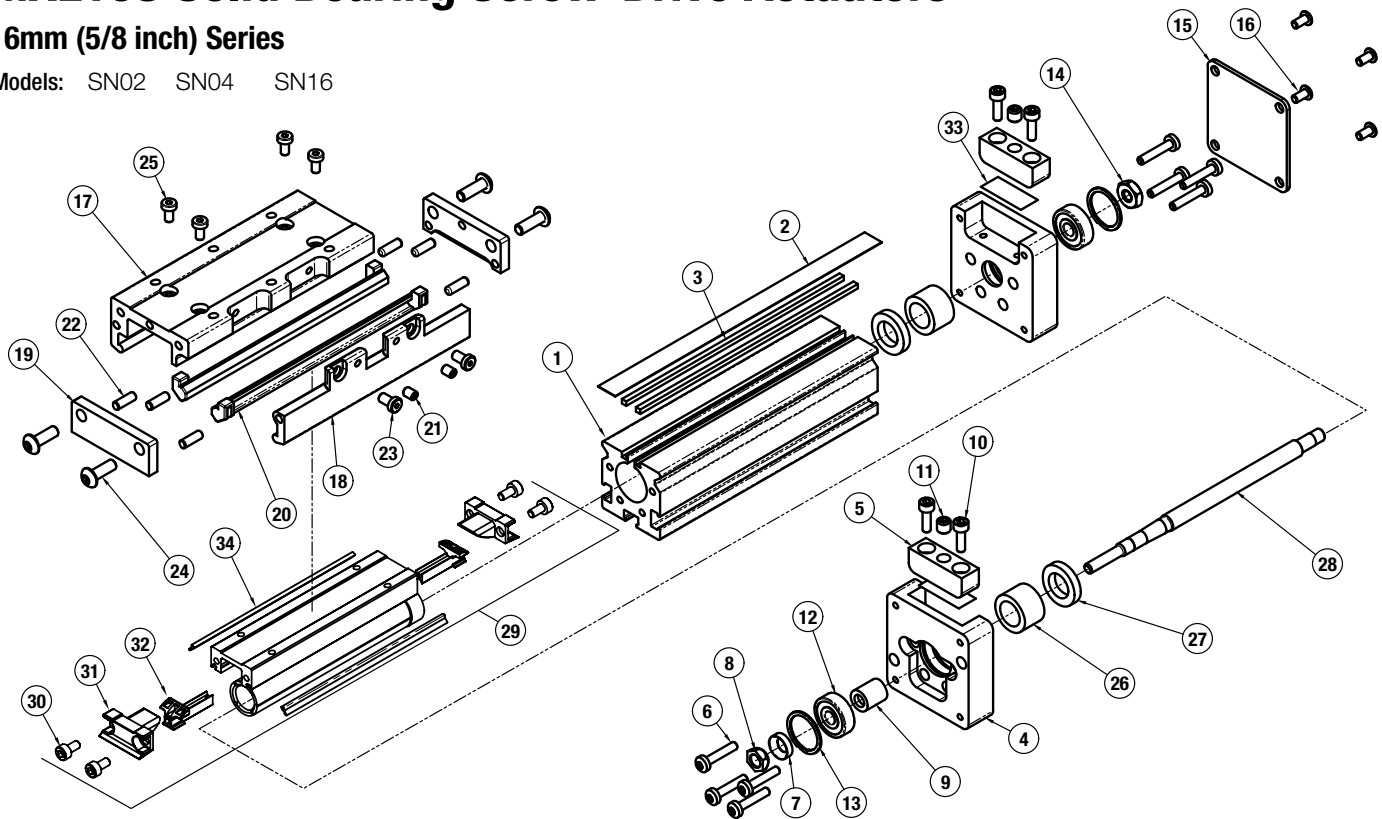


MXE16S Solid Bearing Screw-Drive Actuators

16mm (5/8 inch) Series

Models: SN02 SN04 SN16



			MXE16S		
ITEM	PART NO. OR CONFIG. CODE	DESCRIPTION	SN02	SN04	SN16
1.	RTBMXE16_SK	TUBE (US CONV)	1	1	1
	RTBMXE16_SM	TUBE (METRIC)	1	1	1
2.	NDBMXE16_SK	DUST BAND (US CONV)	1	1	1
	NDBMXE16_SM	DUST BAND (METRIC)	1	1	1
3.	NMBMXE16_SK	MAGNET BAND KIT (US CONV)	2	2	2
	NMBMXE16_SM	MAGNET BAND KIT (METRIC)	2	2	2
4.	8316-1011	HEAD	2	2	2
5.	8316-1017	BAND CLAMP	2	2	2
6.	8316-1022	PAN HEAD CAP SCREW	8	8	8
7.	8316-1028	SPHERICAL WASHER	1	1	1
8.	8316-1027	LOCK NUT	1	1	1
9.	8316-1029	BUSHING	1	1	1

			MXE16S		
ITEM	PART NO. OR CONFIG. CODE	DESCRIPTION	SN02	SN04	SN16
10.	0602-3012	SOCKET HEAD CAP SCREW	4	4	4
11.	0601-1093	SET SCREW	2	2	2
12.	8316-1009	BEARING	2	2	2
13.	8316-1005	RETAINING RING	2	2	2
14.	2506-1007	HEX NUT	1	1	1
15.	8316-1020	COVER PLATE, IDLE END	1	1	1
16.	0602-1056	BUTTON HEAD CAP SCREW	4	4	4
17.	8316-1513	CARRIER, UPPER (INCH)	1	1	1
	8316-1013	CARRIER, UPPER (METRIC)	1	1	1
18.	8116-1514	CARRIER, LOWER (INCH)	1	1	1
	8116-1014	CARRIER, LOWER (METRIC)	1	1	1
19.	8116-1015	END CAP	2	2	2

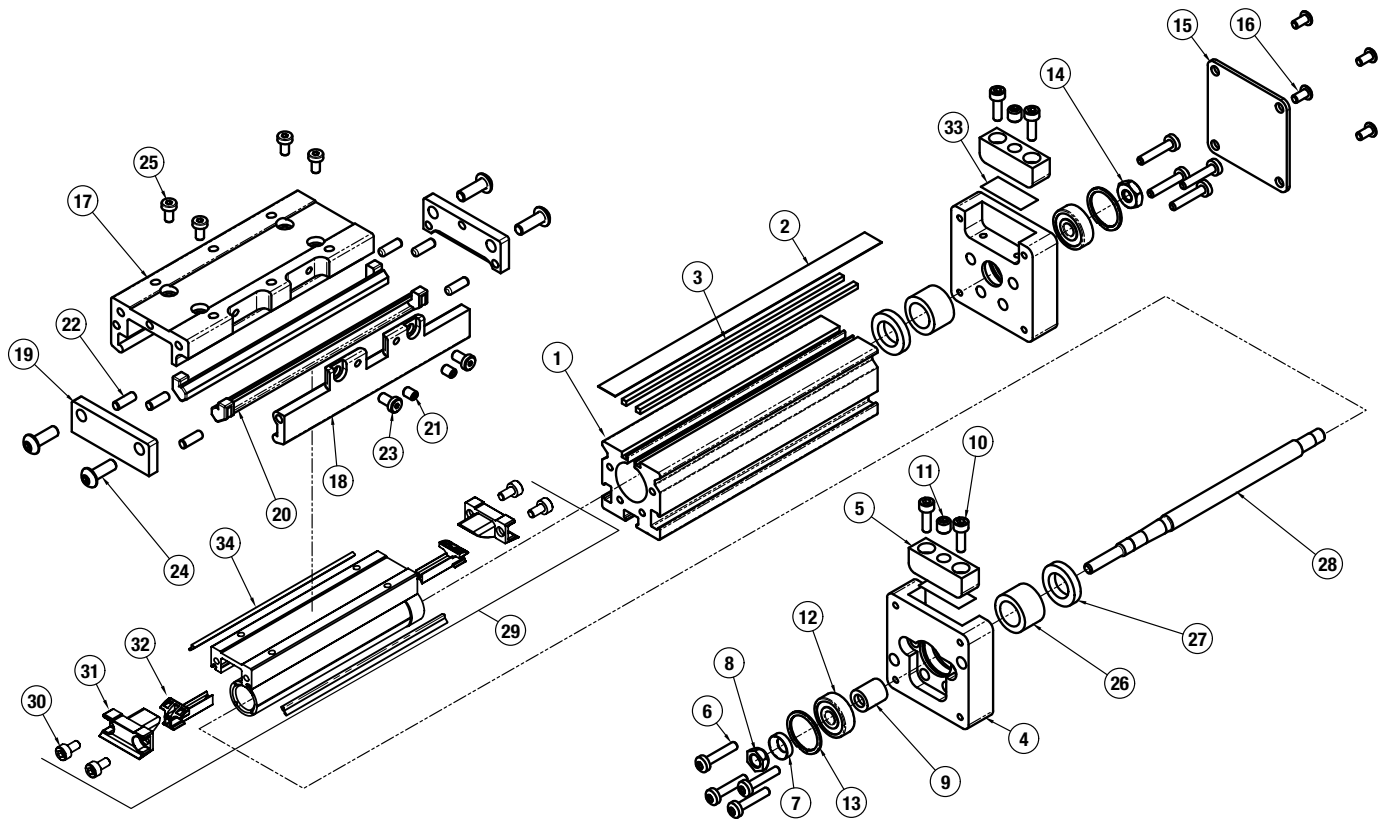
Tube Nut Style & Size
¹ Replacement Tube ordering method: **RTB** **MXE16S** **SK** or **SM** **DC**
EXAMPLE: **RTB** **MXE16S** **BN02** **SK** **21-25** **DC7**

² Replacement ordering method: **ND** **MXE16S** **SK** or **SM** **DC**
EXAMPLE: **NDB** **MXE16S** **SK** **21-25** **DC7**

Dust Band (NDB) or Magnet Band (NMB) Model & Size Bearing Stroke Length Aux. Carrier
 For long stroke lengths the magnet band is shipped in multiple pieces

Auxiliary Carrier Option Note: If replacing a Tube (1.), Dust Band (2.), or Magnet Band (3.) on an actuator that has an Auxiliary Carrier, be sure to add "DC ___" to the end of the configuration string when ordering. "DC" indicates the need for additional length and "___" indicates the measurement of space between carriers (in inches [SK] or millimeters [SM] as indicated earlier in the configuration string).

Drawing is repeated for reference



ITEM	PART NO. OR CONFIG. CODE	DESCRIPTION	MXE16S		
			SN02	SN04	SN16
⁴ 20.	8116-1030	BEARING	2	2	2
21.	8116-1575	TENSION (SET) SCREW (INCH)	2	2	2
	8116-1075	TENSION (SET) SCREW (METRIC)	2	2	2
22.	3417-1451	DOWEL PIN	6	6	6
23.	8116-1515	LOCK SCREW (INCH)	2	2	2
	8116-1076	LOCK SCREW (METRIC)	2	2	2
24.	8140-1075	BUTTON HEAD CAP SCREW	4	4	4
25.	8116-1076	LOW HEAD CAP SCREW	4	4	4
26.	8316-1024	SPACER, NYLON	2	2	2
27.	8316-1023	BUMPER	2	2	2
⁶ 28.	RLSMXE16_SK	LEAD SCREW (US CONV)	A/R	A/R	A/R
	RLSMXE16_SM	LEAD SCREW (METRIC)	A/R	A/R	A/R

ITEM	PART NO. OR CONFIG. CODE	DESCRIPTION	MXE16S		
			SN02	SN04	SN16
^{4,5} 29.	8316-9006	NUT BRACKET ASSEMBLY, SN02	1	—	—
	8316-9007	NUT BRACKET ASSEMBLY, SN04	—	1	—
	8316-9008	NUT BRACKET ASSEMBLY, SN16	—	—	1
⁵ 30.	0601-1038	SOCKET HEAD CAP SCREW	4	4	4
^{4,5} 31.	8116-1006	END CAP	2	2	2
^{4,5} 32.	8316-1007	BAND RAMP	2	2	2
33.	8325-1055	SHIM	2	2	2
	8325-1056	SHIM	2	2	2
	8325-1057	SHIM	2	2	2
⁴ 34.	8116-1059	WIPER	2	2	2

⁴ Parts included in Repair Kits⁵ Parts included in Nut Bracket Assembly

⁶ Replacement Lead Screw ordering method: **RLS** **MXE16S** **SK** or **SM** **IM1YM** **DC**

EXAMPLE: **RLS** **MXE16S** **BN02** **SK21-25** **IM1YM0TBDO** **DC7**

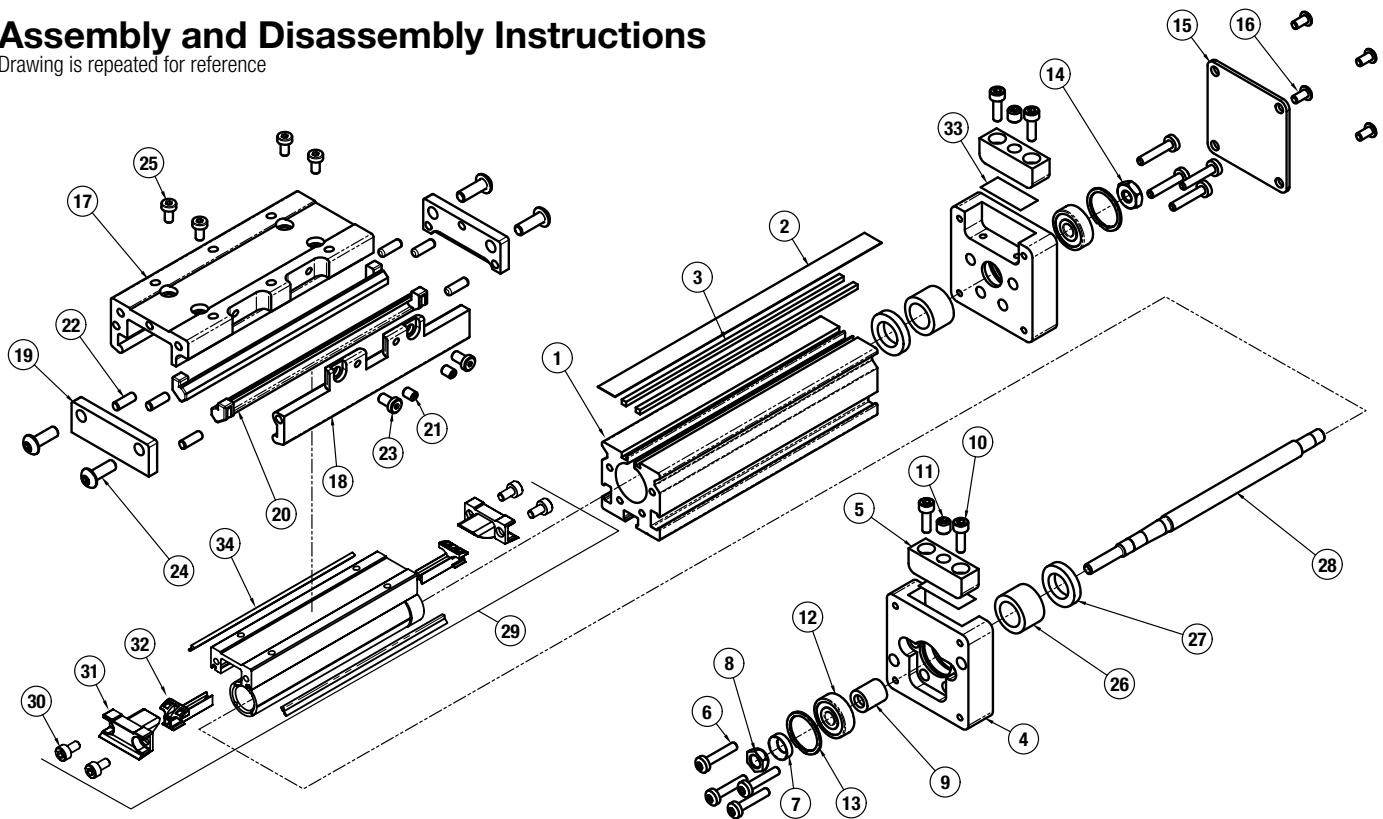
Lead Screw Bearing Nut Style & Size Stroke Length Motor Orientation Motor Code Aux. Carrier

Model & Size

Auxiliary Carrier Option Note: If replacing a Lead Screw (28.) on an actuator that has an Auxiliary Carrier, be sure to add "DC _ _ _" to the end of the configuration string when ordering. "DC" indicates the need for additional length and "_ _ _" indicates the measurement of space between carriers (in inches [SK] or millimeters [SM] as indicated earlier in the configuration string).

Assembly and Disassembly Instructions

Drawing is repeated for reference



GENERAL DISASSEMBLY INSTRUCTIONS

Begin with a clean work area. Be sure all replacement parts are present and have no visual damage or defects. The following tools are recommended for proper disassembly and assembly.

- SAE Hex Wrench Set
- Metric Hex Wrench Set
- Torx bit set
- Metric Socket Set
- SAE Socket Set

1. **DUST BAND AND CARRIER REMOVAL.** Remove the Band Clamps (5) from both Heads (4) of the actuator by removing Screws (10) and backing out the Center Set Screw (11) a couple turns. Carefully lift the Dust Band (2) from the slot in each Head (4) and remove any Shims (33) located under the Band (2) in the Head (4) slot. Retain the Shims (33) for re-assembly. Slightly loosen the Carrier Tension Screws (21) and Lock Screws (23). Remove the Carrier End Caps (19). Remove Screws (25) from the Carrier (17). The Carrier (17) can now be removed. Remove End Caps (31) from both ends of the Nut Bracket (29). The Dust Band (2) can now be removed from the actuator.
2. **LEAD SCREW SUB-ASSY REMOVAL.** On the Non-Drive End of the actuator, remove Screws (16) to remove the Cover Plate (15), and Hex Nut (14) from the Leadscrew (28). Remove Screws (6) from both Heads (4). Remove the Non-Drive End Head (4) and the Drive Head/Leadscrew Assembly (28). The Nut Bracket Assembly (29) can now be removed from the Leadscrew (28) if

necessary and the Band Ramps (32) may also be removed from the Nut Bracket Assembly (29) if required.

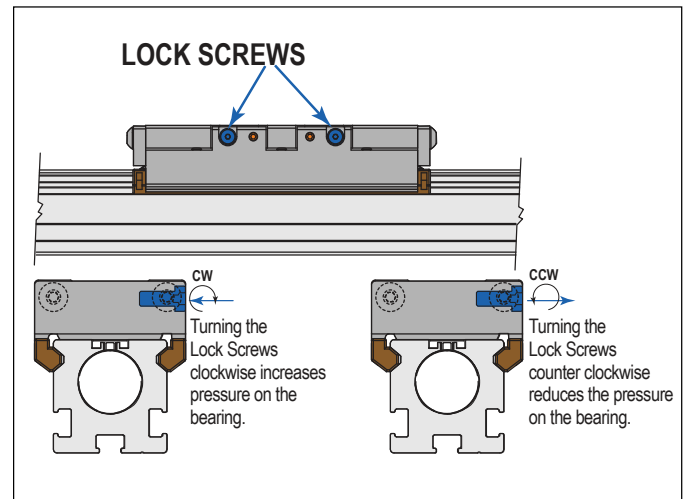
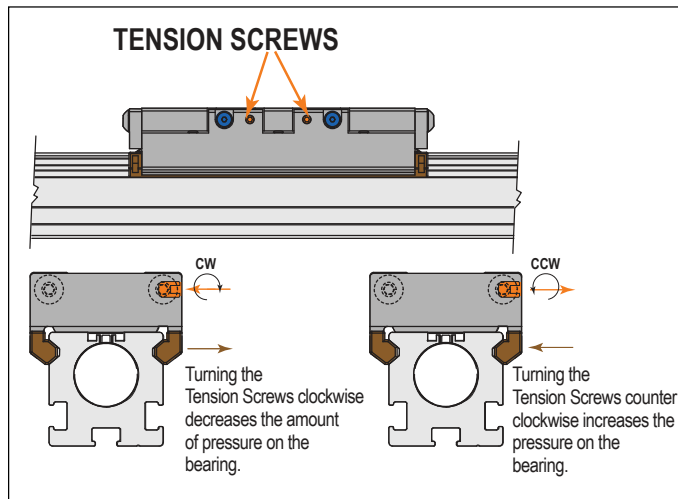
Ball Nut style: Caution is required if removal of the Nut is necessary. Contact the factory for available parts and procedures.

Plastic Nut style: Plastic Nuts are factory pinned into the Nut Bracket (29) and cannot be removed. If Nuts are worn, a new Nut Bracket Assy (29) must be ordered.

If the Drive End Head (4) and Bearing (12) must be removed from the Leadscrew (28), contact the factory prior to removal for specific instructions.

GENERAL ASSEMBLY INSTRUCTIONS

1. **INSTALL LEAD SCREW ASSEMBLY.** Install the Drive Head/Leadscrew Assembly (28) into the Tube (1). Ensure that the Bumper (27) and Nut Spacer (26) are in place and position the Non-Drive End Head (4) over the Leadscrew Bearing (12) and loosely install Screws (6) into the Head (4). Install the Drive End Screws (6) loosely into the Head (4).
2. **INSTALL DUST BAND.** Install the Dust Band (2) through the Nut Bracket Assy (29) and install End Caps (31) onto the Nut Bracket (29).
3. **SUB-ASSEMBLE CARRIER.** Position the Bearings (20) into the slots on the Carrier (17) and with Pins (22) in place, pre-assemble the Lower Carrier Plate (18) to the Carrier with the Bearing (20) in place. Install the Carrier End Caps (19) with Screws (24). Keep the Tension Set Screws (21) and Lock Screws (23) loose.
4. **Tension THE CARRIER.** The MX solid bearing carrier will provide best performance when properly adjusted. The carrier design contains both



Check out our MX--S carrier adjustment video on the web <https://youtu.be/LVWPg2gfy0A>

Tension (21) and Lock Screws (23). The Tension Screws (21) control the amount of pressure placed on the Carrier Bearings (20). The Lock Screws (23) lock the Tension Screws (21) in place and provide fine adjustment of the Carrier Bearings (20).

Tools Required:

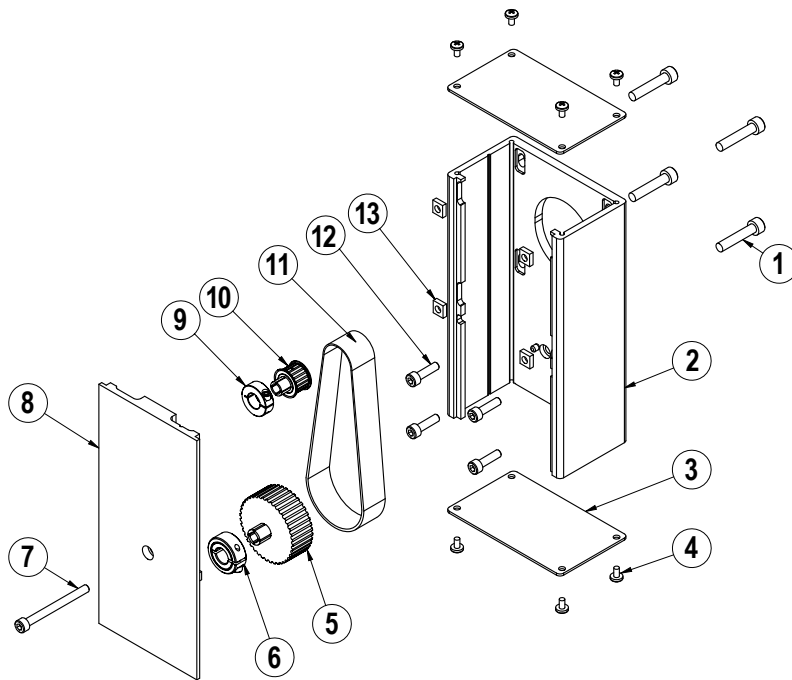
Inch Models: 1/16 inch and 2.5mm Hex Wrench (Key)

Metric Models: 2 and 2.5 mm Hex Wrench (Key)

- a. Loosen End Plate Screws (24) on both ends of the Carrier (17).
- b. Fully loosen all Tension (21) and Lock Screws (23). They do not need to be removed, just fully loosened.
- c. Tighten Tension Screws (21) by turning them clockwise until the Carrier (17) is just tight enough so that no side-to-side rocking motion is present and it can easily be moved by hand over the entire stroke length with no hesitation. Very little torque on the screws is required to obtain this condition.
Note: The Tension Screws (21) are the small set screw style fastener. The Lock Screws (23) are the larger, low head, hex drive screws.
- d. Tighten Lock Screws (23) by turning them clockwise until tight. The Carrier (17) should feel snug in relation to the Tube (1), with no side-to-side rocking motion present. If the Carrier (17) becomes too loose, loosen the Lock Screws (23), tighten the Tension Screws (21) and then retighten the Lock Screws (23).
- e. Once ideal carrier tension is achieved, fully tighten End Plate Screws (24) on both ends of the Carrier (17).
During the service life of the application this process may need to be repeated. Keeping the Carrier (17) in a properly adjusted tension will prolong the life of the MX bearing system and the actuator itself.
- f. Position the Carrier (17) over the Nut Bracket (29) and install Screws (25).

5. PERFORM HEAD ALIGNMENT AND FINAL ASSEMBLY. Note: Custom tooling is used at the factory to align the Heads (4) to the Tube (1) to maintain parallelism between the top of the Head (2) and top of the Tube (1). This is critical to performance and longevity of the Dust Band (2). In the following steps, take care to visually align the Head (4) to the Tube (1). Move the assembled Carrier (17) to Drive End of Tube (1) and tighten one of the Head Bolts (6). Supporting the actuator so the Head (4) is free to float while tightening the Head Fastener Bolts (6). Move the Carrier Assy (17) to Non-drive End of Tube (1) and tighten the Head Fastener Bolts (6). Move Carrier Assy (17) back to the Drive End of Tube (1) and loosen the Screw (6) that was previously tightened and then tighten all Head Fasteners (6). Apply Loctite 242 to Hex Nut (14) and thread onto the Leadscrew (28) and torque to 16-20 oz-in. Install Cover Plate (15) with Screws (16).
6. INSTALL BAND CLAMPS. The Dust Band (2), Tube (1) and clamping surface of the Head (4) must be flush with each other. To accommodate this, it may be necessary to re-install any Shims (33) that were present during disassembly into the clamp pocket on the Head (4). Position the Carrier (17) near the Drive End. Position the Band (2) in the pocket over the installed Shims (33) and install the Band Clamp (5) with the two Screws (10). Tighten down the Center Set Screws (11). Position the Carrier (17) near the Non-Drive End and repeat the steps to install the other Band Clamp (5).

Reverse Parallel (RP) Mounting Option



ITEM	PART NO.	DESCRIPTION	QTY.
1.	CONFIGURED	MOTOR FASTENER	4
2.	CONFIGURED	RP HOUSING	1
3.	CONFIGURED	RP HOUSING END CAP	2
4.	CONFIGURED	END CAP SCREW	8
5.	CONFIGURED	DRIVE SHAFT PULLEY	1
6.	CONFIGURED	COLLAR CLAMP, DRIVE SHAFT	1
7.	CONFIGURED	RP COVER FASTENER	1
8.	CONFIGURED	RP COVER	1
9.	CONFIGURED	COLLAR CLAMP, MOTOR	1
10.	CONFIGURED	MOTOR PULLEY	1
11.	CONFIGURED	BELT	1
12.	CONFIGURED	RP PLATE FASTENER	4
13.	CONFIGURED	SQUARE NUT	4

♦ Part numbers varies depending on YMH (Your Motor Here).
Contact help@tolomatic.com for replacement part numbers.

Disassembly Instructions

1. Remove End Caps (3), and release the tension on the Belt (11) by breaking loose the motor fasteners (1).
2. Remove the RP Cover (8).
3. The Belt (11) can now be removed along with the Motor.
4. Remove both Pulleys (10) and (5) from their respective shafts.
5. Remove the RP Housing (2) from the actuator head by removing the Fasteners (12).

Assembly Instructions

Note: Apply Loctite #242 to all fasteners upon installation

1. Install RP Housing (2) onto the actuator Head with Fasteners (12).
2. Install the Motor to the RP Housing with Fasteners (1) and Square Nuts (13). Do not tighten the fasteners at this time.
3. Locate the Belt (11) over the Pulleys (10) and (5) and slide both pulleys over their respective shafts. Tighten each pulley to its shaft with the Collar Clamps (9) and (6).
4. Position the Cover (8) in the mating slot of the RP case and install the Fasteners (7) to hold it in place. Take care not to overtighten. If the cover is deflected, it can interfere with the leadscrew.
5. Tension the Belt (11) by pulling the motor away from the drive shaft with the appropriate tension force shown in the chart below. While tensioning, the actuator should be positioned so the weight of the motor does not affect the belt tension. Tighten the Motor Fasteners (1) while the tensioning force is applied to the motor.
6. Verify that there is clearance between the inside of the RP case and each pulley. Verify the pulleys are aligned to each other.
7. Install both End Caps (3) with the Screws (4) to finalize the assembly.

SMALLEST SHAFT DIAMETER (Motor or Actuator)		TOTAL WEIGHT TO APPLY	
Inches	mm	lbs	kgs
0.18 to 0.259	4.572 to 6.579	13	5.902
0.260 to 0.499	6.604 to 12.675	22	9.988
0.500 to 0.625	12.7 to 15.875	31	14.074
0.625 and larger	15.875 and larger	40	18.160

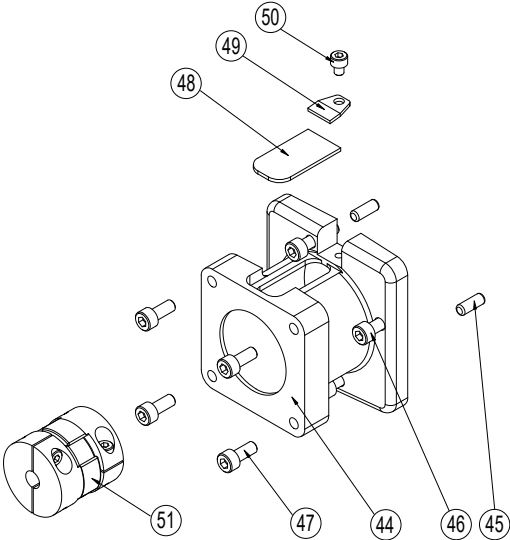
Additional tips are found in Tolomatic [Electric Actuator Motor Mounts Technical Note # 3600-4203](#).

In-Line (LMI) Mounting Options

ITEM	PART NO.	DESCRIPTION	QTY
◊44.	CONFIGURED	MOTOR SPACER	1
◊45.	CONFIGURED	DOWEL PIN	2
◊46.	CONFIGURED	SCREW	4
◊47.	CONFIGURED	SCREW	4
◊48.	CONFIGURED	COVER	1
◊49.	CONFIGURED	CLAMP	1
◊50.	CONFIGURED	SCREW	1
◊51.	CONFIGURED	COUPLER	1

◊ Part number varies depending on YMH (Your Motor Here).
Contact help@tolomatic.com for replacement part number.

A replacement Motor Mount Kit contains all parts listed above.

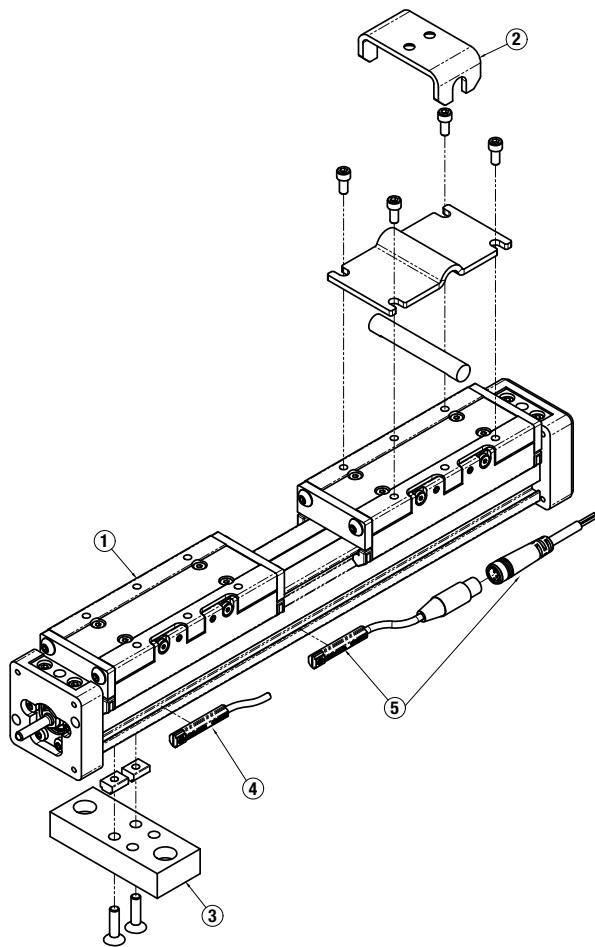


Replacement Motor Mount Kits ordering method: **MMK MXE16S** **LM I Y M**

EXAMPLE: MMK MXE16S SN02 LM I Y M 011001

Motor Mount Kit Model & Size Bearing Style Lead Screw Motor Orientation Motor Code

Actuator Options



ITEM	PART NO.	DESCRIPTION	QTY IN KIT
1.	8316-9515	AUXILIARY CARRIER ASSEMBLY (INCH)	
	8316-9015	AUXILIARY CARRIER ASSEMBLY (METRIC)	
2.	8116-9536	FLOATING MOUNT, KIT (INCH)	
	8116-9036	FLOATING MOUNT, KIT (METRIC)	
	8116-1067	FLOATING MOUNT CLAMP	1
	8116-1066	FLOATING MOUNT BRACKET	1
	8116-1065	FLOATING MOUNT PIN	1
	0905-1135	SOCKET HEAD CAP SCREW (INCH)	4
	8325-1027	LOW HEAD CAP SCREW (METRIC)	4
3.	8316-9016	MOUNTING PLATE KIT	
	8316-1030	MOUNTING PLATE, .50 THICK	1
	8316-1050	T-NUT	2
	4410-1018	FLAT HEAD CAP SCREW	2

To order service parts switches:

Switches for MXE include retained mounting hardware and are the same for all actuator sizes and bearing styles

ITEM	CONFIG. CODE		LEAD	NOR- MALLY	SENSOR TYPE
4.	SWMXE16S	RY	5M (197 IN)	OPEN	REED
5.	SWMXE16S	RK	QUICK-DISCONNECT		
4.	SWMXE16S	NY	5M (197 IN)	CLOSED	REED
5.	SWMXE16S	NK	QUICK-DISCONNECT		
4.	SWMXE16S	TY	5M (197 IN)	OPEN	SOLID STATE PNP
5.	SWMXE16S	TK	QUICK-DISCONNECT		
4.	SWMXE16S	KY	5M (197 IN)	OPEN	SOLID STATE NPN
5.	SWMXE16S	KK	QUICK-DISCONNECT		
4.	SWMXE16S	PY	5M (197 IN)	CLOSED	SOLID STATE PNP
5.	SWMXE16S	PK	QUICK-DISCONNECT		
4.	SWMXE16S	HY	5M (197 IN)	CLOSED	SOLID STATE NPN
5.	SWMXE16S	HK	QUICK-DISCONNECT		
MATING QD CABLE IS INCLUDED.					

Ordering Repair Kits

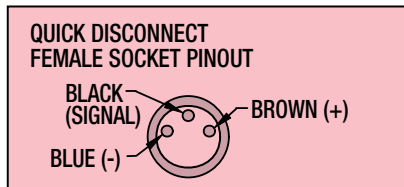
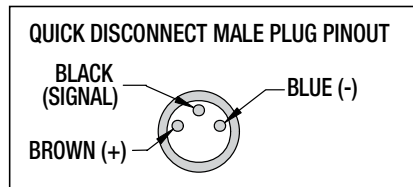
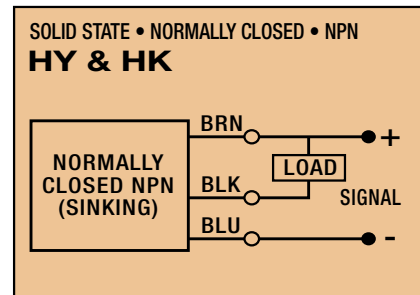
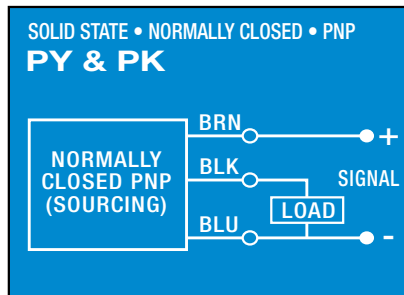
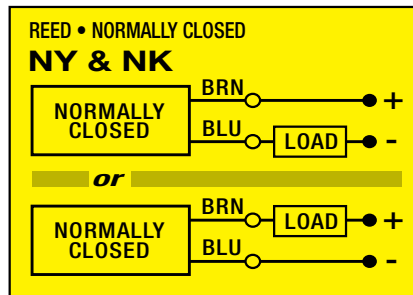
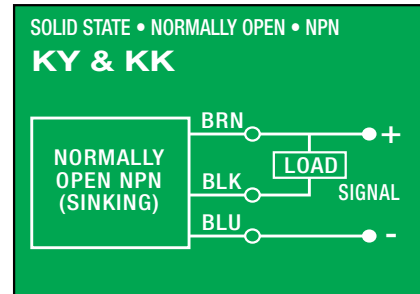
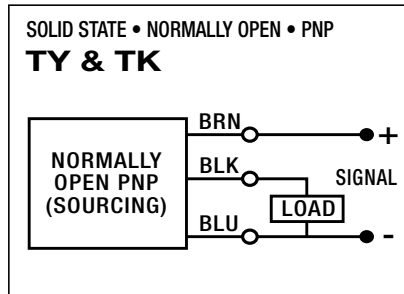
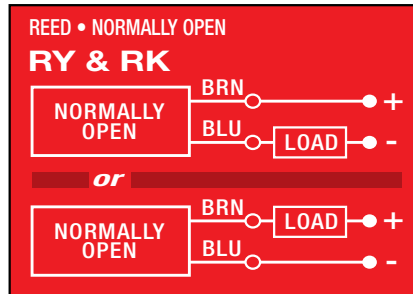
Repair kit includes: dust band, end caps, wipers, solid bearings, bearing end caps

The part number for a repair kit begins with RK followed by model, actuator size, bearing type, and stroke length (**SK** = inch/US Standard, **SM** = metric)

(NOTE: If unit has an auxiliary carrier also include DC and distance between carrier centers)

REPAIR KIT	MODEL	ACTUATOR SIZE	BEARING TYPE	STROKE METRIC	AUXILIARY CARRIER
RK	MXE	16	S	SM2007.02	DC215.9

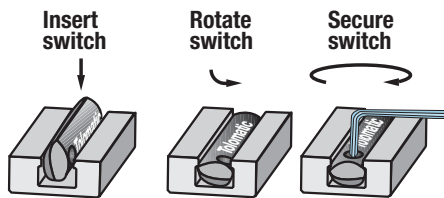
Switch Wiring Diagrams and Label Color Coding (Ce and Rohs Compliant)



Switches for MX:

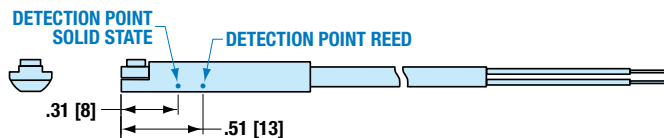
- Include retained mounting hardware
- In slot, sit below extrusion profile
- Same for all sizes and bearing styles

Switch installation and replacement



Place switch in side groove on tube at desired location with "Tolomatic" facing outward. While applying light pressure to the switch, rotate it such that the switch is halfway in the groove. Maintaining light pressure, rotate the switch in the opposite direction until the switch is fully inside the groove with "Tolomatic" visible. Re-position the switch to the exact location and lock the switch securely into place by tightening the screw on the switch.

Switch Detection point



Dimensions in inches [brackets indicate dimensions in millimeters]

TolomaticTM
EXCELLENCE IN MOTION

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