

Series CHD & CHE Hydraulic Cylinders

Parts Identification, Maintenance Instructions & Seal Kits

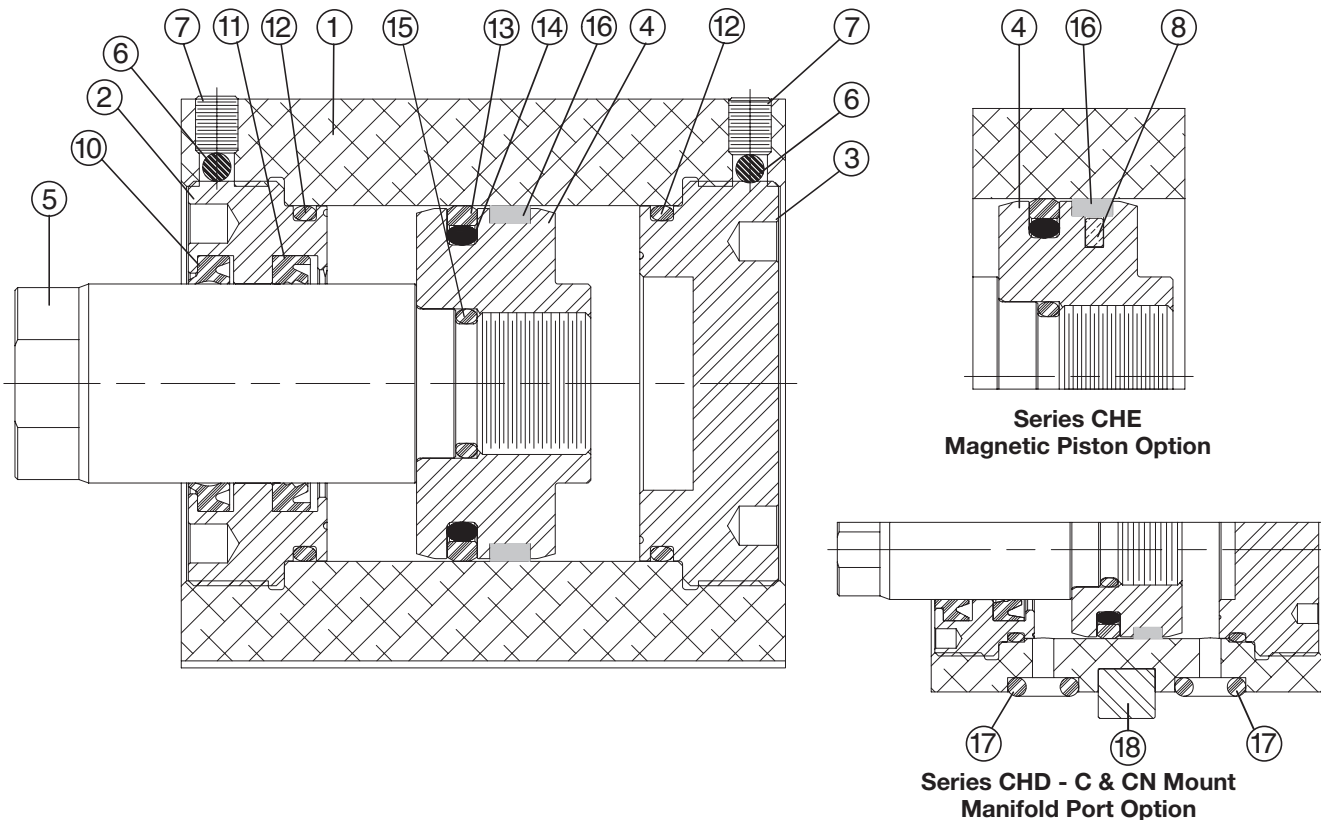
Service Kits

Service kits for Series CHD & CHE cylinders simplify the ordering and maintenance process. They contain subassemblies that are ready for installation and are supplied with full instructions. When ordering service kits,

please refer to the identification plate on the cylinder body, and supply the following information:

Serial Number - Bore - Stroke - Model Number - Fluid Type

Parts Identification Drawing – Standard Piston



Item No.	Description	Material	Item No.	Description	Material	
					Standard	Fluorocarbon
1	Cylinder Body - CHE	Aluminum Alloy (Hard Anodized)	10	Rod Wiper	PUR	Fluorocarbon
	Cylinder Body - CHD	Steel	11	Rod Seal	PUR	Fluorocarbon
2	Gland	Nodular Iron	12	End Seal	PUR	Fluorocarbon
3	Cap	Nodular Iron	13	Piston Seal	PUR	Filled PTFE
4	Piston – Standard	Nodular Iron	14	PS Energizer	NBR	Fluorocarbon
	Piston – with Magnet	Aluminum Alloy	15	Piston-to-Rod o-ring	PUR	Fluorocarbon
5	Piston Rod	Carbon Steel (Hard Chrome Plated)	16	Piston Wear Band	Glass-reinforced nylon	Glass-reinforced nylon
6	Ball	Nylon				
7	Set Screw	Alloy Steel	17	Manifold Port Seal	PUR	Fluorocarbon
8	Magnet	Sintered NdFeB ¹	18	C & CN Mount Key	Steel	

¹ Neodymium Iron Boron

Operating Fluids and Temperature Ranges

The table shows the main types of fluid used with hydraulic cylinders. If the operating conditions of the particular application cannot be met by the groups

described, please consult the factory and supply complete application details.

Seal Classes	Typical Fluids	Temperature Range
1 – Standard Nitrile & Polyurethane	Hydraulic Oil, MIL-H-5606 Oil	-23°C (+10°F) to +74°C (+165°F)
5 – Optional (At extra cost) Fluorocarbon Seals	High Temperature	-23°C (+10°F) to +121°C (+250°F) Class 5 seals may be operated up to +204°C (+400°F) with reduced service life

Note: Class 5 seals are not suitable for use with Skydrol fluid, but can be used with hydraulic oil if desired.

Service Kit Numbers

Rod Gland and Rod Seal Kits

Rod Ø	Rod Gland (w/o pilot ¹) Kits		Rod Seal Kits	
	Class 1	Class 5	Class 1	Class 5
	Consists of 1 ea. of items #2, 6, 10, 11, & 12		Consists of 1 ea. of items #6, 10, 11, & 12	
12	CHE-KR100-12	CHE-KR200-12	CHE-KR300-12	CHE-KR400-12
14	CHE-KR100-14	CHE-KR200-14	CHE-KR300-14	CHE-KR400-14
18	CHE-KR100-18	CHE-KR200-18	CHE-KR300-18	CHE-KR400-18
22	CHE-KR100-22	CHE-KR200-22	CHE-KR300-22	CHE-KR400-22
28	CHE-KR100-28	CHE-KR200-28	CHE-KR300-28	CHE-KR400-28
36	CHE-KR100-36	CHE-KR200-36	CHE-KR300-36	CHE-KR400-36
45	CHE-KR100-45	CHE-KR200-45	CHE-KR300-45	CHE-KR400-45
56	CHE-KR100-56	CHE-KR200-56	CHE-KR300-56	CHE-KR400-56

¹ Pilot gland is required for AN, CA, CN, J, MN and TN mounting styles. For Gland Kit with pilot change 'KR100' or 'KR200' in kit number to 'KR20P'. E.g. CHE-KR10P-12.

Complete Seal Kits

Bore Ø	Class 1	Class 5	Gland & Cap Torque Specifications			
	Consists of 1 ea. of items #10, 11, 13, 14, 16 & 2 ea. of items #6 & 12		Series CHE		Series CHD	
20	CHE-CRK10-20	CHE-CRK20-20	17 - 18 N-m	155 - 162 lb-in	27 - 28 N-m	20 - 21 lb-ft
25	CHE-CRK10-25	CHE-CRK20-25	31 - 32 N-m	23 - 24 lb-ft	47 - 49 N-m	35 - 36 lb-ft
32	CHE-CRK10-32	CHE-CRK20-32	68 - 71 N-m	50 - 52 lb-ft	98 - 102 N-m	72 - 75 lb-ft
40	CHE-CRK10-40	CHE-CRK20-40	129 - 135 N-m	95 - 99 lb-ft	169 - 177 N-m	125 - 131 lb-ft
50	CHE-CRK10-50	CHE-CRK20-50	203 - 213 N-m	150 - 157 lb-ft	285 - 299 N-m	210 - 220 lb-ft
63	CHE-CRK10-63	CHE-CRK20-63	305 - 320 N-m	225 - 236 lb-ft	488 - 512 N-m	360 - 378 lb-ft
80	CHE-CRK10-80	CHE-CRK20-80	576 - 604 N-m	425 - 446 lb-ft	881 - 925 N-m	650 - 682 lb-ft
100	CHE-CRK10-100	CHE-CRK20-100	881 - 925 N-m	650 - 682 lb-ft	–	–

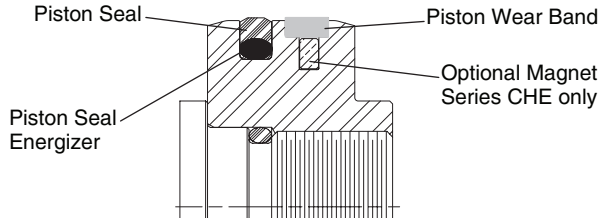
Servicing Piston Seals

When a cylinder is overhauled, a new piston seal assembly is required. The piston seal is included in a Complete Seal Kit. A Complete Seal Kit includes the following items: piston seal (13), piston seal energizing ring (14), piston wear band (16), piston rod seal (11), piston rod wiperseal (10), two gland and cap o-rings (12) and two nylon balls (6).

Cylinders should always be reassembled with new gland and / or cap end seal o-ring(s) (12) on the end(s) removed to service the cylinder. One o-ring is included with each Rod Gland Kit and Rod Seal Kit.

Install the piston seal energizing ring followed by the piston seal. Assemble the wear band in the groove. Lubricate the cylinder body with a light oil and insert the piston.

Note: All Series CHD cylinders include a piston wear band and Series CHE cylinders shipped from mid-2008 to current include a piston wear band. The Series CHE magnetic piston option in this design incorporates a two piece magnet in a groove under the wear band. If the magnet halves are removed from the piston, care should be taken to reinstall them in the correct orientation. Each magnet half is marked with a white dot that must assembled toward the piston seal. When assembled correctly there will be a slight repelling force between the magnet halves. If magnet halves attract each other they are not assembled correctly and will fail to signal the switch.



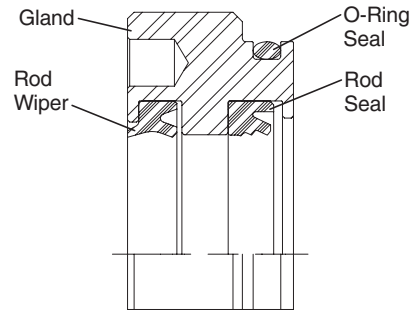
Servicing Rod Gland Seals

Fluid leakage from the piston rod at the gland normally indicates worn gland seals. The cylinder should, if possible, be removed for overhaul, or the piston rod disconnected.

The CHE gland is a cartridge design consisting of a bronze gland, primary lipseal, double lip wiperseal, and end seal o-ring. It is threaded into the cylinder body.

Removal

- 1) Inspect the piston rod to make sure it is free from burrs or damage which would prevent the gland sliding off the rod.
- 2) Loosen set screw (7)
- 3) Unscrew the gland using pins in spanner holes and slide the gland off the piston rod.
- 4) Remove the seals using a sharp pointed instrument, taking care not to damage the gland. Clean and inspect the gland bore and seal grooves. If any wear is present replace with a gland cartridge kit containing seals of the correct group.



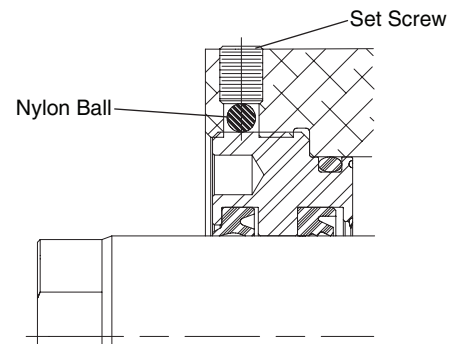
Gland Installation

Inspect the surface of the piston rod for damage which could cause early seal failure. When fitting the gland over the rod thread, a slight rotary motion will help prevent damage to the seals. In addition, shim stock or other thin, tough material can be wrapped around the threads to protect the seal lips.

- 1) Ensure that the kit contains seals of the correct type. Lubricate the gland and seals, and fit the rod wiper (10) into the groove closest to the outside face of the gland.

- 2) Install the rod seal (11) in the groove, **with the lips facing the pressure (cylinder) side of the gland.**

- 3) Each Rod Gland Kit and Rod Seal Kit contains an end seal o-ring (12) that should be replaced before reinstalling the gland.



- 4) Lubricate the gland and seals. Slide the gland cartridge over the piston rod and thread it into the cylinder body. Utilizing pins in spanner holes in the face of the gland, torque the gland to the value listed on page 2.
- 5) Install the nylon ball (6) included in the kit and torque the set screw to the value in the table.

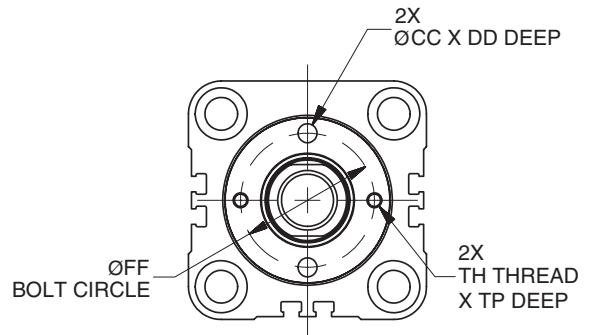
Set Screw Torque

Bore Ø	Torque (lb-in)
20, 25	11 - 13
32 - 63	32 - 38
80, 100	58 - 71

Spanner Hole Dimensions

Gland & Cap Spanners

Bore Ø	CC Ø	DD	FF Ø	TH	TP
20	2.75	2.75	22	-	-
25	3.25	3.25	25	-	-
32	4.25	4.25	30	M3x0.5 - 6H	6
40	5.25	5.25	35	M4x0.7 - 6H	7
50	6.38	6.25	45	M5x0.8 - 6H	7
63	8.38	8.25	55	M6x1 - 6H	8
80	10.50	10.50	70	M8x1.25 - 6H	9
100	10.50	10.50	85	M8x1.25 - 6H	9



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