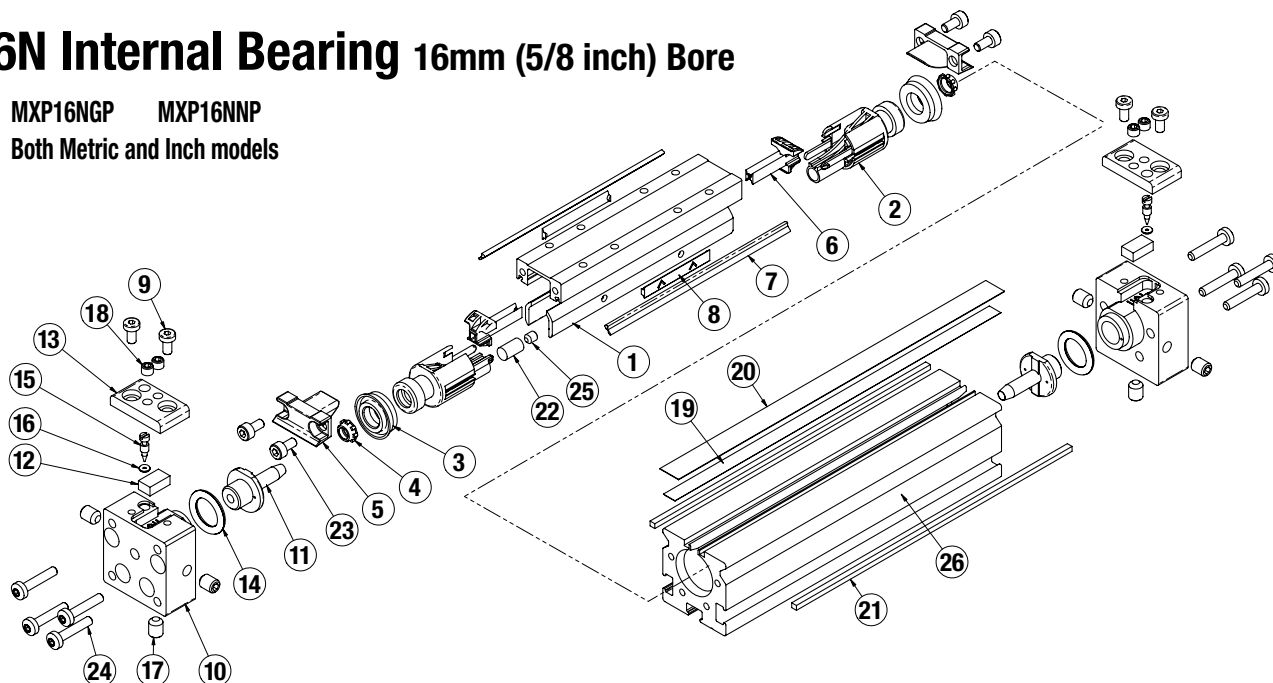


MXP16N Internal Bearing 16mm (5/8 inch) Bore

Models: MXP16NGP MXP16NNP
Both Metric and Inch models



A/R = As Required

| 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 |
| 11 ² | 6906-1023 | Cushion Spear | 2 |
| 12 ² | 8116-1039 | Clamp, Seal Band | 2 |
| 13 ² | 8116-1032 | Clamp, Dust Band | 2 |

¹ Parts included in Repair Kits RKMXP16NSK (inch) & RKMXP16NSM (metric).

Ordering method:

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

⁴ Replacement Dust Band **EXAMPLE:** NDB MXP16 N SK21-25 DW7
Dust Band Model & Size Bearing Stroke Length Aux. Carrier

| ITEM | PART NO. or CONFIG. CODE | DESCRIPTION | QTY. |
|-------------------|-----------------------------|--|-------|
| 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} | NSBMXP16N | Replacement Seal Band (8116-1017) Specify Stroke | A/R |
| 20 ^{1,4} | NDBMXP16N | Replacement Dust Band (8116-1018) Specify Stroke | A/R |
| 21 ⁵ | NMBMXP16N | Replacement Magnet Band (8116-1019) Specify Stroke | 2 A/R |
| 22 | 8116-1008 | Magnet | 1 |
| 23 | 0601-1038 | Socket Head Cap Screw | 4 |
| 24 ² | 8316-1022 | Head Screw | 8 |
| 25 | 7906-1029 | Set Screw | 1 |
| 26 ⁶ | RTBMXP16N | Replacement Tube (8116-1010) Specify Stroke | A/R |

² Parts included in Head Assemblies (10).

Ordering method:

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

⁶ Replacement Tube **EXAMPLE:** RTB MXP16 N 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.), or Tube (26.) 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).

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 Piston Bracket (1).

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

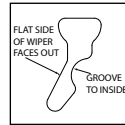
CYLINDER ASSEMBLY INSTRUCTIONS**1. CLEAN AND LUBRICATE**

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.

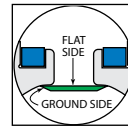
2. PISTON BRACKET ASSEMBLY

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 partway 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

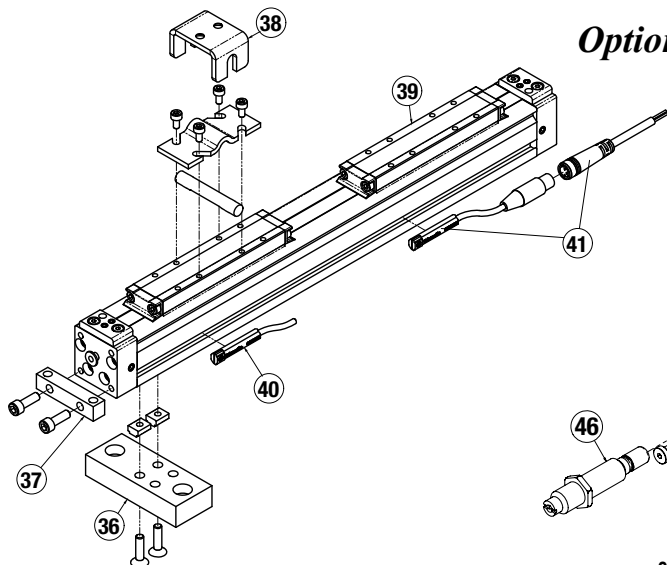
(10) so there is access to the Cushion Needle (15) then secure using Screws (9). Tighten both Set Screws (18) to secure Dust Band. Repeat to secure other end.

8. CHECK ASSEMBLY

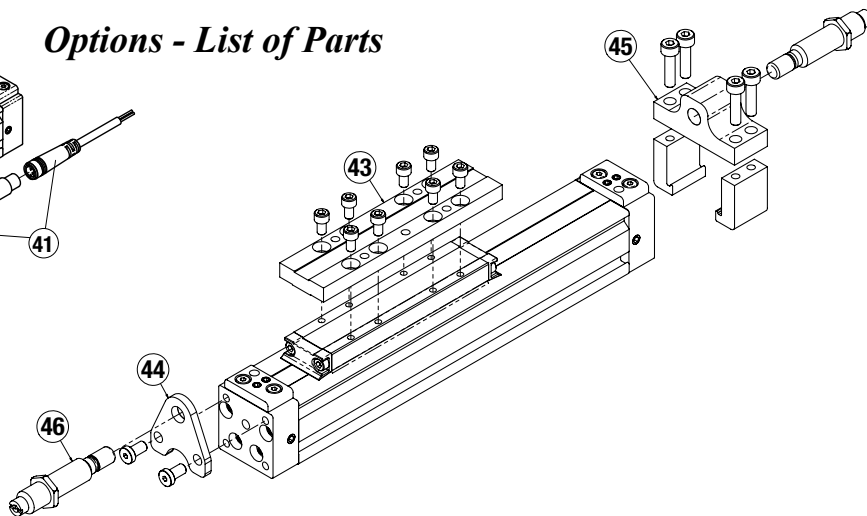
Manually push the Piston Assembly back and forth along the entire length of stroke to make certain that the cylinder is properly assembled before reconnecting to the pneumatic supply. The Piston Assembly should move consistently with minimal friction along the stroke. The Dust Band should not kink at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

9. REMOUNT THE CYLINDER ONTO THE MACHINE

⚠ 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. or CONFIG. CODE | 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 |
| 38 | 6906-9004 | Floating Mount Kit (inch) | |
| 38 | 7906-9004 | Floating Mount Kit (metric) | |
| | 6906-1020 | Floating Mount Bracket | 1 |
| | 6906-1059 | Floating Mount Lower Bracket Strap | 1 |
| | 6906-1021 | Floating Mount Pin | 1 |
| | 0905-1038 | Screw (inch) | 4 |
| | 4905-1005 | Screw (metric) | 4 |
| DUAL CARRIER | | | |
| 39 | 8116-9528 | Dual Carrier Piston Bracket Assembly (inch) | |
| | 8116-9028 | Dual Carrier Piston Bracket Assembly (metric) | |
| SWITCHES | | | |
| 40 | Switches without Quick-Disconnect Couplers | | |
| | SWMXP16NRY | Reed Switch, SPST Normally Open | |
| | SWMXP16NNY | Reed Switch, SPST Normally Closed | |
| | SWMXP16NTY | Solid State Switch, PNP (sourcing) Normally Open | |
| | SWMXP16NKY | Solid State Switch, NPN (sinking) Normally Open | |
| | SWMXP16NPY | Solid State Switch, PNP (sourcing) Normally Closed | |
| | SWMXP16NHY | Solid State Switch, NPN (sinking) Normally Closed | |

| ITEM | PART NO. or CONFIG. CODE | DESCRIPTION | QTY. IN KITS |
|------------------------|---|--|--------------------|
| 41 | Switches with Quick-Disconnect Couplers | | |
| | SWMXP16NRK | Reed Switch, SPST Normally Open | |
| | SWMXP16NNK | Reed Switch, SPST Normally Closed | |
| | SWMXP16NTK | Solid State Switch, PNP (sourcing) Normally Open | |
| | SWMXP16NKK | Solid State Switch, NPN (sinking) Normally Open | |
| | SWMXP16NPK | Solid State Switch, PNP (sourcing) Normally Closed | |
| | SWMXP16NHK | Solid State Switch, NPN (sinking) Normally Closed | |
| SHOCK ABSORBERS | | | |
| 43 | 8116-9521 | Shock Mounting Plate Kit (inch) | |
| 43 | 8116-9021 | Shock Mounting Plate Kit (metric) | |
| | 8116-1562 | Shock Mounting Plate (inch) | 1 |
| | 8116-1062 | Shock Mounting Plate (metric) | 1 |
| | 0905-1038 | Screw (inch) | 8 |
| | 0601-1038 | Screw (metric) | 8 |
| 44 | 8116-9520 | Fixed Shock Mounting Kit (inch) | |
| 44 | 8116-9020 | Fixed Shock Mounting Kit (metric) | |
| | 8116-1060 | Fixed Shock Bracket | 1 |
| | 8125-1574 | Screw (inch) | 2 |
| | 8325-1027 | Screw (metric) | 2 |
| 45 | 8116-9023 | Adjustable Shock Mounting Kit | |
| | 8116-1080 | Upper Shock Bracket | 1 |
| | 8116-1082 | Lower Shock Bracket Clamp | 2 |
| | 0602-1027 | Screw | 4 |
| 46 | 7906-1065 | Lite Duty Shock Absorber | |
| | 7906-1066 | Heavy Duty Shock Absorber | |

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).

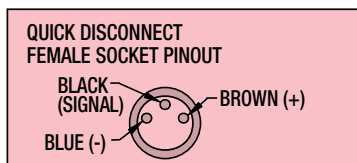
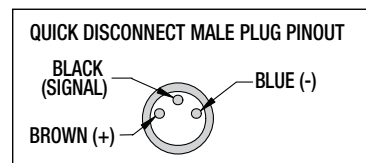
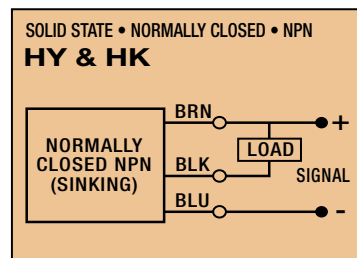
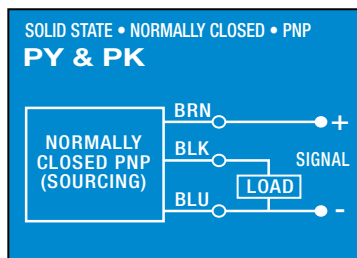
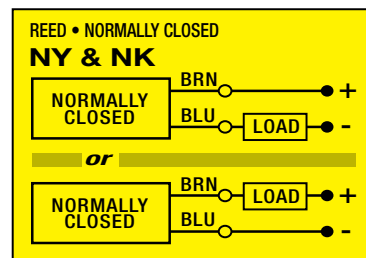
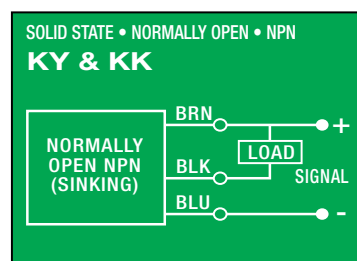
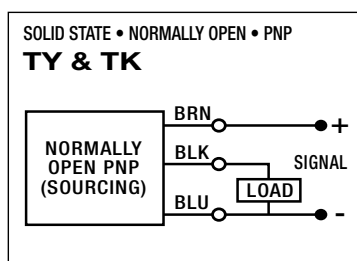
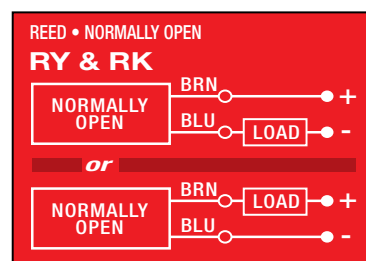
NOTE: Use of external lubricators may wash away the factory installed lubrication. External lubricants must be maintained in a constant supply or the results will be a dry actuator prone to premature wear.

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.

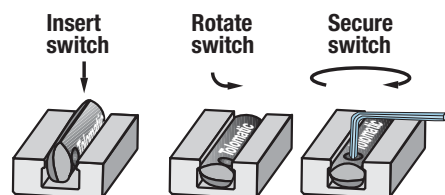
4. Cushion Adjustment

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.

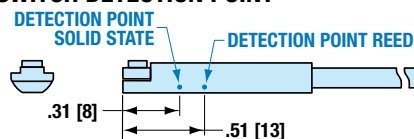
SWITCH WIRING DIAGRAMS AND LABEL COLOR CODING (CE and RoHS Compliant)

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 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]

Tolomatic
EXCELLENCE IN MOTION

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QUALITY SYSTEM
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