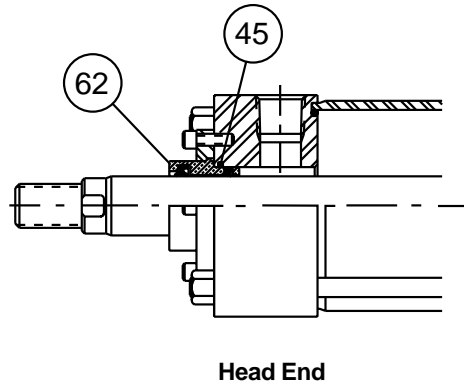
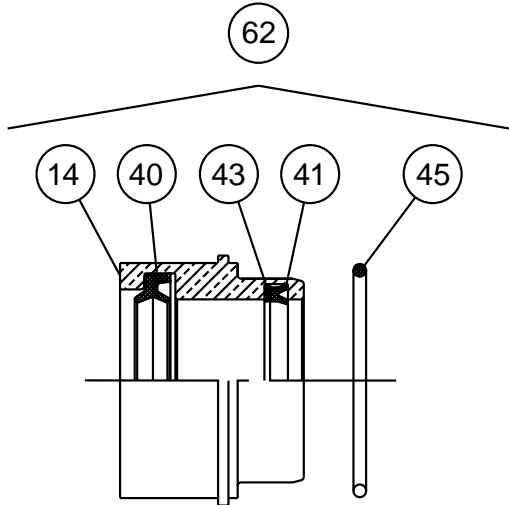


Bushing Seal Kits

For AVN Series Air Cylinders



Rod Seal Kit —

contains 1 each of the following:
 symbol 40, rod wiper
 symbol 41, rod seal
 symbol 45, O-ring, bushing to head seal

Service kits of expendable parts for fluid power cylinders are stocked in principal industrial locations across the U.S.A. and other countries. For prompt delivery and complete information, contact your nearest Miller distributor.

Service kits of expendable parts for fluid power cylinders are available for Class 1 fluid service.

Standard Seals – Class 1 Service Kits contain seals of Nitrile (Buna-N) elastomers. These seals are suitable for use when air is the operating medium.

The recommended operating temperature range for Class 1 seals is -10°F (-23°C) to +165°F (+74°C).

Bushing Kit —

(symbol 62) contains 1 each of the following:
 symbol 14, bushing
 symbol 40, rod wiper
 symbol 41, rod seal
 symbol 45, O-ring, bushing to head seal

WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from the Company, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by the Company and its related companies at any time without notice.

Bushing Seal Kits

| Rod Dia. | Class 1 Service Buna-N | |
|----------|--|---|
| | Bushing Kits (Contains: 1 Each Sym. #14, 40, 41, & 45) | Rod Seal Kits (Contains: 1 Each Sym. #40, 41, & 45) |
| 5/8 | AVN-KR100-63 | AVN-KR300-63 |
| 1 | AVN-KR100-100 | AVN-KR300-100 |
| 1 3/8 | AVN-KR100-138 | AVN-KR300-138 |
| 1 3/4 | AVN-KR100-175 | AVN-KR300-175 |
| 2 | AVN-KR100-200 | AVN-KR300-200 |

Tie Rod Torque*

| Cylinder Bore Size | AVN Series | |
|--------------------|--------------|----------|
| 1 1/2" | 5 ft.-lbs. | 69 cm-kg |
| 2" & 2 1/2" | 11 ft.-lbs. | 15 N.m |
| 3 1/4" | 25 ft.-lbs. | 34 N.m |
| 4" | 25 ft.-lbs. | 34 N.m |
| 5" | 60 ft.-lbs. | 81 N.m |
| 6" | 60 ft.-lbs. | 81 N.m |
| 8" | 110 ft.-lbs. | 149 N.m |
| 10" | 150 ft.-lbs. | 201 N.m |

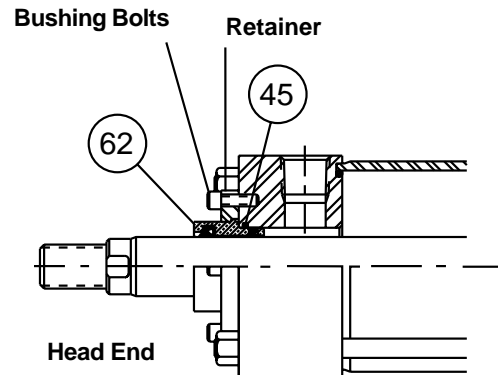
*(-0%, +5% tolerance). When assembling the cylinder, be sure to torque the tie rods evenly.

How to Replace Cylinder Bushing and Rod Seals

Fluid leakage around piston rod at the bushing area will normally indicate a need to replace bushing seals. First, remove cylinder from machine to which it is mounted or, if this is not feasible, disconnect the piston rod from rod clevis, rod eye or machine member to which it is fastened.

To remove the bushing:

- a) Inspect the piston rod to make sure it is free of burrs or other displaced metal which would prevent sliding the bushing off the rod.
- b) Cylinders feature a bolted bushing which is easily removed by loosening (4) socket head cap screws.
- c) Lubricate the rod with Lube-A-Cyl.
- d) Slide the bushing off of the piston rod and remove the seals. Thoroughly clean the bushing and seal grooves. Inspect bushing bore for wear. If bore is worn, replace using bushing kit of proper size (see opposite side).
- e) If bushing is not worn, replace seals only, using rod seal kit with Lube-A-Cyl. Lubricate bushing seal grooves and all new seals. Install wiper, Sym. 40, in groove closest to end of bushing. Install rod seal, Sym. 41, in seal groove. **Lips of seals should point toward the long bearing side of bushing.**
- f) An O-ring, Sym. 45, is supplied with each bushing kit. It serves as a seal between the bushing and the head. This O-ring is a static seal and does not normally require replacement. The original O-ring may be left in place, unless it is known to be leaking.



Installation

Before installing a new bushing, inspect the surface of the piston rod for scratches, burrs, dents or other damage. A damaged piston rod surface will result in premature rod seal failure.

Lubricate the bore of the bushing, the O.D. of the bushing which fits into the cylinder head, and the seals. Slide bushing over the end of the piston rod and seat it firmly against the cylinder head. Replace the retainer and tighten bushing bolt securely and evenly to the force listed in chart.

THE SEALS ARE PRESSURE ACTUATED, SO NO FURTHER ADJUSTMENTS ARE NECESSARY.

When replacing a bushing on a rod which is threaded to the full diameter or so shaped that it could damage the seals, a slight rotary motion of the bushing will help prevent damage. In addition, because full-diameter threads are usually supplied with the crest of the threads slightly truncated, a piece of shim stock or other thin, tough material can be wrapped around the threads to help protect the bushing seals when they are being passed over the threads.

Retainer Bolt Torque*
For Cylinders with Round or Small Square Bushing Retainer

| Screw Size | Torque | Torque |
|------------|-------------|----------|
| #10 | 15 in.-lbs. | 17 cm-kg |
| 1/4" | 60 in.-lbs. | 69 cm-kg |
| 5/16" | 10 ft.-lbs. | 14 N-m |
| 3/8" | 20 ft.-lbs. | 27 N-m |
| 7/16" | 35 ft.-lbs. | 48 N-m |

*-0%, +5% tolerance