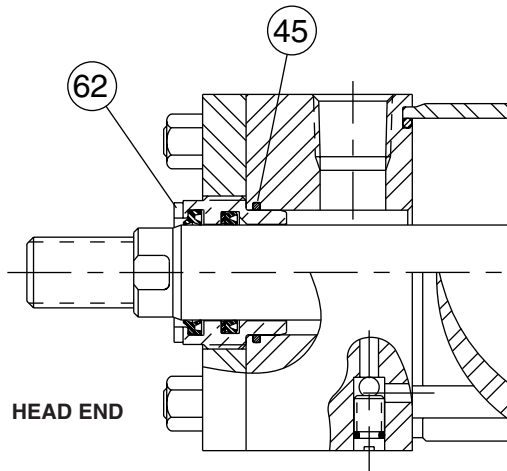


Gland Seal Kits

(Gland Cartridges & Rod Seal)

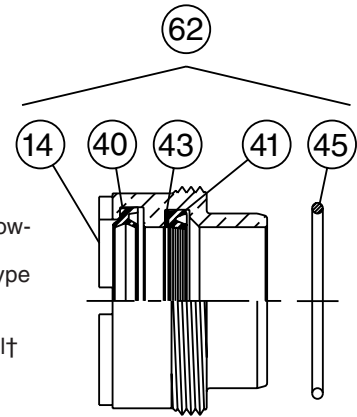
For Series 2A Air Cylinders



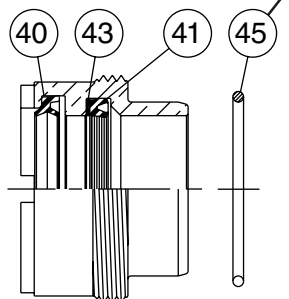
GLAND CARTRIDGE KIT

RG (symbol 62) contains 1 each of the following:

- symbol 14, gland, threaded cartridge type
- symbol 40, rod Wiperseal
- symbol 41, rod Lipseal
- symbol 43, back-up washer for rod seal†
- symbol 45, O-ring gland to head seal.



Installs in Rod End Head Groove



ROD SEAL KIT

RK kit contains 1 each of the following:

- symbol 40, rod Wiperseal
- symbol 41, rod Lipseal
- symbol 43, backup washer for rod Lipseal†
- symbol 45, O-ring, gland to head seal.

†Symbol 43, backup washer for rod lipseal, not required on 3 1/2" and larger diameter rods.

Service kits of expendable parts for air and hydraulic cylinders are stocked in principal industrial locations across the U.S.A. and other countries. For prompt delivery and complete information, contact your nearest Parker Hannifin distributor or office.

Standard Seals –Class 1 Service Kits are standard, and contain Buna-N seals for standard air and hydraulic service. These seals are suitable for use when hydraulic (mineral-type) oil is the operating medium. The recommended operating temperature range for Class 1 seals is -10°F (-23°C) to +165°F (+74°C).

Class 1 Service Only

	Gland Cartridge Kits (Sym. #62)	Rod Seal Kits
	Class 1 (Std.)	Class 1 (Std.)
Rod Dia.	Buna-N (Nitrile)	Buna-N (Nitrile)
1/2"	RG2AHL0051	RK2AHL0051
5/8"	RG2AHL0061	RK2AHL0061
1"	RG2AHL0101	RK2AHL0101
1 3/8"	RG2AHL0131	RK2AHL0131
1 3/4"	RG2AHL0171	RK2AHL0171
2"	RG2AHL0201	RK2AHL0201
2 1/2"	RG2AHL0251	RK2AHL0251
3"	RG2AHL0301	RK2AHL0301
3 1/2"	RG2AHL0351	RK2AHL0351
4"	RG2AHL0401	RK2AHL0401
4 1/2"	RG2AHL0451	RK2AHL0451
5"	RG2AHL0501	RK2AHL0501
5 1/2"	RG2AHL0551	RK2AHL0551

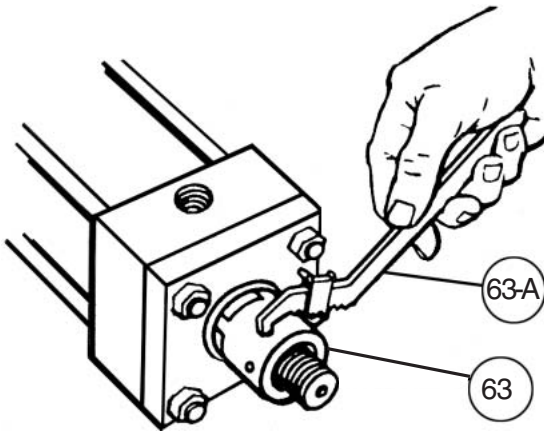
How To Replace Cylinder Gland Packing

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

The Parker Hannifin "Jewel" gland is a unique cartridge design consisting of a bronze gland, primary lipseal and double lip wiperseal. It is threaded into the gland retainer plate, and all sizes are removable without disturbing the tie rod torque.

To remove the gland:

- Inspect the piston rod to make sure it is free of burrs or other displaced metal which would prevent sliding the gland off the rod.
- For most cylinders, unscrew the gland (right hand thread) from the gland retainer plate. The gland protrudes from the face of the retainer and can be removed with vice grip pliers. Or use a Parker Hannifin gland and spanner wrench shown in the table below.



- Slide the gland off the piston rod and remove the seals. Thoroughly clean the gland and seal grooves. Inspect gland bore for wear. If bore is worn, replace — using gland cartridge (RG) kit complete with seals.
- If gland is not worn, replace seals only using rod seal (RK) kit. Lubricate gland seal grooves and all new seals. Install wiperseal, Sym. #40, in groove closest to end of gland. Slightly collapse back-up washer, Sym. #43, and install in seal groove, making sure it is flat against wall of groove. Install lipseal, Sym. #41, in seal groove. **Lips of seal should point toward the long bearing side of the gland.**
- An O-ring, Sym. #45, is supplied with each gland cartridge kit. It serves as a seal between the gland 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 (fluid flow around gland thread).

Retainer Bolt Torque

For Cylinders with Round or Small Square Gland Retainer

Screw Size	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

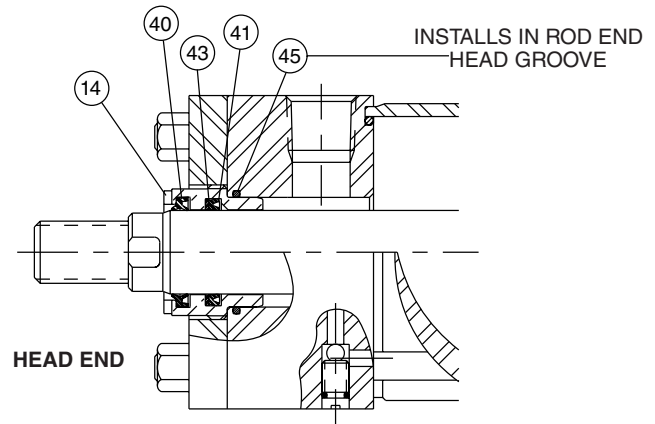
*(-0%, +5% tolerance)

Installation

Before installing a new gland, 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 gland and the seals, and slide the gland over the end of the piston rod. Thread the gland into the retainer until it is seated firmly against the head.

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



When replacing a gland 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 gland 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 gland seals when they are being passed over the threads.

Cyl. Bore Size	Tie Rod Torque*					
	Series 2A Cylinders					
	Cylinder Body Material					
	Brass		Steel		Fiberglass	
1"	12 in.-lbs.	14 cm-kg	35 in.-lbs.	41 cm-kg	—	—
1 1/2"	36 in.-lbs.	42 cm-kg	60 in.-lbs.	69 cm-kg	—	—
2" & 2 1/2"	72 in.-lbs.	83 cm-kg	11 ft.-lbs.	15 N-m	—	—
3 1/4"	18 ft.-lbs.	24 N-m	25 ft.-lbs.	34 N-m	—	—
4"	18 ft.-lbs.	24 N-m	25 ft.-lbs.	34 N-m	—	—
5"	44 ft.-lbs.	50 N-m	60 ft.-lbs.	81 N-m	—	—
6"	44 ft.-lbs.	50 N-m	60 ft.-lbs.	81 N-m	—	—
6"	—	—	L, 2L = 244 ft.-lbs.	L, 2L = 281 N-m	—	—
7"	—	—	90 ft.-lbs.	122 N-m	—	—
8"	80 ft.-lbs.	108 N-m	110 ft.-lbs.	149 N-m	—	—
8"	—	—	L, 2L = 513 ft.-lbs.	L, 2L = 591 N-m	—	—
10"	113 ft.-lbs.	153 N-m	148 ft.-lbs.	201 N-m	78 ft.-lbs.	106 N-m
12"	148 ft.-lbs.	201 N-m	172 ft.-lbs.	233 N-m	78 ft.-lbs.	106 N-m
14"	228 ft.-lbs.	309 N-m	275 ft.-lbs.	373 N-m	118 ft.-lbs.	160 N-m

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

Gland Cartridge Wrenches

Rod Dia.	Gland Wrench (Symbol 63)	Spanner Wrench (Symbol 63-A)	Rod Dia.	Gland Wrench (Symbol 63)	Spanner Wrench (Symbol 63-A)
1/2"	069590 0000	011676 0000	2 1/2"	069595 0000	011677 0000
5/8"	069590 0000		3"	069596 0000	
1"	069591 0000		3 1/2"	069597 0000	
1 3/8"	069592 0000	011703 0000	4"	069598 0000	011678 0000
1 3/4"	069593 0000	011677 0000	5"	069599 0000	
2"	069594 0000	011677 0000	5 1/2"	069600 0000	

Gland Cartridges & Rod Seals

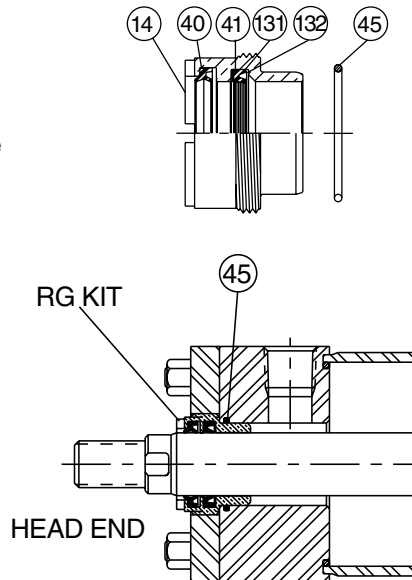
For Series 2AN Air Cylinders

Gland Cartridge Kit

RG kit contains 1 each of the following:
 symbol 14, gland, threaded cartridge type
 symbol 40, rod Wiperseal
 symbol 41, rod Lipseal
 symbol 45, O-ring, gland to head seal
 symbol 131, wick } 3" to 5 1/2"
 symbol 132, washer } rods only

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 distributor or Parker Hannifin office.

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



Rod Seal Kit

RK kit contains 1 each of the following:
 symbol 40, rod Wiperseal
 symbol 41, rod Lipseal
 symbol 45, O-ring, gland to head seal
 symbol 131, wick } 3" to 5 1/2"
 symbol 132, washer } rods only

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

The recommended operating temperature range for Class 1 seals is -10°F to +165°F. These seals will function at temperatures up to 200°F with reduced life.

Bore Size	RG Gland Cartridge Kit No.	RK Rod Seal Kit No.
	Includes RK Kit	Contains Rod Seals
5/8"	RG2AN00061	RK2AN00061
1"	RG2AN00101	RK2AN00101
1 3/8"	RG2AN00131	RK2AN00131
1 3/4"	RG2AN00171	RK2AN00171
2"	RG2AN00201	RK2AN00201
2 1/2"	RG2AN00251	RK2AN00251
3"	RG2AN00301	RK2AN00301
3 1/2"	RG2AN00351	RK2AN00351
4"	RG2AN00401	RK2AN00401
4 1/2"	RG2AN00451	RK2AN00451
5"	RG2AN00501	RK2AN00501
5 1/2"	RG2AN00551	RK2AN00551

Retainer Bolt Torque* For Cylinders with Round or Small Square Gland 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.

Tie Rod Torque* –Series 2AN

Cylinder Bore Size	Cylinder Body Material					
	Steel		Brass/Aluminum		Fiberglass	
1 1/2"	60 in.-lbs.	69 cm-kg	36 in.-lbs.	42 cm-kg	–	–
2" & 2 1/2"	11 ft.-lbs.	15 N-m	72 in.-lbs.	83 cm-kg	–	–
3 1/4"	25 ft.-lbs.	34 N-m	18 ft.-lbs.	24 N-m	–	–
4"	25 ft.-lbs.	34 N-m	18 ft.-lbs.	24 N-m	–	–
5"	60 ft.-lbs.	81 N-m	44 ft.-lbs.	50 N-m	–	–
6"	60 ft.-lbs.	81 N-m	44 ft.-lbs.	50 N-m	–	–
8"	110 ft.-lbs.	149 N-m	80 ft.-lbs.	108 N-m	–	–
10"	148 ft.-lbs.	201 N-m	113 ft.-lbs.	153 N-m	78 ft.-lbs.	106 (N-m)
12"	172 ft.-lbs.	233 N-m	148 ft.-lbs.	201 N-m	78 ft.-lbs.	106 (N-m)
14"	275 ft.-lbs.	373 N-m	228 ft.-lbs.	309 N-m	118 ft.-lbs.	160 (N-m)

*(-0%, +5% tolerance)

When assembling the cylinder, be sure to torque the tie rods evenly.

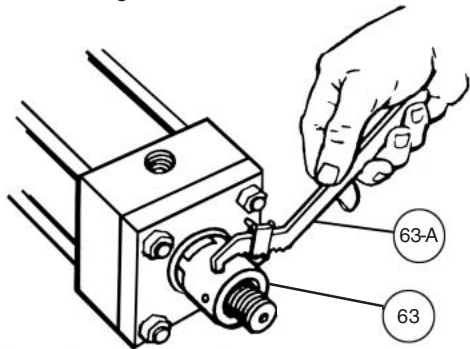
How To Replace Cylinder Gland Packing

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

The Parker Hannifin gland is a unique cartridge design. It is threaded into the gland retainer plate, and all sizes are removable without disturbing the tie rod torque.

To remove the gland:

- Inspect the piston rod to make sure it is free of burrs or other displaced metal which would prevent sliding the gland off the rod.
- Unscrew the gland (right-hand thread) from the gland retainer plate. Or on 8" bore or larger air cylinders remove the bolted gland retainer by loosening the 4 socket headscrews. The gland protrudes from the face of the retainer and can be removed with vise grip pliers. Or use a Parker Hannifin gland wrench which is available for each gland size.



- Lubricate the rod with Lube-A-Cyl.
- Slide the gland off of the piston rod and remove the seals, wicks and washers, if present. Thoroughly clean the gland and seal grooves. Inspect gland bore for wear. If bore is worn, replace – using gland cartridge kit of proper size.
- If gland is not worn, replace seals only, using rod seal kit, with Lube-A-Cyl. Lubricate gland seal grooves and all new seals. Install wiperseal, Sym. 40, in groove closest to end of gland. Install lipseal, Sym. 41, on seal groove. Lips of seals should point toward the long bearing side of gland.

For 3" to 5 1/2" rod sizes:

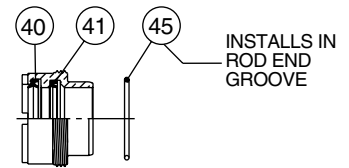
If gland is not worn, replace seals only, using rod seal kit containing seals for proper size. Lubricate gland seal grooves and all new seals. Install wiperseal, Sym. 40, in groove closest to end of gland. Install lipseal, Sym. 41, in seal groove. **Lips of seal should point toward the long bearing side of gland.** Install wick, Sym. 131, and washer, Sym. 132. Immerse gland assembly in standard petroleum lubricating oil "Union Oil" UN-ax-AW-315 or equivalent to soak wicks.

- An O-ring, Sym. 45, is supplied with each gland cartridge kit. It serves as a seal between the gland 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.

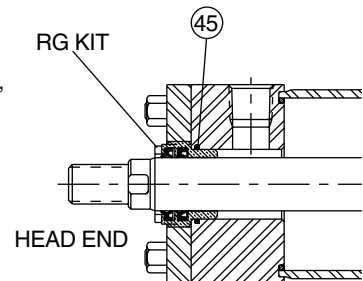
Installation

Before installing a new gland, 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 gland and the seals with Parker "Lube-A-Cyl," and slide the gland over the end of the piston rod. Thread the gland into the retainer until it is seated firmly against the head.



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



When replacing a gland 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 gland 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 gland seals when they are being passed over the threads.

Gland Cartridge Wrenches

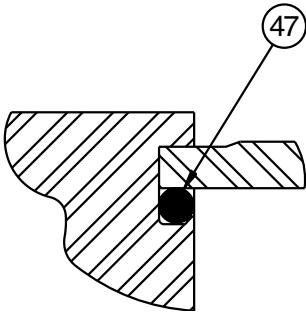
Parker's exclusive gland cartridge design makes gland replacement only a minute's work...and the Gland Cartridge Wrench Set makes it even simpler. A specially designed face-type gland wrench with flared lugs slips into an exact, sure fit on the gland, while a self-locking spanner wrench grips the gland wrench securely. No fumbling for adjustment – no accidental scoring of the piston rod, the job is done quickly...easily...safely.

You can order the Cartridge Wrench or Spanner Wrench to fit the piston rod size used in your Parker Hannifin Cylinder.

See chart below.

Rod Diameter	Gland Wrench (Symbol 63)	Spanner Wrench (Symbol 63-A)
5/8"	069590 0000	011676 0000
1"	060591 0000	
1 3/8"	069592 0000	011703 0000
1 3/4"	069593 0000	
2"	069594 0000	011677 0000
2 1/2"	069595 0000	
3"	069596 0000	011677 0000
3 1/2"	069597 0000	
4"	069598 0000	011678 0000
4 1/2"	083777 0000	
5"	069599 0000	
5 1/2"	069600 0000	

Piston Seal Kits
(Piston & Cylinder Body Seals)
for 2A Series Air Cylinders



Detail

Kits for 2A Series Cylinders –

- contain 2 each of the following:
- symbol 42, Lipseal, piston
- symbol 44†, Back-up washer
- symbol 47, O-ring, cylinder body to head and cap 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 distributor.

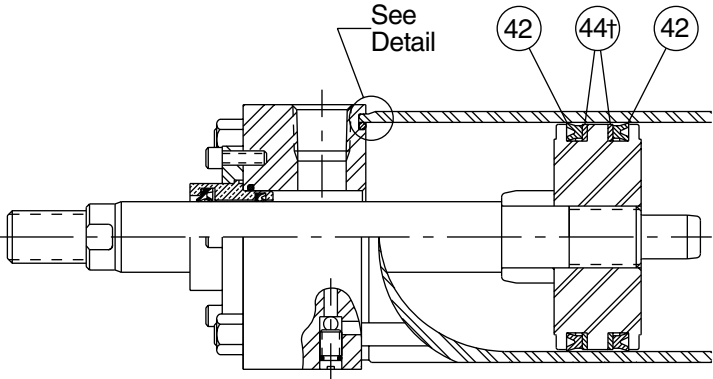
Standard Seals – Standard Seal Kits contain Buna-N seals for standard fluid service. These seals are suitable for use when air, or hydraulic oil, water-glycol fluid or water-in-oil emulsions are the operating medium.

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

Fluorocarbon Seals – Fluorocarbon Seal Kits contain fluorocarbon seals and are especially suited for elevated temperature service or for some fire resistant fluids (consult factory). Fluorocarbon seals should be used for high temperature service within a temperature range of -10°F (-23°C) to +250°F (+121°C). Fluorocarbon seals may be operated to +400°F (+204°C) with limited service life. For temperatures above +250°F (+121°C) must be manufactured with a non-studded piston rod end thread and a pinned piston to rod connection.

†Backup washer only used on specific bore sizes.

	Buna-N Seals
	2A Series
	Contains 2 ea. Symbols: 42, 44 & 47 Part No.
Bore Size	
1	PK1002A001
1½	PK1502A001
2	PK2002A001
2½	PK2502A001
3¼	PK3202A001
4	PK4002A001
5	PK5002A001
6	PK6002A001
7	PK7002A001
8	PK8002A001
10	PK9002A001
12	PK9202A001
14	PK9402A001



2A Series Piston Seal Kit

Warning – The pistons rod stud and the piston rod to piston threaded connections are secured with an anaerobic adhesive which is temperature sensitive. Cylinders specified with fluorocarbon seals are assembled with anaerobic adhesive having a maximum operating temperature rating of +250°F (+121°C). Cylinders specified with all other seal compounds are assembled with anaerobic adhesive having a maximum operating temperature rating of +165°F (+74°C). These temperature limitations are necessary to prevent the possible loosening of threaded connections. Cylinders originally manufactured with standard seals that will be exposed to ambient temperatures above +165°F (+74°C) must be modified for higher temperature service. Contact the factory immediately and arrange for the piston to rod and the stud to piston rod connections to be properly reassembled to withstand the higher temperature service.

	Fluorocarbon Seals
	2A Series
	Contains 2 ea. Symbols: 42, 44 & 47 Part No.
Bore Size	
1	PK1002A005
1½	PK1502A005
2	PK2002A005
2½	PK2502A005
3¼	PK3202A005
4	PK4002A005
5	PK5002A005
6	PK6002A005
7	PK7002A005
8	PK8002A005
10	PK9002A005
12	PK9202A005
14	PK9402A005

Lube-A-Cyl...

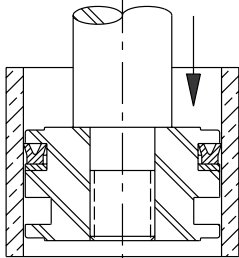
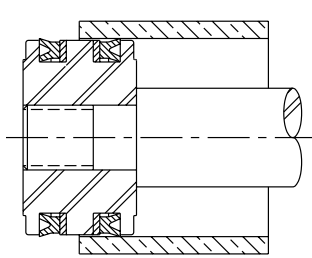
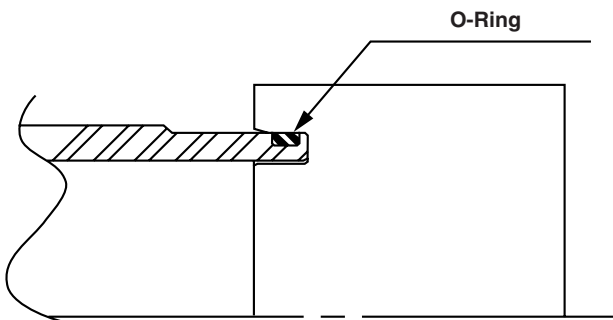
is recommended for use in air cylinders during normal operation, and particularly when servicing and re-assembling cylinders. It is a multi-purpose lubricant in grease form that provides lubrication without deteriorating effects on synthetic seals. Particularly recommended for use in low pressure air cylinders because of its special ability to adhere to metal surfaces. It produces a thin film which will not blow out with exhaust air. It provides piston, rod and seal lubrication, and has excellent resistance to water and mechanical breakdown with temperature range of -10°F (-23°C) to +350°F (+177°C). Lube-A-Cyl is packaged in 1½-oz. tubes, a sufficient quantity for average size air cylinder. One application should last for a period of from 6 to 18 months, depending upon service. Lube-A-Cyl is available in 1½-oz. tubes. Order by part no. 76163.

Servicing The Piston Seals

Disassemble the cylinder completely, remove the old seals and clean all of the parts. The cylinder bore and the piston should then be examined for evidence of scoring. (The light scratch marks usually present on both cylinder bore and piston will generally cause no difficulty.)

Apply "Lube-A-Cyl" to O.D. of piston and to both grooves. Install one piston seal in the groove nearest the rod. The two "lips" of this lipseal should face toward the rod end of the piston. Install one back-up washer (sym. #44) in the same groove opposite the "lip" end of the piston Lipseal (sym. #42). Coat the inside of the cylinder body with "Lube-A-Cyl" and insert the piston, cap end first into the cylinder body as shown in Figure 1 below.

Next, turn the cylinder body on its side and push the piston through the barrel just far enough to expose the groove for the second seal (see Figure 2 below). Be careful not to move the piston too far so as to expose the first seal. If this is done, the "lip" of this Lipseal may slip past the cylinder body and be damaged when the piston is pulled back into the cylinder body. If the piston should move too far, pass the piston and rod completely through the cylinder body and again start the piston from the original end. Now, install the second Lipseal and back-up washer in the exposed groove with the two "lips" facing away from the rod and pull piston into the cylinder body.

**Figure 1****Figure 2*****1" Bore 2A only**

The piston is sealed and securely locked to the piston rod with anaerobic adhesive. This threaded connection should only be disassembled or reassembled by factory trained personnel.

Assemble both cap and head, complete with cylinder body seals, to each end of the cylinder body. If the bore diameter is less than 7" and rod diameter is greater than 2½", thread the gland through the gland retainer, then slip gland and retainer over the end of the rod and pilot gland into the head. Do NOT seat gland against the head until tie rod nuts are tightened to the proper torque (see table below). After nuts are torqued, firmly seat the gland against the head using a gland wrench. If the cylinder bore diameter is 7" or greater, or rod diameter is 3" or over, tighten the tie rod nuts to the torques specified in table below and then install the gland retainer plate and gland. Seat the gland against the head using a gland wrench.

In the case of an MT4 – center trunnion mounted – cylinder, care must be taken to prevent binding the cylinder body when repositioning the trunnion collar. The proper method of assembling this type of cylinder is as follows:

After the piston seals have been inserted the piston is in the cylinder body to its approximate position. Fit the cap with its seal onto the body. Then "stud" into the trunnion collar the four tie rods that connect the cap to the trunnion collar. Bring up the four tie rod nuts at the cap. Distances from the inner face of the cap to the finished face of the trunnion collar should then be made equal at all four tie rods when all four tie rod nuts are in contact with the cap.

Finally, when the assembly is ready for final tightening, it may be necessary to adjust the tie rod nuts at the cap when torquing the tie rod nuts at the head in order to position the trunnion collar in its final position.

As a check to be certain the mount will not interfere with cylinder operation, move the piston by hand to determine whether there is any tendency to bind at the spot where the trunnion collar is located. If any binding is noticeable, readjust the tie rods.

NOTE: An extreme pressure lubricant (such as molybdenum disulphate) should be used on the tie rod threads and nut bearing faces to reduce friction and tie rod twist. Tie rod twist can be eliminated by chalking a straight line on each tie rod before torquing, and backing off the nut after torquing so this line is straight again. This is particularly important on long-stroke cylinders.

Tie Rod Torque* - 2A Series

Cyl. Bore Size	Cylinder Body Material			
	Brass		Steel	
1"	12 in.-lbs.	14 cm-kg	35 in.-lbs.	41 cm-kg
1½"	36 in.-lbs.	42 cm-kg	60 in.-lbs.	69 cm-kg
2" & 2½"	72 in.-lbs.	83 cm-kg	11 ft.-lbs.	15 N-m
3¼" & 4"	18 ft.-lbs.	24 N-m	25 ft.-lbs.	34 N-m
5" & 6"	44 ft.-lbs.	50 N-m	60 ft.-lbs.	81 N-m
7"	—	—	90 ft.-lbs.	122 N-m
8"	80 ft.-lbs.	108 N-m	110 ft.-lbs.	149 N-m
10"	113 ft.-lbs.	153 N-m	148 ft.-lbs.	201 N-m
12"	148 ft.-lbs.	201 N-m	172 ft.-lbs.	233 N-m
14"	228 ft.-lbs.	309 N-m	275 ft.-lbs.	373 N-m

*-0%, +5% tolerance.

When assembling the cylinder, be sure to torque the tie rods evenly. See note above.

Retainer Bolt Torque

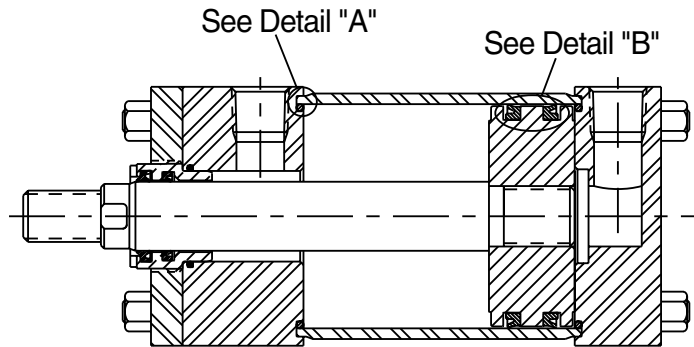
For Cylinders with Round or Small Square Gland Retainer

Screw Size	Torque*	
#10	15 in.-lbs.	17 cm-kg
¼"	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

Piston and Cylinder Body Seals

For 2AN Series Air Cylinders



Piston Seal Kits

PK kits for 2AN Series cylinders contain 2 each of the following:
 symbol 42, Lipseal, piston
 symbol 47, O-ring, cylinder body to head and cap seal
 symbol 129, wick
 symbol 130, washer } 14" bore only (Style 2)

Cylinder Body Seal Kits

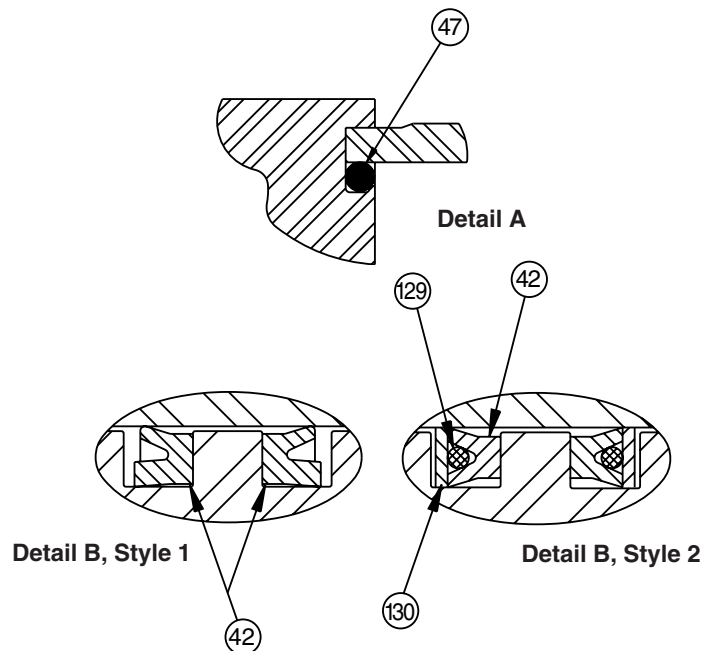
CB kits for 2AN Series Air Cylinders contain 2 each of:
 symbol 47, O-rings

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 distributor.

Service kits contain seals of Nitrile (Buna-N) elastomers for standard fluid service. These seals are suitable for use when air is the operating medium.

The recommended operating temperature range for these seals is -10° F. to +165° F.



Parker Lube-A-Cyl...

is recommended for use in air cylinders during normal operation, and particularly when servicing and re-assembling cylinders. It is a multi-purpose lubricant in grease form, that provides lubrication without deteriorating effects on synthetic seals. Particularly recommended for use in low pressure air cylinders because of its special ability to adhere to metal surfaces. It produces a thin film which will not blow out with exhaust air. It provides piston, rod and seal lubrication, and has excellent resistance to water and mechanical breakdown with temperature range of -10°F (-23°C) to +350°F (+177°C). Lube-A-Cyl is packaged in 4-oz. tubes, a sufficient quantity for average size air cylinder. One application should last for a period of from 6 to 18 months, depending upon service. Lube-A-Cyl is available in 4-oz. tubes. Order by part #0761630000.

Bore Size	PK Piston Seal Kit Nos. For 2AN Series Cylinders	CB Cylinder Body Seal Kit For 2AN Series Cylinders	Rod Dia.	Gland Cartridge Wrenches Part No.	Spanner Wrenches Part No.
1 1/2"	PK1502 AN01	CB152H L001	5/8"	069590 0000	011676 0000
2"	PK2002 AN01	CB202H L001	1"	069591 0000	011676 0000
2 1/2"	PK2502 AN01	CB252H L001	1 3/8"	069592 0000	011703 0000
3 1/4"	PK3202 AN01	CB322A 0001	1 3/4"	069593 0000	011677 0000
4"	PK4002 AN01	CB402A 0001	2"	069594 0000	011677 0000
5"	PK5002 AN01	CB502A 0001	2 1/2"	069595 0000	011677 0000
6"	PK6002 AN01	CB602A 0001	3 1/2"	069597 0000	011677 0000
7"	PK7002 AN01	CB702A 0001	4"	069598 0000	011678 0000
8"	PK8002 AN01	CB802A 0001	4 1/2"	083777 0000	011677 0000
10"	PK9002 AN01	CB902A 0001	5"	069599 0000	011678 0000
12"	PK9202 AN01	CB922A 0001	5 1/2"	069600 0000	011678 0000
14"	PK9402 AN01	CB942A 0001			

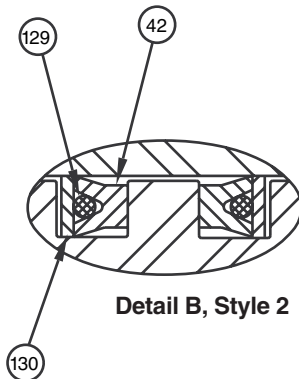
Servicing The Piston Seals

The piston is sealed and securely locked to the piston rod with anaerobic adhesive. This threaded connection should only be disassembled or reassembled by factory trained personnel.

Disassemble the cylinder completely, remove the old seals and clean all of the parts. The cylinder bore and the piston should then be examined for evidence of scoring. Replace all damaged parts. Lubricate the **entire** interior surface of the cylinder bore with a thin film of "Lube-A-Cyl" grease.

Install one piston seal in the groove nearest the rod. The two "lips" of this Lipseal should face toward the rod end of the piston.

In addition on 14" bores only, thoroughly soak both sets of wicks and washers in standard petroleum base lubricating oil, Union Oil "UN-ax-AW-315" or equivalent. Install the flat washer, symbol 130 and wick symbol 129 on the side facing pressure. See Detail B, Style 2.



Detail B, Style 2

Apply "Lube-A-Cyl" to the outside diameter of the piston and seal. Then insert the piston in the cylinder body as shown in Figure 1. Next, turn the cylinder body on its side and push the piston through the barrel just far enough to expose the groove for the second seal (See Figure 2 below). Be careful not to

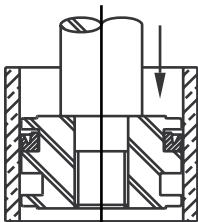


Figure 1

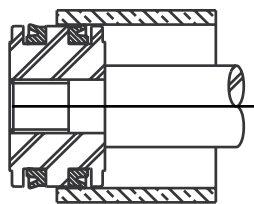


Figure 2

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

Screw Size	Torque	Torque
#10	15 in.-lbs.	17 cm-kq
1/4"	60 in.-lbs.	69 cm-kq
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.

move the piston too far so as to expose the first seal. If this is done, the "lip" of this Lipseal may slip past the cylinder body and be damaged when the piston is pulled back into the cylinder body. If the piston should move too far, pass the piston rod completely through the cylinder body and again start the piston from the original end. Install the second lipseal (and wicks and washers, if required), in the exposed grooves as shown in Figure 2. Lubricate the same as the first seal and pull the piston into the cylinder body. Proceed to assemble cylinder heads, tie rods and tie rod nuts as follows:

"O" rings (symbol 47) should be lightly coated with lubricant then worked into place by hand. Cylinder body can then be assembled to the cap by rocking it down over the seal until the end of the cylinder body is in metal-to-metal contact with the cap. Install "O" ring (symbol 47) in head. Head is then fitted over the rod and assembled to cylinder body. Rock gently into place until body and head are in metal-to-metal contact.

Next, screw gland part way into gland retainer and slip both gland and retainer over the end of the rod. Tighten entire assembly, torquing tie rod nuts to the values specified. Finally, using a gland wrench, firmly seat the gland.

With an intermediate trunnion mounted cylinder, care must be taken to prevent binding the cylinder body when repositioning the trunnion collar. Proper reassembly of this type of cylinder is as follows:

After the piston seals have been inserted and the piston is in the cylinder body, slip the trunnion collar over the cylinder body to its approximate position.

Fit the cap with its seal onto the body. Then "stud" into the trunnion collar the four tie rods that connect the cap to the trunnion collar. Bring up the four tie rod nuts at the cap. Distances from the inner face of cap to finished face of trunnion collar should then be made equal at all four tie rods when all four tie rod nuts are in contact with the cap.

Finally, when the assembly is ready for final tightening, it may be necessary to adjust the tie rod nuts at the cap when torquing the tie rod nuts at the head in order to position the trunnion collar in its final position.

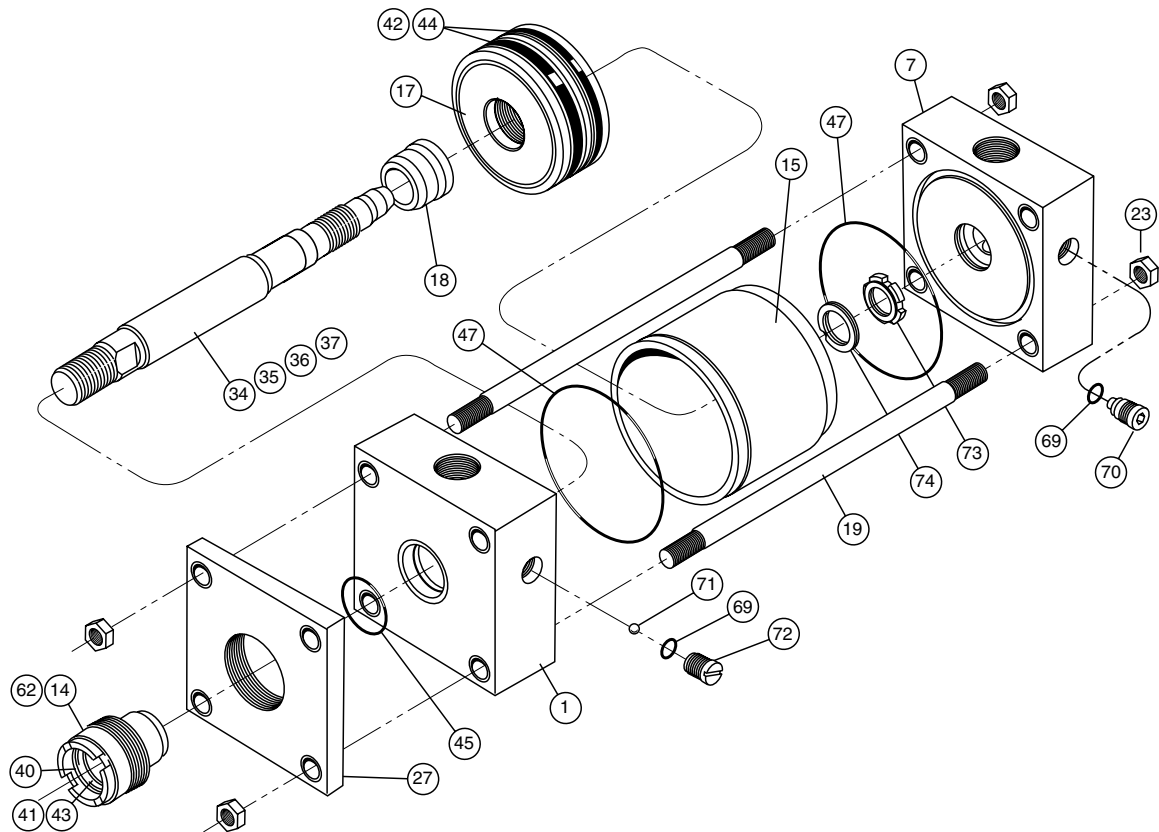
NOTE: An extreme pressure lubricant (such as molybdenum disulphate) should be used on the tie rod threads and nut bearing faces to control friction and reduce tie rod twist. Tie rod twist can be eliminated by chalking a straight line on each tie rod before torquing, and backing off the nut after torquing so this line is straight again. This is particularly important on long-stroke cylinders.

Tie Rod Torque* -2AN Series

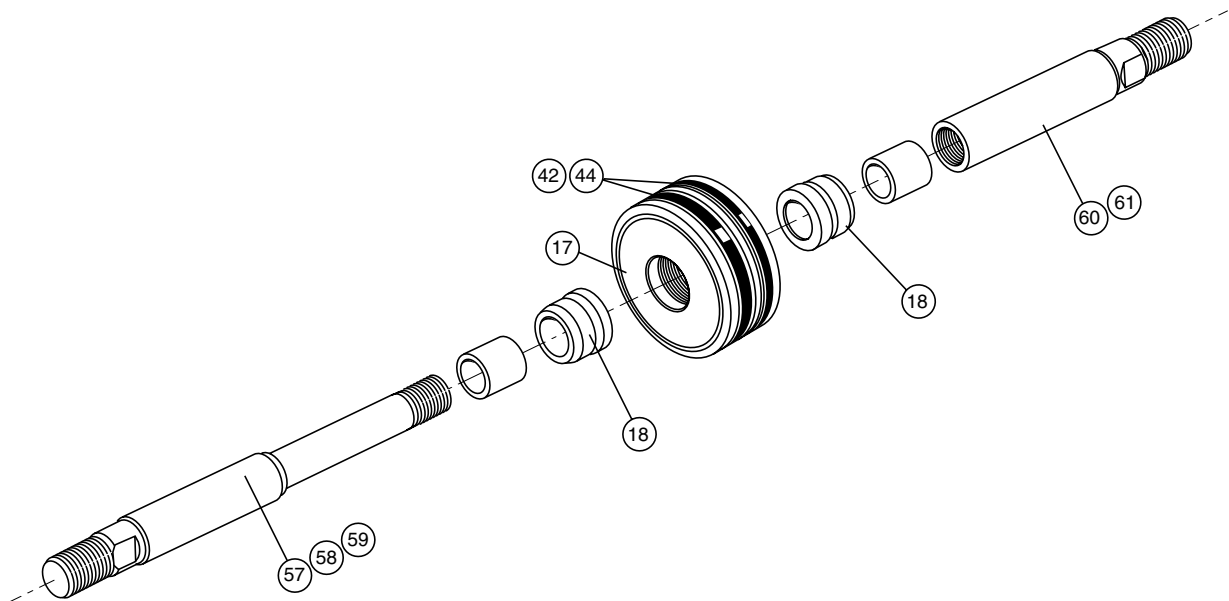
Cylinder Bore Size	Cylinder Body Material					
	Steel		Brass/Aluminum		Fiberglass	
1 1/2"	60 in.-lbs.	69 cm-kq	36 in.-lbs.	42 cm-kq	-	-
2" & 2 1/2"	11 ft.-lbs.	15 N.m	72 in.-lbs.	83 cm-kq	-	-
3 1/4"	25 ft.-lbs.	34 N.m	18 ft.-lbs.	24 N.m	-	-
4"	25 ft.-lbs.	34 N.m	18 ft.-lbs.	24 N.m	-	-
5"	60 ft.-lbs.	81 N.m	44 ft.-lbs.	50 N.m	-	-
6"	60 ft.-lbs.	81 N.m	44 ft.-lbs.	50 N.m	-	-
8"	110 ft.-lbs.	149 N.m	80 ft.-lbs.	108 N.m	-	-
10"	148 ft.-lbs.	201 N.m	113 ft.-lbs.	153 N.m	78 ft.-lbs.	106 (N-m)
12"	172 ft.-lbs.	233 N.m	148 ft.-lbs.	201 N.m	78 ft.-lbs.	106 (N-m)
14"	275 ft.-lbs.	373 N.m	228 ft.-lbs.	309 N.m	118 ft.-lbs.	160 (N-m)

*(-0%, +5% tolerance)

When assembling the cylinder, be sure to torque the tie rods evenly.



K-Type Rod Assembly



Note: For specific mounting styles see Section C.

Parts		Assemblies (Includes Symbol Numbers Shown)		
Symbol	Description	Symbol	Description	Lipseal Type Piston
1	Head, ported, non-cushioned	C1SA	Head, ported, cushioned	1, 69, 70, 71 & 72
7	Cap, ported, non-cushioned	C7SA	Cap, ported, cushioned	7, 69, 70, 73 & 74
14	Gland	62	Gland cartridge kit	14, 40, 41, 43 & 45
15	Cylinder body	—	—	—
17	Piston body, lipseal type	—	—	—
18	Cushion sleeve, cushioned cylinder only	—	—	—
19	Tie rod	—	—	—
23	Tie rod nut	—	—	—
27	Retainer	—	—	—
34	Piston rod, single rod type, non-cushioned	34SA	Piston & rod assembly, single rod type — non-cushioned	17, 34, 42 & 44
35	Piston rod, single rod type, cushioned head end	35SA	Piston & rod assembly, single rod type — cush. head end	17, 18, 35, 42 & 44
36	Piston rod, single rod type, cushioned cap end	36SA	Piston & rod assembly, single rod type — cush. cap end	17, 36, 42 & 44
37	Piston rod, single rod type, cushioned both ends	37SA	Piston & rod assembly, single rod type — cush. both ends	17, 18, 37, 42 & 44
40	Wiperseal, gland	—	Seal Kits See following pages.	—
41	Lipseal, gland	—		—
42	Lipseal, piston	—		—
43	Back-up washer, gland	—		—
44	Back-up washer, piston	—		—
45	O-ring, gland to head seal	—		—
47	O-ring, cylinder body end seal	—		—
57	Piston rod, double rod type, non-cushioned	57SA	Piston & rod assembly, double rod type - non-cush.	17, 42, 44, 57 & 60
58	Piston rod, double rod type, cushioned one end	58SA	Piston & rod assembly, double rod type - cush. one end	17, 18, 42, 44, 58 & 60
59	Piston rod, double rod type, cushioned both ends	59SA	Piston & rod assembly, double rod type - cush. both ends	17, 18, 42, 44, 58 & 61
60	Piston rod extension, double rod type — non-cushioned	—	—	—
61	Piston Rod extension, double rod type — cushioned	—	—	—
69	O-ring, cushion adjustment & check valve screw	—	Cushion Kits See table below.	—
70	Needle valve, cushion adjustment	—		—
71	Ball, check valve	—		—
72	Plug screw, check valve	—		—
73	Cushion bushing, cap end floating check valve	—		—
74	Retaining ring, floating cushion bushing	—		—
75	Seal, cushion sleeve (not shown)	—	—	—

Standard Cushion Hardware Kits

Bore Size	For Head Assemblies	For Cap Assemblies
	Order Kits By Number Below: (Kits include Symbols 69, 70, 71 & 72 for One Head)	Order Kits By Number Below: (Kits include Symbols 69, 70, 73 & 74 for One Cap)
	Series 2A	Series 2A
1	None	None
1 1/2	L065100000	L045800000
2	L065100000	L045800000
2 1/2	L065100000	L045800000
3 1/4	L065110000	L045810000
4	L065110000	L045810000
5	L065110000	L045810000
6	L065120000	L045820000
7	L065120000	L045820000
8	L065120000	L045820000
10	L065120000	L045830000
12	L065120000	L045840000
14	L065120000	L045850000

Fluorocarbon Cushion Hardware Kits

Bore Size	For Head Assemblies	For Cap Assemblies
	Order Kits By Number Below: (Kits include Symbols 69, 70, 71 & 72 for One Head)	Order Kits By Number Below: (Kits include Symbols 69, 70, 73 & 74 for One Cap)
	Series 2A	Series 2A
1	None	None
1 1/2	L070740001	L070750010
2	L070740001	L070750010
2 1/2	L070740001	L070750010
3 1/4	L070740002	L070750011
4	L070740002	L070750011
5	L070740002	L070750011
6	L070740003	L070750012
7	L070740003	L070750012
8	L070740003	L070750012
10	L070740003	L070750013
12	L070740003	L070750014
14	L070740003	L070750015