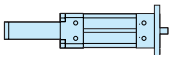
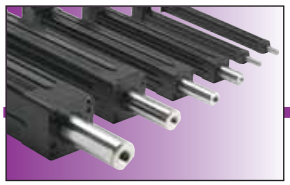
Rod Screw Actuator Technical Data



ROD SCREW

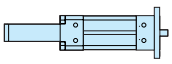
RSA/RSM ROD SCREW ACTUATORS

The following pages contain detailed information about Tolomatic rod type actuators. Visit www.tolomatic.com for the latest updates, Tol-O-Motion Sizing Software, CAD files and software support downloads.



RSA/RSM Rod Screw

OVERVIEW



APPLICATION BENEFITS

- Cost-effective choice for short stroke, high thrust applications
- Multiple mounting options for pivotal mounting flexibility
- Used with externally guided and supported loads

ACTUATOR/MOTOR FACTORS

- Actuator's operating temperature range (40-130° F, 4-54° C) should take into consideration heat generated by the motor and drive, linear velocity and work cycle time.
- For large frame motors or small actuators, cantilevered motors need to be supported, if subjected to continuous rapid reversing duty and/or under dynamic conditions.
- Rod screw actuators are designed to push guided and supported loads and are not meant for applications that require substantial side loading. Please contact the factory for details regarding side loading capabilities.

STANDARD MOUNTING

Mounting holes are provided on the underside of the actuator. and rod ends are internally threaded.

MOTOR MOUNTING

RSA rod screw actuators are configured as an in-line base model or a reverse-parallel base model.

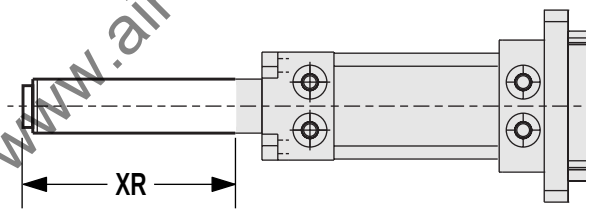
In-line Motor Mounting— motor is internally coupled to the actuator shaft.

Reverse-parallel Motor Mounting—These factory assembled configurations allow offset mounting of the motor to either side of, or below the actuator. Available in a 1:1 drive ratio on RSA12 and 16 series or 1:1 and 2:1 drive ratios for the RSA24, 32, 50 and 64 series, they offer quiet, zero-backlash coupling of the motor to the actuator screw shaft.

GEARHEAD REDUCTION

Gearheads are available for applications requiring reduction for inertia matching or higher torque at lower speeds. High efficiency, single stage, true planetary gearheads are available for the RSA24, 32, 50 and 64 series in 5.5:1 and 10:1 ratios for reduction solutions with most Tolomatic NEMA 23- and 34-frame motors. For gearhead specifications and dimensions, see page F-10 for details.

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.*

The XR dimension in the configuration string (extension + stroke) should not exceed the maximum stroke of the specified actuator. Consult the factory for extensions greater than the maximum stoke length.

MAXIMUM STROKE (in)		MAXIMUM STROKE (mm)	
RSA12	12	RSM12	305
RSA16	18	RSM16	457
RSA24	24	RSM24	610
RSA32	36	RSM32	914
RSA50	48	RSM50	1,219
RSA64	60	RSM64	1,524

SWITCHES

Switches: Reed, dc Hall-effect and ac TRIAC.
See page I-1.

RSA/RSM Rod Screw

OVERVIEW

MOUNTING OPTIONS

Mounting Plates – used when mounting holes on bottom of actuator are not accessible.

Foot Mount – used for mountings other than flush.

Front and Back Flange Mounts – 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

Clevis and Eye Mounts – 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. Clevis and eye mounts are only available on reverse parallel models.

Trunnion Mount – used where space is limited in the rear of the actuator and when pivoting about an axis is required.

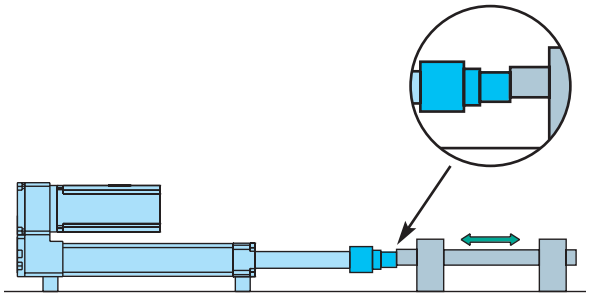
ROD END OPTIONS

Externally Threaded Rod End – an alternative to the standard internally threaded end.

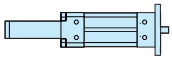
Clevis Rod End – used with the externally threaded rod end when the actuator has to compensate for misalignment or pivot about an axis.

Spherical Rod Eye – allows for slight misalignment between the load and the actuator (radial and angular). Uses a industry-standard bearing.

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



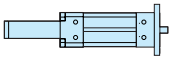
The alignment coupler requires the use of the MET external rod end option.



RSA/RSM Rod Screw

ACME SCREW/NUT COMBINATIONS

ACME SCREW CRITICAL SPEED CAPACITIES

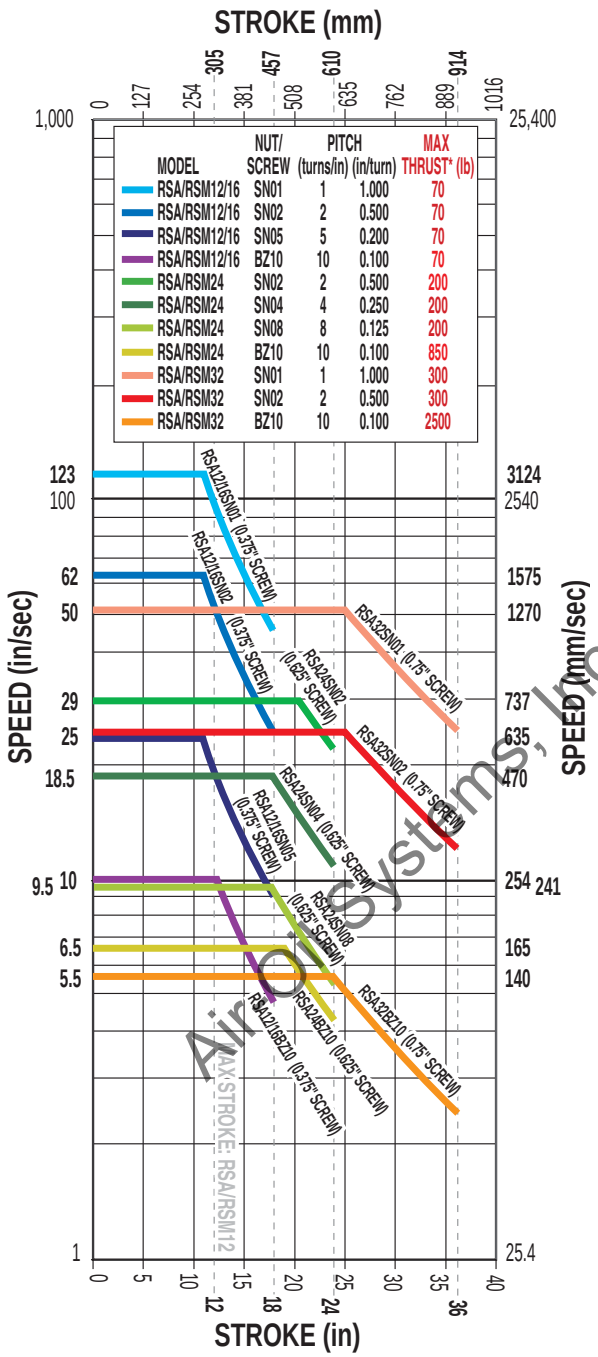


ROD SCREW

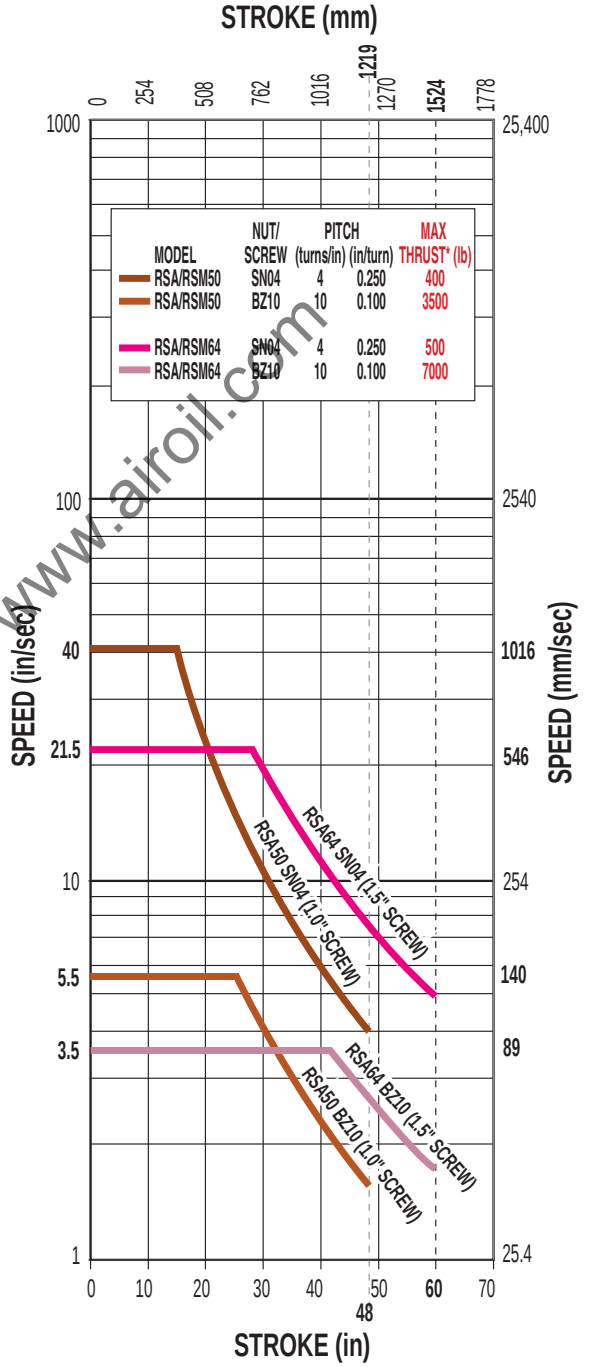
RSA/RSM Series

- Acme screw critical speed capacities

RSA/RSM12, 16, 24, 32: CRITICAL SPEED WITH ENGLISH ACME SCREW



RSA/RSM50, 64: CRITICAL SPEED WITH ENGLISH ACME SCREW



**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

Dotted lines represent maximum stroke for actuator body size.

For Screw PV limits, refer to the individual charts located in the technical section for each actuator body size.

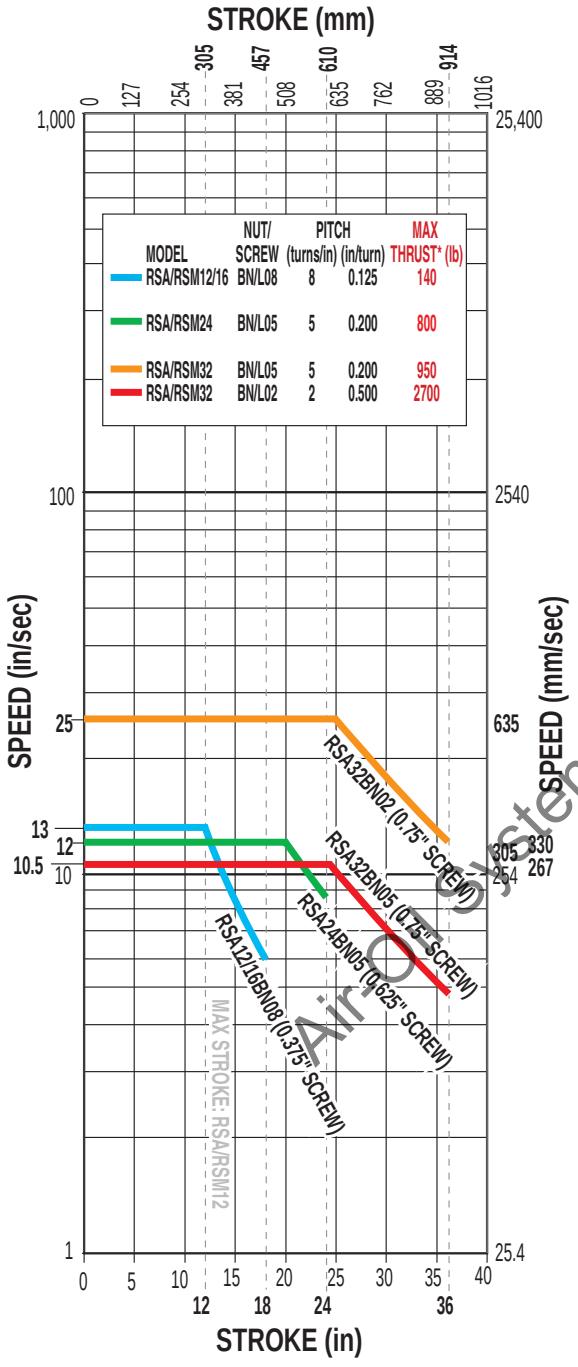
SCREW CODE	*DESCRIPTION*
SN	*Solid Nut*
BZ	*Bronze Nut*

RSA/RSM Rod Screw

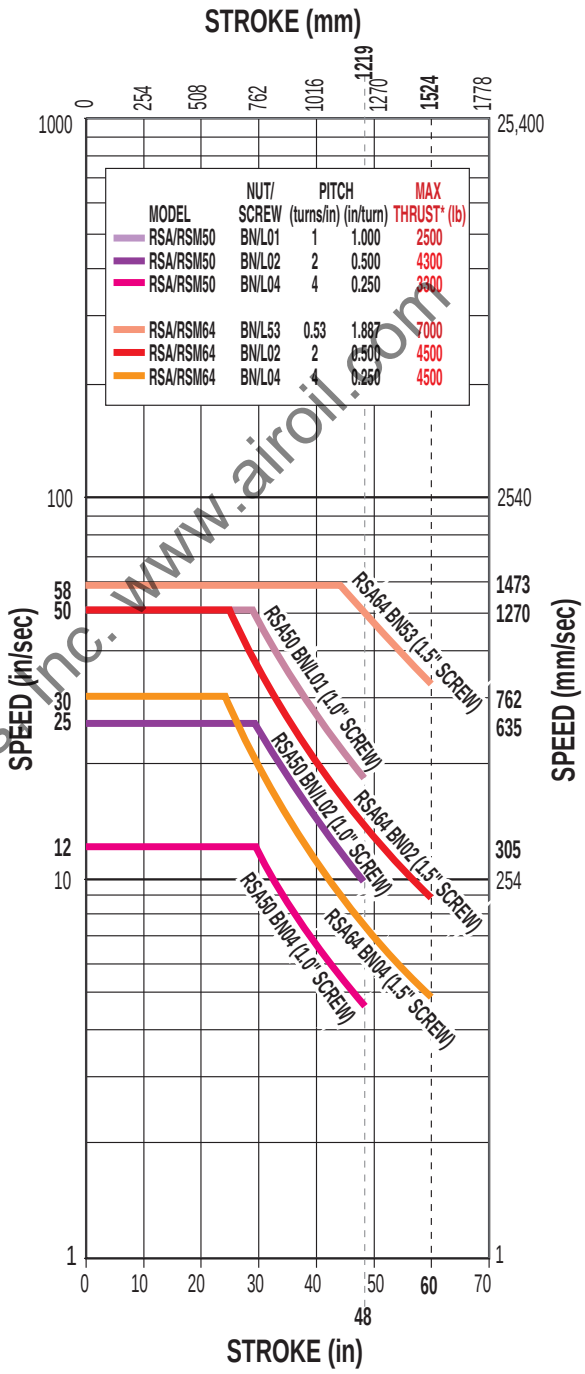
BALL SCREW/NUT COMBINATIONS

BALL SCREW CRITICAL SPEED CAPACITIES

RSA/RSM12, 16, 24, 32: CRITICAL SPEED WITH ENGLISH BALL SCREW



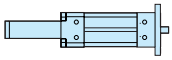
RSA/RSM50, 64: CRITICAL SPEED WITH ENGLISH BALL SCREW



** Maximum thrust reflects 90% reliability for 1 million linear inches of travel.*

Dotted lines represent maximum stroke for screw selections.

SCREW CODE	*DESCRIPTION*
BN	*Ball Nut*
BNL	*Low-backlash Ball Nut*



ROD SCREW

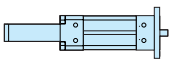
RSA/RSM Series

- Ball screw critical speed capacities

RSA/RSM Rod Screw

BALL SCREW/NUT COMBINATIONS

BALL SCREW LIFE CALCULATIONS

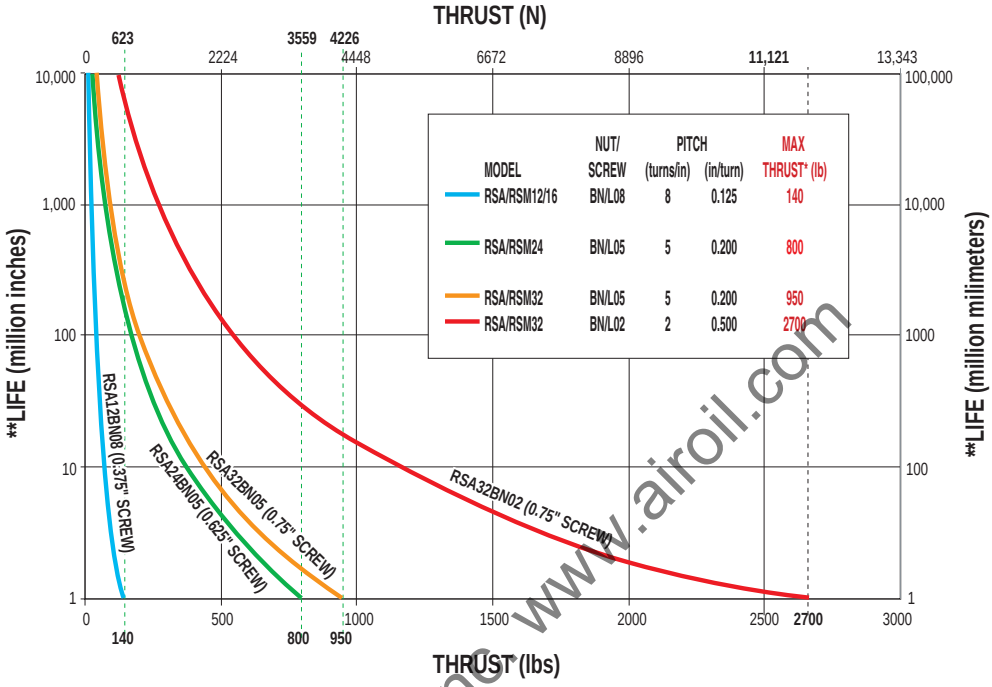


ROD SCREW

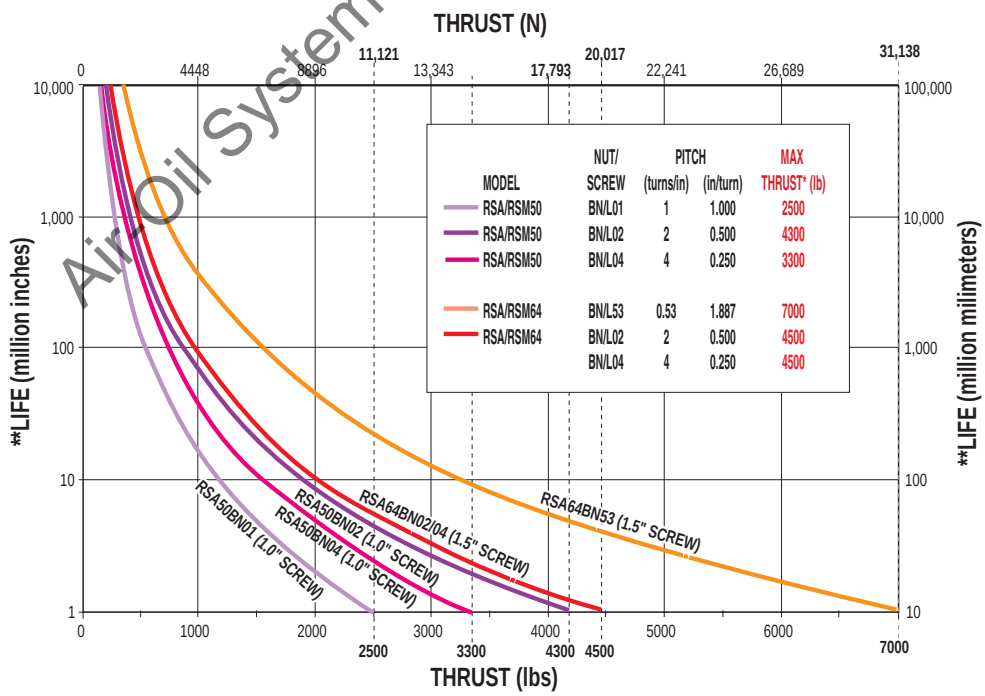
RSA/RSM Series

- Ball screw life calculations

RSA/RSM12, 16, 24, 32: LIFE CAPACITIES WITH ENGLISH BALL SCREW



RSA50, 64: LIFE CAPACITIES WITH ENGLISH BALL SCREW



Maximum thrust reflects 90% reliability for 1 million linear inches of travel.

Dotted lines represent maximum thrust for screw selections.

****Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.***

RSA/RSM Rod Screw

OVERALL SERIES SPECIFICATIONS

RSA SPECIFICATIONS RELATED TO ACTUATOR SIZE AND SCREW SELECTION

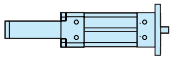
RSA ACTUATORS WITH ENGLISH LEAD SCREWS												
SERIES	SCREW DIA.	SCREW TYPE	TPI	LEAD ACCURACY	BACKLASH	MAXIMUM THRUST*	BASE ACTUATOR INERTIA		INERTIA PER/in OF STROKE	BREAKAWAY TORQUE	MOVING PARTS WEIGHT	
							In Line	Rev. Parallel			Base	Per Inch
	in		turns/in	in/ft	in	lb	lb-in²	lb-in²	lb-in²	lb-in	lb	lb
RSA12	0.38	SN01	1	0.010	0.007	70	0.0044	0.0047	0.0015	0.625	0.11	0.04
		SN02	2	0.006	0.007	70	0.0024	0.0026	0.0008	0.563	0.11	0.04
		SN05	5	0.006	0.007	70	0.0018	0.0020	0.0005	0.500	0.11	0.04
		BZ10	10	0.006	0.008	70	0.0017	0.0019	0.0005	0.500	0.11	0.04
		BN08	8	0.003	0.015	140	0.0017	0.0020	0.0005	0.500	0.19	0.04
		BNL08	8	0.003	0.002	140	0.0017	0.0020	0.0005	0.500	0.19	0.04
RSA16	0.38	SN01	1	0.010	0.007	70	0.0064	0.0065	0.0020	1.313	0.19	0.06
		SN02	2	0.006	0.007	70	0.0028	0.0029	0.0009	1.125	0.19	0.06
		SN05	5	0.006	0.007	70	0.0018	0.0019	0.0006	1.063	0.19	0.06
		BZ10	10	0.006	0.008	70	0.0016	0.0017	0.0005	1.063	0.19	0.06
		BN08	8	0.003	0.015	140	0.0017	0.0018	0.0005	1.000	0.27	0.06
		BNL08	8	0.003	0.002	140	0.0017	0.0018	0.0005	1.000	0.27	0.06
RSA24	0.63	SN02	2	0.005	0.007	200	0.0223	0.0227	0.0051	1.813	0.75	0.14
		SN04	4	0.010	0.007	200	0.0187	0.0192	0.0044	1.688	0.75	0.14
		SN08	8	0.010	0.007	200	0.0178	0.0183	0.0042	1.625	0.75	0.14
		BZ10	10	0.006	0.008	850	0.0177	0.0182	0.0042	1.625	0.75	0.14
		BN05	5	0.003	0.015	800	0.0205	0.0209	0.0043	2.188	1.01	0.14
		BNL05	5	0.003	0.002	800	0.0205	0.0209	0.0043	2.188	1.01	0.14
RSA32	0.75	SN01	1	0.005	0.007	300	0.0774	0.0731	0.0125	3.125	0.97	0.15
		SN02	2	0.005	0.007	300	0.0590	0.0547	0.0096	2.688	0.97	0.15
		BZ10	10	0.006	0.008	2500	0.0531	0.0488	0.0087	3.125	0.97	0.15
		BN02	2	0.004	0.015	2700	0.0723	0.0680	0.0096	2.438	1.44	0.15
		BNL02	2	0.004	0.002	2700	0.0723	0.0680	0.0096	2.438	1.44	0.15
		BN05	5	0.003	0.015	950	0.0647	0.0604	0.0088	2.313	1.44	0.15
		BNL05	5	0.003	0.002	950	0.0647	0.0604	0.0088	2.313	1.44	0.15
RSA50	1.00	SN04	4	0.010	0.007	400	0.2060	0.2027	0.0280	4.250	2.62	0.30
		BZ10	10	0.006	0.008	3500	0.3193	0.3160	0.0351	4.125	2.62	0.30
		BN01	1	0.004	0.002	2500	0.3193	0.3160	0.0351	4.125	3.55	0.30
		BNL01	1	0.004	0.002	2500	0.3193	0.3160	0.0351	4.125	3.55	0.30
		BN02	2	0.004	0.015	4300	0.2519	0.2485	0.0294	3.625	3.55	0.30
		BNLO2	2	0.004	0.002	4300	0.2519	0.2485	0.0294	3.625	3.55	0.30
		BN04	4	0.004	0.015	3300	0.2350	0.2317	0.0280	4.250	3.55	0.30
		BNL04	4	0.004	0.002	3300	0.2350	0.2317	0.0280	4.250	3.55	0.30
RSA64	1.50	SN04	4	0.010	0.007	500	1.5447	1.5043	0.1399	5.375	5.01	0.45
		BZ10	10	0.006	0.008	7000	1.5380	1.4977	0.1393	5.438	5.01	0.45
		BN53	0.53	0.004	0.015	7000	2.4996	2.4592	0.1797	7.188	7.59	0.45
		BNL53	0.53	0.004	0.002	7000	2.4996	2.4592	0.1797	7.188	7.59	0.45
		BN02	2	0.004	0.015	4500	1.8632	1.8229	0.1420	5.313	7.59	0.45
		BNL02	2	0.004	0.002	4500	1.8632	1.8229	0.1420	5.313	7.59	0.45
		BN04	4	0.004	0.015	4500	1.8272	1.7868	0.1399	5.375	7.59	0.45
		BNL04	4	0.004	0.002	4500	1.8272	1.7868	0.1399	5.375	7.59	0.45

SCREW CODE	*DESCRIPTION*
SN	*Solid Nut*
BZ	*Bronze Nut*
BN	*Ball Nut*
BNL	*Low-Backlash Ball Nut*

Contact the factory for higher accuracy and lower backlash options.

* ***For Acme screws, maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

For ball screws, maximum thrust reflects 90% reliability for 1 million linear inches of travel.



ROD SCREW

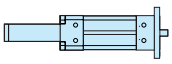
RSA/RSM Series

- RSA actuator/screw specifications

RSA/RSM Rod Screw

OVERALL SERIES SPECIFICATIONS

RSM SPECIFICATIONS RELATED TO ACTUATOR SIZE AND SCREW SELECTION



ROD SCREW

RSA/RSM Series

- RSM actuator/screw specifications

RSM METRIC ACTUATORS* WITH ENGLISH LEAD SCREWS

ACTUATOR SERIES	SCREW DIA.	SCREW TYPE	TPI	LEAD ACCURACY	BACKLASH	MAXIMUM THRUST**	BASE ACTUATOR INERTIA		INERTIA PER/in OF STROKE	BREAKAWAY TORQUE	MOVING PARTS WEIGHT	
							In Line	Rev. Parallel			Base	Per Inch
	in		turns/in	mm/300	mm	N	k-m² x 10^{-6}	k-m² x 10^{-6}	k-m² x 10^{-6}	N-m	N	N
RSM12	0.38	SN01	1	0.254	0.18	311	1.301	1.377	0.443	0.071	0.489	0.178
		SN02	2	0.152	0.18	311	0.690	0.765	0.220	0.064	0.489	0.178
		SN05	5	0.152	0.18	311	0.518	0.594	0.158	0.056	0.489	0.178
		BZ10	10	0.152	0.20	311	0.494	0.570	0.149	0.056	0.489	0.178
		BN08	8	0.076	0.38	623	0.508	0.584	0.151	0.056	0.845	0.178
		BNL08	8	0.076	0.05	623	0.508	0.584	0.150	0.056	0.845	0.178
RSM16	0.38	SN01	1	0.254	0.18	311	1.866	1.905	0.591	0.148	0.845	0.267
		SN02	2	0.152	0.18	311	0.810	0.849	0.257	0.127	0.845	0.267
		SN05	5	0.152	0.18	311	0.514	0.553	0.164	0.120	0.845	0.267
		BZ10	10	0.152	0.20	311	0.472	0.511	0.151	0.120	0.845	0.267
		BN08	8	0.076	0.38	623	0.489	0.528	0.153	0.113	1.201	0.267
		BNL08	8	0.076	0.05	623	0.489	0.528	0.153	0.113	1.201	0.267
RSM24	0.63	SN02	2	0.127	0.18	890	6.516	6.651	1.486	0.205	3.336	0.623
		SN04	4	0.254	0.18	890	5.474	5.609	1.292	0.191	3.336	0.623
		SN08	8	0.254	0.18	890	5.213	5.349	1.243	0.184	3.336	0.623
		BZ10	10	0.152	0.20	3781	5.182	5.317	1.237	0.184	3.336	0.623
		BN05	5	0.076	0.38	3558	5.991	6.126	1.268	0.247	4.493	0.623
		BNL05	5	0.076	0.02	3558	5.991	6.126	1.268	0.247	4.493	0.623
RSM32	0.75	SN01	1	0.127	0.18	1334	22.651	21.386	3.653	0.353	4.315	0.667
		SN02	2	0.127	0.18	1334	17.261	15.996	2.820	0.304	4.315	0.667
		BZ10	10	0.152	0.20	11120	15.536	14.271	2.553	0.353	4.315	0.667
		BN02	2	0.102	0.38	12010	21.160	19.895	2.820	0.275	6.405	0.667
		BNL02	2	0.102	0.02	12010	21.160	19.895	2.820	0.275	6.405	0.667
		BN05	5	0.076	0.38	4226	18.913	17.655	2.586	0.261	6.405	0.667
		BNL05	5	0.076	0.02	4226	18.913	17.655	2.586	0.261	6.405	0.667
RSM50	1.00	SN04	4	0.254	0.18	1779	60.254	59.289	8.180	0.480	11.654	1.334
		BZ10	10	0.152	0.20	15569	59.235	58.270	8.063	0.410	11.654	1.334
		BN01	1	0.102	0.38	11120	93.402	92.422	10.264	0.466	15.791	1.334
		BNL01	1	0.102	0.02	11120	93.402	92.422	10.264	0.466	15.791	1.334
		BN02	2	0.102	0.38	19130	73.675	72.695	8.597	0.410	15.791	1.334
		BNLO2	2	0.102	0.02	19130	73.675	72.695	8.597	0.410	15.791	1.334
		BN04	4	0.102	0.38	14680	68.729	67.764	8.180	0.480	15.791	1.334
		BNL04	4	0.102	0.02	14680	68.729	67.764	8.180	0.480	15.791	1.334
RSM64	1.50	SN04	4	0.254	0.18	2224	451.825	440.017	40.913	0.607	22.286	2.002
		BZ10	10	0.152	0.20	31138	449.876	438.068	40.738	0.614	22.286	2.002
		BN53	0.53	0.102	0.38	31138	731.133	719.325	52.574	0.812	33.762	2.002
		BNL53	0.53	0.102	0.02	31138	731.133	719.325	52.574	0.812	33.762	2.002
		BN02	2	0.102	0.38	20017	544.995	533.188	41.538	0.600	33.762	2.002
		BNL02	2	0.102	0.02	20017	544.995	533.188	41.538	0.600	33.762	2.002
		BN04	4	0.102	0.38	20017	534.451	522.644	40.913	0.607	33.762	2.002
		BNL04	4	0.102	0.02	20017	534.451	522.644	40.913	0.607	33.762	2.002

SCREW CODE	*DESCRIPTION*
SN	*Solid Nut*
BZ	*Bronze Nut*
BN	*Ball Nut*
BNL	*Low-Backlash Ball Nut*

Contact the factory for higher accuracy and lower backlash options.

** RSM metric actuators use the same leadscrew as the RSA English series. Mounting threaded and dowel pin holes on RSM series are metric.*

***For Acme screws, maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.*

For ball screws, maximum thrust reflects 90% reliability for 1 million linear inches of travel.

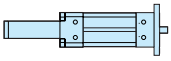
RSA/RSM Rod Screw

OVERALL SERIES SPECIFICATIONS

GENERAL ACTUATOR SPECIFICATIONS

		RSA ENGLISH ACTUATORS						
SPECIFICATIONS		**RSA12**		**RSA16**	**RSA24**	**RSA32**	**RSA50**	**RSA64**
Weights		17 frame	23 frame					
In-Line base weight	(lb)	1.73	1.73	3.73	3.98	6.11	14.21	23.01
Reverse parallel base weight	(lb)	2.28	2.42	4.00	5.68	9.76	20.10	28.51
Weight per in (mm) of stroke	(lb)	0.013	0.128	0.30	0.33	0.46	0.86	1.38
Maximum Stroke	(in)	12		18	24	36	48	60
Temperature Operating Range*	(°F)	40 - 130		40 - 130	40 - 130	40 - 130	40 - 130	40 - 130
IP Rating**		54		54	54	54	54	54

		RSM METRIC ACTUATORS						
SPECIFICATIONS		**RSM12**		**RSM16**	**RSM24**	**RSM32**	**RSM50**	**RSM64**
Weights		17 frame	23 frame					
In-Line base weight	(kg)	0.78	0.78	1.69	1.80	2.77	6.44	10.43
Reverse parallel base weight	(kg)	1.03	1.10	1.81	2.57	4.42	9.11	12.93
Weight per in (mm) of stroke	(kg)	0.0002	0.0002	0.00536	0.00589	0.00821	0.01536	0.02464
Maximum Stroke	(mm)	304		457	609	914	1219	1524
Temperature Operating Range*	(°C)	4 - 54		4 - 54	4 - 54	4 - 54	4 - 54	4 - 54
IP Rating**		54		54	54	54	54	54

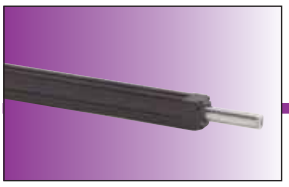


**** Heat generated by the motor and drive should be taken into consideration as well as linear velocity and work cycle time. For applications that require operation outside of the recommended temperature range, contact the factory.***

***** Protected against dust and splashing water.***

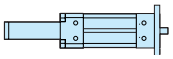
LARGE FRAME MOTORS AND SMALLER SIZE ACTUATORS: Cantilevered motors need to be supported, if subjected to continuous rapid reversing duty and/or under dynamic conditions.

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 the factory for details regarding side loading capabilities.



RSA/RSM12 Series

ACME SCREW SPECIFICATIONS



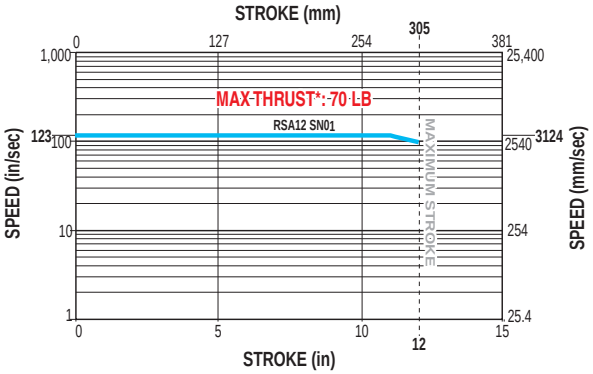
ROD SCREW

RSA/RSM12 Series

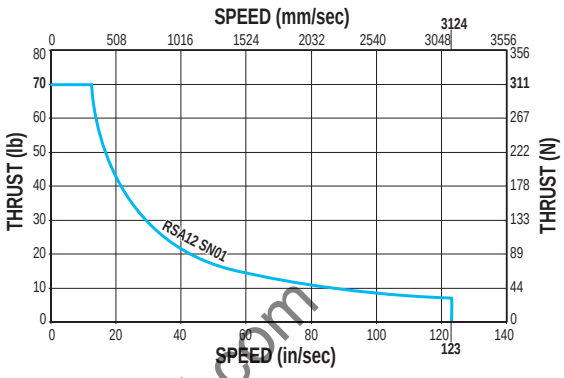
- Acme screw critical speed

RSA12 ACME SCREW CRITICAL SPEED AND PV LIMITS

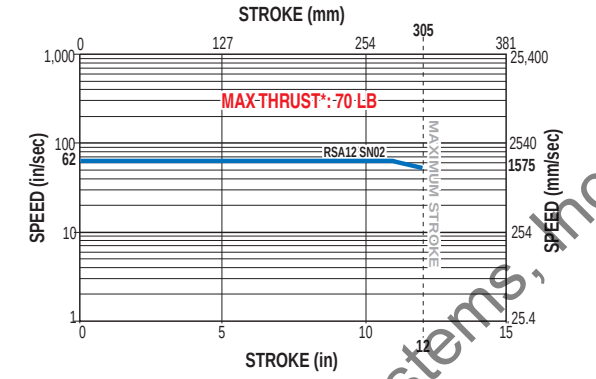
CRITICAL SPEED WITH 0.375" 1TPI ENGLISH ACME SCREW



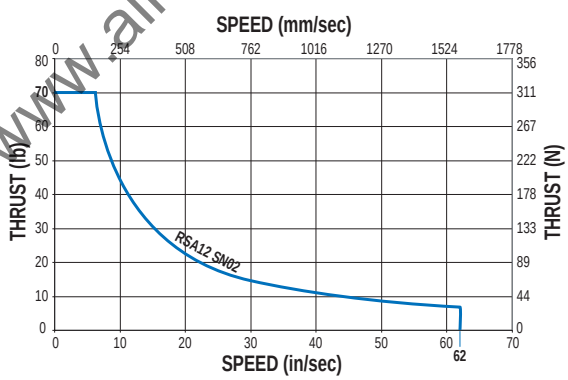
PV LIMITS: 0.375" 1TPI ENGLISH ACME SCREW



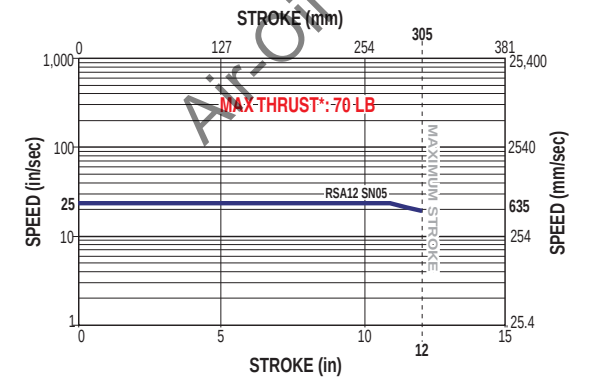
CRITICAL SPEED WITH 0.375" 2TPI ENGLISH ACME SCREW



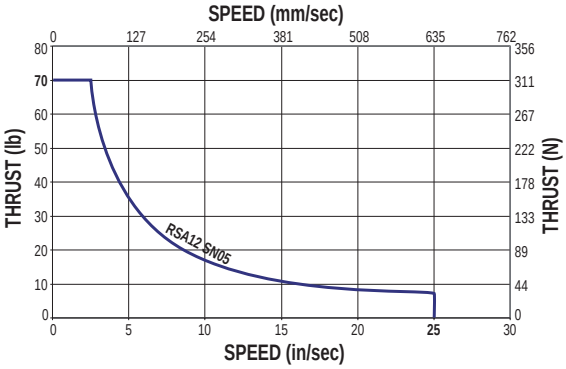
PV LIMITS: 0.375" 2TPI ENGLISH ACME SCREW



CRITICAL SPEED WITH 0.375" 5TPI ENGLISH ACME SCREW



PV LIMITS: 0.375" 5TPI ENGLISH ACME SCREW



SN = Solid Nut

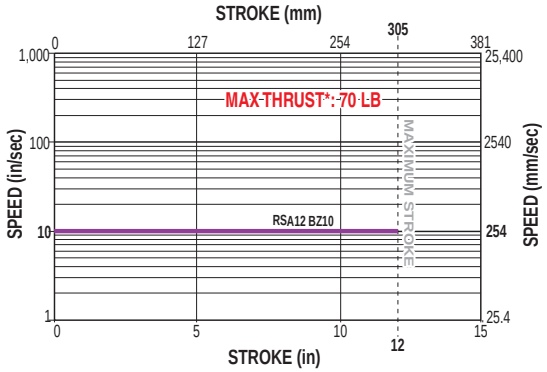
**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

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

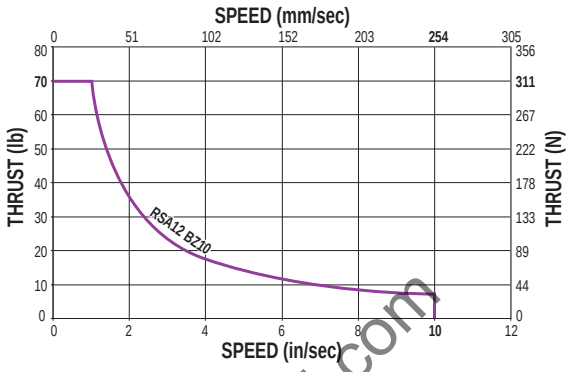
$$\left(\frac{\text{P}}{\text{Thrust (Max. Thrust Rating)}}\right) \text{x} \left(\frac{\text{V}}{\text{Speed (Max. Speed Rating)}}\right) \leq 0.1 \quad \leq 0.1$$

RSA12 ACME SCREW CRITICAL SPEED AND PV LIMITS (continued)

CRITICAL SPEED WITH 0.375" 10TPI ENGLISH ACME SCREW



PV LIMITS: 0.375" 10TPI ENGLISH ACME SCREW



BZ = Bronze Nut

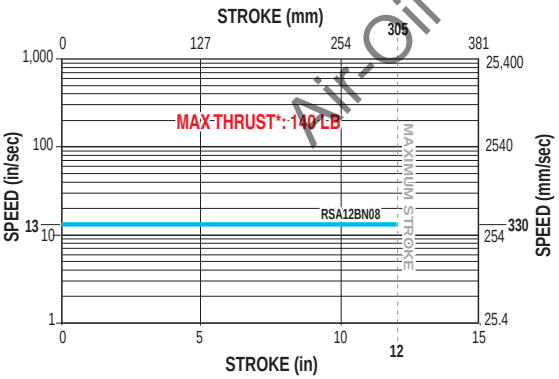
**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

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

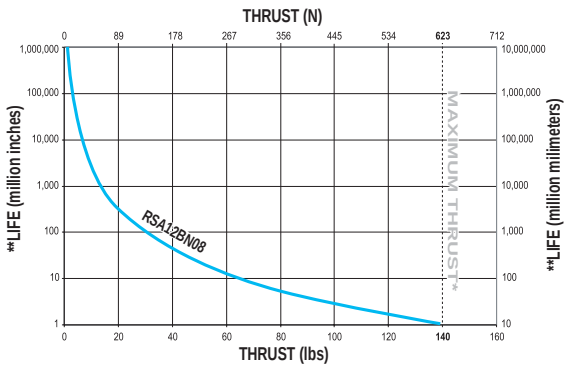
$$\left(\frac{\text{P}}{\text{Thrust (Max. Thrust Rating)}}\right) \text{x} \left(\frac{\text{V}}{\text{Speed (Max. Speed Rating)}}\right) \leq 0.1 \quad \leq 0.1$$

RSA12 BALL SCREW CRITICAL SPEED AND LIFE CALCULATIONS

CRITICAL SPEED WITH 0.375" 8TPI ENGLISH BALL SCREW



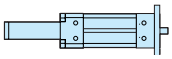
LIFE CALCULATION: 0.375" 8TPI ENGLISH BALL SCREW



BN = Ball Nut

**** Maximum thrust reflects 90% reliability for 1 million linear inches of travel.***

*****Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.***



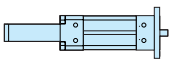
ROD SCREW

RSA/RSM12 Series

- Acme screw critical speed and PV limits
- Ball screw critical speed and life calculations

DIMENSIONS

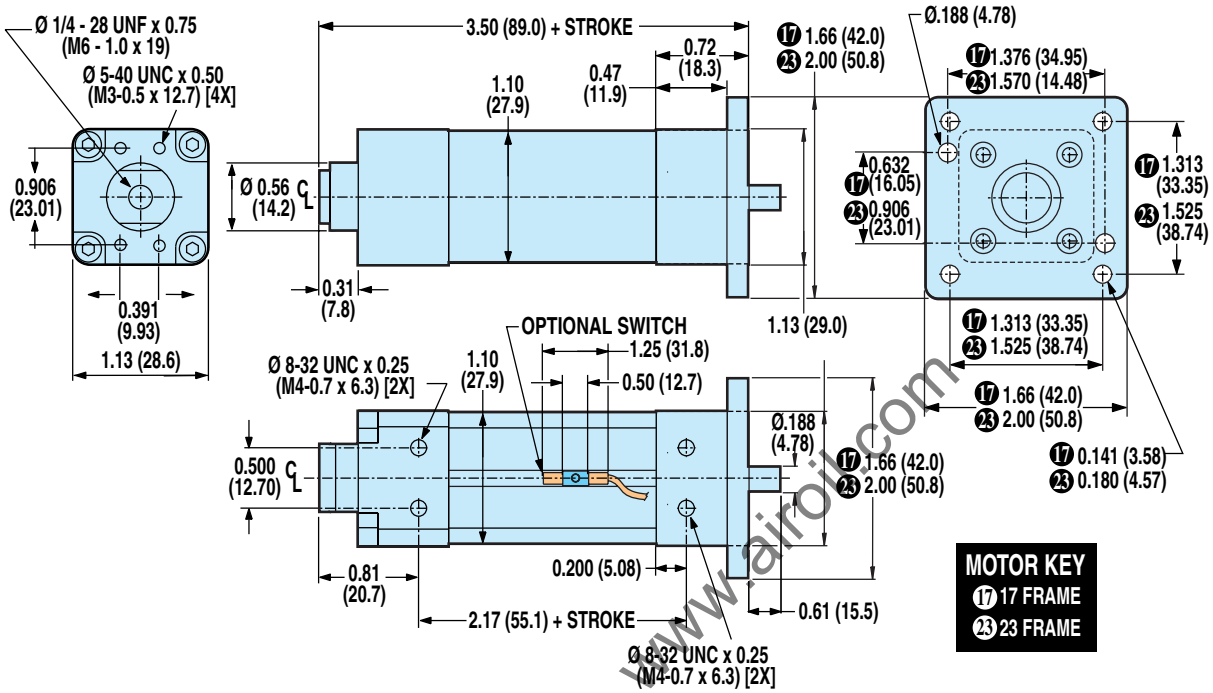
RSA/RSM12 IN-LINE (LMI) BASE MODEL AND SWITCH MOUNTING



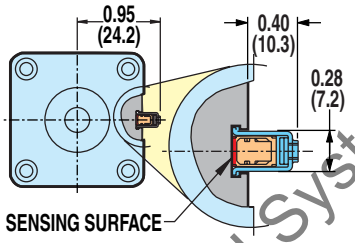
ROD SCREW

RSA/RSM12 Series

- In-line (LMI) base model dimensions



OPTIONAL SWITCH MOUNTING ❶⚠❷



❶⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

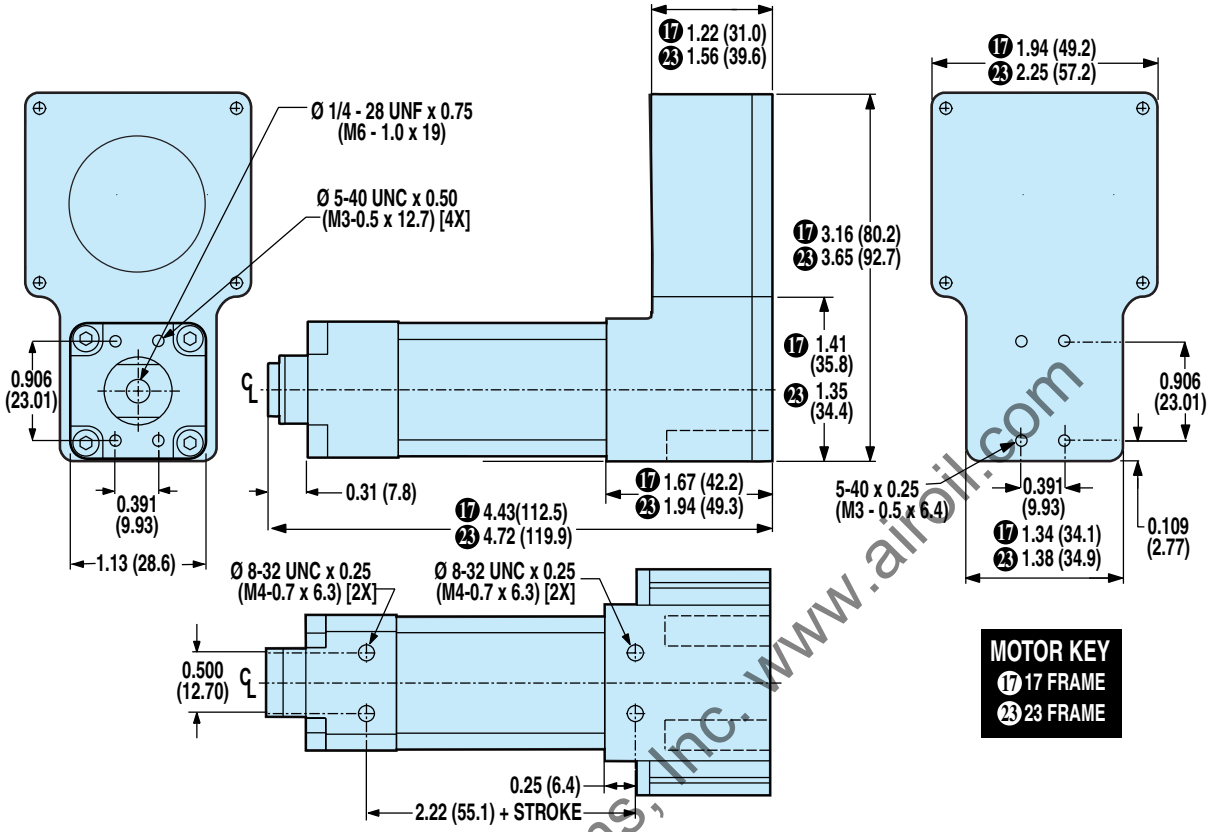
❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet

Unless otherwise noted, all dimensions shown are in inches (Dimensions in parenthesis are in millimeters)

RSA/RSM12 Series

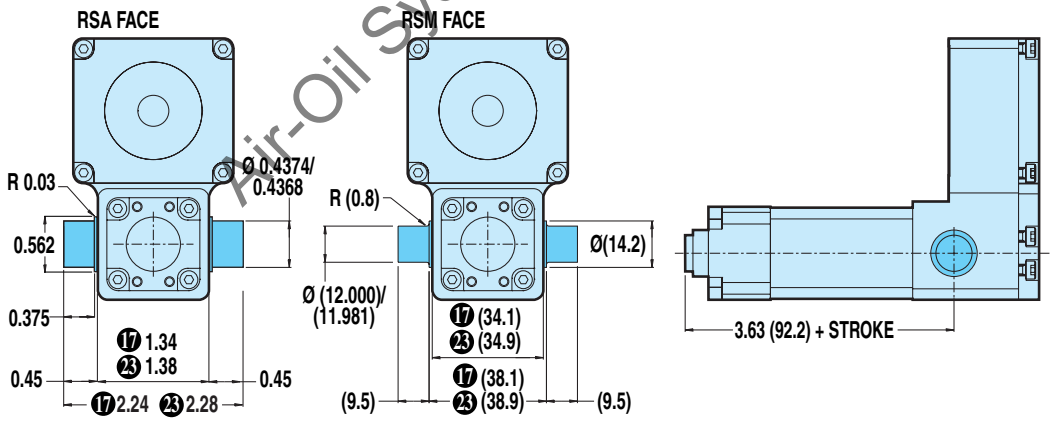
DIMENSIONS

RSA/RSM12 REVERSE PARALLEL (RP) BASE MODEL OPTIONS AND SWITCH MOUNTING

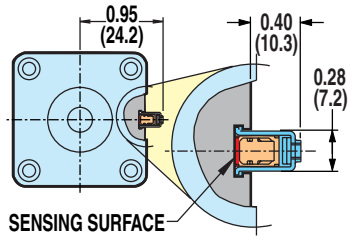


OPTIONAL TRUNNION MOUNT: TRN

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.



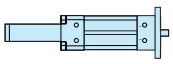
OPTIONAL SWITCH MOUNTING ❶⚠❷



❶ ⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet

Dimensions are in inches
(Dimensions in parenthesis are in millimeters)



ROD SCREW

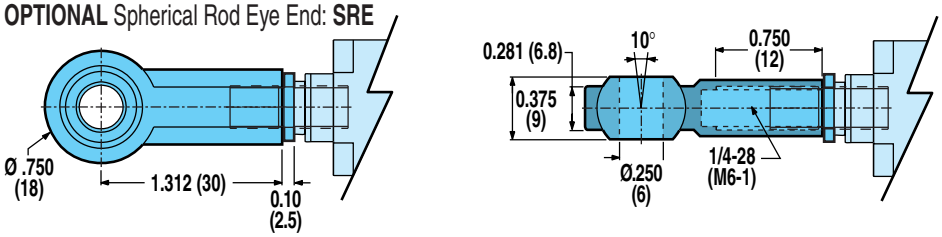
RSA/RSM12 Series

- Reverse parallel base model options and switch mounting

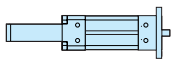
RSA/RSM12 RETROFITTABLE ROD END OPTIONS

FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

OPTIONAL Spherical Rod Eye End: **SRE**



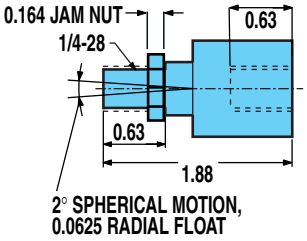
OPTIONAL Alignment Coupler Rod End: **ALC**



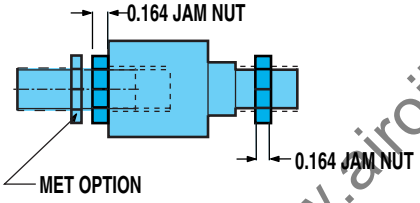
ROD SCREW

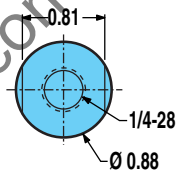
RSA/RSM12 Series
- Retrofittable rod end options

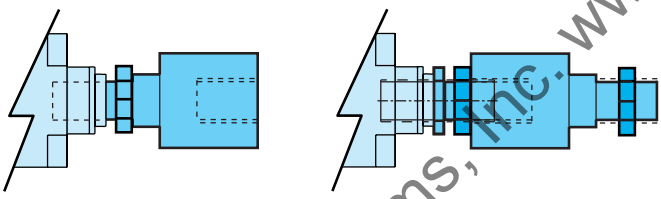
INTERNALLY THREADED END SPECIFIED



EXTERNALLY THREADED END SPECIFIED



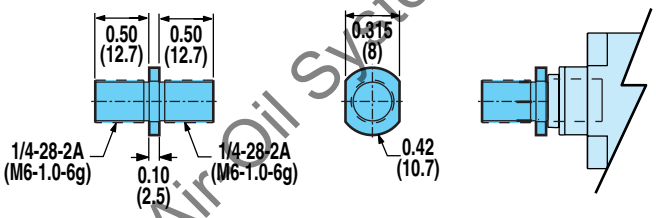




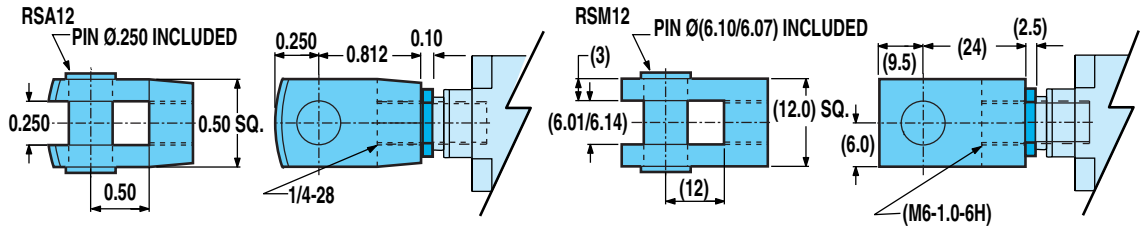
THE ALIGNMENT COUPLER COMES WITH AN INTERNAL THREAD. IF AN EXTERNAL THREAD IS PREFERRED, THE ADDITION OF THE "MET" OPTION IS REQUIRED.

NOT AVAILABLE ON THE RSM12 METRIC MODEL.

OPTIONAL External Threaded Rod End: **MET**



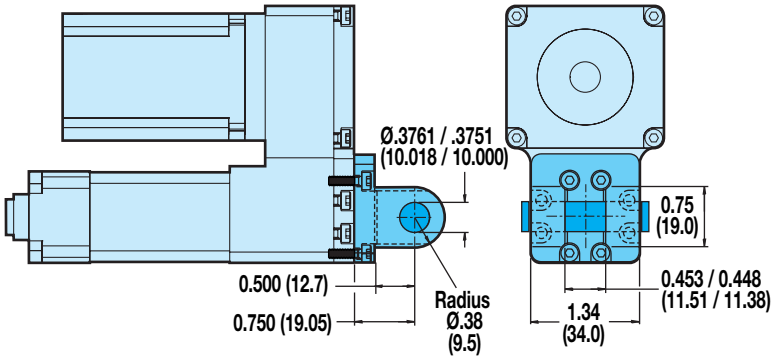
OPTIONAL Clevis Rod End: **CLV**



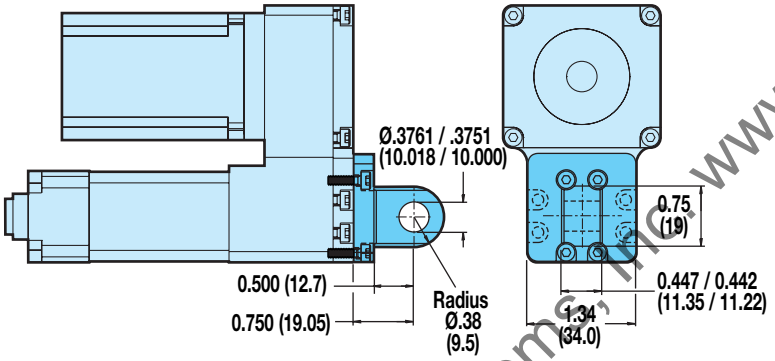
RSA/RSM12 RETROFITTABLE MOUNTING OPTIONS

FOR REVERSE PARALLEL (RP) MODELS ONLY

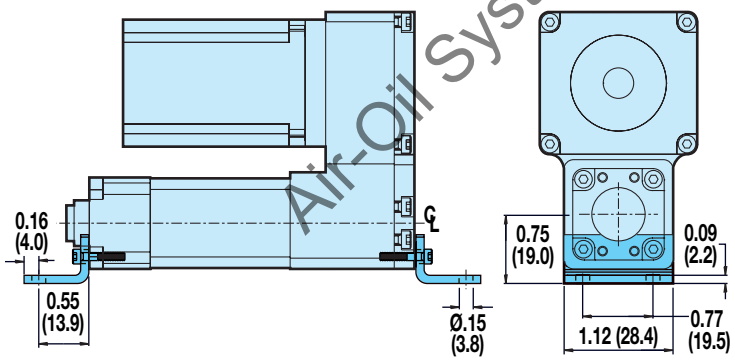
OPTIONAL Clevis Mount: **PCD**



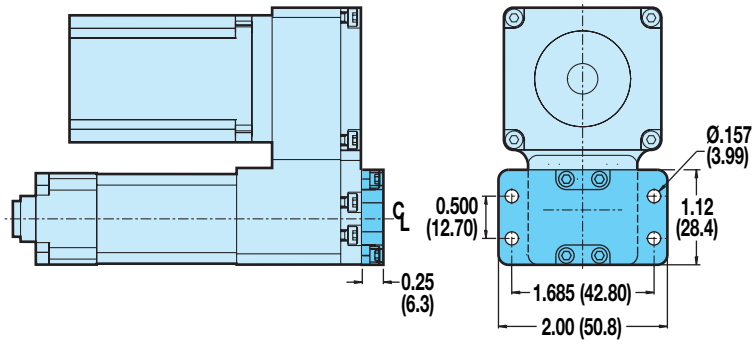
OPTIONAL Eye Mount: **PCS**



OPTIONAL Foot Mount: **FM2**

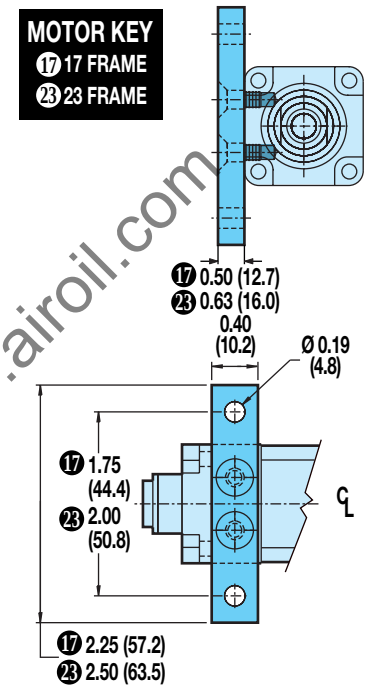


OPTIONAL Back Flange: **BFG**

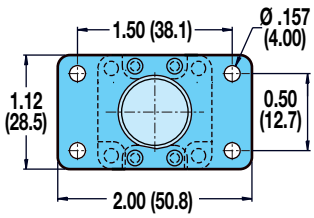


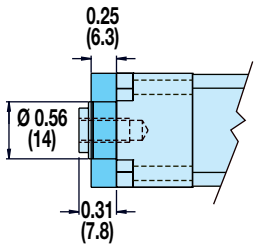
FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

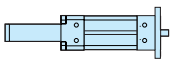
OPTIONAL Mounting Plate: **MP2**



OPTIONAL Front Flange Mount: **FFG**







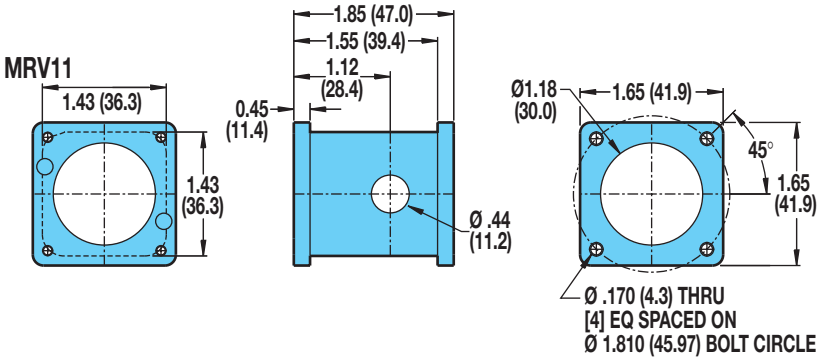
ROD SCREW

RSA/RSM12 Series

- Retrofittable mounting options

DIMENSIONS

RSA/RSM12: IN-LINE MOUNTING FOR 17-FRAME MOTORS



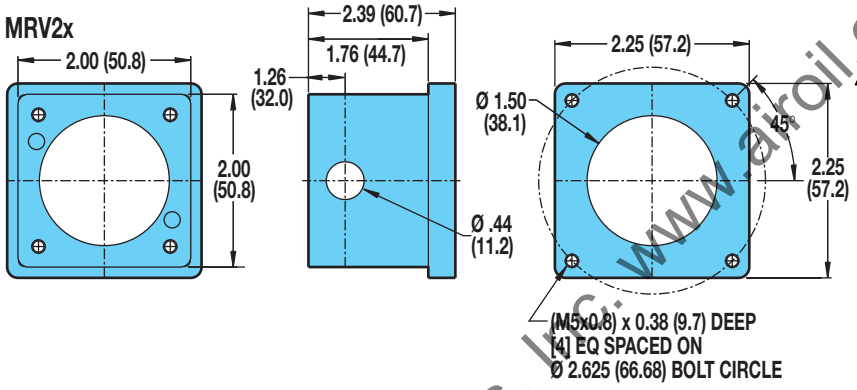
Gearheads are not available for the RSA/RSM12.

RSA/RSM12: IN-LINE MOUNTING FOR 23-FRAME MOTORS

ROD SCREW

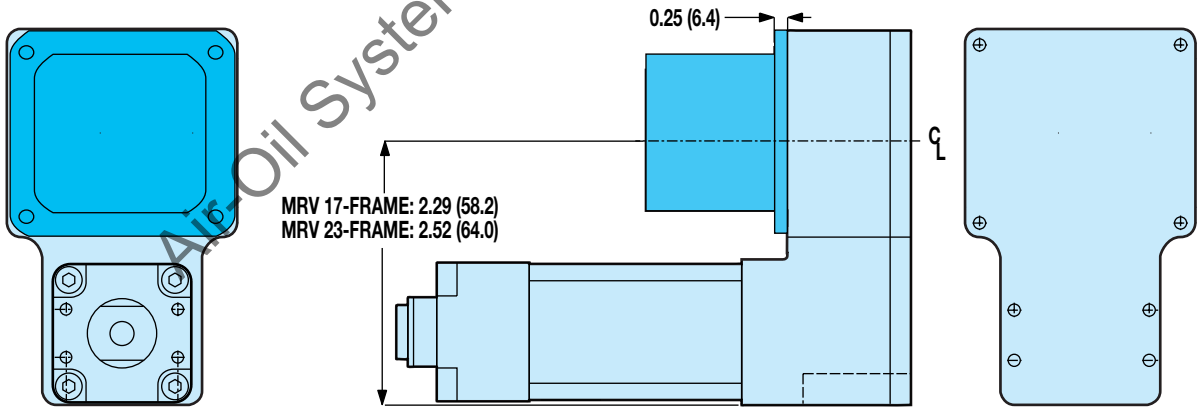
RSA/RSM12 Series

- In-line motor mounting
- Reverse parallel motor mounting



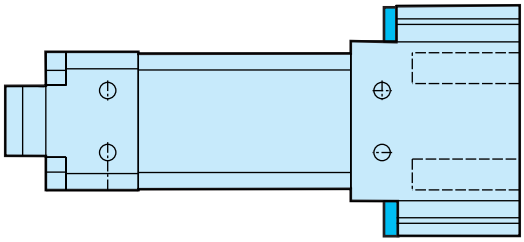
Gearheads are not available for the RSA/RSM12.

RSA/RSM12: REVERSE PARALLEL MOTOR MOUNTING



SPECIFICATIONS

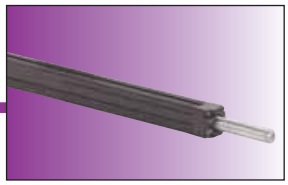
	MOTOR	REDUCTION INERTIA AT MOTOR SHAFT 1:1 lb-in²	kg-cm²
BRUSHLESS	MRV11	.037	.1083
BRUSHLESS	MRV21, 22, 23, 24	.037	.1083



REDUCTION EFFICIENCY: 0.95

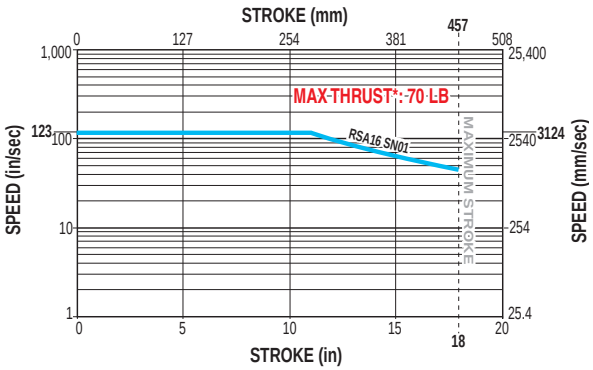
RSA/RSM16 Series

ACME SCREW SPECIFICATIONS

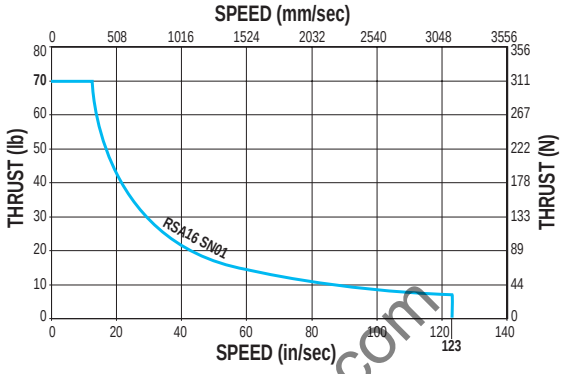


RSA16 ACME SCREW CRITICAL SPEED AND PV LIMITS

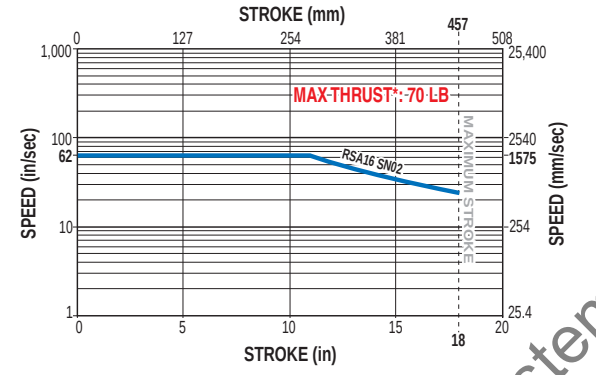
CRITICAL SPEED WITH 0.375" 1TPI ENGLISH ACME SCREW



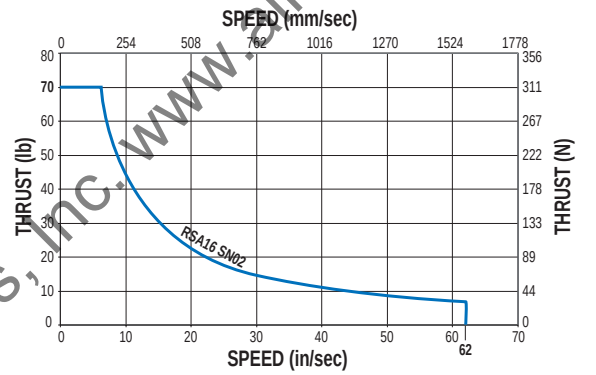
PV LIMITS: 0.375" 1TPI ENGLISH ACME SCREW



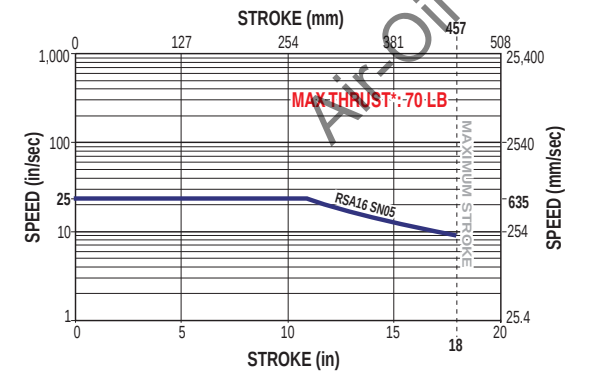
CRITICAL SPEED WITH 0.375" 2TPI ENGLISH ACME SCREW



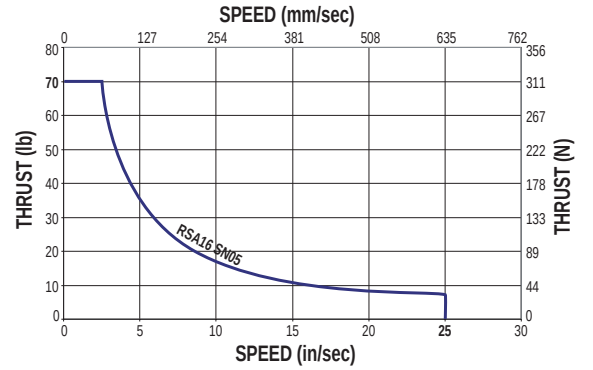
PV LIMITS: 0.375" 2TPI ENGLISH ACME SCREW



CRITICAL SPEED WITH 0.375" 5TPI ENGLISH ACME SCREW



PV LIMITS: 0.375" 5TPI ENGLISH ACME SCREW

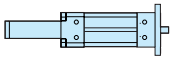


SN = Solid Nut

**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

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

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



ROD SCREW

RSA/RSM16 Series

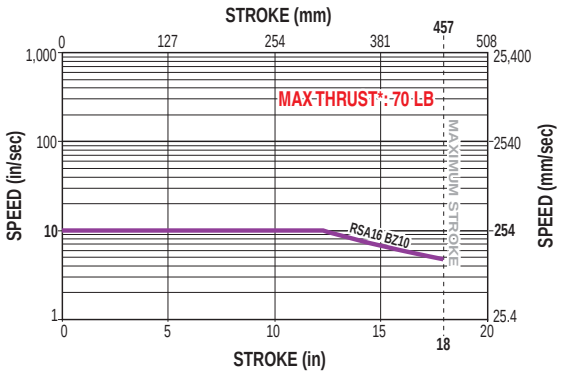
- Acme screw critical speed and PV limits

RSA/RSM16 Series

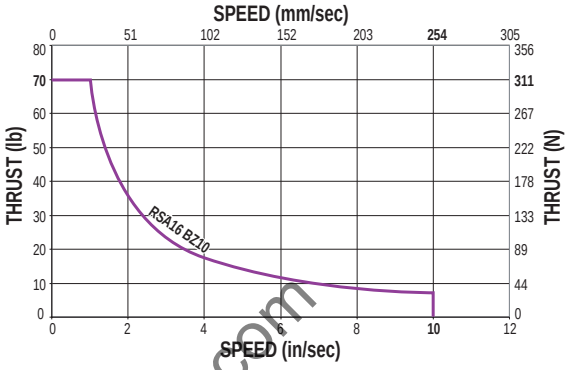
ACME AND BALL SCREW SPECIFICATIONS

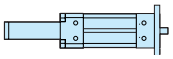
RSA16 ACME SCREW CRITICAL SPEED AND PV LIMITS (continued)

CRITICAL SPEED WITH 0.375" 10TPI ENGLISH ACME SCREW



PV LIMITS: 0.375" 10TPI ENGLISH ACME SCREW





ROD SCREW

RSA/RSM16 Series

- Acme screw critical speed and PV limits
- Ball screw critical speed and life calculations

BZ = Bronze Nut

**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

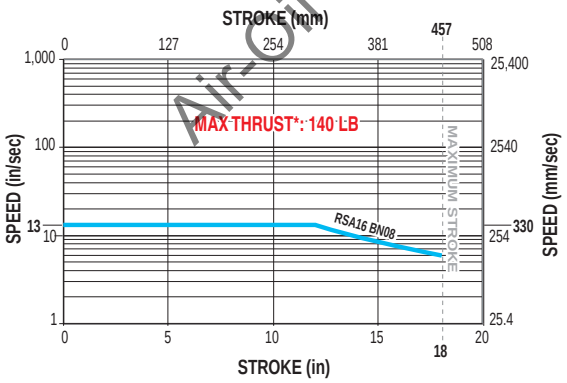
PV LIMITS: Any material which carries a sliding load is limited by heat buildup. The factors that affect heat generation rate in an application are the pressure on the nut in pounds per square inch and the surface velocity in feet per minute. The product of these factors provides a measure of the severity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

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

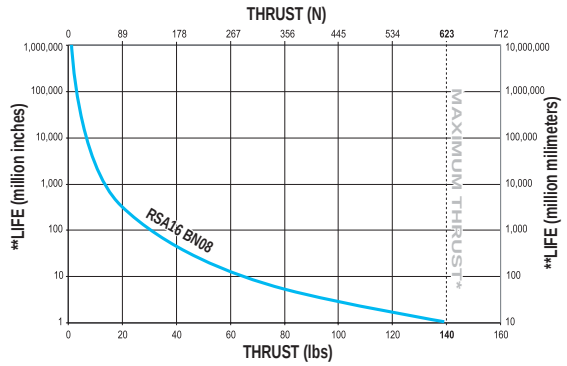
$$\leq 0.1$$

RSA16 BALL SCREW CRITICAL SPEED AND LIFE CALCULATIONS

CRITICAL SPEED WITH 0.375" 8TPI ENGLISH BALL SCREW



LIFE CALCULATION: 0.375" 8TPI ENGLISH BALL SCREW



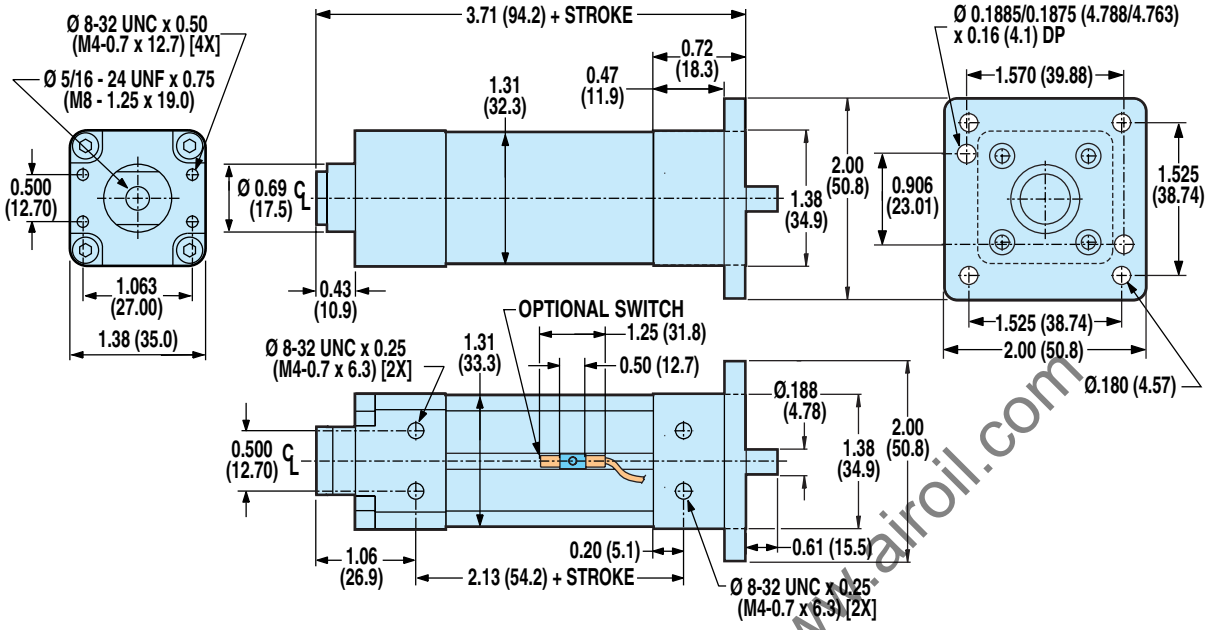
BN = Ball Nut

**** Maximum thrust reflects 90% reliability for 1 million linear inches of travel.***

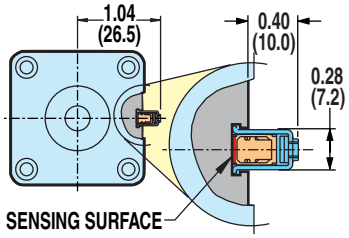
*****Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.***

DIMENSIONS

RSA/RSM16 IN-LINE (LMI) BASE MODEL OPTIONS AND SWITCH MOUNTING

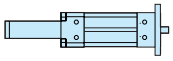


OPTIONAL SWITCH MOUNTING ❶⚠❷



❶ ⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet



ROD SCREW

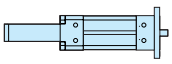
RSA/RSM16 Series

- In-line (LMI) base model dimensions

RSA/RSM16 Series

DIMENSIONS

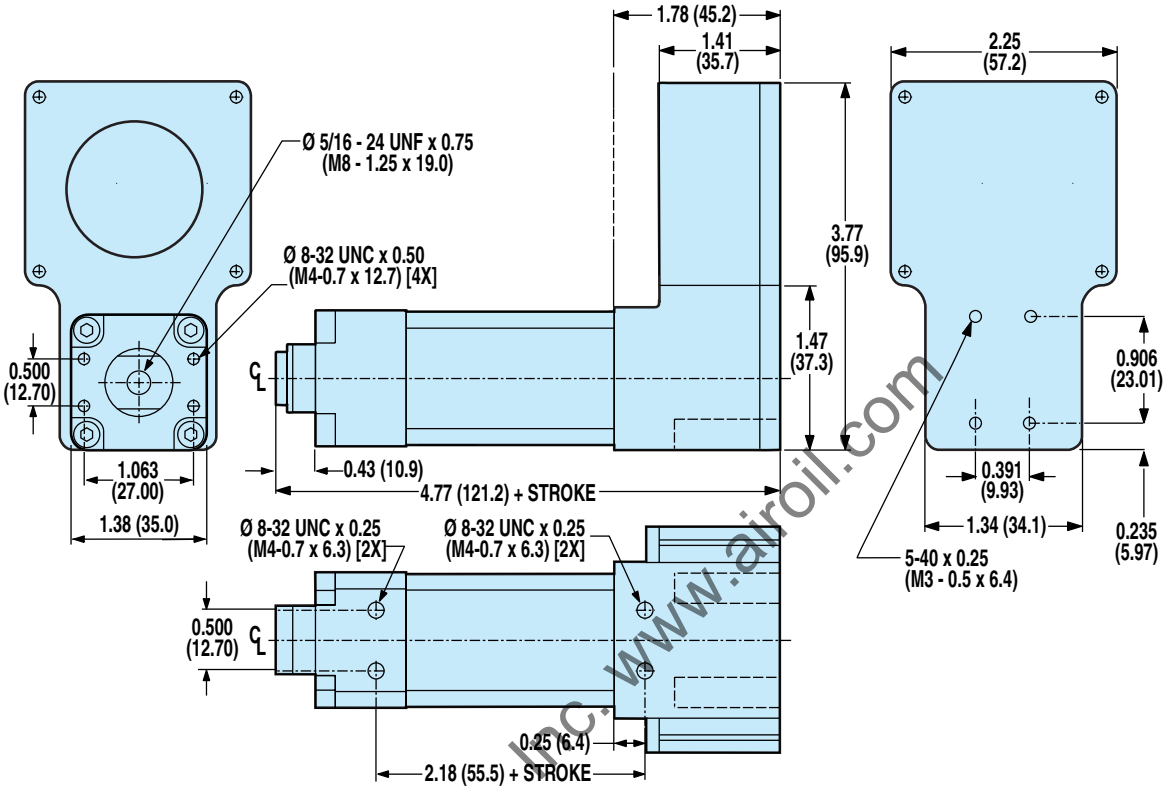
RSA/RSM16 REVERSE PARALLEL (RP) BASE MODEL OPTIONS AND SWITCH MOUNTING



ROD SCREW

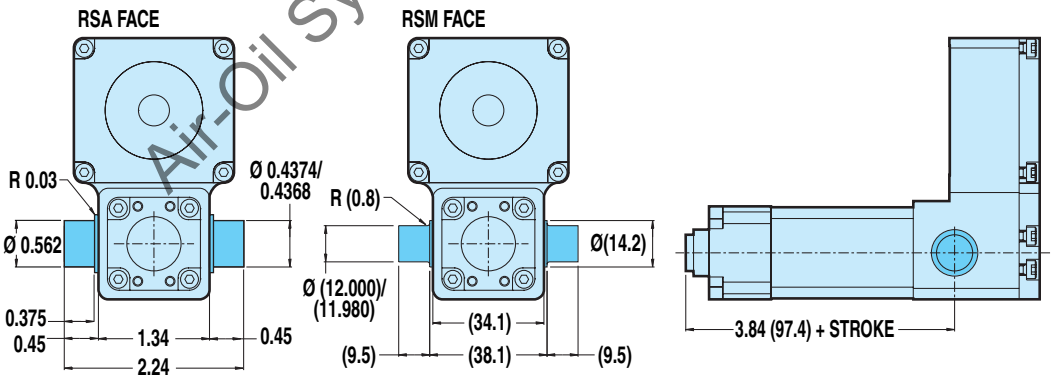
RSA/RSM16 Series

- Reverse parallel base model options and switch mounting

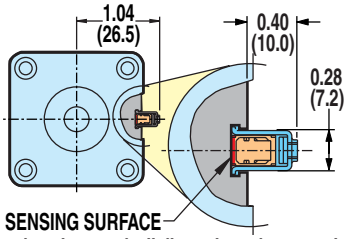


OPTIONAL TRUNNION MOUNT: TRN

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.



OPTIONAL SWITCH MOUNTING[1][2]



[1] ⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

[2] NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet

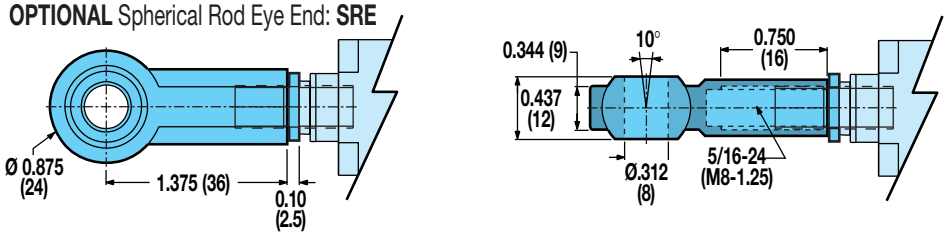
Unless otherwise noted, all dimensions shown are in inches (Dimensions in parenthesis are in millimeters)

DIMENSIONS

RSA/RSM16 RETROFITTABLE ROD END OPTIONS

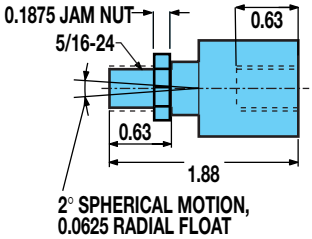
FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

OPTIONAL Spherical Rod Eye End: **SRE**

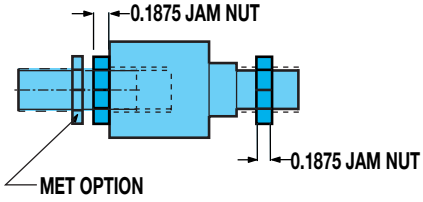


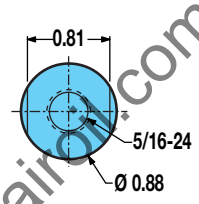
OPTIONAL Alignment Coupler Rod End: **ALC**

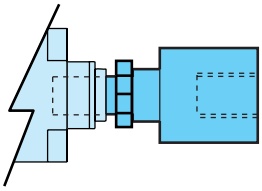
INTERNALLY THREADED END SPECIFIED

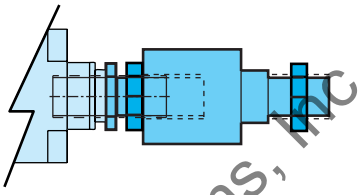


EXTERNALLY THREADED END SPECIFIED





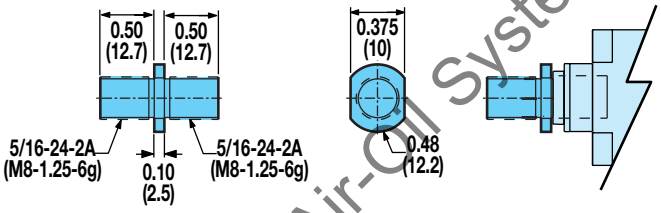




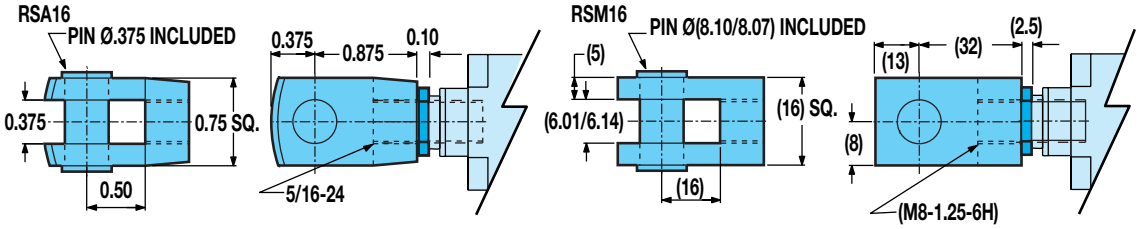
THE ALIGNMENT COUPLER COMES WITH AN INTERNAL THREAD. IF AN EXTERNAL THREAD IS PREFERRED, THE ADDITION OF THE "MET" OPTION IS REQUIRED.

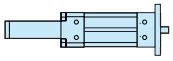
NOT AVAILABLE ON THE RSM16 METRIC MODEL.

OPTIONAL External Threaded Rod End: **MET**



OPTIONAL Clevis Rod End: **CLV**

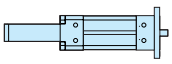




ROD SCREW

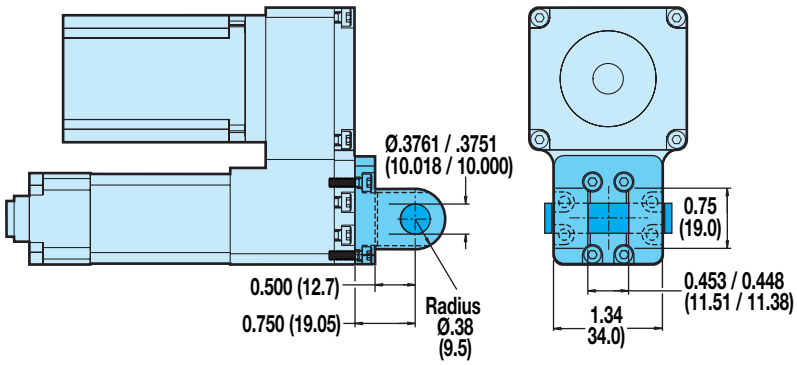
RSA/RSM16 Series
- Retrofittable rod end options

RSA/RSM16 RETROFITTABLE MOUNTING OPTIONS

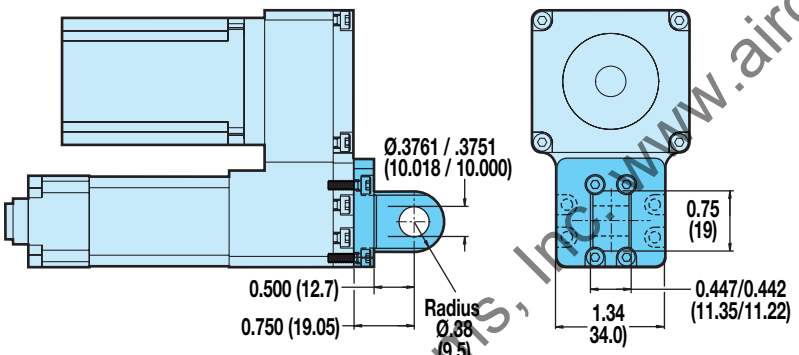


FOR REVERSE PARALLEL (RP) MODELS ONLY

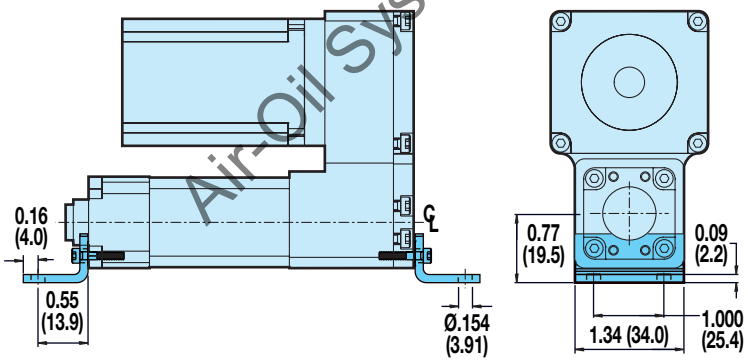
OPTIONAL Clevis Mount: **PCD** (for use on RP models only)



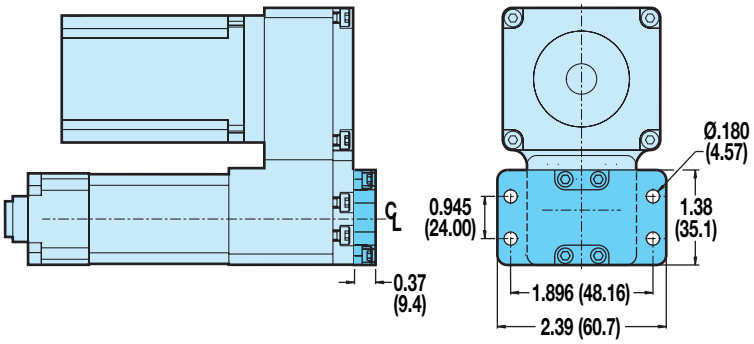
OPTIONAL Eye Mount: **PCS**



OPTIONAL Foot Mount: **FM2**

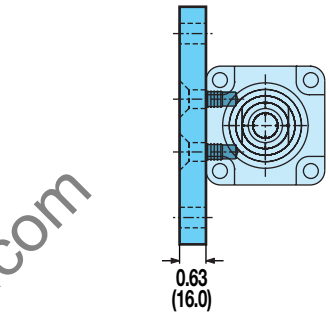


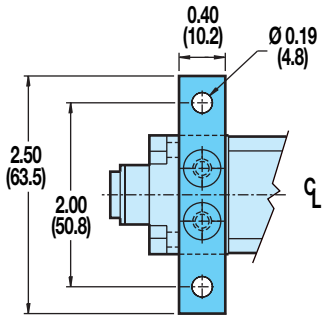
OPTIONAL Back Flange: **BFG**



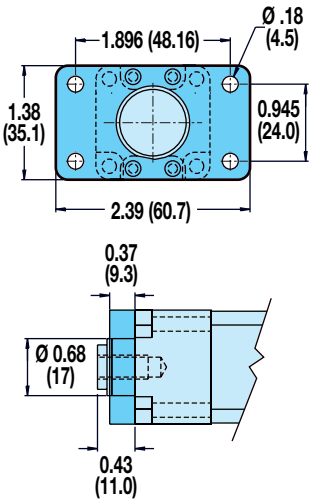
FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

OPTIONAL Mounting Plate: **MP2**





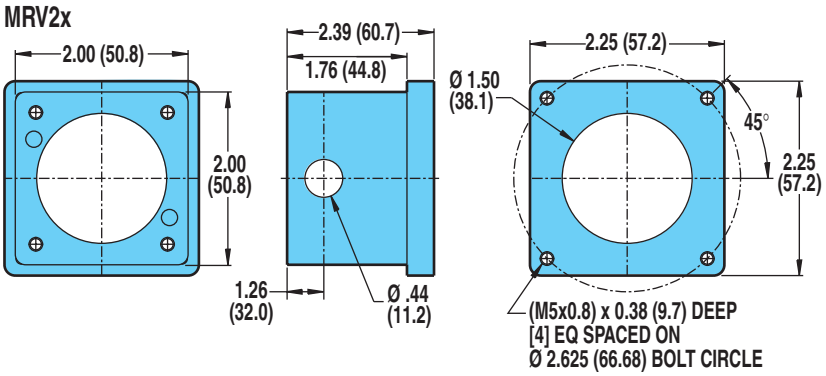
OPTIONAL Front Flange Mount: **FFG**



RSA/RSM16 Series

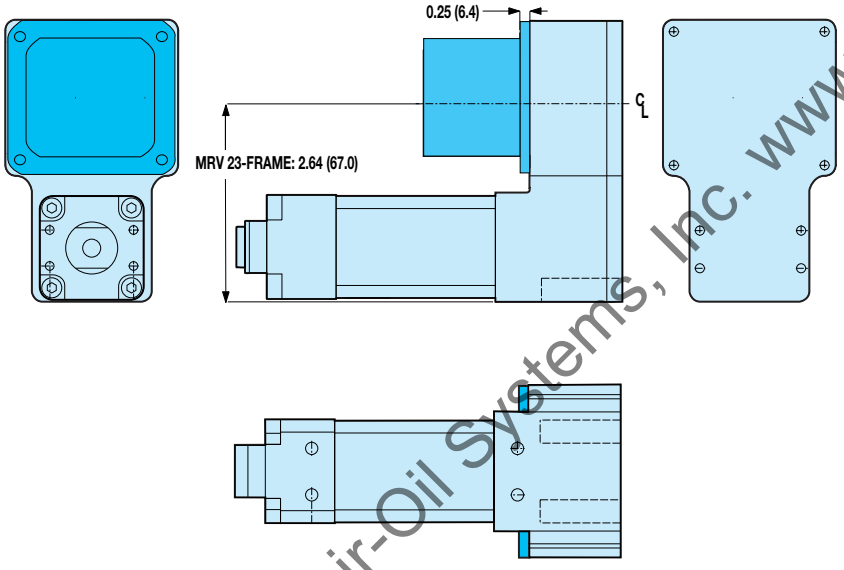
DIMENSIONS

RSA/RSM16: IN-LINE MOTOR MOUNTING



Gearheads are not available for the RSA/RSM16

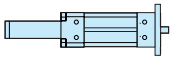
RSA/RSM16: REVERSE PARALLEL MOTOR MOUNTING



SPECIFICATIONS

	MOTOR	REDUCTION INERTIA AT MOTOR SHAFT 1:1	
		lb-in²	kg-cm²
BRUSHLESS	MRV21, 22, 23, 24	.037	.1083

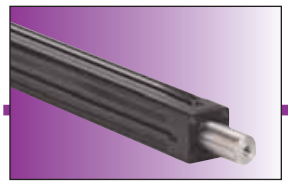
REDUCTION EFFICIENCY: 0.95



ROD SCREW

RSA/RSM16 Series

- In-line motor mounting
- Reverse parallel motor mounting

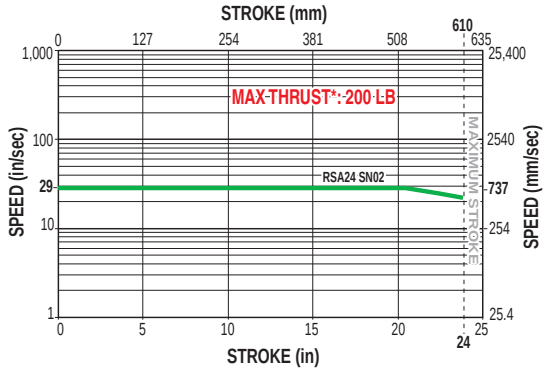


RSA/RSM24 Series

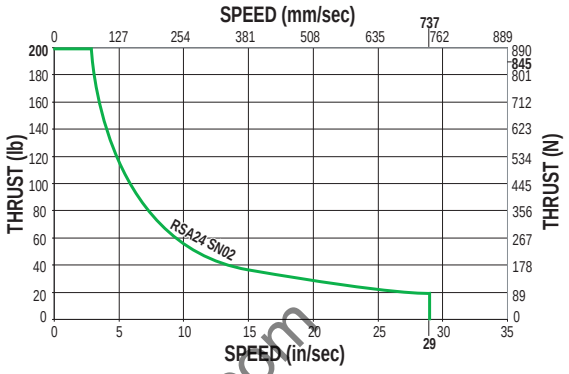
ACME SCREW SPECIFICATIONS

RSA24 ACME SCREW CRITICAL SPEED AND PV LIMITS

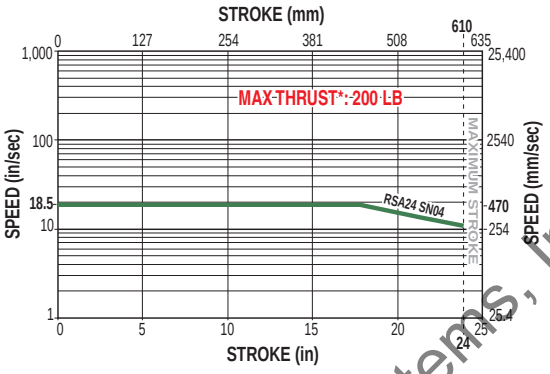
CRITICAL SPEED WITH 0.625" 2TPI ENGLISH ACME SCREW



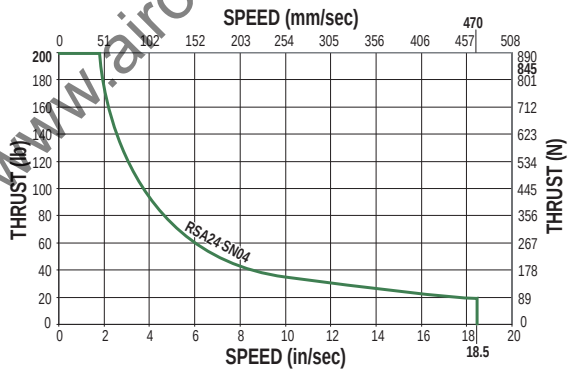
PV LIMITS: 0.625" 2TPI ENGLISH ACME SCREW



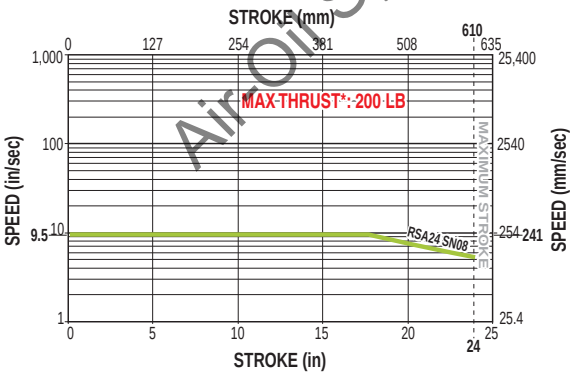
CRITICAL SPEED WITH 0.625" 4TPI ENGLISH ACME SCREW



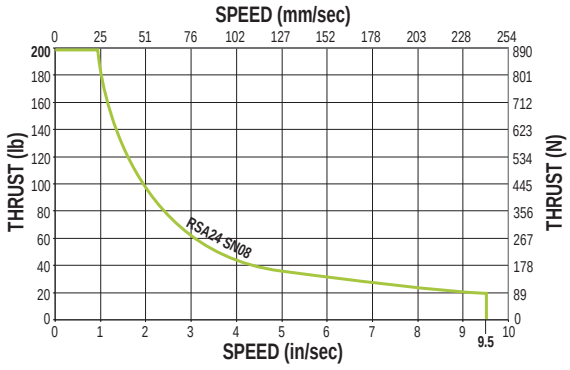
PV LIMITS: 0.625" 4TPI ENGLISH ACME SCREW



CRITICAL SPEED WITH 0.625" 8TPI ENGLISH ACME SCREW



PV LIMITS: 0.625" 8TPI ENGLISH ACME SCREW

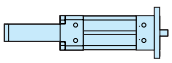


SN = Solid Nut

**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

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

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



ROD SCREW

RSA/RSM24 Series

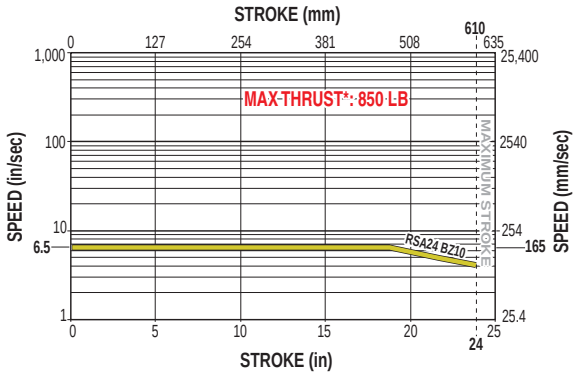
- Acme screw critical speed and PV limits

RSA/RSM24 Series

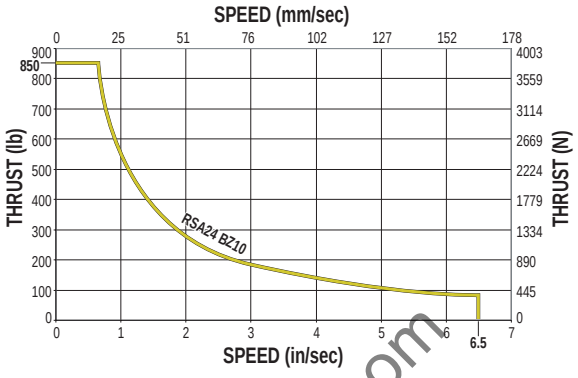
ACME AND BALL SCREW SPECIFICATIONS

RSA24 ACME SCREW CRITICAL SPEED AND PV LIMITS (continued)

CRITICAL SPEED WITH 0.625" 10TPI ENGLISH ACME SCREW



PV LIMITS: 0.625" 10TPI ENGLISH ACME SCREW



BZ = Bronze Nut

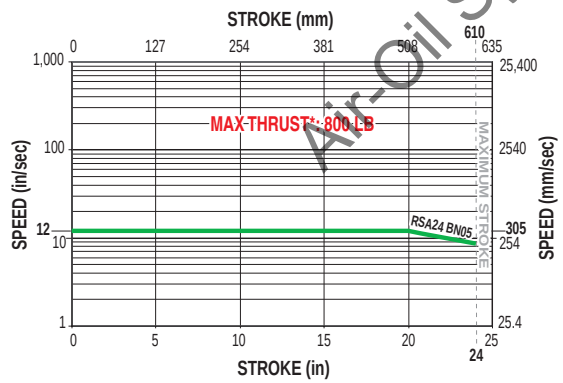
**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

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

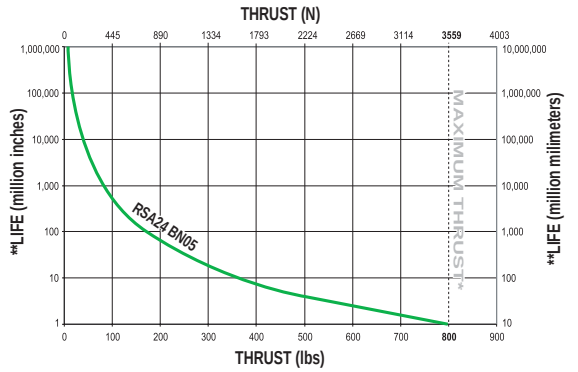
$$\left(\frac{\text{P}}{\text{Thrust}\ (\text{Max. Thrust Rating})}\right) \text{x} \left(\frac{\text{V}}{\text{Speed}\ (\text{Max. Speed Rating})}\right) \leq 0.1 \leq 0.1$$

RSA24 BALL SCREW CRITICAL SPEED AND LIFE CALCULATIONS

CRITICAL SPEED WITH 0.625" 5TPI ENGLISH BALL SCREW



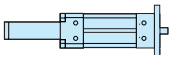
LIFE CALCULATION: 0.625" 5TPI ENGLISH BALL SCREW



BN = Ball Nut

**** Maximum thrust reflects 90% reliability for 1 million linear inches of travel.***

*****Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.***



ROD SCREW

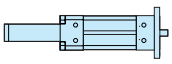
RSA/RSM24 Series

- Acme screw critical speed and PV limits
- Ball screw critical speed and life calculations

RSA/RSM24 Series

DIMENSIONS

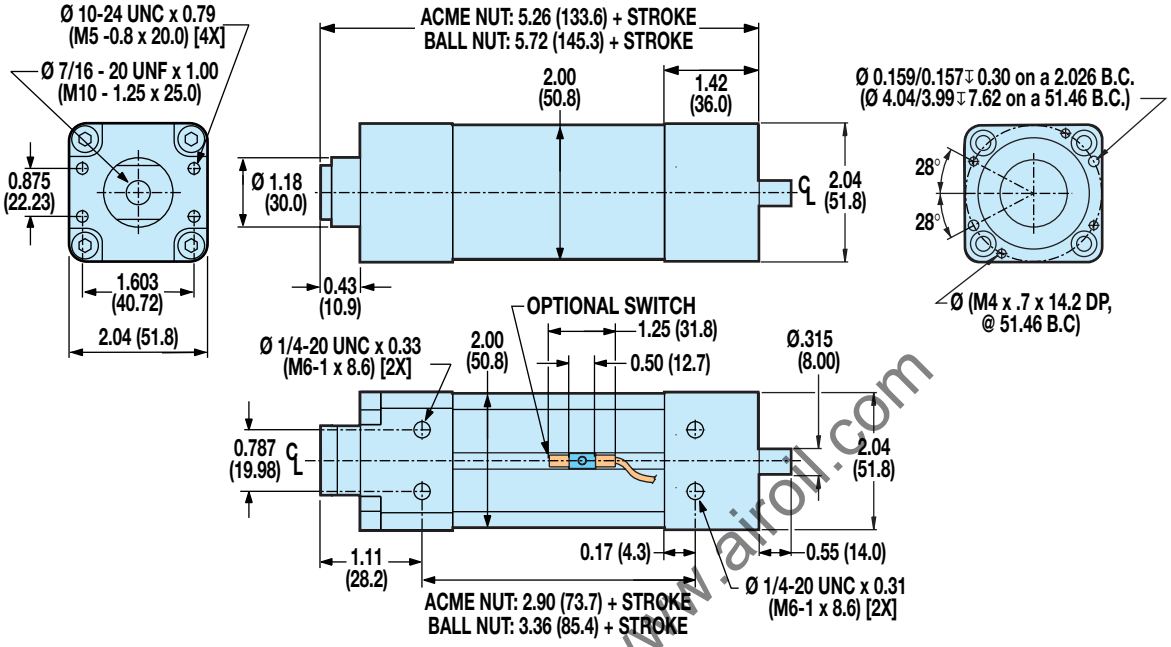
RSA/RSM24 IN-LINE (LMI) BASE MODEL OPTIONS AND SWITCH MOUNTING



ROD SCREW

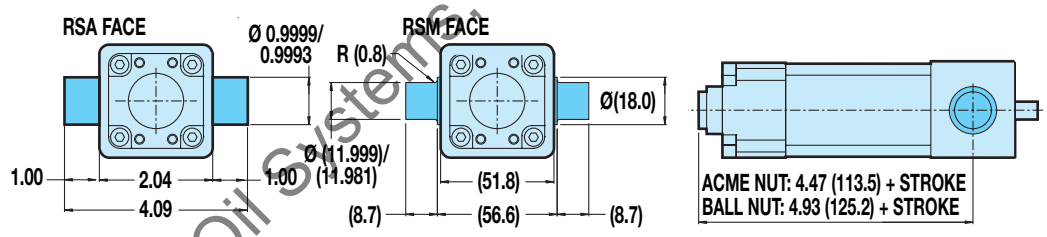
RSA/RSM24 Series

- In-line base model and switch mounting dimensions

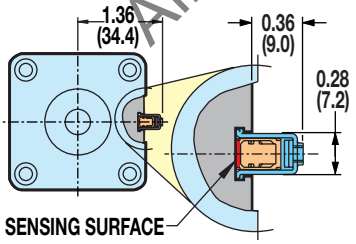


OPTIONAL TRUNNION MOUNT: TRN

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.



OPTIONAL SWITCH MOUNTING ❶ ❷



❶ ⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

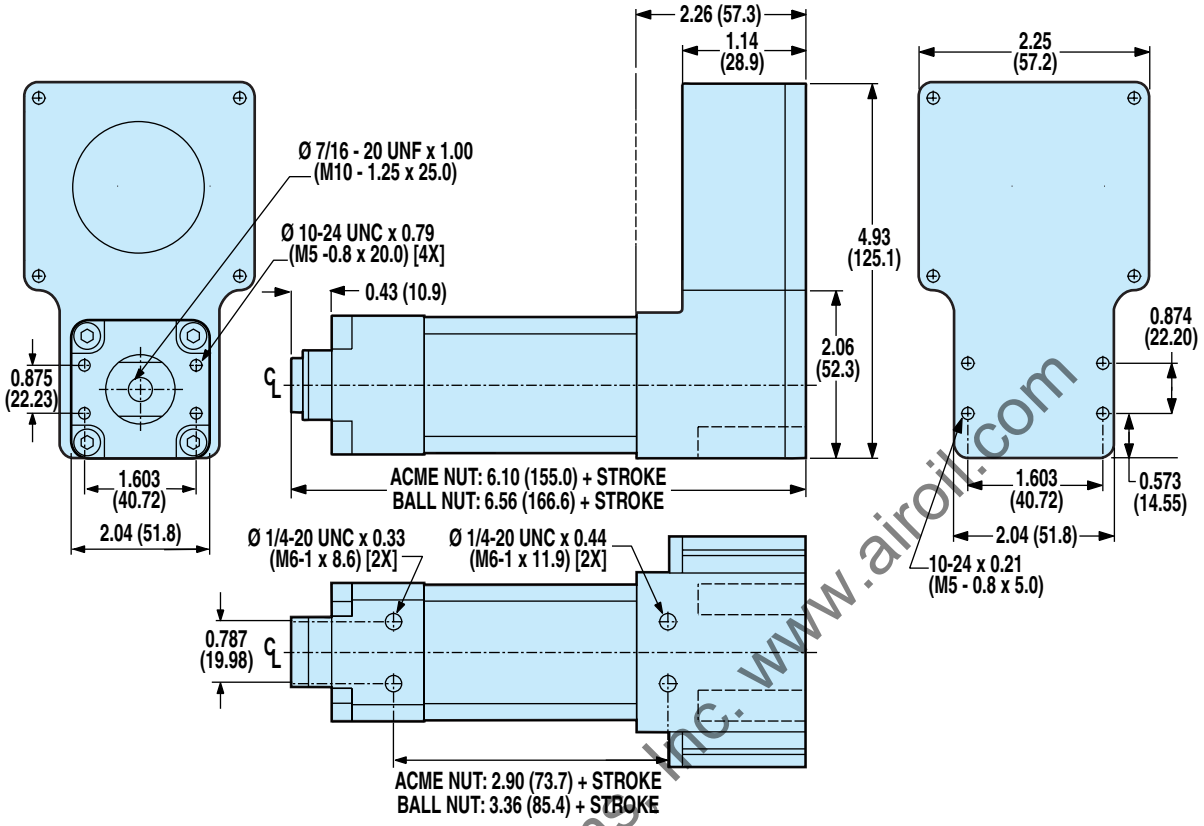
❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet

Unless otherwise noted, all dimensions shown are in inches (Dimensions in parenthesis are in millimeters)

RSA/RSM24 Series

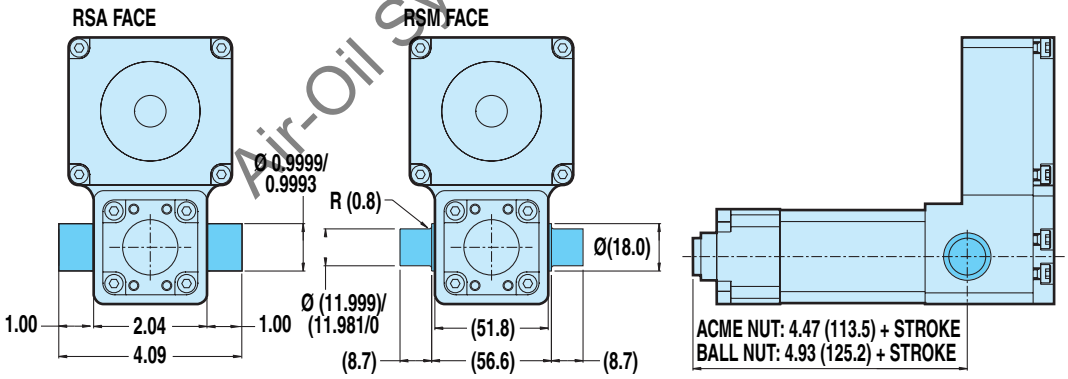
DIMENSIONS

RSA/RSM24 REVERSE PARALLEL (RP) BASE MODEL OPTIONS AND SWITCH MOUNTING

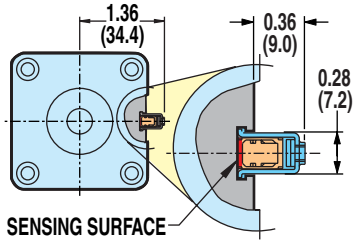


OPTIONAL TRUNNION MOUNT: TRN

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.

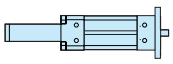


OPTIONAL SWITCH MOUNTING ❶⚠❷



❶⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet



ROD SCREW

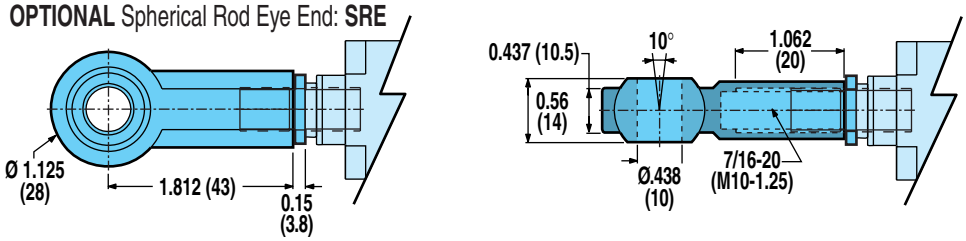
RSA/RSM24 Series

- Reverse parallel base model dimensions

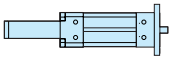
RSA/RSM24 RETROFITTABLE ROD END OPTIONS

FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

OPTIONAL Spherical Rod Eye End: **SRE**



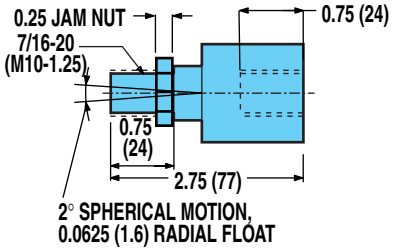
OPTIONAL Alignment Coupler Rod End: **ALC**



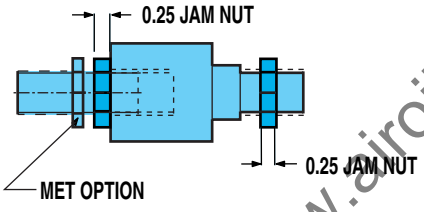
ROD SCREW

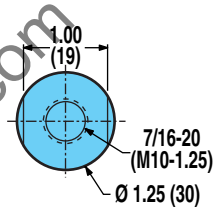
RSA/RSM24 Series
- Retrofittable rod end options

INTERNALLY THREADED END SPECIFIED

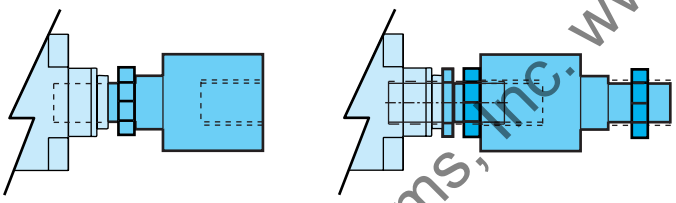


EXTERNALLY THREADED END SPECIFIED

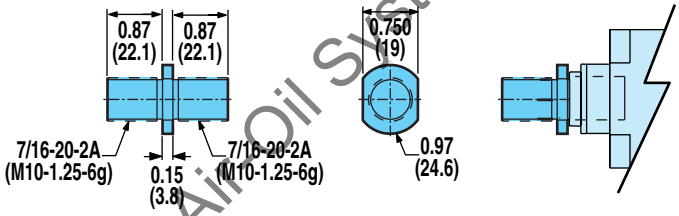




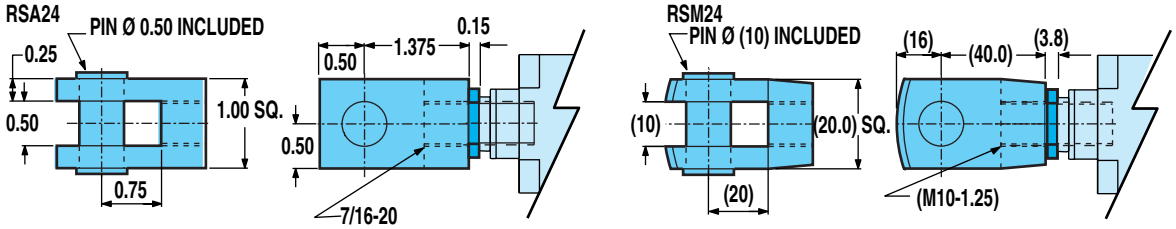
THE ALIGNMENT COUPLER COMES WITH AN INTERNAL THREAD. IF AN EXTERNAL THREAD IS PREFERRED, THE ADDITION OF THE "MET" OPTION IS REQUIRED.



OPTIONAL External Threaded Rod End: **MET**



OPTIONAL Clevis Rod End: **CLV**



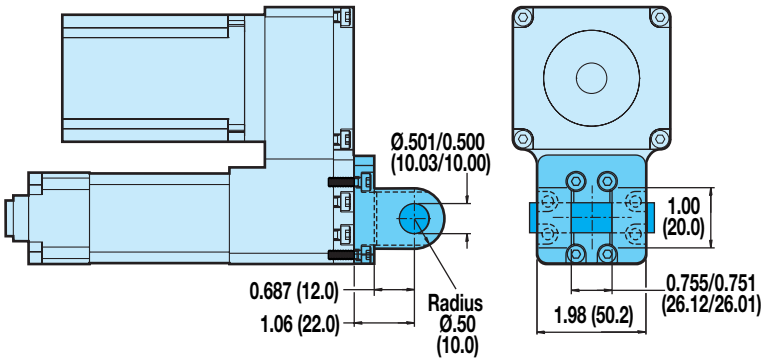
RSA/RSM24 Series

DIMENSIONS

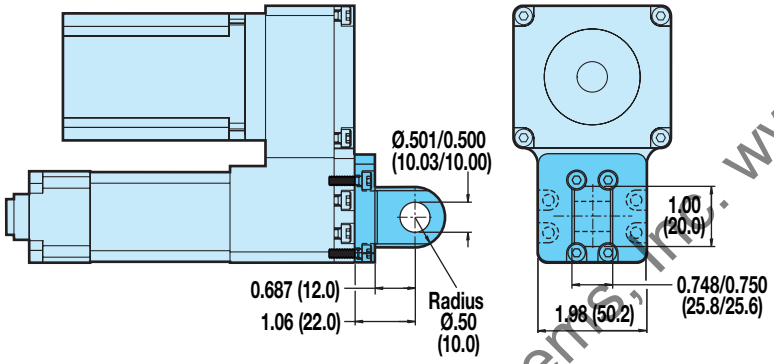
RSA/RSM24 RETROFITTABLE MOUNTING OPTIONS

FOR REVERSE PARALLEL (RP) MODELS ONLY

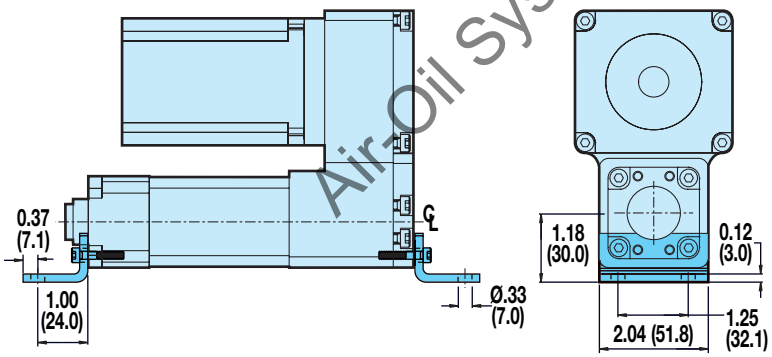
OPTIONAL Clevis Mount: **PCD**



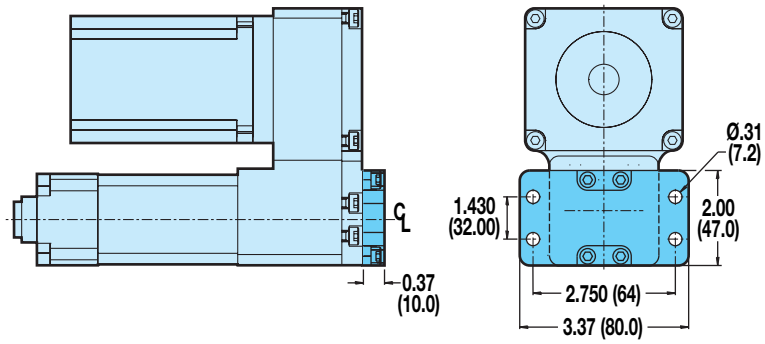
OPTIONAL Eye Mount: **PCS**



OPTIONAL Foot Mount: **FM2**

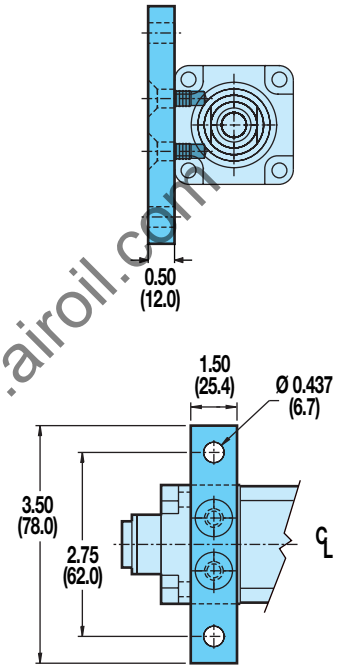


OPTIONAL Back Flange: **BFG**

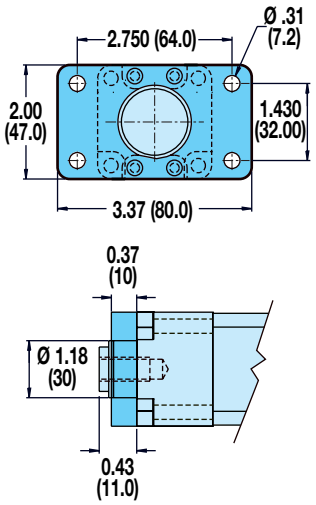


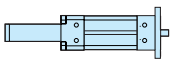
FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

OPTIONAL Mounting Plate: **MP2**



OPTIONAL Front Flange Mount: **FFG**





ROD SCREW

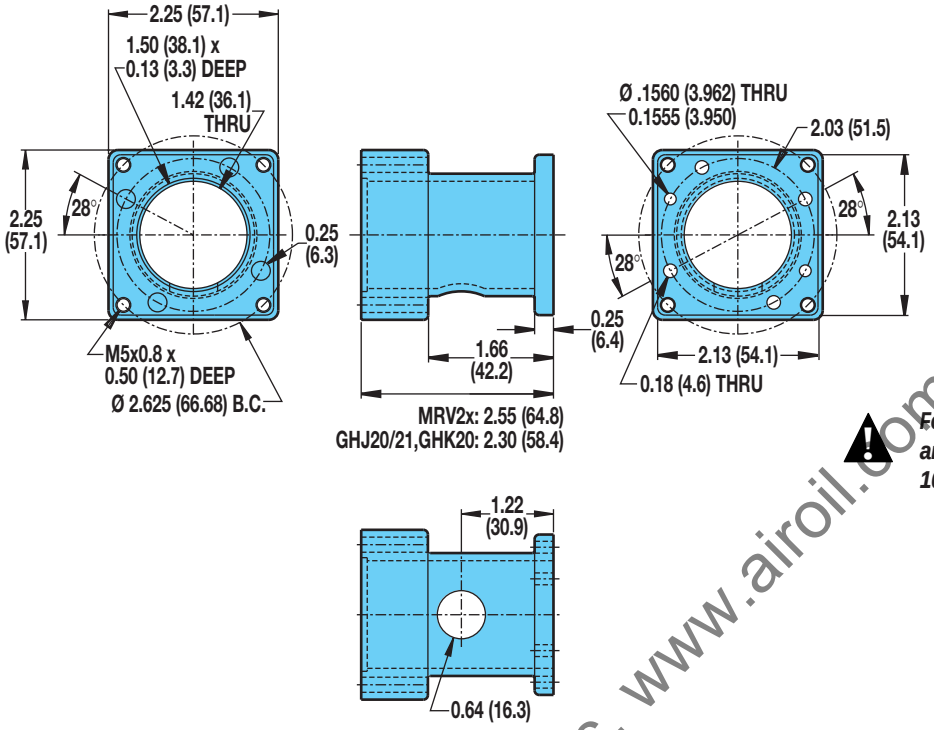
RSA/RSM24 Series

- Retrofittable mounting options

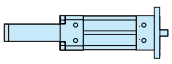
RSA/RSM24 Series

DIMENSIONS

RSA/RSM24: IN-LINE MOUNTING FOR 23-FRAME MOTORS AND GEARHEADS



For gearhead specifications and dimensions, see page F-10.

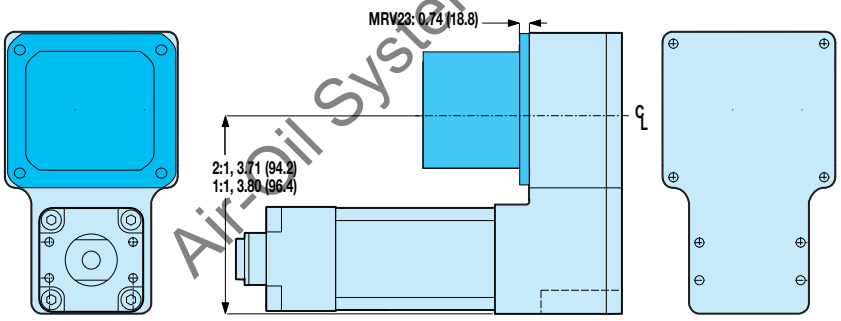


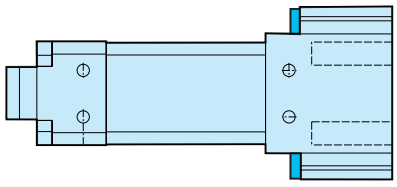
ROD SCREW

RSA/RSM24 Series

- In-line motor mounting
- Reverse parallel motor mounting

RSA/RSM24: REVERSE PARALLEL MOTOR MOUNTING





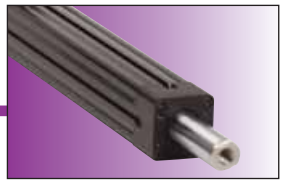
SPECIFICATIONS

	MOTOR	REDUCTION INERTIA AT MOTOR SHAFT			
		1:1		2:1	
		lb-in²	kg-cm²	lb-in²	kg-cm²
BRUSHLESS	MRV21, 22, 23, 24	.007	.0205	.019	.0541

REDUCTION EFFICIENCY: 0.95

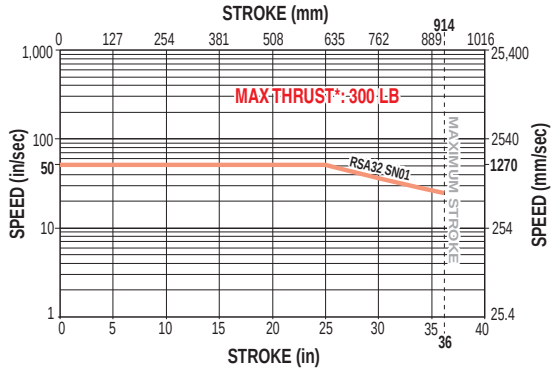
RSA/RSM32 Series

ACME SCREW SPECIFICATIONS

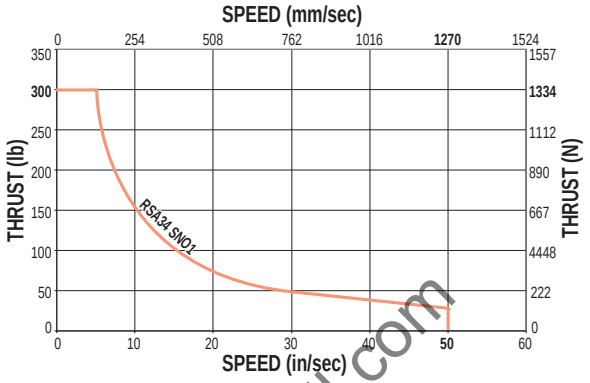


RSA32 ACME SCREW CRITICAL SPEED AND PV LIMITS

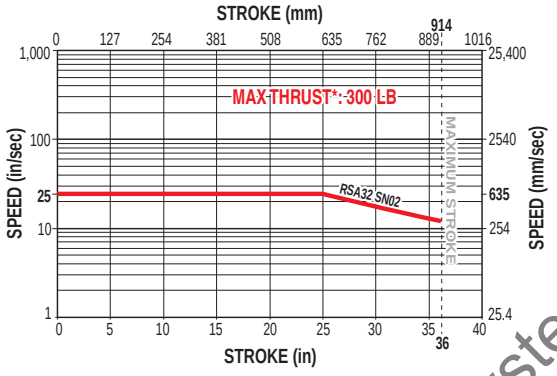
CRITICAL SPEED WITH 0.75" 1TPI ENGLISH ACME SCREW



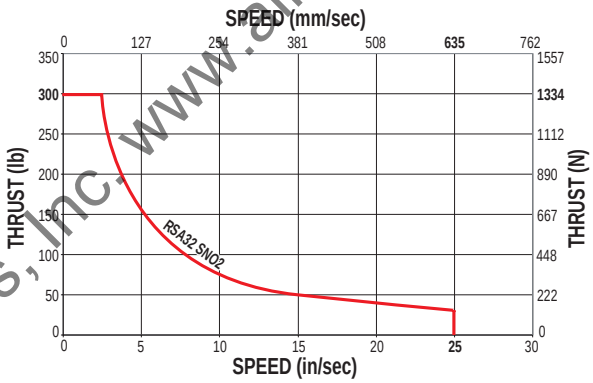
PV LIMITS: 0.75" 1TPI ENGLISH ACME SCREW



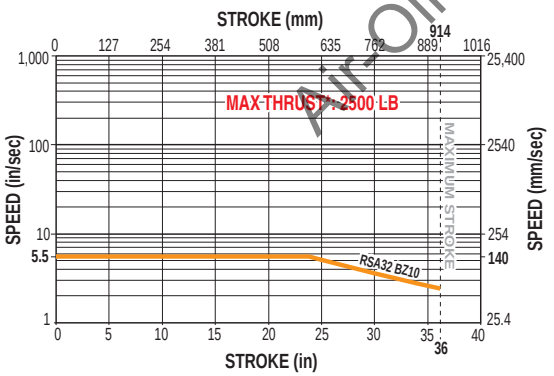
CRITICAL SPEED WITH 0.75" 2TPI ENGLISH ACME SCREW



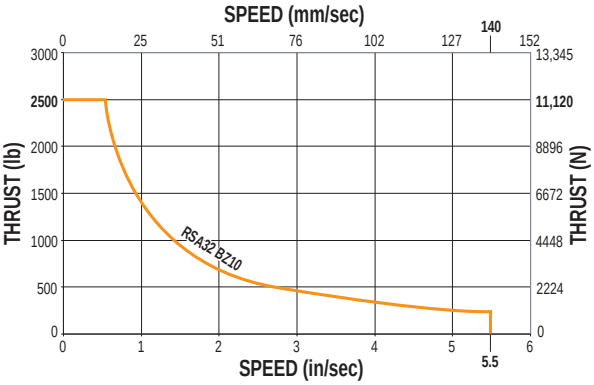
PV LIMITS: 0.75" 2TPI ENGLISH ACME SCREW



CRITICAL SPEED WITH 0.75" 10TPI ENGLISH ACME SCREW



PV LIMITS: 0.75" 10TPI ENGLISH ACME SCREW



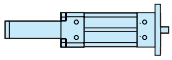
SN = Solid Nut ***BZ= Bronze Nut***

**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

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

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

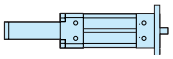
$$\text{Thrust} \quad \text{Speed} \quad \leq 0.1$$



ROD SCREW

RSA/RSM32 Series

- Acme screw critical speed and PV limits



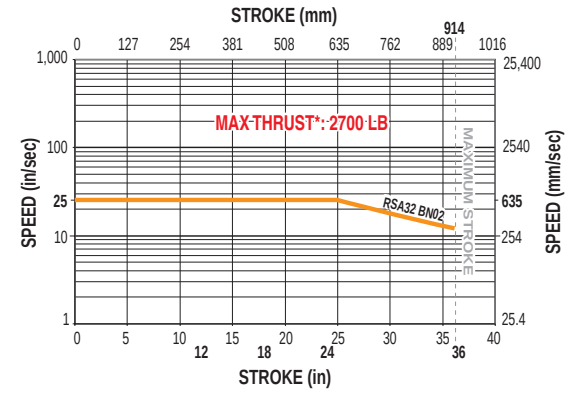
ROD SCREW

RSA/RSM32 Series

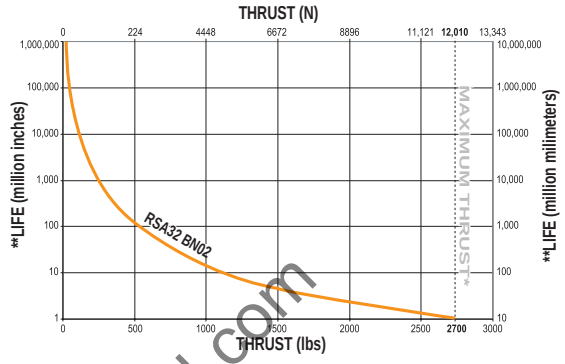
- Ball screw critical speed and life calculations

RSA32 BALL SCREW CRITICAL SPEED AND LIFE CALCULATIONS

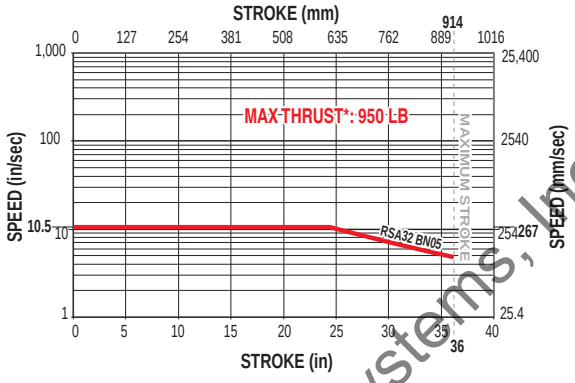
CRITICAL SPEED WITH 0.75" 2TPI ENGLISH BALL SCREW



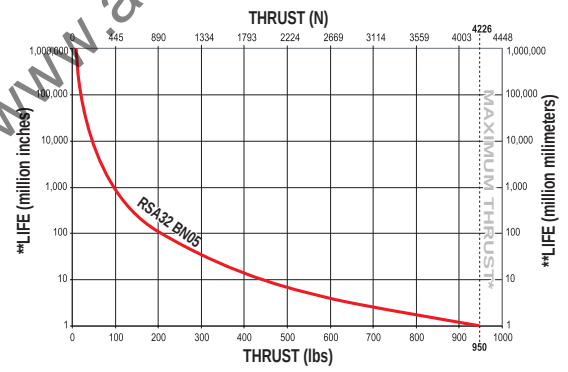
LIFE CALCULATION: 0.75" 2TPI ENGLISH BALL SCREW



CRITICAL SPEED WITH 0.75" 5TPI ENGLISH BALL SCREW



LIFE CALCULATION: 0.75" 5TPI ENGLISH BALL SCREW

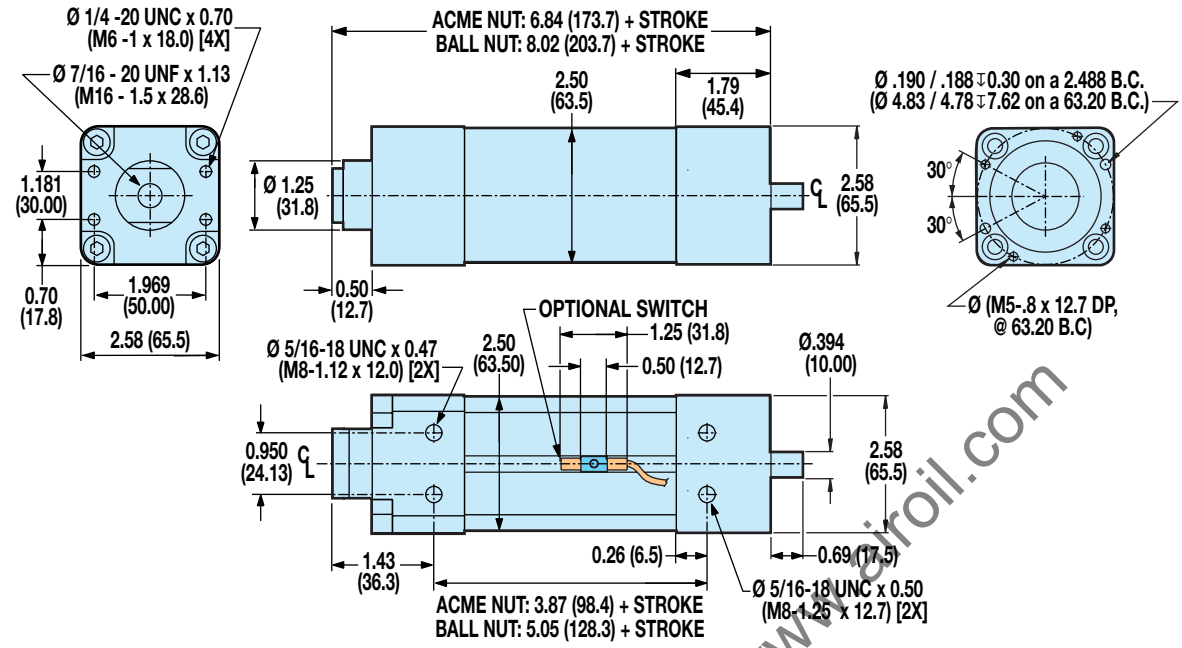


BN = Ball Nut

**** Maximum thrust reflects 90% reliability for 1 million linear inches of travel.***

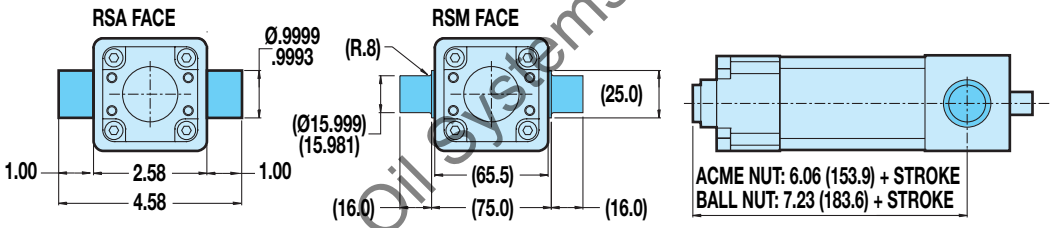
*****Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.***

RSA/RSM32 IN-LINE (LMI) BASE MODEL OPTIONS AND SWITCH MOUNTING

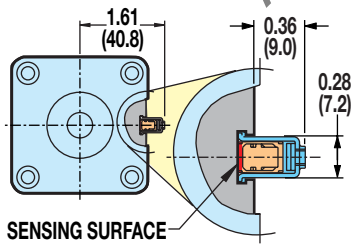


OPTIONAL TRUNNION MOUNT: TRN

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.

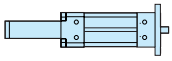


OPTIONAL SWITCH MOUNTING ❶ ❷



❶ ⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet



ROD SCREW

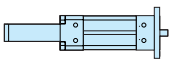
RSA/RSM32 Series

- In-line base model and switch mounting dimensions

Unless otherwise noted, all dimensions shown are in inches (Dimensions in parenthesis are in millimeters)

DIMENSIONS

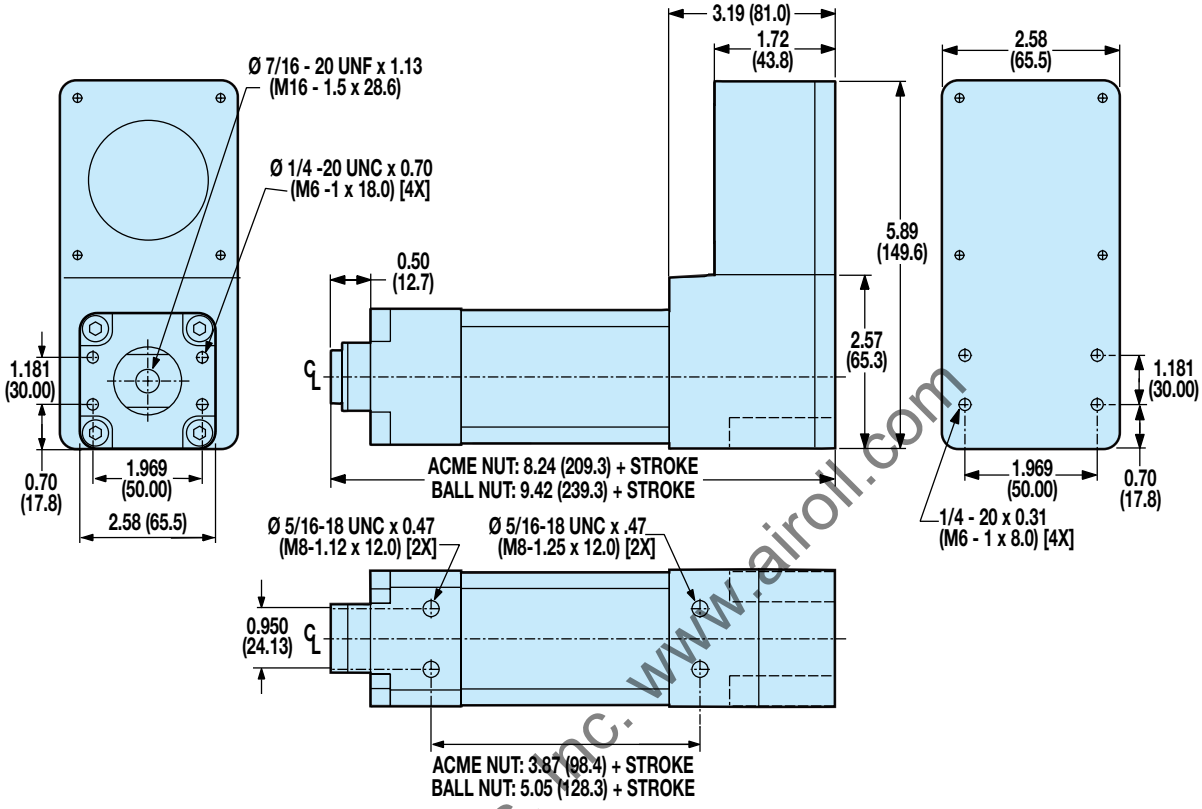
RSA/RSM32 REVERSE PARALLEL (RP) BASE MODEL OPTIONS AND SWITCH MOUNTING



ROD SCREW

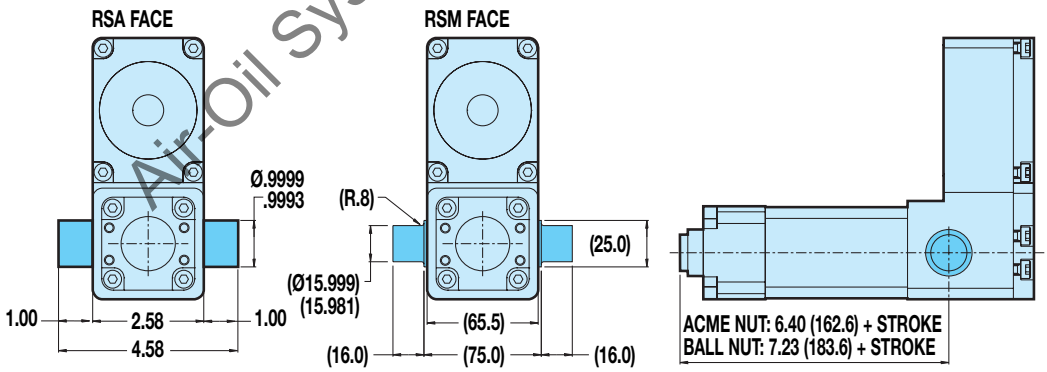
RSA/RSM32 Series

- Reverse parallel base model and switch mounting dimensions

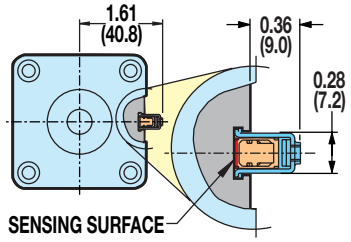


OPTIONAL TRUNNION MOUNT: TRN

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.



OPTIONAL SWITCH MOUNTING ❶⚠ ❷



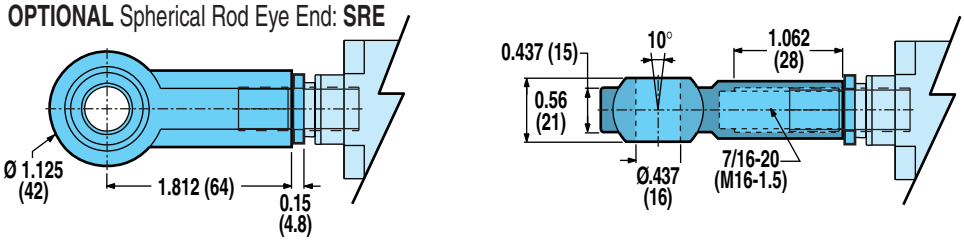
❶⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet

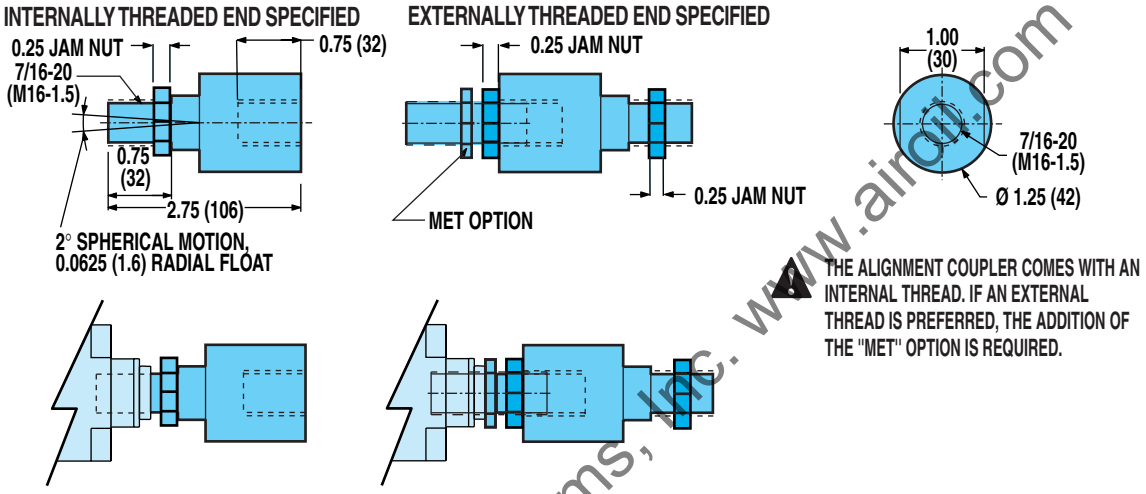
RSA/RSM32 RETROFITTABLE ROD END OPTIONS

FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

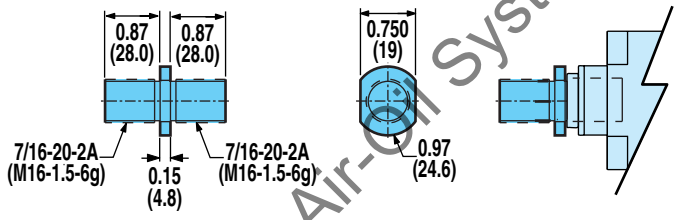
OPTIONAL Spherical Rod Eye End: **SRE**



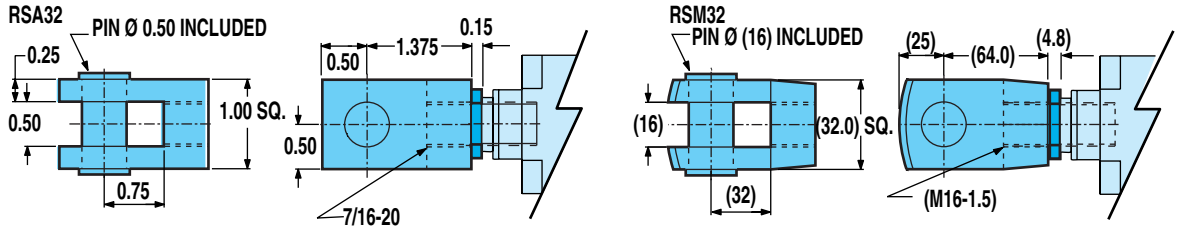
OPTIONAL Alignment Coupler Rod End: **ALC**

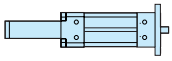


OPTIONAL External Threaded Rod End: **MET**



OPTIONAL Clevis Rod End: **CLV**



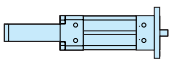


ROD SCREW

RSA/RSM32 Series

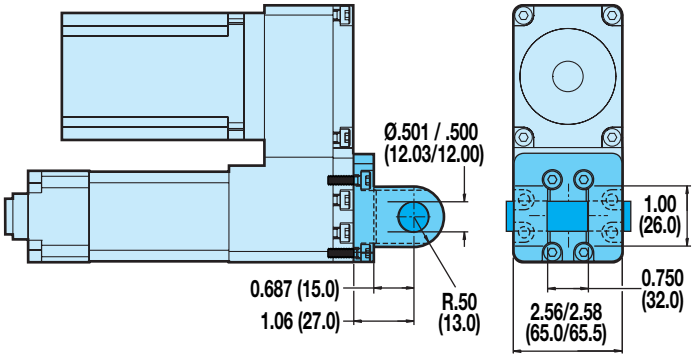
- Retrofittable rod end options dimensions

RSA/RSM32 RETROFITTABLE MOUNTING OPTIONS

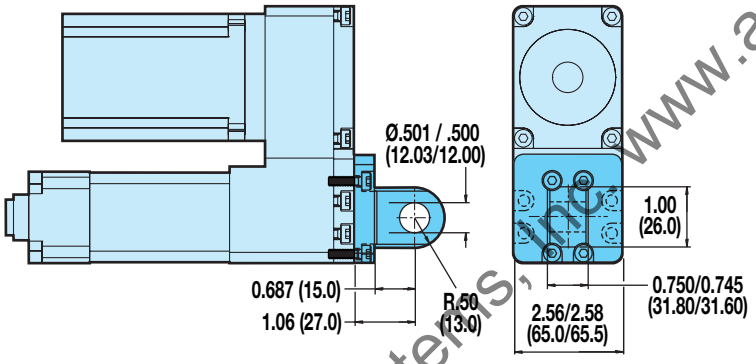


FOR REVERSE PARALLEL (RP) MODELS ONLY

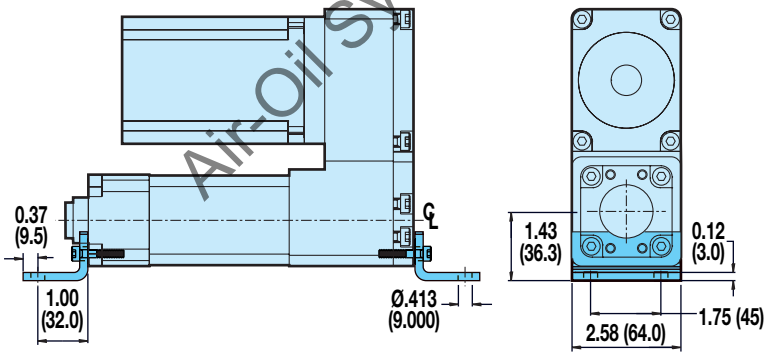
OPTIONAL Clevis Mount: **PCD**



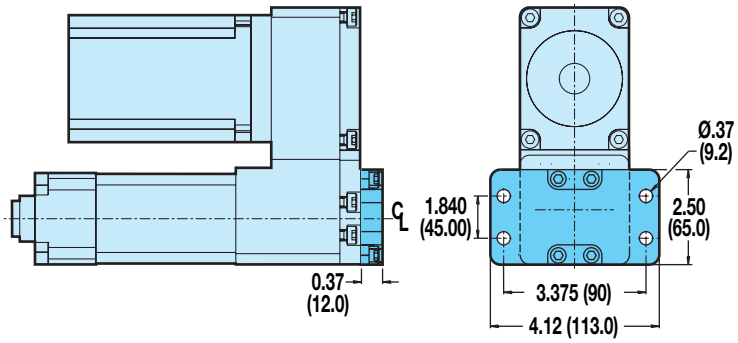
OPTIONAL Eye Mount: **PCS**



OPTIONAL Foot Mount: **FM2**

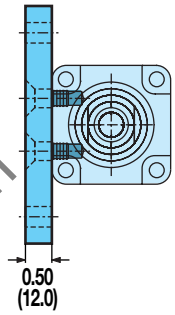


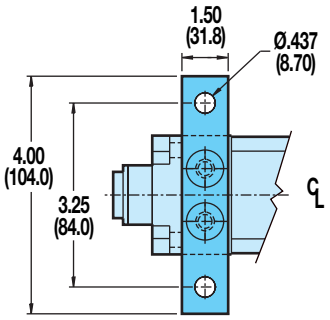
OPTIONAL Back Flange: **BFG**



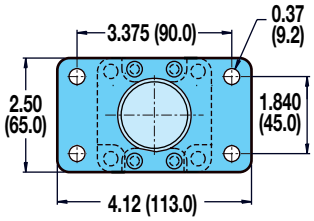
FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

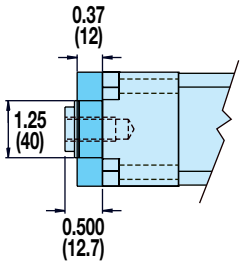
OPTIONAL Mounting Plate: **MP2**





OPTIONAL Front Flange Mount: **FFG**



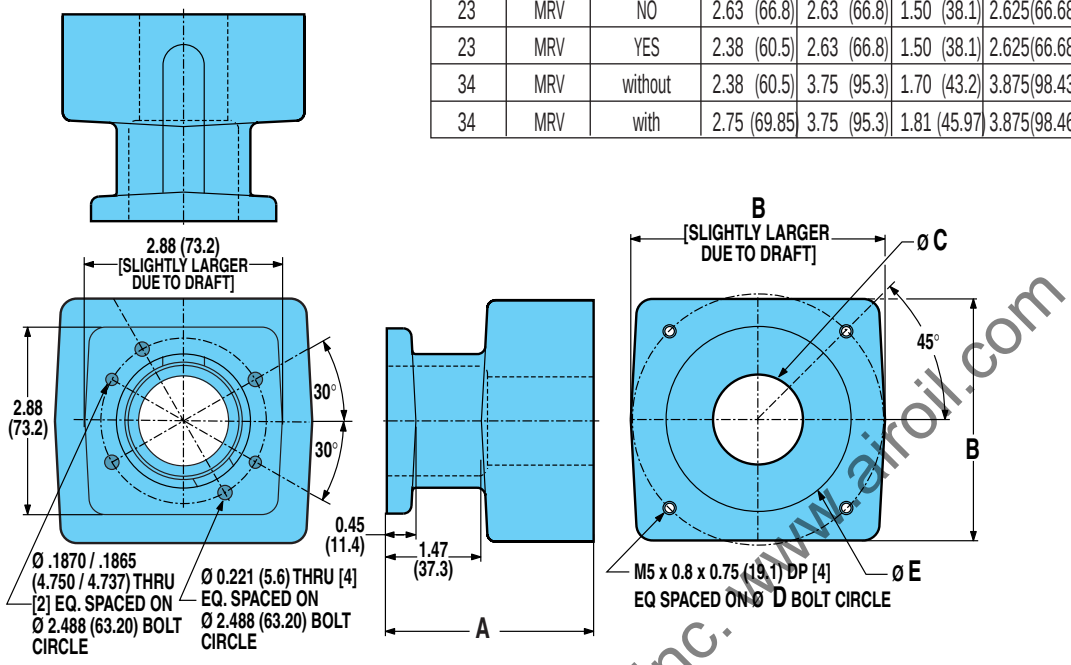


RSA/RSM32 Series

DIMENSIONS

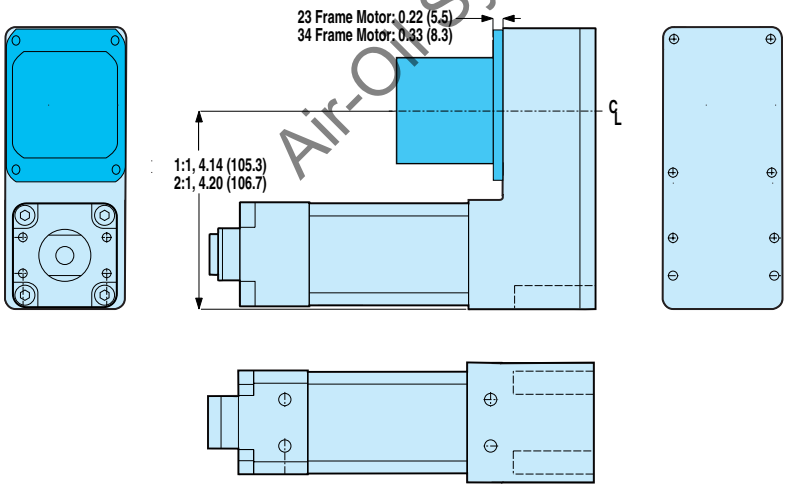
RSA/RSM32: IN-LINE MOUNTING MOTORS AND GEARHEADS

FRAME	MOTOR	GEARHEAD	A		B		C		D		E	
			in	(mm)	in	(mm)	in	(mm)	in	(mm)	in	(mm)
23	MRV	NO	2.63	(66.8)	2.63	(66.8)	1.50	(38.1)	2.625	(66.68)	1.505	(38.23)
23	MRV	YES	2.38	(60.5)	2.63	(66.8)	1.50	(38.1)	2.625	(66.68)	1.505	(38.23)
34	MRV	without	2.38	(60.5)	3.75	(95.3)	1.70	(43.2)	3.875	(98.43)	2.880	(73.15)
34	MRV	with	2.75	(69.85)	3.75	(95.3)	1.81	(45.97)	3.875	(98.46)	2.880	(73.15)



For gearhead specifications and dimensions, see page F-10.

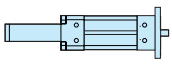
RSA/RSM32: REVERSE PARALLEL MOTOR MOUNTING



SPECIFICATIONS

	MOTOR	REDUCTION INERTIA AT MOTOR SHAFT			
		1:1		2:1	
		lb-in²	kg-cm²	lb-in²	kg-cm²
BRUSHLESS	MRV21, 22, 23, 24	.044	.1288	.109	.3175
BRUSHLESS	MRV31, 32, 33	.044	.1288	.109	.3175

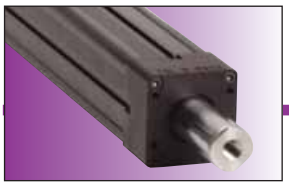
REDUCTION EFFICIENCY: 0.95



ROD SCREW

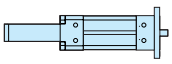
RSA/RSM32 Series

- In-line motor mounting
- Reverse parallel motor mounting



RSA/RSM50 Series

ACME SCREW SPECIFICATIONS



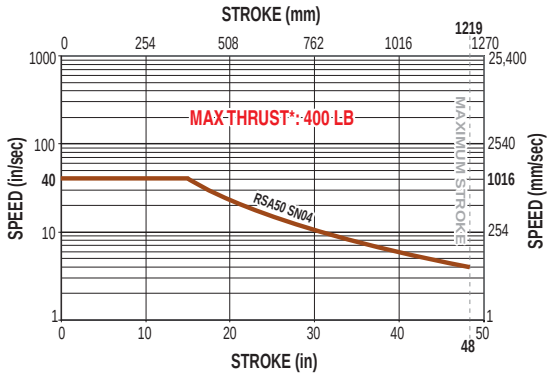
ROD SCREW

RSA/RSM50 Series

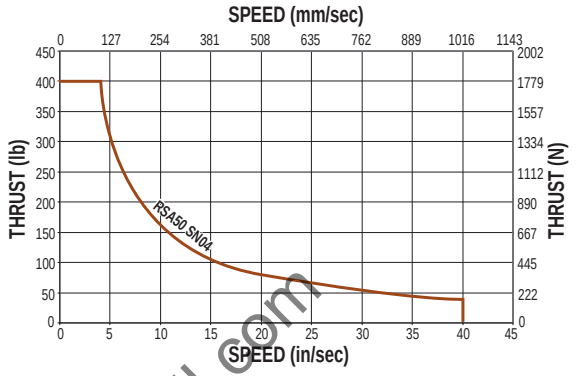
- Acme screw critical speed and PV limits

RSA50 ACME SCREW CRITICAL SPEED AND PV LIMITS

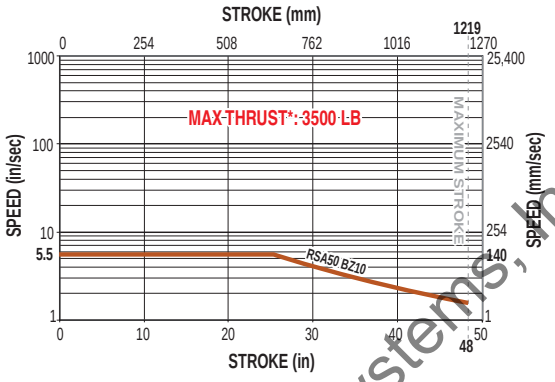
CRITICAL SPEED WITH 1.0" 4TPI ENGLISH ACME SCREW



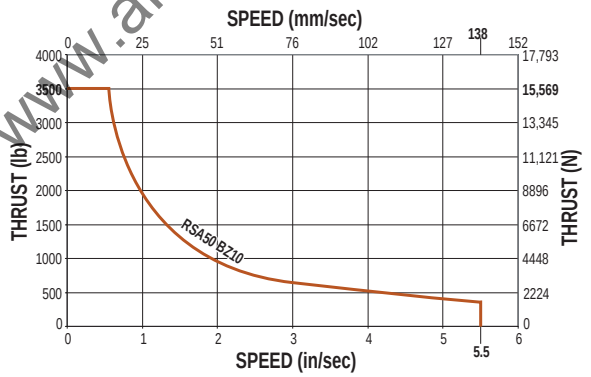
PV LIMITS: 1.0" 4TPI ENGLISH ACME SCREW



CRITICAL SPEED WITH 1.0" 10TPI ENGLISH ACME SCREW



PV LIMITS: 1.0" 10TPI ENGLISH ACME SCREW



SN = Solid Nut ***BZ= Bronze Nut***

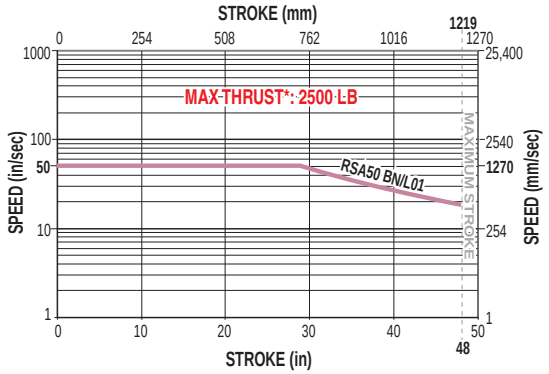
**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

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

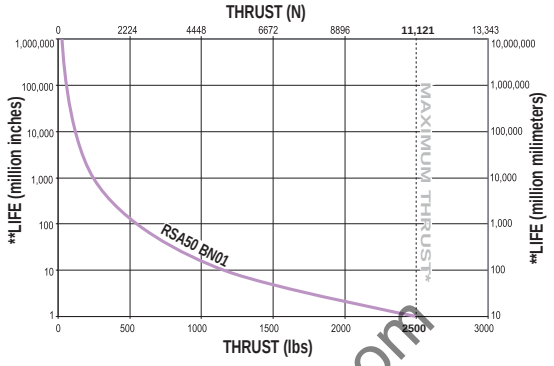
$$\left(\frac{P}{\text{Thrust}}\right) \text{ (Max. Thrust Rating)} \times \left(\frac{V}{\text{Speed}}\right) \text{ (Max. Speed Rating)} \leq 0.1 \leq 0.1$$

RSA50 BALL SCREW CRITICAL SPEED AND LIFE CALCULATIONS

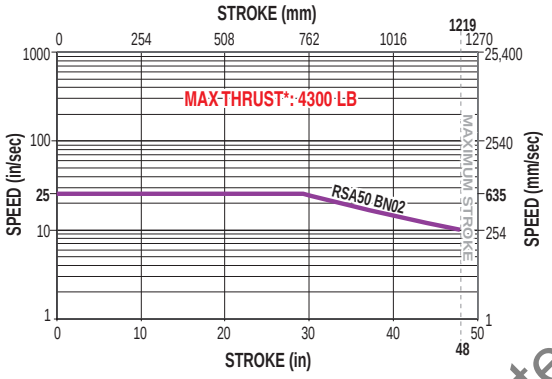
CRITICAL SPEED WITH 1.0" 1TPI ENGLISH BALL SCREW



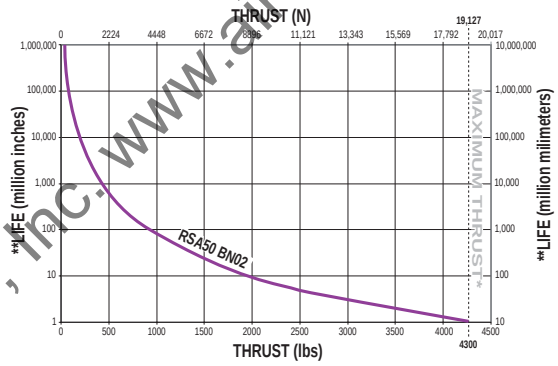
LIFE CALCULATION: 1.0" 1TPI ENGLISH BALL SCREW



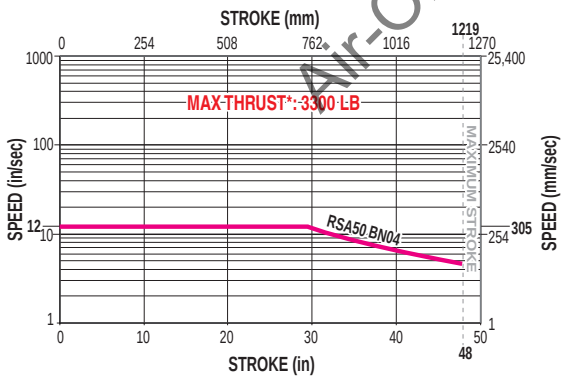
CRITICAL SPEED WITH 1.0" 2TPI ENGLISH BALL SCREW



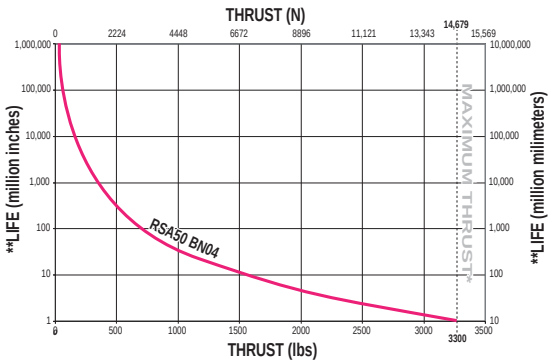
LIFE CALCULATION: 1.0" 2TPI ENGLISH BALL SCREW



CRITICAL SPEED WITH 1.0" 4TPI ENGLISH BALL SCREW



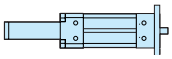
LIFE CALCULATION: 1.0" 4TPI ENGLISH BALL SCREW



BN = Ball Nut

**** Maximum thrust reflects 90% reliability for 1 million linear inches of travel.***

*****Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.***



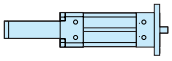
ROD SCREW

RSA/RSM50 Series

- Ball screw critical speed and life calculations

DIMENSIONS

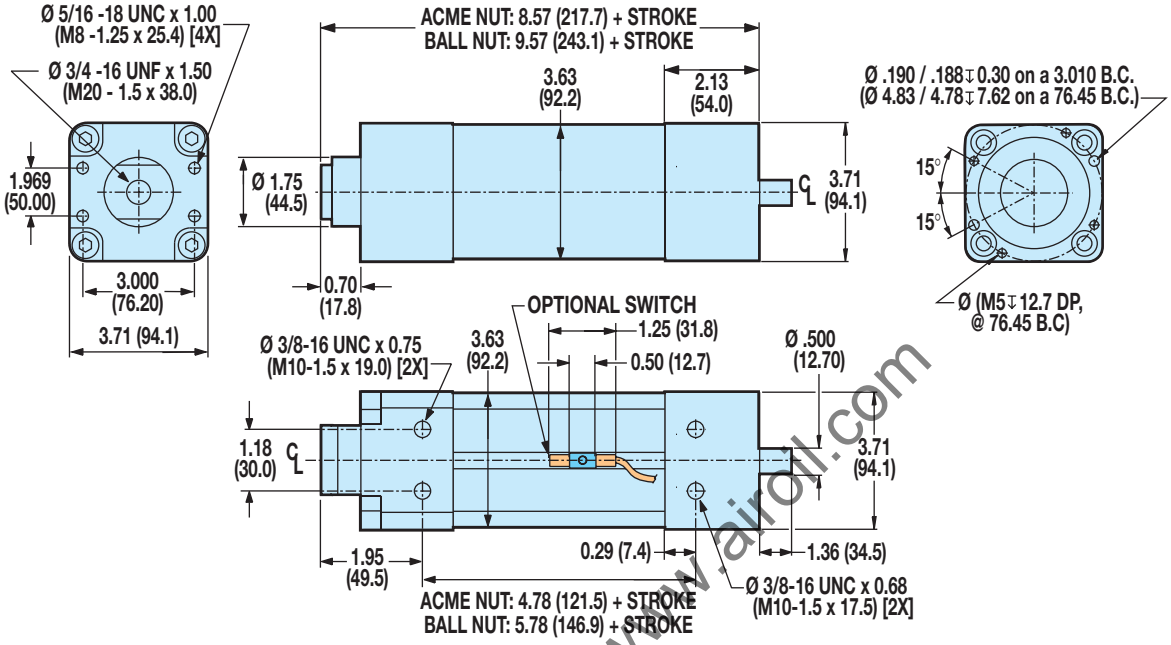
RSA/RSM50 IN-LINE (LMI) BASE MODEL OPTIONS AND SWITCH MOUNTING



ROD SCREW

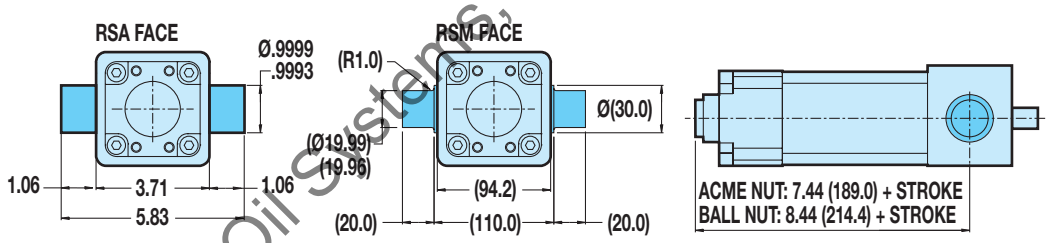
RSA/RSM50 Series

- In-line base model and switch mounting dimensions

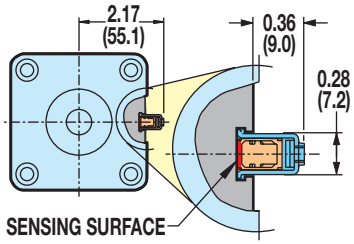


OPTIONAL TRUNNION MOUNT: TRN

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.



OPTIONAL SWITCH MOUNTING ❶⚠❷

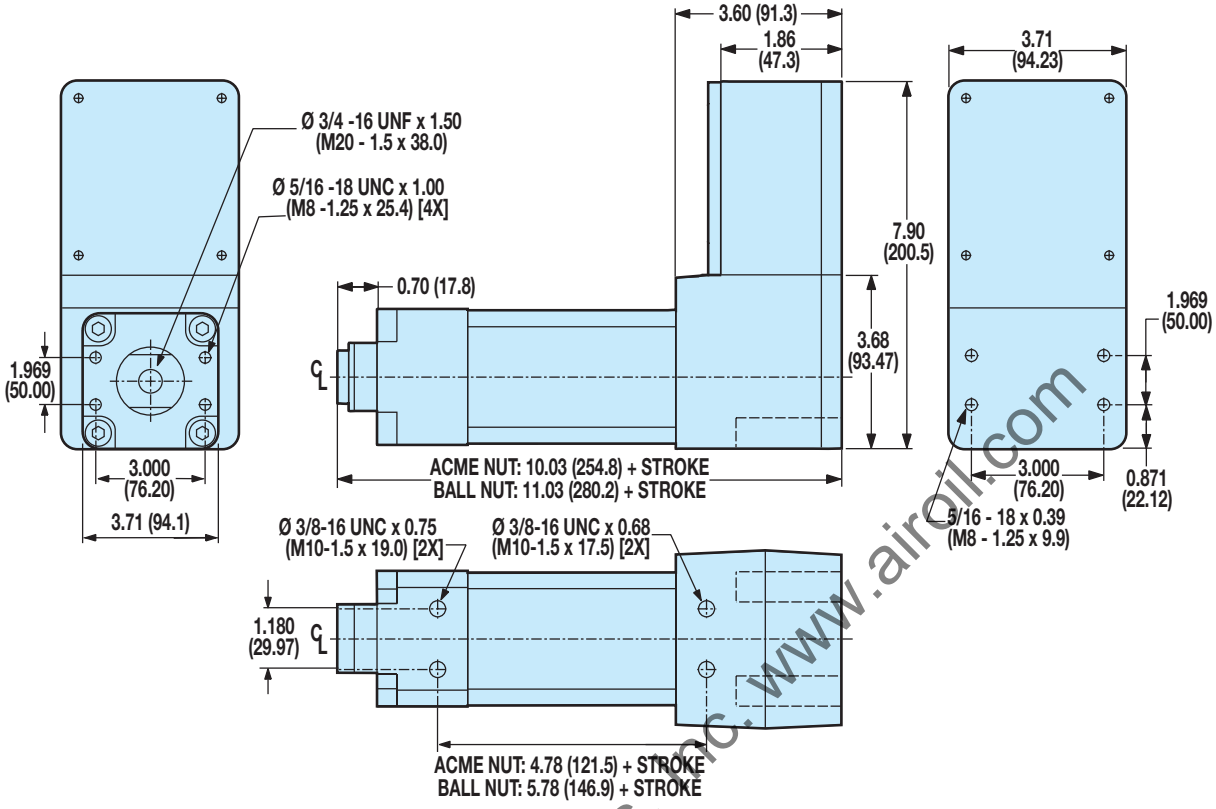


❶⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet

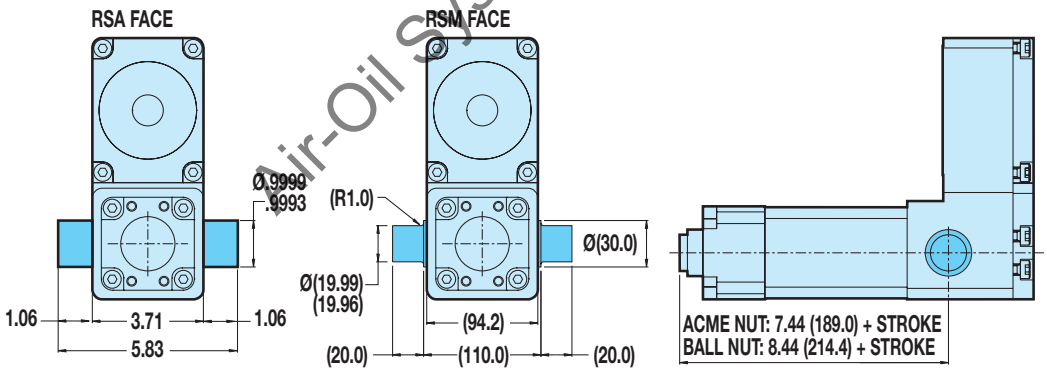
DIMENSIONS

RSA/RSM50 REVERSE PARALLEL (RP) BASE MODEL OPTIONS AND SWITCH MOUNTING

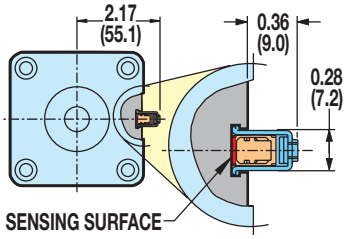


OPTIONAL TRUNNION MOUNT: TRN

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.

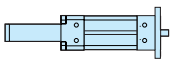


OPTIONAL SWITCH MOUNTING❶⚠❷



❶⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet



ROD SCREW

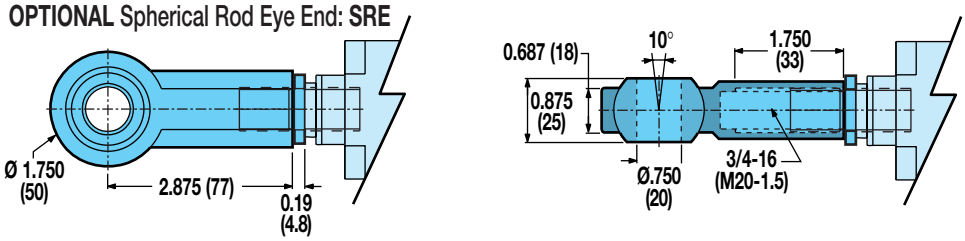
RSA/RSM50 Series

- Reverse parallel base model and switch mounting dimensions

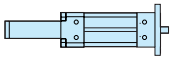
RSA/RSM50 RETROFITTABLE ROD END OPTIONS

FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

OPTIONAL Spherical Rod Eye End: **SRE**

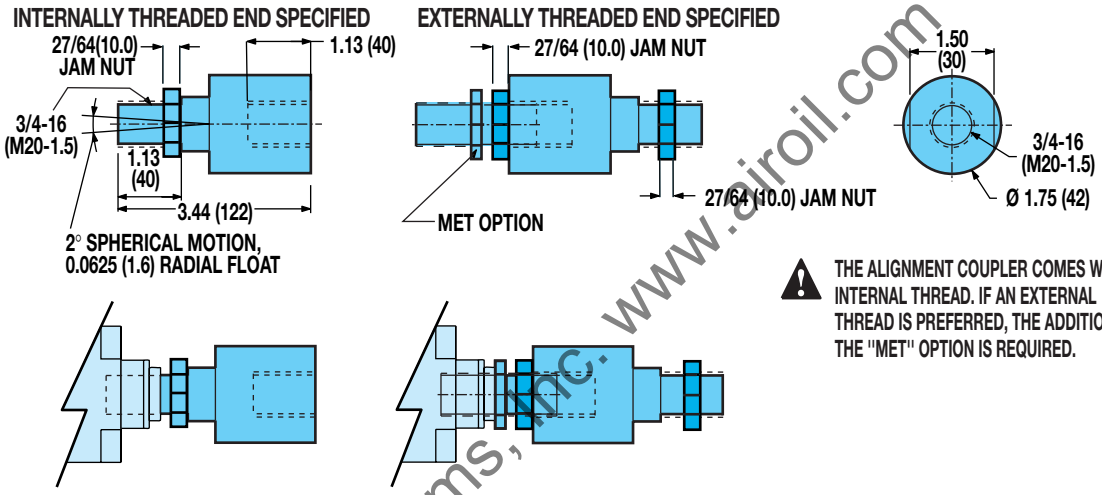


OPTIONAL Alignment Coupler Rod End: **ALC**



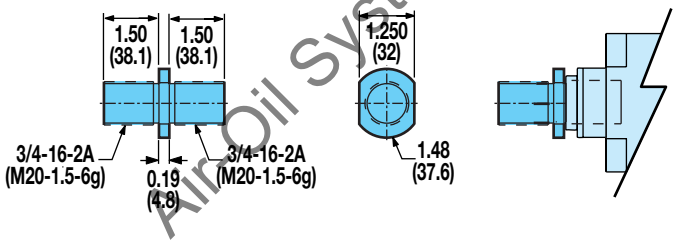
ROD SCREW

RSA/RSM50 Series
- Retrofittable rod end options

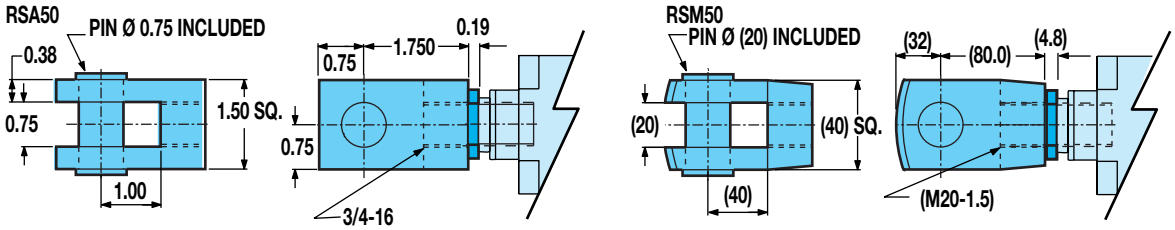


THE ALIGNMENT COUPLER COMES WITH AN INTERNAL THREAD. IF AN EXTERNAL THREAD IS PREFERRED, THE ADDITION OF THE "MET" OPTION IS REQUIRED.

OPTIONAL External Threaded Rod End: **MET**



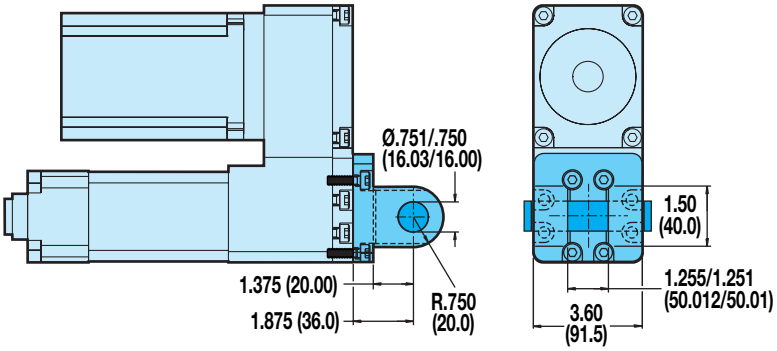
OPTIONAL Clevis Rod End: **CLV**



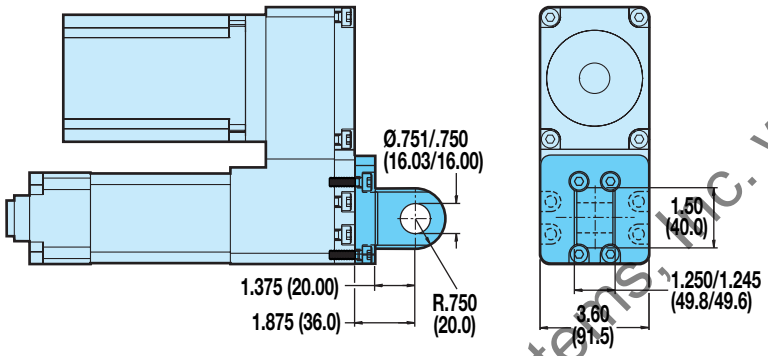
RSA/RSM50 RETROFITTABLE MOUNTING OPTIONS

FOR REVERSE PARALLEL (RP) MODELS ONLY

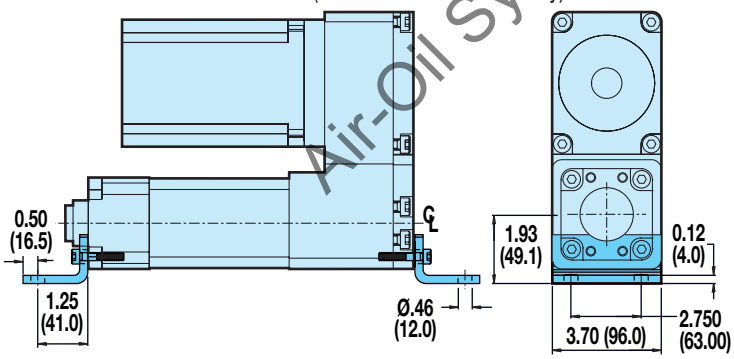
OPTIONAL Clevis Mount: **PCD** (for use on RP models only)



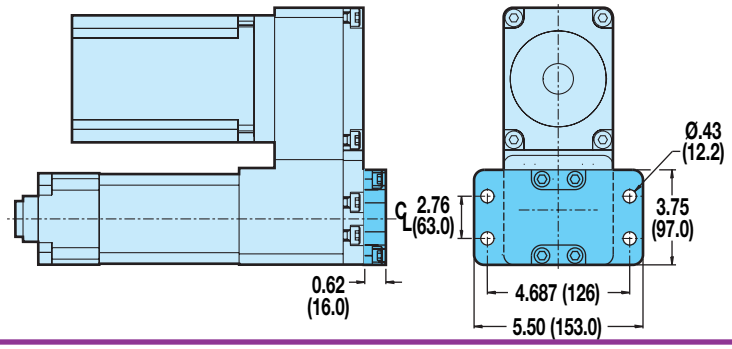
OPTIONAL Eye Mount: **PCS** (for use on RP models only)



OPTIONAL Foot Mount: **FM2** (for use on RP models only)

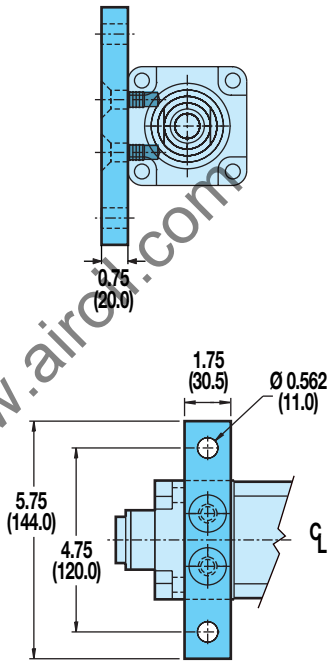


OPTIONAL Back Flange: **BFG** (for use on RP models only)

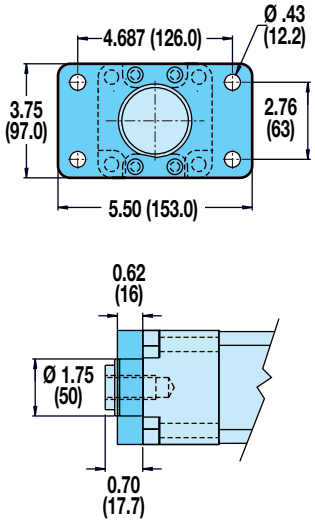


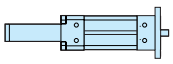
FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

OPTIONAL Mounting Plate: **MP2**



OPTIONAL Front Flange Mount: **FFG**





ROD SCREW

RSA/RSM50 Series

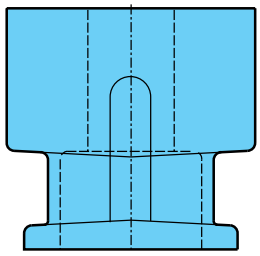
- Retrofittable mounting options

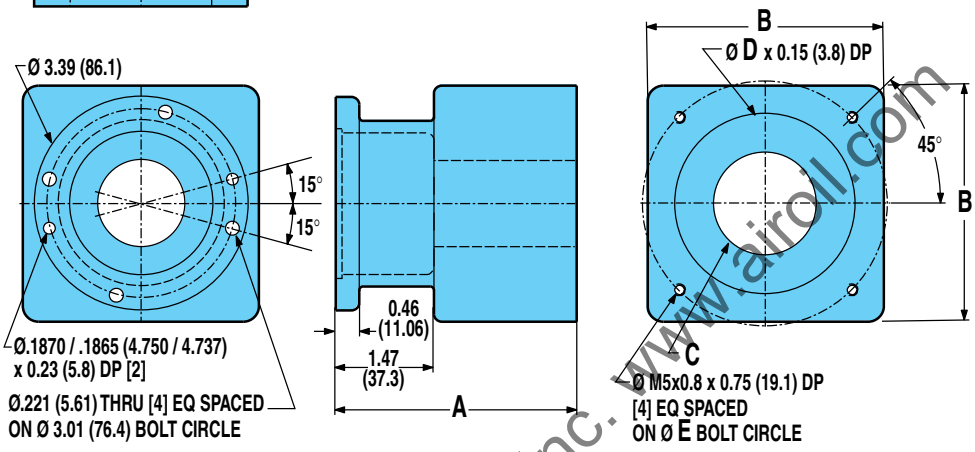
RSA/RSM50 Series

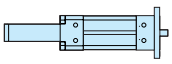
DIMENSIONS

RSA/RSM50: IN-LINE MOUNTING MOTORS AND GEARHEADS

FRAME	MOTOR	GEARHEAD	A	B	C	D	E
			in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
23	MRV	NO	3.30 (83.8)	3.00 (76.2)	2.31(58.67	1.505 (38.23)	2.625 (66.6)
23	MRV	YES	3.05 (63.5)	3.00 (76.2)	2.31(58.67	1.505 (38.23)	2.625 (66.6)
34	MRV	NO	3.05 (63.5)	3.75 (95.2)	2.31(58.67	2.880 (73.15)	3.875 (98.4)
34	MRV	YES	3.83 (97.2)	3.75 (95.2)	2.31(58.67	2.880 (73.15)	3.875 (98.4)
56	MRV	NO	4.48 (77.4)	3.75 (95.2)	2.31(58.67	4.505 (114.43)	5.875 (149.23)







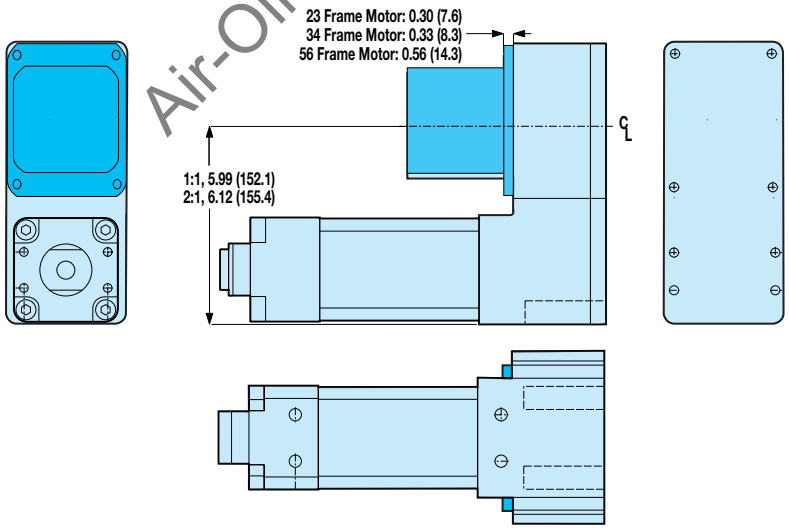
ROD SCREW

RSA/RSM50 Series

- In-line mounting motors and gearheads
- Reverse parallel motor mounting

⚠ *For gearhead specifications and dimensions, see page F-10.*

RSA/RSM50: REVERSE PARALLEL MOTOR MOUNTING



SPECIFICATIONS

	MOTOR	REDUCTION INERTIA AT MOTOR SHAFT			
		1:1		2:1	
		lb-in²	kg-cm²	lb-in²	kg-cm²
BRUSHLESS	MRV21, 22, 23, 23, 24, 31, 32, 33, 51	.198	.5794	.549	1.682

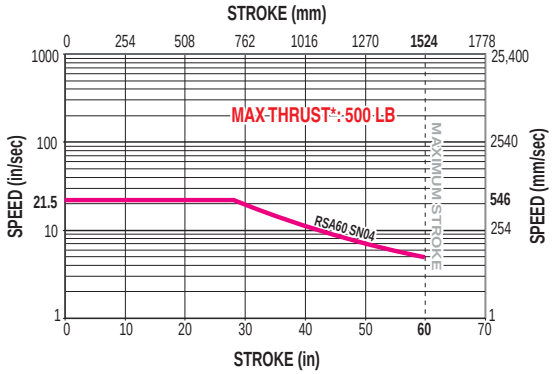
REDUCTION EFFICIENCY: 0.95

RSA/RSM 64 Series

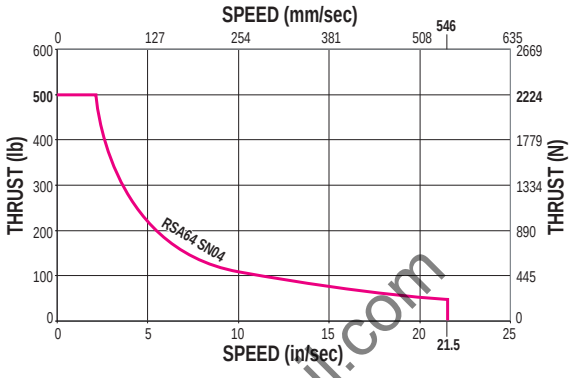
ACME SCREW SPECIFICATIONS

RSA64 ACME SCREW CRITICAL SPEED AND PV LIMITS

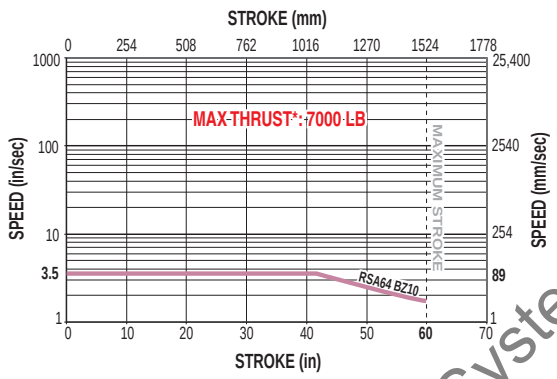
CRITICAL SPEED WITH 1.5" 4TPI ENGLISH ACME SCREW



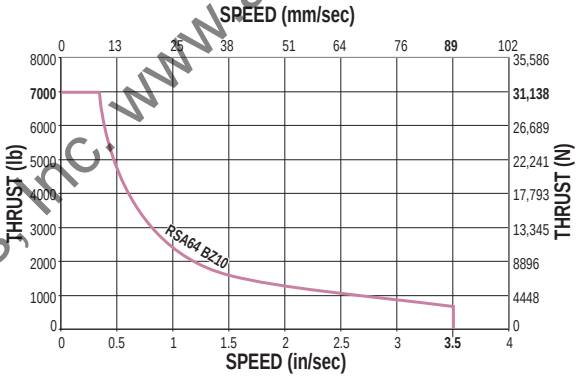
PV LIMITS: 1.5" 4TPI ENGLISH ACME SCREW

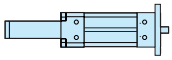


CRITICAL SPEED WITH 1.5" 10TPI ENGLISH ACME SCREW



PV LIMITS: 1.5" 10TPI ENGLISH ACME SCREW





ROD SCREW

RSA/RSM64 Series

- Acme screw critical speed and PV limits

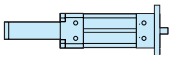
SN = Solid Nut *BZ= Bronze Nut*

**** Maximum thrust is the maximum continuous dynamic thrust subject to Thrust x Velocity limitation.***

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

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

$$\leq 0.1$$



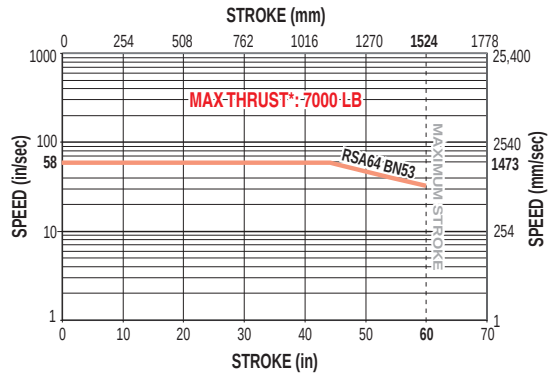
ROD SCREW

RSA/RSM64 Series

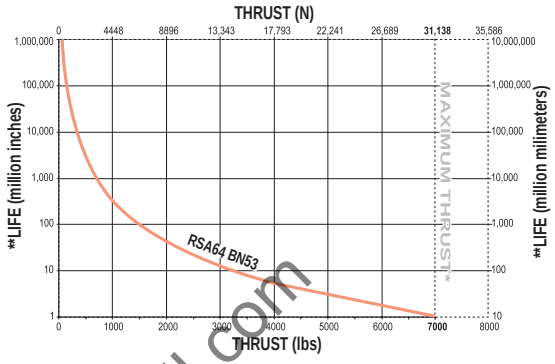
- Ball screw critical speed and life calculations

RSA64 BALL SCREW CRITICAL SPEED AND LIFE CALCULATIONS

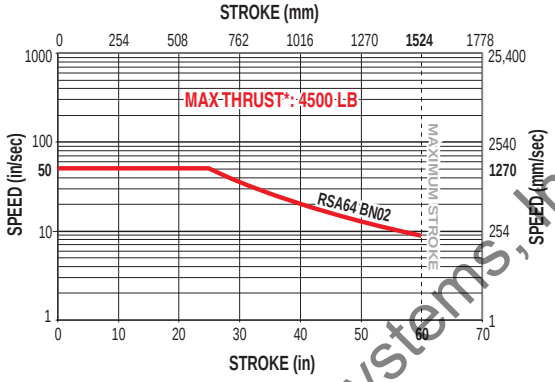
CRITICAL SPEED WITH 1.5" 0.53TPI ENGLISH BALL SCREW



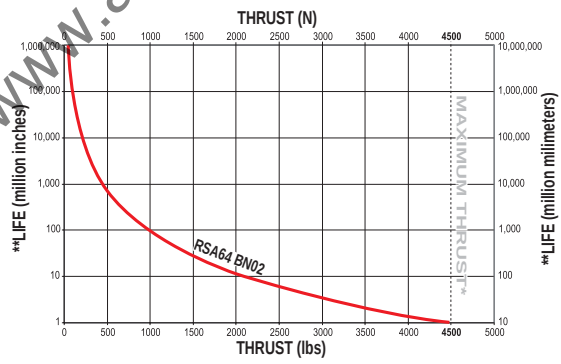
LIFE CALCULATION: 1.5" 0.53TPI ENGLISH BALL SCREW



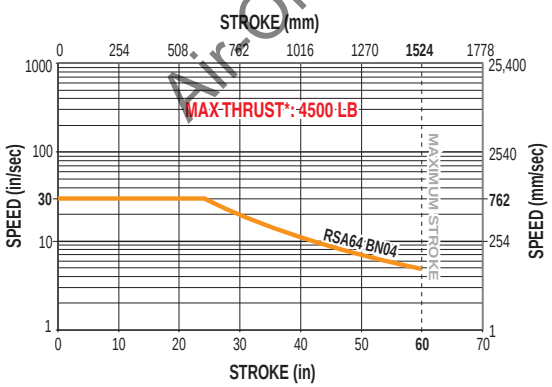
CRITICAL SPEED WITH 1.5" 2TPI ENGLISH BALL SCREW



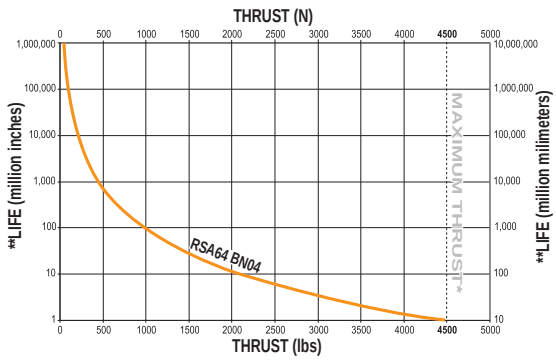
LIFE CALCULATION: 1.5" 2TPI ENGLISH BALL SCREW



CRITICAL SPEED WITH 1.5" 4TPI ENGLISH BALL SCREW



LIFE CALCULATION: 1.5" 4TPI ENGLISH BALL SCREW

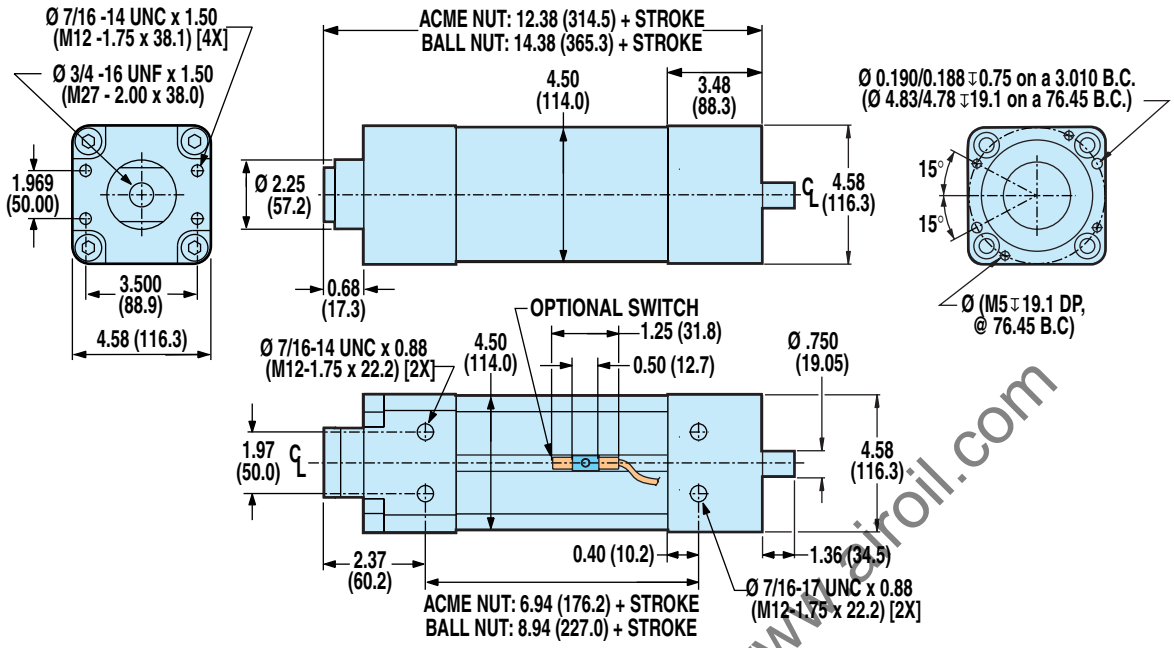


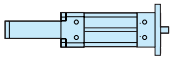
BN = Ball Nut

**** Maximum thrust reflects 90% reliability for 1 million linear inches of travel.***

*****Life indicates theoretical maximum life of screw only, under ideal conditions and does not indicate expected life of actuator.***

RSA/RSM64 IN-LINE (LMI) BASE MODEL OPTIONS AND SWITCH MOUNTING





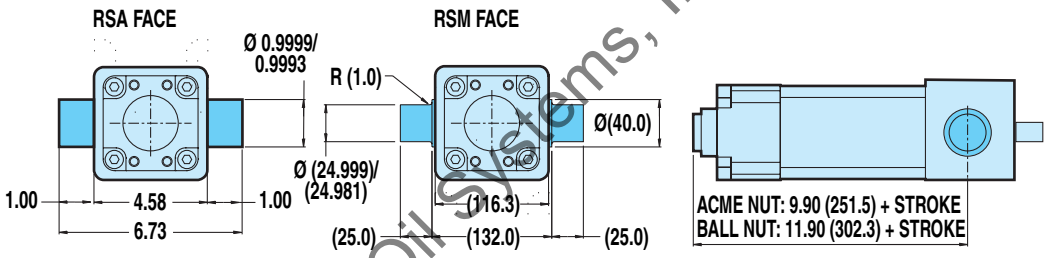
ROD SCREW

RSA/RSM64 Series

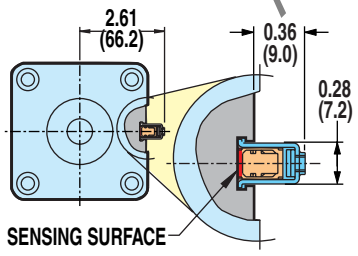
- In-line base model and switch mounting

OPTIONAL Trunnion Mount: TRN

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.



OPTIONAL SWITCH MOUNTING ❶⚠❷



❶⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

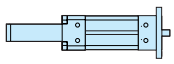
❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet

Unless otherwise noted, all dimensions shown are in inches (Dimensions in parenthesis are in millimeters)

RSA/RSM64 Series

DIMENSIONS

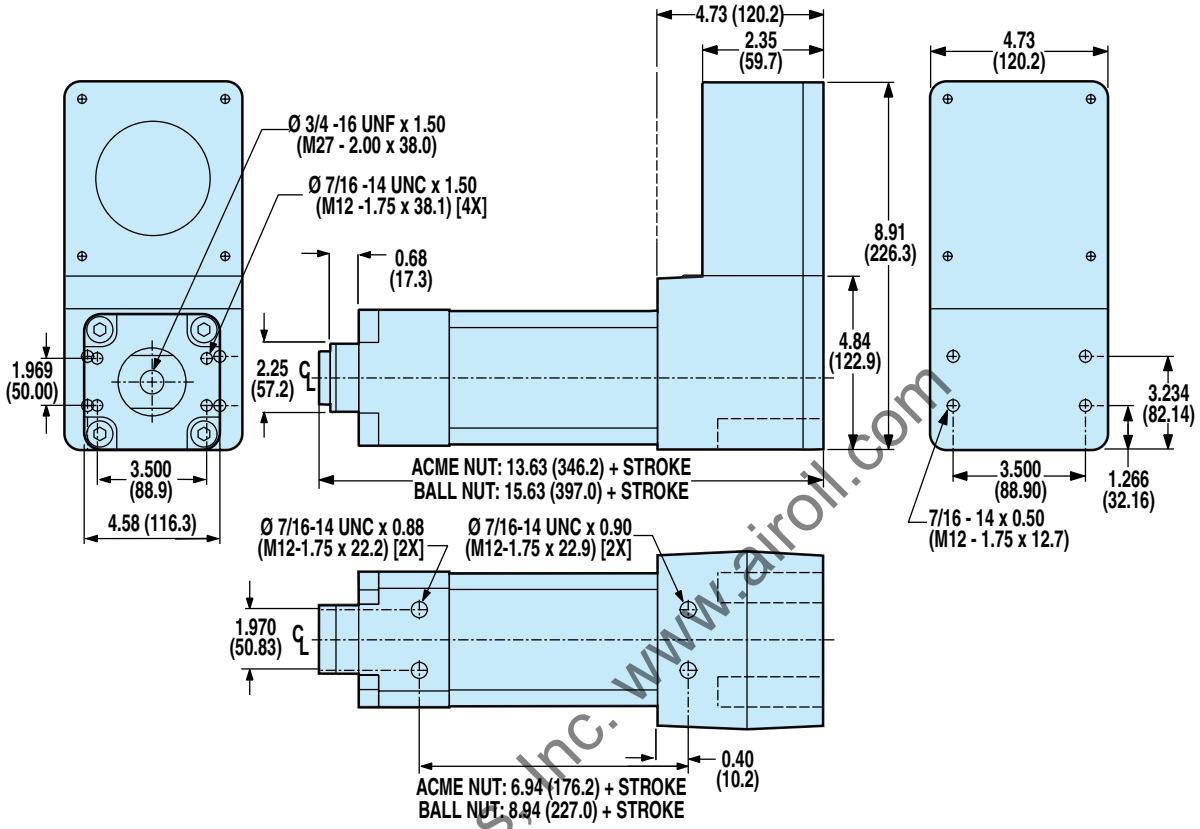
RSA/RSM64 REVERSE PARALLEL (RP) BASE MODEL OPTIONS AND SWITCH MOUNTING



ROD SCREW

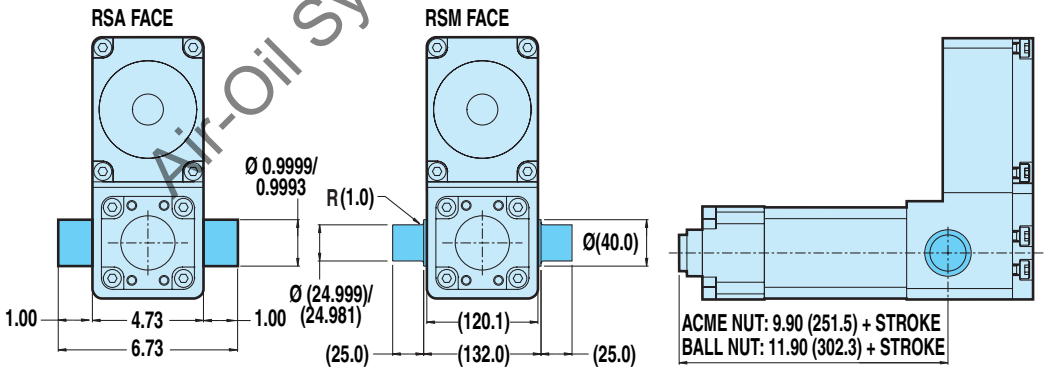
RSA/RSM64 Series

- Reverse parallel base model and switch mounting

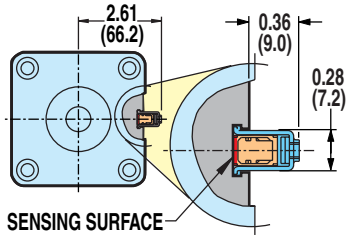


OPTIONAL Trunnion Mount: **TRN**

⚠ TRUNNION MOUNTS ARE NOT FIELD RETROFITTABLE AND MUST BE CONFIGURED AS PART OF THE BASE ACTUATOR. CONTACT THE FACTORY FOR ADDITIONAL INFORMATION.



OPTIONAL SWITCH MOUNTING❶⚠❷



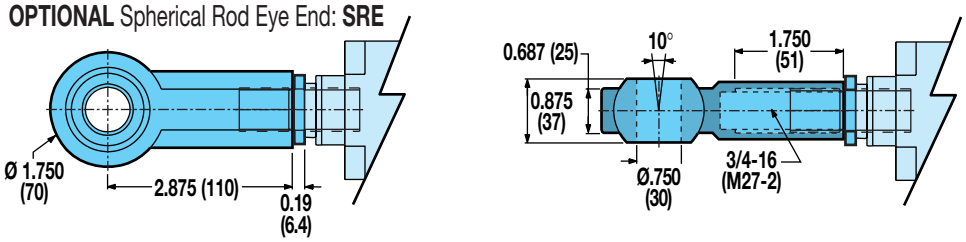
❶⚠ CAUTION: DO NOT OVERTIGHTEN SWITCH HARDWARE WHEN INSTALLING

❷ NOTE: The scored face of the switch indicates the sensing surface and must face toward the magnet

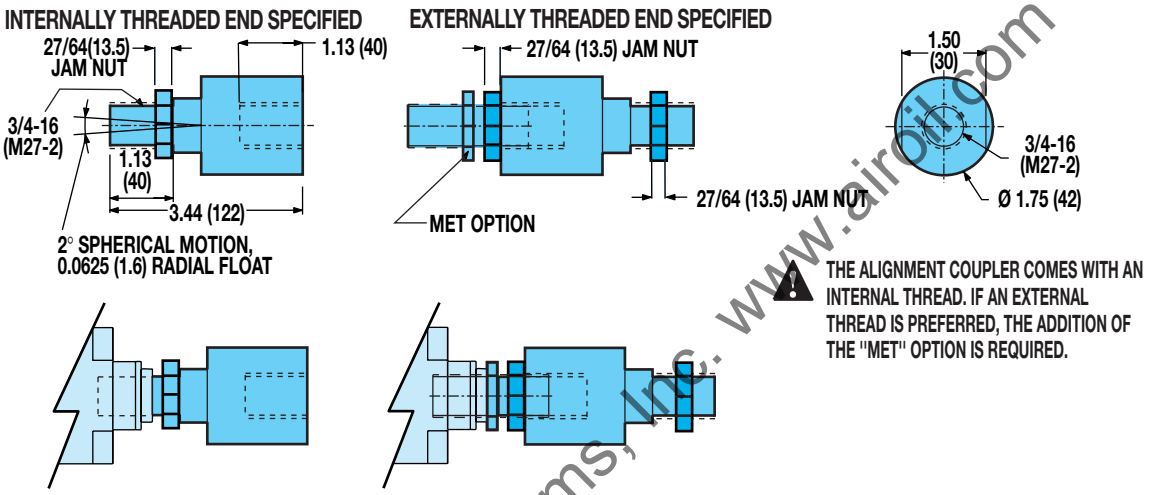
RSA/RSM64 RETROFITTABLE ROD END OPTIONS

FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

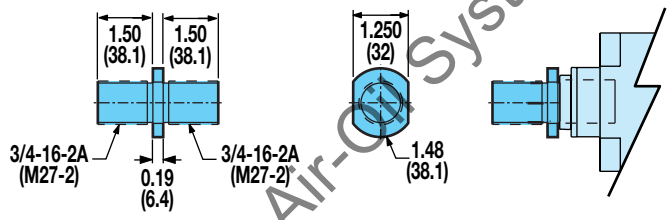
OPTIONAL Spherical Rod Eye End: **SRE**



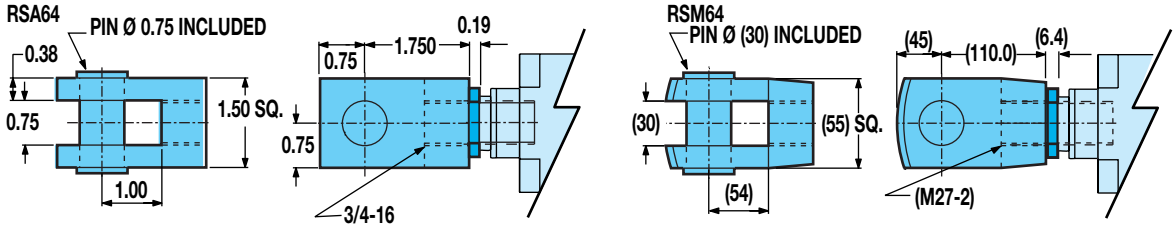
OPTIONAL Alignment Coupler Rod End: **ALC**

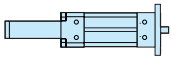


OPTIONAL External Threaded Rod End: **MET**



OPTIONAL Clevis Rod End: **CLV**



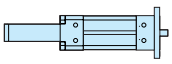


ROD SCREW

RSA/RSM64 Series

- Retrofittable rod end options

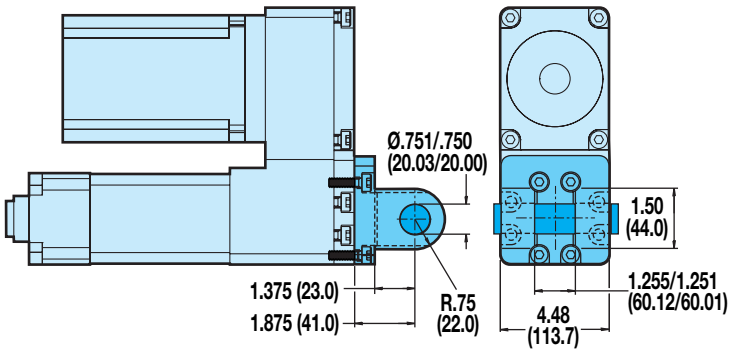
RSA/RSM64 RETROFITTABLE MOUNTING OPTIONS



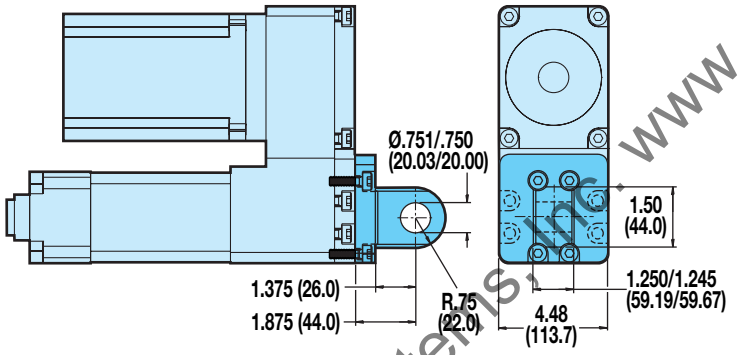
RSA/RSM64 Series
- Retrofittable mounting options

FOR REVERSE PARALLEL (RP) MODELS ONLY

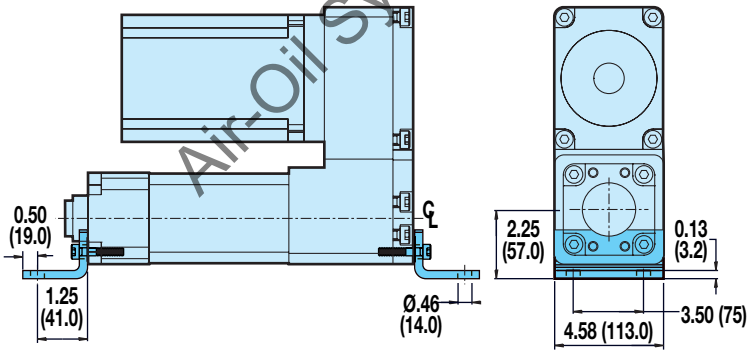
OPTIONAL Clevis Mount: **PCD**



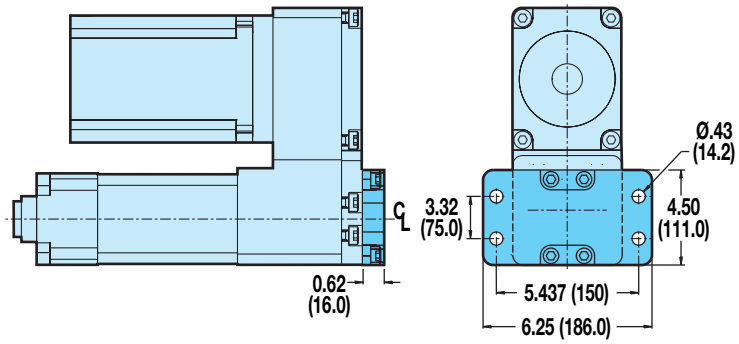
OPTIONAL Eye Mount: **PCS**



OPTIONAL Foot Mount: **FM2**

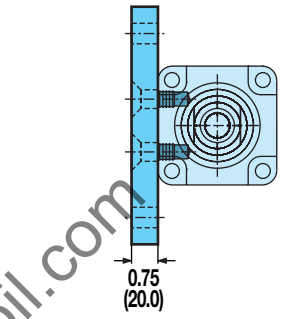


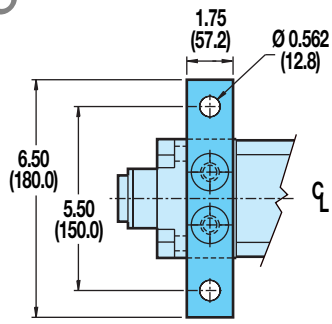
OPTIONAL Back Flange: **BFG**



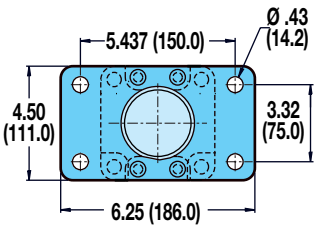
FOR IN-LINE (LMI) OR REVERSE PARALLEL (RP) MODELS

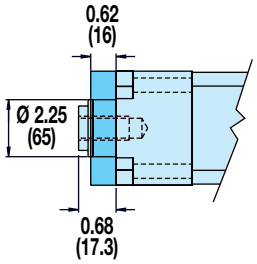
OPTIONAL Mounting Plate: **MP2**





OPTIONAL Front Flange Mount: **FFG**



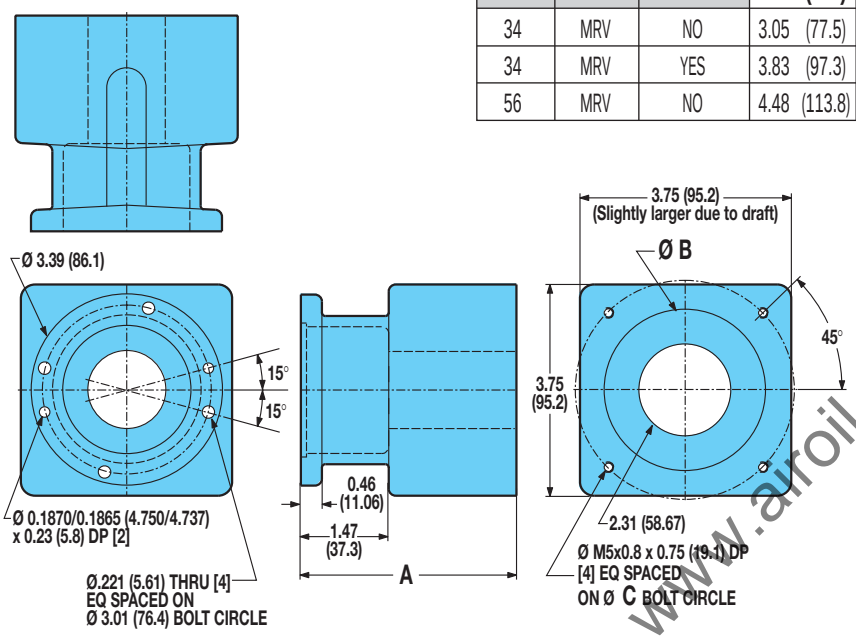


RSA/RSM64 Series

DIMENSIONS

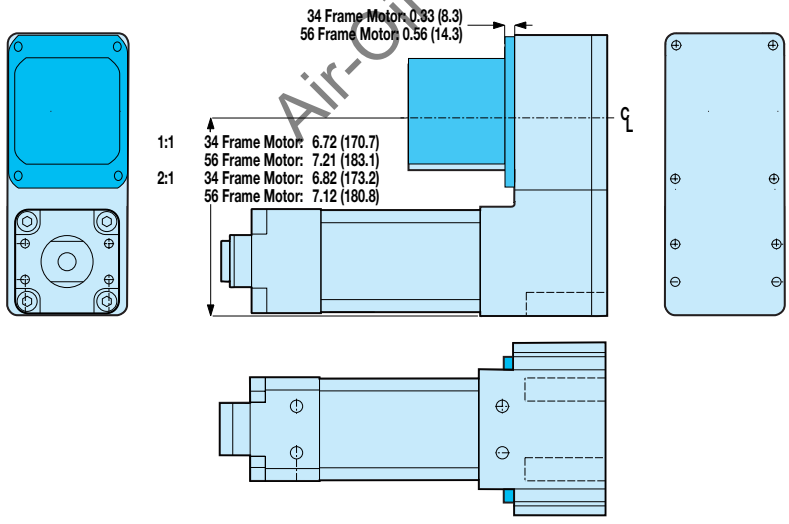
RSA/RSM64: IN-LINE MOUNTING MOTORS AND GEARHEADS

FRAME	MOTOR	GEARHEAD	A		B		C	
			in	(mm)	in	(mm)	in	(mm)
34	MRV	NO	3.05	(77.5)	2.880	(73.15)	3.875	(98.4)
34	MRV	YES	3.83	(97.3)	2.880	(73.15)	3.875	(98.4)
56	MRV	NO	4.48	(113.8)	4.505	(114.43)	5.875	(149.23)



For gearhead specifications and dimensions, see page F-10.

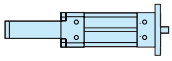
RSA/RSM64: REVERSE PARALLEL MOTOR MOUNTING



SPECIFICATIONS

MOTOR		REDUCTION INERTIA AT MOTOR SHAFT			
		1:1		2:1	
		lb-in²	kg-cm²	lb-in²	kg-cm²
BRUSHLESS	MRV31, 32, 33, 51	.581	1.7002	1.682	4.9222

REDUCTION EFFICIENCY: 0.95



ROD SCREW

RSA/RSM64 Series

- In-line mounting motors and gearheads

RSA/RSM Series

ORDERING

BASE MODEL SPECIFICATIONS **OPTIONS SPECIFICATIONS**

RSA	50	BN02	SK35	RP1	TRN	XR6	BFG	ALCMET	KT2

MODEL TYPE

RSA	RSA Series English Rod Screw
RSM	RSM Series Metric Rod Screw

BODY SIZE

12	**32**
16	**50**
24	**64**

NUT/SCREW CONFIGURATION

SOLID NUT /

PITCH (TPI)	RSA AND RSM SERIES
SN01	12, 16, 32
SN02	12, 16, 24, 32
SN04	24, 50, 64
SN05	12, 16
SN08	24

BRONZE NUT /

PITCH (TPI)	RSA AND RSM SERIES
BZ10	12, 16, 24, 32, 50, 64

BALL NUT /

PITCH (TPI)	RSA AND RSM SERIES
BN01 / BNL01	50
BN02 / BNL02	32, 50, 64
BN04 / BNL04	50, 64
BN05 / BNL05	24, 32
BN08 / BNL08	12, 16
BN53 / BNL53	64

STROKE LENGTH

SK_ _ Stroke, then enter desired stroke length in decimal inches

MODEL	MAX STROKE (in)
12 Series	12
16 Series	18
24 Series	24
32 Series	36
50 Series	48
64 Series	60

BASE MODEL

LMI	In-line motor mounting base model
RP1	1:1 Reverse parallel mount
RP2	2:1 Reverse parallel mount*

**** Not available on 12 or 16 Series.***

BASE MODEL MOUNTING OPTIONS

TRN Add Trunnion Mount (MT2)**

***** Not available on In-line (LMI) 12 or 16 Series.***

Trunnion mounts must be built as part of the base actuator and are non-retrofittable.

ROD EXTENSION OPTION

XR_ _ Rod Extension* (in inches)

**** Selecting this option may exceed the actuators bearing load capabilities. It is recommended for vertical application only.***

ACTUATOR MOUNTING OPTIONS

FM2	Foot Mount (MS1)*
FFG	Front Flange Mount (MF2)
PCD	Clevis Mount (MP2)*
MP2	Mounting Plate (MS2)
BFG	Back Flange Mount (MF2)*
PCS	Eye Mount (MP4)*

**** Available on Reverse Parallel (RP) base models only.***

ROD END OPTIONS

Internally threaded rod end is standard

MET	External Threaded Rod End
CLV	Clevis Rod End
SRE	Spherical Rod End
ALC	Alignment Coupler Rod End*

**** If alignment coupler is selected, the external rod end must also be added.***

SWITCHES

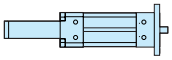
RM_	Reed Switch (Form A) with 5-meter lead/QD, and quantity desired
RT_	Reed Switch (Form A) with 5-meter lead, and quantity desired
BM_	Reed Switch (Form C) with 5-meter lead/QD, and quantity desired
BT_	Reed Switch (Form C) with 5-meter lead, and quantity desired
KM_	Hall-effect Sinking Switch with 5-meter lead/QD, and quantity desired
KT_	Hall-effect Sinking Switch with 5-meter lead, and quantity desired
TM_	Hall-effect Sourcing Switch with 5-meter lead/QD, and quantity desired
TT_	Hall-effect Sourcing Switch with 5-meter lead, and quantity desired
CM_	TRIAC Switch with 5-meter lead/QD, and quantity desired
CT_	TRIAC Switch with 5-meter lead, and quantity desired

TO ORDER MOTORS/CONTROLS/INTERFACES

BRUSHLESS SERVO (SEE PAGE F-33)

Not all codes listed are compatible with all options.

Use the Tolomatic Sizing Software to determine available options and accessories based on your application requirements.



ROD SCREW

RSA/RSM64 Series

- Ordering

Rod Screw Actuators

ORDERING

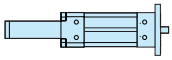
FIELD RETROFIT MOUNTING KITS

Item	12 Series		16 Series		24 Series		32 Series		50 Series		64 Series	
	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#
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
Foot Mount	1107-9010	2107-9009	1112-9010	2112-9010	1124-9020	2124-9030	1132-9020	2132-9040	1150-9020	2150-9040	1164-9020	2164-9020
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
Back Flange Mount	1107-9014	2107-9014	1112-9013	2112-9025	1124-9022	2124-9032	1132-9022	2132-9042	1150-9022	2150-9042	1164-9022	2164-9022
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
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

FIELD RETROFIT ROD END KITS

Item	12 Series		16 Series		24 Series		32 Series		50 Series		64 Series	
	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#	RSA Kit#	RSM Kit#
External Threaded	1107-1073	2107-1073	1112-1058	2112-1058	1124-1057	2124-1067	1124-1057	2132-1057	1150-1057	2150-1057	1150-1057	2164-1057
Spherical Rod Eye	1107-9020	2107-9020	1112-9019	2112-9019	1124-9028	2124-9038	1124-9028	2132-9048	1150-9028	2150-9048	1150-9028	2164-9028
Clevis End	1107-9021	2107-9021	1112-9020	2112-9020	1124-9029	2124-9039	1124-9029	2132-9049	1150-9029	2150-9049	1150-9029	2164-9029
Alignment Coupler	1107-1076	NA	1112-1065	NA	1124-9004	2124-1070	1124-9004	2132-1060	1150-9009	2150-1060	1150-9009	2164-1060

When interfacing with the threaded end of the Alignment Coupler, an External Threaded Rod End kit is also required.



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