	0.0040	0.0150	1,517	5,355	0.654	1.104	0.458	0.029	3.63
	48	BN(L)04	4.00	0.0040	0.0150	3,034	5,159	0.654	1.104	0.458	0.028	4.25
	48	BNM05	5.08	0.0020	0.0040	2,347	4,035	0.654	1.104	0.458	0.026	7.50
	48	BNM10	2.54	0.0020	0.0040	1,926	3,372	0.654	1.104	0.458	0.026	7.50
	48	BNM25	1.02	0.0040	0.0050	771	2,537	0.654	1.104	0.458	0.026	7.50
64	60	BZ10	10.00	0.0060	0.0080	1,781	NA	2.306	2.461	2.316	0.139	5.44
	60	BN(L)53	0.53	0.0040	0.0150	538	5,961	2.306	2.461	2.316	0.180	14.70
	60	BN(L)02	2.00	0.0040	0.0150	2,019	11,402	2.306	2.461	2.316	0.142	5.31
	60	BN(L)04	4.00	0.0040	0.0150	4,028	6,746	2.306	2.461	2.316	0.140	5.38
	60	BNM05	5.08	0.0020	0.0040	2,033	6,714	2.306	2.461	2.316	0.170	9.40
	60	BNM10	2.54	0.0020	0.0040	2,033	7,476	2.306	2.461	2.316	0.170	9.40
	60	BNM20	1.27	0.0020	0.0050	1,282	5,528	2.306	2.461	2.316	0.170	9.40

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

Contact Tolomatic for higher accuracy and lower backlash options.

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

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

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

RSA ST Electric Rod-Style Actuator

SIZE: **ALL** units: **metric****

SPECIFICATIONS

sizeit.tolomatic.com for fast, accurate actuator selection

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

RSA SIZE	MAX. STROKE	SCREW CODE	LEAD	LEAD ACCUR-ACY	BACK-LASH †	MAX. THRUST*	DYNAMIC LOAD RATING**	BASE ACTUATOR INERTIA			INERTIA PER/ 25mm OF STROKE	DYNAMIC TORQUE TO OVERCOME FRICTION
								In Line	Reverse Parallel 1:1	Reverse Parallel 2:1		
	mm		mm/rev	mm/300mm	mm	N	N	kg-m² x 10⁻⁶	kg-m² x 10⁻⁶	kg-m² x 10⁻⁶	kg-m² x 10⁻⁶	N-m
12	305	SN01	25.40	0.25	0.18	311	NA	1.171	1.463	NA	0.585	0.071
	305	SN02	12.70	0.15	0.18	311	NA	0.585	0.878	NA	0.293	0.064
	305	SN05	5.08	0.15	0.18	311	NA	0.585	0.585	NA	0.293	0.056
	305	BZ10	2.54	0.15	0.20	311	NA	0.585	0.585	NA	0.293	0.056
	305	BN(L)08	3.18	0.08	0.38	578	1,157	0.585	0.585	NA	0.293	0.056
16	457	SN01	25.40	0.25	0.18	311	NA	1.756	2.048	NA	0.585	0.148
	457	SN02	12.70	0.15	0.18	311	NA	0.878	0.878	NA	0.293	0.127
	457	SN05	5.08	0.15	0.18	311	NA	0.585	0.585	NA	0.293	0.120
	457	BZ10	2.54	0.15	0.20	311	NA	0.585	0.585	NA	0.293	0.120
	457	BN(L)08	3.18	0.08	0.38	578	1,157	0.585	0.585	NA	0.293	0.113
24	610	SN02	12.70	0.13	0.18	890	NA	33.946	34.239	20.777	1.463	0.205
	610	SN04	6.35	0.25	0.18	890	NA	33.946	34.239	20.777	1.171	0.191
	610	SN08	3.18	0.25	0.18	890	NA	33.946	34.239	20.777	1.171	0.184
	610	BZ10	2.54	0.15	0.20	2,682	NA	33.946	34.239	20.777	1.171	0.184
	610	BN(L)05	5.08	0.08	0.38	3,670	6,275	33.946	34.239	20.777	1.171	0.247
	610	BN(L)02	12.70	0.08	0.38	1,521	4,764	33.946	34.239	20.777	0.878	0.282
	610	BNM05	5.00	0.10	0.07	3,861	12,000	33.946	34.239	20.777	1.171	0.340
	610	BNM10	10.00	0.10	0.07	1,930	8,500	33.946	34.239	20.777	1.171	0.340
32	914	BZ10	2.54	0.15	0.20	3,492	NA	68.770	52.382	43.018	2.634	0.353
	914	BN(L)02	12.70	0.10	0.38	2,375	14,964	68.770	52.382	43.018	2.926	0.275
	914	BN(L)05	5.08	0.08	0.38	4,226	7,226	68.770	52.382	43.018	2.634	0.261
	914	BNM05	5.00	0.10	0.07	6,036	13,700	68.770	52.382	43.018	2.926	0.633
	914	BNM10	10.00	0.10	0.07	3,016	21,000	68.770	52.382	43.018	2.926	0.633
	914	BNM20	20.00	0.05	0.13	1,508	11,388	68.770	52.382	43.018	3.219	0.633
50	1219	BZ10	2.54	0.15	0.20	7,936	NA	191.386	323.073	134.029	10.242	0.466
	1219	BN(L)01	25.40	0.10	0.38	3,372	10,231	191.386	323.073	134.029	10.242	0.466
	1219	BN(L)02	12.70	0.10	0.38	6,748	23,820	191.386	323.073	134.029	8.487	0.410
	1219	BN(L)04	6.35	0.10	0.38	13,496	22,949	191.386	323.073	134.029	8.194	0.480
	1219	BNM05	5.00	0.05	0.10	10,440	17,947	191.386	323.073	134.029	7.609	0.847
	1219	BNM10	10.00	0.05	0.10	8,567	14,999	191.386	323.073	134.029	7.609	0.847
	1219	BNM25	25.00	0.10	0.13	3,430	11,285	191.386	323.073	134.029	7.609	0.847
64	1524	BZ10	2.54	0.15	0.20	7,922	NA	674.825	720.184	677.752	40.677	0.614
	1524	BN(L)53	47.93	0.10	0.38	2,393	26,516	674.825	720.184	677.752	52.675	1.412
	1524	BN(L)02	12.70	0.10	0.38	8,981	50,719	674.825	720.184	677.752	41.555	0.600
	1524	BN(L)04	6.35	0.10	0.38	17,917	30,010	674.825	720.184	677.752	40.969	0.607
	1524	BNM05	5.00	0.05	0.10	9,043	29,865	674.825	720.184	677.752	49.749	1.062
	1524	BNM10	10.00	0.05	0.10	9,043	33,253	674.825	720.184	677.752	49.749	1.062
	1524	BNM20	20.00	0.05	0.13	5,703	24,592	674.825	720.184	677.752	49.749	1.062

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

Contact Tolomatic for higher accuracy and lower backlash options.

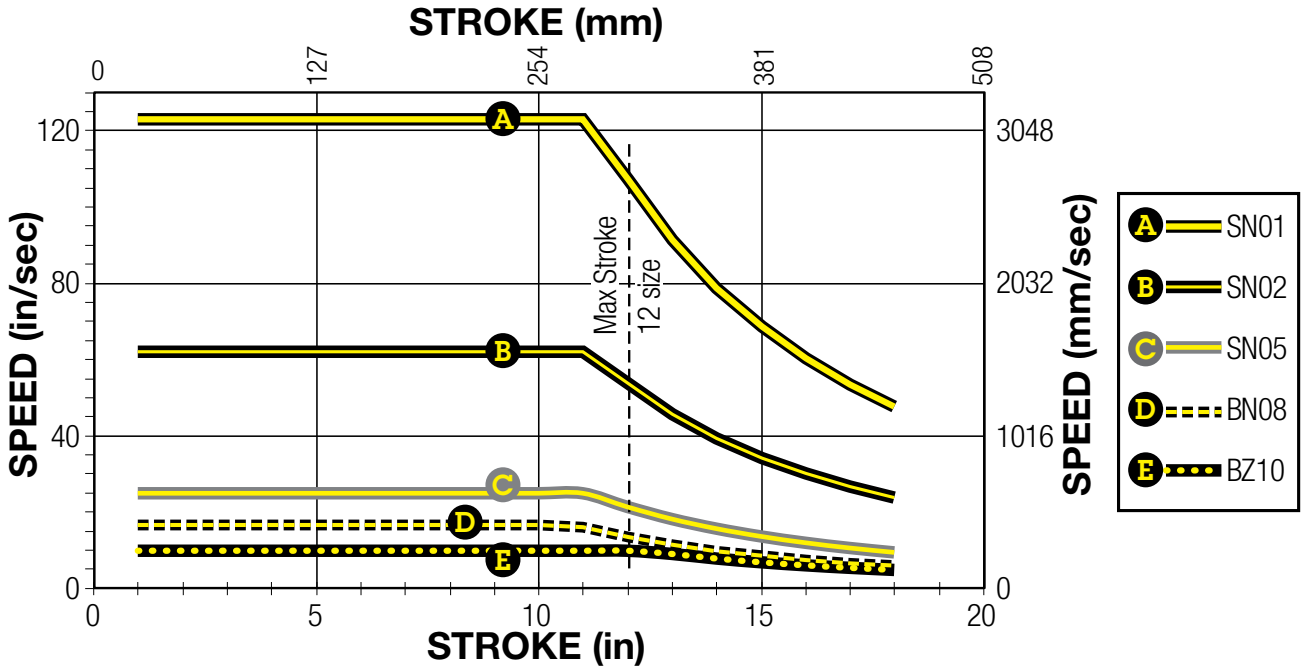
† (L) for low backlash ball screws: backlash = 0.0020" (0.05 mm)

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

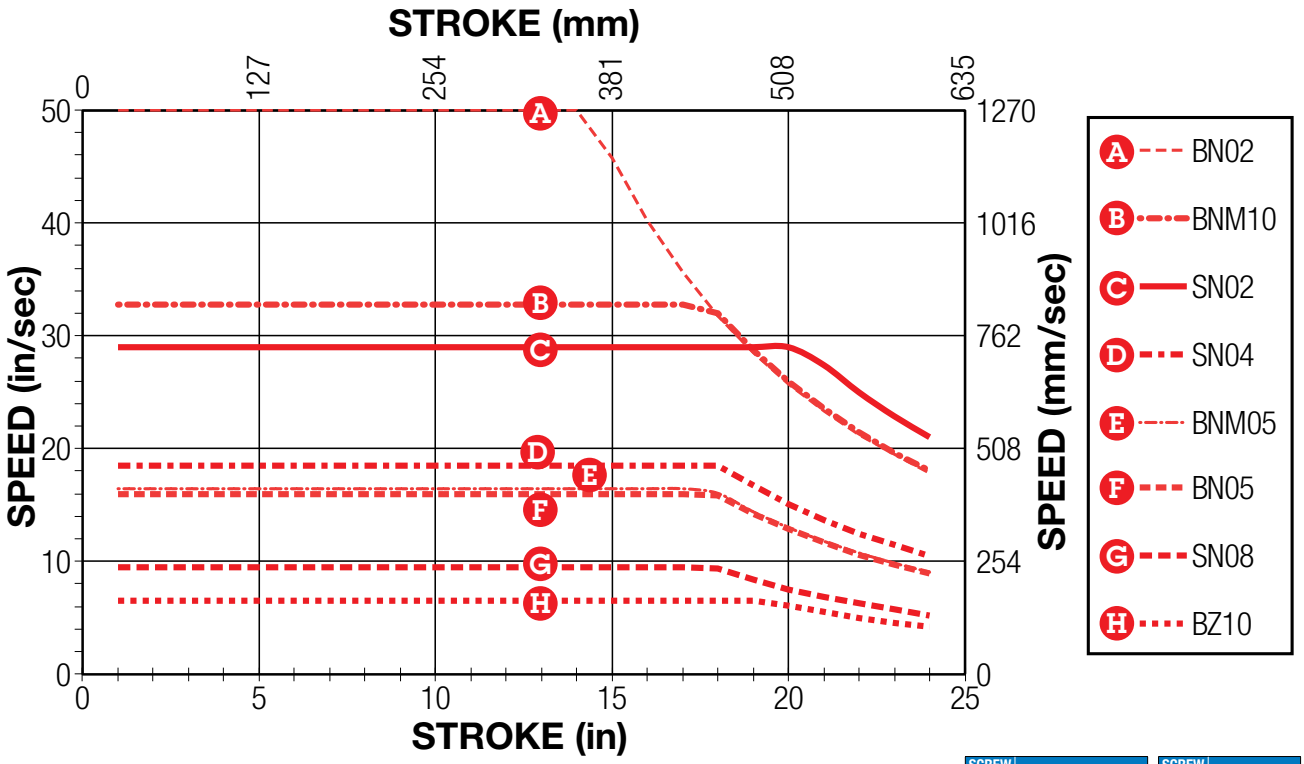
** For RN, BN & BNL screws, dynamic load rating reflects 90% reliability for 1 million revolutions.

SIZE: 12,16: CRITICAL SPEED CAPACITIES

SPECIFICATIONS



SIZE: 24: CRITICAL SPEED CAPACITIES

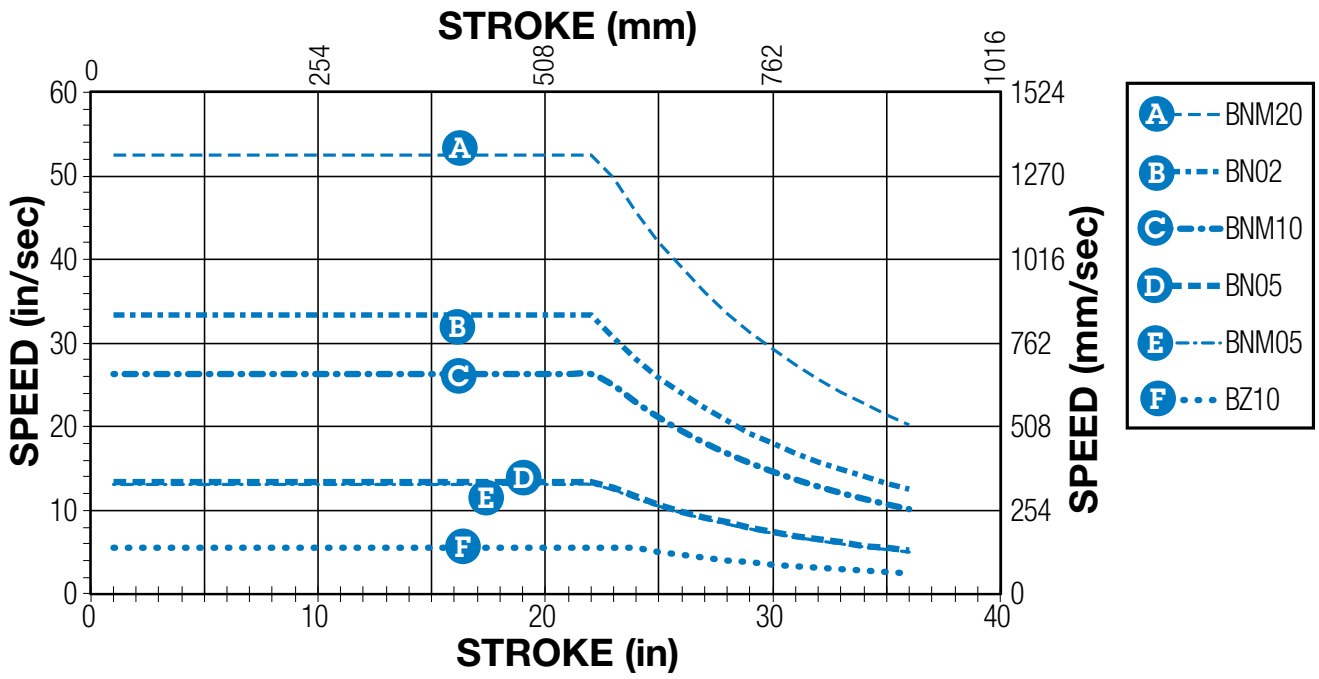


SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

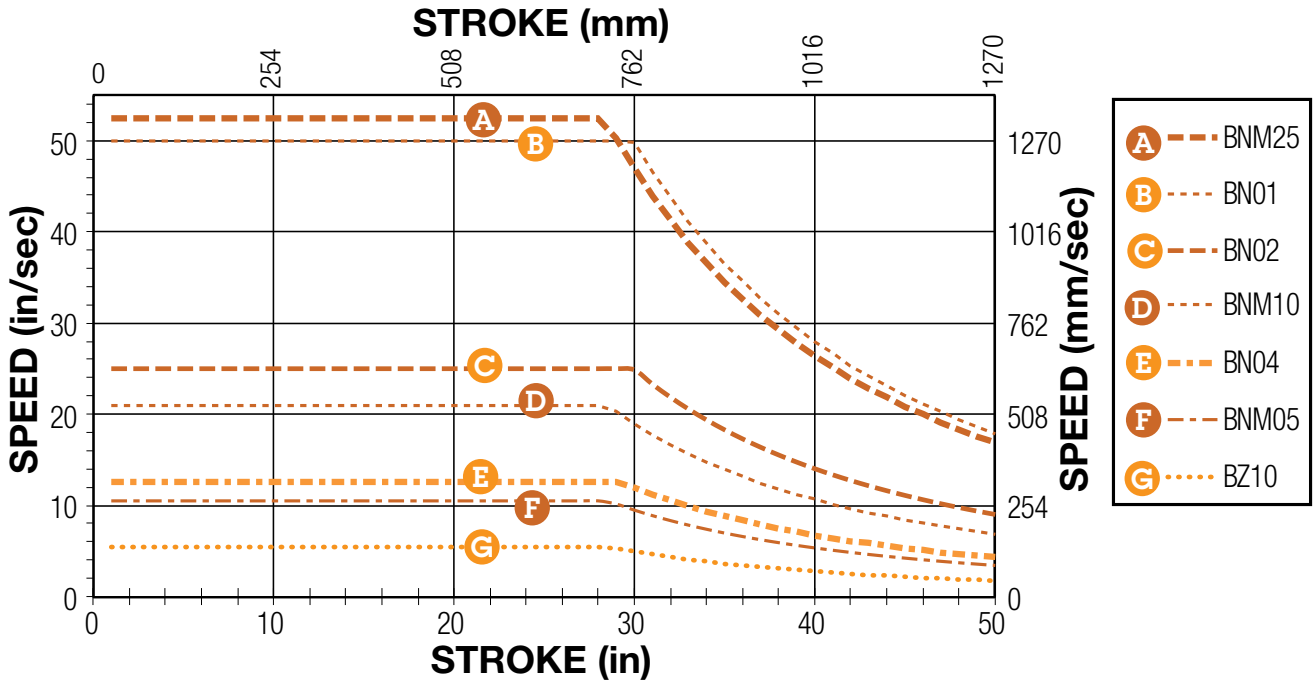
SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

SIZE: 32: CRITICAL SPEED CAPACITIES

SPECIFICATIONS



SIZE: 50: CRITICAL SPEED CAPACITIES

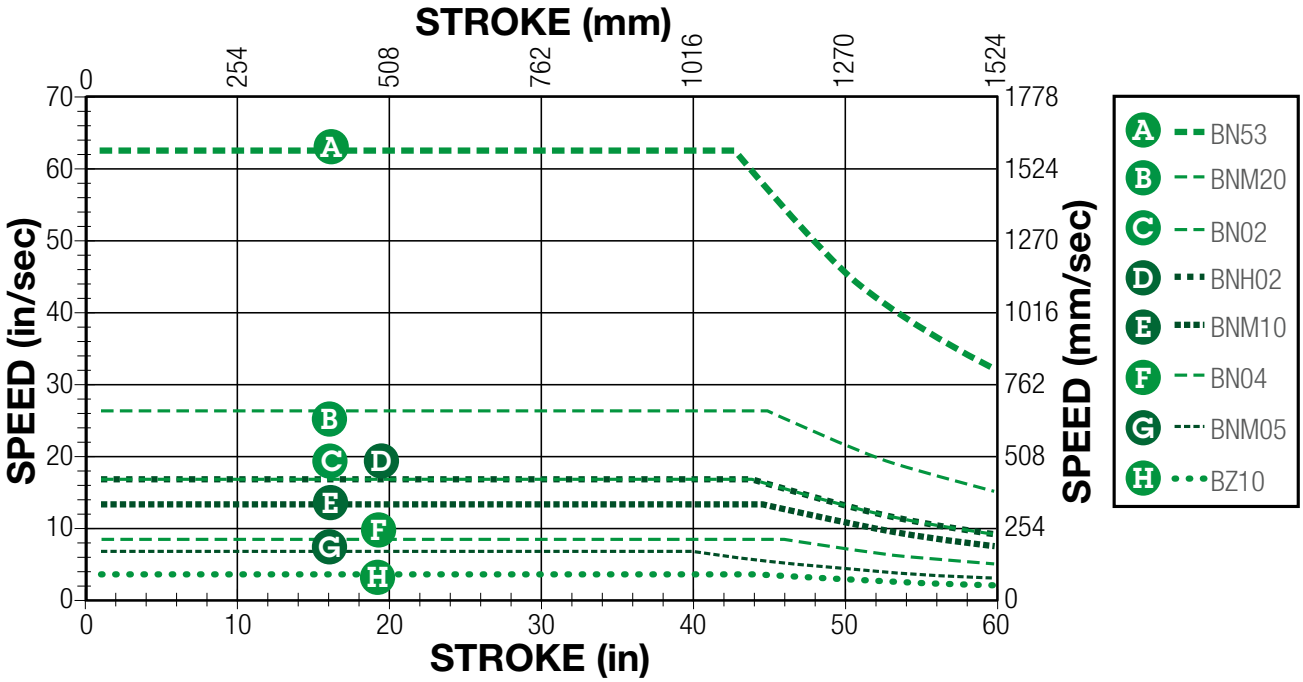


SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

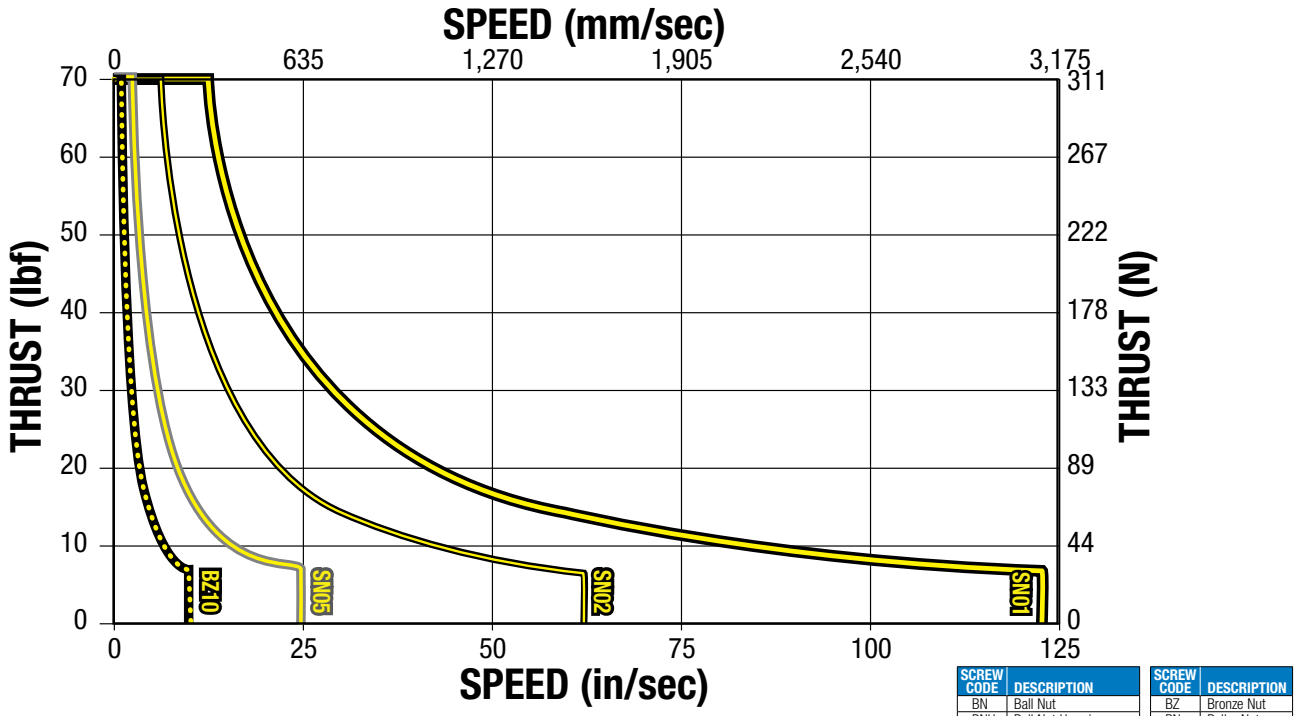
SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

SIZE: **64: CRITICAL SPEED CAPACITIES**

SPECIFICATIONS



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



SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

PV LIMITS

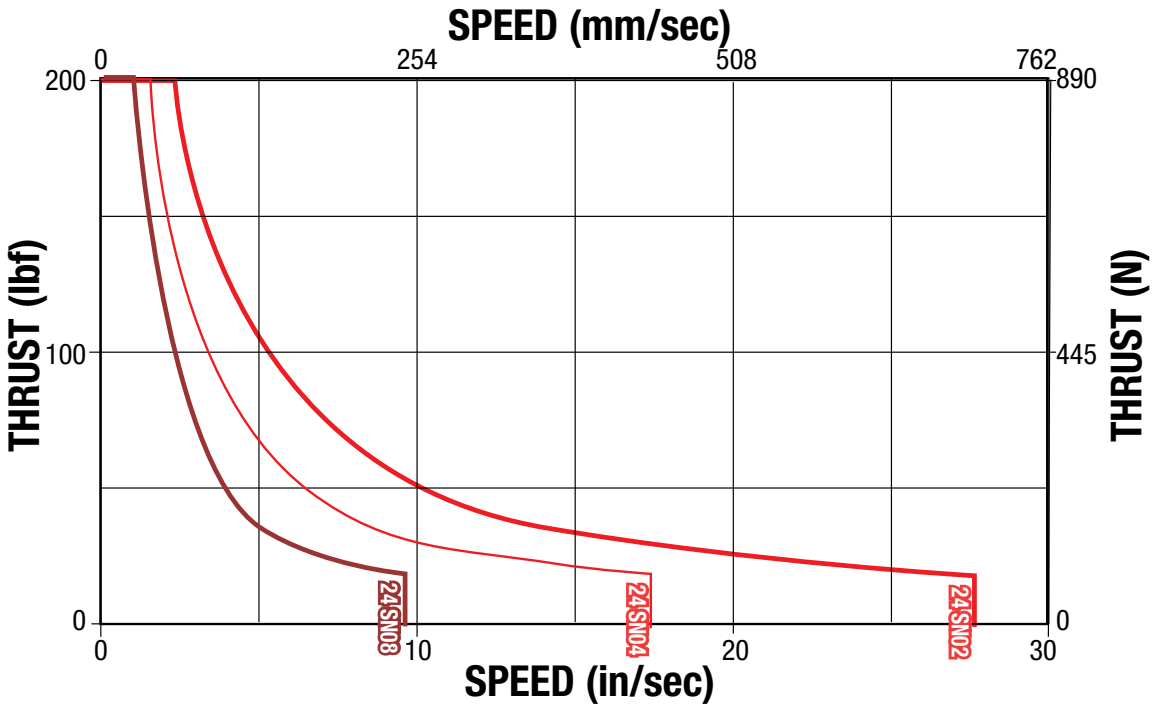
PV LIMITS: Any material which carries a sliding load is limited by heat buildup. The factors that affect heat generation rate in an application are the pressure on the nut in pounds per square inch and the surface velocity in feet per minute. The product of these factors provides a measure of the severity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

$$P \times V \leq 0.1$$

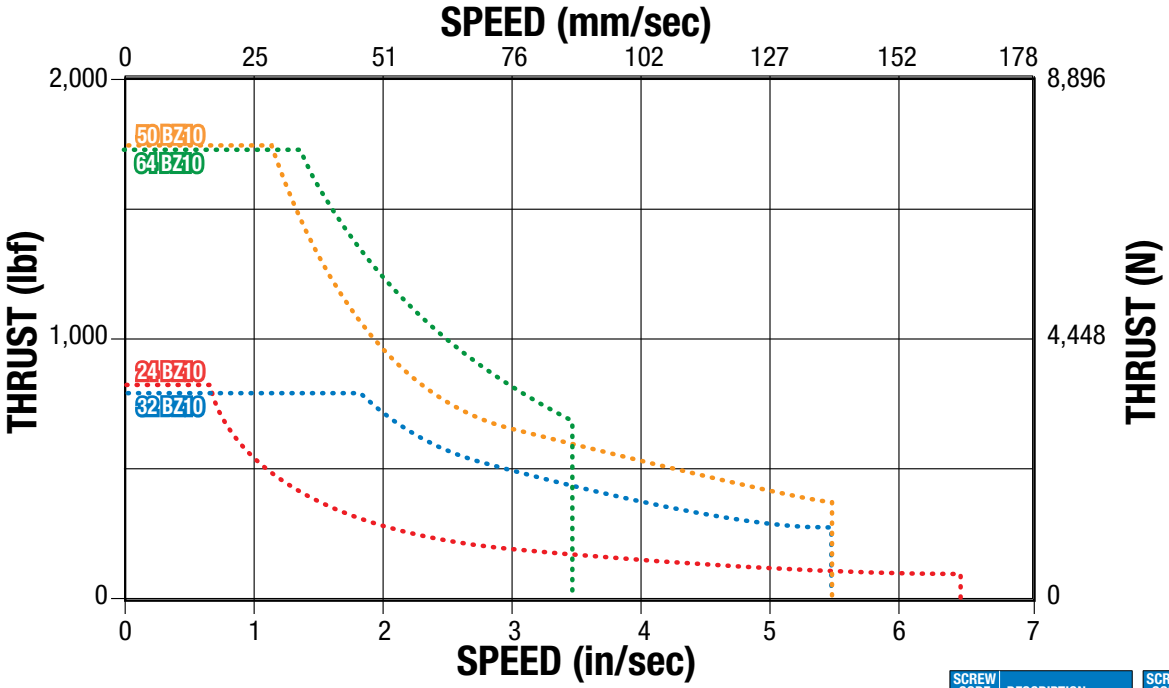
$$\left(\frac{\text{Thrust}}{\text{(Max. Thrust Rating)}}\right) \times \left(\frac{\text{Speed}}{\text{(Max. Speed Rating)}}\right) \leq 0.1$$

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

SPECIFICATIONS



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



SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

PV LIMITS

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

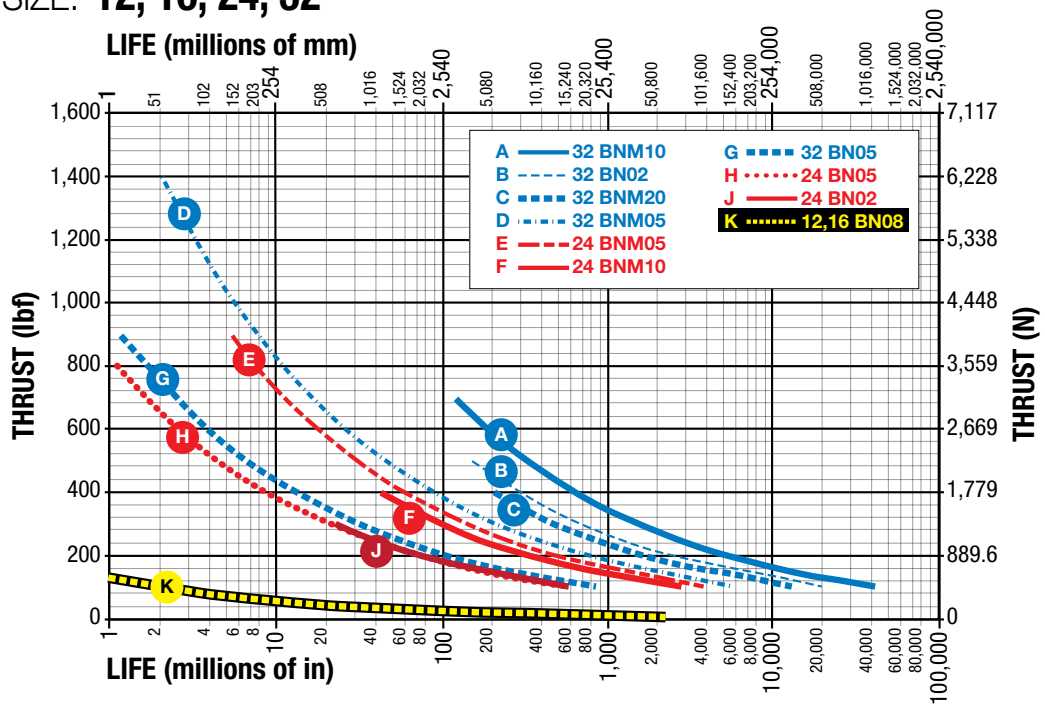
$$P \times V \leq 0.1$$

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

BALL SCREW LIFE GRAPHS

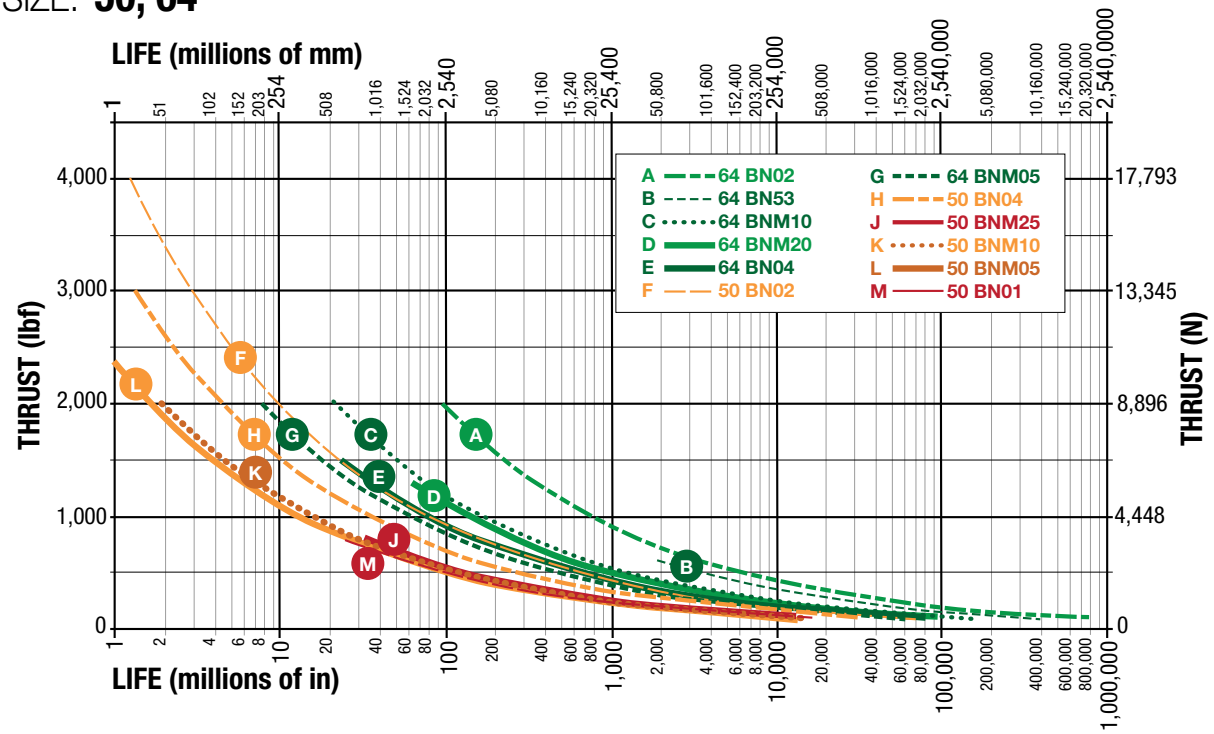
SPECIFICATIONS

SIZE: **12, 16, 24, 32**



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

SIZE: **50, 64**



NOTE: The **L_{10}** *expected life of a ball screw linear actuator is expressed as the linear travel distance that 90% of properly 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:

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

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

C = Dynamic load rating (lbf) or *(N)*
P_e = Equivalent load (lbf) or *(N)*
If load is constant across all movements then:
actual load = equivalent load
ℓ = 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.*

Where:

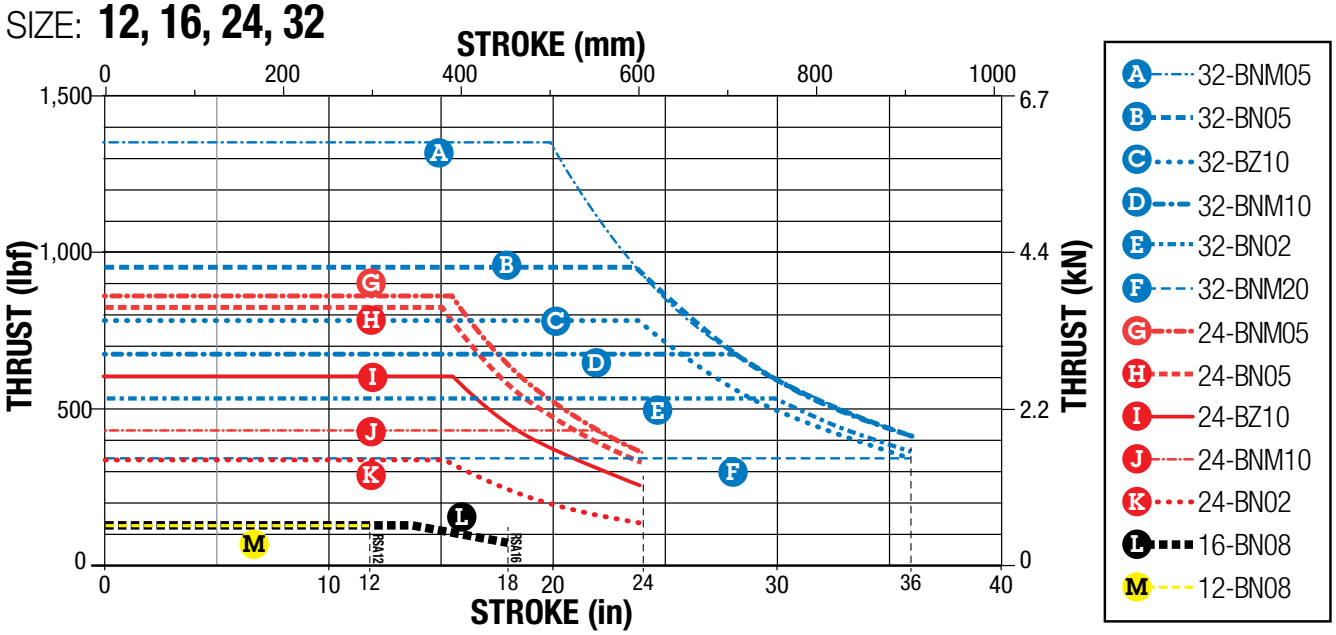
$$P_e = \sqrt[3]{\frac{L_1(P_1)^3 + L_2(P_2)^3 + L_3(P_3)^3 + L_n(P_n)^3}{L}}$$

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)*

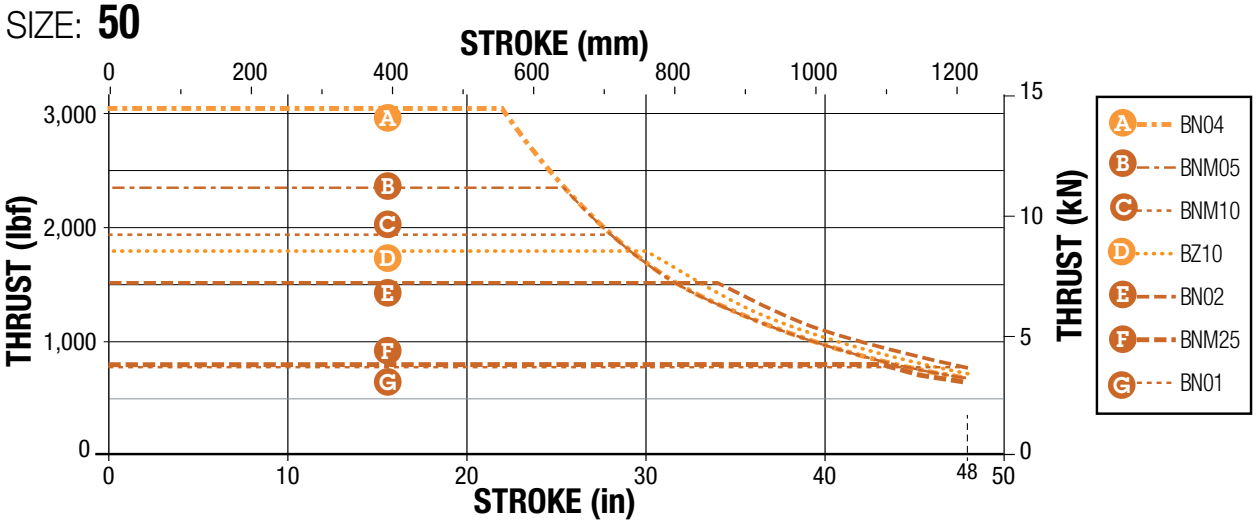
SCREW BUCKLING LOAD

SPECIFICATIONS

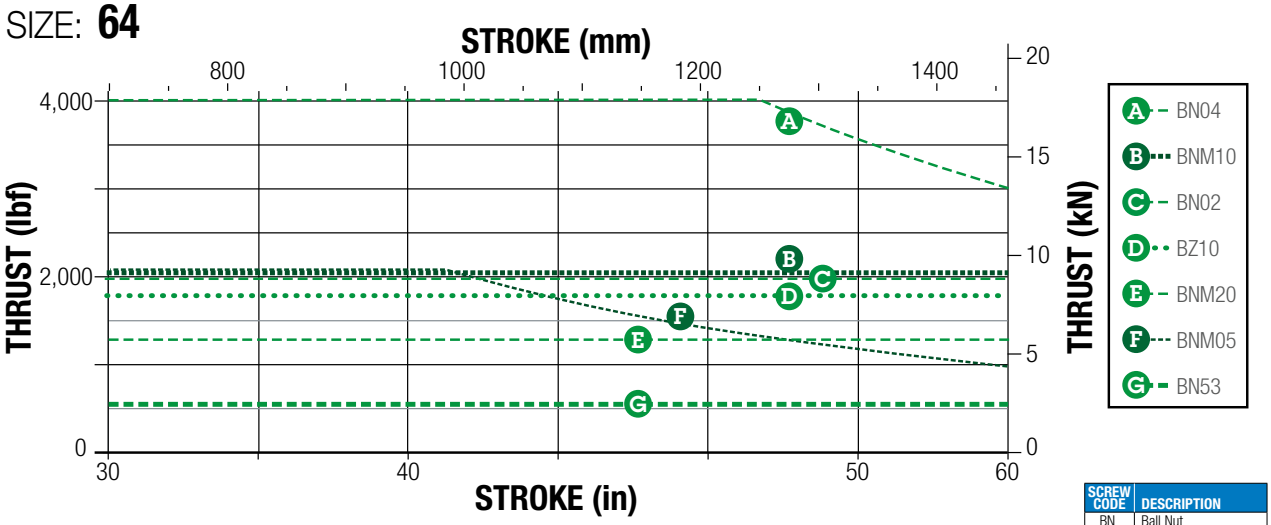
SIZE: **12, 16, 24, 32**



SIZE: **50**



SIZE: **64**



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

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

RSA ST Electric Rod-Style Actuator

SIZE: **ALL**

SPECIFICATIONS

sizeit.tolomatic.com for fast, accurate actuator selection

				RSA SIZE	12	16	24	32	50	64
WEIGHT	BASE MODEL		IN-LINE	lb	1.73	3.73	3.98	6.11	14.21	23.01
			REVERSE PARALLEL	lb	2.40	4.00	6.25	10.40	19.66	29.69
			PER in OF STROKE	lb/in	0.128	0.300	0.330	0.460	0.860	1.380
	MOVING PARTS WEIGHT		BASE WT. BZ & SN	lb	0.11	0.19	0.75	0.97	2.62	5.01
			BASE WT. BN	lb	0.19	0.27	1.01	1.44	3.55	7.59
			PER in OF STROKE	lb/in	0.04	0.06	0.14	0.15	0.33	0.45
			MAX. STROKE	in	12.0	18.0	24.0	36.0	48.0	60.0
			TEMP. RANGE*	°F	Standard: 40 to 130 Extended:-40 to 140					

Contact Tolomatic if operation in the extended range is required.

				RSA SIZE	12	16	24	32	50	64
WEIGHT	BASE MODEL		IN-LINE	kg	*0.78*	*1.68*	*1.79*	*2.75*	*6.39*	*10.35*
			REVERSE PARALLEL	kg	*1.08*	*1.80*	*2.81*	*4.68*	*8.85*	*13.36*
			PER mm OF STROKE	g/mm	*2.3*	*5.3*	*5.8*	*8.1*	*15.2*	*24.4*
	MOVING PARTS WEIGHT		BASE WT. BZ & SN	kg	*0.05*	*0.09*	*0.34*	*0.44*	*1.19*	*2.27*
			BASE WT. BN	kg	*0.09*	*0.12*	*0.46*	*0.65*	*1.61*	*3.44*
			PER mm OF STROKE	g/mm	*0.71*	*1.07*	*2.50*	*2.68*	*5.89*	*8.04*
			MAX. STROKE	mm	*304.8*	*457.2*	*609.6*	*914.4*	*1219.2*	*1524*
			TEMP. RANGE*	°C	*Standard: 4 to 54 Extended:-40 to 60*					

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

Contact Tolomatic if operation in the extended range is required.

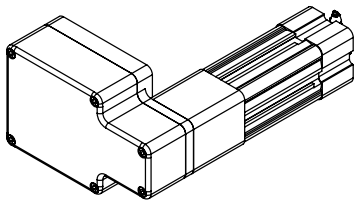
*** Heat generated by the motor and drive should be taken into consideration as well as linear velocity and work cycle time. For applications that require operation outside of the recommended temperature range, contact Tolomatic.**

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

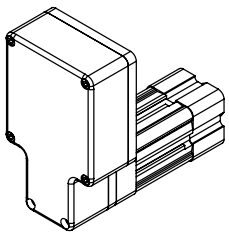
SIDE LOADING CONSIDERATIONS: Rod screw actuators are designed to push guided and supported loads and are not meant for applications that require substantial side loading. Please contact Tolomatic for details regarding side loading capabilities.

REVERSE PARALLEL MOUNTING ORDER CODES

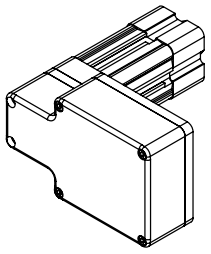
Note that these configurations all are shown with the tapped mounting holes at the bottom of the actuator



RPL



RP



RPR

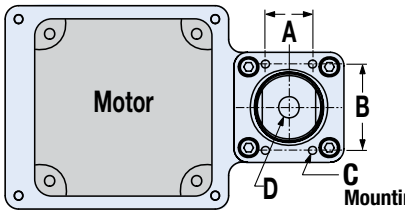
RSA ST Electric Rod-Style Actuator

SIZE: **ALL**

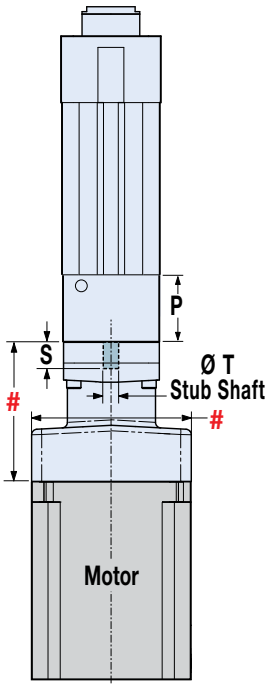
DIMENSIONS

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

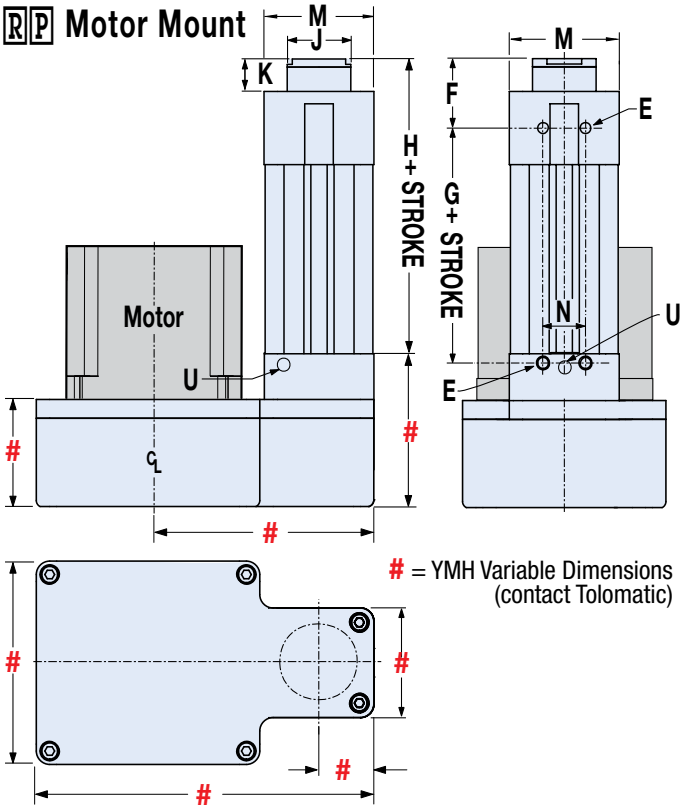
ST ACTUATOR DIMENSIONS



LMI Motor Mount



RP Motor Mount



= YMH Variable Dimensions (contact Tolomatic)

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

ST ACTUATOR DIMENSIONS

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

Dimensions in inches

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

Dimensions in millimeters

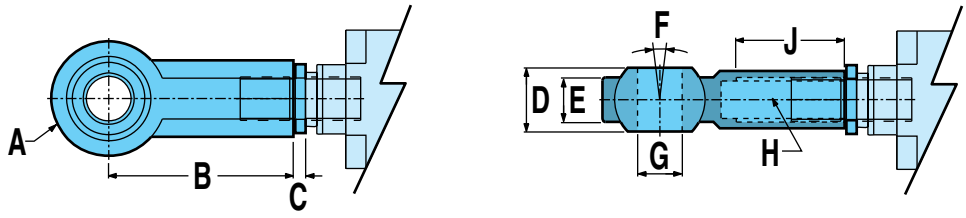
RSA ST Rod End Options

SIZE: **ALL**

DIMENSIONS

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

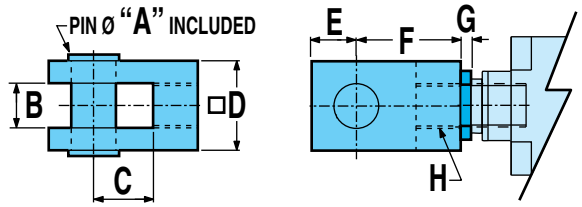
SRE SPHERICAL ROD END



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

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

CLV CLEVIS ROD END



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

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

KEY TO SYMBOLS

⚠ Indicates a note of high importance

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

Make note of this item

RSA ST Rod End Options

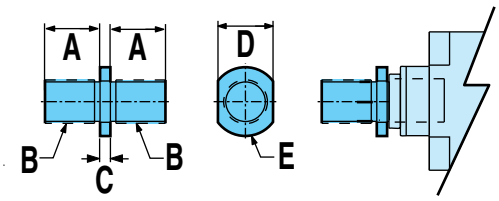
SIZE: **ALL**

DIMENSIONS

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

MET EXTERNALLY THREADED ROD END

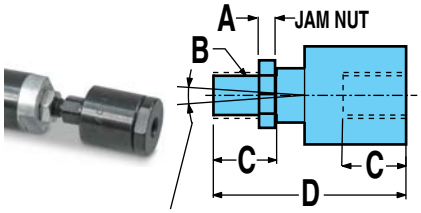
An alternative to the standard internally threaded end.



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

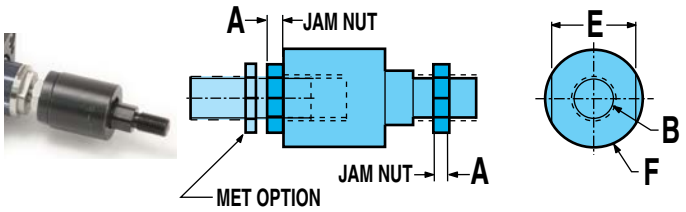
ALC ALIGNMENT COUPLER

INTERNALLY THREADED END

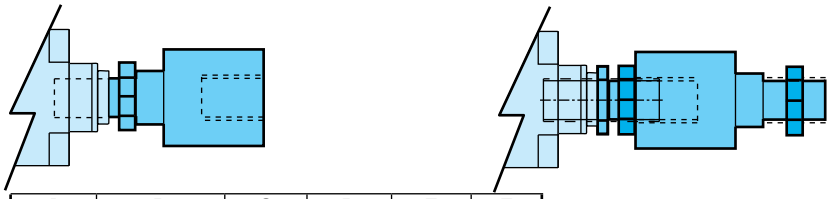


2 SPHERICAL MOTION,
0.0625 (1.6) RADIAL FLOAT

EXTERNALLY THREADED END



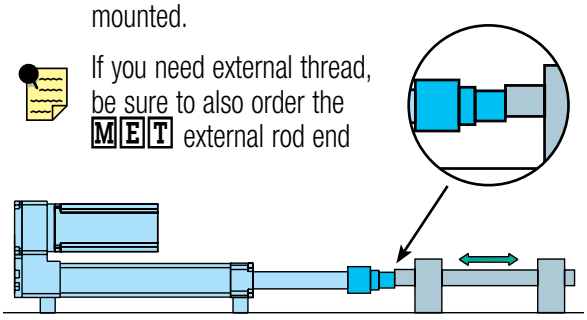
THE ALIGNMENT COUPLER COMES WITH AN INTERNAL THREAD. IF AN EXTERNAL THREAD IS PREFERRED, THE ADDITION OF THE "MET" OPTION IS REQUIRED.



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

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

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



RSA ST Mounting Options

SIZE: **ALL**

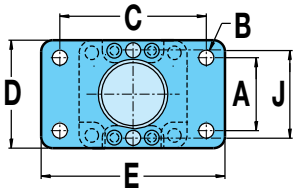
DIMENSIONS

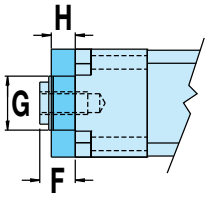
tolomatic.com/CAD **Download 3D CAD** *Always use CAD solid model to determine critical dimensions*

FFG FRONT FLANGE MOUNT

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

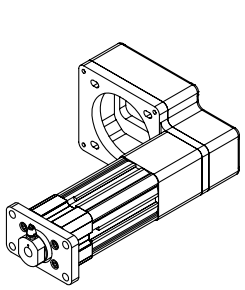
Flange can be mounted directly to framework or a bulkhead



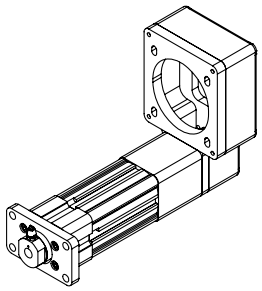


Size		A	B Ø	C	D	E	F	G Ø	H	J
12	in	0.500	0.157	1.500	1.12	2.00	0.31	0.72	0.25	–
	mm	*12.70*	*4.00*	*38.10*	*28.5*	*50.8*	*7.8*	*18.3*	*6.3*	–
16	in	0.945	0.18	1.896	1.38	2.39	0.43	0.81	0.37	–
	mm	*24.00*	*4.5*	*48.16*	*35.1*	*60.7*	*11.0*	*20.5*	*9.3*	–
24	in	1.430	0.31	2.750	2.00	3.37	0.43	1.34	0.37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

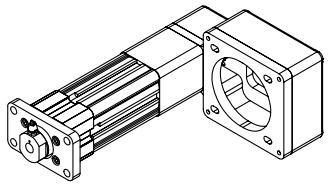
ADDITIONAL FFG MOUNT ORDER CODES



FFG RPR

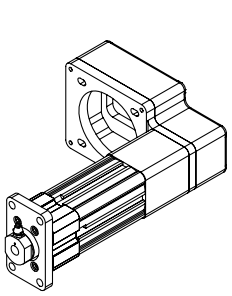


FFG RP

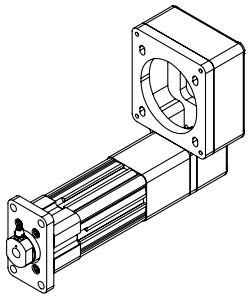


FFG RPL

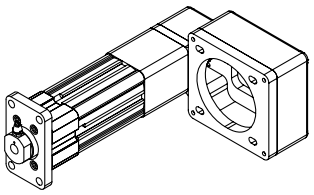
Note that these configurations all are shown with the tapped mounting holes at the bottom of the actuator (These additional ordering codes are unnecessary if the tapped mounting holes are not used)



FFGR RPR



FFGR RP



FFGR RPL

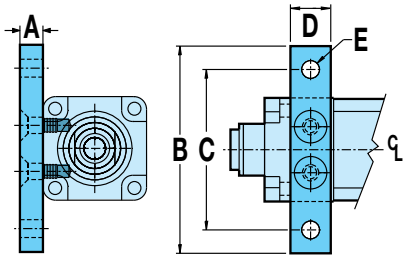
RSA ST Mounting Options

SIZE: **ALL**

DIMENSIONS

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

MP2 MOUNTING PLATE

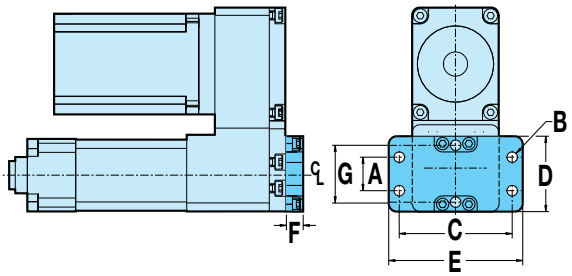


Used for mountings other than flush.

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

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

BFG BACK FLANGE MOUNT



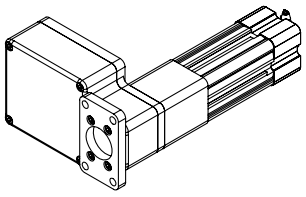
Used when a bottom-tapped mount is not an option or where bottom support mechanisms are not feasible. Flange can be mounted directly to framework or a bulkhead

⊗ Not available with LMI (inline) motor mounting

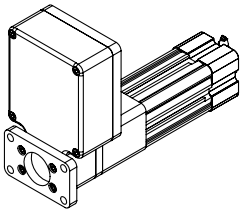
Size		A	B Ø	C	D	E	F	G
12	in	0.500	0.157	1.500	1.12	2.00	0.25	–
	mm	*12.70*	*4.00*	*38.10*	*28.5*	*50.8*	*6.35*	–
16	in	0.945	0.18	1.896	1.38	2.39	0.37	–
	mm	*24.00*	*4.5*	*48.16*	*35.1*	*60.7*	*9.40*	–
24	in	1.430	0.31	2.750	2.00	3.37	0.37	–
	mm	*32.00*	*7.2*	*64.00*	*47.0*	*80.0*	*9.40*	–
32	in	1.840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

ADDITIONAL BFG MOUNT ORDER CODES

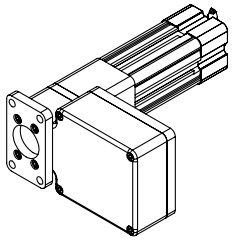
Note that these configurations all are shown with the tapped mounting holes at the bottom of the actuator (These additional ordering codes are unnecessary if the tapped mounting holes are not used)



BFG RPL



BFG RP



BFG RPR

RSA ST Mounting Options

SIZE: **ALL**

DIMENSIONS

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

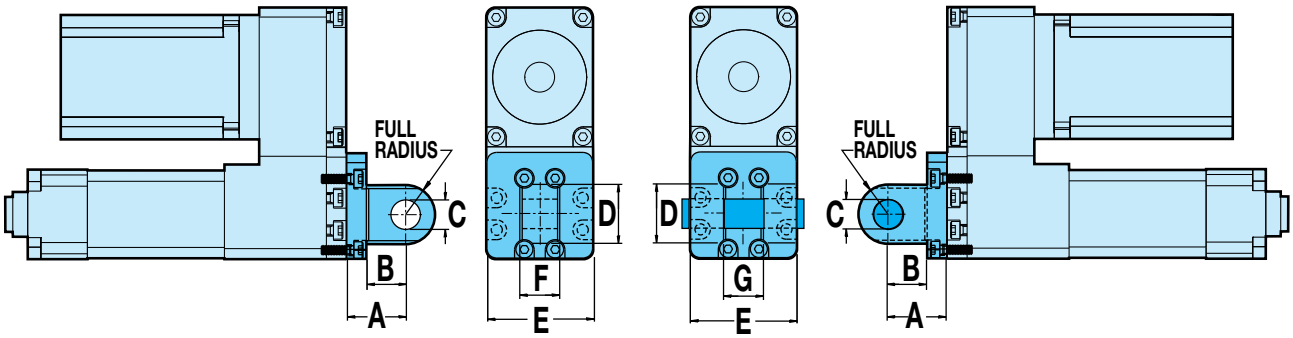
PCS EYE MOUNT & PCD CLEVIS MOUNT

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

⊗ Not available with LMI (inline) motor mounting

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

⊗ Not available with LMI (inline) motor mounting.



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

KEY TO SYMBOLS

⚠ Indicates a note of high importance

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

Make note of this item

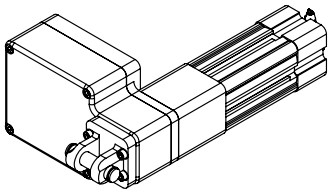
RSA ST Mounting Options

SIZE: **ALL**

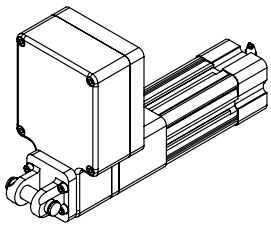
DIMENSIONS

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

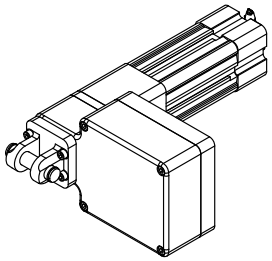
ADDITIONAL PCS and PCD MOUNT ORDER CODES



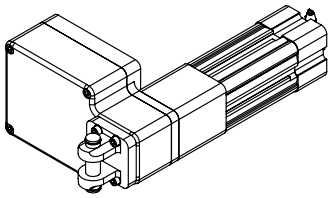
PCD RPL



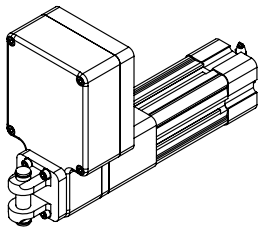
PCD RP



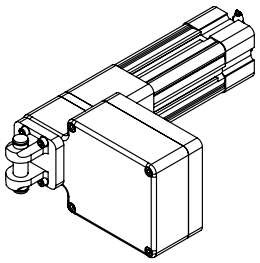
PCD RPR



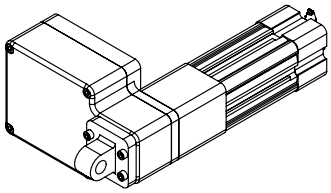
PCDR RPL



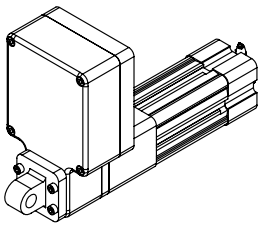
PCDR RP



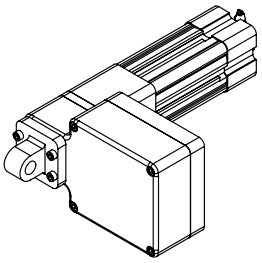
PCDR RPR



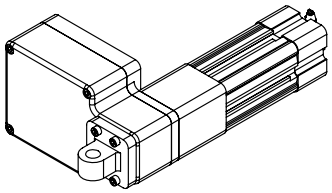
PCS RPL



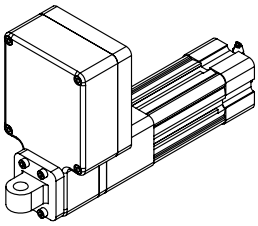
PCS RP



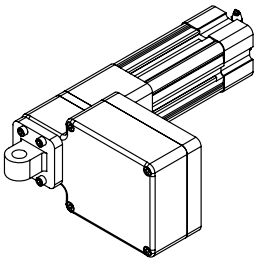
PCS RPR



PCSR RPL



PCSR RP



PCSR RPR

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

RSA ST Mounting Options

SIZE: **ALL**

DIMENSIONS

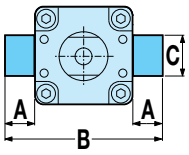
tolomatic.com/CAD **Download 3D CAD** *Always use CAD solid model to determine critical dimensions*

TRR TRUNNION MOUNT

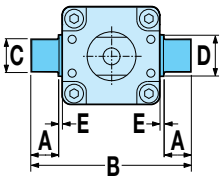
Used where space is limited in the rear of the actuator and when pivoting about an axis is required.

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

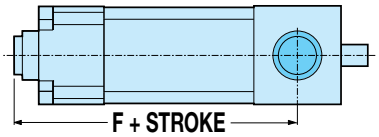
RSA US standard
(Sizes: 24, 32, 50, 64)



RSM Metric
(+RSA12, RSA16)



Both RSA US standard RSM Metric



	Size		A	B	C Ø	D Ø	E	F (LMI)			F (RP)		
								ACME NUT	BALL NUT	ROLLER NUT	ACME NUT	BALL NUT	ROLLER NUT
RSA: US standard	12	in	0.38	2.25	0.4374/0.4368	0.562	0.078	NA	NA	NA	3.09	3.09	NA
	16	in	0.38	2.25	0.4374/0.4368	0.562	0.078	NA	NA	NA	3.30	3.30	NA
	24	in	1.04	4.12	0.9999/0.9993	NA	NA	4.46	4.94	6.33	4.30	4.73	6.33
	32	in	1.00	4.58	0.9999/0.9993	NA	NA	6.06	7.24	7.42	5.65	6.83	7.42
	50	in	1.06	5.83	0.9999/0.9993	NA	NA	7.44	8.44	NA	7.14	8.14	NA
	64	in	1.06	6.70	0.9999/0.9993	NA	NA	9.90	11.90	NA	9.80	11.80	NA

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

RSA ST Mounting Options

SIZE: **ALL**

DIMENSIONS

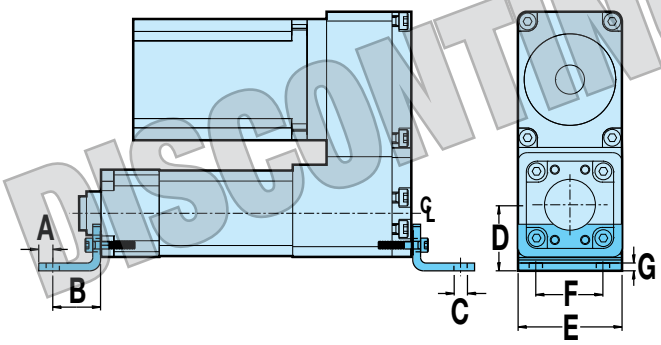
tolomatic.com/CAD **Download 3D CAD** *Always use CAD solid model to determine critical dimensions*

⊗ FM2 FOOT MOUNTS DISCONTINUED (FOR REFERENCE ONLY)

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

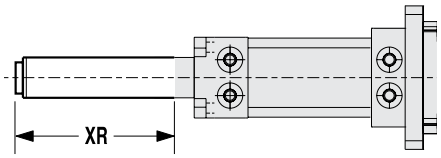
⊗ Not available with LMI (inline) motor mounting

⊗ Not available with HT option



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

XR OPTIONAL ROD EXTENSION



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

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

Maximum Stroke Length

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

RSA HT Electric Rod-Style Actuator

SIZE: **24, 32, 50, 64** units: **US standard**

SPECIFICATIONS

sizeit.tolomatic.com for fast, accurate actuator selection

RSA SIZE	MAX. STROKE	SCREW CODE	TPI	LEAD ACCUR-ACY	BACK-LASH †	MAX. THRUST*	DYNAMIC LOAD RATING**	BASE ACTUATOR INERTIA			INERTIA PER/in OF STROKE	DYNAMIC TORQUE TO OVERCOME FRICTION
								In Line	Reverse Parallel 1:1	Reverse Parallel 2:1		
	in		turns/in	in/ft	in	lbf	lbf	lb-in^2	lb-in^2	lb-in^2	lb-in^2	lb-in
24	24	RN04	6.35	0.0004	0.0012	1,700	5,577	0.709	0.188	0.115	0.004	5.30
	24	RN05	5.08	0.0004	0.0012	1,700	5,577	0.709	0.188	0.115	0.004	5.30
	24	RN10	2.54	0.0004	0.0012	1,556	5,577	0.709	0.188	0.115	0.004	5.30
32	36	BZ10	10.00	0.0060	0.0080	2,500	NA	2.252	0.338	0.160	0.009	3.13
	36	BN(L)02	2.00	0.0040	0.0150	2,500	3,364	2.252	0.338	0.160	0.010	2.44
	36	BN(L)05	5.00	0.0030	0.0150	950	1,624	2.252	0.338	0.160	0.009	2.31
	36	BNM05	5.08	0.0040	0.0030	1,792	3,080	2.252	0.338	0.160	0.010	5.60
	36	BNM10	2.54	0.0040	0.0030	2,473	4,721	2.252	0.338	0.160	0.010	5.60
	36	BNM20	1.27	0.0020	0.0050	2,364	2,560	2.252	0.338	0.160	0.011	5.60
	36	RN04	6.35	0.0004	0.0012	4,159	12,761	2.692	1.751	0.784	0.011	6.20
	36	RN05	5.08	0.0004	0.0012	3,878	12,761	2.692	1.751	0.784	0.011	6.20
	36	RN10	2.54	0.0004	0.0012	4,159	12,761	2.692	1.751	0.784	0.011	6.20
50	48	BZ10	10.00	0.0060	0.0080	3,500	NA	6.537	2.026	0.843	0.035	4.13
	48	BN(L)01	1.00	0.0040	0.0150	2,300	2,300	6.537	2.026	0.843	0.035	4.13
	48	BN(L)02	2.00	0.0040	0.0150	4,250	5,355	6.537	2.026	0.843	0.029	3.63
	48	BN(L)04	4.00	0.0040	0.0150	3,250	5,159	6.537	2.026	0.843	0.028	4.25
	48	BNM05	5.08	0.0020	0.0040	2,347	4,035	6.537	2.026	0.843	0.026	7.50
	48	BNM10	2.54	0.0020	0.0040	2,471	3,372	6.537	2.026	0.843	0.026	7.50
	48	BNM25	1.02	0.0040	0.0050	2,524	2,537	6.537	2.026	0.843	0.026	7.50
	36§	RN05	5.08	0.0004	0.0012	7,868	16,245	7.072	9.859	4.379	0.060	8.50
	36§	RN10	2.54	0.0004	0.0012	7,868	16,245	7.072	9.859	4.379	0.060	8.50
64	60	BZ10	10.00	0.0060	0.0080	7,000	NA	16.342	13.578	7.670	0.139	5.44
	60	BN(L)53	0.53	0.0040	0.0150	3,500	5,961	16.342	13.578	7.670	0.180	12.50
	60	BN(L)02	2.00	0.0040	0.0150	9,050	11,402	16.342	13.578	7.670	0.142	5.31
	60	BN(L)04	4.00	0.0040	0.0150	4,250	6,746	16.342	13.578	7.670	0.140	5.38
	60	BNM05	5.08	0.0020	0.0040	3,906	6,714	16.342	13.578	7.670	0.170	9.40
	60	BNM10	2.54	0.0020	0.0040	5,479	7,476	16.342	13.578	7.670	0.170	9.40
	60	BNM20	1.27	0.0020	0.0050	5,105	5,528	16.342	13.578	7.670	0.170	9.40
	60	BNH(L)02	2.00	0.0040	0.0020	12,900	16,253	16.342	13.578	7.670	0.140	9.40
	36§	RN05	5.08	0.0004	0.0012	13,039	23,954	16.342	13.578	7.670	0.125	9.40
	36§	RN10	2.54	0.0004	0.0012	11,997	23,954	16.342	13.578	7.670	0.125	9.40

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

Contact Tolomatic for higher accuracy and lower backlash options.

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

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

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

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

RSA HT Electric Rod-Style Actuator

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

SPECIFICATIONS

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

RSA SIZE	MAX. STROKE	SCREW CODE	LEAD	LEAD ACCUR-ACY	BACK-LASH †	MAX. THRUST*	DYNAMIC LOAD RATING**	BASE ACTUATOR INERTIA			INERTIA PER/in OF STROKE	DYNAMIC TORQUE TO OVERCOME FRICTION
								In Line	Reverse Parallel 1:1	Reverse Parallel 2:1		
	mm		mm/rev	mm/300mm	mm	N	N	kg-m² x 10⁻⁶	kg-m² x 10⁻⁶	kg-m² x 10⁻⁶	kg-m² x 10⁻⁶	N-m
24	609.6	RN04	4.00	0.01	0.03	7,562	24,808	207.481	55.016	33.653	1.171	0.599
	609.6	RN05	5.00	0.01	0.03	7,562	24,808	207.481	55.016	33.653	1.171	0.599
	609.6	RN10	10.00	0.01	0.03	6,921	24,808	207.481	55.016	33.653	1.171	0.599
32	914	BZ10	2.54	0.15	0.20	11,121	NA	659.023	98.912	46.822	2.634	0.353
	914	BN(L)02	12.70	0.10	0.38	11,121	14,964	659.023	98.912	46.822	2.926	0.275
	914	BN(L)05	5.08	0.08	0.38	4,226	7,226	659.023	98.912	46.822	2.634	0.261
	914	BNM05	5.00	0.10	0.07	7,971	13,700	659.023	98.912	46.822	2.926	0.633
	914	BNM10	10.00	0.10	0.07	11,000	21,000	659.023	98.912	46.822	2.926	0.633
	914	BNM20	20.00	0.05	0.13	10,516	11,388	659.023	98.912	46.822	3.219	0.633
	914.4	RN04	4.00	0.01	0.03	18,500	56,764	787.784	512.411	229.429	3.219	0.701
	914.4	RN05	5.00	0.01	0.03	17,250	56,764	787.784	512.411	229.429	3.219	0.701
	914.4	RN10	10.00	0.01	0.03	18,500	56,764	787.784	512.411	229.429	3.219	0.701
50	1219	BZ10	2.54	0.15	0.20	15,569	NA	1912.980	592.886	246.695	10.242	0.466
	1219	BN(L)01	25.40	0.10	0.38	10,231	10,231	1912.980	592.886	246.695	10.242	0.466
	1219	BN(L)02	12.70	0.10	0.38	18,905	23,820	1912.980	592.886	246.695	8.487	0.410
	1219	BN(L)04	6.35	0.10	0.38	14,457	22,949	1912.980	592.886	246.695	8.194	0.480
	1219	BNM05	5.00	0.05	0.10	10,440	17,947	1912.980	592.886	246.695	7.609	0.847
	1219	BNM10	10.00	0.05	0.10	10,992	14,999	1912.980	592.886	246.695	7.609	0.847
	1219	BNM25	25.00	0.10	0.13	11,227	11,285	1912.980	592.886	246.695	7.609	0.847
	914.4§	RN05	5.00	0.01	0.03	34,999	72,262	2069.542	2885.127	1281.466	17.558	0.960
	914.4§	RN10	10.00	0.01	0.03	34,999	72,262	2069.542	2885.127	1281.466	17.558	0.960
64	1524	BZ10	2.54	0.15	0.20	31,138	NA	4782.305	3973.451	2244.540	40.677	0.614
	1524	BN(L)53	47.93	0.10	0.38	15,569	26,516	4782.305	3973.451	2244.540	52.675	1.661
	1524	BN(L)02	12.70	0.10	0.38	40,257	50,719	4782.305	3973.451	2244.540	41.555	0.600
	1524	BN(L)04	6.35	0.10	0.38	18,905	30,010	4782.305	3973.451	2244.540	40.969	0.607
	1524	BNM05	5.00	0.05	0.10	17,375	29,865	4782.305	3973.451	2244.540	49.749	1.062
	1524	BNM10	10.00	0.05	0.10	24,372	33,253	4782.305	3973.451	2244.540	49.749	1.062
	1524	BNM20	20.00	0.05	0.13	22,708	24,592	4782.305	3973.451	2244.540	49.749	1.062
	1524	BNH(L)02	12.70	0.10	0.38	57,382	72,297	4782.305	3973.451	2244.540	40.969	1.062
	914.4§	RN05	5.00	0.01	0.03	58,000	106,552	4782.305	3973.451	2244.540	36.580	1.062
	914.4§	RN10	10.00	0.01	0.03	53,366	106,553	4782.305	3973.451	2244.540	36.580	1.062

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

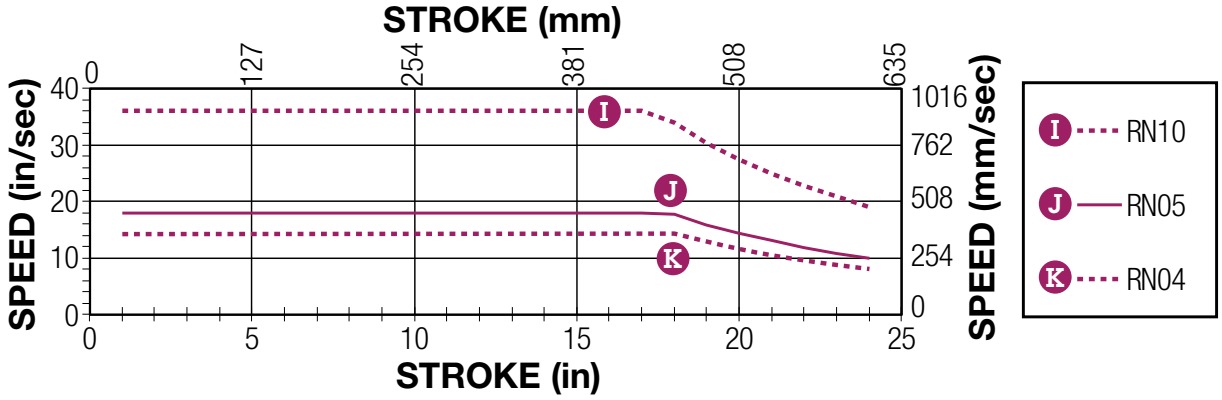
Contact Tolomatic for higher accuracy and lower backlash options.
† (L) for low backlash ball screws: backlash = 0.0020" (0.05 mm)

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

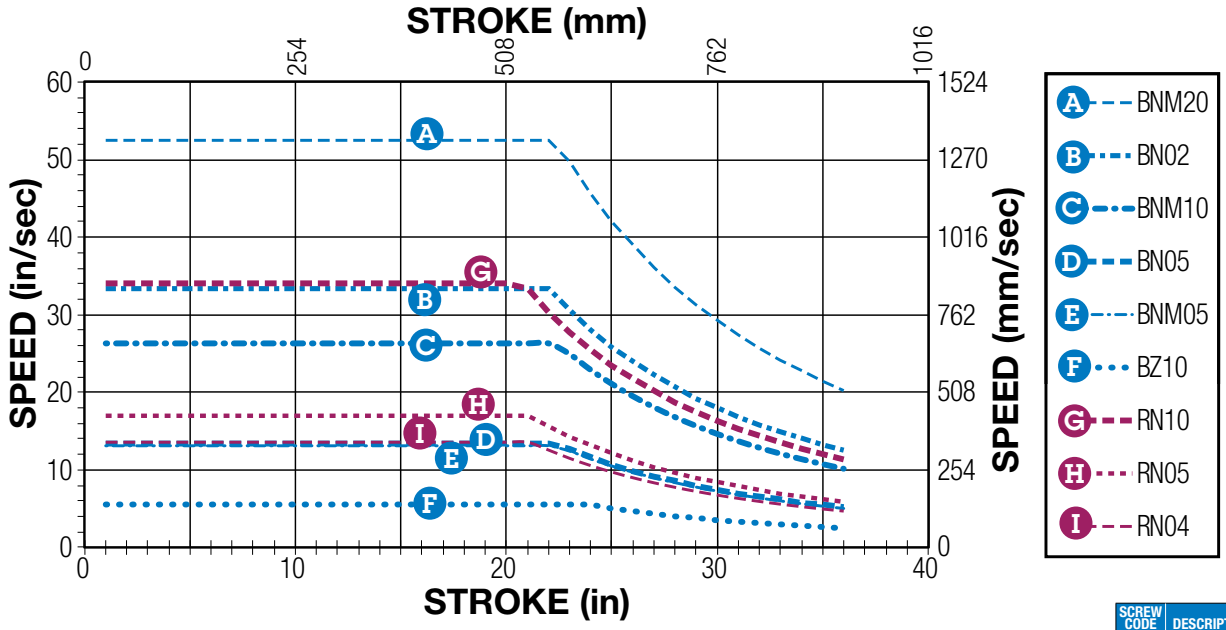
**** For RN, BN & BNL screws, dynamic load rating reflects 90% reliability for 1 million revolutions.**

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

SIZE: **24: CRITICAL SPEED CAPACITIES** **SPECIFICATIONS**

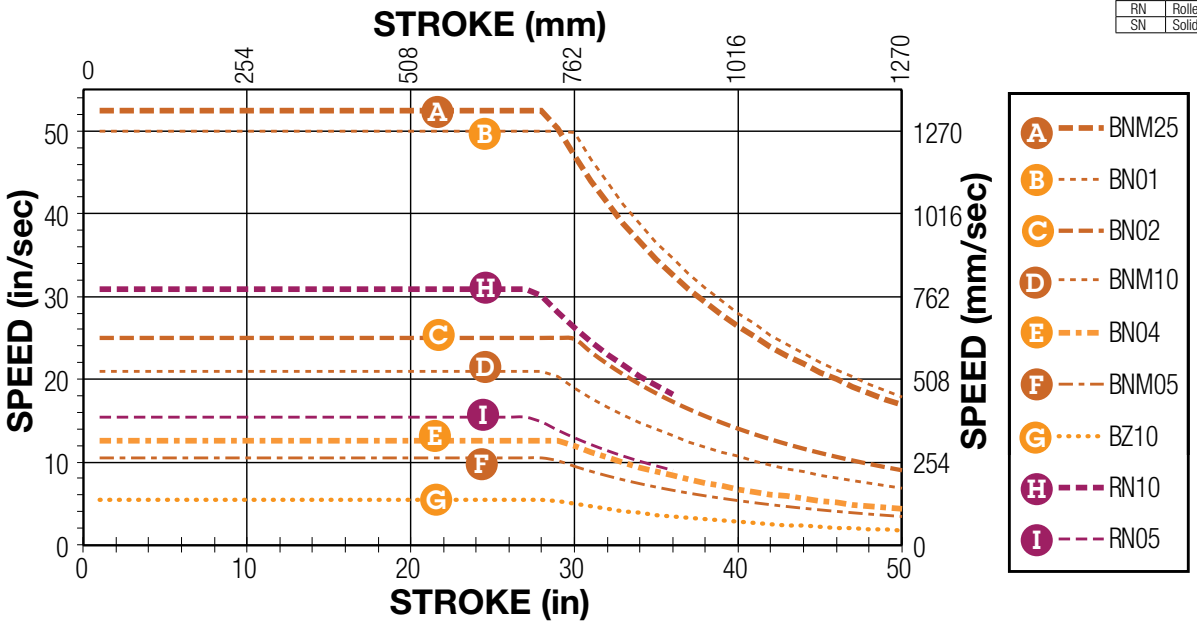


SIZE: **32: CRITICAL SPEED CAPACITIES**



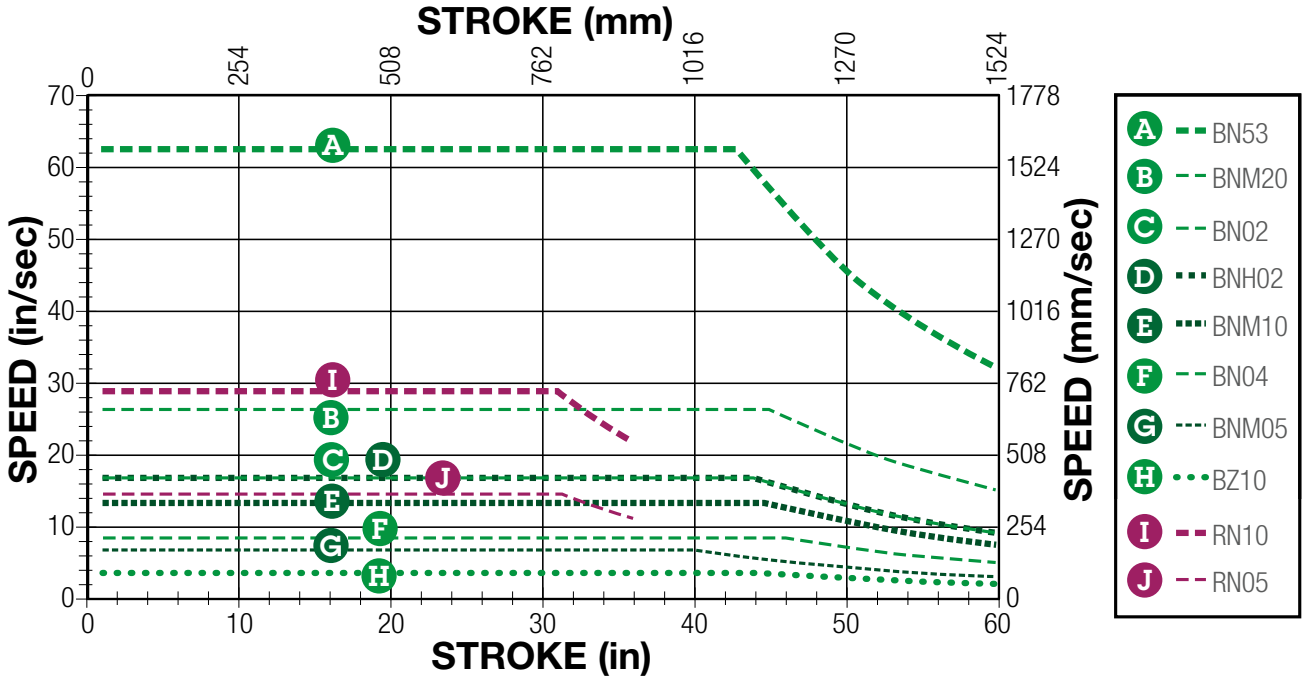
SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

SIZE: **50: CRITICAL SPEED CAPACITIES**

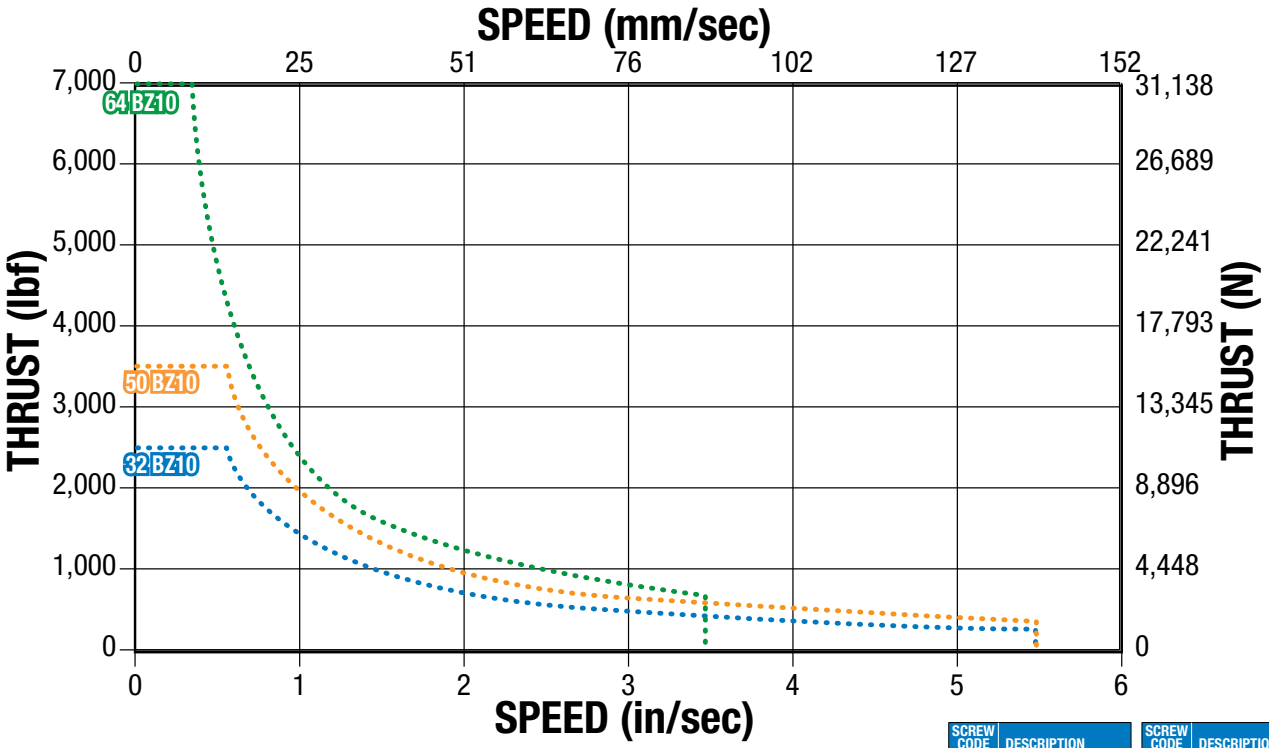


SIZE: 64: CRITICAL SPEED CAPACITIES

SPECIFICATIONS



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



SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

PV LIMITS

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

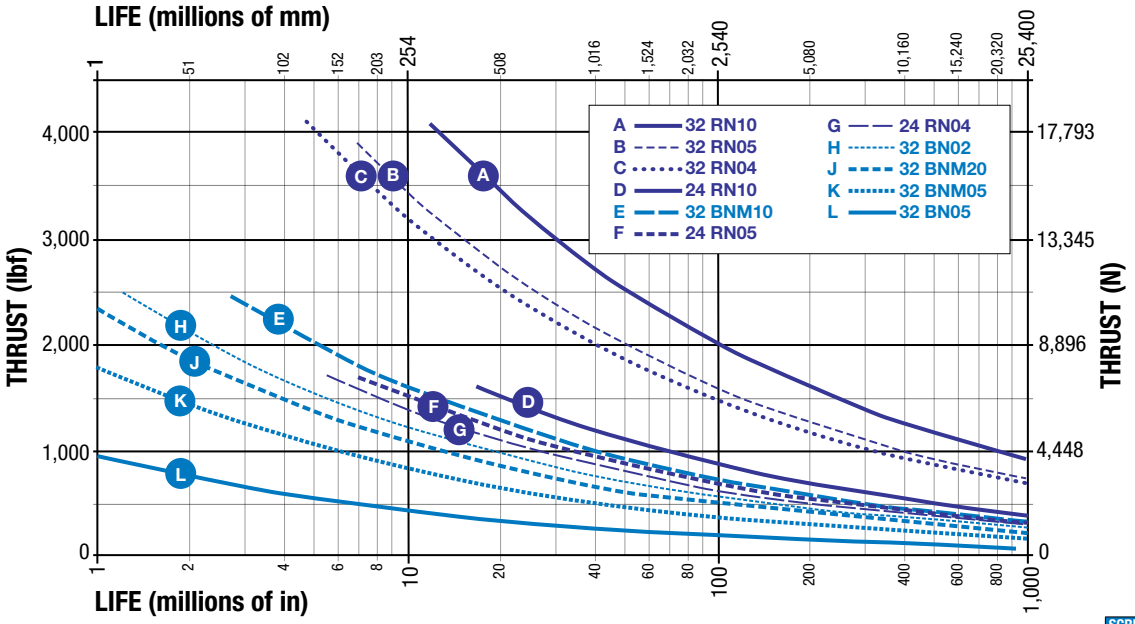
$$P \times V \leq 0.1$$

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

BALL & ROLLER SCREW LIFE GRAPHS

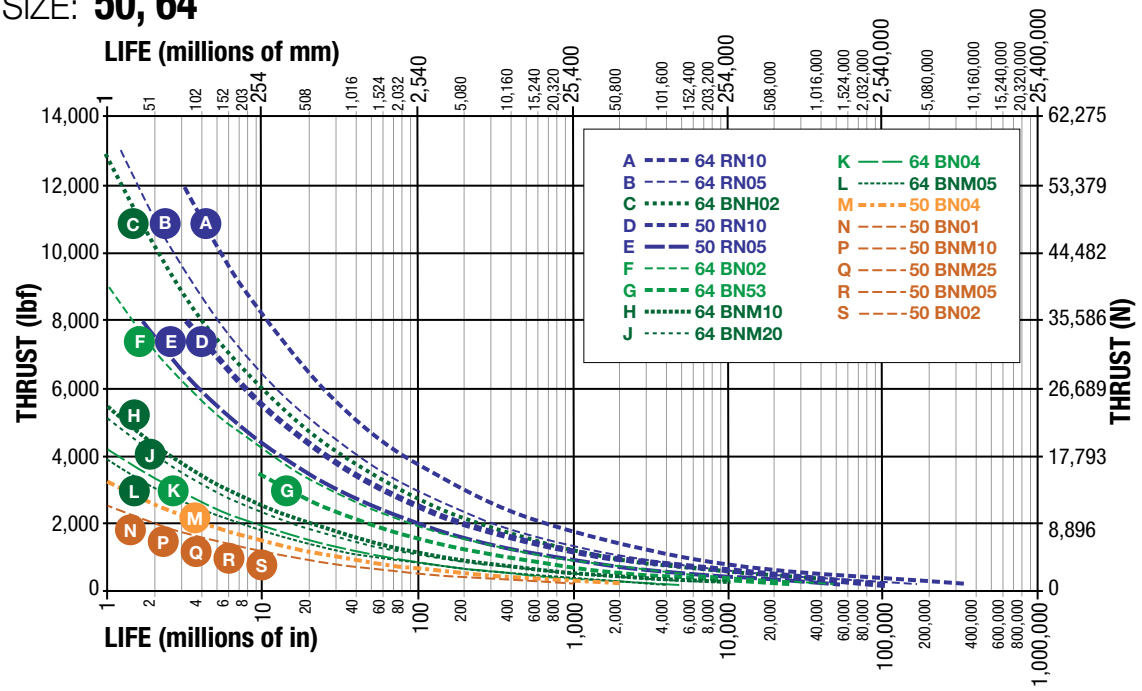
SPECIFICATIONS

SIZE: 24, 32



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

SIZE: 50, 64



NOTE: The **L_{10}** *expected life of a ball screw linear actuator is expressed as the linear travel distance that 90% of properly 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:

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

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

C = Dynamic load rating (lbf) or *(N)*
P_e = Equivalent load (lbf) or *(N)*
If load is constant across all movements then:
actual load = equivalent load
ℓ = 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.*

Where:

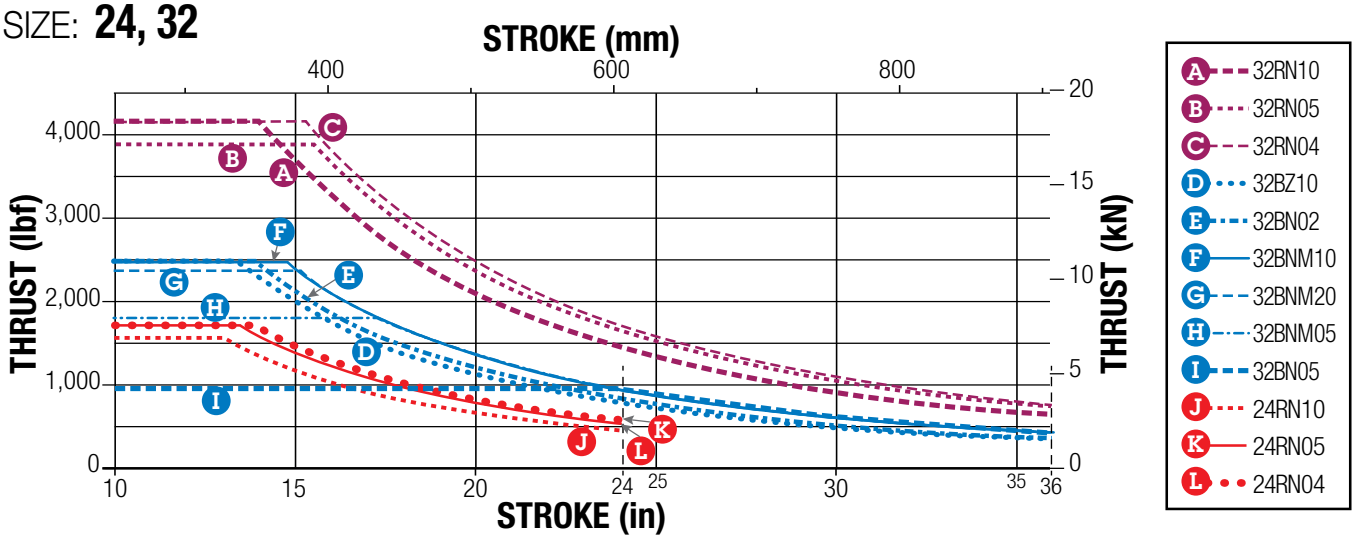
$$P_e = \sqrt[3]{\frac{L_1(P_1)^3 + L_2(P_2)^3 + L_3(P_3)^3 + L_n(P_n)^3}{L}}$$

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)*

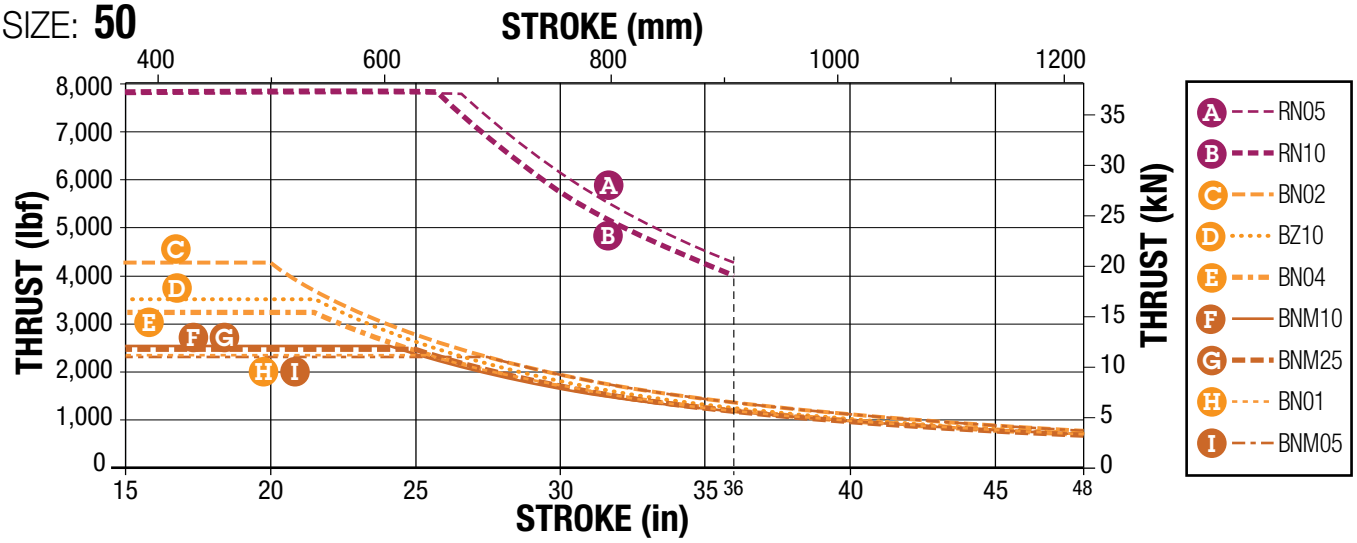
SCREW BUCKLING LOAD

SPECIFICATIONS

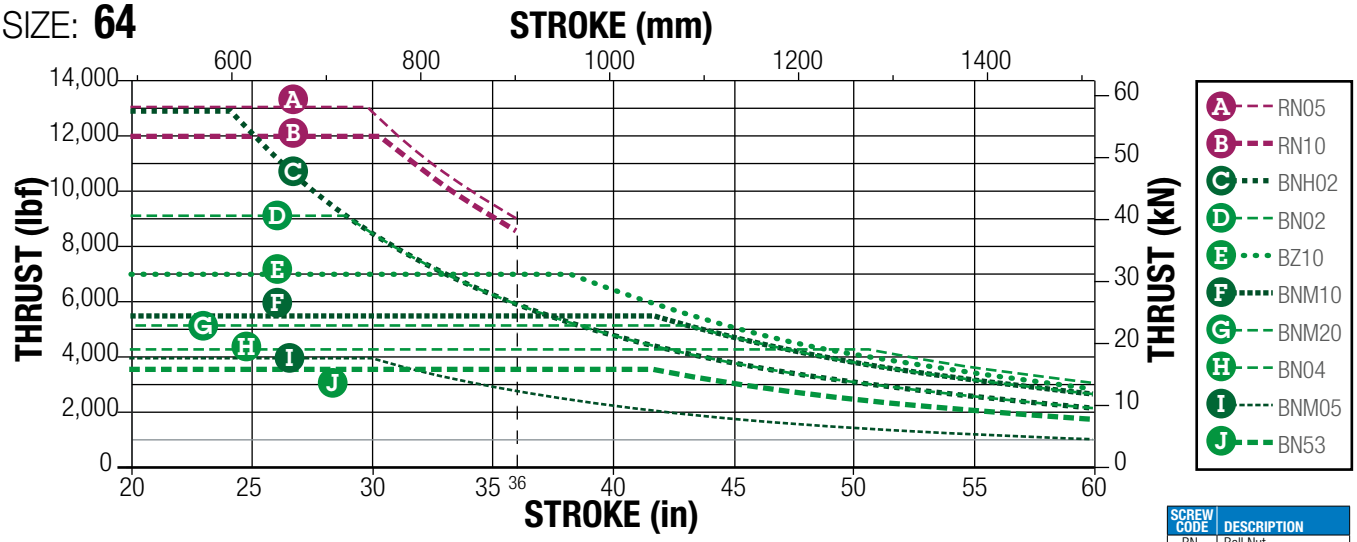
SIZE: **24, 32**



SIZE: **50**



SIZE: **64**



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

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

RSA HT Electric Rod-Style Actuator

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

SPECIFICATIONS

sizeit.tolomatic.com for fast, accurate actuator selection

			RSA SIZE	24	32			50			64		
				RN	BZ	BN	RN	BZ	BN	RN	BZ	BN	RN
WEIGHT	BASE MODEL	IN-LINE	lb	3.98	12.76	12.76	17.29	20.58	20.58	22.08	38.10	38.10	40.06
		REVERSE PARALLEL	lb	6.25	12.01	12.01	20.36	25.32	25.32	26.82	44.43	44.43	46.39
		PER in OF STROKE	lb/in	0.330	0.460	0.460	0.473	0.860	0.860	0.950	1.380	1.380	1.325
MOVING PARTS WEIGHT		BASE WT.	lb	1.64	0.97	1.44	3.15	2.62	3.55	6.77	5.01	7.59	12.88
		PER in OF STROKE	lb/in	0.14	0.15	0.15	0.15	0.3	0.3	0.3	0.45	0.45	0.45
MAX. STROKE			in	24.0	36.0	36.0	36.0	48.0	48.0	36.0	60.0	60.0	36.0
TEMP. RANGE*			°F	Standard: 40 to 130 Extended:-40 to 140									

Contact Tolomatic if operation in the extended range is required.

			RSA SIZE	24	32			50			64		
				RN	BZ	BN	RN	BZ	BN	RN	BZ	BN	RN
WEIGHT	BASE MODEL	IN-LINE	*kg*	*1.79*	*5.79*	*5.79*	*7.84*	*9.33*	*9.33*	*10.01*	*17.28*	*17.28*	*18.17*
		REVERSE PARALLEL	*kg*	*2.81*	*5.45*	*5.45*	*9.17*	*11.40*	*11.40*	*12.08*	*20.15*	*20.15*	*21.04*
		PER mm OF STROKE	*g/mm*	*5.8*	*8.1*	*8.1*	*8.4*	*15.2*	*15.2*	*16.8*	*24.4*	*24.4*	*23.4*
MOVING PARTS WEIGHT		BASE WT.	*kg*	0.74	0.44	0.65	1.43	1.19	1.61	3.07	2.27	3.44	5.84
		PER mm OF STROKE	*g/mm*	2.50	2.68	2.68	2.68	5.36	5.36	5.36	8.04	8.04	8.04
MAX. STROKE			*mm*	*609.6*	*914.4*	*914.4*	*914.4*	*1219.2*	*1219.2*	*914.4*	*1524*	*1524*	*914.4*
TEMP. RANGE*			*°C*	*Standard: 4 to 54 Extended:-40 to 60*									

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

Contact Tolomatic if operation in the extended range is required.

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

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

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

RSA HT Electric Rod-Style Actuator

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

SPECIFICATIONS

RE-LUBRICATION RECOMMENDATION:

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

For many general purpose applications, Tolomatic ball screw actuators are typically considered lubricated for life unless otherwise specified, such as those actuator models outfitted with a re-lubrication feature. For roller screw or ball screw actuators outfitted with a re-lubrication feature, Tolomatic recommends to re-lubricate the actuator at least once per year or every 1,000,000 cycles, whichever comes first, to maximize service life. For more demanding applications such as pressing, high frequency or other highly stressed applications, the re-lubrication interval for these actuators will vary and will need to be more frequent. In these demanding applications, it is recommended to execute at least 5 full stroke moves every 5,000 cycles of operation (or more frequent if possible) to re-distribute the grease within the actuator.

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

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

§ = Stroke length (mm or in)

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

GREASE ZERK

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

RSA HT Electric Rod-Style Actuator

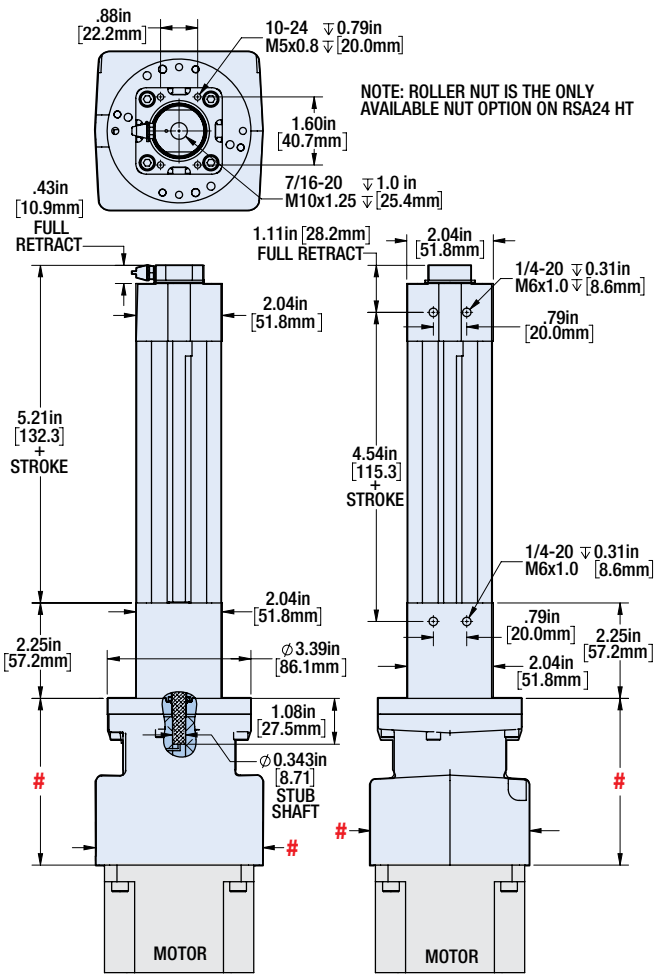
SIZE: **24,32,50,64**

DIMENSIONS

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

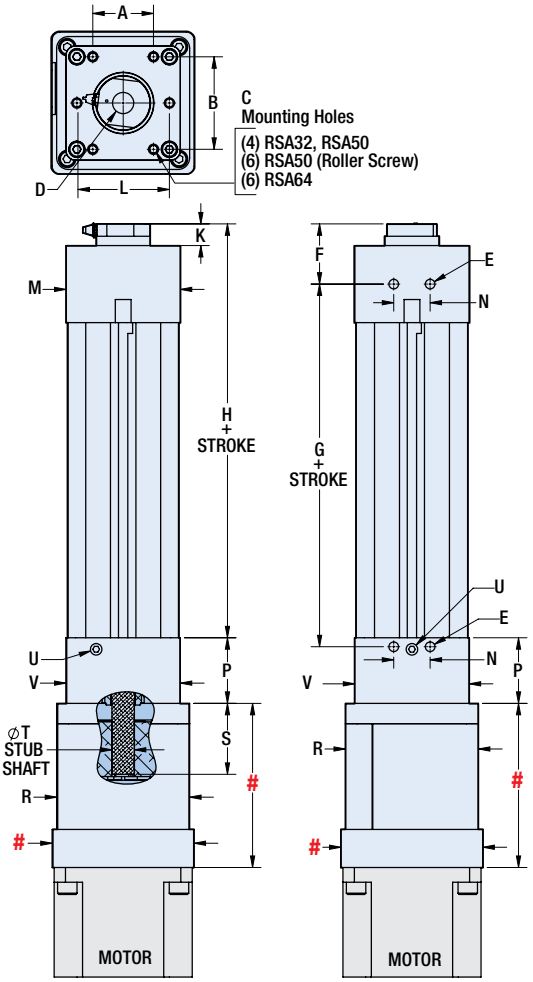
HT ACTUATOR L M I Motor Mount

RSA24 HT



 # = YMH Variable Dimensions

RSA32 HT, RSA50 HT, RSA64 HT



 # = YMH Variable Dimensions

NOTE: See next page for additional dimensions and RP drawing

			A	B	C	D	E
RSA32	RN	in	1.18	1.97	1/4-20 ↧0.70	7/16-20 ↧1.13	5/16-18 ↧0.47
		mm	*30.0*	*50.0*	*M6x1.0 ↧18.0*	*M16x1.5 ↧28.6*	*M8x1.25 ↧11.9*
	BN	in	1.18	1.97	1/4-20 ↧0.70	7/16-20 ↧1.13	5/16-18 ↧0.47
		mm	*30.0*	*50.0*	*M6x1.0 ↧18.0*	*M16x1.5 ↧28.6*	*M8x1.25 ↧11.9*
	BZ	in	1.18	1.97	1/4-20 ↧0.70	7/16-20 ↧1.13	5/16-18 ↧0.47
		mm	*30.0*	*50.0*	*M6x1.0 ↧18.0*	*M16x1.5 ↧28.6*	*M8x1.25 ↧11.9*
RSA50	RN	in	1.97	3.00	5/16-18 ↧0.47	3/4-16 ↧1.50	3/8-16 ↧0.75
		mm	*50.0*	*76.2*	*M8x1.25 ↧12.0*	*M20x1.5 ↧38.0*	*M10x1.5 ↧15.0*
	BN	in	1.97	3.00	5/16-18 ↧0.47	3/4-16 ↧1.50	3/8-16 ↧ 0.75
		mm	*50.0*	*76.2*	*M8x1.25 ↧12.0*	*M20x1.5 ↧38.0*	*M10x1.5 ↧15.0*
	BZ	in	1.97	3.00	5/16-18 ↧0.47	3/4-16 ↧1.50	3/8-16 ↧0.75
		mm	*50.0*	*76.2*	*M8x1.25 ↧12.0*	*M20x1.5 ↧38.0*	*M10x1.5 ↧15.0*
RSA64	RN	in	1.97	3.50	1/2-13 ↧0.75	1-1/4-12 ↧2.50	7/16-14 ↧0.88
		mm	*50.0*	*88.9*	*M12x1.75 ↧18.0*	*M27x2.0 ↧63.5*	*M12x1.75 ↧18.0*
	BN	in	1.97	3.50	1/2-13 ↧0.75	1-1/4-12 ↧2.50	7/16-14 ↧0.88
		mm	*50.0*	*88.9*	*M12x1.75 ↧18.0*	*M27x2.0 ↧63.5*	*M12x1.75 ↧18.0*
	BZ	in	1.97	3.50	1/2-13 ↧0.75	1-1/4-12 ↧2.50	7/16-14 ↧0.88
		mm	*50.0*	*88.9*	*M12x1.75 ↧18.0*	*M27x2.0 ↧63.5*	*M12x1.75 ↧18.0*

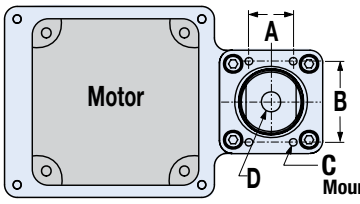
RSA HT Electric Rod-Style Actuator

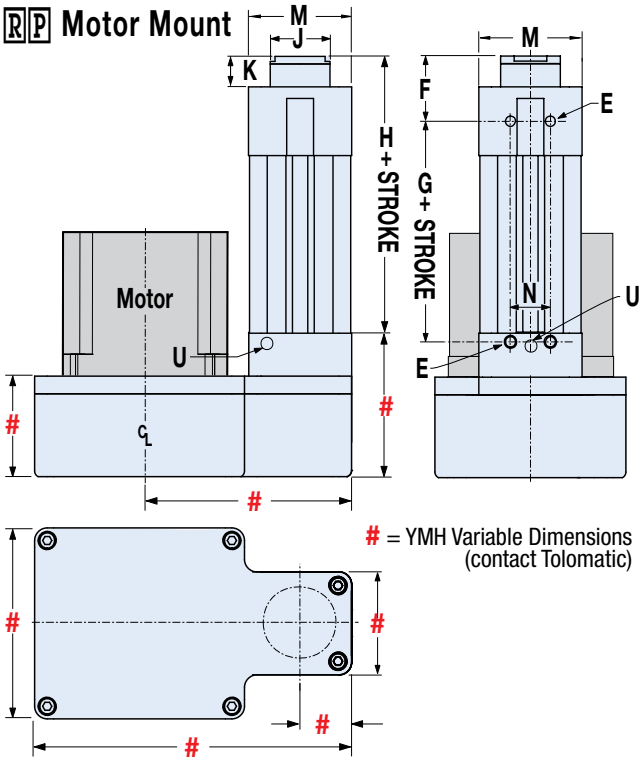
SIZE: **24,32,50,64**

DIMENSIONS

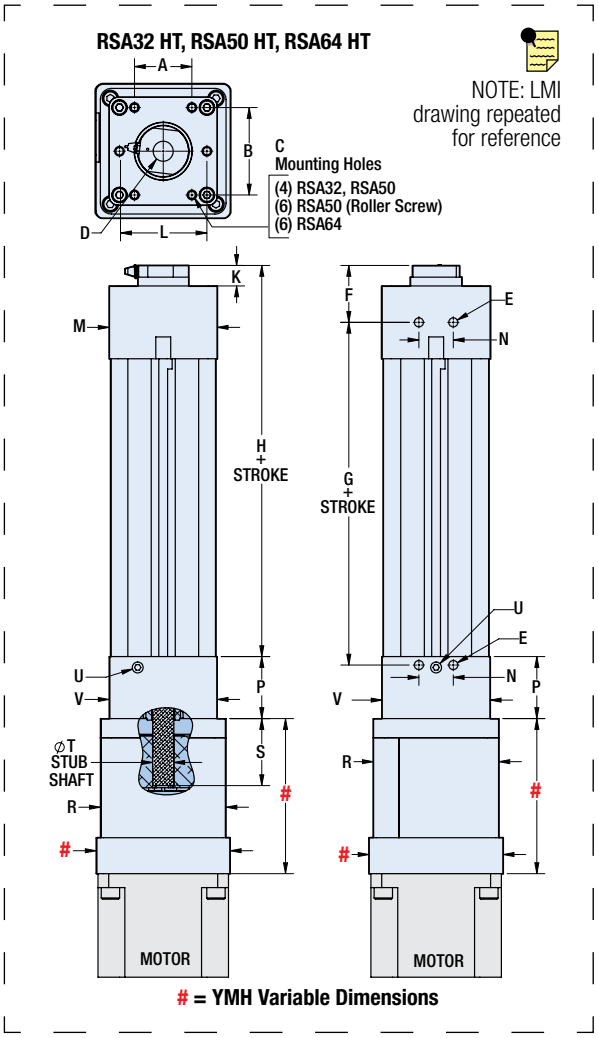
tolomatic.com/CAD **Download 3D CAD** *Always use CAD solid model to determine critical dimensions*

HT ACTUATOR DIMENSIONS





= YMH Variable Dimensions (contact Tolomatic)



			F	G	H	K	L	M	N	P	R	S	T	U	V
RSA32	RN	in	1.44	5.92	6.24	0.50	--	2.58	0.95	3.50	3.25	1.70	0.625	1/16-27 NPT	3.25
		mm	*36.5*	*150.4*	*158.4*	*12.7*	--	*65.5*	*24.1*	*88.9*	*82.6*	*43.2*	*15.88*	1/16-27 NPT	*82.6*
	BN	in	1.44	5.05	6.24	0.50	--	2.58	0.95	1.79	3.25	1.75	0.530	1/16-27 NPT	2.58
		mm	*36.5*	*128.3*	*158.4*	*12.7*	--	*65.5*	*24.1*	*45.4*	*82.6*	*44.5*	*13.46*	1/16-27 NPT	*65.5*
	BZ	in	1.44	3.87	5.06	0.50	--	2.58	0.95	1.79	3.25	1.75	0.530	1/16-27 NPT	2.58
		mm	*36.5*	*96.4*	*128.4*	*12.7*	--	*65.5*	*24.1*	*45.4*	*82.6*	*44.5*	*13.46*	1/16-27 NPT	*65.5*
RSA50	RN	in	1.95	7.21	8.41	0.70	3.00	3.71	1.81	3.80	4.31	2.31	0.729	1/8-27 NPT	3.71
		mm	*49.5*	*183.1*	*213.6*	*17.8*	*76.2*	*94.1*	*30.0*	*96.5*	*109.5*	*58.7*	*18.52*	1/8-27 NPT	*94.2*
	BN	in	1.95	5.78	7.44	0.70	--	3.71	1.81	2.13	4.31	2.30	0.730	1/8-27 NPT	3.71
		mm	*49.5*	*146.9*	*189.0*	*17.8*	--	*94.1*	*30.0*	*54.0*	*109.5*	*58.4*	*18.54*	1/8-27 NPT	*94.2*
	BZ	in	1.95	4.78	6.44	0.70	--	3.71	1.81	2.13	4.31	2.30	0.730	1/8-27 NPT	3.71
		mm	*49.5*	*121.5*	*163.6*	*17.8*	--	*94.1*	*30.0*	*54.0*	*109.5*	*58.4*	*18.54*	1/8-27 NPT	*94.2*
RSA64	RN	in	2.37	7.80	9.29	0.68	3.50	4.58	1.97	4.25	5.60	2.67	0.999	1/8-27 NPT	4.58
		mm	*60.1*	*196.0*	*235.9*	*17.3*	*88.9*	*116.3*	*50.0*	*108.0*	*142.2*	*67.9*	*25.38*	1/8-27 NPT	*116.3*
	BN	in	2.37	10.25	11.74	0.68	3.50	4.58	1.97	4.25	5.60	2.67	0.999	1/8-27 NPT	4.58
		mm	*60.1*	*260.3*	*298.2*	*17.3*	*88.9*	*116.3*	*50.0*	*108.0*	*142.2*	*67.9*	*25.38*	1/8-27 NPT	*116.3*
	BZ	in	2.37	7.80	9.29	0.68	3.50	4.58	1.97	4.25	5.60	2.67	0.999	1/8-27 NPT	4.58
		mm	*60.1*	*198.0*	*235.9*	*17.3*	*88.9*	*116.3*	*50.0*	*108.0*	*142.2*	*67.9*	*25.38*	1/8-27 NPT	*116.3*

NOTE: See previous page for additional dimensions

See page 18 for additional RP mounting codes

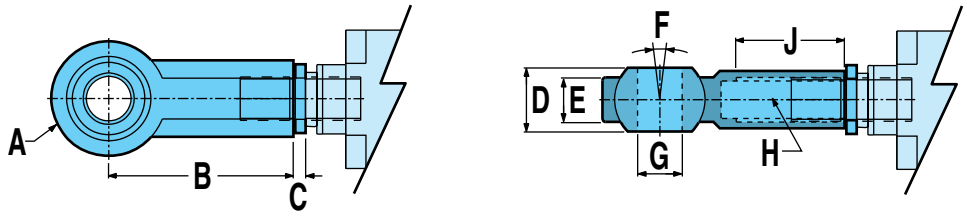
RSA HT Rod End Options

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

DIMENSIONS

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

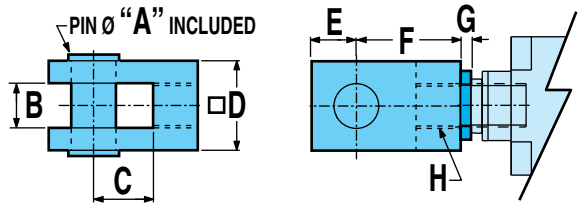
SRE SPHERICAL ROD END



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

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

CLV CLEVIS ROD END



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

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

KEY TO SYMBOLS

⚠ Indicates a note of high importance

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

Make note of this item

RSA HT Rod End Options

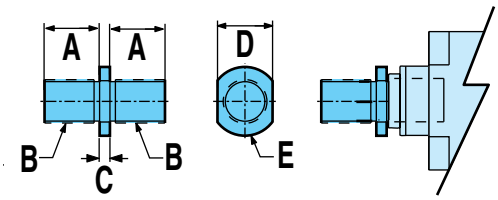
SIZE: **24, 32, 50, 64**

DIMENSIONS

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

MET EXTERNALLY THREADED ROD END

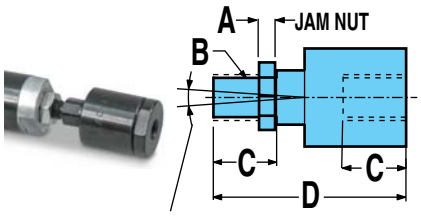
An alternative to the standard internally threaded end.



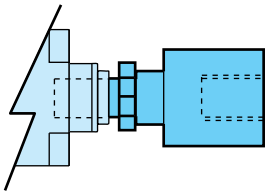
Size		A	B	C	D	E Ø
24	in	0.87	7/16-20	0.15	0.750	0.97
	mm	*22.1*	*M10x1.25*	*3.8*	*19.00*	*24.6*
32	in	0.87	7/16-20	0.15	0.750	0.97
	mm	*28.0*	*M16x1.5*	*4.8*	*19.00*	*24.6*
50	in	1.50	3/4-16	0.19	1.250	1.48
	mm	*38.1*	*M-20x1.5*	*4.8*	*32.00*	*37.6*
64	in	2.13	1-1/4-12	0.19	1.313	1.60
	mm	*50.8*	*M27x2*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

ALC ALIGNMENT COUPLER

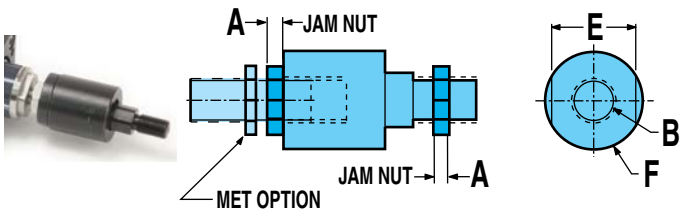
INTERNALLY THREADED END

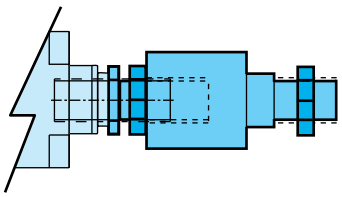


2 SPHERICAL MOTION, 0.0625 (1.6) RADIAL FLOAT



EXTERNALLY THREADED END



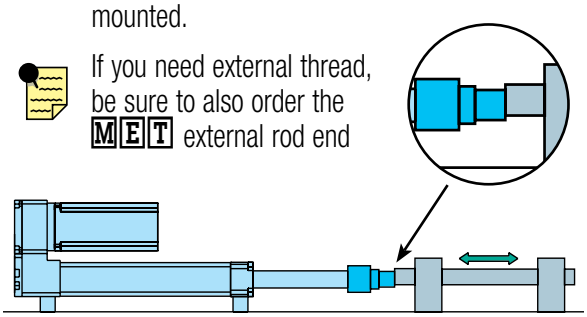


THE ALIGNMENT COUPLER COMES WITH AN INTERNAL THREAD. IF AN EXTERNAL THREAD IS PREFERRED, THE ADDITION OF THE "MET" OPTION IS REQUIRED.

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

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

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



RSA-HT

RSA HT Mounting Options

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

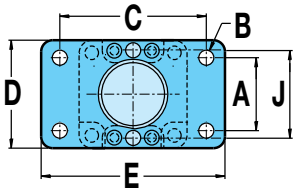
DIMENSIONS

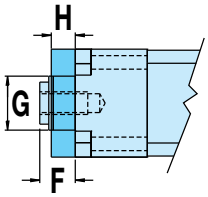
tolomatic.com/CAD Download 3D CAD *Always use CAD solid model to determine critical dimensions*

FFG FRONT FLANGE MOUNT

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

Flange can be mounted directly to framework or a bulkhead

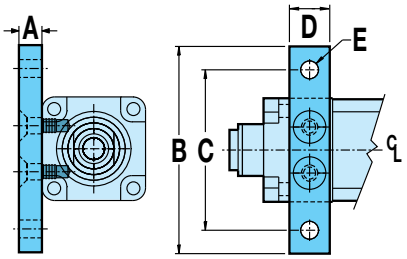




Size		A	B Ø	C	D	E	F	G Ø	H	J
24	in	1.430	0.31	2.750	2.00	3.37	0.80	1.34	0.37	–
	mm	*32.00*	*7.2*	*64.00*	*47.0*	*80.0*	*20.4*	*34.0*	*10.0*	–
32	in	1.840	0.37	3.375	2.50	4.12	0.87	1.50	0.37	–
	mm	*45.00*	*9.2*	*90.00*	*65.0*	*113.0*	*22.1*	*34.0*	*12.0*	–
50	in	2.760	0.43	4.687	3.75	5.50	1.32	1.90	0.62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

See page 22 for additional FFG mount codes

MP2 MOUNTING PLATE



Used for mountings other than flush.

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

KEY TO SYMBOLS

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

RSA HT Mounting Options

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

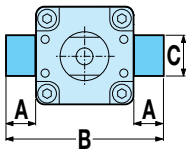
DIMENSIONS

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

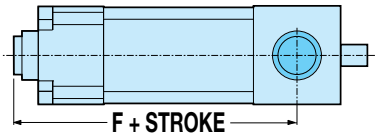
TRR TRUNNION MOUNT

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

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



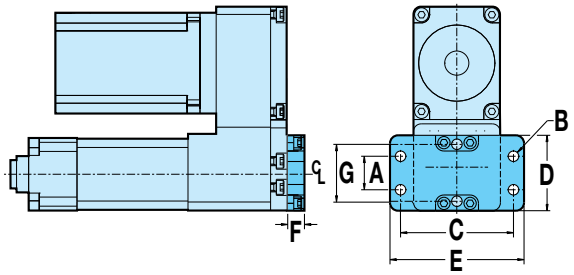
Both RSA US standard RSM Metric



RSA: US standard	Size		A	B	C Ø	D Ø	E	F (LMI)			F (RP)		
								ACME NUT	BALL NUT	ROLLER NUT	ACME NUT	BALL NUT	ROLLER NUT
	24	in	1.04	4.12	0.9999/0.9993	NA	NA	4.46	4.94	6.33	4.30	4.73	6.33
	32	in	1.00	4.58	0.9999/0.9993	NA	NA	6.06	7.24	7.42	5.65	6.83	7.42
	50	in	1.06	5.83	0.9999/0.9993	NA	NA	7.44	8.44	9.07	7.14	8.14	9.07
	64	in	1.25	7.92	0.9999/0.9993	1.50	0.42	10.29	12.74	10.29	10.29	12.74	10.29

RSM: Metric	Size		A	B	C Ø	D Ø	E	F (LMI)			F (RP)		
								ACME NUT	BALL NUT	ROLLER NUT	ACME NUT	BALL NUT	ROLLER NUT
	24	mm	*8.6*	*75.7*	*11.96/11.99*	*18.0*	*3.3*	*113.4*	*125.5*	*160.8*	*109.1*	*120.2*	*160.8*
	32	mm	*16.0*	*107.0*	*15.95/15.98*	*25.0*	*4.74*	*153.8*	*183.8*	*188.5*	*143.5*	*173.5*	*188.5*
	50	mm	*20.1*	*150.1*	*19.95/19.98*	*30.0*	*7.9*	*191.0*	*214.4*	*230.3*	*181.3*	*206.7*	*230.3*
	64	mm	*24.9*	*181.9*	*24.97/24.99*	*40.0*	*7.9*	*261.3*	*323.6*	*261.3*	*261.3*	*323.6*	*261.3*

BFG BACK FLANGE MOUNT



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

⊗ Not available with LMI (inline) motor mounting

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

See page 22 for additional BFG mount codes

RSA HT Mounting Options

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

DIMENSIONS

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

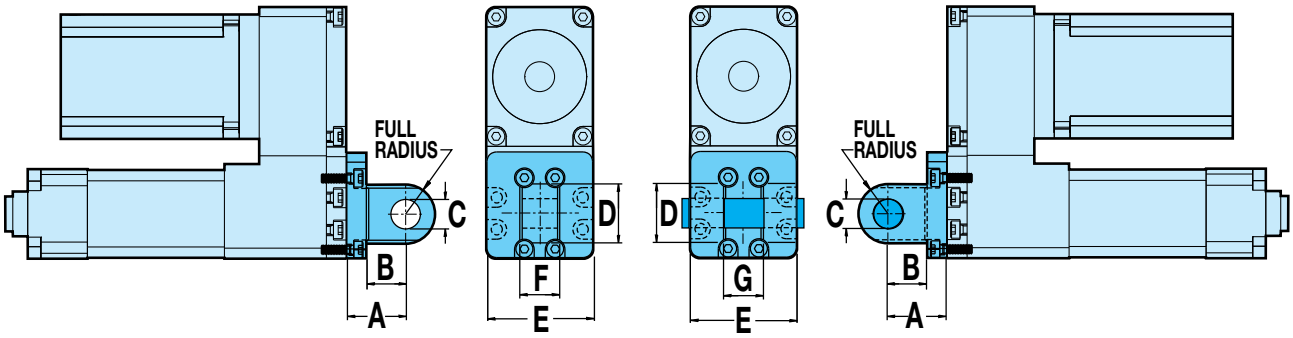
PCS EYE MOUNT & PCD CLEVIS MOUNT

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

⊗ Not available with LMI (inline) motor mounting

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

⊗ Not available with LMI (inline) motor mounting.



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

See page 25 for additional PCS and PCD mount codes

KEY TO SYMBOLS

⚠ Indicates a note of high importance

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

Make note of this item

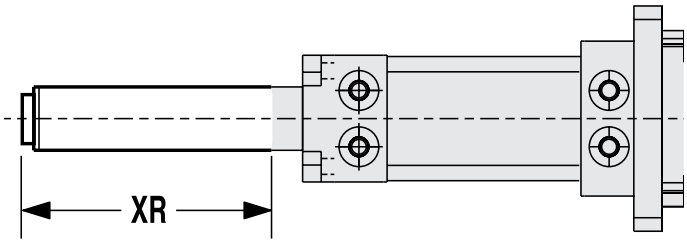
RSA HT Mounting Options

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

DIMENSIONS

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

XR OPTIONAL ROD EXTENSION



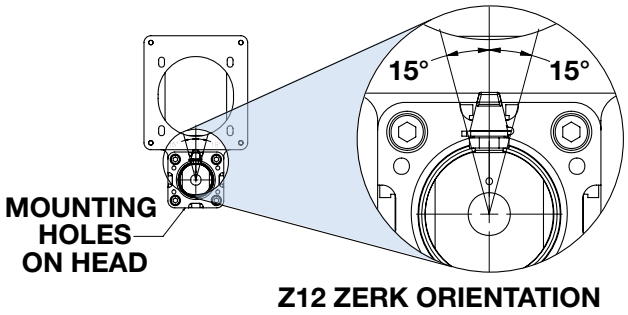
In **vertical applications only,** the thrust rod length can be extended by specifying the rod extension option. This does not increase the working stroke, only the length of the thrust rod.

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

Maximum Stroke Length

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

Z12 ZERK ORIENTATION



Z12 ZERK ORIENTATION

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

GSA Guided Electric Rod-Style Actuator

SIZE: **ALL** units: **US standard**

SPECIFICATIONS

GSA SIZE	BEARING TYPE	GUIDE ROD	MAX. STROKE	SCREW TYPE	TPI	LEAD ACCURACY†	BACKLASH	MAX THRUST*	DYNAMIC LOAD RATING**	BASE ACTUATOR INERTIA			INERTIA PER/in OF STROKE	DYNAMIC FRICTION TORQUE	MOVING PARTS WEIGHT	
										In Line	Reverse Parallel 1:1	Reverse Parallel 2:1			Base	Per Inch
		in	in		turns/in	in/ft	in	lbf	lbf	lb-in^2	lb-in^2	lb-in^2	lb-in^2	lb-in	lb	lb
12	LINEAR	STANDARD Ø0.50	18	SN01	1	0.010	0.007	70	NA	0.004	0.005	NA	0.002	2.938	1.21	0.14
			18	SN02	2	0.006	0.007	70	NA	0.002	0.003	NA	0.001	1.500	1.21	0.14
			18	SN05	5	0.006	0.007	70	NA	0.002	0.002	NA	0.001	0.563	1.21	0.14
			18	BZ10	10	0.006	0.008	70	NA	0.002	0.002	NA	0.001	0.438	1.21	0.14
			18	BN(L)08	8	0.003	0.015	130	260	0.002	0.002	NA	0.001	0.500	1.29	0.14
	COMPOSITE	STANDARD Ø0.50	18	SN01	1	0.010	0.007	70	NA	0.004	0.005	NA	0.002	5.625	1.21	0.14
			18	SN02	2	0.006	0.007	70	NA	0.002	0.003	NA	0.001	2.813	1.21	0.14
			18	SN05	5	0.006	0.007	70	NA	0.002	0.002	NA	0.001	1.125	1.21	0.14
			18	BZ10	10	0.006	0.008	70	NA	0.002	0.002	NA	0.001	0.813	1.21	0.14
			18	BN(L)08	8	0.003	0.015	130	260	0.002	0.002	NA	0.001	0.688	1.29	0.14
		OVERSIZED Ø0.63	18	SN01	1	0.010	0.007	70	NA	0.004	0.005	NA	0.002	6.125	1.56	0.20
			18	SN02	2	0.006	0.007	70	NA	0.002	0.003	NA	0.001	3.063	1.56	0.20
			18	SN05	5	0.006	0.007	70	NA	0.002	0.002	NA	0.001	1.250	1.56	0.20
			18	BZ10	10	0.006	0.008	70	NA	0.002	0.002	NA	0.001	0.938	1.56	0.20
			18	BN(L)08	8	0.003	0.015	130	260	0.002	0.002	NA	0.001	0.750	1.64	0.20
16	LINEAR	STANDARD Ø0.63	24	SN01	1	0.010	0.007	70	NA	0.006	0.007	NA	0.002	2.938	2.42	0.21
			24	SN02	2	0.006	0.007	70	NA	0.003	0.003	NA	0.001	1.500	2.42	0.21
			24	SN05	5	0.006	0.007	70	NA	0.002	0.002	NA	0.001	0.563	2.42	0.21
			24	BZ10	10	0.006	0.008	70	NA	0.002	0.002	NA	0.001	0.438	2.42	0.21
			24	BN(L)08	8	0.003	0.015	130	260	0.002	0.002	NA	0.001	0.500	2.50	0.21
	COMPOSITE	STANDARD Ø0.63	24	SN01	1	0.010	0.007	70	NA	0.006	0.007	NA	0.002	6.125	2.42	0.21
			24	SN02	2	0.006	0.007	70	NA	0.003	0.003	NA	0.001	3.063	2.42	0.21
			24	SN05	5	0.006	0.007	70	NA	0.002	0.002	NA	0.001	1.250	2.42	0.21
			24	BZ10	10	0.006	0.008	70	NA	0.002	0.002	NA	0.001	0.938	2.42	0.21
			24	BN(L)08	8	0.003	0.015	130	260	0.002	0.002	NA	0.001	0.688	2.50	0.21
		OVERSIZED Ø0.75	24	SN01	1	0.010	0.007	70	NA	0.006	0.007	NA	0.002	6.625	2.94	0.29
			24	SN02	2	0.006	0.007	70	NA	0.003	0.003	NA	0.001	3.313	2.94	0.29
			24	SN05	5	0.006	0.007	70	NA	0.002	0.002	NA	0.001	1.313	2.94	0.29
			24	BZ10	10	0.006	0.008	70	NA	0.002	0.002	NA	0.001	1.000	2.94	0.29
			24	BN(L)08	8	0.003	0.015	130	260	0.002	0.002	NA	0.001	0.750	3.02	0.29

SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

Contact Tolomatic for higher accuracy and lower backlash options.

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

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

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

GSA Guided Electric Rod-Style Actuator

SIZE: **ALL** units: **US standard** **SPECIFICATIONS**

GSA SIZE	BEARING TYPE	GUIDE ROD	MAX. STROKE	SCREW TYPE	TPI	LEAD ACCURACY†	BACKLASH	MAX THRUST*	DYNAMIC LOAD RATING**	BASE ACTUATOR INERTIA			INERTIA PER/in OF STROKE	DYNAMIC FRICTION TORQUE	MOVING PARTS WEIGHT	
										In Line	Reverse Parallel 1:1	Reverse Parallel 2:1			Base	Per Inch
		in	in		turns/in	in/ft	in	lbf	lbf	lb-in^2	lb-in^2	lb-in^2	lb-in^2	lb-in	lb	lb
24	LINEAR	STANDARD Ø0.75	30	BZ10	10	0.006	0.008	603	NA	0.116	0.117	0.071	0.004	2.000	4.49	0.33
			30	BN(L)05	5	0.003	0.015	825	1,411	0.116	0.117	0.071	0.004	1.563	4.75	0.33
			30	BN(L)02	2	0.003	0.015	342	1,071	0.116	0.117	0.071	0.003	1.56	4.75	0.33
	COMPOSITE	STANDARD Ø0.75	30	BZ10	10	0.006	0.008	603	NA	0.116	0.117	0.071	0.004	2.000	4.49	0.33
			30	BN(L)05	5	0.003	0.015	825	1,411	0.116	0.117	0.071	0.004	1.563	4.75	0.33
			30	BN(L)02	2	0.003	0.015	342	1,071	0.116	0.117	0.071	0.003	1.56	4.75	0.33
		OVERSIZED Ø1.00	30	BZ10	10	0.006	0.008	603	NA	0.116	0.117	0.071	0.004	2.188	6.06	0.53
			30	BN(L)05	5	0.003	0.015	825	1,411	0.116	0.117	0.071	0.004	1.875	6.32	0.53
			30	BN(L)02	2	0.003	0.015	342	1,071	0.116	0.117	0.071	0.003	1.88	6.32	0.53
32	LINEAR	STANDARD Ø1.00	36	BZ10	10	0.006	0.008	785	NA	0.235	0.179	0.147	0.009	2.000	9.03	0.60
			36	BN(L)02	2	0.004	0.015	534	3,364	0.235	0.179	0.147	0.010	3.125	9.51	0.60
			36	BN(L)05	5	0.003	0.015	950	1,624	0.235	0.179	0.147	0.009	1.875	9.51	0.60
			36	BNM20	1.27	0.002	0.005	339	2,560	0.235	0.179	0.147	0.011	1.875	9.51	0.60
	COMPOSITE	STANDARD Ø1.00	36	BZ10	10	0.006	0.008	785	NA	0.235	0.179	0.147	0.009	2.813	9.03	0.60
			36	BN(L)02	2	0.004	0.015	534	3,364	0.235	0.179	0.147	0.010	3.438	9.51	0.60
			36	BN(L)05	5	0.003	0.015	950	1,624	0.235	0.179	0.147	0.009	2.188	9.51	0.60
			36	BNM20	1.27	0.002	0.005	339	2,560	0.235	0.179	0.147	0.011	2.188	9.51	0.60
		OVERSIZED Ø1.25	36	BZ10	10	0.006	0.008	785	NA	0.235	0.179	0.147	0.009	3.438	11.40	0.86
			36	BN(L)02	2	0.004	0.015	534	3,364	0.235	0.179	0.147	0.010	4.063	11.88	0.86
			36	BN(L)05	5	0.003	0.015	950	1,624	0.235	0.179	0.147	0.009	2.500	11.88	0.86
			36	BNM20	1.27	0.002	0.005	339	2,560	0.235	0.179	0.147	0.011	2.500	11.88	0.86

SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

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

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

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

GSA Guided Electric Rod-Style Actuator

SIZE: **ALL** units: **metric****

SPECIFICATIONS

sizeit.tolomatic.com for fast, accurate actuator selection

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

GSA SIZE	BEARING TYPE	GUIDE ROD	MAX. STROKE	SCREW TYPE	LEAD	LEAD ACCURACY	BACKLASH†	MAX THRUST*	DYNAMIC THRUST RATING**	BASE ACTUATOR INERTIA			INERTIA PER/ 25mm OF STROKE	DYNAMIC FRICTION TORQUE	MOVING PARTS WEIGHT	
										In Line	Reverse Parallel 1:1	Reverse Parallel 2:1			Base	Per Inch
		mm	mm		mm/rev	mm/300	mm	N		kg-m^{2}x10^{-6}	kg-m^{2}x10^{-6}	kg-m^{2}x10^{-6}	kg-m^{2}x10^{-6}	N-m	Kg	Kg
12	LINEAR	STANDARD Ø12.7	457.2	SN01	25.40	0.25	0.18	311	NA	1.171	1.463	NA	0.585	0.332	0.549	0.063
			457.2	SN02	12.70	0.15	0.18	311	NA	0.585	0.878	NA	0.293	0.169	0.549	0.063
			457.2	SN05	5.08	0.15	0.18	311	NA	0.585	0.585	NA	0.293	0.064	0.549	0.063
			457.2	BZ10	2.54	0.15	0.20	311	NA	0.585	0.585	NA	0.293	0.049	0.549	0.063
			457.2	BN(L)08	3.18	0.08	0.38	578	1,157	0.585	0.585	NA	0.293	0.056	0.585	0.063
	COMPOSITE	STANDARD Ø12.7	457.2	SN01	25.40	0.25	0.18	311	NA	1.171	1.463	NA	0.585	0.636	0.549	0.063
			457.2	SN02	12.70	0.15	0.18	311	NA	0.585	0.878	NA	0.293	0.318	0.549	0.063
			457.2	SN05	5.08	0.15	0.18	311	NA	0.585	0.585	NA	0.293	0.127	0.549	0.063
			457.2	BZ10	2.54	0.15	0.20	311	NA	0.585	0.585	NA	0.293	0.092	0.549	0.063
			457.2	BN(L)08	3.18	0.08	0.38	578	1,157	0.585	0.585	NA	0.293	0.078	0.585	0.063
		OVERSIZED Ø15.9	457.2	SN01	25.40	0.25	0.18	311	NA	1.171	1.463	NA	0.585	0.692	0.707	0.09
			457.2	SN02	12.70	0.15	0.18	311	NA	0.585	0.878	NA	0.293	0.346	0.707	0.09
			457.2	SN05	5.08	0.15	0.18	311	NA	0.585	0.585	NA	0.293	0.141	0.707	0.09
			457.2	BZ10	2.54	0.15	0.20	311	NA	0.585	0.585	NA	0.293	0.106	0.707	0.09
			457.2	BN(L)08	3.18	0.08	0.38	578	1,157	0.585	0.585	NA	0.293	0.085	0.744	0.09
16	LINEAR	STANDARD Ø15.9	609.6	SN01	25.40	0.25	0.18	311	NA	1.756	2.048	NA	0.585	0.332	1.10	0.095
			609.6	SN02	12.70	0.15	0.18	311	NA	0.878	0.878	NA	0.293	0.169	1.10	0.095
			609.6	SN05	5.08	0.15	0.18	311	NA	0.585	0.585	NA	0.293	0.064	1.10	0.095
			609.6	BZ10	2.54	0.15	0.20	311	NA	0.585	0.585	NA	0.293	0.049	1.10	0.095
			609.6	BN(L)08	3.18	0.08	0.38	578	1,157	0.585	0.585	NA	0.293	0.056	1.13	0.095
	COMPOSITE	STANDARD Ø15.9	609.6	SN01	25.40	0.25	0.18	311	NA	1.756	2.048	NA	0.585	0.692	1.10	0.095
			609.6	SN02	12.70	0.15	0.18	311	NA	0.878	0.878	NA	0.293	0.346	1.10	0.095
			609.6	SN05	5.08	0.15	0.18	311	NA	0.585	0.585	NA	0.293	0.141	1.10	0.095
			609.6	BZ10	2.54	0.15	0.20	311	NA	0.585	0.585	NA	0.293	0.106	1.10	0.095
			609.6	BN(L)08	3.18	0.08	0.38	578	1,157	0.585	0.585	NA	0.293	0.078	1.13	0.095
		OVERSIZED Ø19.1	609.6	SN01	25.40	0.25	0.18	311	NA	1.756	2.048	NA	0.585	0.749	1.33	0.132
			609.6	SN02	12.70	0.15	0.18	311	NA	0.878	0.878	NA	0.293	0.374	1.33	0.132
			609.6	SN05	5.08	0.15	0.18	311	NA	0.585	0.585	NA	0.293	0.148	1.33	0.132
			609.6	BZ10	2.54	0.15	0.20	311	NA	0.585	0.585	NA	0.293	0.113	1.33	0.132
			609.6	BN(L)08	3.18	0.08	0.38	578	1,157	0.585	0.585	NA	0.293	0.085	1.37	0.132

SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

Contact Tolomatic for higher accuracy and lower backlash options.

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

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

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

GSA

GSA Guided Electric Rod-Style Actuator

SIZE: **ALL** units: **metric****

SPECIFICATIONS

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

GSA SIZE	BEARING TYPE	GUIDE ROD	MAX. STROKE	SCREW TYPE	LEAD	LEAD ACCURACY	BACKLASH†	MAX THRUST*	DYNAMIC THRUST RATING**	BASE ACTUATOR INERTIA			INERTIA PER/ 25mm OF STROKE	DYNAMIC FRICTION TORQUE	MOVING PARTS WEIGHT	
										In Line	Reverse Parallel 1:1	Reverse Parallel 2:1			Base	Per Inch
		mm	mm		mm/rev	mm/300	mm	N		kg-m²x10⁻⁶	kg-m²x10⁻⁶	kg-m²x10⁻⁶	kg-m²x10⁻⁶	N-m	Kg	Kg
24	LINEAR	STANDARD Ø19.1	762.0	BZ10	2.54	0.15	0.20	2,682	NA	33.946	34.239	20.777	1.171	0.226	2.04	0.15
			762.0	BN(L)05	5.08	0.08	0.38	3,670	6,275	33.946	34.239	20.777	1.171	0.177	2.15	0.15
			762.0	BN(L)02	12.70	0.08	0.38	1,521	4,764	33.946	34.239	20.777	0.878	0.176	2.15	0.15
	COMPOSITE	STANDARD Ø19.1	762.0	BZ10	2.54	0.15	0.20	2,682	NA	33.946	34.239	20.777	1.171	0.226	2.04	0.15
			762.0	BN(L)05	5.08	0.08	0.38	3,670	6,275	33.946	34.239	20.777	1.171	0.177	2.15	0.15
			762.0	BN(L)02	12.70	0.08	0.38	1,521	4,764	33.946	34.239	20.777	0.878	0.176	2.15	0.15
		OVERSIZED Ø25.4	762.0	BZ10	2.54	0.15	0.20	2,682	NA	33.946	34.239	20.777	1.171	0.247	2.75	0.24
			762.0	BN(L)05	5.08	0.08	0.38	3,670	6,275	33.946	34.239	20.777	1.171	0.212	2.87	0.24
			762.0	BN(L)02	12.70	0.08	0.38	1,521	4,764	33.946	34.239	20.777	0.878	0.212	2.87	0.24
32	LINEAR	STANDARD Ø25.4	914.4	BZ10	2.54	0.15	0.20	3,492	NA	68.770	52.382	43.018	2.634	0.226	4.10	0.27
			914.4	BN(L)02	12.70	0.10	0.38	2,375	14,964	68.770	52.382	43.018	2.926	0.353	4.31	0.27
			914.4	BN(L)05	5.08	0.08	0.38	4,226	7,226	68.770	52.382	43.018	2.634	0.212	4.31	0.27
			914.4	BNM20	20.00	0.05	0.13	1,508	11,388	68.770	52.382	43.018	3.219	0.212	4.31	0.27
	COMPOSITE	STANDARD Ø25.4	914.4	BZ10	2.54	0.15	0.20	3,492	NA	68.770	52.382	43.018	2.634	0.318	4.10	0.27
			914.4	BN(L)02	12.70	0.10	0.38	2,375	14,964	68.770	52.382	43.018	2.926	0.388	4.31	0.27
			914.4	BN(L)05	5.08	0.08	0.38	4,226	7,226	68.770	52.382	43.018	2.634	0.247	4.31	0.27
			914.4	BNM20	20.00	0.05	0.13	1,508	11,388	68.770	52.382	43.018	3.219	0.212	4.31	0.27
		OVERSIZED Ø31.8	914.4	BZ10	2.54	0.15	0.20	3,492	NA	68.770	52.382	43.018	2.634	0.388	5.17	0.39
			914.4	BN(L)02	12.70	0.10	0.38	2,375	14,964	68.770	52.382	43.018	2.926	0.459	5.39	0.39
			914.4	BN(L)05	5.08	0.08	0.38	4,226	7,226	68.770	52.382	43.018	2.634	0.282	5.39	0.39
			914.4	BNM20	20.00	0.05	0.13	1,508	11,388	68.770	52.382	43.018	3.219	0.282	5.39	0.39

SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

Contact Tolomatic for higher accuracy and lower backlash options.

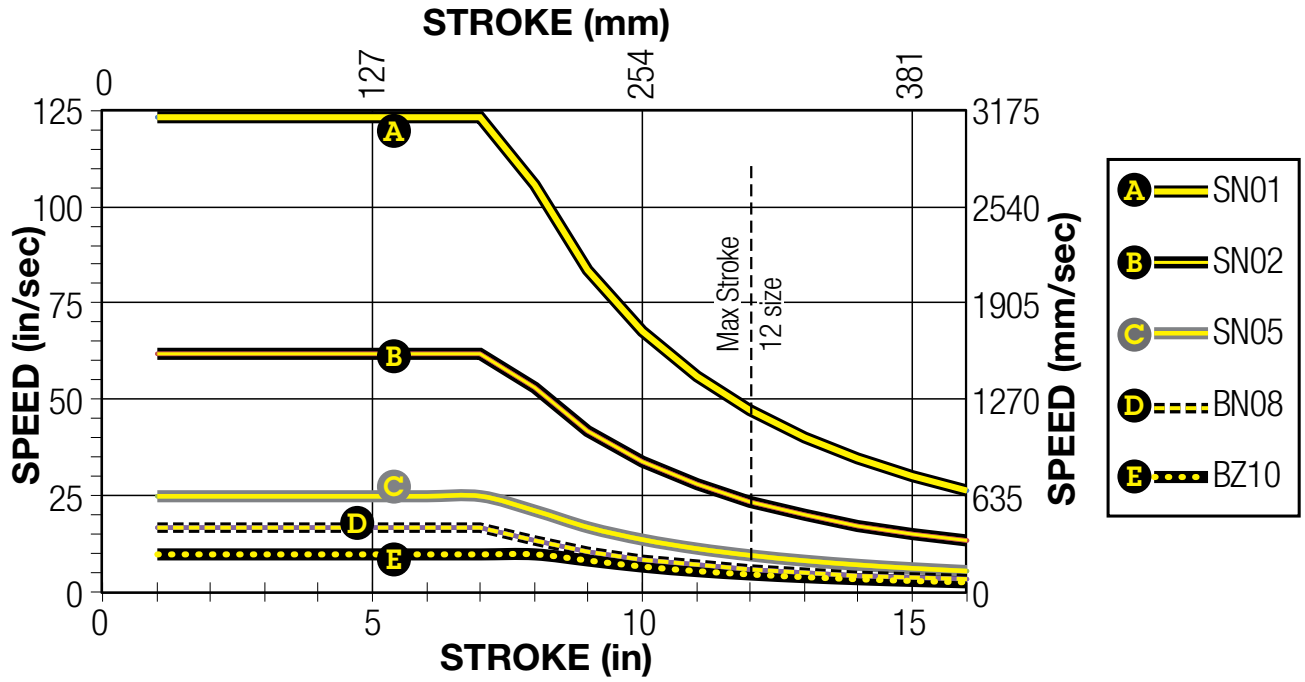
† (L) for low backlash ball screws: backlash = 0.0020" (0.05 mm)

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

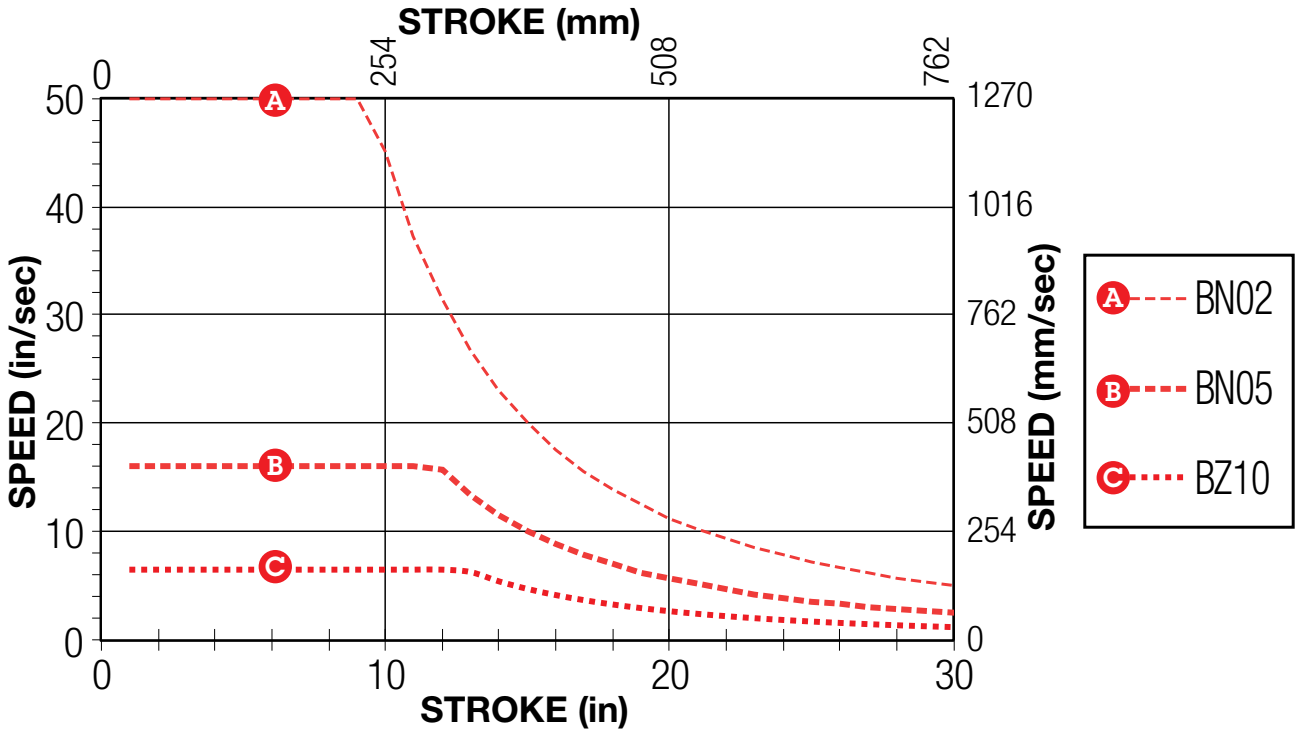
**** For RN, BN & BNL screws, dynamic load rating reflects 90% reliability for 1 million revolutions.**

SIZE: 12,16: CRITICAL SPEED CAPACITIES

SPECIFICATIONS



SIZE: 24: CRITICAL SPEED CAPACITIES



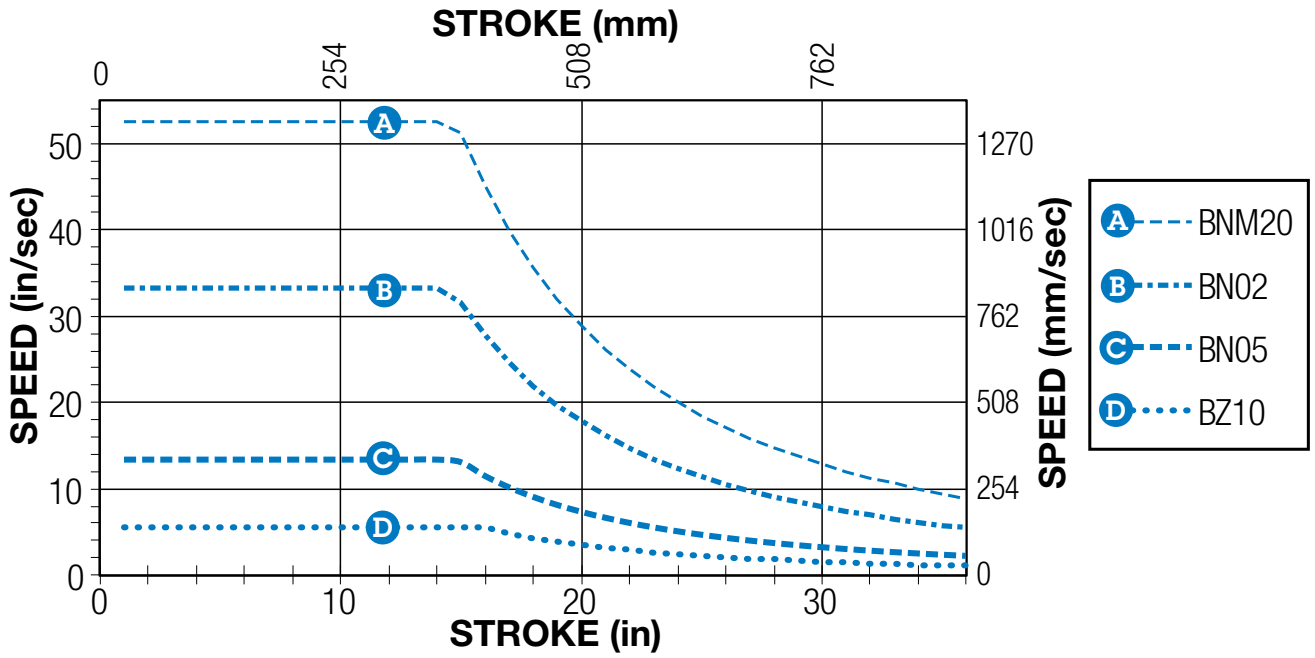
SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

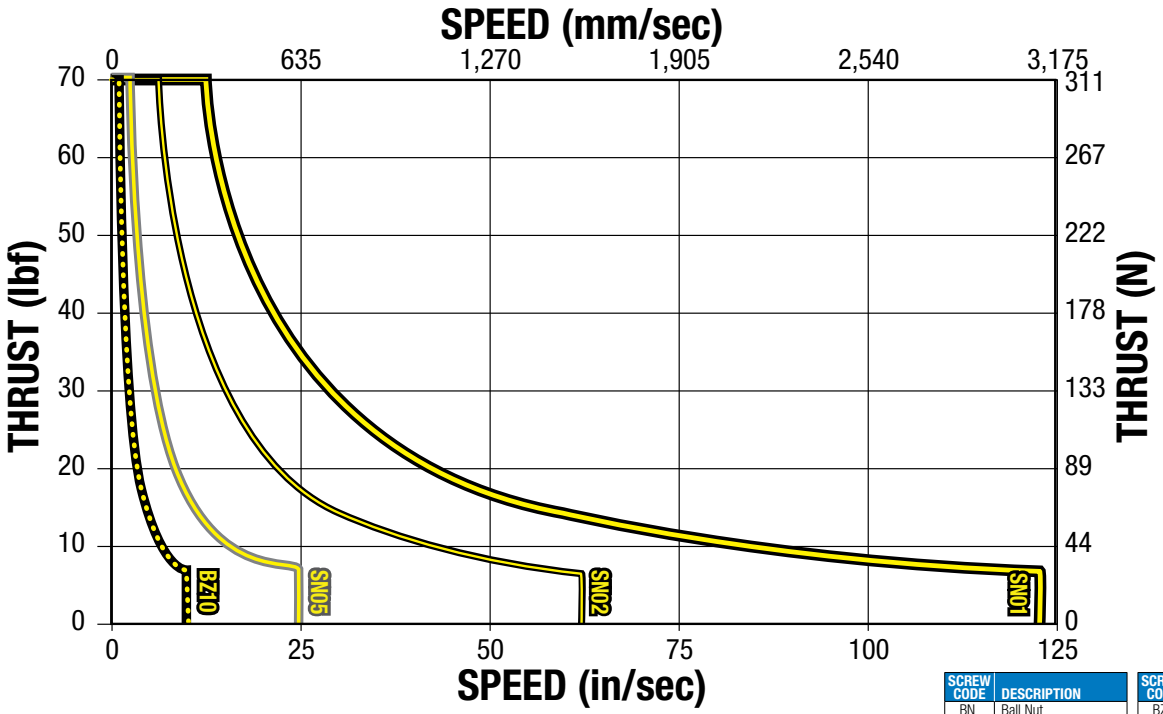
GSA

SIZE: 32: CRITICAL SPEED CAPACITIES

SPECIFICATIONS



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



SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

PV LIMITS

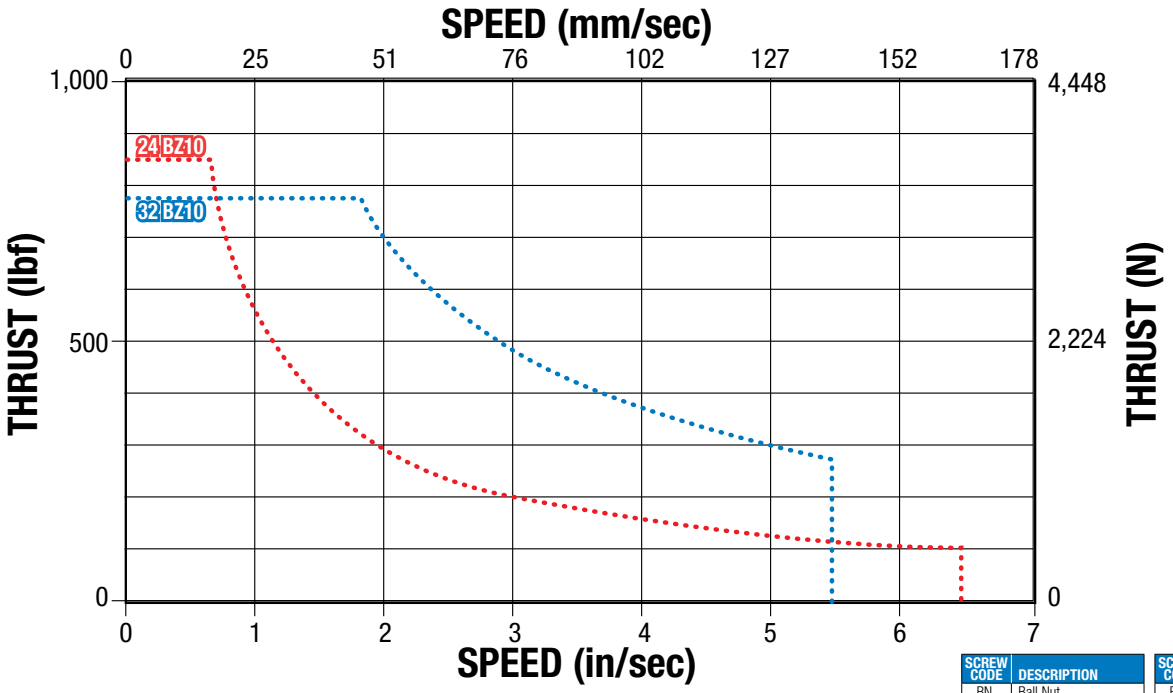
PV LIMITS: Any material which carries a sliding load is limited by heat buildup. The factors that affect heat generation rate in an application are the pressure on the nut in pounds per square inch and the surface velocity in feet per minute. The product of these factors provides a measure of the severity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

$$P \times V \leq 0.1$$

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

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

SPECIFICATIONS



SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

PV LIMITS

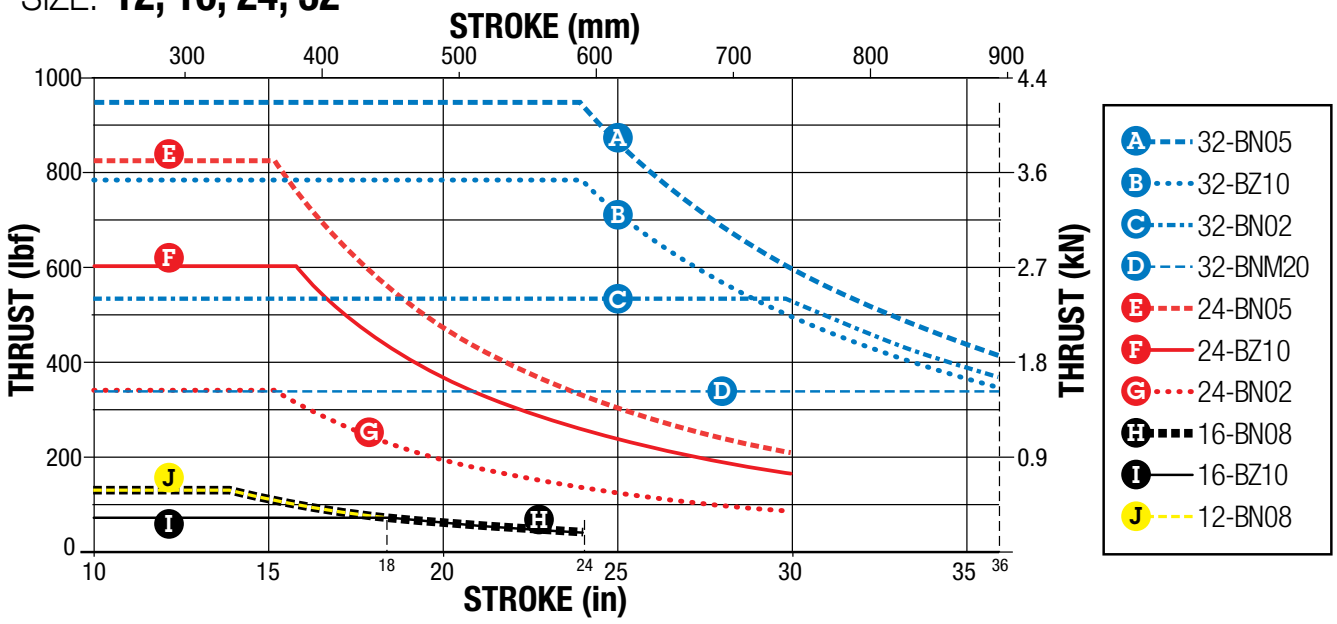
PV LIMITS: Any material which carries a sliding load is limited by heat buildup. The factors that affect heat generation rate in an application are the pressure on the nut in pounds per square inch and the surface velocity in feet per minute. The product of these factors provides a measure of the severity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

$$P \times V \leq 0.1$$

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

SCREW BUCKLING LOAD

SIZE: **12, 16, 24, 32**



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

SCREW CODE	DESCRIPTION
BN	Ball Nut
BNH	Ball Nut H-series
BNL	Low-Backlash Ball Nut
BNM	Ball Nut Metric

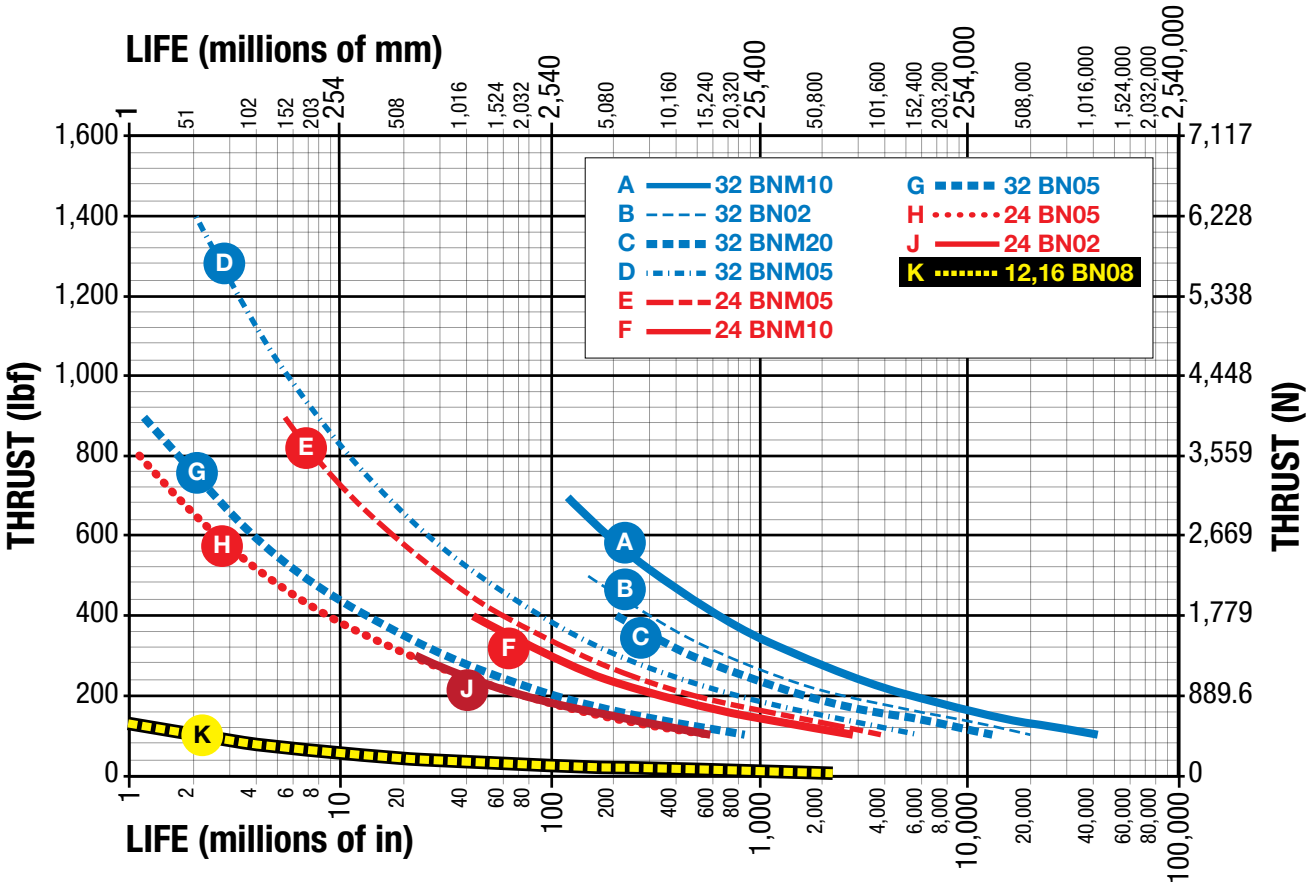
SCREW CODE	DESCRIPTION
BZ	Bronze Nut
RN	Roller Nut
SN	Solid Nut

GSA Guided Electric Rod-Style Actuator

BALL SCREW LIFE GRAPHS

SIZE: **12, 16, 24, 32**

SPECIFICATIONS



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:

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

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

C = Dynamic load rating (lbf) or *(N)*
P_e = Equivalent load (lbf) or *(N)*
If load is constant across all movements then:
actual load = equivalent load
ℓ = 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.*

Where:

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

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)*

GSA Guided Electric Rod-Style Actuator

SIZE: **ALL**

SPECIFICATIONS

sizeit.tolomatic.com for fast, accurate actuator selection

GSA SIZE				12				16		24		32	
				17 frame		23 frame							
Guide Rod				STD	OVR	STD	OVR	STD	OVR	STD	OVR	STD	OVR
WEIGHT	BASE MODEL	IN-LINE	lb	3.65	4.44	3.68	4.47	7.25	7.54	16.48	17.35	27.34	28.65
		REVERSE PARALLEL	lb	3.92	4.72	4.05	4.85	7.59	7.88	17.09	17.96	28.81	30.12
		PER in OF STROKE	lb/in	0.21	0.27	0.21	0.27	0.30	0.38	0.54	0.74	0.93	1.19
MAX. STROKE			in	18				24		30		36	
TEMP. RANGE*			°F	Standard: 40 to 130 Extended: -40 to 140									

Contact Tolomatic if operation in the extended range is required.

GSA SIZE				12				16		24		32	
				17 frame		23 frame							
Guide Rod				STD	OVR	STD	OVR	STD	OVR	STD	OVR	STD	OVR
WEIGHT	BASE MODEL	IN-LINE	*kg*	*1.65*	*2.01*	*1.67*	*2.03*	*3.29*	*3.42*	*7.48*	*7.87*	*12.40*	*13.00*
		REVERSE PARALLEL	*kg*	*1.78*	*2.14*	*1.84*	*2.20*	*3.44*	*3.57*	*7.75*	*8.15*	*13.07*	*13.66*
		PER in OF STROKE	*g/mm*	*3.75*	*4.82*	*3.75*	*4.82*	*5.36*	*6.79*	*9.64*	*13.21*	*16.61*	*21.25*
MAX. STROKE			*mm*	*457*				*609*		*762*		*914*	
TEMP. RANGE*			*°C*	*Standard: 4 - 54 Extended: -40 to 60*									

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

Contact Tolomatic if operation in the extended range is required.

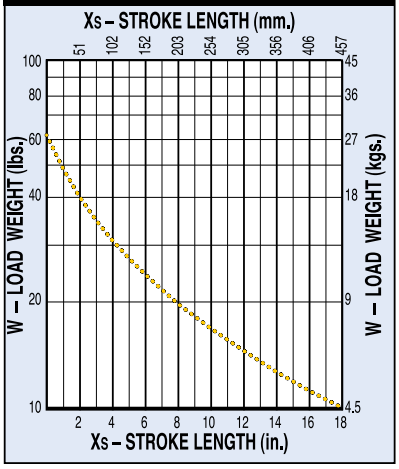
*** Heat generated by the motor and drive should be taken into consideration as well as linear velocity and work cycle time. For applications that require operation outside of the recommended temperature range, contact Tolomatic.**

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

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

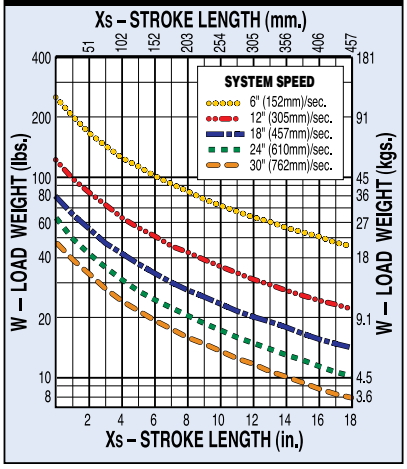
MAX. LOAD WEIGHT & GUIDE ROD DEFLECTION

MAXIMUM LOAD WEIGHT vs STROKE LENGTH
LINEAR BALL BEARING, STANDARD GUIDE RODS

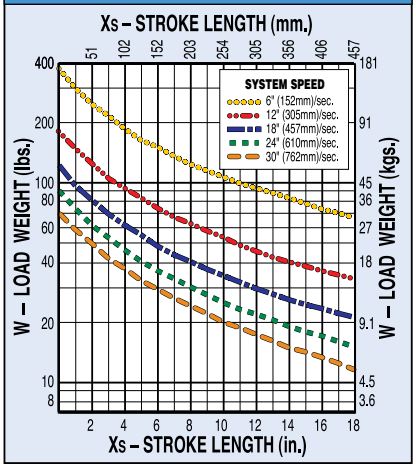


Linear ball bearings are not available with stainless steel guide rod option.

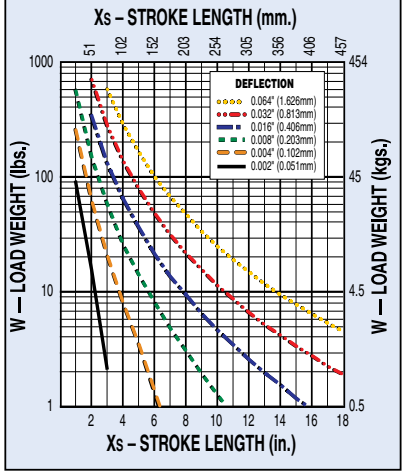
MAXIMUM LOAD WEIGHT vs STROKE LENGTH
COMPOSITE BEARING, STANDARD GUIDE RODS



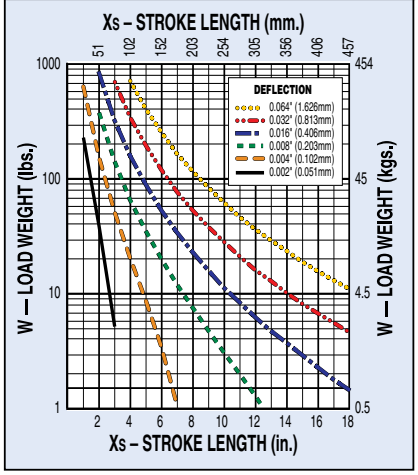
MAXIMUM LOAD WEIGHT vs STROKE LENGTH
COMPOSITE BEARING, OVERSIZE GUIDE RODS



GUIDE ROD DEFLECTION
STANDARD GUIDE RODS



GUIDE ROD DEFLECTION
OVERSIZE GUIDE RODS



DO NOT EXCEED MAXIMUM LOAD CURVE

Maximum load values are based on 200 million linear inches of travel.

1. To obtain most accurate results, stroke length should be adjusted by the distance between the center of mass of the load and tooling plate.

   $$X_{adj} = X_s + X_{cm}$$

   Then, use X_{adj} instead of X_s on the Maximum Load Weight vs. Stroke Length graph.

2. For the off-center loads, calculate adjusted load weight using the following formula:

   $$W_{adj} = W\ (1 + 0.67\ Y_{cm})$$

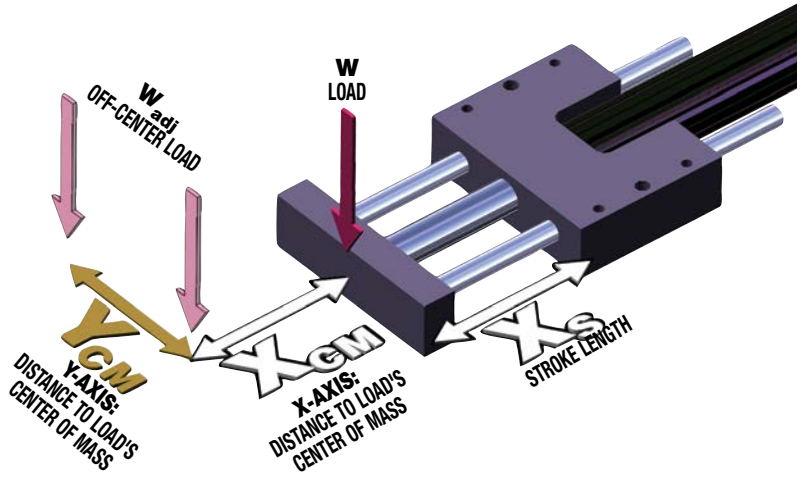
   where Y_{cm} is distance between center of mass of off-center load and center of tooling plate.

   Then, use W_{adj} instead of **W** on Maximum Load Weight vs. Stroke Length graph.

3. Using your stroke length and load weight, evaluate guide rod deflection. If the intersection point is above the highest curve (.064"), contact Tolomatic for assistance.

• Impact loading is not recommended for GSA actuators.
• Motor brakes may be required on vertically positioned actuators with plastic (solid) or ball nuts in applications with risk of load backdriving. (Actuators with bronze nuts will not backdrive for loads, thrusts within catalog specifications.)

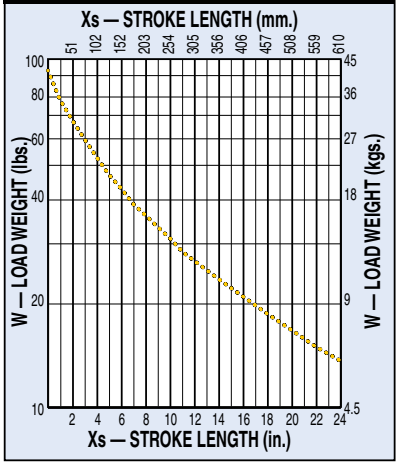
Contact Tolomatic for assistance.



GSA

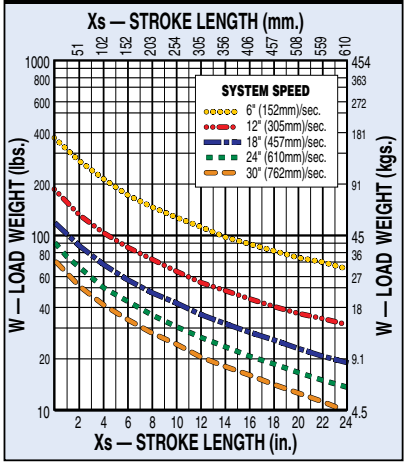
MAX. LOAD WEIGHT & GUIDE ROD DEFLECTION

MAXIMUM LOAD WEIGHT vs STROKE LENGTH
LINEAR BALL BEARING, STANDARD GUIDE RODS

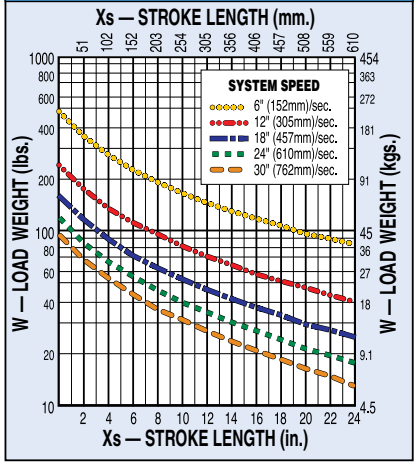


Linear ball bearings are not available with stainless steel guide rod option.

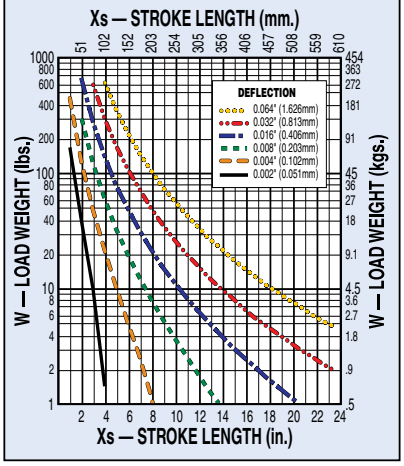
MAXIMUM LOAD WEIGHT vs STROKE LENGTH
COMPOSITE BEARING, STANDARD GUIDE RODS



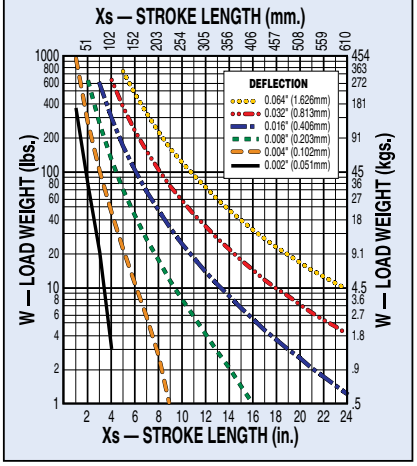
MAXIMUM LOAD WEIGHT vs STROKE LENGTH
COMPOSITE BEARING, OVERSIZE GUIDE RODS



GUIDE ROD DEFLECTION
STANDARD GUIDE RODS



GUIDE ROD DEFLECTION
OVERSIZE GUIDE RODS



DO NOT EXCEED MAXIMUM LOAD CURVE

Maximum load values are based on 200 million linear inches of travel.

1. To obtain most accurate results, stroke length should be adjusted by the distance between the center of mass of the load and tooling plate.

   $$X_{adj} = X_s + X_{cm}$$

   Then, use X_{adj} instead of X_s on the Maximum Load Weight vs. Stroke Length graph.

2. For the off-center loads, calculate adjusted load weight using the following formula:

   $$W_{adj} = W\ (1 + 0.53\ Y_{cm})$$

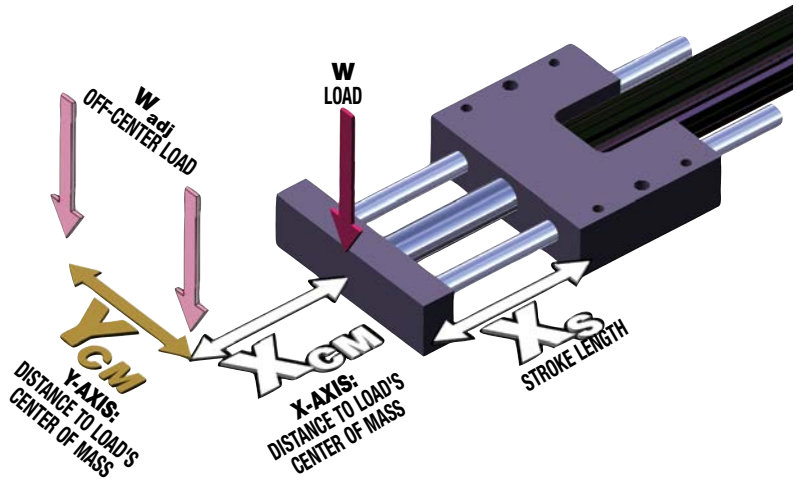
   where Y_{cm} is distance between center of mass of off-center load and center of tooling plate.

   Then, use W_{adj} instead of **W** on Maximum Load Weight vs. Stroke Length graph.

3. Using your stroke length and load weight, evaluate guide rod deflection. If the intersection point is above the highest curve (.064"), contact Tolomatic for assistance.

- **Impact loading is not recommended for GSA actuators.**
- **Motor brakes may be required on vertically positioned actuators with plastic (solid) or ball nuts in applications with risk of load backdriving. (Actuators with bronze nuts will not backdrive for loads, thrusts within catalog specifications.)**

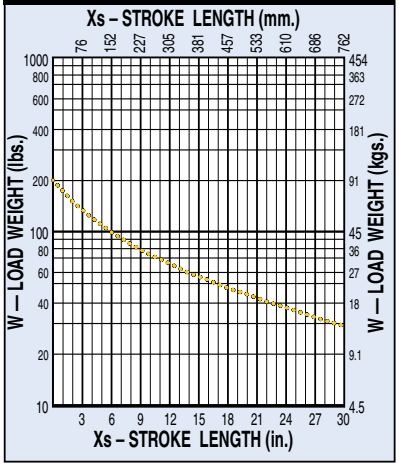
Contact Tolomatic for assistance.



GSA

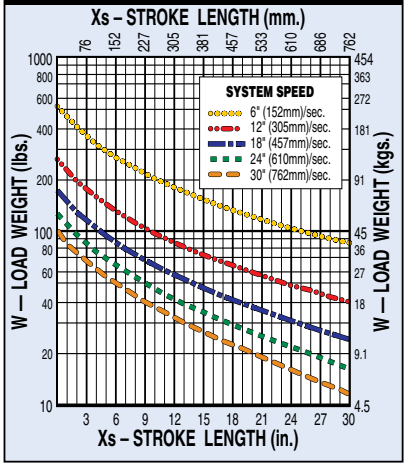
MAX. LOAD WEIGHT & GUIDE ROD DEFLECTION

MAXIMUM LOAD WEIGHT vs STROKE LENGTH
LINEAR BALL BEARING, STANDARD GUIDE RODS

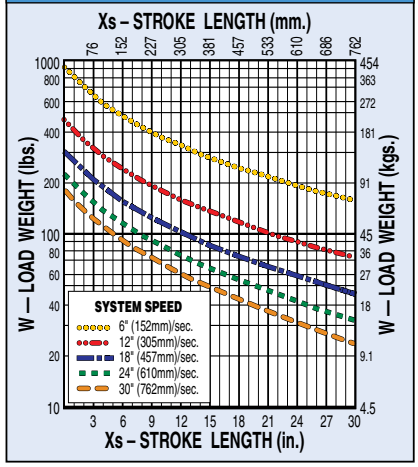


Linear ball bearings are not available with stainless steel guide rod option.

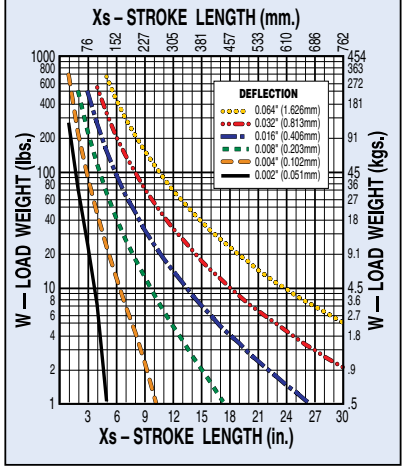
MAXIMUM LOAD WEIGHT vs STROKE LENGTH
COMPOSITE BEARING, STANDARD GUIDE RODS



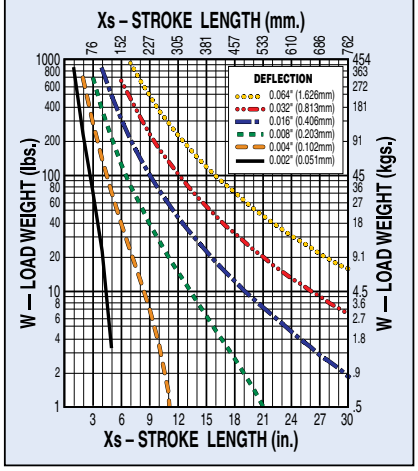
MAXIMUM LOAD WEIGHT vs STROKE LENGTH
COMPOSITE BEARING, OVERSIZE GUIDE RODS



GUIDE ROD DEFLECTION
STANDARD GUIDE RODS



GUIDE ROD DEFLECTION
OVERSIZE GUIDE RODS



DO NOT EXCEED MAXIMUM LOAD CURVE

Maximum load values are based on 200 million linear inches of travel.

1. To obtain most accurate results, stroke length should be adjusted by the distance between the center of mass of the load and tooling plate.

   $$X_{adj} = X_s + X_{cm}$$

   Then, use X_{adj} instead of X_s on the Maximum Load Weight vs. Stroke Length graph.

2. For the off-center loads, calculate adjusted load weight using the following formula:

   $$W_{adj} = W\ (1 + 0.40\ Y_{cm})$$

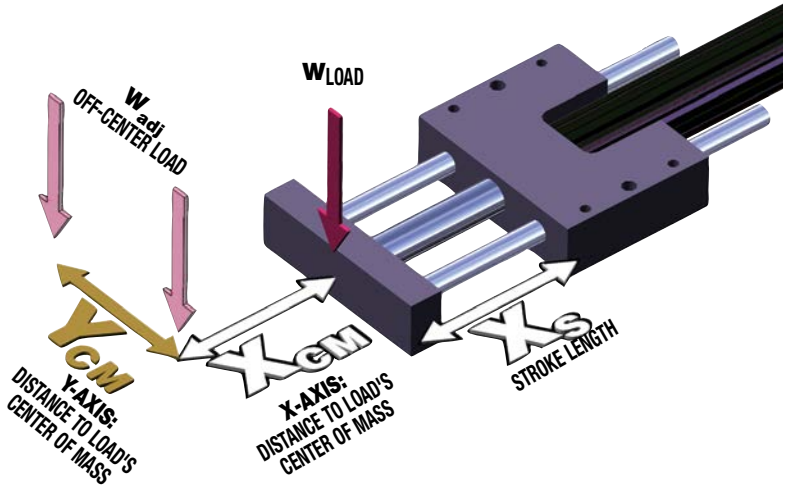
   where Y_{cm} is distance between center of mass of off-center load and center of tooling plate.

   Then, use W_{adj} instead of **W** on Maximum Load Weight vs. Stroke Length graph.

3. Using your stroke length and load weight, evaluate guide rod deflection. If the intersection point is above the highest curve (.064"), contact Tolomatic for assistance.

- **Impact loading is not recommended for GSA actuators.**
- **Motor brakes may be required on vertically positioned actuators with plastic (solid) or ball nuts in applications with risk of load backdriving. (Actuators with bronze nuts will not backdrive for loads, thrusts within catalog specifications.)**

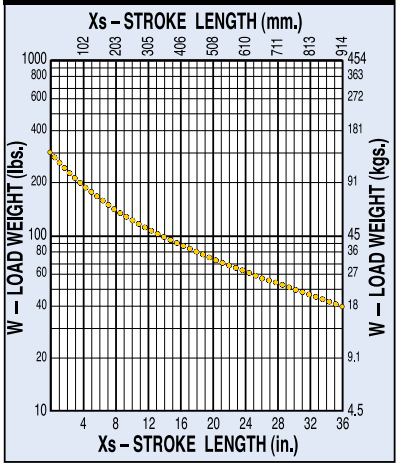
Contact Tolomatic for assistance.



GSA

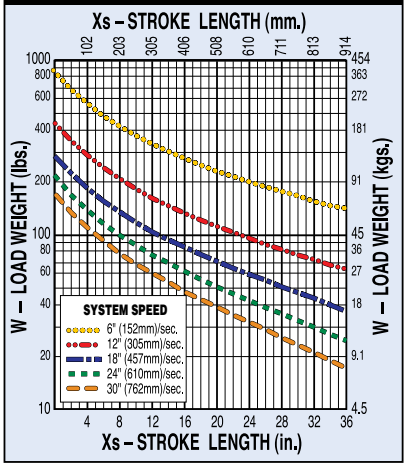
MAX. LOAD WEIGHT & GUIDE ROD DEFLECTION

MAXIMUM LOAD WEIGHT vs STROKE LENGTH
LINEAR BALL BEARING, STANDARD GUIDE RODS

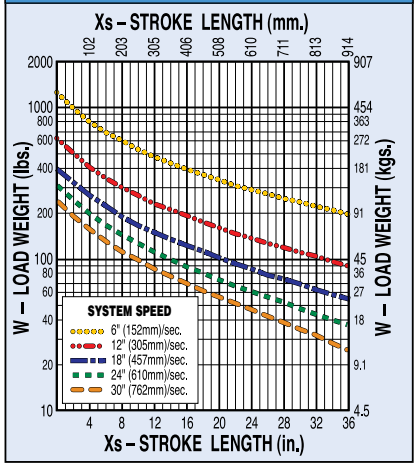


Linear ball bearings are not available with stainless steel guide rod option.

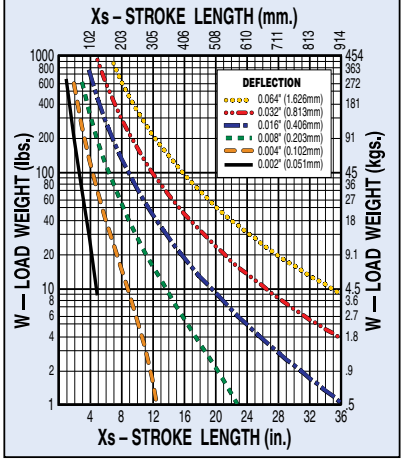
MAXIMUM LOAD WEIGHT vs STROKE LENGTH
COMPOSITE BEARING, STANDARD GUIDE RODS



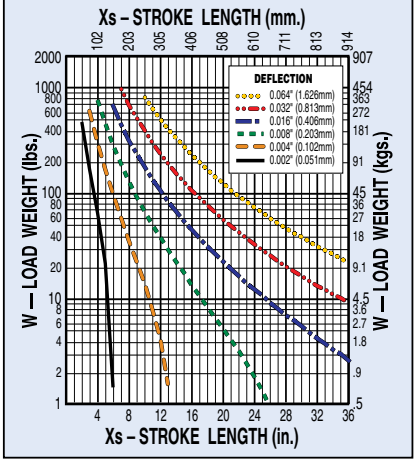
MAXIMUM LOAD WEIGHT vs STROKE LENGTH
COMPOSITE BEARING, OVERSIZE GUIDE RODS



GUIDE ROD DEFLECTION
STANDARD GUIDE RODS



GUIDE ROD DEFLECTION
OVERSIZE GUIDE RODS



DO NOT EXCEED MAXIMUM LOAD CURVE

Maximum load values are based on 200 million linear inches of travel.

1. To obtain most accurate results, stroke length should be adjusted by the distance between the center of mass of the load and tooling plate.

   $$X_{adj} = X_s + X_{cm}$$

   Then, use X_{adj} instead of X_s on the Maximum Load Weight vs. Stroke Length graph.

2. For the off-center loads, calculate adjusted load weight using the following formula:

   $$W_{adj} = W\ (1 + 0.53\ Y_{cm})$$

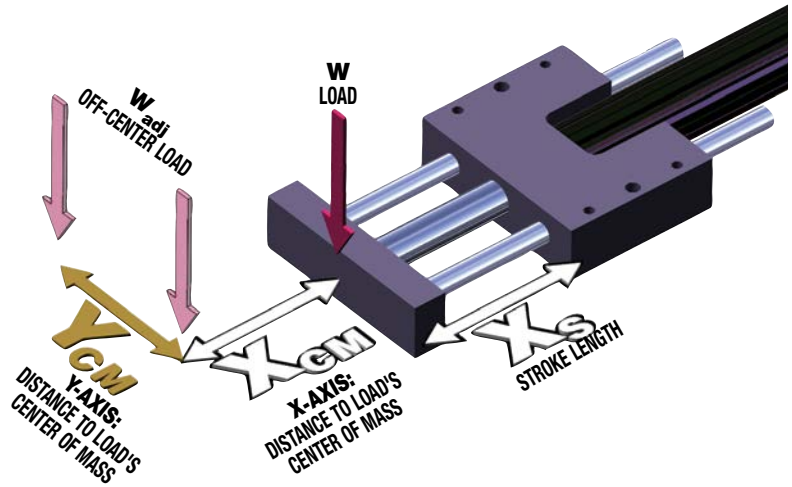
   where Y_{cm} is distance between center of mass of off-center load and center of tooling plate.

   Then, use W_{adj} instead of **W** on Maximum Load Weight vs. Stroke Length graph.

3. Using your stroke length and load weight, evaluate guide rod deflection. If the intersection point is above the highest curve (.064"), contact Tolomatic for assistance.

- **Impact loading is not recommended for GSA actuators.**
- **Motor brakes may be required on vertically positioned actuators with plastic (solid) or ball nuts in applications with risk of load backdriving. (Actuators with bronze nuts will not backdrive for loads, thrusts within catalog specifications.)**

Contact Tolomatic for assistance.



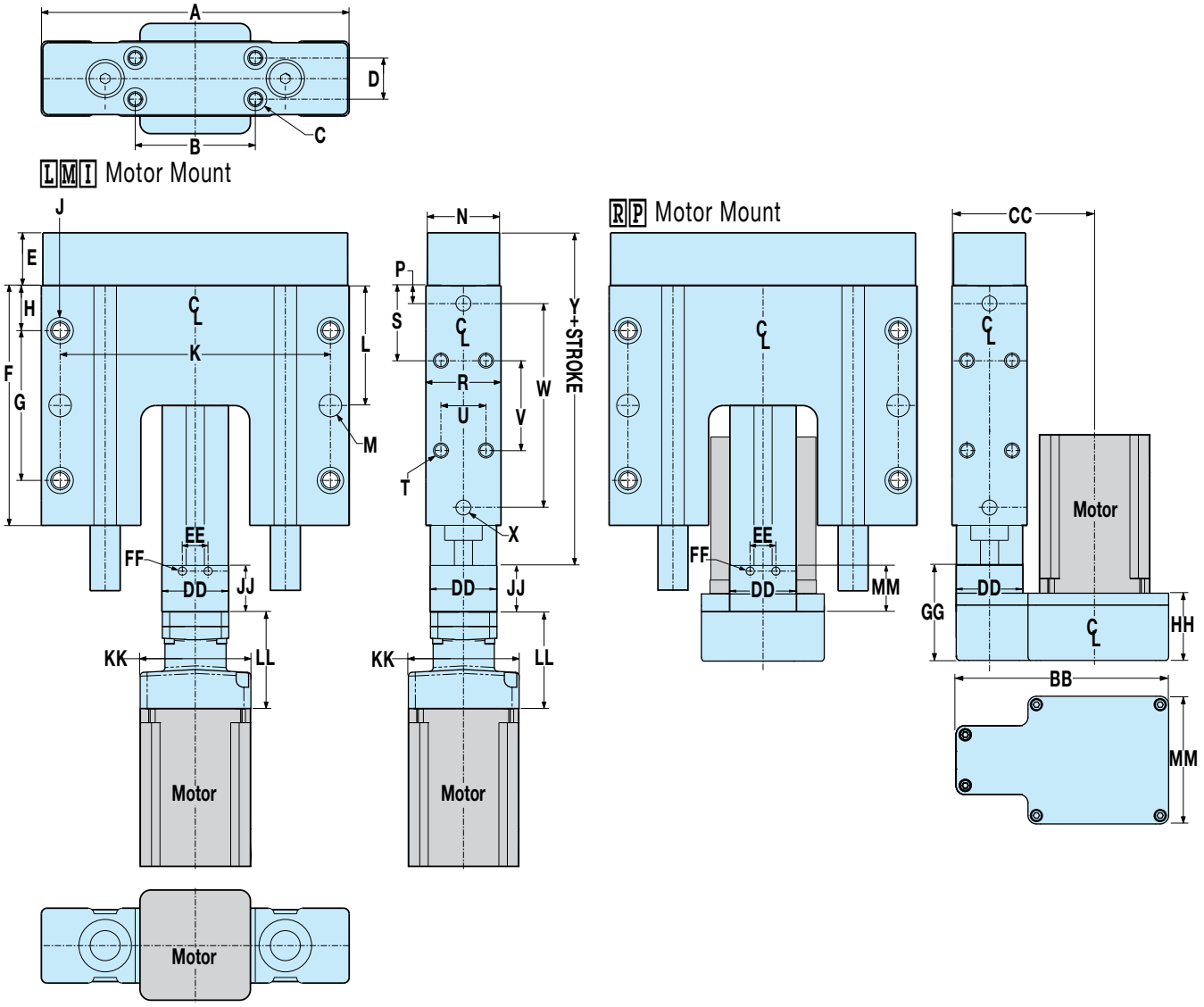
GSA

GSA Guided Electric Rod-Style Actuator

SIZE: **ALL**

DIMENSIONS

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



Size		A	B	C [4x]	D	E	F	G	H	J [4x]
12	in	5.13	2.000	1/4-20 ⌴Ø0.38 ↧0.22 OPP	0.688	0.88	4.00	2.500	0.750	Ø.266 Thru ⌴Ø0.44 ↧0.28 5/16-18 ↧0.75 OPP
	mm	*130.2*	*50.80*	*M6x1.0 ⌴Ø9.5 ↧5.6 OPP*	*17.46*	*22.4*	*101.6*	*63.50*	*19.05*	*Ø6.76 Thru ⌴Ø11.1 ↧7.1 M8x1.25 ↧19.1 OPP*
16	in	6.25	2.500	5/16-18 ⌴Ø0.44 ↧0.28 OPP	1.000	1.13	5.00	2.625	1.188	Ø.266 Thru ⌴Ø0.44 ↧0.28 5/16-18 ↧0.75 OPP
	mm	*158.8*	*63.50*	*M8x1.25 ⌴Ø11.1 ↧7.1 OPP*	*25.40*	*28.6*	*127.0*	*66.68*	*30.18*	*Ø6.76 Thru ⌴Ø11.1 ↧7.1 M8x1.25 ↧19.1 OPP*
24	in	7.75	3.500	5/16-18 ⌴Ø0.44 ↧0.28 OPP	1.375	1.38	6.00	3.875	1.063	Ø.328 Thru ⌴Ø0.53 ↧0.34 3/8-16 ↧1.00 OPP
	mm	*196.9*	*88.90*	*M8x1.25 ⌴Ø11.1 ↧7.1 OPP*	*34.93*	*35.1*	*152.4*	*98.43*	*27.00*	*Ø8.33 Thru ⌴Ø13.5 ↧8.6 M10x1.5 ↧25.4 OPP*
32	in	10.00	5.000	3/8-16 ⌴Ø0.53 ↧0.50 OPP	1.750	1.63	7.00	4.125	1.438	Ø.453 Thru ⌴Ø0.72 ↧0.47 1/2-13 ↧1.50 OPP
	mm	*254.0*	*127.00*	*M10x1.5 ⌴Ø13.5 ↧12.7 OPP*	*44.45*	*41.4*	*177.8*	*104.78*	*36.51*	*Ø10.49 Thru ⌴Ø18.2 ↧11.9 M12x1.75 ↧38.1 OPP*

GSA Guided Electric Rod-Style Actuator

SIZE: **ALL**

DIMENSIONS

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

Size		K	L	M Ø [2x]	N	P	R	S	T Ø [4x]	U	V	W	X Ø [4x]	Y
12	in	4.500	2.000	0.375 ↧0.50	1.20	0.297	1.25	1.250	1/4-20 ↧0.50	0.750	1.500	3.406	0.250 ↧0.38	5.68
	mm	*114.30*	*50.80*	*10.00 ↧12.7*	*30.5*	*7.54*	*31.8*	*31.75*	*M6x1.0 ↧12.7*	*19.05*	*38.10*	*86.51*	*6.00 ↧9.5*	*144.1*
16	in	5.438	2.500	0.375 ↧0.50	1.70	0.516	1.75	1.625	1/4-20 ↧0.50	1.000	1.750	3.969	0.250 ↧0.38	6.42
	mm	*138.13*	*63.50*	*10.00 ↧12.7*	*43.2*	*13.11*	*44.5*	*41.28*	*M6x1.0 ↧12.7*	*25.40*	*44.45*	*100.81*	*6.00 ↧9.5*	*163.1*
24	in	7.000	3.000	0.500 ↧0.50	2.15	0.438	2.25	1.625	5/16-18 ↧0.63	1.250	2.750	5.125	0.313 ↧0.50	8.14
	mm	*177.80*	*76.20*	*12.00 ↧12.7*	*54.6*	*11.13*	*57.2*	*41.28*	*M8x1.25 ↧16.0*	*31.75*	*69.85*	*130.18*	*8.00 ↧9.5*	*206.6*
32	in	9.000	3.500	0.500 ↧0.50	2.65	0.594	2.75	2.125	3/8-16 ↧0.75	1.750	2.750	5.812	0.375 ↧0.50	9.81
	mm	*228.60*	*88.90*	*12.00 ↧12.7*	*67.3*	*15.09*	*69.9*	*53.98*	*M10x1.5 ↧19.1*	*44.45*	*69.85*	*147.62*	*10.00 ↧12.7*	*249.0*

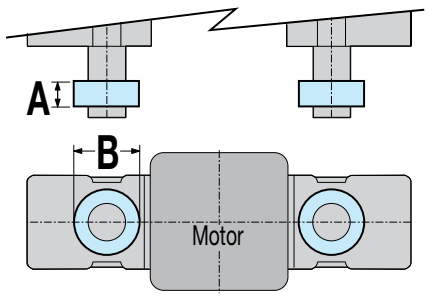
Size	Motor Frame		AA	BB ∞	CC∞ 1:1	CC∞ 2:1	DD	EE	FF [2x]	GG ∞	HH ∞	JJ	KK ∞	LL ∞	MM ∞
12	17	in	1.34	3.92	2.63	NA	1.13	0.500	8-32 ↧0.25	1.66		0.72	1.66	1.85	2.26
		mm	*34.1*	*99.5*	*66.9*		*28.6*	*12.70*	*M4x0.7 ↧6.3*	*42.1*		*18.3*	*42.0*	*47.0*	*57.3*
	23	in	1.34	3.92	2.63		1.13	0.500	8-32 ↧0.25	1.66		0.72	2.00	2.49	2.26
		mm	*34.1*	*99.5*	*66.9*		*28.6*	*12.70*	*M4x0.7 ↧6.3*	*42.1*		*18.3*	*50.8*	*63.2*	*57.3*
16	23	in	1.34	4.04	2.88		1.38	0.500	8-32 ↧0.25	1.66		0.72	2.25	2.49	2.26
		mm	*34.1*	*102.7*	*73.2*		*35.0*	*12.70*	*M4x0.7 ↧6.3*	*42.1*		*18.3*	*57.2*	*63.2*	*57.3*
24	23	in	2.04	5.13	3.78	3.75	2.04	0.787	1/4-20 ↧0.31	2.28	1.66	1.42	2.35	2.55	2.50
		mm	*51.8*	*130.2*	*96.1*	*95.3*	*51.8*	*20.00*	*M6x1.0 ↧8.6*	*57.9*	*42.2*	*36.0*	*59.7*	*64.8*	*63.5*
	34	in	2.04	6.29	4.20	4.17	2.04	0.787	1/4-20 ↧0.31	2.87	2.00	1.42	3.75	3.28	3.79
		mm	*51.8*	*159.8*	*106.6*	*105.9*	*51.8*	*20.00*	*M6x1.0 ↧8.6*	*72.8*	*50.7*	*36.0*	*95.3*	*83.3*	*96.3*
32	23	in	2.58	5.89	4.26	4.28	2.58	0.950	5/16-18 ↧ 0.50	3.19	2.00	1.79	3.00	2.63	2.58
		mm	*65.5*	*149.6*	*108.3*	*108.9*	*65.5*	*24.13*	*M8x1.25 ↧12.7*	*80.9*	*50.7*	*45.4*	*76.2*	*66.8*	*65.5*
	34	in	2.58	7.52	5.11	5.08	2.58	0.950	5/16-18 ↧0.50	3.19	2.00	1.79	3.75	2.38	4.25
		mm	*65.5*	*190.9*	*129.9*	*129.0*	*65.5*	*24.13*	*M8x1.25 ↧12.7*	*80.9*	*50.7*	*45.4*	*95.3*	*60.5*	*108.0*

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

See dimensional drawing on previous page

CK & CKS STOP COLLARS

Provides a positive stop mechanism when required.



STANDARD GUIDE RODS

Size		A	B Ø
12	in	0.406	1.125
	mm	*10.31*	*28.58*
16	in	0.438	1.313
	mm	*11.13*	*33.35*
24	in	0.500	1.500
	mm	*12.70*	*38.10*
32	in	0.500	1.750
	mm	*12.70*	*44.45*

OVERSIZED GUIDE RODS

Size		A	B Ø
12	in	0.438	1.313
	mm	*11.13*	*33.35*
16	in	0.500	1.500
	mm	*12.70*	*38.10*
24	in	0.500	1.750
	mm	*12.70*	*44.45*
32	in	0.500	2.063
	mm	*12.70*	*52.40*

SWITCHES

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

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

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

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

RoHS COMPLIANT CE

	Order Code	Lead	Switching Logic	Power LED	Signal LED	Operating Voltage	**Power Rating (Watts)	Switching Current (mA max.)	Current Consumption	Voltage Drop	Leakage Current	Temp. Range	Shock / Vibration
REED	RY	5m	SPST Normally Open	—	Red	5 - 240 AC/DC	**10.0	100mA	—	3.0 V max.	—	14 to 158°F [-10 to 70°C]	50 G / 9 G
	RK	QD*		Tolomatic 81009082									
	NY	5m	SPST Normally Closed	—	Yellow	5 - 110 AC/DC							
	NK	QD*		Tolomatic 81009084									
SOLID STATE	TY	5m	PNP (Sourcing) Normally Open	Green	Yellow	10 - 30 VDC	**3.0	100mA	20 mA @ 24V	2.0 V max.	0.05 mA max.		
	TK	QD*		Tolomatic 81009088									
	KY	5m	NPN (Sinking) Normally Open	Green	Red								
	KK	QD*		Tolomatic 81009090									
	PY	5m	PNP (Sourcing) Normally Closed	Green	Yellow								
	PK	QD*		Tolomatic 81009092									
	HY	5m	NPN (Sinking) Normally Closed	Green	Red								
	HK	QD*		Tolomatic 81009094									

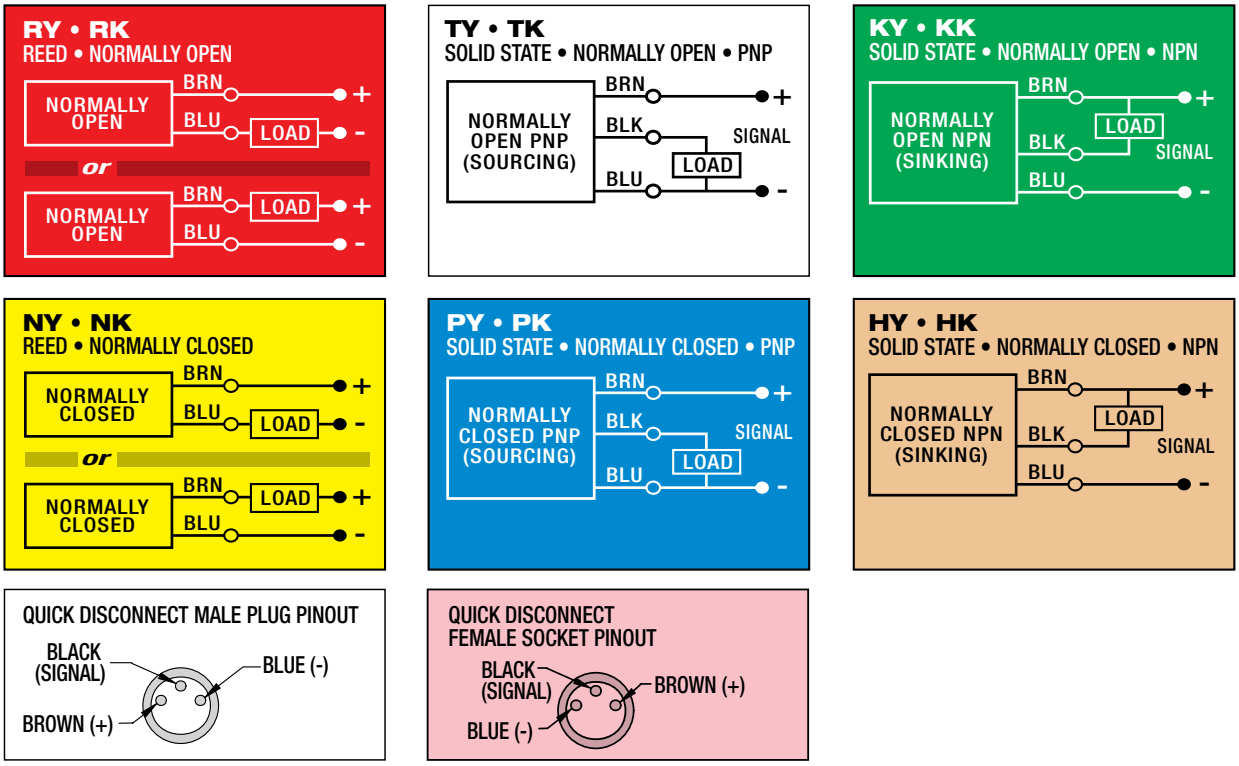
*QD = Quick-disconnect Enclosure classification IEC 529 IP67 (NEMA 6) CABLES: Robotic grade, oil resistant polyurethane jacket, PVC insulation

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

SWITCH INSTALLATION

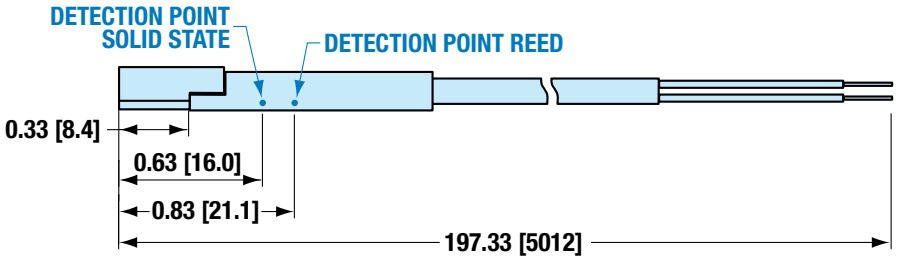
Place switch bracket into one of the four slots that run the length of the extruded tube. Note that there is a cutout on the actuator head (RSA) or tube (GSA) to allow insertion of the bracket. Insert the switch with the word "Tolomatic" facing up and slide it under the bracket. Position the bracket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

WIRING DIAGRAMS

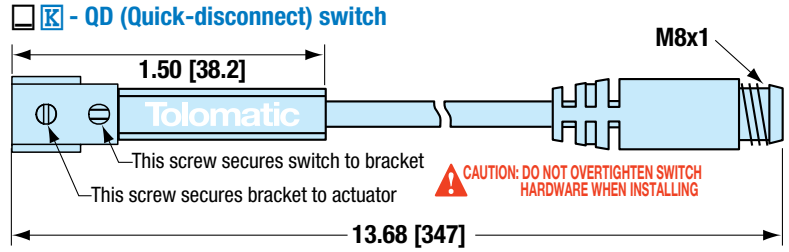


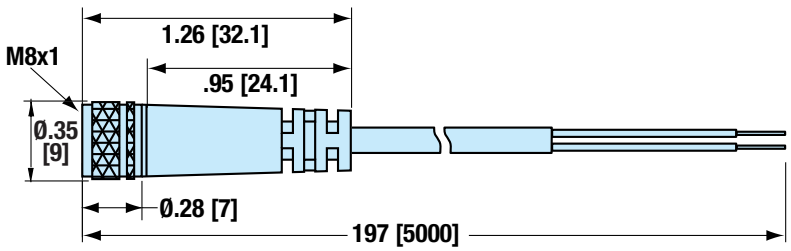
SWITCH DIMENSIONS

Y - direct connect

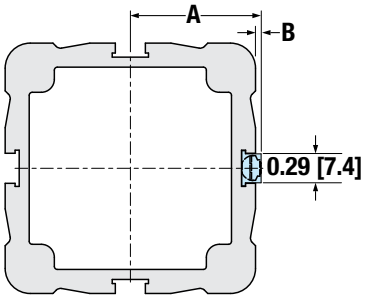


K - QD (Quick-disconnect) switch





MOUNTING DIMENSIONS



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

Dimensions shown in inches [dimensions in brackets millimeters]

RSA & GSA Electric Rod-Style Actuators

Application Data Worksheet

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

ACTUATOR ORIENTATION

☐ Horizontal ☐ Vertical-Motor End Up ☐ Angled ☐ Vertical-Motor End Down

Angle: _____ degrees

ACTUATOR REQUIREMENTS

Stroke Length: _____ ☐ inches ☐ millimeters

No. of Cycles: _____ ☐ per minute ☐ per hour

Actuator to Hold Position: ☐ required ☐ not required

If Hold Required: ☐ after move ☐ during power loss

Motor: ☐ Third Party Motor ☐ Tolomatic Motor

APPLICATION ENVIRONMENT

Ambient Temperature: _____ ☐ °F ☐ °C

Actuator Environment Description and Ingress Protection Requirements:

MOTION & FORCES

Extend

Move Distance: _____ ☐ in ☐ mm

Move Time: _____ seconds

Max. Speed: _____ ☐ in/s ☐ mm/s

Dwell Time After Move: _____ seconds

Retract

Move Distance: _____ ☐ in ☐ mm

Move Time: _____ seconds

Max. Speed: _____ ☐ in/s ☐ mm/s

Dwell Time After Move: _____ seconds

Load

Load: _____ ☐ lb ☐ kg

Supported by Actuator: _____ %

Moment Prevention: ☐ Guided/Supported

Center of Load:

D_X: _____ ☐ in ☐ mm

D_Y: _____ ☐ in ☐ mm

D_Z: _____ ☐ in ☐ mm

Assign to Moves: ☐ Extend ☐ Retract

Force

Force: _____ ☐ lb_f ☐ N

Force Direction: ☐ Toward ☐ Away

Direction of Applied Force: ☐ F_x ☐ F_y ☐ F_z

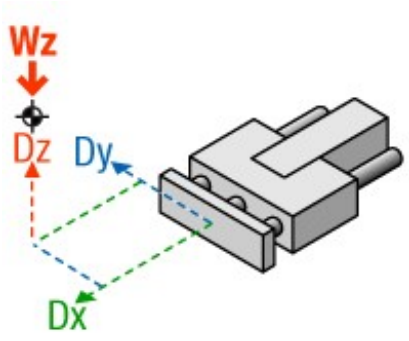
Center of Applied Force:

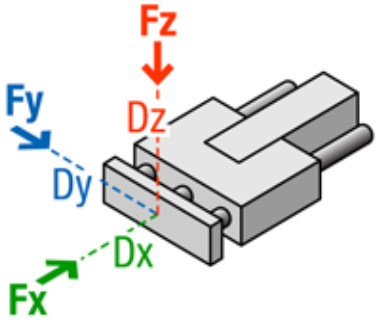
D_X: _____ ☐ in ☐ mm

D_Y: _____ ☐ in ☐ mm

D_Z: _____ ☐ in ☐ mm

Assign to Moves: ☐ Extend ☐ Retract





RSA & GSA Electric Rod-Style Actuators

Selection Guidelines

1 ESTABLISH MOTION PROFILE

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

2 SELECT ACTUATOR TYPE

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

3 SELECT ACTUATOR SIZE AND SCREW TYPE

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

4 VERIFY CRITICAL SPEED OF THE SCREW

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

5 VERIFY AXIAL BUCKLING STRENGTH OF THE SCREW

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

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

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

7 CALCULATE LUBRICATION INTERVAL (ROLLER SCREW)

When a roller screw is selected, calculate the recommended lubrication interval. See page R/GSA_33 and parts sheets for complete lubrication information for the RSA24, RSA32, RSA50 and RSA64 HT option.

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

8 TEMPERATURE CONSIDERATIONS

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

9 ESTABLISH TOTAL TORQUE REQUIREMENTS

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

10 SELECT A MOTOR AND A CONTROLLER

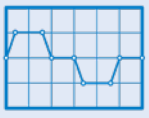
Use the obtained total torque value to select a motor and a reduction device (if required). Verify that the peak torque value is below the motor's peak torque curve, and that the continuous torque value is below the motor's continuous torque curve. Verify the minimum torque margin (15%). Verify the inertia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

11 SELECT A MOTOR-ACTUATOR CONFIGURATION AND SENSORS IF REQUIRED

Select an inline or a reverse-parallel motor configuration. Select mounting and rod end options. Select position sensors (if required). 12 sensor choices include: reed, solid state PNP or NPN, all in normally open or normally closed, with flying leads or quick-disconnect couplers.

12 SELECT ROD END OPTIONS AND MOUNTING OPTIONS

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



sizeit.tolomatic.com
for fast, accurate actuator selection

tolomatic.com/ask
Technical support before and after purchase

SERVICE PARTS ORDERING

RSA ACTUATOR MOUNTING REPLACEMENT KITS

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

RSA ROD END REPLACEMENT KITS

U.S. MODELS

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

METRIC MODELS

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

**NOTE: Alignment coupler is internally threaded, if external thread is desired order MET also* *NA = Not Available*

GSA OPTIONS REPLACEMENT KITS

Description	SIZE 12	16	24	32
Stop Collar	2312-1005	2317-1005	2334-1005	2332-1005
Stainless Steel Stop Collar	2312-1056	2317-1056	2324-1056	2332-1056

Description	SIZE 12	16	24	32
Over-Sized Stop Collar	2317-1005	2324-1005	2332-1005	2348-1005
Stainless Steel Over-Sized Stop Collar	2317-1056	2324-1056	2332-1056	2348-1056

Kits include one collar and required fasteners

RSA & GSA SWITCHES

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

EXAMPLE: SWRSA24KK

KIT · ACTUATOR · SIZE · SWITCH CODE

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

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

Code	Lead	Normally	Sensor Type
RY	5m (197 in)	Open	Reed
RK	Quick-disconnect		
NY	5m (197 in)	Closed	Reed
NK	Quick-disconnect		
TY	5m (197 in)	Open	Solid State PNP
TK	Quick-disconnect		
KY	5m (197 in)	Open	Solid State NPN
KK	Quick-disconnect		
PY	5m (197 in)	Closed	Solid State PNP
PK	Quick-disconnect		
HY	5m (197 in)	Closed	Solid State NPN
HK	Quick-disconnect		

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

RSA ST & HT Electric Rod-Style Actuator

ORDERING

ACTUATOR

RSA 50 BN02 SK35 RP1 ST1

OPTIONS

FFG XR6 ALC MET KK2 YM_ _ _

MODEL & MOUNTING

RSA Rod-Style Screw-Drive Actuator

SIZE

12, 16, 24, 32, 50, 64

NUT/SCREW

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

STROKE LENGTH

SK_ _ _ _ Enter desired stroke length in decimal inches

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

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

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

SM= metric mounting

MAXIMUM STROKE

SIZE	BN, BZ, SN in	BN, BZ, SN *mm*	RN in	RN *mm*
12	12	*304.8*	12	*304.8*
16	18	*457.2*	18	*457.2*
24	24	*609.6*	24	*609.6*
32	36	*914.4*	36	*914.4*
50	48	*1,219.2*	36§	*914.4*§
64	60	*1,524.0*	36§	*914.4*§

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

MOTOR MOUNTING

LMI	In-line motor mount
RP1	1:1 ratio, reverse parallel motor mount
RPL1 RPR1	1:1 ratio, reverse parallel motor mount, left or right see page 18 for details
RP2	2:1 ratio, reverse parallel motor mount
RPL2 RPR2	2:1 ratio, reverse parallel motor mount, left or right see page 18 for details

RP2 not available on 12 or 16 size

RP BELT TENSIONING

TEN Belt tensioning tool for RP motor mounting

STANDARD OR HIGH TORQUE

ST1 Standard RS Actuator

HT* High Torque Option *requires keyed motor

HT not available on 12 or 16 size

NOTE: RN always requires HT option

TRUNNION MOUNT

TRR Trunnion mount

Not available on 12 or 16 size with LMI motor mount

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

ACTUATOR MOUNTING

For all motor mounts:

FFG Front Flange Mount

FFGR Front Flange Mount rotated 90° (see pg. 22)

MP2 Mounting Plates (2 required)

For RP motor mounting only:

PCD Clevis Mount

PCDR Clevis Mount rotated 90° (see pg. 25)

PCS Eye Mount

PCSR Eye Mount rotated 90° (see pg. 25)

BFG Back Flange Mount

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

ROD EXTENSION

XR_ _ _ _ Enter desired rod extension in inches (**SK**) or millimeters (**SM**)

(Same unit of measure as stroke length is required)

For vertical applications only.

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

ROD END

Internally threaded rod end is standard

CLV Clevis Rod End

SRE Spherical Rod End

MET Externally Threaded Rod End

ALC Alignment Coupler Rod End*

Z12 Grease Zerk at 12 O'clock position (see page 43)

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

ENVIRONMENTAL PROTECTION

Standard actuator IP54

IP67 Basic ingress protection (RSA32, 50, 64 only)

LUB Grease, Food/Drug

SWITCHES

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

YOUR MOTOR HERE

YM_ _ _ _ _ _ Motor mount for non-Tolomatic motor. www.tolomatic.com

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

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

GSA Guided Electric Rod-Style Actuator

ORDERING

ACTUATOR

GSA 24 BN02 SK23 RP1

OPTIONS

CBSO CKS KK2 YM_____

MODEL & MOUNTING

GSA Guided Screw-Drive Actuator

SIZE

12, 16, 24, 32

NUT/SCREW COMBINATIONS

SIZE	CODE	CODE NUMBER
12	SN	01,02,05
	BZ	10
	BN, BNL	08
16	SN	01,02,05
	BZ	10
	BN, BNL	08
24	BZ	10
	BN,BNL	02,05
32	BZ	10
	BN,BNL	02,05
	BNM	20

STROKE LENGTH

SK____ Enter desired stroke length in decimal inches

SM†____ **(Metric Mounting)** Enter desired stroke length in millimeters

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

SM= metric mounting

SIZE	MAXIMUM STROKE GSA in	GSA *mm*
12	18	*457.2*
16	24	*609.6*
24	30	*762.0*
32	36	*914.4*

† The metric version provides metric tapped tooling plate, actuator mounting and dowel pins

MOTOR MOUNTING

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

RP2 not available on 12 or 16 size

BEARINGS & GUIDE RODS (GSA ONLY)

LB Linear Bearings*
CB Composite Bearings, Standard Size Rods
COB Composite Bearings, Over Sized Rods
CBS Composite Bearings, Standard Size Stainless Steel Rods
CBSO Composite Bearings, Over-Sized Stainless Steel Rods

**Stainless steel guide rods not available with Linear Bearings*

STOP COLLAR (GSA ONLY)

CK Steel Stop Collar
CKS Stainless Steel Stop Collar

NOTE: The correct Stop Collar will be automatically chosen based on the bearing and guide rod previously selected.

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

Fast delivery Built-to-Order

SWITCHES

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

YOUR MOTOR HERE

YM_____ Motor mount for non-Tolomatic motor. www.tolomatic.com

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

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

FOOD GRADE LUBRICATION

LUB Grease, Food/Drug

The Tolomatic Difference Expect More From the Industry Leader:

INNOVATIVE PRODUCTS
Solutions with Endurance Technology℠ for challenging applications.

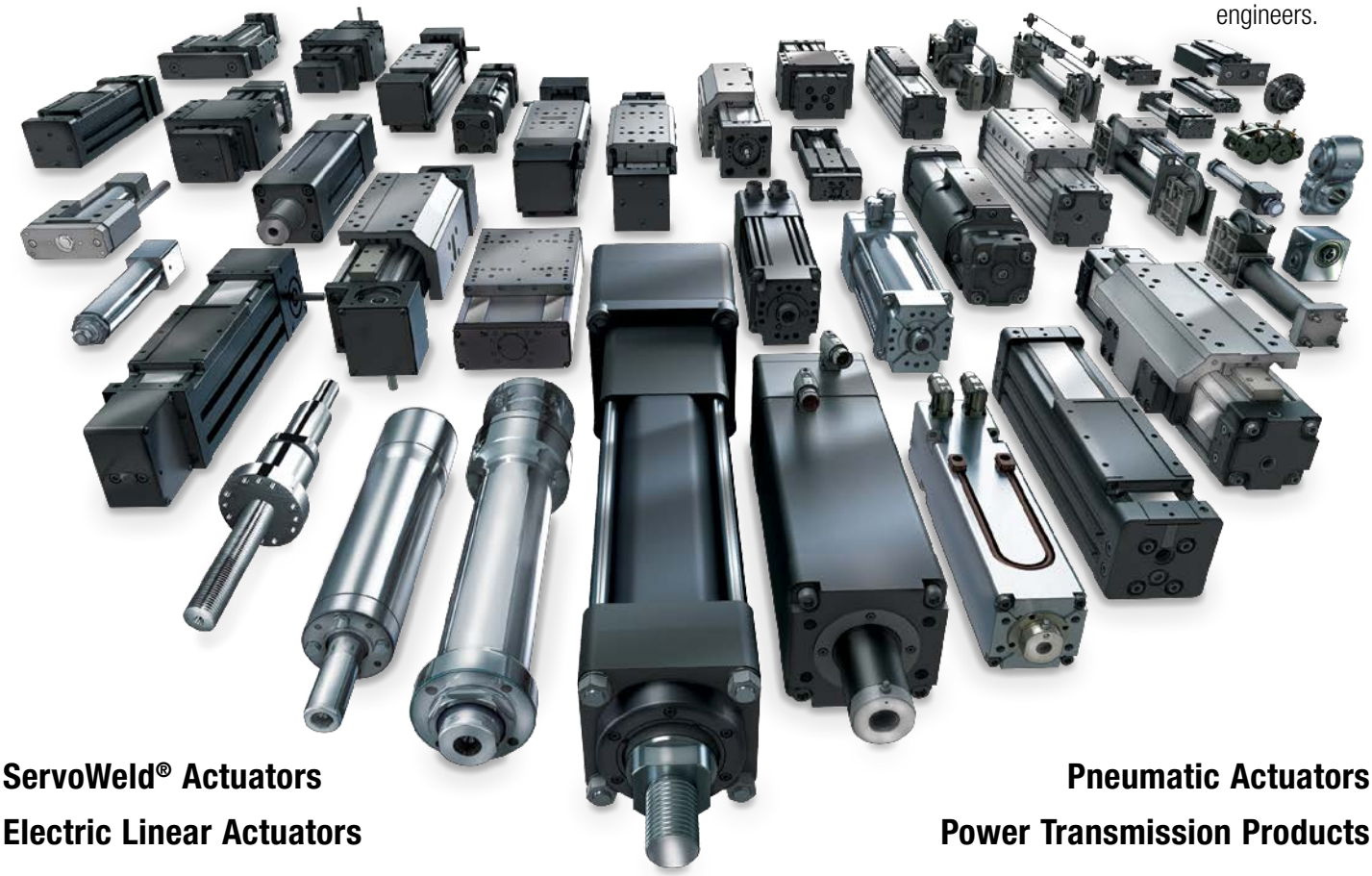
FAST DELIVERY
Built-to-order with configurable stroke lengths and flexible mounting options.

ACTUATOR SIZING
Size and select electric actuators with our online software.

YOUR MOTOR HERE®
Match your motor to compatible mounting plates with Tolomatic actuators.

CAD LIBRARY
Download 2D or 3D CAD files for Tolomatic products.

TECHNICAL SUPPORT
Get a question answered or request a virtual design consultation with one of our engineers.



ServoWeld® Actuators

Electric Linear Actuators

Pneumatic Actuators

Power Transmission Products

MADE IN U.S.A.

Tolomatic™
EXCELLENCE *IN MOTION*

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV = ISO 9001 =
Certified site: Hamel, MN

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

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

EUROPE
Tolomatic Europe GmbH
Elisabethenstr. 20
65428 Rüsselsheim
Germany
Phone: +49 6142 17604-0
help@tolomatic.eu
www.tolomatic.com/de-de

CHINA
Tolomatic Automation Products (Suzhou) Co. Ltd.
No. 60 Chuangye Street, Building 2
Huqiu District, SND Suzhou
Jiangsu 215011 - P.R. China
Phone: +86 (512) 6750-8506
Tolomatic_China@tolomatic.com

Visit www.tolomatic.com for the most up-to-date technical information

202405131421

NÚMERO DE LITERATURA: 3600-4166_31