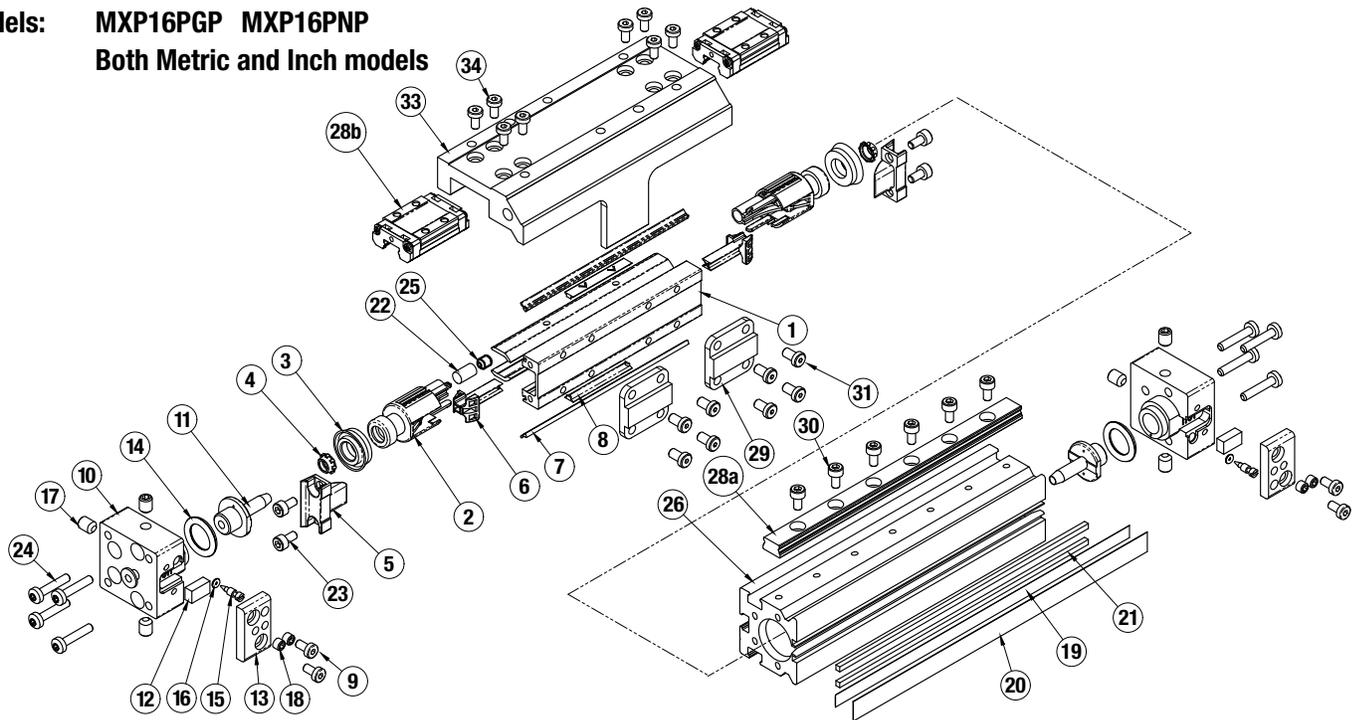


MXP16P Profiled Rail 16mm (5/8 inch) Bore

Models: MXP16PGP MXP16PNP
Both Metric and Inch models



ITEM	PART NO. or CONFIG. CODE	DESCRIPTION	QTY.
1	8116-1512	Piston Bracket (Inch)	1
	8116-1012	Piston Bracket (Metric)	1
2	8116-1005	Piston	2
3 ¹	6906-1024	U-Cup	2
4 ¹	6906-1022	Cushion Seal	2
5 ¹	8116-1006	End Cap	2
6 ¹	8116-1007	Band Ramp	2
7 ¹	8116-1059	Wiper	2
8	8116-1028	Bearing, Piston Bracket, Plastic	2
9 ²	8125-1022	Low Head Cap Screw	4
10 ²	8116-9001	Head Assy, Metric Mount, Inch Port	2
	8116-9501	Head Assy, Inch Mount, Inch Port	2
	8116-9007	Head Assy, Metric Mnt, Metric Port	2
	8116-9507	Head Assy, Inch Mount, Metric Port	2

ITEM	PART NO. or CONFIG. CODE	DESCRIPTION	QTY.
11 ²	6906-1023	Cushion Spear	2
12 ²	8116-1039	Clamp, Seal Band	2
13 ²	8116-1032	Clamp, Dust Band	2
14 ^{1,2}	6906-1065	O-Ring	2
15 ²	6906-1026	Needle Cushion Screw	2
16 ²	0912-1101	O-Ring	2
17 ²	5910-1008	Set Screw (Inch)	6
	7906-1029	Set Screw (Metric)	6
18 ²	8116-1071	Set Screw	4
19 ^{1,3}	NSBMXP16P	Replacement Seal Band (8116-1017) Specify Stroke	A/R
20 ^{1,4}	NDBMXP16P	Replacement Dust Band (8116-1018) Specify Stroke	A/R
21 ⁵	NMBMXP16P	Replacement Magnet Band (8116-1019) Specify Stroke	2A/R

¹ Parts included in Repair Kits RKMXP16PSK (inch) & RKMXP16PSM (metric).

² Parts included in Head Assemblies (10).

Ordering method:

³ Replacement Seal Band
EXAMPLE: NSB MXP16 P SK21-25 DW7

⁴ Replacement Dust Band
EXAMPLE: NDB MXP16 P SK21-25 DW7

Dust Band Model & Size Bearing Stroke Length Aux. Carrier

Ordering method:

⁵ Replacement Magnet Band
 For long stroke lengths the magnet band is shipped in multiple pieces **EXAMPLE:** NMB MXP16 P SK21-25 DW7

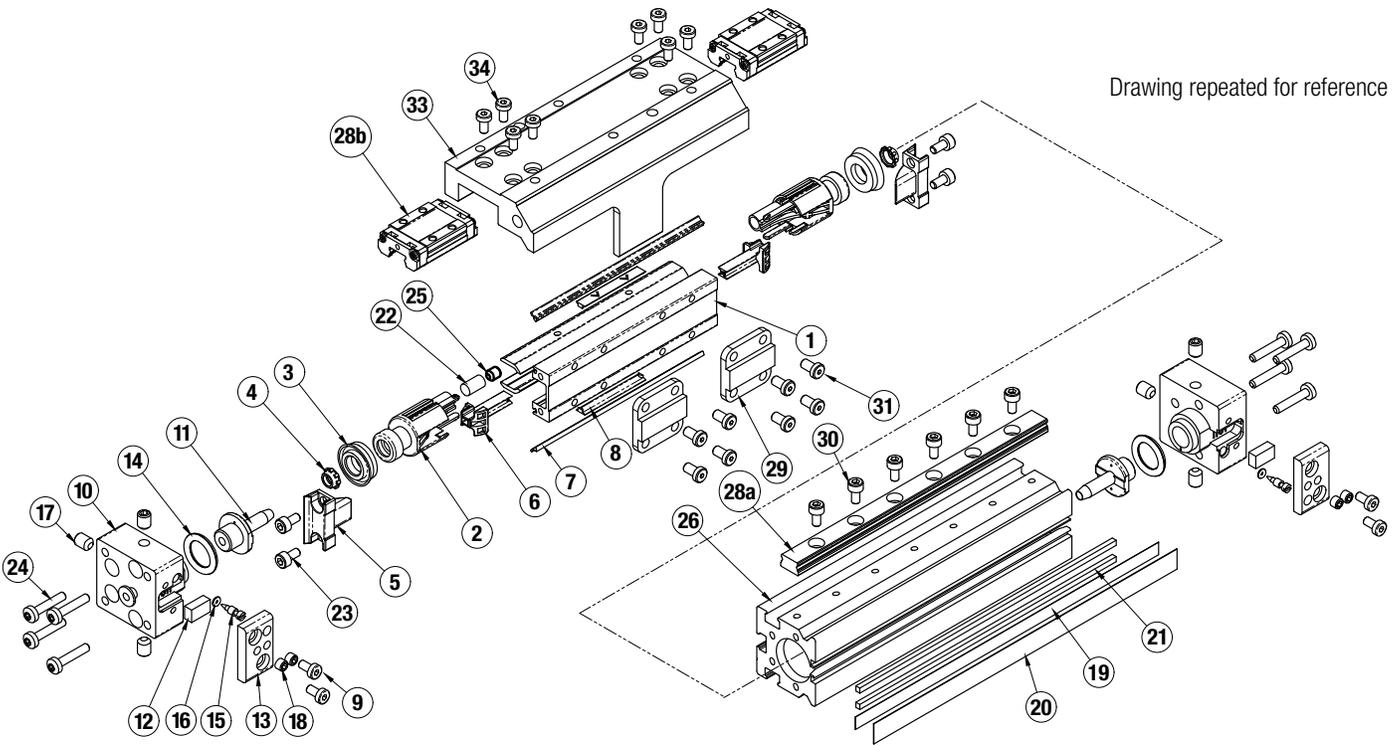
⁶ Replacement Tube
EXAMPLE: RTB MXP16 P SK21-25 DW7

Tube Model & Size Bearing Stroke Length Aux. Carrier

Auxiliary Carrier Option Note: If replacing a Seal Band (19.), Dust Band (20.), Magnet Band (21.), Tube (26.), Bearing Rail (29.), or Nut Rail (30.) on an actuator that has an Auxiliary Carrier, be sure to add "DW _ _" to the end of the configuration string when ordering. "DW" 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).

⁷ Linear Bearing Block Kit includes 2 Bearing Blocks (8116-1044) on a rail for installation. MUST BE ORDERED AS A KIT.

⁸ ⓧ Bearing Blocks and/or Bearing Rail purchased before Oct. 1, 2014 are NOT compatible with current Bearing Blocks and Bearing Rails purchased after Oct. 1, 2014.



Drawing repeated for reference

ITEM	PART NO. or CONFIG. CODE	DESCRIPTION	QTY.	ITEM	PART NO. or CONFIG. CODE	DESCRIPTION	QTY.
22	8116-1008	Magnet	1	29	8116-1034	Adjustment Plate	2
23	0601-1038	Socket Head Cap Screw	4	30	4905-1005	Socket Head Cap Screw	A/R
24 ²	8316-1022	Head Screw	8	31	8116-1515	Low Head Cap Screw (Inch)	8
25	7906-1029	Set Screw	1		8125-1022	Low Head Cap Screw (Metric)	8
26 ⁶	RTB MXP16P	Replacement Tube (8116-1010) Specify Stroke	A/R	32		Number is not used	1
28a ^{7,8}	NPRMXP16P	Replacement Bearing Rail (Specify stroke) add DW for Dual Carrier add BB for optional Bearing Blocks	A/R	33	8116-1521	Carrier (Inch)	1
28b ^{7,8}					8116-1021	Carrier (Metric)	1
				34	8125-1022	Low Head Cap Screw	8

¹ Parts included in Repair Kits RKMXP16SSK (inch) & RKMXP16SSM (metric). ² Parts included in Head Assemblies (10).

Ordering method: ⁶ Replacement Tube **RTB MXP16S** **SK** or **SM** **DW**

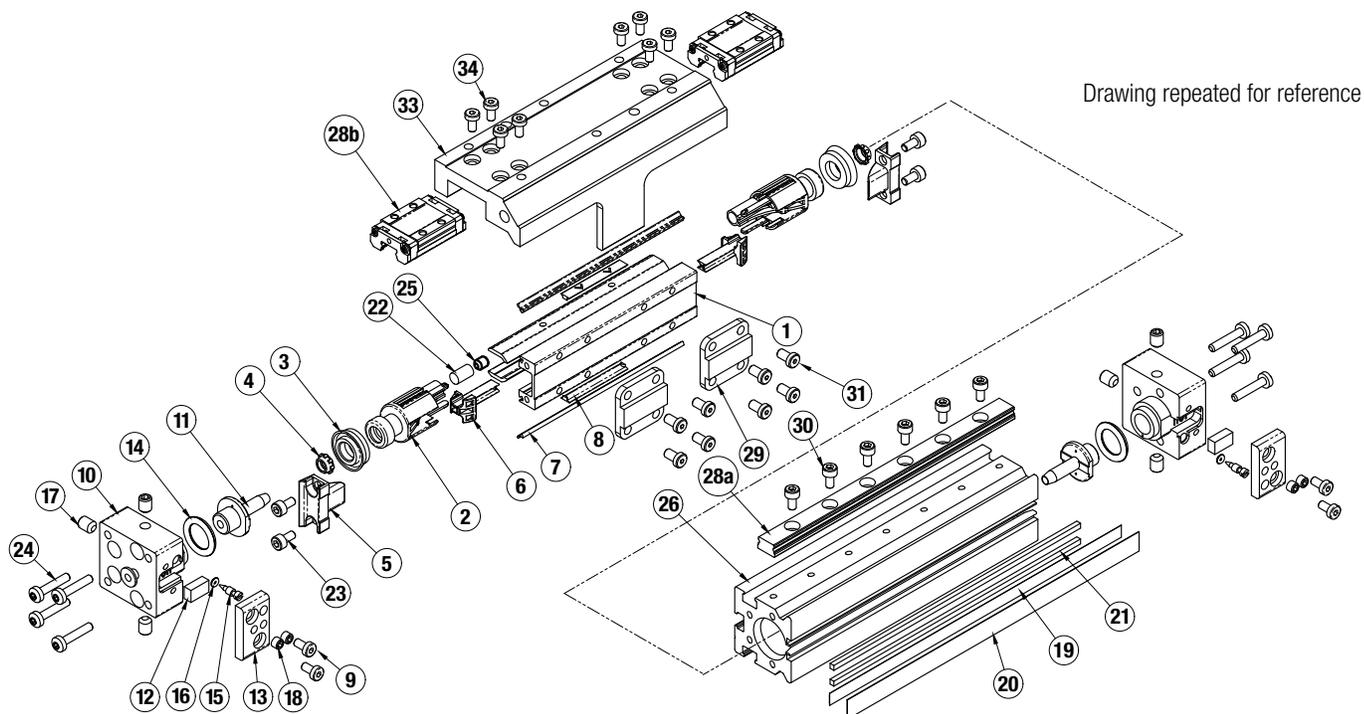
EXAMPLE: **RTB MXP16S SK21.25 DW7**

Tube Model & Size Bearing Stroke Length Aux. Carrier

Auxiliary Carrier Option Note: If replacing a Seal Band (19.), Dust Band (20.), Magnet Band (21.), Tube (26.), Bearing Rail (29.), or Nut Rail (30.) on an actuator that has an Auxiliary Carrier, be sure to add "DW ___" to the end of the configuration string when ordering. "DW" 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).

⁷Linear Bearing Block Kit includes 2 Bearing Blocks (8116-1044) on a rail for installation. MUST BE ORDERED AS A KIT.

⁸⊗ Bearing Blocks and/or Bearing Rail purchased before Oct. 1, 2014 are NOT compatible with current Bearing Blocks and Bearing Rails purchased after Oct. 1, 2014.



CYLINDER DISASSEMBLY INSTRUCTIONS

Begin with a clean work area. Make sure all replacement parts are available and have no visual damage or defects. The following tools and materials are recommended for proper disassembly and assembly. (Exact wrench sizes will vary depending on cylinder size.)

- Allen wrench set (English and Metric)
- Torx wrench set
- Small straight edge screwdriver
- Socket wrench & socket set
- Needle nose pliers
- Tin snips
- Razor Blade
- RheoGel TEK664 grease

For best actuator performance it is recommended that the following instructions be read and followed carefully.

1. REMOVE BAND CYLINDER FROM MACHINERY

Remove all mounting hardware and air connections, if present, from the Cylinder Heads (10) and/or Carrier (33).

2. REMOVE CARRIER FROM CYLINDER

Remove Screws (34) from Carrier (33). Slowly lift up the Carrier (33) and remove it from the cylinder.

⚠ CAUTION: Contaminating the Bearing Block (28b) will hinder the operation of the Band Cylinder. Do not remove the Bearing Blocks (28b) from the Bearing Rail (28a).

Remove Screws (31) and Adjustment Plates (29) from Piston Bracket (1).

3. REMOVE BEARING RAIL (OPTIONAL)

The MX Bearing System is designed to provide maximum life. Should the Bearing Blocks (28b) need replacement, the Bearing Rail (28a) will need to be replaced as well. Bearing Blocks (28b) and Bearing Rail (28a) must remain together. If the cylinder stroke requires two or more Bearing Rails to be mounted, the cylinder will need to be sent to the factory. It is critical that the two (or more) Bearing Rails are aligned properly. This requires special fixtures and cannot be done in

the field. To remove both Bearing Blocks and Bearing Rail, slide each Bearing Block to the furthest end of the Bearing Rail. Remove the Screws (30) from the other end of the Bearing Rail. Move Bearing Blocks back to the other end of the Bearing Rail and remove remaining Screws.

4. REMOVE BAND CLAMPS

Loosen Set Screws (18) on Dust Band Clamp (13). Remove Screws (9) from Cylinder Heads (10). Remove Seal Band Clamp (12) from between Dust Band (20) and Seal Band (19). Repeat for other Cylinder Head.

5. REMOVE DUST BAND

Remove End Caps (5) from both ends of the Piston Bracket (1) by removing Screws (23). To remove Dust Band (20), lift one end and pull the Band through the Piston Bracket. The Band is magnetically retained so some resistance will be present when removing.

6. REMOVE HEADS

Remove the four Head Screws (24) to free each Cylinder Head (10). Remove each Head by rocking it up and down until the Head is free from the Cylinder Tube (26). **DO NOT TWIST!** Remove the O-ring (14) from both Heads with a small straight edge screwdriver.

7. REMOVE SEAL BAND

⚠ CAUTION: Sealing Band edges are sharp. Grasp the top and bottom of the Band when removing, not the edges.

Slide Piston Bracket (1) out of the Cylinder Tube (26). Remove the Sealing Band (19) through the slot in the Tube.

8. DISASSEMBLE PISTON BRACKET

Remove Wipers (7) from the Piston Bracket (1). With a small straight edge screwdriver, remove the U-Cups (3) from both Pistons (2). Remove the Cushion Seal (4) from each Piston. Remove the Pistons (2) by inserting a small allen wrench into the holes on each side of Piston Bracket (1) to disengage the Pistons. With a small screwdriver, remove the Band Ramps (6) and the Plastic Bearings (8) by disengaging the side retaining tabs for each. Keep the Piston Bracket (1) and the two Pistons (2) for reassembly.

CYLINDER ASSEMBLY INSTRUCTIONS**1. CLEAN AND LUBRICATE**

Thoroughly clean all components, particularly the Tube Bore, Tube Slot, Sealing Band and Dust Band. Thoroughly lubricate the Tube Bore with a thin, uniform layer of RheoGel TEK664 grease.

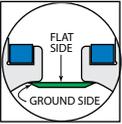
2. PISTON BRACKET ASSEMBLY

With the Piston Bracket (1) in hand, install the Band Ramps (6), with small end down, so the ends on each side snap into the hole of the Piston Bracket. Install one Plastic Bearing (8) on each side of Piston Bracket and between the Band Ramps by snapping ends into holes. Note, install Plastic Bearings with arrows pointing up. Install the Pistons (2) into the Piston Bracket (1), with Band Ramp up, until Piston snaps into hole in Piston Bracket. Install new lubricated U-Cups (3) (seal lips facing out), and Cushion Seals (4) (small end facing out). Slide new Wipers (7) into the groove on the Piston Bracket (1) until flush with end. Trim off excess flush to other end of Piston Bracket. Wipers need to be installed with the flare edges facing outward.

**3. INSTALL INNER SEAL BAND**

CAUTION: Metal edges of Sealing Band are sharp. Exercise caution to avoid injury to yourself while installing. Handle Sealing Band with care. Do not damage edges while handling.

Insert Sealing Band (19) into Cylinder Tube (26) by laying the Band out along the length of the actuator and passing it sideways through the slot in Tube. With flat side facing up (ground side facing down), position the Band so the length of band sticking out the end of the Tube is as long as Piston Assembly. (5 - 10 inches or 12 - 25 cm)

**4. INSTALL PISTON ASSEMBLY**

Place generous amounts of grease around bore of Tube (26) and on exterior surfaces of both Pistons (2), U-Cups (3), Band Ramps (6) and Plastic Bearings (8). Use the 6-inch length of Seal Band included with repair kit, or a short length of the old Seal Band, slightly kink the Band upwards, one inch (25mm) from the end. Insert into slot between the Band Ramp (6) and Piston (2) on the Piston Bracket (1), and stop against opposite end of the Piston Bracket and up the short length of inserted Band. Once the Seal Band is through the Piston Bracket, remove the short length of band material and discard.

Grasp the Piston Bracket while holding the Wipers in place with your fingers. Flare the Wiper edges out, while inserting the Piston Bracket part-way into the Tube. Do not force the Piston Bracket. Place a finger over the opposite end of the Piston Bracket to keep the Wipers in place, while pushing the remainder of the Piston Bracket into the Tube (26). With the Piston Assembly experiences resistance, use a small screwdriver to press in the ends of the Band Ramps (6) and the Plastic Bearings (8) where it enters the Tube. With the Piston Assembly in place, slide the length of the Tube until the end of the Piston just extends out of the Tube. Wipe off any excess grease from the end of the Piston and Tube. Position Piston Assembly so it is fully engaged in the Tube.

Note: If Tube and Piston Assembly were greased properly, excess grease should be present as the Piston exits the end of the Tube. If there is no excess grease present, remove the Piston Assembly and re-grease the Tube, then re-install the Piston Assembly.

5. INSTALL HEADS

CAUTION: Twisting the Head (10) during installation may cut the O-ring (14) resulting in excessive leakage during operation.

Install new lubricated O-Ring (14) onto each Head (10). Position Piston Assembly near the end of the Tube in which the Head is being installed. Position the Seal Band (19) so .394" (10mm) is protruding from the end of the Tube (26) and centered with the slot in the Tube. With black marker, make vertical line where the Seal Band intersects with the Tube and a horizontal line at the center of the Seal Band and slot. Install

Head into Tube using a slight up and down rocking motion (not side-to-side or twisting) until the Head is flush with the end of the Tube. Secure Head to Tube by installing Head Screws (24) applying a torque of 10 in-lbs (1.13 N-m). Verify horizontal mark on Seal Band is still centered to the Tube slot. If not, remove Head and try again until centered. Verify vertical mark on Seal Band is still aligned with end of Tube. If not, use needle nose pliers to pull on Seal Band until properly located.

Move Piston Assembly to other end of the Tube and repeat the steps above to install the other Head. Trim Seal Band with tin snips if needed to achieve .394" (10mm) from end of Tube.

Once 2nd Head is properly installed, verify the horizontal and vertical marks on Seal Band on 1st Head did not move. If moved, use needle nose pliers to properly locate Seal Band for both Heads.

6. INSTALL DUST BAND

Position the Piston Assembly at mid-stroke of cylinder. Slide Dust Band (20) through the upper slot of Piston Bracket (1) and lay on top of the Cylinder Tube slot. Position the Dust Band .394" (10mm) from each end of Tube. Install End Caps (5) using Screws (23) into ends of Piston Bracket (1).

7. SECURE SEAL AND DUST BANDS

In the Head (10) slot, place Seal Band Clamp (12) between Seal Band (19) and Dust Band (20) positioning end of Seal Band Clamp against end of Tube (26). Place Dust Band Clamp (13) onto Head (10) so there is access to the Cushion Needle (15) then secure using Screws (9). Tighten both Set Screws (18) to secure Dust Band. Repeat to secure other end.

8. CHECK ASSEMBLY

Manually push the Piston Assembly back and forth along the entire length of stroke to make certain that the cylinder is properly assembled before reconnecting to the pneumatic supply. The Piston Assembly should move consistently with minimal friction along the stroke. The Dust Band should not kink at end of stroke. If it does, loosen Set Screws (18) until kinking is eliminated and retighten.

9. INSTALL BEARING RAIL (OPTIONAL)

If you completed step 3 in the disassembly procedure follow this assembly procedure. Place the Tube (26) so the threaded holes on the side are facing up. Align and place the new Bearing Rail (28a) with Bearing Blocks (28b) on top of Tube. Start all of the Screws (30) that hold down the Bearing Rail onto the Tube. Do not tighten. Center the Bearing Rail along the length and width of the cylinder, making sure the ends of the Bearing Rail are not past each end of the Tube. Once the Bearing Rail is positioned, tighten all of the Screws (30) to secure Bearing Rail to the Tube. Verify the Bearing Blocks (28b) can slide easily from one end of the Tube to the other.

10. INSTALL THE CARRIER

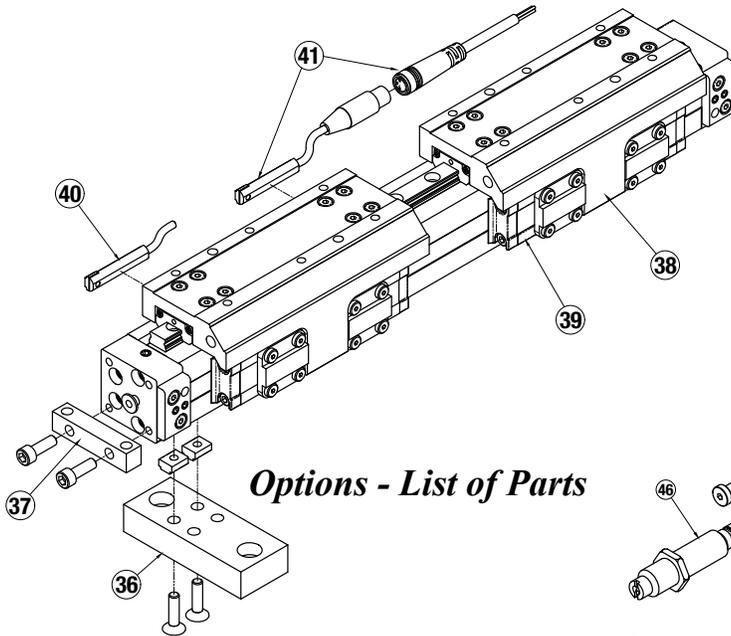
With the Bearing Rail facing up and the Piston Assembly on the side facing you, slide the two Bearing Blocks (28b) so they are lined up with both ends of the Piston Assembly. Place the Carrier (33) over the top of the two Bearing Blocks aligning the mounting holes. Secure Carrier to Bearing Blocks using Screws (34). Move Piston Assembly so it is centered with the Carrier. Attach both Adjustment Plates (29) with Screws (31) capturing the Carrier (33) between the Adjustment Plates.

11. CHECK ASSEMBLY

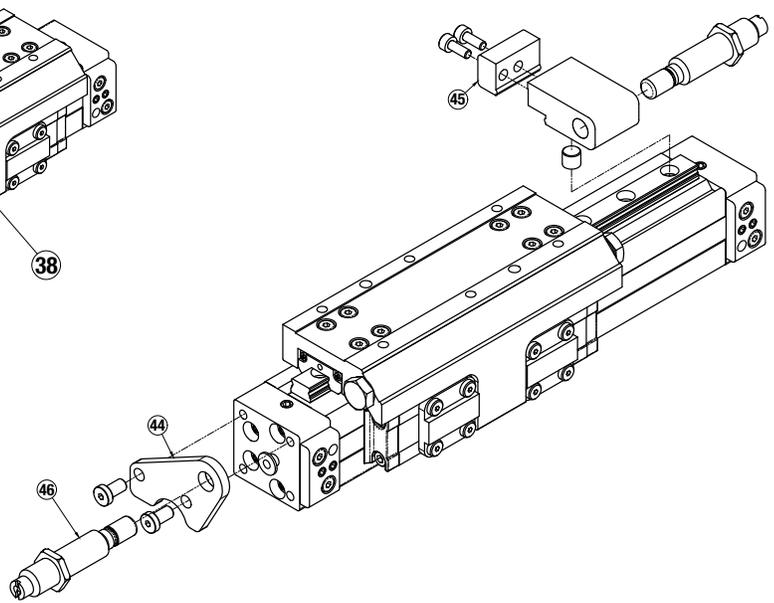
Manually push the Carrier (33) back and forth along the full stroke of the cylinder. Carrier should move consistently with minimal friction along the stroke.

12. REMOUNT THE CYLINDER ONTO THE MACHINE

CAUTION: Be certain any flow controls are in place and adjusted prior to applying compressed air to the cylinder.



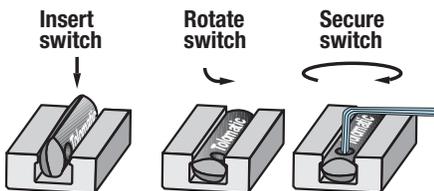
Options - List of Parts



ITEM	PART NO.	DESCRIPTION	QTY. IN KITS
MOUNTING KITS			
36	8316-9016	Mounting Plate Kit	
	8316-1030	Mounting Plate	1
	8316-1050	T-Nut	2
	4410-1018	Flat Head Cap Screw	2
37	8116-9519	Foot Mount Kit (inch)	
37	8116-9019	Foot Mount Kit (metric)	
	8116-1055	Foot Mount	1
	0910-1166	Screw (inch)	2
	0604-1028	Screw (metric)	2
DUAL CARRIER			
38	8116-9504	Auxiliary Carrier Assembly (inch)	
	8116-9004	Auxiliary Carrier Assembly (metric)	
39	8116-9528	Dual Carrier Piston Bracket Assembly (inch)	
	8116-9028	Dual Carrier Piston Bracket Assembly (metric)	
SWITCHES			
40	Switches without Quick-Disconnect Couplers		
	SWMXP16 RY	Reed Switch, SPST Normally Open	
	SWMXP16 NY	Reed Switch, SPST Normally Closed	
	SWMXP16 TY	Solid State Switch, PNP (sourcing) Normally Open	
	SWMXP16 KY	Solid State Switch, NPN (sinking) Normally Open	
	SWMXP16 PY	Solid State Switch, PNP (sourcing) Normally Closed	
	SWMXP16 HY	Solid State Switch, NPN (sinking) Normally Closed	
41	Switches with Quick-Disconnect Couplers		
	SWMXP16 RK	Reed Switch, SPST Normally Open	

ITEM	PART NO.	DESCRIPTION	QTY. IN KITS
	SWMXP16 NK	Reed Switch, SPST Normally Closed	
	SWMXP16 TK	Solid State Switch, PNP (sourcing) Normally Open	
	SWMXP16 KK	Solid State Switch, NPN (sinking) Normally Open	
	SWMXP16 PK	Solid State Switch, PNP (sourcing) Normally Closed	
	SWMXP16 HK	Solid State Switch, NPN (sinking) Normally Closed	
42	NOTE: Female Connector for Quick-Disconnect is included		
SHOCK ABSORBERS			
44	8116-9522	Fixed Shock Mounting Kit (inch)	
44	8116-9022	Fixed Shock Mounting Kit (metric)	
	8116-1064	Fixed Shock Bracket	1
	8125-1574	Screw (inch)	2
	8325-1027	Screw (metric)	2
45	8116-9024	Adjustable Shock Mounting Kit	
	8116-1084	Shock Bracket	1
	8116-1086	Bracket Clamp	1
	2212-1090	Screw	2
	8116-1035	Dowel Pin	1
46	7906-1065	Lite Duty Shock Absorber	
	7906-1066	Heavy Duty Shock Absorber	

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.

LUBRICATION AND MAINTENANCE

All Tolomatic MX Band Cylinders are prelubricated at the factory. To ensure maximum cylinder life, the following guidelines should be followed.

1. Filtration

We recommend the use of dry, filtered air in our products. “Filtered air” means a level of 10 Micron or less. “Dry” means air should be free of appreciable amounts of moisture. Regular maintenance of installed filters will generally keep excess moisture in check.

2. External Lubricators (optional)

The factory prelubrication of Tolomatic Band Cylinders will provide optimal performance without the use of external lubrication. However, external lubricators can further extend service life of pneumatic actuators if the supply is kept constant.

Oil lubricators, (mist or drop) should supply a minimum of 1 drop per 20 standard cubic feet per minute to the cylinder. As a rule of thumb, double that rate if water in the system is suspected. Demanding conditions may require more lubricant.

If lubricators are used, we recommend a non-detergent, 20cP @ 140°F 10-weight lubricant. Optimum conditions for standard cylinder operation is +32° to +150°F (+0° to 65.5°C).

NOTE: Use of external lubricators may wash away the factory installed lubrication. External lubricants must be maintained in a constant supply or the results will be a dry actuator prone to premature wear.

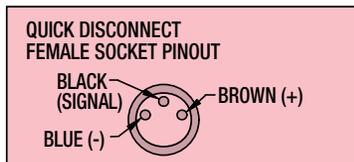
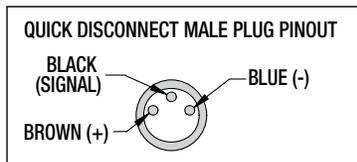
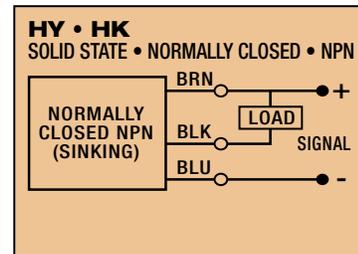
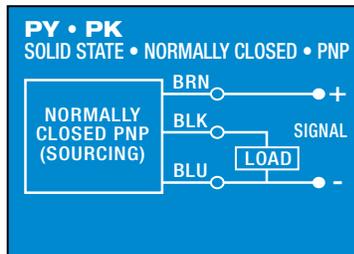
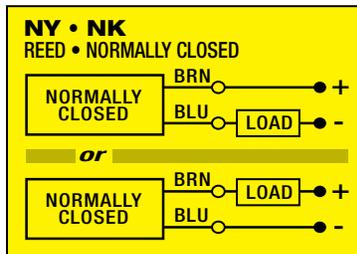
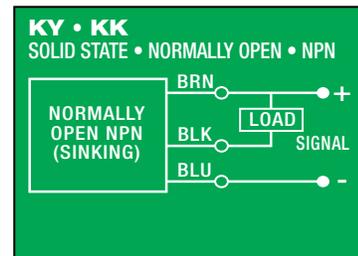
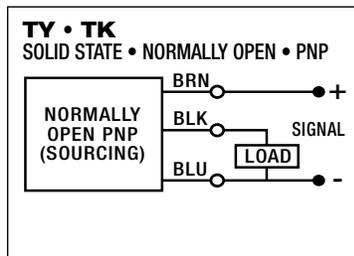
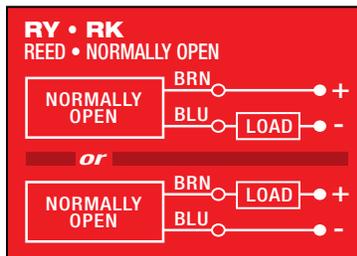
3. Sanitary Environments

Oil mist lubricators must dispense “Food Grade” lubricants to the air supply. Use fluids with ORAL LD50 toxicity ratings of 35 or higher such as Multitherm® PG-1 or equivalent. Demanding conditions can require a review of the application.

4. Cushion Adjustment

Adjust the Cushion Needles in the Cylinder Heads carefully to obtain optimum deceleration for your particular application. If there are questions on proper adjustment, please consult Tolomatic.

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 DETECTION POINT

