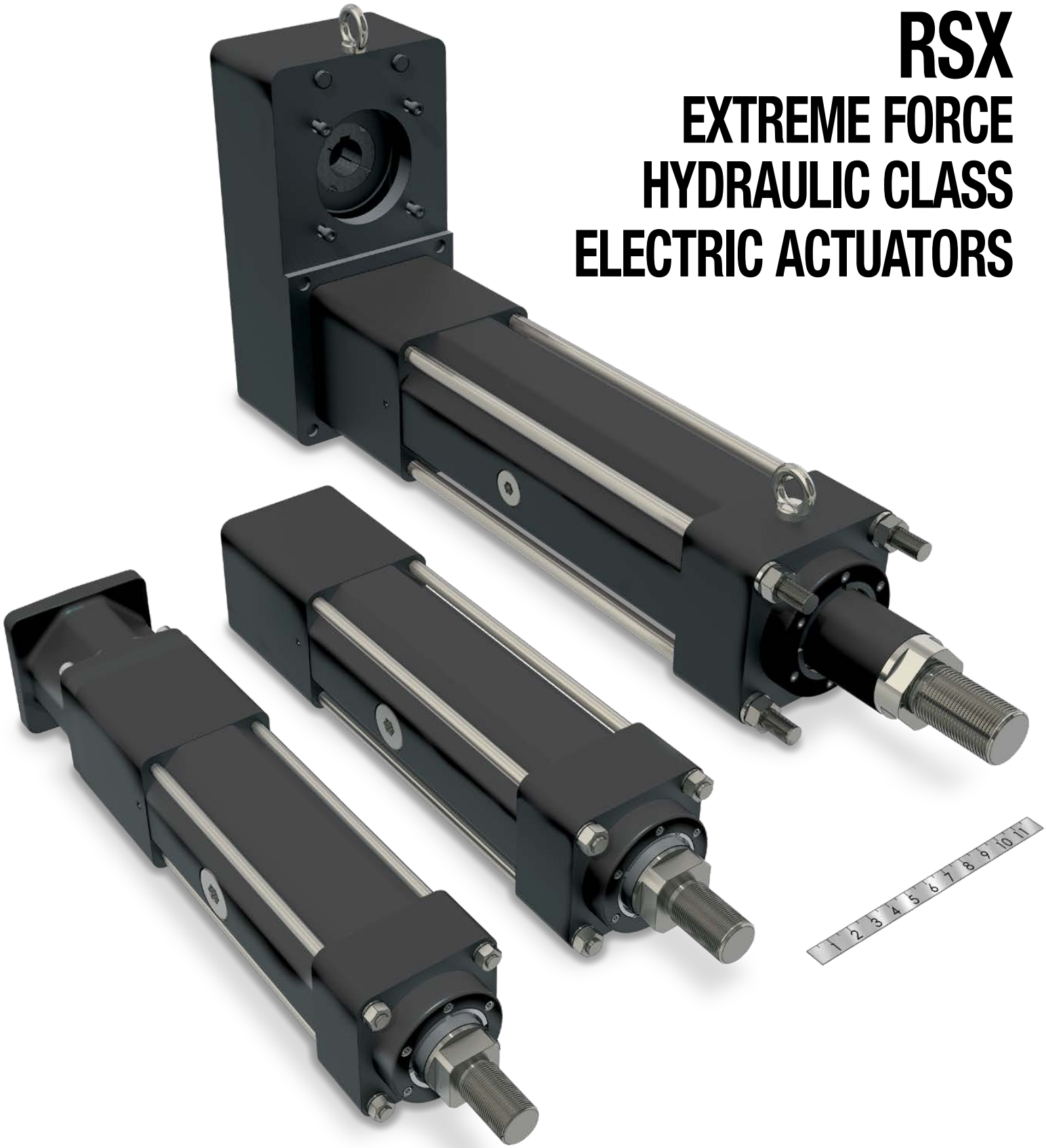
Tolomatic™
EXCELLENCE *IN MOTION*

ENDURANCE TECHNOLOGY℠
A Tolomatic Design Principle

RSX
EXTREME FORCE HYDRAULIC CLASS ELECTRIC ACTUATORS



LINEAR SOLUTIONS MADE EASY

RSX Extreme Force, Hydraulic Class Electric Actuator

WHAT IS THE RSX?

RSX actuators are an ideal choice for replacing hydraulic cylinders. These high force electric actuators are available for forces up to 50,000 lbf (222.4 kN). Designed for 100% duty cycle, rugged service and long life.

The RSX utilizes planetary roller screws for long lasting consistent performance. Additionally, the RSX uses Tolomatic's popular Your Motor Here program which allows RSX to easily mount many servo motor and gearboxes on the market.

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:	2.22 kN *(500 lbf)*	35 kN *(7,943 lbf)*	58 kN *(13,039 lbf)*	222.4 kN *(50,000 lbf)*	4.23 kN *(950 lbf)*	30.6 kN *(6,875 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)*	890 mm *(35 in)*	914 mm *(36 in)*	457 mm *(18 in)*
Screw/Nut Type	Solid, Ball & Roller	Ball & Roller	Solid, Ball & Roller	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

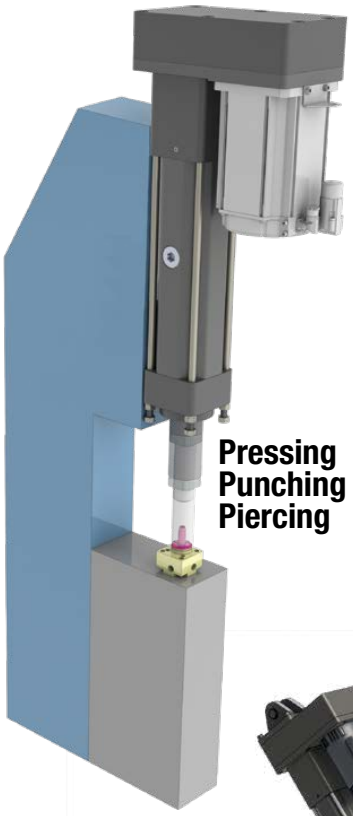
(Not all models deliver maximum values listed, i.e.: Maximum thrust may not be available with maximum speed)

RSX Extreme Force, Hydraulic Class Electric Actuator

Applications

Volumetric pumps
Injection molding

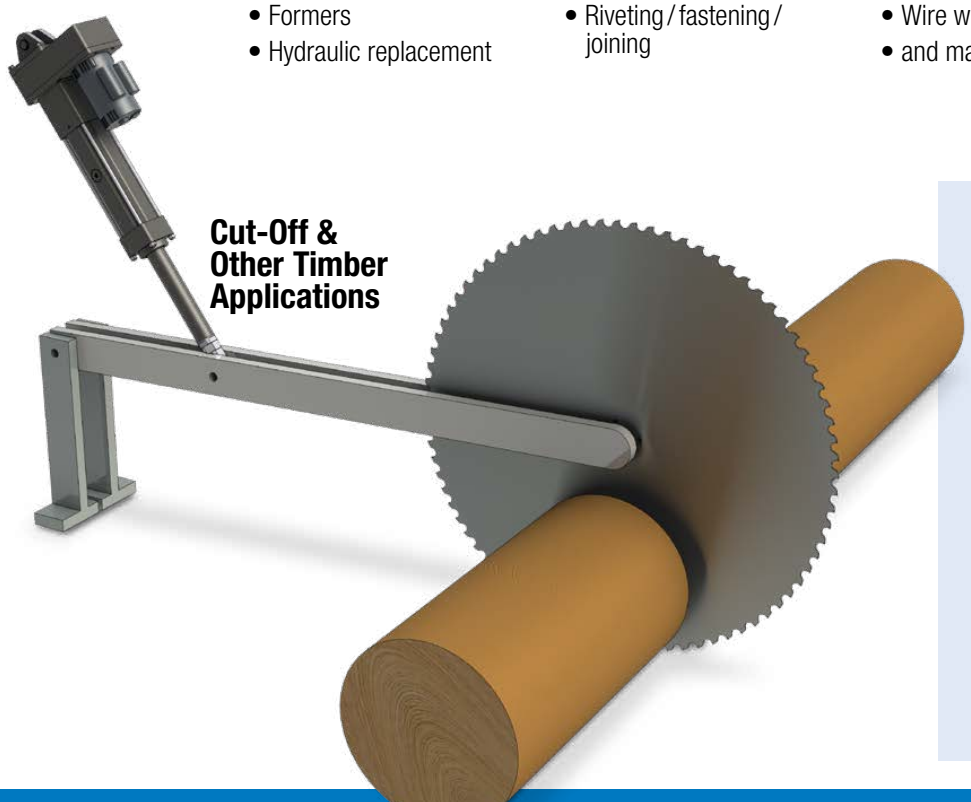
Motion simulators



Pressing
Punching
Piercing

Other Applications:

- Active Security Barrier
- Assembly machinery
- Automatic tool changers
- Automotive
- Clamping
- Converting
- Cycle testing
- Fillers
- Formers
- Hydraulic replacement
- Machine tools
- Open / close doors
- Parts clamping
- Piercing
- Precision grinders
- Product test simulations
- Pressing
- Punching
- Riveting / fastening / joining
- Sawmill equipment
- Stamping
- Tension control
- Test stands
- Tube bending
- Wave generation
- Web guidance
- Welding
- Wire winding
- and many more



Cut-Off &
Other Timber
Applications

CONTENTS

RSX ELECTRIC ROD-STYLE ACTUATOR

ENDURANCE TECHNOLOGY℠

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

The RSX series high force electric actuators with planetary roller screws are designed for rugged service, long life and are an ideal choice for replacing hydraulic cylinders.

IP65 STANDARD

Protection against dust and water spray (static)

IP67 OPTION

Protection against dust and water spray (static)

YOUR MOTOR HERE

YOU CAN CHOOSE:

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

HIGH POSITIONAL ACCURACY

SCREW ACCURACY		
Roller Nut	± 0.0102mm/300mm	*± 0.0004"/ft.*

LUBE ACCESS PORT

- This re-lubrication system provides extended screw service life
- Convenient lubrication without disassembly
- Grease zerk fitting

SUPERIOR CONSTRUCTION

- Steel parts are black or clear zinc plated for corrosion resistance
- Aluminum parts are Type III hardcoat black anodized for high surface hardness

FIELD REPLACEABLE CARTRIDGE

- Scraper and dual seal design prevent contaminants from entering the housing for extended life of the actuator
- One piece assembly designed for easy field replacement

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

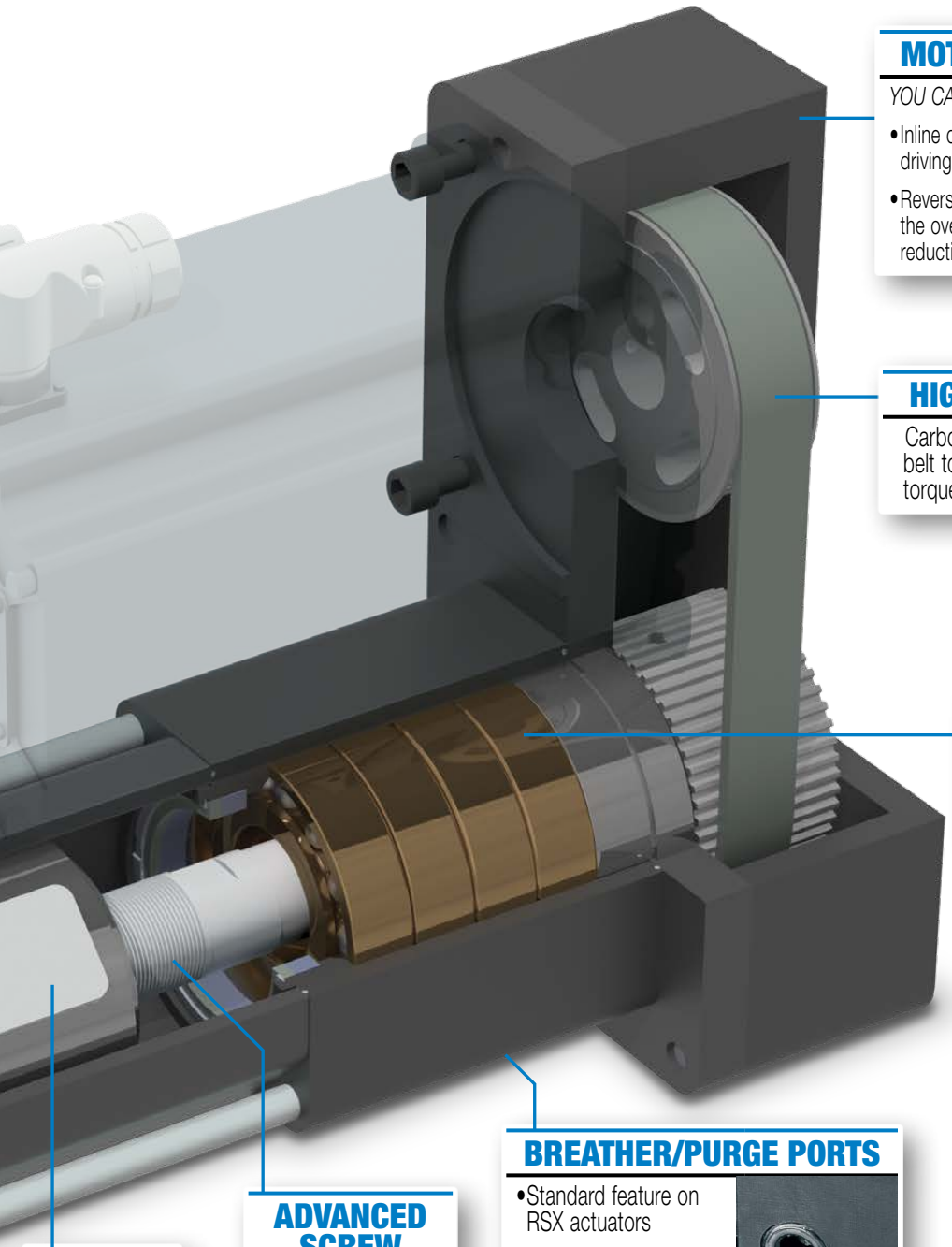
NOSE BEARING

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

HEAVY DUTY INTERNAL BUMPER

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

...MAXIMUM DURABILITY



MOTOR ORIENTATION

YOU CAN CHOOSE:

- Inline option directly couples the driving shaft
- Reverse-parallel option minimizes the overall length and offers a belt reduction drive with a 1:1 or 2:1 ratio

HIGH POWER TIMING BELT

Carbon fiber tensile reinforced synchronous belt to ensure smooth transmission of high torques in a compact design.

HIGH FORCE ANGULAR CONTACT BEARINGS

Four ball bearings to support high axial loads & forces for long life

INTERNAL ANTI-ROTATE

Composite bearings prevent rotation of the thrust tube

ADVANCED SCREW TECHNOLOGY

Precision ground planetary roller screws provide the highest force and life ratings available

BREATHER/PURGE PORTS

- Standard feature on RSX actuators
- 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 RSX. Use as Purge Port: positive pressure with air lines and filters ensure contaminants do not enter the interior of the actuator.

MOUNTING OPTIONS

- Front Flange
- Extended Tie Rods
- Trunnion
- Mounting Plates

ROD END OPTIONS

- Rod Clevis
- Threaded Rod (standard)
- Extended Rod

SENSOR OPTIONS

- Solid state NPN, PNP or reed
- Tie Rod Clip

OIL COOLED

- For extended high duty cycle/ high force performance

RSX096P PRESS MODEL

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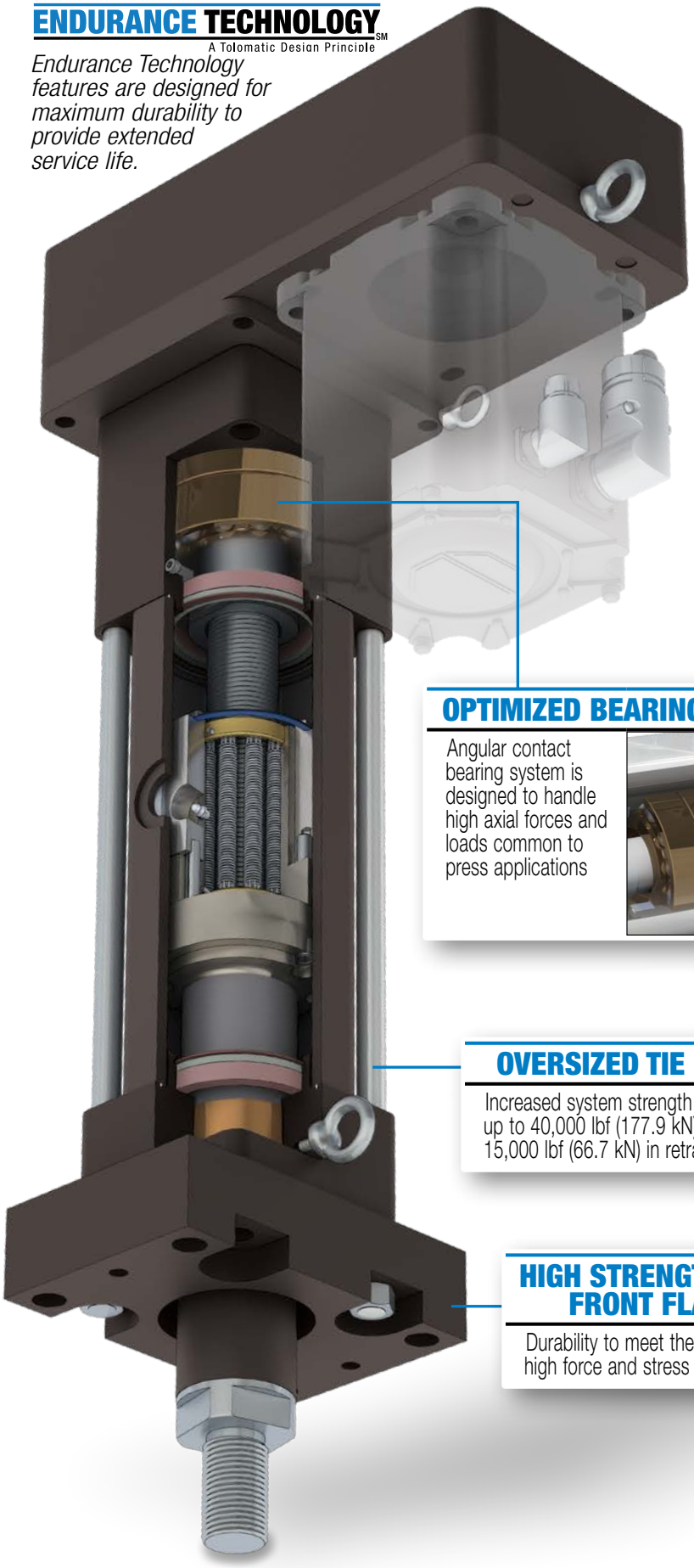
EXCELLENCE IN MOTION
...MAXIMUM DURABILITY

ENDURANCE TECHNOLOGY℠
A Tolomatic Design Principle

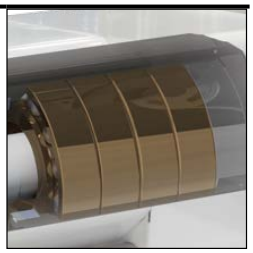
Endurance Technology features are designed for maximum durability to provide extended service life.

The RSX096P press actuator expands the extend force capability to 40,000 lbf (178 kN) making it well suited for applications such as pressing, riveting, clinching and many others. The RSX096P press model has all the features of the standard RSX on pages 4 & 5 plus oversized tie rods, a bearing system optimized for high force extend, and a high strength steel front flange.



OPTIMIZED BEARING SYSTEM

Angular contact bearing system is designed to handle high axial forces and loads common to press applications



OVERSIZED TIE RODS

Increased system strength to handle up to 40,000 lbf (177.9 kN) in extend; 15,000 lbf (66.7 kN) in retract

HIGH STRENGTH STEEL FRONT FLANGE

Durability to meet the demands of high force and stress applications

Fast delivery Built-to-Order

RSX096 OIL COOLED OPTION

Contact Tolomatic for RSX080 & RSX128 Oil Cooled Option

Tolomatic™ EXCELLENCE IN MOTION
…MAXIMUM DURABILITY

RSX ACTUATORS

- An ideal choice for replacing hydraulic cylinders
- Available for forces up to 50,000 lbf (222 kN)
- Designed for 100% duty cycle, rugged service and long life

OIL COOLED OPTION

- Provides up to 2 times the work capacity compared to standard grease RSX actuators.

ENDURANCE TECHNOLOGY℠
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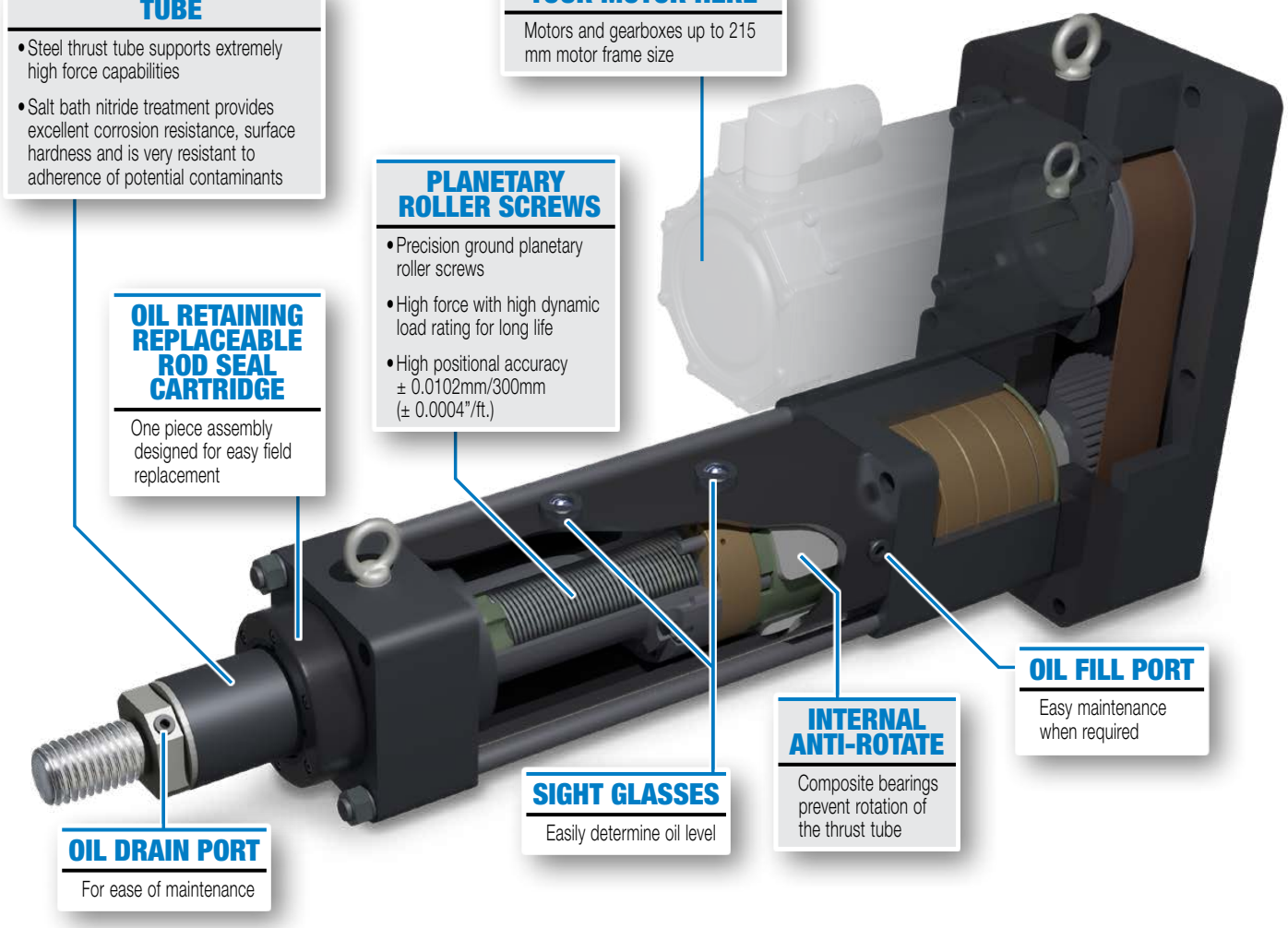
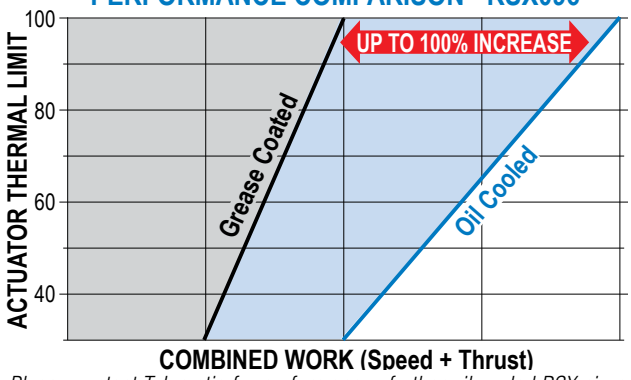


What does Oil Cooled mean?

An unpressurized synthetic oil bath around the screw and nut replaces the standard (extreme temperature and pressure rated) grease. The oil bath efficiently reduces internal temperatures while simultaneously providing lubrication.

PERFORMANCE COMPARISON - RSX096



Please contact Tolomatic for performance of other oil cooled RSX sizes

FOOD GRADE RSX

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

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...MAXIMUM DURABILITY

The food grade RSX has all the features of the RSX shown on the previous pages plus additional features that are suited to challenging environments: 316 Stainless steel thrust rod, rod end, tie rods, fasteners; food grade white paint; IP67 rating; and food grade grease. The food grade RSX is a great option for the food & beverage processing environment. Contact Tolomatic for lead time and application review.

STAINLESS STEEL MOTOR MOUNTING PLATE

316 series stainless steel for corrosion resistance

SMOOTH BODY DESIGN

Fewer collection points for contaminants in wash-down environments

STAINLESS STEEL RODS

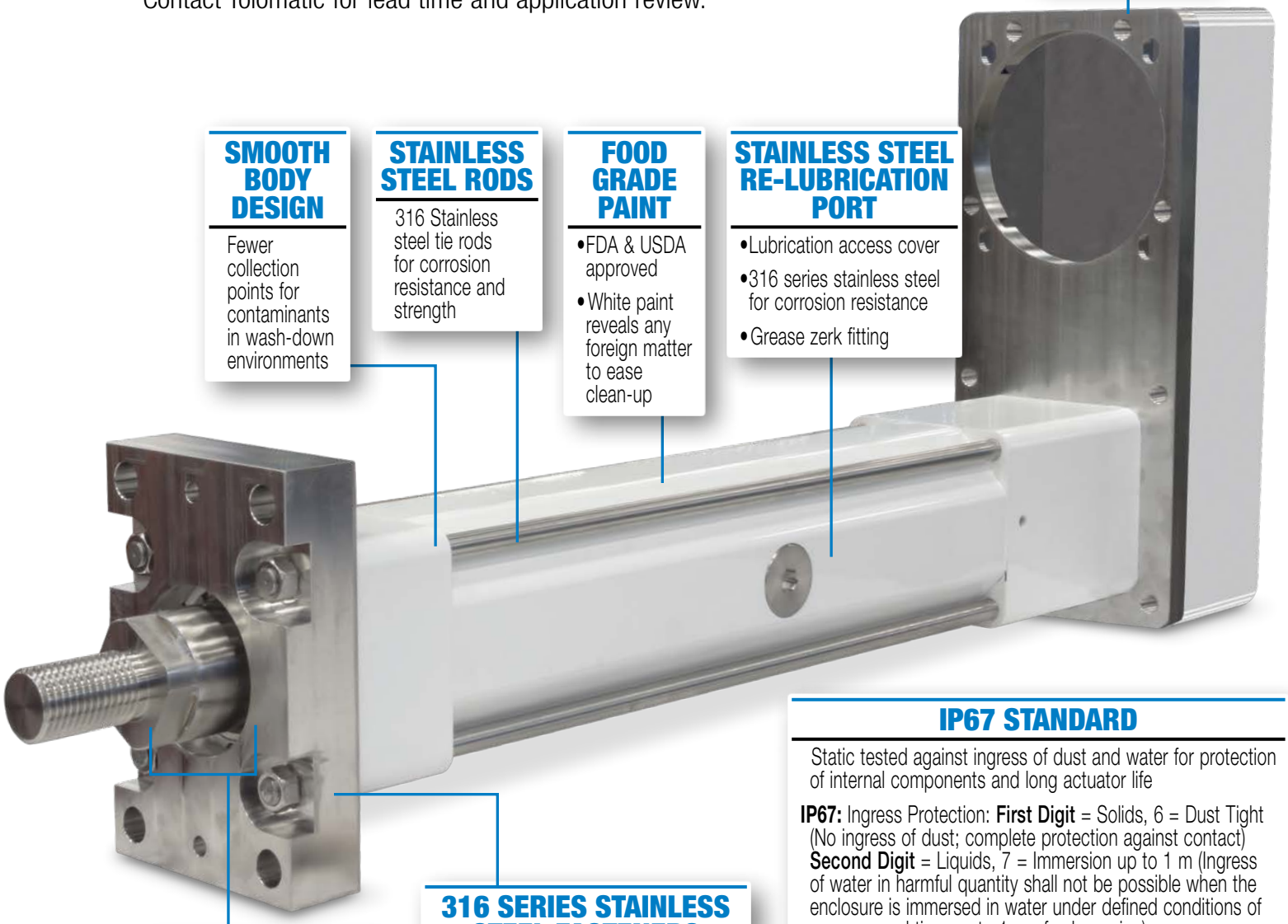
316 Stainless steel tie rods for corrosion resistance and strength

FOOD GRADE PAINT

- FDA & USDA approved
- White paint reveals any foreign matter to ease clean-up

STAINLESS STEEL RE-LUBRICATION PORT

- Lubrication access cover
- 316 series stainless steel for corrosion resistance
- Grease zerk fitting



IP67 STANDARD

Static tested against ingress of dust and water for protection of internal components and long actuator life

IP67: Ingress Protection: **First Digit** = Solids, 6 = Dust Tight (No ingress of dust; complete protection against contact) **Second Digit** = Liquids, 7 = Immersion up to 1 m (Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time up to 1 m of submersion)

Contact Tolomatic for lead time and application review of Food Grade RSX

STAINLESS STEEL THRUST ROD & ROD END

Corrosion resistant 316 series stainless steel thrust rod and rod end

316 SERIES STAINLESS STEEL FASTENERS

- Stainless steel fasteners for corrosion resistance
- Hex bolts for fewer collection points for contaminants in wash-down environments

RSX Extreme Force, Hydraulic Class Electric Actuator

Specifications

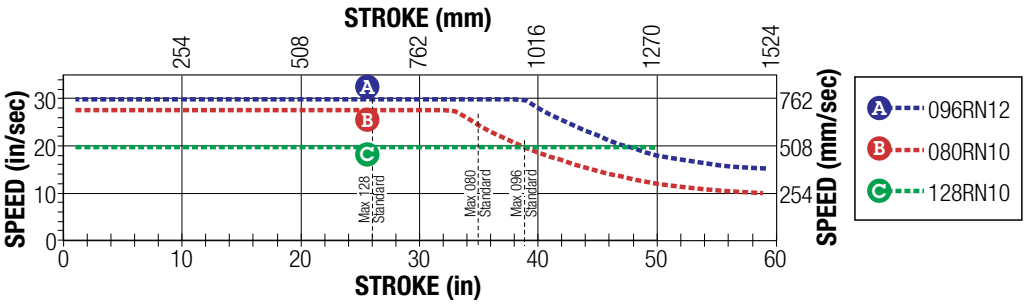
RSX SIZE	MIN. STROKE	MAX. STROKE STANDARD	MAX. STROKE EXTENDED*	MAX. STROKE TRR STANDARD	MAX. STROKE TRR EXTENDED*	SCREW CODE	SCREW LEAD	LEAD ACCURACY	BACK–LASH	MAX. FORCE	MAX. SPEED	DYNAMIC LOAD RATING	DYNAMIC TORQUE TO OVERCOME FRICTION
	mm	mm	mm	mm	mm		mm/rev	mm/300mm	mm	kN	mm/sec	kN	N-m
080	75	890	1500	820	1430	RN10	10.00	0.01	0.030	80.07	701	173.1	6.21
096	75	960	1500	880	1420	RN12	12.00	0.01	0.030	133.45†	759	269.3	6.21
096P	75	450	—	—	—	RN12	12.00	0.01	0.030	177.93**	759	269.3	6.21
128◊	75	660	1230	550	1120	RN10	10.00	0.01	0.030	222.41	500	442.7	8.47
	in	in	in	in	in		turns/in	in/ft	in	lbf	in/sec	lbf	lbf-in
080	2.95	35.0	59.1	32.3	56.3	RN10	2.54	0.0004	0.0012	18,000	27.6	38,914	55.0
096	2.95	37.8	59.1	34.6	55.9	RN12	2.12	0.0004	0.0012	30,000†	29.9	60,541	55.0
096P	2.95	17.7	—	—	—	RN12	2.12	0.0004	0.0012	40,000**	29.9	60,541	55.0
128◊	2.95	26.0	48.4	21.7	44.1	RN10	2.54	0.0004	0.0012	50,000	19.7	99,519	75.0

* Any stroke length above standard and up to max. extended stroke length, may require longer production time, contact Tolomatic.
** Max. force only in extend (retract force 15,000 lbf; 66.7 kN) TRR = Trunnion option †Requires HT1 Option
◊ RSX128P now available with press capability up to 60,000 lbf (266.9kN) Contact Tolomatic for more information.

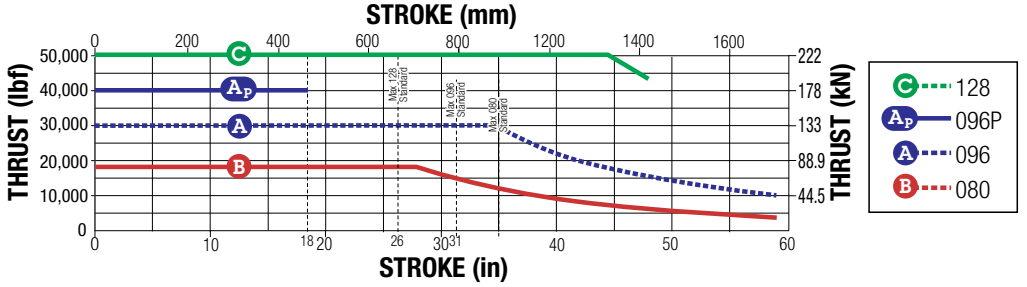
RSX SIZE	SCREW CODE	INERTIA BASE ACTUATOR LMI	INERTIA BASE ACTUATOR RP1 ST	INERTIA BASE ACTUATOR RP1HT	INERTIA BASE ACTUATOR RP2 ST	INERTIA BASE ACTUATOR RP2 HT	INERTIA PER UNIT	WEIGHT BASE ACTUATOR LMI	WEIGHT BASE ACTUATOR RP1 ST	WEIGHT BASE ACTUATOR RP1HT	WEIGHT BASE ACTUATOR RP2 ST	WEIGHT BASE ACTUATOR RP2 HT	WEIGHT PER UNIT
		BASE ACTUATOR kg-m² x 10⁻⁴					PER UNIT kg-m² x 10⁻⁴	BASE ACTUATOR kg					PER UNIT
		LMI	RP1 ST	RP1HT	RP2 ST	RP2 HT	per mm	LMI	RP1 ST	RP1HT	RP2 ST	RP2 HT	kg per mm
080	RN10	56.9	102.8	102.8	42.0	42.0	0.02	35.16	40.81	40.81	40.77	40.77	0.03
096	RN12	178.7	216.2	253.7	92.4	100.5	0.04	65.60	73.13	75.23	73.60	74.11	0.04
096P	RN12	178.7	216.2	253.7	92.4	100.5	0.04	68.85	—	80.19	—	79.07	0.04
128	RN10	708.8	676.8	676.8	269.6	269.6	0.11	192.10	207.70	207.70	280.40	280.40	0.08
		lb-in²					lb-in² per in	lb					lb per in
080	RN10	19.4	35.13	35.13	14.36	14.36	0.15	77.51	89.96	89.96	89.88	89.88	1.72
096	RN12	61.1	73.87	86.70	31.59	34.19	0.33	144.63	161.22	165.86	162.27	163.38	2.31
096P	RN12	61.1	73.87	86.70	31.59	34.19	0.33	151.78	—	176.78	—	174.32	2.40
128	RN10	242.2	231.29	231.29	92.11	92.11	0.98	423.60	457.80	457.80	459.40	459.40	4.40

TEMP. RANGE: Standard 4° to 54°C (40° to 130°F). For extended ranges -30C° to 60°C (-22° to 140°F) contact Tolomatic for application review.

SIZE: ALL: CRITICAL SPEED CAPACITIES*



SIZE: ALL: SCREW BUCKLING LOAD*



*NOTE: When using Trunnion Mount, (TRR) consider the stroke to be longer when determining Critical Speed and Buckling Load:

	mm	in
RSX080	68.1	2.68
RSX096	72.4	2.85
RSX128	108.0	4.25

RSX Standard Actuators Expected Life:

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

$\mathbf{P_e}$ = 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:

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

$\mathbf{P_e}$ = Equivalent load (lbf) or *(N)*

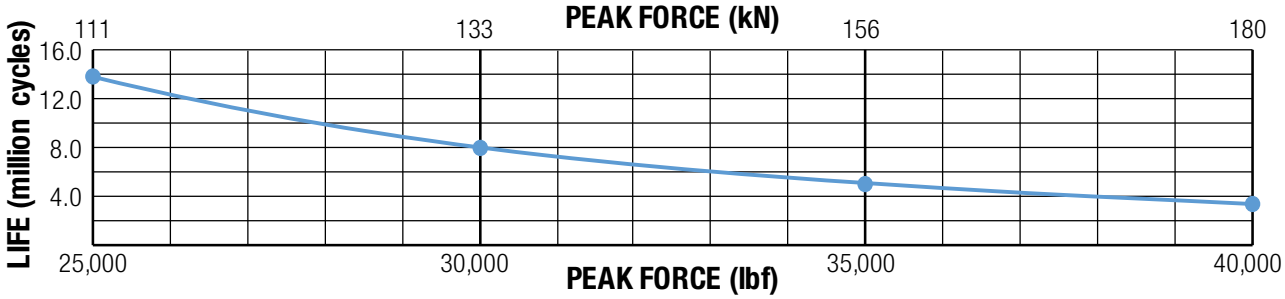
$\mathbf{P_n}$ = Each increment at different load (lbf) or *(N)*

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

$\mathbf{L_n}$ = Each increment of stroke at different load (in) or *(mm)*

RSX096P Press Model Expected Life:

The RSX096P (RSX Press Model) L10 expected life calculation is modified to consider only high force press (or similar) cycles. The calculation is modified because in applications such as pressing (or similar), repeated high force cycles on the same position of the roller screw will focus the stress in one area or location which may limit the life of the device. In the standard L10 calculation, the lower force motion segments may significantly lower the equivalent load leading to an inflated life estimation. This modified L10 expected life calculation for press (or similar) applications with the high force segment over a distance of one screw lead or less results in the following life estimation graph:



NOTE: The L10 life estimation method does not include failures caused by other conditions such as contamination, misalignment, improper lubrication and exceeding actuator specifications

RE-LUBRICATION RECOMMENDATION:

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.

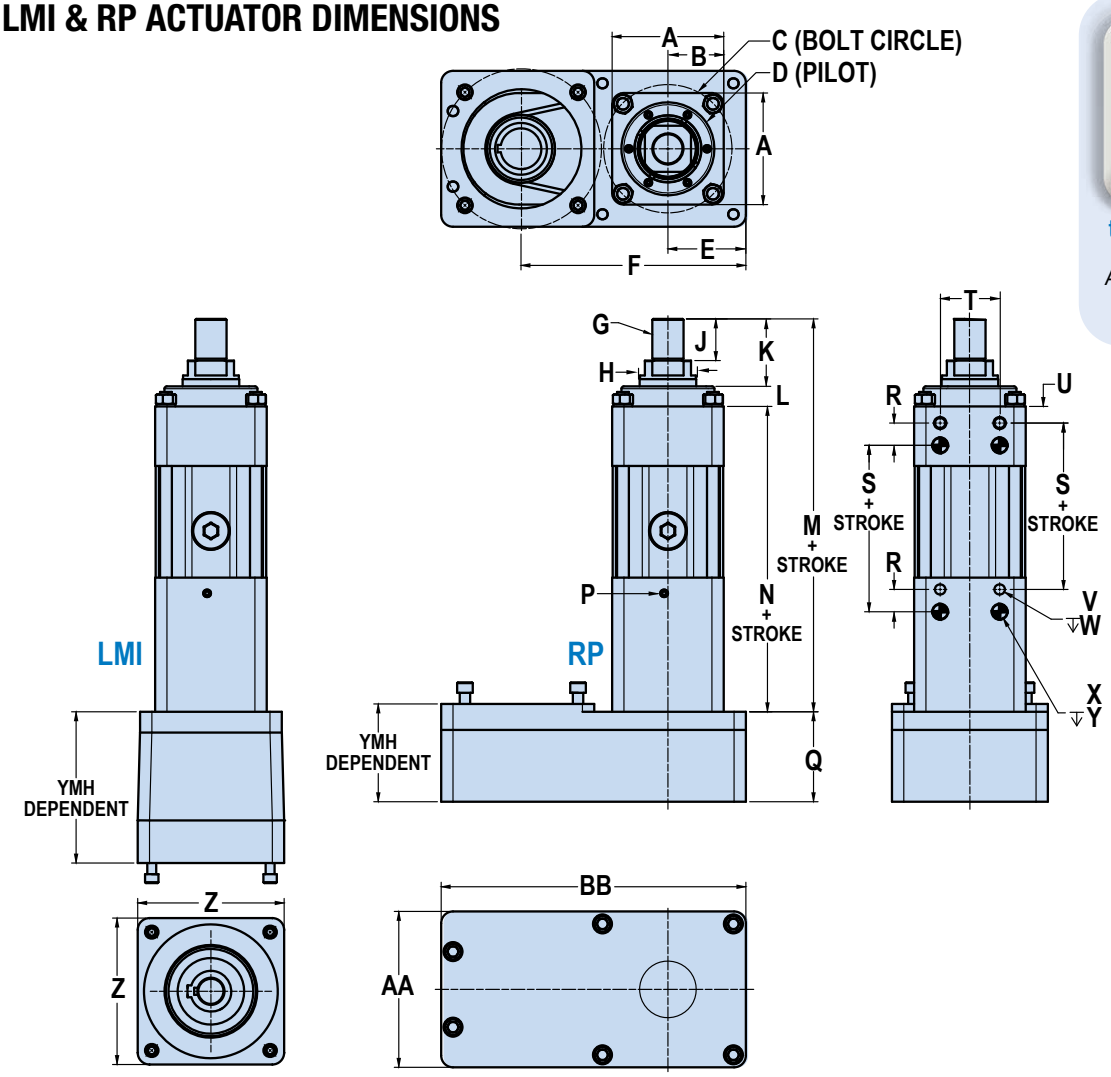
Re-lubricate with Tolomatic Grease into the grease port located on the side of the actuator.

For RSX096 OIL Option refer to the RSX Oil Cooled Option Operation and Maintenance Addendum (https://www.tolomatic.com/storyslab?resid=3483)

	RSX080	RSX096(P)	RSX128
Quantity (g)	8.0 + (0.020 x Stroke^{mm})	9.5 + (0.025 x Stroke^{mm})	12.0 + (0.027 x Stroke^{mm})
Quantity (oz)	0.28 + (0.018 x Stroke^{in})	0.34 + (0.022 x Stroke^{in})	0.42 + (0.024 x Stroke^{in})

Stroke^{mm} = Stroke length in millimeters Stroke^{in} = Stroke length in inches

LMI & RP ACTUATOR DIMENSIONS



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

	080	096	128
A	135.0	150.0	220.0
B	67.5	75.0	110.0
C	150.00	171.0	250.0
D	110.00 (+0.00) (-0.03)	125.00 (+0.00) (-0.03)	175.0 (+0.00) (-0.03)
E	88.9	104.8	145.5
F	RP1		
	272.9	304.8	425.6
	RP2		
	271.1	302.3	427.2
G	STANDARD		
	M36 x 3.0-6g	M42 x 4.5-6g	M64 x 3.0-6g
Hø	63.388 / 63.449	76.093 / 76.149	101.488 / 101.549
THREAD LENGTH			
J	60.0	69.9	105.0
FULL RETRACT			
K	95.0	104.8	165.1
L	27.0	27.0	33.0
M	474.7	601.1	803.9
N	352.7	469.2	605.8

	080	096	128
P	RC 1/8 -28 X 38.1 DP (Plugged)	RC 1/8 -28 X 38.1 DP (Plugged)	RC 1/4 -19 X 38.1 DP (Plugged)
Q	96.0	124.7	184.2
R	30.0	30.0	40.0
S	210.9	282.4	369.0
T	70.0	80.0	115.0
U	18.0	22.3	35.0
V	M12 x 1.75-6H	M16 x 2.0-6H	M20 x 2.5-6H
W	↧ 18.0 (4)	↧ 20.0 (4)	↧ 20.0 (4)
X	16.025 16.012	20.025 20.013	20.025 20.013
Y	↧ 15.0 (4)	↧ 15.0 (4)	↧ 20.0 (4)
Z	152.4	196.9	287.8
AA	177.8	209.6	291.1
BB	355.6	409.6	589.8

Dimensions in millimeters

	080	096	128
A	*5.31*	*5.91*	*8.66*
B	*2.66*	*2.95*	*4.33*
C	*5.905*	*6.73*	*9.84*
D	*4.331 (+0.000) (-0.001)*	*4.921 (+0.000) (-0.001)*	*6.89 (+0.000) (-0.001)*
E	*3.50*	*4.13*	*5.73*
F	RP1		
	10.74	*12.00*	*16.75*
	RP2		
	10.67	*11.90*	*16.82*
G	SR1 OPTION		
	1½-12 UN-2A	*1⅞-12 UN-2A*	*2½-8 UN-2A*
Hø	*2.4956 / 2.4980*	*2.9958 / 2.9980*	*3.9956 / 3.9980*
THREAD LENGTH			
J	*2.36*	*2.75*	*4.13*
FULL RETRACT			
K	*3.74*	*4.13*	*6.50*
L	*1.06*	*1.06*	*1.30*
M	*18.69*	*23.66*	*31.65*
N	*13.89*	*18.47*	*23.85*

	080	096	128
P	RC 1/8 -28 X 38.1 DP (Plugged)	RC 1/8 -28 X 38.1 DP (Plugged)	RC 1/4 -19 X 38.1 DP (Plugged)
Q	*3.78*	*4.91*	*7.25*
R	*1.18*	*1.18*	*1.57*
S	*8.30*	*11.12*	*14.53*
T	*2.76*	*3.15*	*4.53*
U	*0.71*	*0.88*	*1.38*
V	M12 x 1.75-6H	M16 x 2.0-6H	M20 x 2.5-6H
W	↧ *.71 (4)*	↧ *.79 (4)*	↧ *.79 (4)*
X	*Ø.6309 Ø.6304*	*Ø.7884 Ø.7879*	*Ø.7884 Ø.7879*
Y	↧ *.59 (4)*	↧ *.59 (4)*	↧ *.79 (4)*
Z	*6.00*	*7.75*	*11.33*
AA	*7.00*	*8.25*	*11.46*
BB	*14.00*	*16.13*	*23.22*

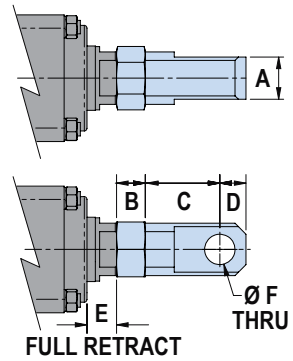
Dimensions in inches

RSX Extreme Force, Hydraulic Class Electric Actuator

SIZE: **ALL**

DIMENSIONS

CLEVIS OPTION (CLV)



	080	096	128
A	40.00 39.59	50.00 49.59	60.00 59.26
B	29.0	34.0	51.0
C	75.0	88.3	137.0
D	25.0	31.0	45.0
E	35.0	35.0	61.2
F	28.05 28.00	36.06 36.00	45.06 45.00

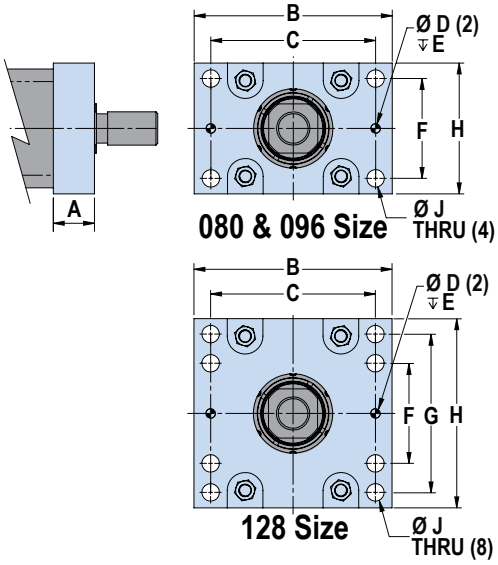
Dimensions in millimeters

	080	096	128
A	*1.575* *1.559*	*1.969* *1.953*	*2.362* *2.333*
B	*1.14*	*1.34*	*2.01*
C	*2.95*	*3.48*	*5.39*
D	*0.98*	*1.22*	*1.77*
E	*1.38*	*1.38*	*2.41*
F	*1.104* *1.102*	*1.420* *1.417*	*1.774* *1.772*

Dimensions in inches

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

FRONT FLANGE OPTION (FFG)



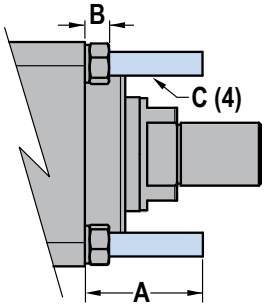
	080	096	128
A	42.0	62.0	85.0
B	225.0	250.0	360.0
C	180.0	208.0	300.0
D	10.013 10.000	12.025 12.013	20.033 20.013
E	12.0	12.0	20.0
F	100.0	126.0	190.0
G	–	–	
H	150.0	165.0	245.0
J	18.0	22.0	26.2

Dimensions in millimeters

	080	096	128
A	*1.65*	*2.44*	*3.35*
B	*8.86*	*9.84*	*14.17*
C	*7.09*	*8.19*	*11.81*
D	*0.3942* *0.3937*	*0.4734* *0.4729*	*0.7887* *0.7879*
E	*0.47*	*0.47*	*0.798*
F	*3.94*	*4.96*	*7.48*
G	–	–	
H	*5.91*	*6.50*	*9.65*
J	*0.71*	*0.87*	*1.03*

Dimensions in inches

EXTENDED TIE ROD OPTION (XT)

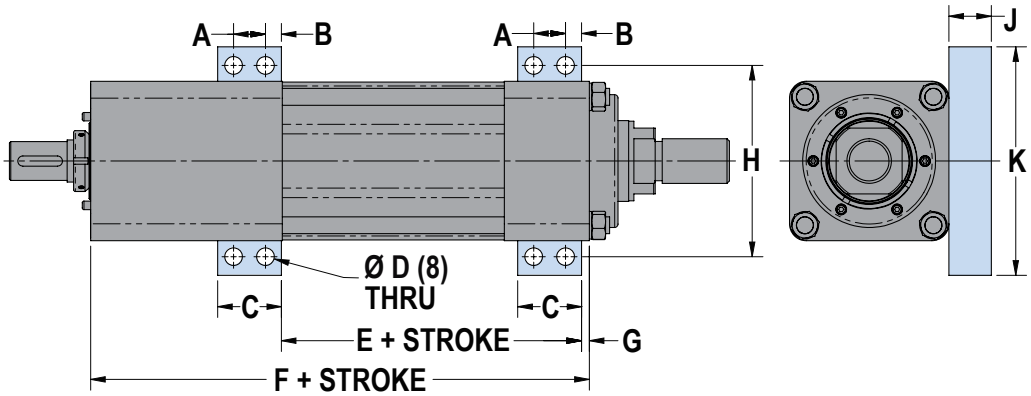


		080	096	128
A MIN	mm	50.0	50.0	50.0
	in	*1.97*	*1.97*	*1.97*
A MAX	mm	100.0	100.0	100.0
	in	*3.94*	*3.94*	*3.94*
B	mm	13.3	15.3	26.9
	in	*0.52*	*0.60*	*1.06*
C (4)		M14 x 2.0-6g	M16 x 1.5-6g	M24 x 3.0-6g

A = Customer Specified Length

IMPERIAL THREAD OPTION (SRI)

MOUNTING PLATE OPTION (MP2) DIMENSIONS



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

	080	096	128
A	30.0	30.0	40.0
B	12.5	15.0	22.5
C	55.0	60.0	85.0
D	12.7	16.7	21.0
E	210.9	282.4	477.0
F	352.7	469.2	712.6
G	5.5	7.3	12.5

	080	096	128
H	170.0	180.0	260.0
J	31.4	40.0	45.0
K	200.0	215.0	305.0

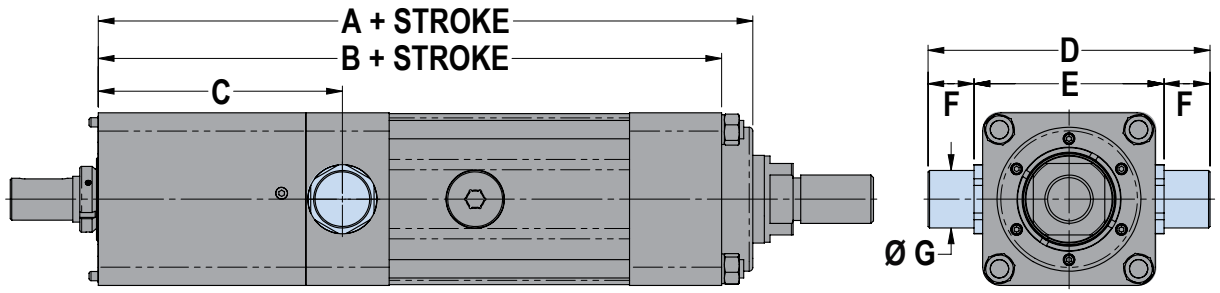
Dimensions in millimeters

	080	096	128
A	*1.18*	*1.18*	*1.57*
B	*0.49*	*0.59*	*0.89*
C	*2.17*	*2.36*	*3.35*
D	*0.50*	*0.66*	*0.83*
E	*8.30*	*11.12*	*18.78*
F	*13.89*	*18.47*	*28.06*
G	*0.22*	*0.29*	*0.49*

	080	096	128
H	*6.69*	*7.09*	*10.24*
J	*1.24*	*1.57*	*1.77*
K	*7.87*	*8.46*	*12.01*

Dimensions in inches

TRUNNION OPTION (TRR) DIMENSIONS



	080	096	128
A	447.8	568.6	746.7
B	420.8	541.6	713.7
C	171.5	212.1	268.1
D	214.0	245.0	340.0
E	150.0	165.0	220.0

	080	096	128
F	32.0	40.0	50.0
G	39.98 39.95	49.98 49.94	62.97 62.92

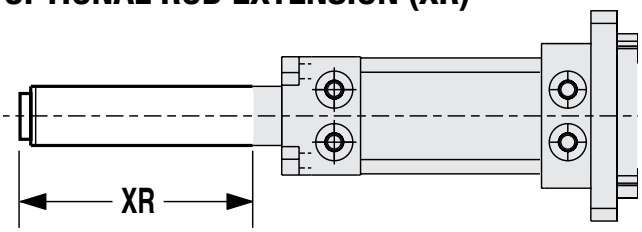
Dimensions in millimeters

	080	096	128
A	*17.63*	*22.39*	*29.40*
B	*16.57*	*21.32*	*28.10*
C	*6.75*	*8.35*	*10.56*
D	*8.43*	*9.65*	*13.39*
E	*5.91*	*6.50*	*8.66*

	080	096	128
F	*1.26*	*1.57*	*1.97*
G	*1.574* *1.573*	*1.968* *1.966*	*2.479* *2.477*

Dimensions in inches

OPTIONAL ROD EXTENSION (XR)



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: Please consult Tolomatic if your application requires rod extension length greater than 100 mm (3.9 in).

RSX Extreme Force, Hydraulic Class Electric Actuator

SWITCHES

RSX actuators 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									

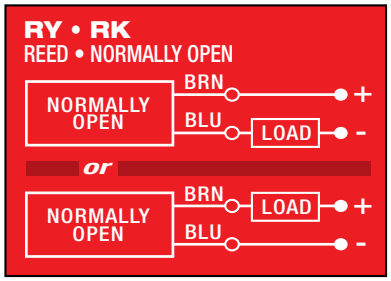
*QD = Quick-disconnect Enclosure classification IEC 529 IP67 (NEMA 6) CABLES: Robotic grade, oil resistant polyurethane jacket, PVC insulation

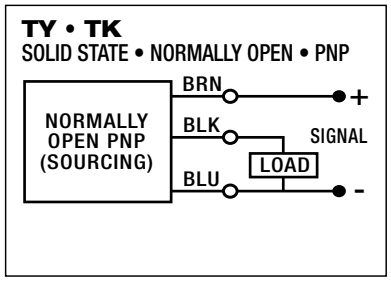
⚠ **WARNING: Do not exceed power rating (Watt = Voltage x Amperage). Permanent damage to sensor will occur.

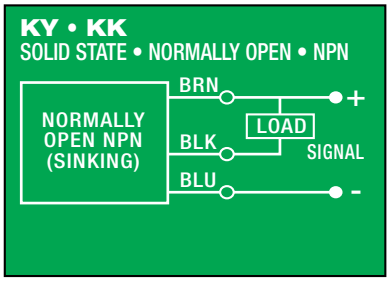
SWITCH INSTALLATION

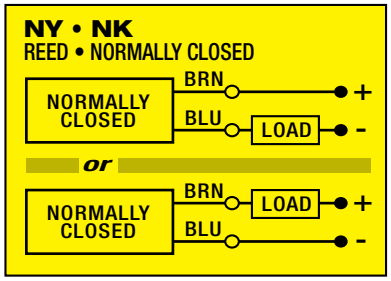
Place switch bracket onto any one of the four tie rods that run the length of the extruded tube. Insert the switch with set screw and the word "Tolomatic" facing up and slide into the mating slot on the bracket. Position the bracket with the switch to the exact location desired, with the bracket tight to the surface of the extrusion, then lock the bracket securely into place by tightening the set screw with the Allen wrench provided. Then tighten the switch into the bracket with a small slotted screwdriver.

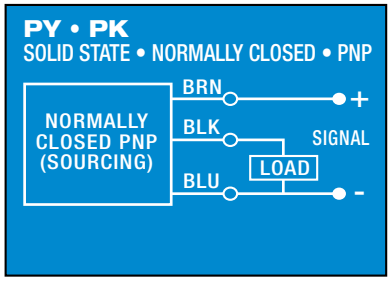
WIRING DIAGRAMS

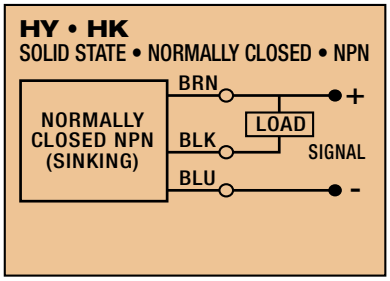


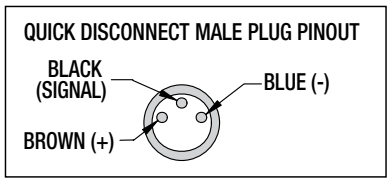


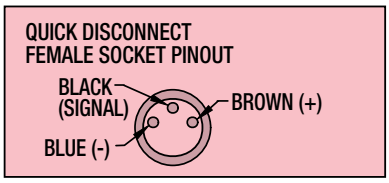






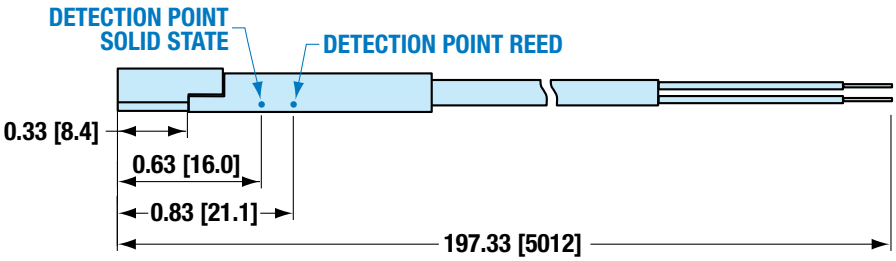




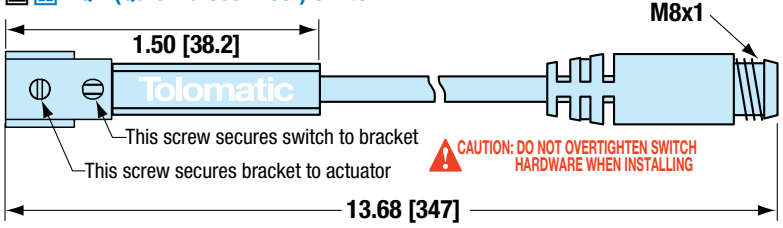


SWITCH DIMENSIONS

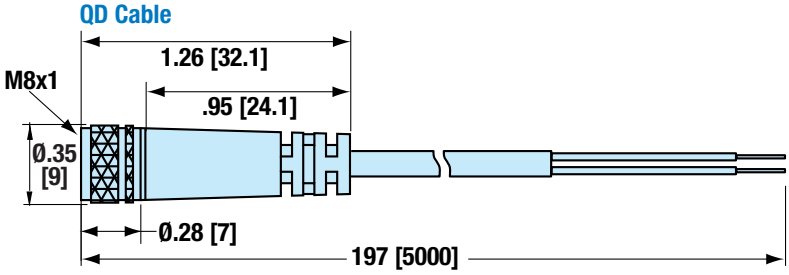
☐ Y - direct connect



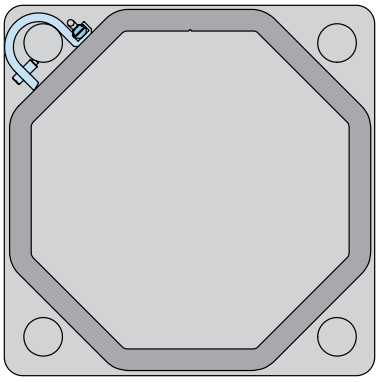
☐ K - QD (Quick-disconnect) switch



QD Cable



SWITCH MOUNTING



The switch bracket and switch does not extend beyond the profile of the RSX heads.

Electric Rod-Style Actuator Application 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

☐ Incline ° α _____

☐ Vertical Motor End Up

☐ Vertical Motor End Down

APPLICATION ENVIRONMENT

☐ Caustic Washdown

☐ Ingress Protection

☐ Nonstandard Temperature: _____ ☐ °F ☐ °C

Actuator Environment Description: _____

_____

_____

_____

ACTUATOR REQUIREMENTS

Stroke Length: _____ ☐ in ☐ mm

Repeatability: _____ ☐ in ☐ mm

Number of Cycles: _____ ☐ per minute ☐ per sec

Actuator to Hold Position: ☐ required ☐ not required

If Hold Required: ☐ After Move ☐ During Power Loss

ADDITIONAL DETAILS

_____

_____

_____

_____

MOTION AND FORCES

EXTEND

Move Distance: _____ ☐ in ☐ mm

Max Speed: _____ ☐ in/sec ☐ mm/sec

Move Time: _____ ☒ sec

Dwell Time After Move: _____ ☒ sec

RETRACT

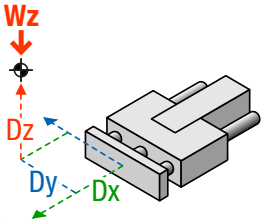
Move Distance: _____ ☐ in ☐ mm

Max Speed: _____ ☐ in/sec ☐ mm/sec

Move Time: _____ ☒ sec

Dwell Time After Move: _____ ☒ sec

LOAD



Load: _____ ☐ lb ☐ kg

Supported by Actuator: _____ %

Moment Prevention: ☐ Guided/Supported

Distance From Tooling Plate to Load Center of Gravity:

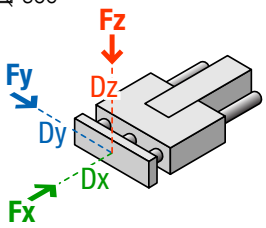
Load dx: _____ ☐ in ☐ mm

Load dy: _____ ☐ in ☐ mm

Load dz: _____ ☐ in ☐ mm

Assign to Moves: ☐ Extend ☐ Retract

FORCE



Force: _____ ☐ lbf ☐ N

Force Direction: ☐ Toward ☐ Away

Direction of Applied Force: ☐ Fx ☐ Fy ☐ Fz

Center of Applied Force:

Force dx: _____ ☐ in ☐ mm

Force dy: _____ ☐ in ☐ mm

Force dz: _____ ☐ in ☐ mm

Assign to Moves: ☐ Extend ☐ Retract

MOTOR DETAILS

Motor Type: ☐ Third Party Motor ☐ Tolomatic motor

Your Motor Here Code (YMH): YM_____

Additional Motor Information: _____

_____

_____

_____

CONTACT INFORMATION

Name: _____

Company: _____

Address: _____

_____

Email: _____

Phone: _____

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 force in each of its segments.

2 SELECT ACTUATOR SIZE AND SCREW TYPE

Based on the required velocities and forces, select an actuator size including the lead of the roller screw assembly..

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 force does not exceed the critical buckling force for the size of the screw selected.

5 COMPARE APPLICATION'S PEAK PARAMETERS TO PEAK CAPACITY (PEAK REGION) OF SELECTED ACTUATOR

Calculate the application's required peak force and peak velocity and compare to the graphs. The selection must satisfy the application's peak requirements.

6 CONSIDER THERMAL MITIGATION

Determine whether the oil cooled option is necessary based on the calculated screw thermals in the application.

7 CONSIDER LUBRICATION INTERVAL

Evaluate the recommended lubrication interval with respect to the application motion profile.
See page RSX_10 for complete lubrication information.

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 standard range (see page RSX_9), contact Tolomatic.

9 SELECT A MOTOR-ACTUATOR CONFIGURATION

Select an inline or a reverse-parallel motor configuration.

10 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.

11 SELECT A MOTOR

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.

12 SELECT OPTIONAL POSITION SENSORS

12 sensor choices include: reed, solid state PNP or NPN, all in normally open or normally closed, with flying leads or quick-disconnect couplers.

13 SELECT ACTUATOR MOUNTING

Mounting options include: TRN trunnion mount, FFG front flange mount, MP2 mounting plates.

14 SELECT ROD END OPTIONS

Rod end options include: CLV clevis rod end.

sizeit.tolomatic.com
for fast, accurate actuator selection

RSX Extreme Force, Hydraulic Class Electric Actuator

Ordering

ACTUATOR **OPTIONS**

RSX 096 RN12 SM4500 RP1 HT1 FFG OIL CLV XR10 KK2 YM_ _ _

MODEL & MOUNTING

RSX	Rod-Style Actuator,

SIZE

080, 096, 128	
096P	Press Model

NUT/SCREW

SIZE	CODE	LEAD (mm/rev)
080	RN	10
096	RN	12
128	RN	10

STROKE LENGTH

SM_ _ _ Enter desired stroke length in millimeters

Minimum Stroke: 75mm (2.95 in)

SIZE	MAX. STROKE	*TRR
	mm	mm
080	890	820
096	800	725
096P	450	—
128	665	555
	in	in
080	35.03	32.28
096	31.49	28.54
096P	17.71	—
128	26.18	21.85

*TRR = Trunnion Option

Fast delivery Built-to-Order

MOTOR MOUNTING

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

STANDARD OR HIGH TORQUE

ST1*	Standard Actuator
HT1**	High Torque Option

*Only available with RP option on RSX096

**Use sizing software to determine if HT1 is required for torque and motor specifications

TRUNNION MOUNT

TRR* Trunnion mount

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

*Not available for RSX096P

IP67

IP67 Ingress protection (Note: if not specified standard IP65 actuator will be built)

ACTUATOR MOUNTING

For all motor mounts:

FFG	Front Flange Mount
MP2	Mounting Plates (2 required)
XT	Extended Tie Rods (min. 50mm, max. 100mm)

OIL COOLED

OIL For extended high duty cycle/high force performance

NOTE: The RSX actuator with oil cooled option is IP67 rated. To get a motor gasket select IP67 option

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

ROD END

Externally threaded rod end is standard

CLV*	Clevis Rod End
SR1*	Imperial Thread

*Not available for RSX096P

ROD EXTENSION

XR_ _ _ _ Enter desired rod extension in millimeters

NOTE: XR option does not increase the working stroke, only the length of the thrust rod.

NOTE: Please consult Tolomatic if your application requires rod extension length greater than 100 mm (3.9 in).

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

Contact Tolomatic for food grade option lead time and application review.

The Tolomatic Difference Expect More From the Industry Leader:

INNOVATIVE PRODUCTS
Solutions with Endurance Technology℠ for challenging applications.

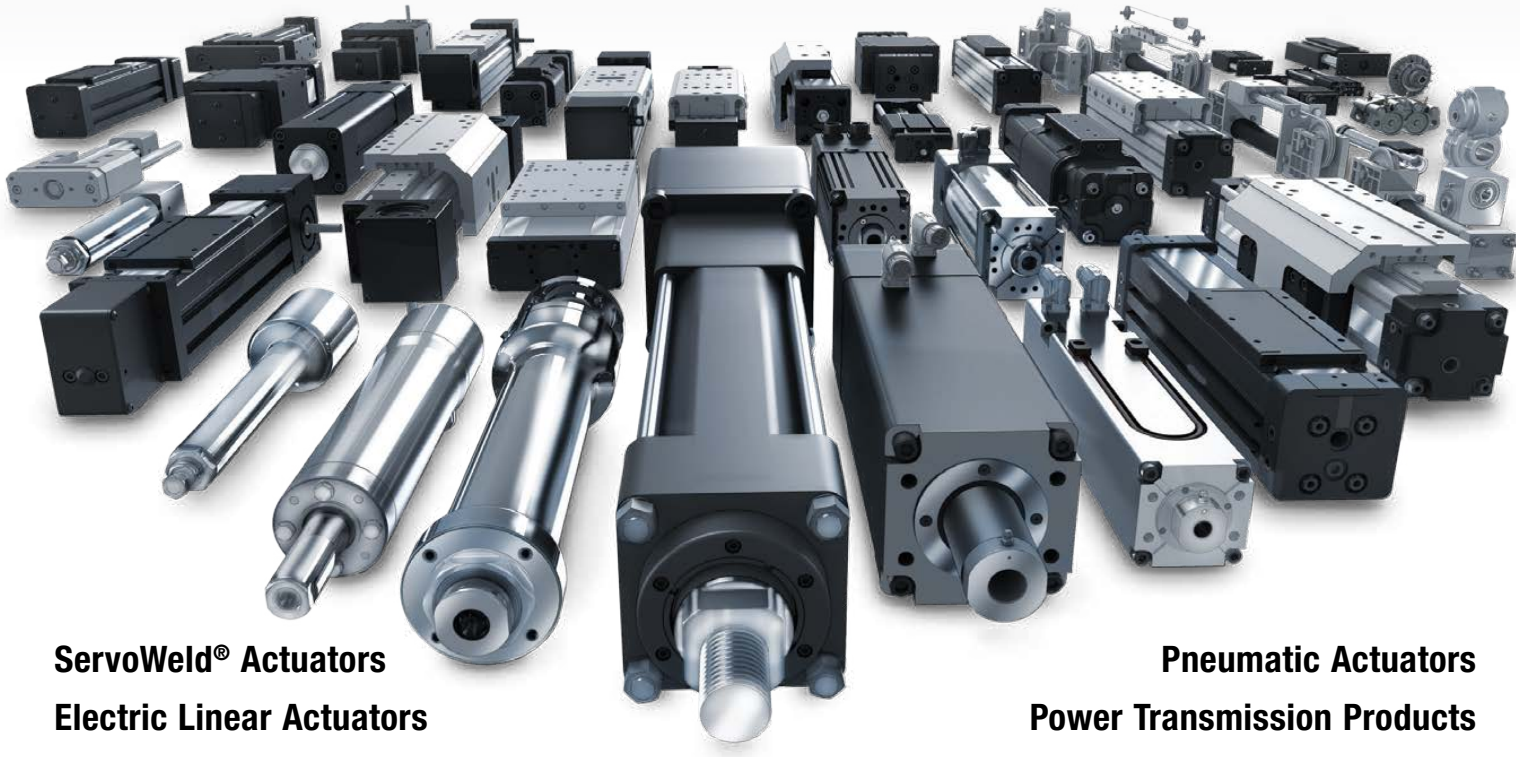
FAST DELIVERY
Built-to-order with configurable stroke lengths and flexible mounting options.

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.



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Electric Linear Actuators
Pneumatic Actuators
Power Transmission Products

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