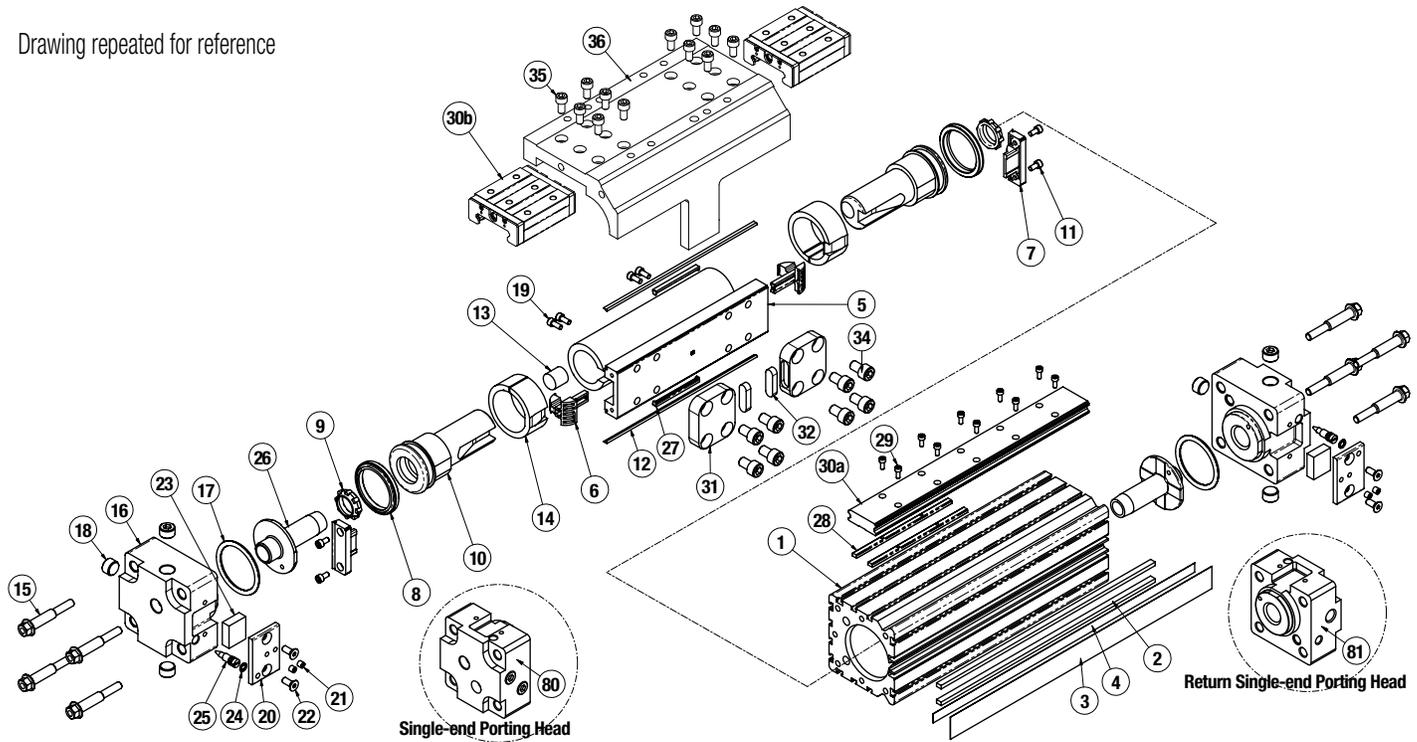


Drawing repeated for reference



ITEM	PART NO. or CONFIG. CODE	DESCRIPTION	QTY.
⁶ 21	0915-1044	Set Screw	4
⁶ 22	0920-1024	Flat Head Cap Screw	4
⁶ 23	8163-1038	Band Wedge	2
⁶ 24	0720-1003	O-Ring	2
⁶ 25	8163-1065	Needle Screw	2
⁶ 26	0925-1158	Cushion	2
⁵ 27	8163-1028	Bearing	2
⁸ 28	NNRMP63P	Replacement Nut Rail (8163-1053) Specify Stroke	A/R
29	4415-1001	Socket Head Cap Screw	A/R
⁸ 30a	NPRMP63P	Replacement Bearing Rail (Specify stroke) add DW for Dual Carrier	A/R
⁸ 30b		add BB for optional Bearing Blocks	

ITEM	PART NO. or CONFIG. CODE	DESCRIPTION	QTY.
31	8163-1034	Carrier Adjustment Plate	2
32	8163-1076	Bearing	2
33		Number is not used	
34	2324-1014	Socket Head Cap Screw (inch)	8
	8163-1070	Socket Head Cap Screw (metric)	
35	4415-1000	Socket Head Cap Screw	12
36	8163-1521	Carrier (inch)	1
	8163-1021	Carrier (metric)	
⁷ 80	8163-9002	Head Assy, NPT, Single-end Porting	1
	8163-9008	Head Assy, BSPT Metric Taper, Single-end Porting	
	8163-9009	Head Assy, ISO Metric Parallel, Single-end Porting	
⁷ 81	8163-9003	Head Assembly, Return, Single-end Porting	1

Auxiliary Carrier Option Note: If replacing a Tube (1.), Magnet Band (2.), Dust Band (3.), Seal Band (4.), Bearing Rail (30), or Nut Rail (28.) 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).

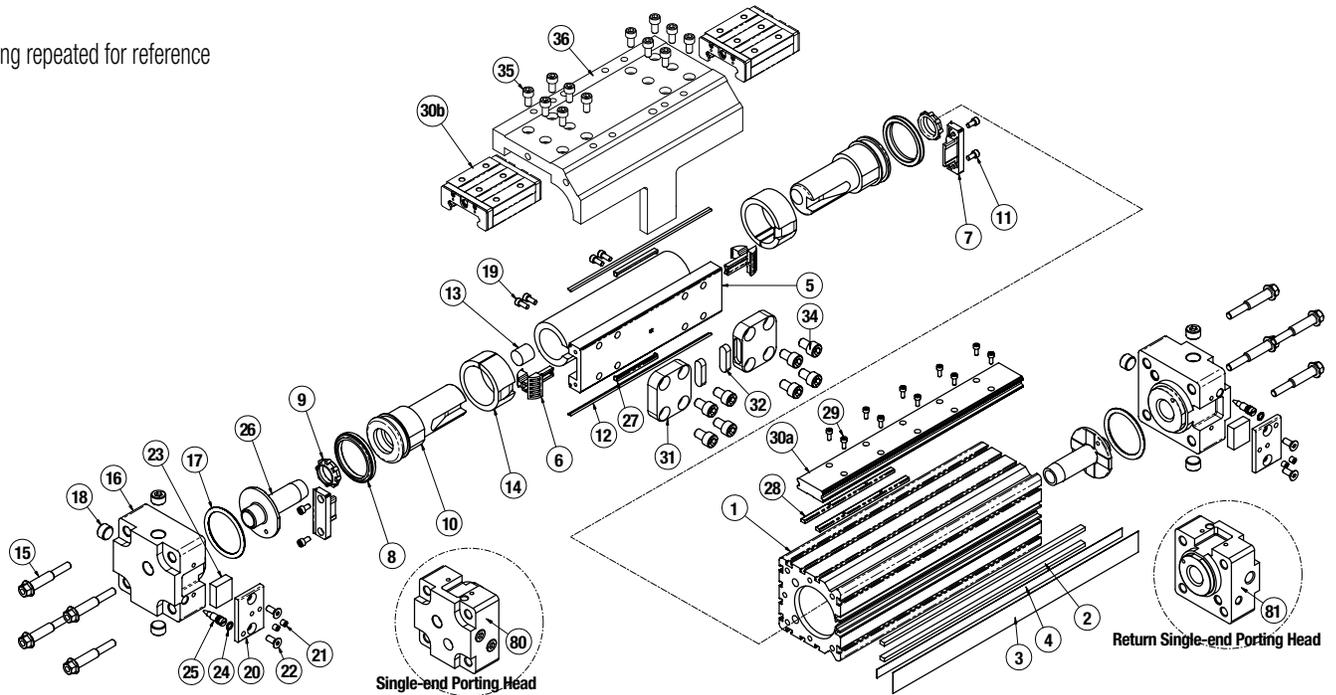
⁵ Parts included in Repair Kits RKMXP63PSK (inch) & RKMXP63PSM (metric).

⁶ Parts included in Head Assemblies (16).

⁷ Part exclusive to single-end porting option.

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



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 (Inch and Metric)
- 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 (16) and/or Carrier (36).

2. REMOVE CARRIER FROM CYLINDER

Remove Screws (35) from Carrier (36). Slowly lift up the Carrier and remove it from the cylinder.

⚠ CAUTION: Contaminating the Bearing Block will hinder the operation of the cylinder. Do not remove the Bearing Blocks from the Rails. If the Bearing Blocks need to be replaced so will the Bearing Rail.

Remove Screws (34), Adjustment Blocks (31) and Carrier Bearings (32) from the cylinder.

3. REMOVE BEARING BLOCKS AND BEARING RAIL (OPTIONAL)

The MX Bearing System is designed to provide maximum life. Should the Bearing Blocks need replacement, the Bearing Rail will need to be replaced as well. Bearing Blocks (30b) and Bearing Rail (30a) must remain together.

If the cylinder stroke requires two Bearing Rails to be mounted, the cylinder will need to be sent to the factory. It is critical that the two Rails are aligned properly. This requires special fixtures and cannot be done in the field.

To remove both the Bearing Blocks and Bearing Rail, slide each Bearing Block off one at a time and place in a clean area. Next remove Screws (29) from the Bearing Rail (30a). Lift up on the Rail and place in a clean area.

4. REMOVE BAND CLAMPS

Loosen Screws (21) on Dust Band Clamp (20). Remove Screws (22) from Cylinder Heads (16). Remove Seal Band Clamp (23) from between Dust Band (3) and Seal Band (4). Do not adjust the point Set Screw in the Seal Band Clamp (23). Repeat for other Cylinder Head.

5. REMOVE DUST BAND

Remove End Caps (7) from both ends of the Piston Bracket (5) by removing Screws (11). To remove Dust Band (3), 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 (15) to free each Cylinder Head (16). Remove each head by rocking it up and down until the head is free from the Cylinder Tube (1). **DO NOT TWIST!** Remove the O-Ring (17) 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 (5) out of the Cylinder Tube (1). Remove the Sealing Band (3) through the slot in the Tube.

8. DISASSEMBLE PISTON BRACKET

Remove Wipers (12) from the Piston Bracket (5). With the small straight edge screwdriver, remove the U-Cups (8) from both Pistons (10). Remove the Cushion Seal (9) from each Piston. Remove the Pistons (10) by removing Screws (19) then sliding out of Piston Bracket (5). With a small screwdriver, remove the Band Ramps (6) by disengaging the side retaining tabs for each. Keep the Piston Bracket (5) and the two Pistons (10) for reassembly.

CYLINDER ASSEMBLY INSTRUCTIONS

1. CLEAN AND LUBRICATE

Thoroughly clean all components, particularly the Tube (1) Bore, Tube Slot, Sealing Band (4) and Dust Band (3). Thoroughly lubricate the Tube Bore with a thin, uniform layer of RheoGel TEK664 grease.

2. PISTON BRACKET ASSEMBLY

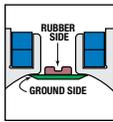
With the Piston Bracket (5) in hand, install the Band Ramps (6), with small end down, so the ends on each side snaps into the hole of the Piston Bracket. Slide the Pistons (10) into the Piston Bracket (5) so the threads on the Piston align with the holes in the Piston Bracket and secure using Screws (19).



Verify surface of Piston is behind the surface of the Piston Bracket in both places as shown in diagram.

If not aligned properly the Seal Band (4) life may be shortened.

Install new lubricated U-Cups (8) (seal lips facing out), and Cushion Seals (9) (small end facing out).



3. INSTALL SEALING 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 (4) into Cylinder Tube (1) by laying the Band out along the length of the actuator and passing it sideways through the slot in Tube. With rubber side facing up (ground side facing down), position the Seal Band so there is enough sticking out the end of the Tube as long as a Piston Assembly.

4. INSTALL PISTON ASSEMBLY

Place generous amounts of grease around bore of Tube (1) and on exterior surfaces of both Wear Rings (14) on Pistons (10), U-Cups (8) and Band Ramps (6).

Create a Seal Band Guide Tool by using the 12-inch length of Seal Band included with repair kit (without rubber), or cut a short length of the old Seal Band. (Remove the rubber along the entire length of the Seal Band Guide Tool if needed.) At one inch from one end of the Seal Band Guide Tool, bend slightly upward. The bend helps to guide the Seal Band Guide Tool through the Piston Assembly. Determine which end of the Piston Assembly is going to be inserted into the Tube (1) first. Insert the bent end of the Seal Band Guide Tool into the opposite end of the Piston Assembly. Push the Tool through the opening between the Band Ramp (8) and Wear Ring (14) on the Piston Bracket (5) and stopping when the Tool exits the end of the Piston Assembly.

Place the Seal Band (4) on top of the Seal Band Guide Tool. Insert the Piston Assembly into the Tube (1) until both U-Cups are captured by the bore in the Tube. Do not force the Piston Bracket into the Tube and if the Piston Assembly experiences resistance, use a small screwdriver to press in the ends of the Band Ramps (6) where entering the Tube. Allow the Seal Band (4) to pass through the Piston Assembly. Once the Seal Band is through the Piston Assembly, pull the Seal Band Guide Tool out of the Piston Assembly. Continue inserting the Piston Assembly into the Tube until the 2nd U-Cup is inserted into the bore of the Tube.

Slide new Wipers (12) into the groove on the Piston Bracket (5) until flush with end. Manually move the Piston Assembly the length of the Tube until the end of the leading U-Cup extends out of the Tube. Wipe off any excess grease from the end of the Piston Assembly and the Tube. Move the Piston Assembly so the U-Cup back into the Tube bore.

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 (16) during installation may cut the O-Ring (17) resulting in excessive leakage during operation.

Install new lubricated O-Ring (17) onto each Head (16). Position Piston Assembly near the end of the Tube in which the Head is being installed. Position or trim the Seal Band (4) so 1.25" (31.8mm) is protruding from

the end of the Tube (1). Use a razor blade to cut the rubber along the end of the Tube then remove all rubber outside the end of the Tube. Keep the rubber on the Seal Band aligned with the end of the Head (16). 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 (15) applying a torque of 190 in-lbs (21.47 N-m). Verify rubber on Seal Band (4) is still aligned with end of Tube. If not, use needle nose pliers to pull on Seal Band until aligned. Place Band Wedge (23) with point of Set Screw down into slot of Head and on top of Seal Band. Push Band Wedge so it is against the end of the Tube. Secure Band Wedge with Band Clamp (20), FHCS (22) and Set Screws (21). Make sure hole in Band Clamp aligns with the Cushion Needle (25) in Head.

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 1.25" (31.8mm) from end of Tube. While pulling Seal Band tightly with needle nose pliers, use razor to cut rubber at the end of the Tube. Remove rubber from the end of the Seal Band to the cut just made. Install the Head (16) to the Tube and secure with the Head Screws (15). Use needle nose pliers to pull on the Seal Band removing any slack and aligning the rubber on Seal Band with the end of the Tube. If rubber is past end of Tube, trim excess rubber. If rubber is not up to end of Tube, pull on Seal Band with needle nose pliers to remove slack. Secure Seal Band with Band Clamp, FHCS and Set Screws. Once both ends of the Seal Band are secured, manually move the Piston Assembly the entire length of the Tube two times to see if there is any slack or issues with the Seal Band.

6. INSTALL AND SECURE DUST BAND

Position the Piston Assembly at mid-stroke of the cylinder. Slide Dust Band (3) through the upper slot of Piston Bracket (5) and lay on top of the cylinder tube slot. Position the Dust Band 1.25" (31.8mm) from each end of Tube. Install End Caps (7) using SHCS (11) into ends of Piston Bracket (5). Loosen Set Screws (21) and FHCS (22) on both ends of the Tube. Slide Dust Band (3) between Band Wedge (23) and Band Clamps (20). Tighten the FHCS then the Set Screws to secure the Dust Band. Move the Piston Assembly to each end of the Tube to verify the Dust Band is positioned properly.

7. 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 (21) until kinking is eliminated and retighten.

8. INSTALL BEARING BLOCKS AND BEARING RAIL (OPTIONAL)

If you completed Step 3 in the disassembly procedure place the new Bearing Rail (30a) on top of Nut Rail with the reference mark located on the bottom of the Rail towards the Piston Bracket (5). Next start all the Screws (29) that hold the Rail, but do not tighten. Center the Bearing Rail along the length and width of the cylinder, making sure the ends of the Rail do not cover the Heads. Also, once the Rail has been centered, tighten all Screws (29). Slide on the new Bearing Blocks (30b) one at a time, with the reference mark facing you.

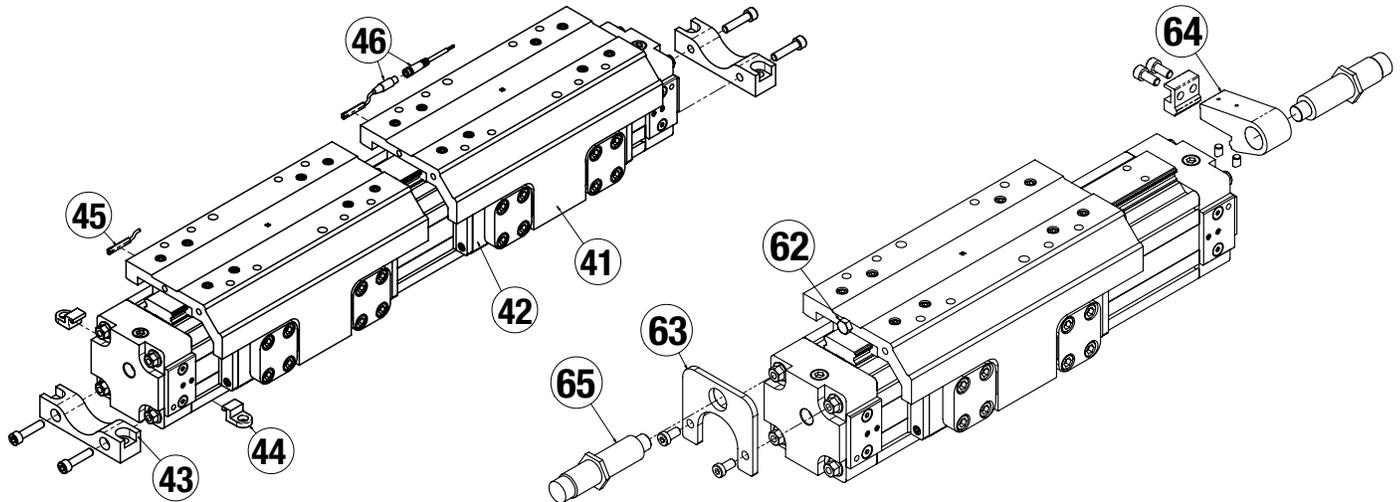
9. INSTALL THE CARRIER

Slide the two Bearing Blocks so they are lined up with both ends of the Piston Assembly. Place the Carrier (36) over the top of the Bearing Blocks, guiding the Carrier around the Carrier Adjustment Plates (31). Carefully slide the two Bearing Blocks under the Carrier (36), until the holes from the top of the Carrier and the Bearing Blocks align. Install Screws (35) into the Carrier and tighten.

Replace Carrier Adjustment Plates (31) and then install the Carrier Bearing (32) into the indent on the Adjustment Blocks. Install and tighten Screws (34) making sure Carrier is captured.

10. 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.



ITEM	PART NO.	DESCRIPTION
AUXILIARY CARRIER		
41	8163-9504	Auxiliary Carrier Assembly (inch)
	8163-9004	Auxiliary Carrier Assembly (metric)
42	8163-9528	Auxiliary Carrier Piston Bracket Assembly (inch)
	8163-9028	Auxiliary Carrier Piston Bracket Assembly (metric)
MOUNTING KITS		
43 ²	8163-9519	Foot Mount Kit (inch)
	8163-9019	Foot Mount Kit (metric)
	8163-1055	Foot Mount
	1104-1011	Screw (inch)
	3420-1638	Screw (metric)
44 ¹	8163-9018	Tube Clamp Mounting Kit
	8163-1050	Tube Clamp
SWITCHES		
45	Switches without Quick-Disconnect Couplers	
	SWMXP63 RY	Reed Switch, SPST Normally Open
	SWMXP63 NY	Reed Switch, SPST Normally Closed
	SWMXP63 TY	Solid State Switch, PNP (sourcing) Normally Open
	SWMXP63 KY	Solid State Switch, NPN (sinking) Normally Open
	SWMXP63 PY	Solid State Switch, PNP (sourcing) Normally Closed
	SWMXP63 HY	Solid State Switch, NPN (sinking) Normally Closed
	46	Switches with Quick-Disconnect Couplers
SWMXP63 RK		Reed Switch, SPST Normally Open
SWMXP63 NK		Reed Switch, SPST Normally Closed
SWMXP63 TK		Solid State Switch, PNP (sourcing) Normally Open
SWMXP63 KK		Solid State Switch, NPN (sinking) Normally Open
SWMXP63 PK		Solid State Switch, PNP (sourcing) Normally Closed
	SWMXP63 HK	Solid State Switch, NPN (sinking) Normally Closed
	NOTE: Female Connector for Quick-Disconnect is included	
SHOCK ABSORBERS		
62	4415-1003	Impact Bolt

ITEM	PART NO.	DESCRIPTION
63 ⁴	8163-9520	Fixed Shock Mounting Kit (inch)
	8163-9020	Fixed Shock Mounting Kit (metric)
	8163-1060	Fixed Shock Bracket
	2317-1015	Screw (inch)
	8163-1061	Screw (metric)
64 ⁵	8163-9024	Adjustable Shock Mounting Kit
	8163-1084	Shock Bracket
	8163-1086	Shock Bracket Clamp
	2212-1104	Socket Head Cap Screw
	8125-1035	Dowel Pin
65	4920-1068	Light Duty Shock Absorber
	4920-1069	Heavy Duty Shock Absorber

¹ Tube Clamp Kit contains 2 tube clamps.

² Foot Mount Kit contains 1 foot mount and 2 fasteners.

³ Floating Mount Kit contains 1 floating mount, 1 lower strap, 1 pin and 4 fasteners.

⁴ Fixed Shock Mounting Kit contains 1 shock bracket, and 2 fasteners.

⁵ Adjustable Shock Mounting Kit contains 1 shock bracket, 2 bracket clamps, and 4 fasteners.

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.

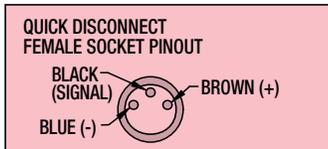
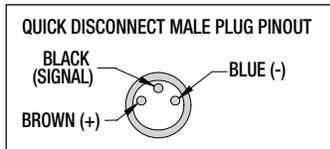
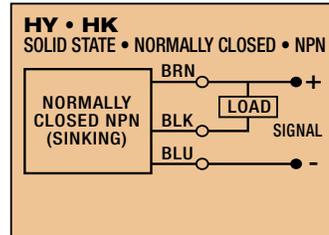
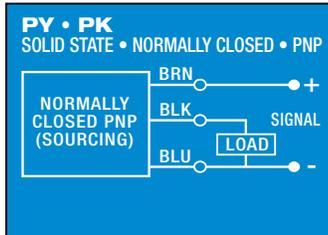
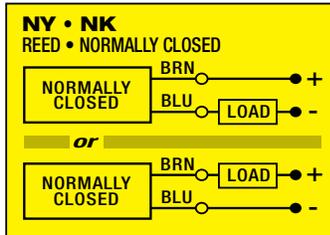
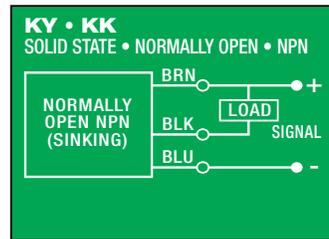
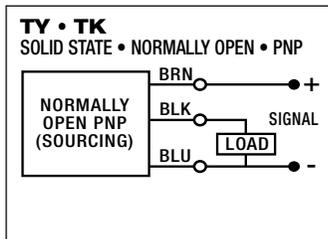
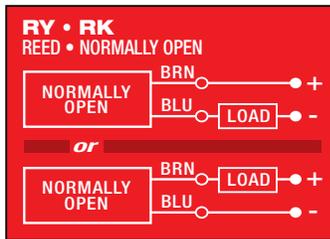
3. Sanitary Environments

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.

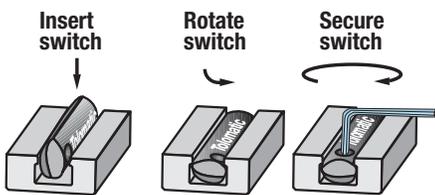
SWITCH WIRING DIAGRAMS AND LABEL COLOR CODING (CE and RoHS Compliant)



Switches for MX:

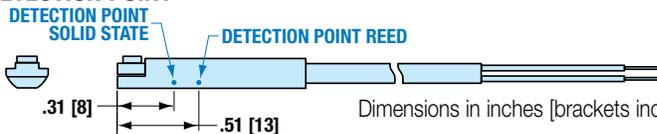
- Include retained mounting hardware
- In slot, sit below extrusion profile
- Same for all sizes and bearing styles

SWITCH 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 the switch halfway into 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 it securely into place by tightening the screw on the switch.

SWITCH DETECTION POINT



Dimensions in inches [brackets indicate dimensions in millimeters]



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 Phone: (763) 478-8000 • Toll Free: 1-800-328-2174

COMPANY WITH
 QUALITY SYSTEM
 CERTIFIED BY DNV
 = ISO 9001 =

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