

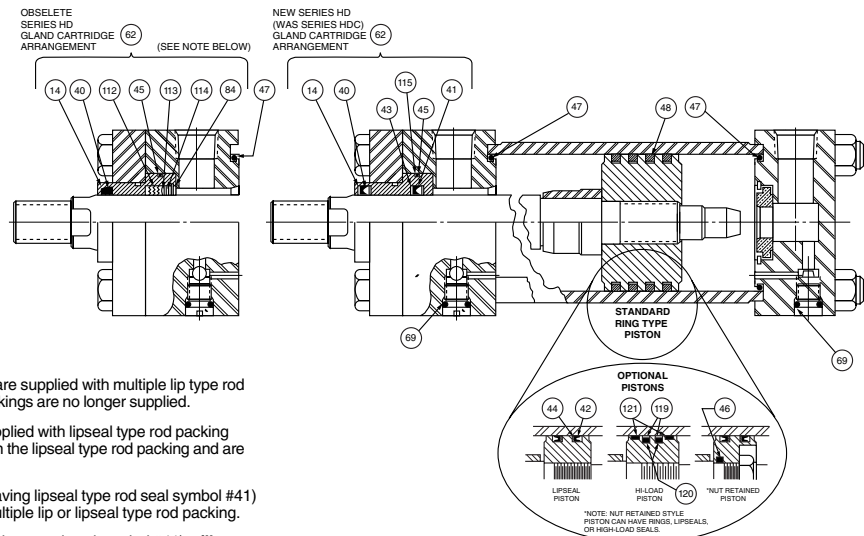


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Series HD Hydraulic Cylinders
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Parker Series HD Hydraulic Cylinders



NOTE: "HD" Series cylinders manufactured prior to Jan. 1987 are supplied with multiple lip type rod packing (symbol #112). After Jan. 1987 multiple lip type rod packings are no longer supplied.

"HDC" series cylinders manufactured prior to Jan. 1987 are supplied with lipseal type rod packing (symbol #41). All cylinders manufactured after Jan. 1987 contain the lipseal type rod packing and are now identified as series "HD".

The ("RG") rod gland cartridge kits shown in the table below (having lipseal type rod seal symbol #41) will fit all standard series HD & HDC cylinders having either multiple lip or lipseal type rod packing.

The ("RK") rod seal kits shown in the table below (having lipseal type rod seal symbol #41) **will not fit** existing rod glands (symbol #14) having multiple lip type rod packing symbol #112. Order appropriate "RG" kit shown in the table below for initial "first time" rod seal repair.

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 Parker Hannifin distributor or office.

Service kits of expendable parts for fluid power cylinders are available for either Class 1, 5 or Class 6 fluid service.

Standard Seals - Class 1 Service Kits are standard, and contain Buna-N and urethane seals for standard fluid service. These seals are suitable for use when air or hydraulic (mineral-type) oil are the operating medium.

Water Service Seals - Class 2 Service Kits contain Buna-N seals for water service. These seals are recommended for use when water, water-glycol fluid or water-in-oil emulsions are the operating medium.

The recommended operating temperature range for Class 1 and 2 seals is -10° F. (-23° C.) to +165° F. (+74° C.)

Fluorocarbon Seals - Class 5 Service Kits contain fluorocarbon seals and are especially suited for elevated temperature service or for some fire resistant fluids (for specific fluids not listed in Catalog 0106 or 0900P consult factory). Fluorocarbon seals (class 5) 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. (120° C.) the cylinder must be manufactured with a non-studded piston rod end thread and a pinned piston to rod connection.

Warning The piston 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 an anaerobic adhesive having a maximum operating temperature rating of +250° F. (+121° C.). Cylinders specified with all other seal compounds are assembled with an anaerobic adhesive having a maximum operating temperature of +165° F. (+74° C.). These temperature limitations are necessary to prevent the possible loosening of the threaded connections. Cylinders originally manufactured with Class 1 seals (Buna-N) 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 re-assembled to withstand the higher temperature service.

High Water Content Fluid - Class 6 Service Kits contain specially compounded HWB seals for High Water Content Fluid Service. These seals can also be used when hydraulic oil is the operating medium. The recommended operating temperature range for Class 6 seals is +40° F. (+4° C.) to +165° F. (+74° C.).

Parts Identification

Sym. No.	Description	Sym. No.	Description
14	Rod gland	62	Gland cartridge assy.
40	Rod wiperseal	69	O-ring
41	Rod lipseal	84	Retaining ring
42	Piston lipseal	112	Rod packing set
43**	Rod back-up washer	113	Shim ring
44	Piston back-up washer	114	Wave spring
45	Gland to head o-ring	115	Back-up washer
46*	Piston to rod o-ring	119	Outer ring
47	End seal o-ring	120	Inner ring
48	Piston ring	121	Wear ring

*Symbol 46 required only with nut retained lipseal and hi-load style pistons.

**Not used for class 1 seals.

Rod Gland Seal Kits+

Bore Size	RG (Sym 62) Includes Symbol No. 14, 40, 41, 43, 45 & 115	RK Includes Symbol No. 40, 41, 43, 45 & 115
5/8"	RG1HDL0061	RK1HDL0061
1"	RG1HDL0101	RK1HDL0101
1 3/8"	RG1HDL0131	RK1HDL0131
1 3/4"	RG1HDL0171	RK1HDL0171
2"	RG1HDL0201	RK1HDL0201
2 1/2"	RG1HDL0251	RK1HDL0251
3 1/2"	RG1HDL0351	RK1HDL0351
4"	RG1HDL0401	RK1HDL0401
5 1/2"	RG1HDL0551	RK1HDL0551

+Rod gland cartridge kits & rod seal kit part numbers shown identify class 1 seals only. To order class 2, 5 or 6 seals substitute 2, 5 or 6 as required for the last digit of kit number.

Bore Size	Cylinder Body Seal Kit	Piston Seal Kits†		
	CB	PK	PR	Hi-Load
	Includes 2 ea. Symbol No. 47	Includes 2 ea. Symbol 42, 44 & 47	Includes 2 ea. Sym.47 4 ea. Sym. 48	Includes 2 ea. Symbol 47, 119, 120 & 121
1 1/2	CB152HL001	PK152HLL01	PR152H0001	PK152HK001
2	CB202HL001	PK202HLL01	PR202H0001	PK202HK001
2 1/2	CB252HL001	PK252HLL01	PR252H0001	PK252HK001
3 1/4	CB322HL001	PK322HLL01	PR322H0001	PK322HK001
4	CB402HL001	PK402HLL01	PR402H0001	PK402HK001
5	CB502HL001	PK502HLL01	PR502H0001	PK502HK001
6	CB602HL001	PK602HLL01	PR602H0001	PK602HK001
8	CB802HL001	PK802HLL01	PR802H0001	PK802HK001

†CB, PR & hi-load piston seal kit part numbers shown identify class 1, 2 & 6 service only. To order Class 5 seals substitute 5 for the last digit of kit number.

PK kit part numbers shown identify Class 1 service only. For Class 2, 5 & 6 substitute for last digit of kit number, as follows.

5-for Class 5 seals

6-for Class 2 or 6 seals

Series HD Hydraulic Cylinders

To Service Rod Bushing Seals – The rod bushing cartridge is removable without disassembly of the cylinder on all HV-2 Series hydraulic cylinders. To remove the bushing, loosen the retainer screws and remove the bushing retainer. It is recommended that the used bushing be replaced by a complete bushing kit. Later the used bushing can be inspected, and if the bearing surface is still satisfactory and not out-of-round, it can be repacked with replacement seals and stored for future use.

Assemble seals for the HV-2 Series bushing by installing the rod wiperseal and rod seal in their proper grooves. Install head to bushing "O" ring in its proper groove. Lubricate all seals.

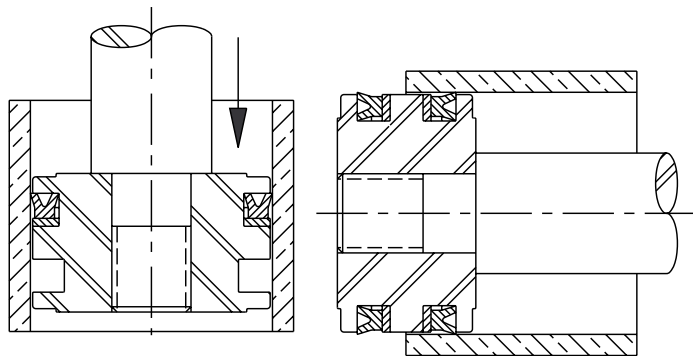
THE SEALS ARE PRESSURE-ACTUATED, SO NO FURTHER ADJUSTMENTS ARE NECESSARY.

To Service 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. If either is damaged, it should be replaced. The piston seal is either lipseal, cast iron rings or hi load type.

Back-up washers, Symbol 44, are required to prevent extrusion of lipseal piston seals. Install one in each piston groove.

Install one piston lipseal, Symbol 62, in the groove nearest the rod. The "lips" of this lipseal should face toward the rod end of the piston with back-up washer on the side away from the lips. Then insert the piston in the cylinder tube as shown in (1). Next, turn the cylinder tube on its side and push piston through tube just far enough to expose groove for second seal (see 2). Install second piston seal and back-up washers as shown. Then pull the piston into the cylinder tube and proceed to assemble cylinder cap, head, tie rods and tie rod nuts as described below.

Iron piston rings seldom need replacement. If the rings show no signs of damage or abnormal wear, they may be reused. To install piston and rings, collapse the rings one at a time, while inserting the piston into the cylinder tube, using a light oil to aid this process.



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 Parker Hannifin, its subsidiaries and authorized distributors provide product and / or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of 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 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 Parker Hannifin and its subsidiaries at any time without notice.

The hi load piston is supplied with continuous PTFE outer rings (two rings for 1½"-6" bores and one ring for 7" & 8" bores), Symbol 119, which are preloaded by synthetic rubber inner rings, Symbol 120, and two split wear rings, Symbol 121. To service the hi load piston, remove old seals and wear rings and clean all piston surfaces. Install inner rings in grooves as shown. Install wear rings in longer grooves at each end of piston, also as shown. Heat the PTFE outer rings in boiling water and stretch them by hand until they will fit over the O.D. of the wear ring. Push outer ring over wear ring and into the seal groove. Repeat for other outer ring by installing it from opposite side of piston. Do not attempt to push an outer ring over one already installed in its groove. With outer rings in their grooves, compress them with ring compressor or use a starting sleeve having an I.D. same size as cylinder bore and tapered at one end.

To Replace Piston – If the piston or piston rod is badly scored or otherwise damaged, they should be replaced as a complete assembly. To order a piston and rod assembly, specify serial number, bore size, stroke and model number as shown on the cylinder name plate.

Cylinder Reassembly – O-rings, Symbol 47, should be lightly coated with lubricant, then worked into place into the cap by hand. Cylinder tube can then be reassembled to the cap by rocking it down over the seal until the end of the cylinder tube is in metal-to-metal contact with the cap. Install O-ring, Symbol 47, in head. Head is then fitted over the piston rod and assembled to cylinder tube. Rock gently into place until tube and head are in metal-to-metal contact.

Install tie rods in holes provided in cap and thread them into the tapped holes in the head. On cap end mounting styles the tapped holes are in the cap. Install the tie rod nuts and tighten finger tight.

Inspect the surface of the piston rod for scratches, dents, raised burrs or other damage. A damaged piston rod will quickly ruin any seal through which it moves and should be replaced. Slide the bushing with its seals over the piston rod until it seats against the cavity in the head. Install the bushing retainer and retainer screws. Torque the tie rod nuts to the torque level shown in the table below.

Bore Size	Tie Rod Nut Torque*	
	Series HD Hydraulic Cylinders	
1-1/2"	18 ft.-lbs.	24 N-m
2" & 2-1/2"	45 ft.-lbs.	61 N-m
3-1/4"	120 ft.-lbs.	163 N-m
4"	131 ft.-lbs.	178 N-m
5"	312 ft.-lbs.	423 N-m
6"	528 ft.-lbs.	716 N-m
7"	800 ft.-lbs.	1085 N-m
8"	1168 ft.-lbs.	1584 N-m

*(-0%, +5% tolerance). When assembling the cylinder, be sure to torque the tie rods evenly using MoS2 thread and nut bearing surface lubricant.

Retainer Bolt Torque for Cylinders with Round, Small Square or Full Square Bushing Retainer

Screw Size	Torque	
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
1/2"	40 ft.-lbs.	53 N-m
5/8"	46 ft.-lbs.	62 N-m
7/8"	78 ft.-lbs.	106 N-m
1"	118 ft.-lbs.	160 N-m
1-1/4"	282 ft.-lbs.	382 N-m

*-0%, +5% tolerance