

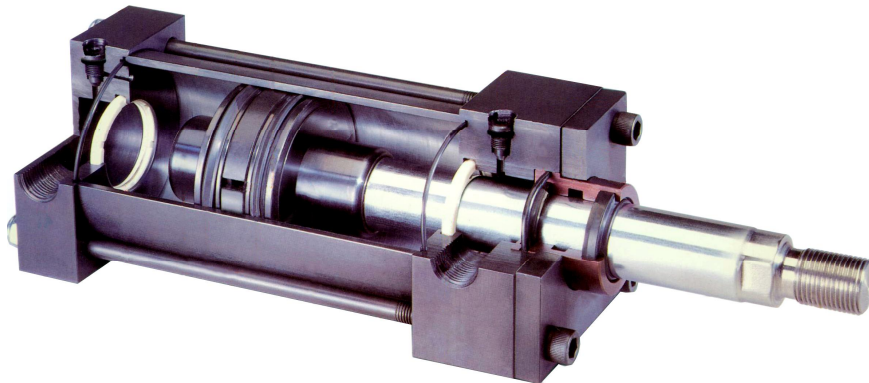
**PENINSULAR
CYLINDER CO.**

Cylinder Maintenance & Repair Instructions

Model MH & Model LM Pneumatic Cylinders

Proximity Switch & Non – Proximity Switch Designs

Model MH Air Cylinder - *NFPA, Heavy-Duty Steel, Prelubricated for Life*



Model LM Air Cylinder - *NFPA, Medium-Duty Aluminum, Prelubricated for Life*



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Cylinder Maintenance and Repair Instructions

Model MH & Model LM Pneumatic Cylinders

Please refer to the Cylinder Parts List drawing and related charts when performing maintenance on a cylinder.

ROD CARTRIDGE SEALS

To replace the Rod Cartridge Seals:

1. Remove the Rod Cartridge Retainer Screws (items 12). Normally, the Tie Rod Nuts (items 21) DO NOT have to be loosened to replace the Rod Seal (item 3) and the Rod Wiper Seal (item 2) unless the cylinder is supplied with a "Tie Rod Retained Cartridge".
2. Remove the Rod Cartridge Retainer (item 13).
3. Remove the Rod Bearing Cartridge (item 1) from the Front End Cap (item 14) by pulling straight out while twisting slightly.
4. Remove the Rod Wiper Seal (item 2), the Rod Seal (item 3) and the Rod Cartridge O-Ring Seal (item 4). It is very important to note the orientation of the Rod Wiper Seal (item 2) and the Rod Seal (item 3) in the seal grooves. The new seals must be oriented the exact same way during replacement.
5. Clean the Rod Bearing Cartridge (item 1) and inspect for it for excessive wear or scoring. Replace the Rod Bearing Cartridge if necessary.
6. Install a new Rod Wiper Seal (item 2), Rod Seal (item 3), and Rod Cartridge O-Ring Seal (item 4) into the Rod Bearing Cartridge (item 1). Coat the I.D. of the Rod Bearing Cartridge (item 1) with Acrolube grease.
7. Check the Piston Rod end (item 11) for burrs in the thread areas and wrench flats. Remove and polish sharp edges as required.
8. Install the reassembled Rod Cartridge Assembly over the Piston Rod end (item 11) with a slight twisting motion. Push the Rod Cartridge Assembly into the bored cavity in the Front End Cap (item 14).
9. Install the Rod Cartridge Retainer (item 13) and torque the Rod Cartridge Retainer Screws (items 12) to the values in our torque table.

TUBE END SEALS

To replace the Tube End O-Ring Seals:

1. Remove the Tie Rod Nuts (items 21). It may be helpful to grip the Tie Rods (items 18) with Vise Grip Pliers to prevent the Tie Rods from twisting.
2. Remove the Front End Cap (item 14) and the Rear End Cap (item 20) from the cylinder.
3. Remove the old Tube O-Ring Seals (items 7) and clean the Front and Rear End Cap seal grooves thoroughly.
4. Install new Tube O-Ring Seals (items 7) into the Front and Rear End Caps (items 14 & 20). A small amount of grease on the O-Ring may be helpful to hold it in place during assembly. It is very important that the O-Ring is fully seated in the seal groove.
5. Re-assemble the Front and Rear End Caps (items 14 & 20) to the Cylinder Tube (item 15) being careful not to pinch the O-Rings.
6. Hand tighten the Tie Rod Nuts (items 21) while making sure the Front and Rear End Caps (items 14 & 20) are square to the Cylinder Tube (item 15). Assembling the cylinder on a flat surface is helpful to assure proper alignment of the Front and Rear End Caps.
7. Torque the Tie Rod Nuts (items 21) in the order and values shown in the torque chart. Gripping the Tie Rods (items 18) with Vise Grip Pliers may be helpful to avoid twisting the Tie Rods during tightening.

PISTON SEALS

To replace the Piston Seals:

1. Remove the Tie Rod Nuts (items 21), the Tie Rods (items 18) and the Front and Rear End Caps (items 14 & 20). See instructions 1 & 2 under "Tube End Seals".
2. Pull the Piston and Rod Assembly from the Cylinder Tube (item 15).
3. Remove the Piston U-cup Seals (items 10) from their grooves in the Piston (item 17) with a brass or plastic tool (avoid any tools which might damage the seal groove surfaces).
4. Remove the Wearband (item 9) and inspect it for wear and replace if necessary. The Wearband (item 9) is split and snaps into the middle groove on the Piston (item 17).
5. Clean the Piston (item 17) and Cylinder Tube (item 15) with suitable solvent. Blow dry with compressed air. Inspect parts for wear or scoring and replace if necessary.
6. Fill the Piston's Lubrication Cavity below the Wearband (item 9) with Acrolube grease.
7. Install two new Piston U-cup Seals (items 10) on to the Piston (item 17). **IMPORTANT:** the Lips on the seals must face the direction of the air pressure within the cylinder (See the illustration for proper seal orientation). Lightly coat the seals and tube I.D. with Acrolube grease.
8. Install the Piston Assembly into the Cylinder Tube (item 15) being careful to avoid damage to the Piston U-cup Seals (items 10).
9. Re-install the Front and Rear End Caps (items 14 & 20) and the Tie Rods (items 18). Tighten the Tie Rod Nuts (items 21) following instructions 6 & 7 under "Tube End Seals".

CUSHION SEALS & CUSHION ADJUSTING SCREW

To replace Cushion Seal Inserts or Cushion Adjusting Screw O-ring:

1. The Cushion Adjusting Screw (item 6) or its sealing O-Ring (item 5) may be replaced without dismantling the cylinder.
2. Unscrew the Cushion Adjusting Screw (item 6) by it turning counter clockwise.
3. Inspect the Cushion Adjusting Screw tip and O-Ring seal. Replace if parts are damaged.
4. Install new O-Ring (item 5) on to the Cushion Adjusting Screw (item 6). Lubricate the O-Ring with grease and reinstall the Cushion Adjusting Screw into the Front and /or Rear End Caps (items 14 & 20). To replace the Cushion Seal Inserts (items 8), the Front and /or Rear End Caps (items 14 & 20) must be removed. Follow the instructions under "Tube End Seals" 1 & 2. Once the Front and /or Rear End Caps are removed the Cushion Inserts (items 8) may be replaced by pulling them out of the Cushion Insert bores. Clean out the Cushion Insert bores and install new Cushion Inserts by simply pushing them into the bore.

PISTON

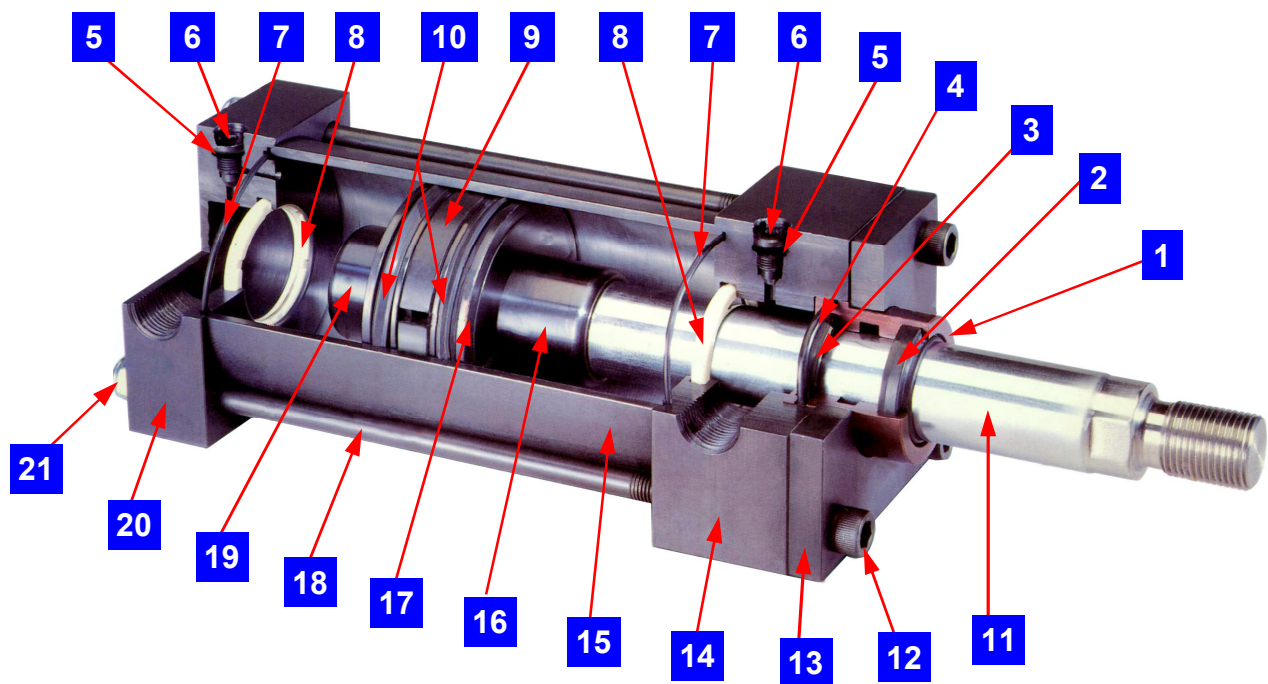
To remove Piston from Piston Rod:

1. The Piston Rod (item 11) and Piston (item 117) are assembled at the factory with a high strength locking sealant.
2. Remove the Piston Rod Assembly from the cylinder (see instructions 1 through 3 under "Piston Seals"). Remove the Piston U-cup Seals (items 10) and the Wearband (item 9) from the piston.
3. Heat the Piston and Rod Assembly to 400 degrees - 450 degrees Fahrenheit.
4. Disassemble the Piston from the Rod while hot. Use a spanner wrench to remove the Piston from the Piston Rod.
5. Clean threads with solvent and bristle brush. Blow dry with compressed air.
6. Apply "Loctite" sealant #277 or equivalent to threads of the Piston Rod. Assemble and torque to specifications (see torque chart). Allow the sealant to cure for 30 minutes before operating the cylinder.

Model MH & Model LM Pneumatic Cylinder Parts List

- | | | | |
|-----|----------------------------------|-----|-----------------------------------|
| 1. | (1) Rod Bearing Cartridge | 12. | (4) Rod Cartridge Retainer Screws |
| 2. | (1) Rod Wiper Seal | 13. | (1) Rod Cartridge Retainer |
| 3. | (1) Rod Seal | 14. | (1) Front End Cap |
| 4. | (1) Rod Cartridge O-Ring Seal | 15. | (1) Cylinder Tube |
| 5. | (2) Cushion Screw O-Ring Seals | 16. | (1) Cushion Hub - Front End Cap |
| 6. | (2) Cushion Adjustment Screws | 17. | (1) Piston |
| 7. | (2) End Cap to Tube O-Ring Seals | 18. | (4) Tie Rods |
| 8. | (2) Cushion Seal Inserts | 19. | (1) Cushion Hub - Rear End Cap |
| 9. | (1) Piston Wear Band | 20. | (1) Rear End Cap |
| 10. | (2) Piston U-Cup Seals | 21. | (4) Tie Rod Nuts |
| 11. | (1) Piston Rod | | |

Model MH Cylinder shown:



PENINSULAR CYLINDER CO.

MH SERIES PNEUMATIC CYLINDER FASTENER TORQUE CHART

TABLE 1

TIE ROD & SOCKET HEAD CAP SCREW TORQUE VALUES	
THREAD SIZE	TORQUE (FT. LBS.)
10-32	2.5
1/4-28	6.5
5/16-24	12
3/8-24	22
7/16-20	35
1/2-20	55
5/8-18	110
3/4-16	185
7/8-14	300

FASTENER TORQUE INSTRUCTIONS:

Tighten tie rod nuts & retainer nuts in pattern shown at the right and to torque values in Table 1.

Use MoS2 grease or equivalent on both the threads and bearing surface.

Should lubricant not be available, torque values should be increased by 50%.

TIE ROD TORQUE PATTERN

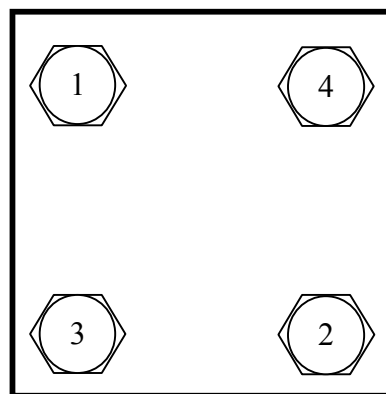


FIGURE 1

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