Tolomatic™
EXCELLENCE *IN MOTION*

ENDURANCE TECHNOLOGY℠
A Tolomatic Design Principle

RSH ELECTRIC HYGIENIC ROD-STYLE ACTUATOR

PATENT PENDING

LINEAR SOLUTIONS MADE EASY

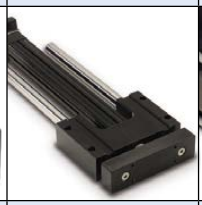
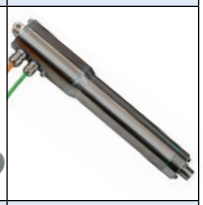
RSH – Hygienic Electric Rod-Style Actuator

All 316 stainless steel construction and IP69K environmental rating make the RSH Hygienic rod-style actuators ideal for food, beverage, and pharmaceutical automation machinery.

Designed to Meet Hygienic Guidelines for:

- **USDA**
- **BISSC**
- **EHEDG**
- **NSF/3-A**

TOLOMATIC'S ELECTRIC ROD-STYLE ACTUATORS

	ERD	RSH	RSA	GSA	RSX	IMA
						
	Rod-Style Actuator	**Hygienic Rod-Style Actuator**	**Rod-Style Actuator**	**Guided Rod-Style Actuator**	**Rod-Style Actuator**	**Integrated Servo Actuator**
Force up to:	500 lbf *(2.2 kN)*	7,900 lbf *(35.3 kN)*	13,000 lbf *(58.0 kN)*	950 lbf *(4.2 kN)*	50,000 lbf *(222.4 kN)*	2.500 lbf *(2.5 kN)*
Speed up to:	58 in/sec *(1,473 mm/sec)*	20 in/sec *(500 mm/sec)*	123 in/sec *(3,124 mm/sec)*	123 in/sec *(3,124 mm/sec)*	30 in/sec *(760 mm/sec)*	20 in/sec *(500 mm/sec)*
Stroke Length up to:	24 in *(610 mm)*	48 in *(1,200 mm)*	60 in *(1,520 mm)*	36 in *(910 mm)*	35 in *(890 mm)*	18 in *(460 mm)*
Screw/ Nut Type	Solid & Ball	Ball & Roller	Solid, Ball & Roller	Solid & Ball	Roller	Ball & Roller
	For complete information see www.tolomatic.com or literature number:					
Literature Number:	2190-4000	2100-4010	3600-4166	3600-4166	2171-4001	2700-4014

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

RSH – Improving upon the ERD Hygienic

Features: ERD

THREADED ROD END
•Compatible with many commercially available metric rod end accessories

•Standard metric threads

GREASE PORT
•Screw re-lubrication system provides extended screw life

•Convenient lubrication without disassembly

SMOOTH EXTERIOR
Polished, contoured mating surface designed to provide IP69K seal for today's hygienic servo motors

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

STATIC IP69K OPTION
•To withstand high-pressure wash-down

• Clean-in-place compatible

BREATHER/PURGE PORT
Helps prevent contaminants from entering into actuator

Improvements: RSH

ROBUST DESIGN
• Up to 89% higher force capability for the RSH22 ball screw options

• Increased DLR ratings on most screw options

FRONT FACE SEALING O-RING
Hygienic design from head to toe

THREADED ROD END
•Compatible with many commercially available metric rod end accessories

•Standard metric threads

GREASE PORT
•Screw re-lubrication system provides extended screw life

•Convenient lubrication without disassembly

CARTRIDGE W/ REPLACEABLE SEALS
Quick seal cartridge replacement without special tools

DUAL SEAL SYSTEM
Use the dual seal system that provides the longest life in your application

ALL POLISHED 316 STAINLESS STEEL WITH SMOOTH EXTERIOR
• 316 series stainless steel for corrosion resistance

•Simplifies and lowers cost of machine design by eliminating the need for protective guards around standard actuators

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

STATIC IP69K RATED (STANDARD)
•To withstand high-pressure wash-down

• Clean-in-place compatible

HYGIENIC BREATHER/PURGE PORT
Helps prevent contaminants from entering into actuator

HYGIENIC STAINLESS STEEL FASTENERS
•Standard metric threads

•Hex fasteners for sturdy construction without potential particle collection areas

•Included for your motor: EHEDG compliant 316 stainless seal sealed bolts

RSH HYGIENIC ELECTRIC ROD STYLE ACTUATOR

ENDURANCE TECHNOLOGY℠

A Tolomatic Design Principle

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

The all 316 series stainless-steel RHS Hygienic Electric Rod Style Actuator incorporates hygienic design principles and has an IP69K rating (static). Available in 22, 25 & 30 sizes, the RSH is built-to-order in stroke lengths up to 48" *(1,220 mm)* with force up to 7,900 lbf *(35.3 kN)*.

ALL POLISHED 316 STAINLESS STEEL CONSTRUCTION

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

HYGIENIC SEALING DESIGN FOR FRONT FACE MOUNTING

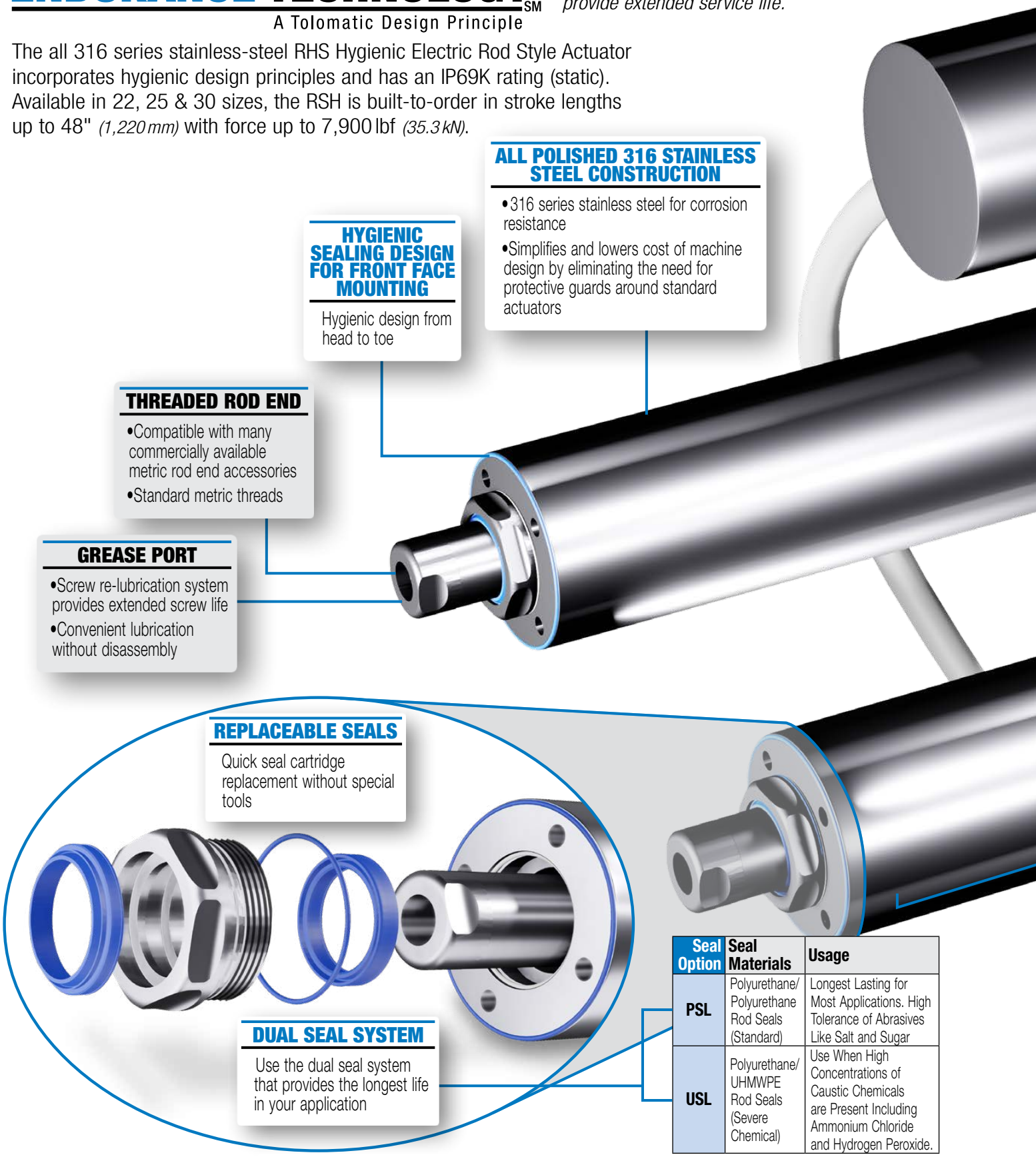
Hygienic design from head to toe

THREADED ROD END

- Compatible with many commercially available metric rod end accessories
- Standard metric threads

GREASE PORT

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



REPLACEABLE SEALS

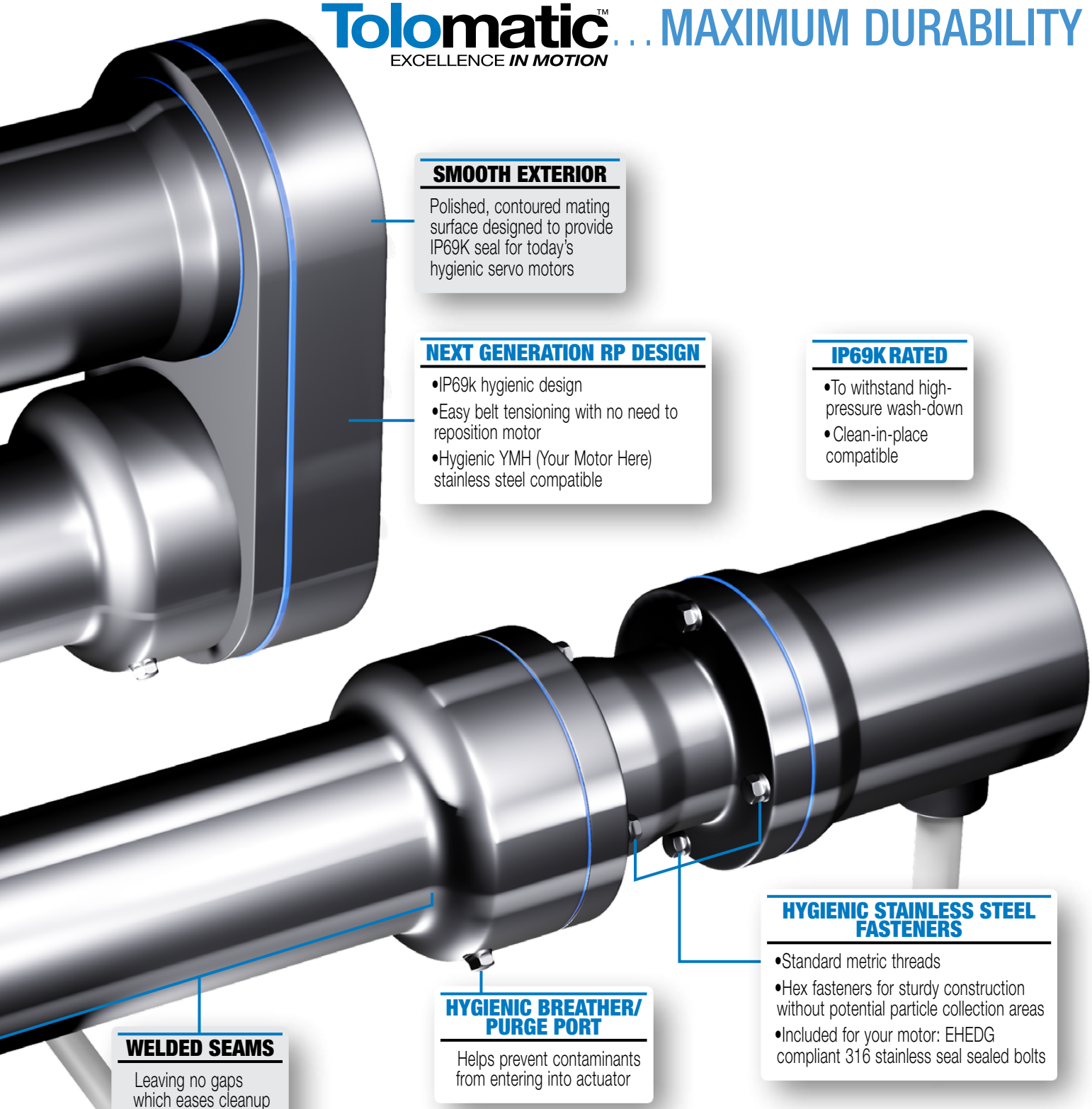
Quick seal cartridge replacement without special tools

DUAL SEAL SYSTEM

Use the dual seal system that provides the longest life in your application

Seal Option	Seal Materials	Usage
PSL	Polyurethane/ Polyurethane Rod Seals (Standard)	Longest Lasting for Most Applications. High Tolerance of Abrasives Like Salt and Sugar
USL	Polyurethane/ UHMWPE Rod Seals (Severe Chemical)	Use When High Concentrations of Caustic Chemicals are Present Including Ammonium Chloride and Hydrogen Peroxide.

. . . MAXIMUM DURABILITY



SMOOTH EXTERIOR

Polished, contoured mating surface designed to provide IP69K seal for today's hygienic servo motors

NEXT GENERATION RP DESIGN

- IP69k hygienic design
- Easy belt tensioning with no need to reposition motor
- Hygienic YMH (Your Motor Here) stainless steel compatible

IP69K RATED

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

HYGIENIC STAINLESS STEEL FASTENERS

- Standard metric threads
- Hex fasteners for sturdy construction without potential particle collection areas
- Included for your motor: EHEDG compliant 316 stainless seal sealed bolts

HYGIENIC BREATHER/ PURGE PORT

Helps prevent contaminants from entering into actuator

WELDED SEAMS

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

POLISHED EXTERIOR

Polished surface finish reduces bacterial growth and meets hygienic design guidelines.

MULTIPLE SCREW TECHNOLOGIES

ROLLER NUT	BALL NUT
Roller nuts provide the highest thrust and life ratings available	Ball nuts offer efficiency at a cost effective price
SCREW ACCURACY	**SCREW ACCURACY**
± 0.0102mm/300mm; ± 0.0004"/ft.	*± 0.051mm/300mm; ± 0.002"/ft.*

RSH – Hygienic Electric Actuator

SIZE: **ALL**

SPECIFICATIONS (US conventional measurement)

RSH SIZE	MAXIMUM STROKE	SCREW CODE	LEAD	LEAD ACCURACY	BACKLASH	MAXIMUM THRUST	DYNAMIC LOAD RATING	INERTIA			WEIGHT		
								LMI	RP		LMI	RP	
								Base	Base	Per Inch	Base	Base	Per Inch
	in		in/rev	in/ft	in	lbf	lbf	lb-in^2	lb-in^2	lb-in^2	lb	lb	lb
22	39.4	BNM05	0.197	0.0040	0.0028	1,700	3,080	0.776	0.410	0.009	11.6	18.9	0.45
	39.4	BNM10	0.394	0.0040	0.0028	1,700	4,721	0.778	0.412	0.010	11.5	18.9	0.45
	39.4	BNM20	0.787	0.0040	0.0028	1,000	2,248	0.781	0.415	0.011	11.6	18.9	0.45
	24.0	RN04	0.157	0.0004	0.0012	1,700	6,409	0.758	0.392	0.004	12.5	19.9	0.38
	24.0	RN05	0.197	0.0004	0.0012	1,700	6,409	0.758	0.392	0.004	12.5	19.9	0.38
	24.0	RN10	0.397	0.0004	0.0012	1,556	6,409	0.758	0.392	0.004	12.5	19.9	0.38
25	39.4	BN04	0.250	0.0040	0.0150	2,846	3,250	7.820	3.433	0.028	34.8	40.2	0.84
	39.4	BNM05	0.197	0.0020	0.0024	2,000	3,777	7.795	3.408	0.022	34.3	39.7	0.82
	39.4	BNM10	0.394	0.0020	0.0024	1,750	5,171	7.795	3.408	0.022	34.7	40.1	0.82
	39.4	BNM25	0.984	0.0040	0.0031	700	4,496	7.804	3.417	0.024	34.5	39.9	0.83
	36.0	RN04	0.157	0.0004	0.0012	4,159	12,917	7.742	3.355	0.010	36.8	42.2	0.79
	36.0	RN05	0.197	0.0004	0.0012	3,878	12,917	7.742	3.355	0.010	36.8	42.2	0.79
	36.0	RN10	0.394	0.0004	0.0012	4,159	12,917	7.745	3.358	0.011	36.8	42.2	0.79
30	48.0	BN04	0.250	0.0040	0.0150	4,500	4,250	8.435	4.053	0.141	41.2	46.6	1.30
	48.0	BNM05	0.197	0.0010	0.0024	3,000	5,598	8.504	4.122	0.155	42.3	47.7	1.32
	48.0	BNM10	0.394	0.0020	0.0031	2,950	9,757	8.428	4.046	0.140	43.7	49.1	1.32
	48.0	BNM20	0.787	0.0020	0.0031	1,848	9,622	8.429	4.047	0.140	41.8	47.2	1.32
	36.0§	RN05	0.197	0.0004	0.0012	7,868	12,917	8.018	3.636	0.057	43.5	48.9	1.16
	36.0§	RN10	0.394	0.0004	0.0012	7,943	12,917	8.032	3.650	0.060	43.5	48.9	1.16

§ RSH30 extended stroke length 50" (1270mm) available for roller screws, contact Tolomatic for production time.

*Standard Temperature range	-4° to 104° F *(-20° to 40° C)*
IP rating	**69k** (static) standard for 22, 25, 30 sizes

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

SIDE LOAD CONSIDERATIONS

The standard RSH rod-style actuator is not meant to be used in applications where side loading occurs.

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

Side loading will affect the life of the actuator.

SCREW CODE	DESCRIPTION
BN	Ball Nut
BNM	Ball Nut Metric
RN	Roller Nut

SPECIFICATIONS (metric measurement)

RSH SIZE	MAXIMUM STROKE	SCREW CODE	LEAD	LEAD ACCURACY	BACKLASH	MAXIMUM THRUST	DYNAMIC LOAD RATING	INERTIA LMI Base	INERTIA RP Base	INERTIA Per 25mm	WEIGHT LMI Base	WEIGHT RP Base	WEIGHT Per 25mm
	mm		*mm/rev*	*mm/300mm*	*mm*	*N*	*N*	*kg-m² x 10⁻⁶*	*kg-m² x 10⁻⁶*	*kg-m² x 10⁻⁶*	*kg*	*kg*	*kg*
22	1000.0	BNM05	5.00	0.100	0.070	7,562	13,700	227.26	120.04	2.66	5.3	8.6	0.20
	1000.0	BNM10	10.00	0.100	0.070	7,562	21,000	227.82	120.60	2.84	5.2	8.6	0.20
	1000.0	BNM20	20.00	0.100	0.070	4,448	10,000	228.89	121.67	3.14	5.3	8.6	0.20
	609.6	RN04	4.00	0.010	0.030	7,562	28,509	221.95	114.74	1.07	5.7	9.0	0.17
	609.6	RN05	5.00	0.010	0.030	7,562	28,509	221.96	114.74	1.07	5.7	9.0	0.17
	609.6	RN10	10.00	0.010	0.030	6,921	28,509	221.98	114.76	1.07	5.7	9.0	0.17
25	1000.0	BN04	6.35	0.100	0.380	12,659	14,456	2,291.38	1,005.99	8.15	15.8	18.2	0.38
	1000.0	BNM05	5.00	0.052	0.060	8,896	16,800	2,283.96	998.56	6.51	15.6	18.0	0.37
	1000.0	BNM10	10.00	0.052	0.060	7,784	23,000	2,283.99	998.60	6.51	15.7	18.2	0.37
	1000.0	BNM25	25.00	0.100	0.080	3,114	20,000	2,286.68	1,001.29	7.07	15.6	18.1	0.38
	914.4	RN04	4.00	0.010	0.030	18,499	57,456	2,268.34	982.95	3.02	16.7	19.1	0.36
	914.4	RN05	5.00	0.010	0.030	17,249	57,456	2,268.35	982.96	3.02	16.7	19.1	0.36
	914.4	RN10	10.00	0.010	0.030	18,499	57,456	2,269.17	983.78	3.18	16.7	19.1	0.36
30	1219.2	BN04	6.35	0.100	0.380	20,016	18,904	2,471.55	1,187.63	41.29	18.7	21.1	0.59
	1219.2	BNM05	5.00	0.023	0.060	13,344	24,900	2,491.73	1,207.81	45.33	19.2	21.6	0.60
	1219.2	BNM10	10.00	0.052	0.080	13,122	43,400	2,469.37	1,185.45	41.02	19.8	22.3	0.60
	1219.2	BNM20	20.00	0.052	0.080	8,220	42,800	2,469.58	1,185.65	41.04	19.0	21.4	0.60
	914.4§	RN05	5.00	0.010	0.030	34,997	57,456	2,349.33	1,065.40	16.78	19.7	22.2	0.53
	914.4§	RN10	10.00	0.010	0.030	35,330	57,456	2,353.24	1,069.32	17.55	19.7	22.2	0.53

§ RSH30 extended stroke length 50" (1270mm) available for roller screws, contact Tolomatic for production time.

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

The IP69K test specifies a spray nozzle that is fed with 80°C water at 8–10 MPa (80–100 bar) and a flow rate of 14–16 L/min. The nozzle is held 10–15 cm from the tested device at angles of 0°, 30°, 60° and 90° for 30 s each. The test device sits on a turntable that rotates once every 12 s (5 rpm).

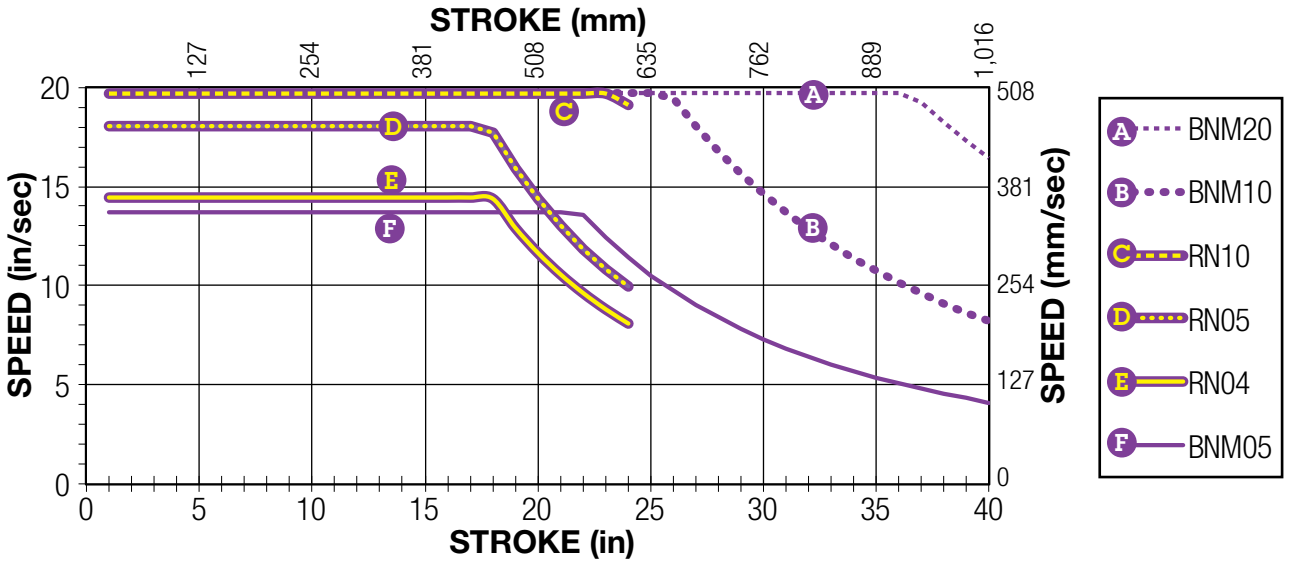
SOLIDS, FIRST DIGIT:		
6	Dust tight	No ingress of dust; complete protection against solid object intrusion
LIQUIDS, SECOND DIGIT (static rating)		
9K	High pressure, high temp. wash-down	As above, plus ingress of water in harmful quantity shall not be possible when the enclosure is subject to high pressure, high temperature wash-down.

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

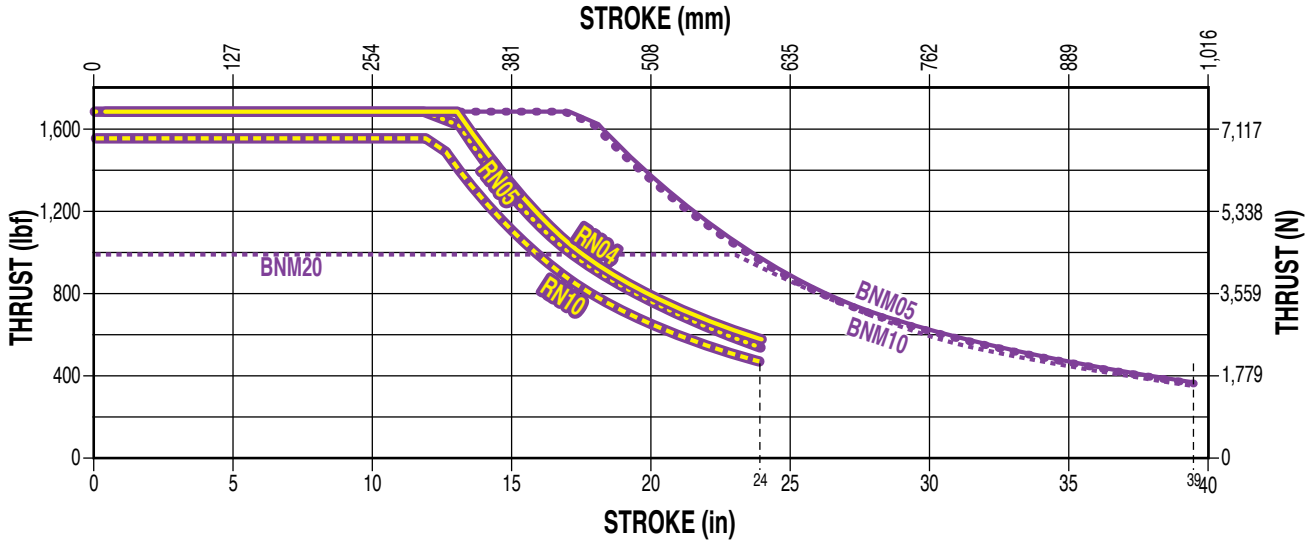
The first digit indicates the level of protection that the enclosure provides against access to hazardous parts (e.g., electrical conductors, moving parts) and the ingress of solid foreign objects.

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

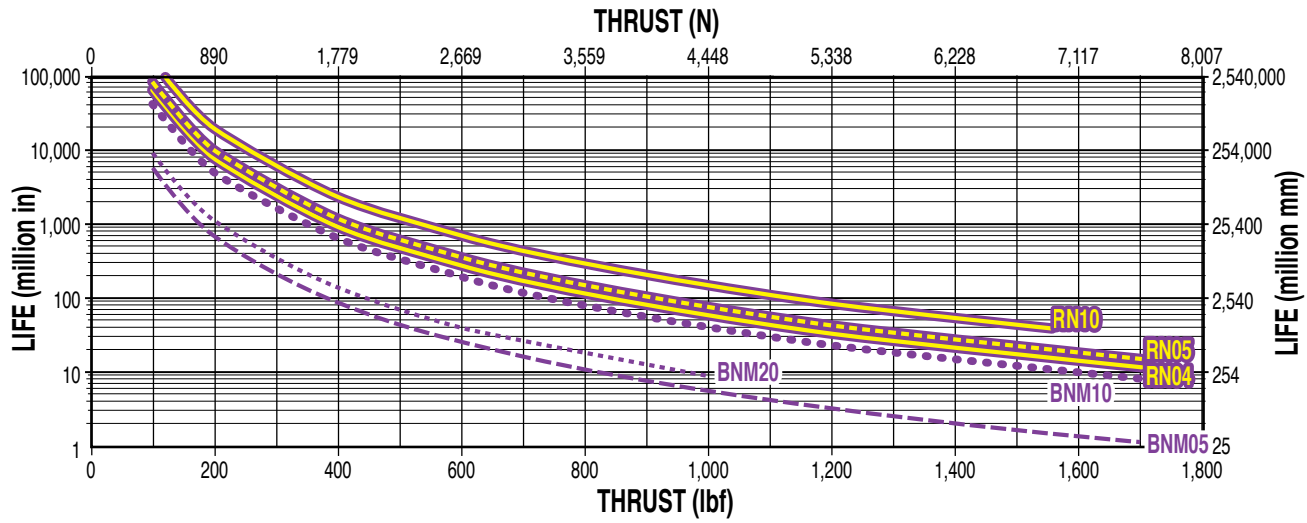
CRITICAL SPEED CAPACITY (NOTE: Max.19.6 in/sec critical speed is limited by the seal not the screw)



MAXIMUM THRUST vs STROKE



SCREW LIFE

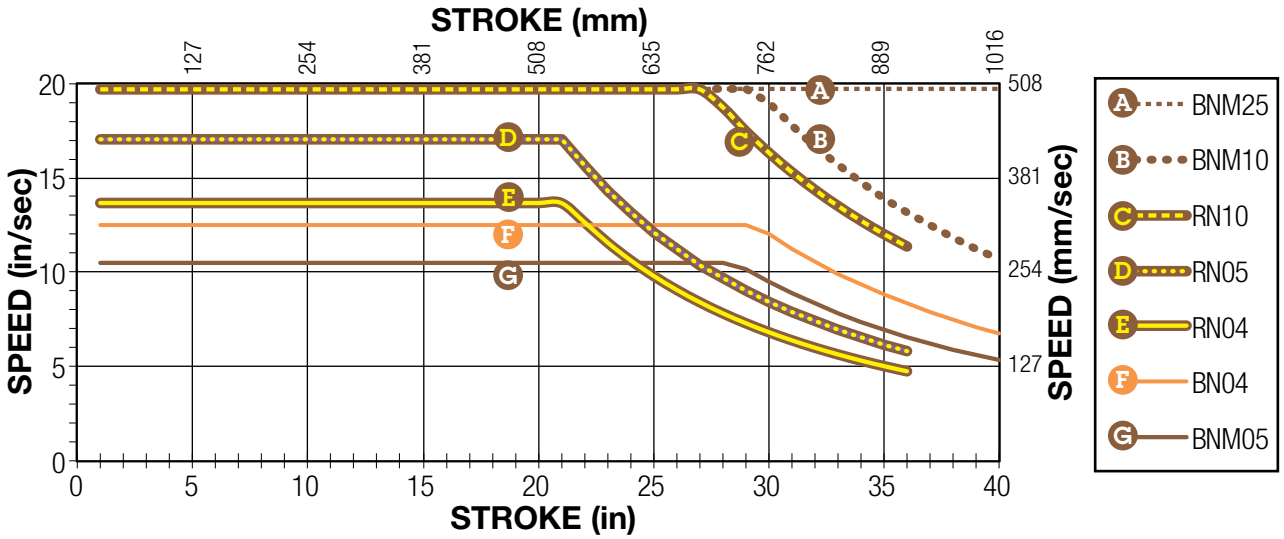


RSH – Hygienic Electric Rod-Style Actuator

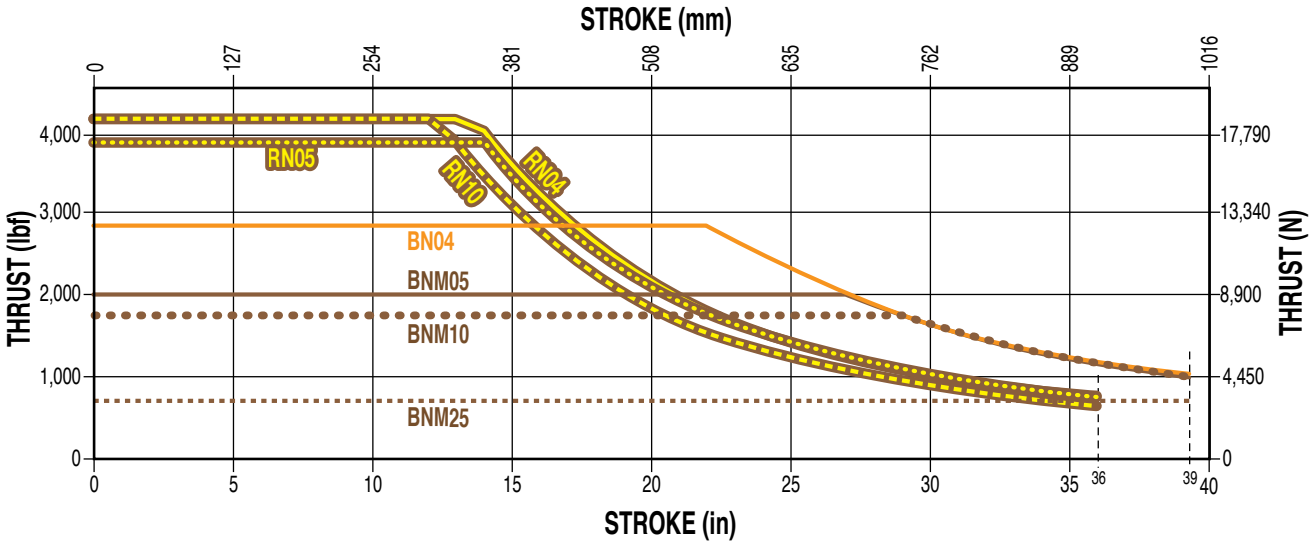
SIZE: **RSH25**

SPECIFICATIONS

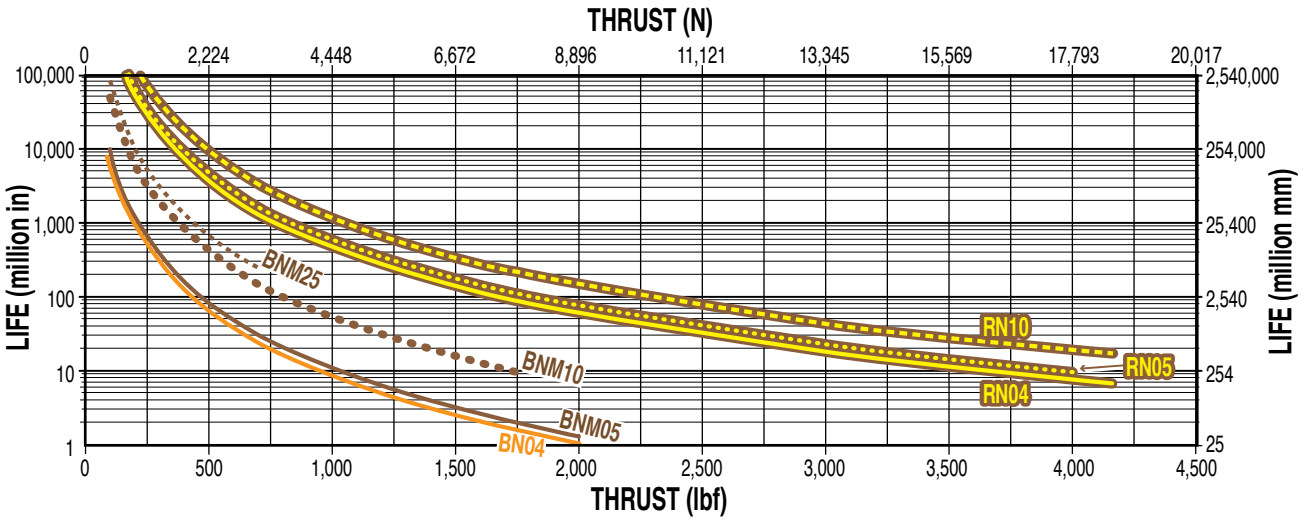
CRITICAL SPEED CAPACITY (NOTE: Max.19.6 in/sec critical speed is limited by the seal not the screw)



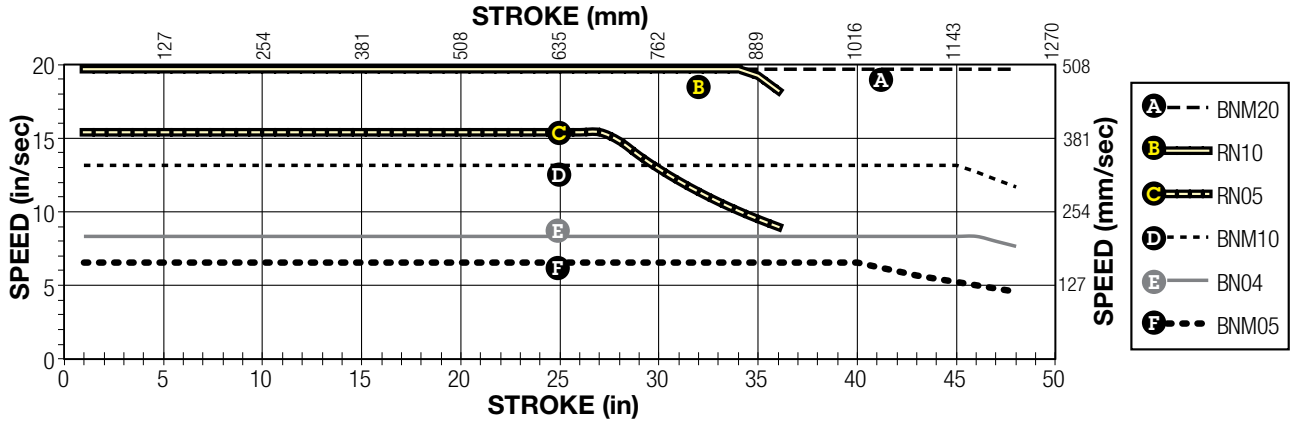
MAXIMUM THRUST vs STROKE



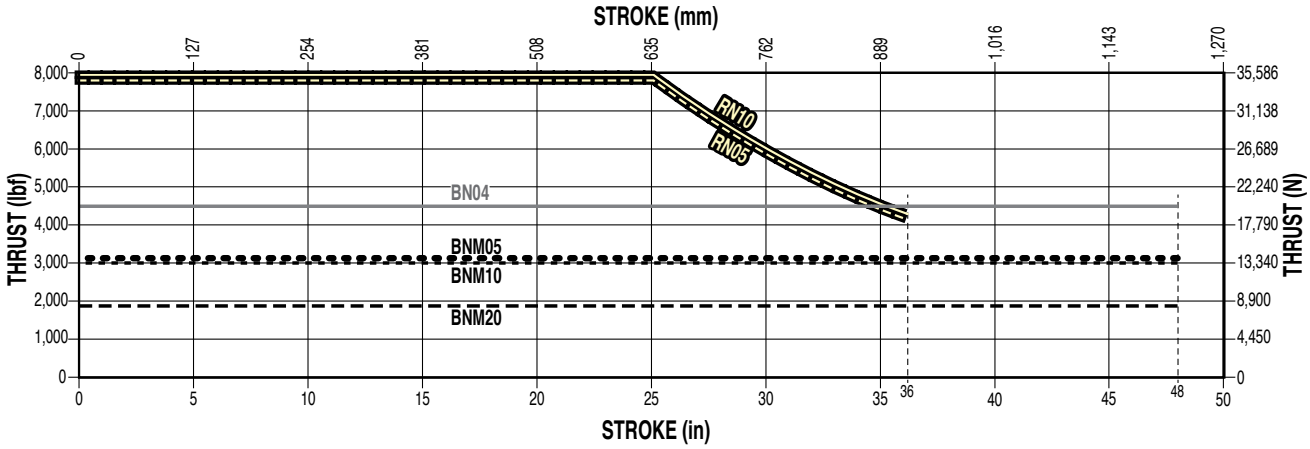
SCREW LIFE



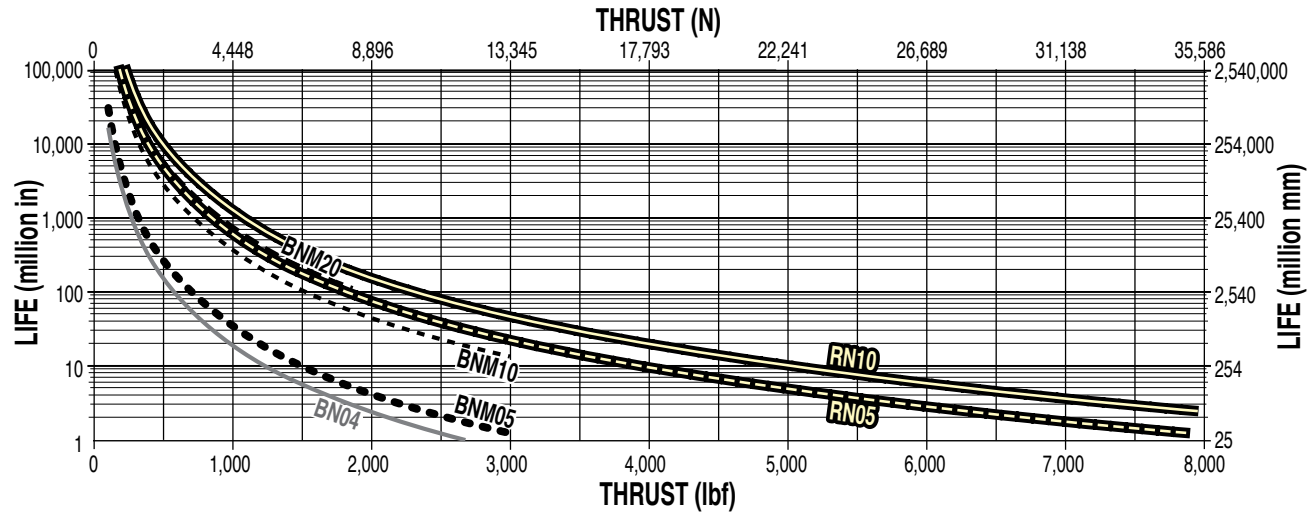
CRITICAL SPEED CAPACITY (NOTE: Max.19.6 in/sec critical speed is limited by the seal not the screw)



MAXIMUM THRUST vs STROKE



SCREW LIFE



RE-LUBRICATION RECOMMENDATION:

RSH22, RSH25, RSH30: RSH 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 in the rod end.

	RSH22	RSH25	RSH30
Qty.	2.5 g + (0.010 x § mm)	4.8 g + (0.010 x § mm)	5.3 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)

§ = Stroke length (mm or in)

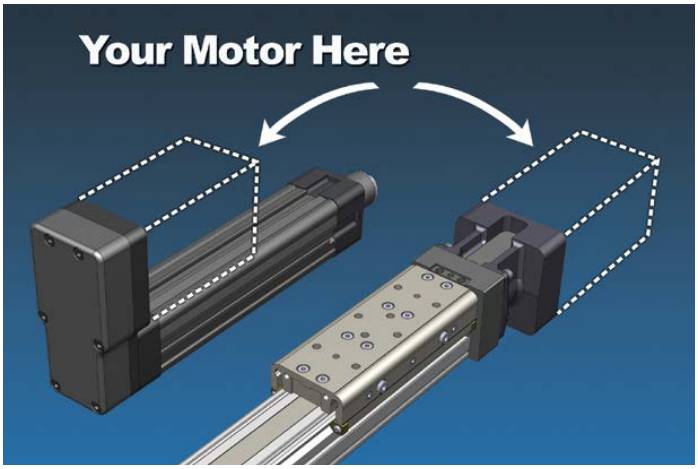
In some applications oil may leak from the grease zerk. In contamination sensitive applications replace grease zerk with plug.

sizeit.tolomatic.com
for fast, accurate
actuator selection

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.

MOTOR CHOICES - YOUR MOTOR HERE

ADD ANY MOTION SYSTEM TO OUR ACTUATORS



"YOUR MOTOR HERE" MADE-TO-ORDER MOTOR MOUNTS.

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

Visit **www.tolomatic.com/ymh** to find your motor/actuator match!

tolomatic.com/ymh
YOUR MOTOR HERE
Motor Mounts
Made-to-Order

The RSH utilizes Tolomatic's YMH (Your Motor Here) program. See www.tolomatic.com/ymh or consult Tolomatic sales at 1-800-328-2174 for details.

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

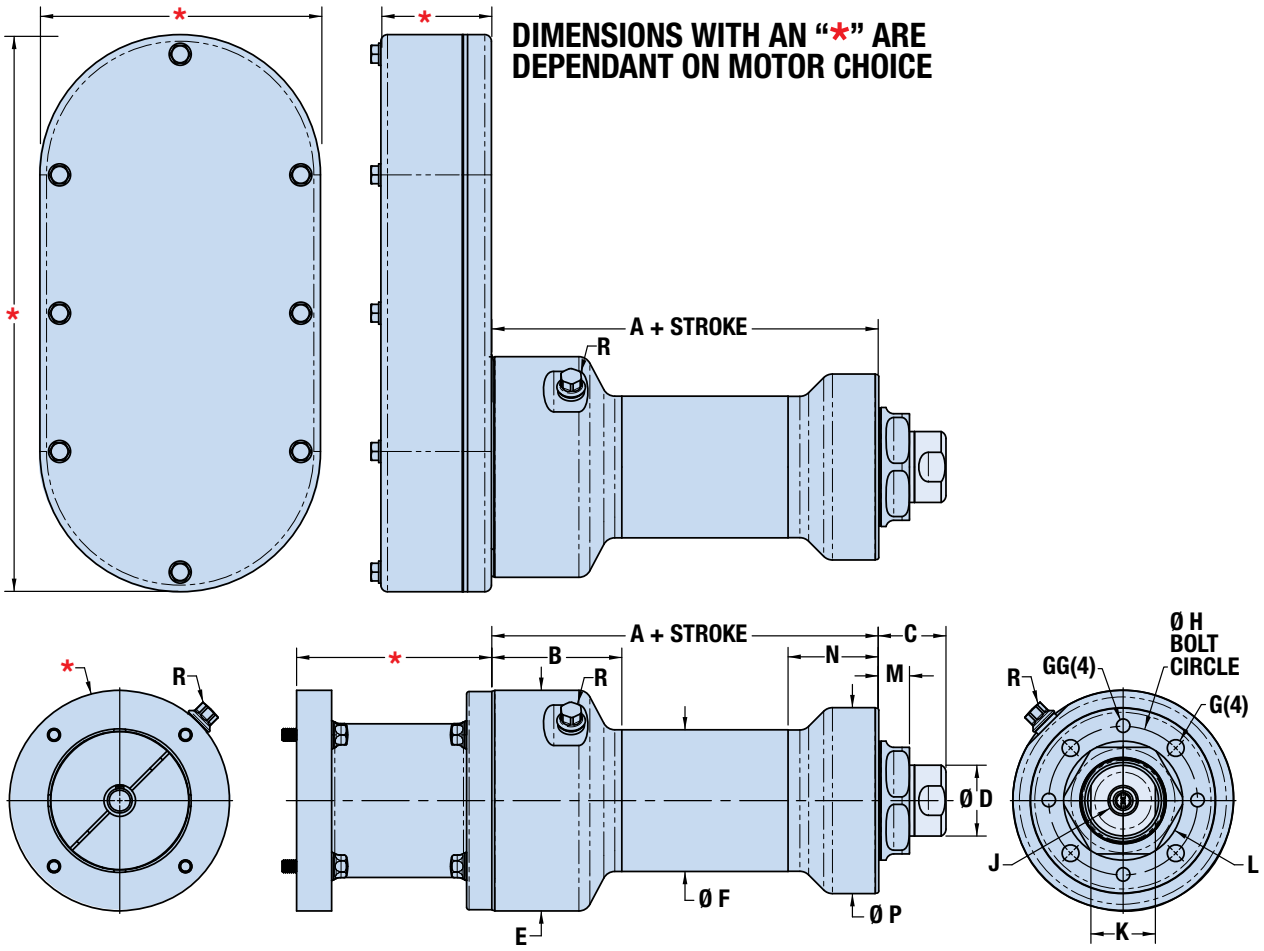
RSH – Hygienic Electric Rod-Style Actuator

SIZE: **22, 25, 30**

DIMENSIONS

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

DIMENSIONS WITH AN "*" ARE DEPENDANT ON MOTOR CHOICE



	A	B	C	ØD	ØE	ØF	G	GG	ØH	J	K	L	M	N	ØP
RSH22	6.14	2.06	1.08	1.13	3.50	2.25	M8 x 1.25 ↧0.63"	M6 x 1.0 ↧0.47"	2.362	M12x1.25↧0.87"	1.02	1.890 1.888	0.50	1.43	2.95
RSH25	8.31	2.70	1.39	1.38	4.92	3.50	M10x1.50 ↧0.79"	M8x1.25 ↧0.63"	2.756	M20x1.5 ↧1.00"	1.18	2.205 2.203	0.52	1.86	3.50
RSH30	9.34	2.70	1.39	2.13	4.92	3.50	M12x1.75 ↧0.95"	M10x1.50 ↧0.79"	3.701	M27x2.0 ↧1.30"	1.97	3.071 3.069	0.55	2.13	4.49

Dimensions in inches

R	M5x0.8x10 plug

	A	B	C	ØD	ØE	ØF	G	GG	ØH	J	K	L	M	N	ØP
RSH22	155.9	52.4	27.3	28.6	89.0	57.2	M8x1.25 ↧16.0	M6x1.0 ↧12.0	60.00	M12x1.25↧22.2	26.0	48.00 47.95	12.6	36.4	75.0
RSH25	211.2	68.5	35.3	35.0	125.0	89.0	M10x1.50 ↧20.0	M8x1.25 ↧16.0	70.00	M20x1.5 ↧25.4	30.0	56.00 55.95	13.3	47.2	89.0
RSH30	237.2	68.5	35.3	54.0	125.0	89.0	M12x1.75 ↧24.0	M10x1.50 ↧24.0	94.00	M27x2.0 ↧33.0	50.0	78.00 77.95	13.8	54.0	114.0

Dimensions in millimeters

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RSH – Hygienic Electric Rod-Style Actuator

SIZE: **22, 25, 30**

DIMENSIONS

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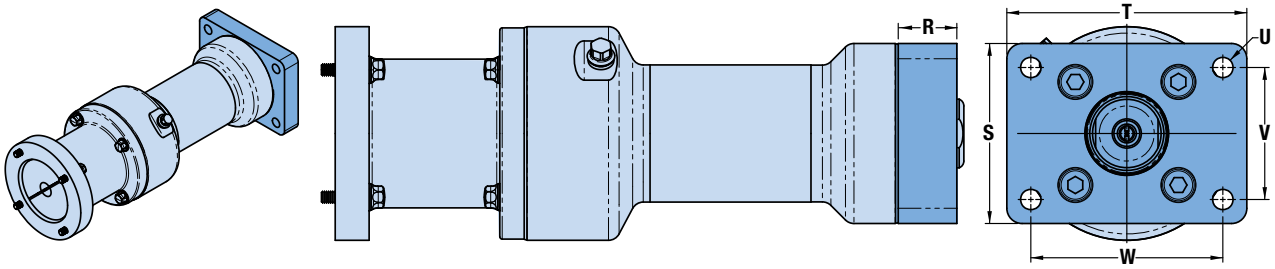
Download 3D CAD
Always use CAD solid model to determine critical dimensions

FFG - FRONT FLANGE MOUNT OPTION



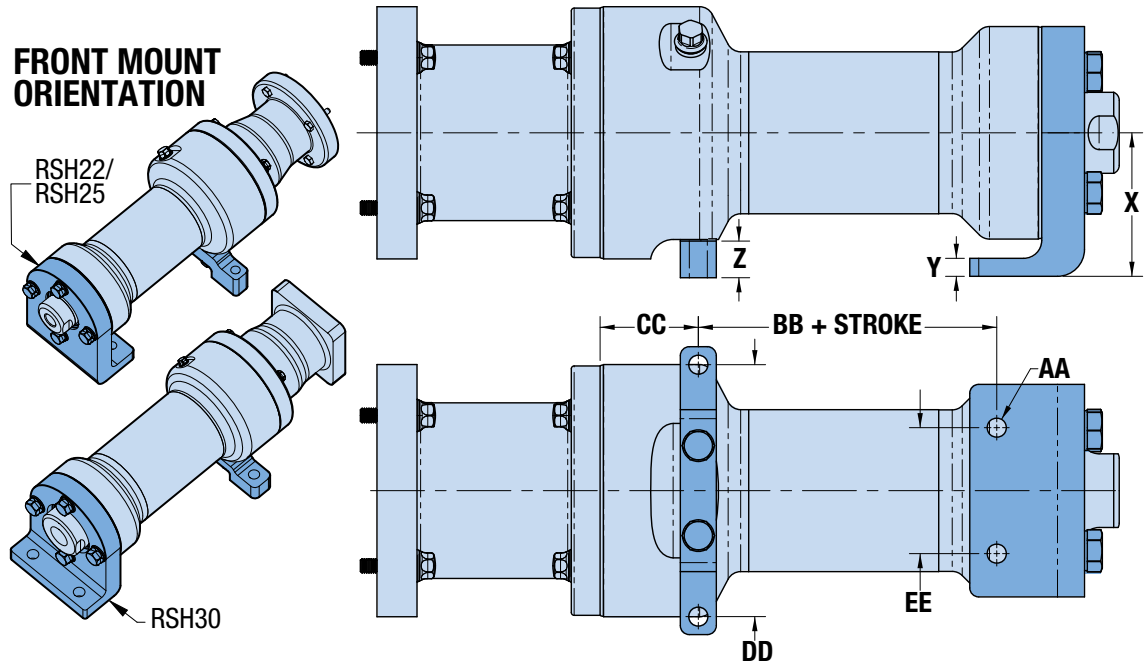
	R	S	T	U	V	W
RSH22	0.98	2.95	3.88	0.34	2.00	3.00
RSH25	1.16	4.75	6.25	0.42	3.32	5.44
RSH30	1.20	4.75	6.25	0.49	3.32	5.44

Dimensions in inches

	R	S	T	U	V	W
RSH22	25.0	75.0	98.6	8.5	50.8	76.2
RSH25	29.5	120.7	158.8	10.7	84.3	138.2
RSH30	30.5	120.7	158.8	12.5	84.3	138.2

Dimensions in millimeters

FM2 - FOOT MOUNT OPTION



	X	Y	Z	Ø AA	BB	CC	DD	EE
RSH22	2.52	.38	.83	.28	4.31	1.29	3.50	1.75
RSH25	3.15	.50	.79	.47	6.06	1.52	4.75	2.75
RSH30	3.15	.63	.79	.47	9.41	1.52	4.75	2.75

Dimensions in inches

	X	Y	Z	Ø AA	BB	CC	DD	EE
RSH22	64.0	9.5	21.0	7.1	109.5	32.9	88.9	44.5
RSH25	79.9	12.7	20.0	12.0	154.0	38.6	120.7	69.9
RSH30	79.9	15.9	20.0	12.0	239.0	38.6	120.7	69.9

Dimensions in millimeters

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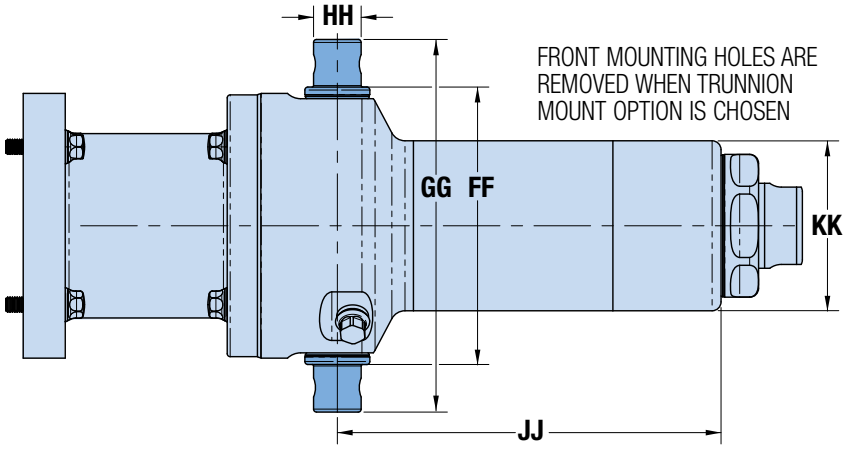
RSH – Hygienic Electric Rod-Style Actuator

SIZE: **22, 25, 30**

DIMENSIONS

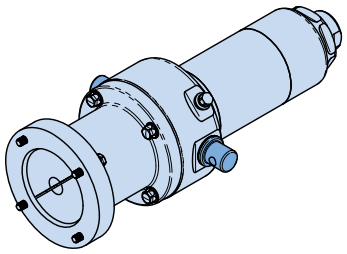
tolomatic.com/CAD
Download 3D CAD
Always use CAD solid model to determine critical dimensions

TRR/TRM - TRUNNION MOUNT OPTION



FRONT MOUNTING HOLES ARE REMOVED WHEN TRUNNION MOUNT OPTION IS CHOSEN

TRUNNIONS ARE MADE OF 17-4 H900 STAINLESS INSTEAD OF 316 STAINLESS FOR INCREASED HARDNESS



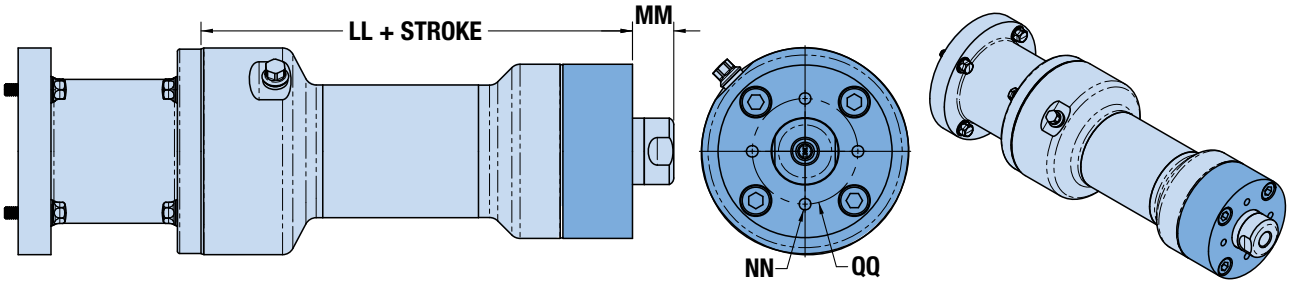
TRR	FF	GG	Ø HH		JJ	KK
RSH22	3.67	4.93	0.625	0.624	5.20	2.25
RSH25	5.05	7.17	1.000	0.999	7.05	3.50
RSH30	5.05	7.17	1.000	0.999	8.07	3.50

Dimensions in inches

TRM	FF	GG	Ø HH		JJ	KK
RSH22	93.3	125.3	16.00	15.97	132.0	57.2
RSH25	128.3	182.1	25.00	24.98	179.0	89.0
RSH30	128.3	182.1	25.00	24.98	205.0	89.0

Dimensions in millimeters

RSH TO ERD MOUNT OPTION



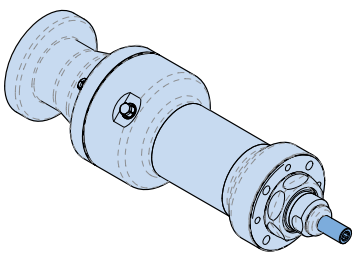
	LL	MM	NN	Ø QQ
RSH22	7.32	0.70	M6x1.0 x↧0.47	1.791
RSH25	9.34	0.94	M8x1.25 x↧0.63	3.000
RSH30	10.74	0.94	M8x1.25 x↧0.63	3.000

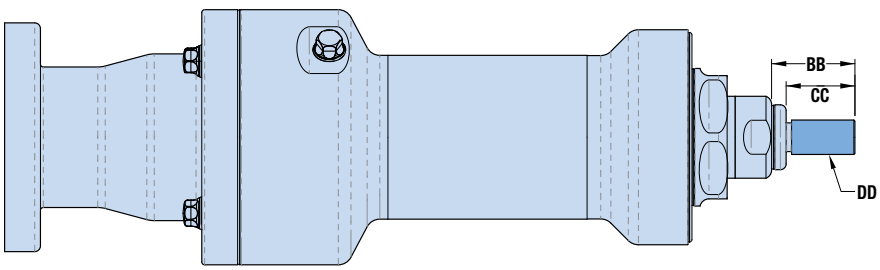
Dimensions in inches

	LL	MM	NN	ØQQ
RSH22	185.8	17.8	M6x1.0 x↧12.0	45.50
RSH25	237.2	17.8	M8x1.25 x↧16.0	76.20
RSH30	272.7	23.9	M8x1.25 x↧16.0	76.20

Dimensions in millimeters

MET/IET - EXTERNALLY THREADED ROD END OPTION





IET	BB	CC	DD
RSH22	1.20	1.000	1/2-20
RSH25	1.70	1.500	3/4-16
RSH30	2.30	2.000	1-14

Dimensions in inches

MET	BB	CC	DD
RSH22	29.1	24.00	M12x1.25
RSH25	49.5	44.45	M20x1.5
RSH30	58.4	50.80	M27x2.0

Dimensions in millimeters

RSH – Hygienic Electric Rod-Style Actuator

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SWITCHES

SPECIFICATIONS

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

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

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

All switches are CE rated, IP67 rated and are RoHS compliant. Switches feature bright red or green LED signal indicators.

RoHS COMPLIANT CE

	Order Code	Part Number	Lead	Switching Logic	Power LED	Signal LED	Operating Voltage	**Power Rating (Watts)	Switching Current (mA max.)	Current Consumption	Voltage Drop	Leakage Current	Temp. Range	Shock / Vibration	IP Rating
REED	R Y	2190-9082	5m	SPST Normally Open	—	Red	5 - 240 AC/DC	**10.0	100mA	—	3.0 V max.	—	14 to 158°F [-10 to 70°C]	30 G / 9 G	67
	R K	2190-9083	QD*												
SOLID STATE	T Y	2190-9088	5m	PNP (Sourcing) Normally Open	—	Green	5 - 30 VDC	**3.0	200mA	8 mA @ 24V	1.0 V max.	0.01 mA max.		50 G / 9 G	
	T K	2190-9089	QD*												
	K Y	2190-9090	5m	NPN (Sinking) Normally Open	—	Red									
	K K	2190-9091	QD*												

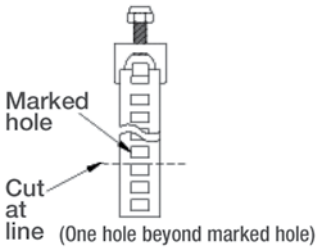
*QD = Quick-disconnect Enclosure classification IEC 529 IP67 (NEMA 6) CABLES: Robotic grade, oil resistant polyurethane jacket, PVC insulation

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

SWITCH INSTALLATION - FIELD REPLACEMENT INSTRUCTIONS

STEP 1:
Loosen screw and nut.

STEP 2:
Place sensor and wrap the band around the RSH cylinder. Position the hook with the nearest hole on the band and mark the hole with a permanent marker.

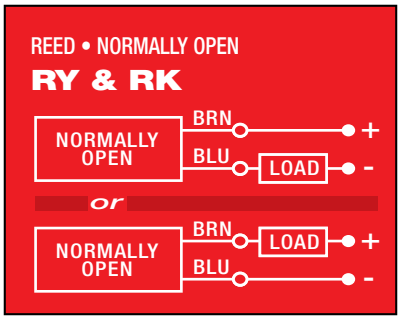


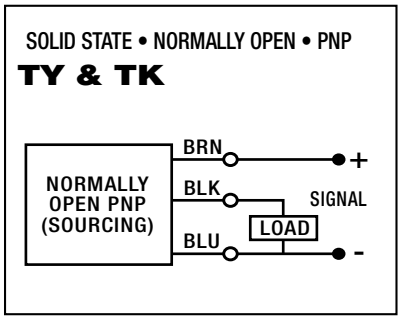
STEP 3:
Remove mounting assembly. Cut the band at the nearest edge of the next hole. (The one that's furthest away from the mounting head.)

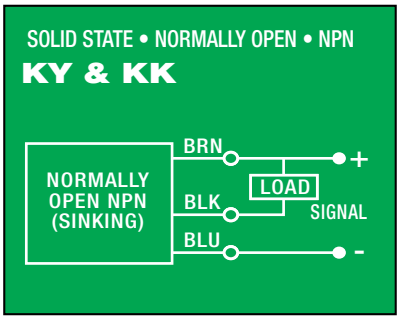
STEP 4:
Replace the sensor and mounting assembly. Wrap the band and put the chosen hole on the hook. Position the switch and tighten. Tighten nut for steadying.

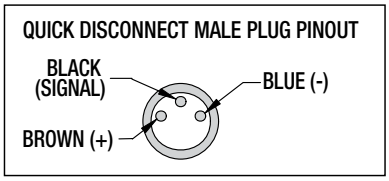
SWITCHES

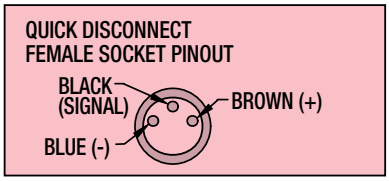
WIRING DIAGRAMS





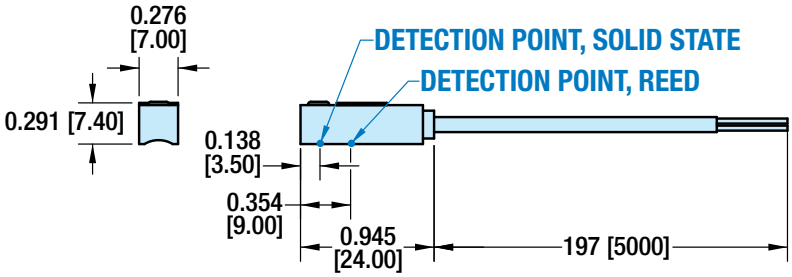




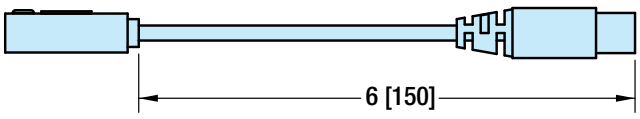


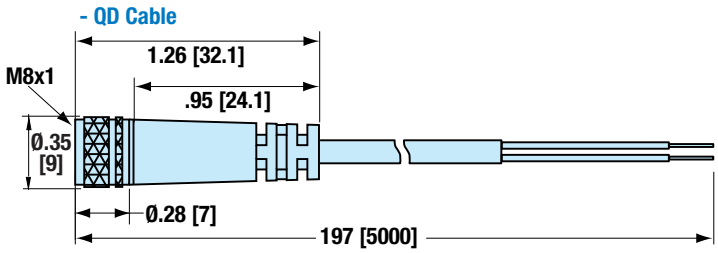
SWITCH DIMENSIONS

☐ Y - direct connect

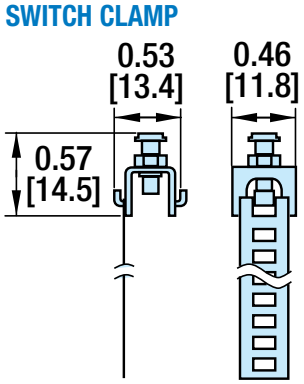


☐ K - QD (Quick-disconnect) switch





SWITCH CLAMP

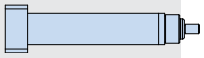


APPLICATION DATA WORKSHEET

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

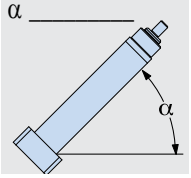
ORIENTATION

☐ Horizontal

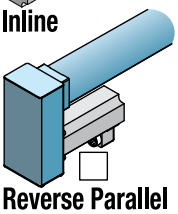


☐ Vertical

☐ Incline °
α _____



☐ Inline



☐ Reverse Parallel

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

MOVE PROFILE

EXTEND

Move Distance _____

☐ inch (US conventional) ☐ millimeters (Metric)

Move Time _____ **sec**

Max. Speed _____

☐ in/sec ☐ mm/sec

Dwell Time After Move _____ **sec**

RETRACT

Move Distance _____

☐ inch ☐ millimeters

Move Time _____ **sec**

Max. Speed _____

☐ in/sec ☐ mm/sec

Dwell Time After Move _____ **sec**

NO. OF CYCLES _____

☐ per minute ☐ per hour

HOLD POSITION?

☐ **Required**
☐ **Not Required**

☐ After Move ☐ During Power Loss

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

EXTEND	RETRACT
LOAD _____	**LOAD** _____
☐ lb. (U.S. Standard) ☐ kg. (Metric)	☐ lb. (U.S. Standard) ☐ kg. (Metric)
FORCE _____	**FORCE** _____
☐ lbf. (U.S. Standard) ☐ N (Metric)	☐ lbf. (U.S. Standard) ☐ N (Metric)

STROKE LENGTH _____

☐ inch (US conventional) ☐ millimeters (Metric)

PRECISION

Repeatability _____

☐ inch ☐ millimeters

OPERATING ENVIRONMENT

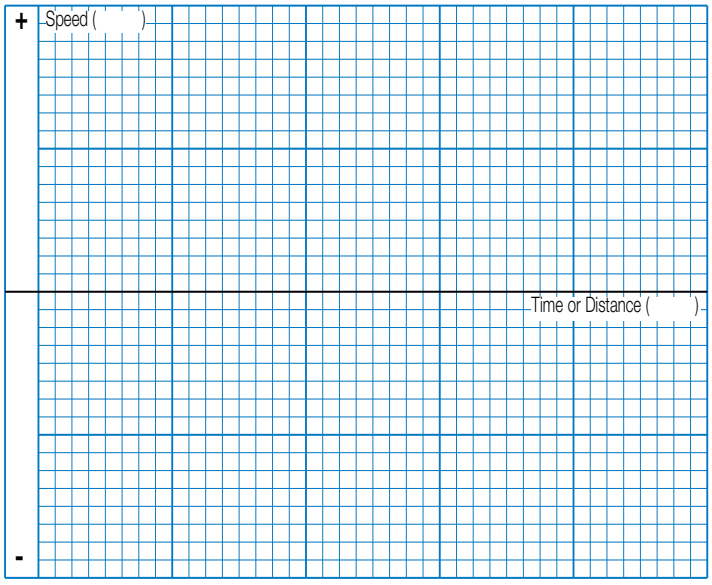
Temperature, Contamination, Water, etc.

_____

_____

_____

MOTION PROFILE



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

CONTACT INFORMATION

Name, Phone, Email
Co. Name, Etc.

_____

_____

_____

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USE THE TOLOMATIC SIZING AND SELECTION SOFTWARE AVAILABLE ON-LINE AT www.tolomatic.com OR... CALL TOLOMATIC AT 1-800-328-2174.

We will provide any assistance needed to determine the proper actuator for the job.

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

RSH – Hygienic Rod-Style Actuator

Selection Guidelines

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1 ESTABLISH MOTION PROFILE

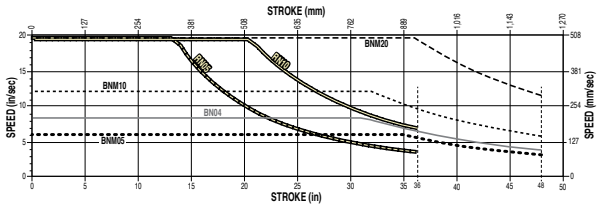
Using the application stroke length, desired cycle time, loads and forces, establish the motion profile details including linear velocity and thrust in each of its segments.

2 SELECT ACTUATOR SIZE AND SCREW TYPE

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

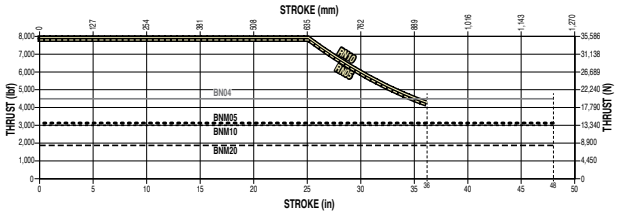
3 VERIFY CRITICAL SPEED OF THE SCREW

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



4 VERIFY AXIAL BUCKLING STRENGTH OF THE SCREW

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

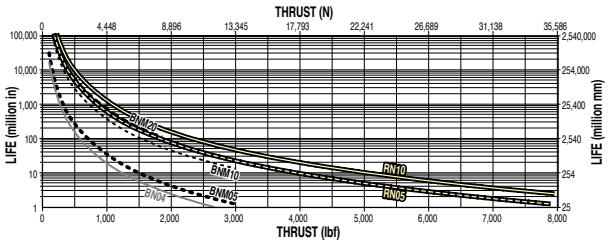


5 ESTABLISH TOTAL TORQUE REQUIREMENTS

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

6 CALCULATE LIFE

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



7 SELECT MOUNTING AND SENSOR CHOICES

Mounting options include: T R R trunnion mount, F F G front flange mount, F M 2 foot mount. 6 sensor choices include: reed, solid state PNP and solid state NPN, with either flying lead cables or the quick-disconnect cable option. All sensors are normally open.

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SERVICE PARTS ORDERING

RSH ACTUATOR REPLACEMENT KITS

Code	Description	RSH SIZE		
		22	25	30
FFG	Front Flange Mount Kit	2122-9020	2125-9020	2130-9020
FM2	* Foot Mount Kit	2122-9021	2125-9021	2130-9021
TRR	*† Trunnion Mount	2122-1042	2125-1042	2125-1042
TRM	*† Trunnion Mount	2122-1041	2125-1041	2125-1041
ERD	RSH to ERD Face Mount Adapter	2122-9019	2125-9019	2130-9019
IET	Imperial Male Thread Adapter	2122-9036	2125-9036	2130-9036
MET	Metric Male Thread Adapter	2122-9035	2125-9035	2130-9035
PSL	Standard Rod Seal Kit	2122-9009	2125-9009	2130-9009
USL	FDA Rod Seal Kit	2122-9010	2125-9010	2130-9010

* REPLACEMENT ONLY † Quantity 1, Trunnion Mount; for pair order 2

RSH SWITCHES

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

EXAMPLE: SWRSH25KK

SW	RS	H	25	KK
KIT	ACTUATOR		SIZE	SWITCH CODE

The example is for a Solid State NPN, Normally Open switch with Quick-disconnect Coupler. The Switch Kit is complete with Bracket, Set Screw, Switch and mating QD cable.

Code		Lead	Normally	Sensor Type
RY		5m (197 in)	Open	Reed
RK		Quick-disconnect		
TY		5m (197 in)	Open	Solid State PNP
TK		Quick-disconnect		
KY		5m (197 in)	Open	Solid State NPN
KK		Quick-disconnect		

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RSH – Hygienic Electric Rod-Style Actuator

ORDERING

RSH 25 RN05 SM152.4 LMI PSL

MODEL

RSH	Rod-Style Actuator

SIZE

22, 25, 30

NUT/SCREW COMBINATIONS

SIZE	CODE	revs/in or lead
22	BNM	05, 10, 20 mm lead
	RN	05, 10 mm lead
25	BN	04 rev/in
	BNM	05, 10, 25 mm lead
	RN	05, 10 mm lead
30	BN	04 rev/in
	BNM	05, 10, 20mm lead
	RN	05, 10 mm lead

STROKE LENGTH

SM__.__ Enter desired stroke length in millimeters (25.4mm = 1 inch)

MAXIMUM STROKE				
	SN or BN		Roller Nut	
SIZE	*mm*	in	*mm*	in
22	*1000.0*	39.4	*609.6*	24
25	*1000.0*	39.4	*914.4*	36
30	*1219.2*	48.0	*914.4*§	36§

Contact Tolomatic with requests for longer strokes

§ RSH30 extended stroke length 50" (1270mm) available for roller screws, contact Tolomatic for production time.

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

MOTOR MOUNTING

LMI	In-line motor mount
RP1	1:1 ratio, Reverse Parallel motor mount
RP2	2:1 ratio, Reverse Parallel motor mount

SEALING OPTIONS

PSL	Polyurethane/Polyurethane Rod Seals (Standard)
USL	Polyurethane/UHMWPE Rod Seals (Severe Chemicals)

ACTUATOR GUIDE & ANTI-ROTATE

ARI	Internal Anti-Rotate

ARI not available for RSH30 RN05, RSH30 RN10

ROD END OPTION

IET	Imperial External (Male) Thread Adapter
MET	Metric External (Male) Thread Adapter

ACTUATOR MOUNTING

FFG*	Front Flange Mount
TRM	Trunnion Mounting, Rear (metric)
TRR	Trunnion Mounting, Rear (US standard)
FM2*	Foot Mount
ERD	RSH to ERD Face Mount Adapter

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

OPTION ORDERING

ARI FFG KK2 YM___

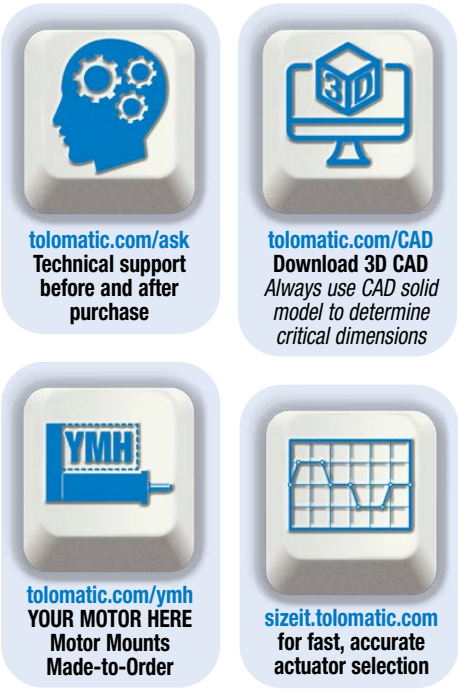
SWITCHES**

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

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

YOUR MOTOR HERE

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



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The fastest delivery of catalog products... Built-to-order with configurable stroke lengths and flexible mounting options.

ACTUATOR SIZING
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Easy to access CAD files available in the most popular formats to place directly into your assembly.

TECHNICAL SUPPORT
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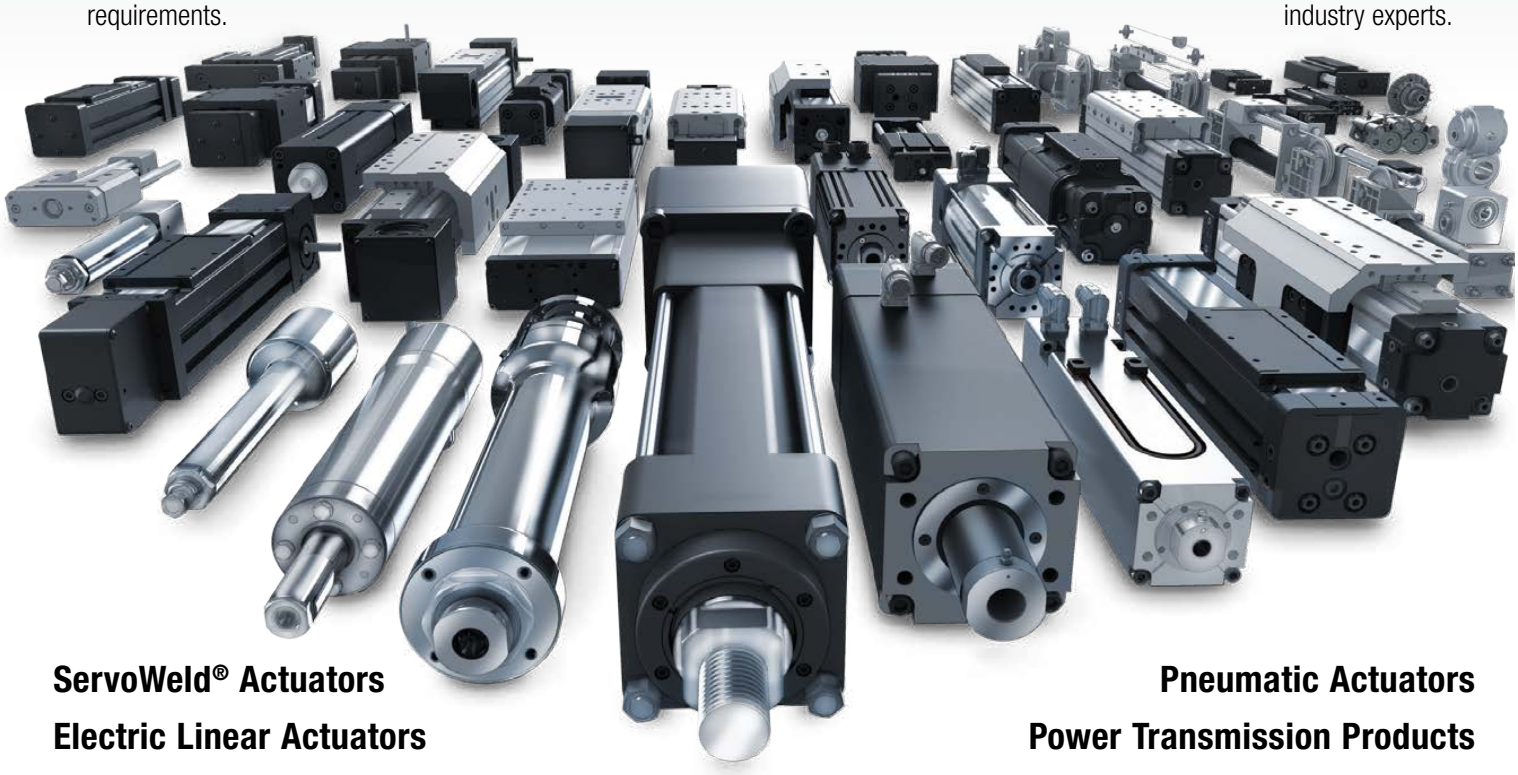

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