KNOWLEDGE BASE

Article Type: Reference

Parker Cylinder Maintenance Instructions for; Compression and Stripper on CPM 30, 40, 50, 60 Machines.

Description:

Instructions on "How to" properly maintain Parker cylinders, (compression and stripper) used on CPM 30, 40, 50 & 60 machines, this covers part numbers, 366.2.1681, 366.2.1682, 366.2.1682.1, 366.2.1682.2, 366.2.1682.3, 366.2.1682.4

WARNING

Never work on, clean or service this unit, control panel or any machine or open or remove any protective cover, guard, grate, door, or maintenance panel until the power or energy sources has been turned off, locked out / tagged out, and all moving parts have come to a complete stop and or blocked to prevent movement. Machinery is dangerous – avoid personal injury and or death by following manufacture, Local, and OHSA safety procedures. Contact Columbia Machine for safety decals, guards, horns and beacons.

CUSTOM CYLINDER OPERATION

MAINTENANCE INSTRUCTIONS

FOR

COLUMBIA MACHINE, INC.

CPM COMPRESSION AND STRIPPER CYLINDERS

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MAINTENANCE INSTRUCTIONS

1.0 GENERAL

The cylinder has been cleaned and tested with Chevron AW32 or equal hydraulic fluid, filtered to a cleanliness level of NAS 1638 Class 6 or better. The cylinder should be operated with similar fluid of comparable cleanliness.

Figure 1 and Table I describe all component parts.

2.0 STORAGE

To protect the cylinder against external damage, store in its original shipping container. Ideally, the cylinder should be stored vertically, rod end up. This minimizes the possibility of internal corrosion of sealing surfaces due to condensation. If the cylinder must be stored horizontally, rotate the container 90^0 at approximately one-month intervals. For optimum protection against internal corrosion, pour a few ounces of volatile oil into each end of the cylinder and tightly seal the ports. Shell VSI circulating oil is good for this purpose.

Store the cylinder indoors in a clean dry, non-corrosive atmosphere. Do not remove the protective port covers until the cylinder is ready to be installed.

3.0 INSPECTION AND SERVICE

3.1 Visual Inspection

Any failure which can be observed externally, such as leakage, chatter, drift, seizing, and scored or pitted rod, should be cause for cylinder repair.

3.2 Replacement Intervals

See Appendix I for scheduled replacement intervals and trouble-shooting charts.

3.3 Service – It is recommended that for ease of service that the cylinder be removed from its on-site position for service and reinstalled afterwards.

3.3.1 Rod seal and wiper replacement

a. Make sure that piston rod (11) is fully retracted. Drain any hydraulic fluid from the cylinder before rod seal, wiper or cartridge replacement.

b. Remove all attachments from the rod end of the cylinder.

c. Remove the packing cap screws (7) and the packing cap (6) from the cylinder.

d. Remove the cartridge (12) from the rod head (2).

e. The tool at the bottom is from a Snap-On tool set called Pick Set #ASA 204. The screwdriver has had all edges rounded and made smooth so it doesn't damage the cartridge. The top tool is for seal installation and is from Macrotech/PolySeal in Salt Lake City, Utah. We get it from AFM at 1-800-431-1961. The tool number is IT100.

f. Start by removing the rod wiper (13). Use the pic and screwdriver to pry it out of the groove. Be careful not to damage the cartridge.

g. Work your way toward the center of the cartridge by removing the top wear ring (16). Then remove the tri-lip seal (15).

h. Flip the cartridge over and remove the regular seal (14). Then remove the second wear ring (16).

i. Finally, remove the OD cartridge seal (17) and backup (18).

j. Once the parts are removed, the cartridge is to be thoroughly cleaned and inspected for dings and scratches. Any debris or damage will shorten seal life and cause leaking.

k. Insert the Tri-lip seal (16) first. Use the seal installation tool. The grooved face of the seal faces in toward the pressure side of the cartridge.

l. Snap the wear rings (16) into their grooves.

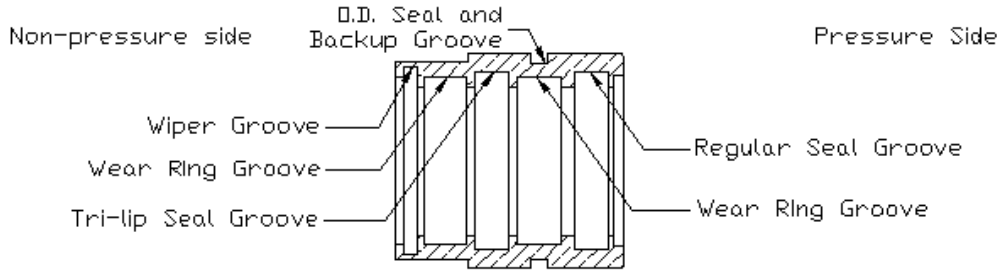
m. Remove the black expander ring from the regular rod seal (14). Using the seal installation tool, place the seal in the expander ring. The grooved face of the seal faces in toward the pressure side of the cartridge.

n. Place the wiper (13) into its groove. The rounded side faces out.

o. Place the white backup seal (18) in the OD seal groove towards the non-pressure side of the cartridge.

p. Roll the O.D. cartridge seal (17) into its groove, being sure that it is on the pressure side of the backup seal.

q. Below is a diagram of the gland cartridge for reference during seal installation.



r. Carefully slide the cartridge (12) over the rod (11) and into the rod head (2) using care not to damage the cartridge OD seal (17, 18) and rod seals (14, 15).

s. Reinstall the cylinder components, Packing cap (6), packing cap screws (7). Torque screws to the specified torque in Appendix II

t. Reinstall the cylinder and test for smooth operation and leakage.

3.3.2 Cylinder barrel seal replacement

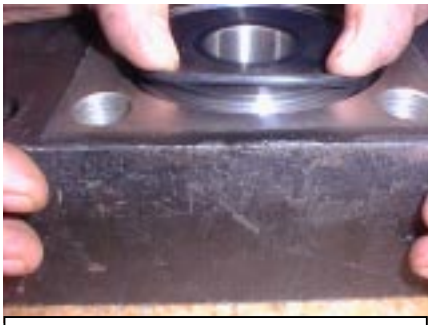
a. Make sure that piston rod (11) is fully retracted. Drain any hydraulic fluid from the cylinder for cylinder barrel seal replacement.

b. Remove the head bolts (3, 5) and from the ends of the cylinder.

c. Remove the rod head (2) and base end head (4) from the cylinder body (8).

d. Remove the two barrel seal o-rings. On cylinders 366.2.1682 and 366.2.1662, the o-rings are in grooves at the ends of the barrel. On cylinders 366.2.1661 and 366.2.1681, the o-rings sit on a shoulder in the heads. Use a flat head screwdriver that has been ground smooth to remove the o-rings.

Cylinders 366.2.1662 & 366.2.1682



Cylinders 366.2.1661 & 366.2.1681

e. Use caution to not damage the machined surfaces of any of the parts, and verify that all parts are clean before attempting re-assembly. Install two new barrel seal o-rings (24).

f. Reinstall the rod head (2) and base end head (4) and torque the head bolts (3, 5) to the specified torque in Appendix II

g. Reinstall the cylinder and test cylinder for smooth operation and leakage.

3.3.4 Piston seal replacement – Note: It is advisable that the cartridge, rod seals, and cylinder barrel seals be replaced when undertaking this procedure.

a. Make sure that the piston rod (11) is fully retracted. Drain any hydraulic fluid from the cylinder.

b. Remove the rod head bolts (3) from the end of the cylinder.

c. Remove the rod head (2) and piston rod (11) with piston (9) attached from cylinder assembly.

d. Remove the piston rings and seals using a flat head screw driver that has been ground smooth. The piston rings should come out easily, but the seal will probably be more difficult. Gently pry the seal up until you have room to cut it with a pair of cutting pliers or dykes. Be careful not to damage the piston.

e. Lubricate seal groove for ease of installation. Place the square expander ring on first. Be sure that it is not twisted.

f. The Shamban seal goes on next. This seal is very stiff. To ease installation, it is recommended that the seal be heated using and electric skillet. No direct flame or microwave should be used. Set the skillet heat to around 450 degrees Fahrenhiet and heat the seal for about ten minutes. The seals won't melt, so leaving them on longer won't hurt them. Once the seal is pliable, work it into place on top of the square expander ring. You may need to use a flat head screw driver to get the seal in place. The seal may stretch out of shape, but is easily formed back when the piston is reinserted in the barrel.

g. Finally, snap the piston rings into their grooves.

h. Carefully slide piston (9) and piston rod (11) into barrel. Do not damage piston seals.

i. Install rod head (2), rod end bolts (3) onto cylinder assembly. Use care not to damage the rod seals and cartridge. Torque rod end bolts to specified torque in Appendix II.

j. Reinstall the cylinder and test for smooth operation and leakage.

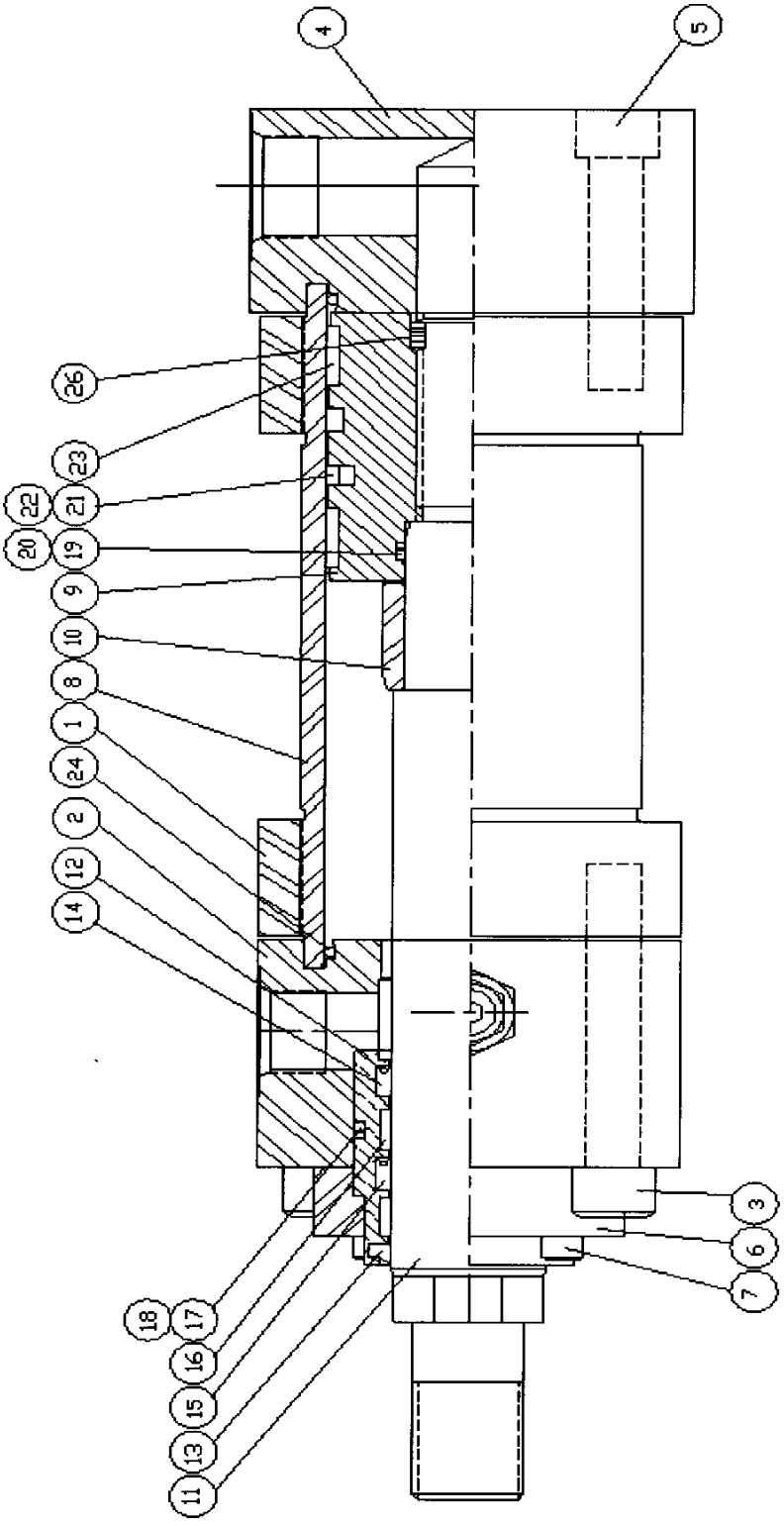


Figure 1
CYLINDER

TABLE I

PARTS LIST

ITEM	DESCRIPTION	QUANTITY
1	Barrel Flange	2
2	Rod Head	1
3	Rod End Head Bolts	4
4	ME6 Base End Head	1
5	Base End Head Bolts	4
6	Packing Cap	1
7	Packing Cap Screws	4
8	Barrel	1
9	Piston	1
10	Rod End Cushion Sleeve	1
11	Piston Rod	1
12	Cartridge	1
13	Rod Wiper	1
14	Outer Rod Seal	1
15	Inner Rod Seal	4
16	Rod Wear Ring	2
17	Cartridge OD Seal	1
18	Cartridge OD Back-up	1
19	Piston ID Seal	1
20	Piston ID Back-up	1
21	Piston OD Seal	1
22	Piston OD Expander	1
23	Piston Wear Ring	2
24	Barrel Seal	2
25	Flow Control Valve	1
26	Piston to Rod Lock Pin	1

APPENDIX I

MAINTENANCE CHARTS

ITEM: ROD WIPER

ITEM NUMBER
13

SCHEDULED REPLACEMENT INTERVAL
When rod seals are replaced. See page 10.

POSSIBLE PROBLEMS
Failure to exclude contaminants.

POSSIBLE CAUSE
Normal wear, or damage due to:
1. Scored or nicked piston rod

CORRECTIVE ACTION
Replace rod wiper, replace or repair piston rod, if damaged.

PREVENTIVE MEASURES
Avoid sharp blows or abrasive action on piston rod.

ITEM: ROD SEALS

ITEM NUMBER

14, 15

SCHEDULED REPLACEMENT INTERVAL

Whenever leakage is sufficient enough to cause hydraulic fluid to run down exterior of cylinder.

POSSIBLE PROBLEMS

External leakage.

POSSIBLE CAUSE

Normal wear of seal or rod bearing & cartridge, or damage due to:

1. Fluid incompatibility
2. Contaminated fluid
3. Scored or nicked piston rod
4. Extreme pressure
5. Extreme temperature
6. Excessive side loads

CORRECTIVE ACTION

Replace seal, replace or repair piston rod, if damaged.
Replace rod bearing & cartridge, if necessary.

PREVENTIVE MEASURES

1. See Paragraph 1.0 regarding fluid
2. Use adequate filtration
3. Avoid sharp blows or abrasive action on piston rod
4. P max. = 5,000 PSI
5. Temperature range = - 10° F. to + 165° F.

ITEM: PISTON SEALS

ITEM NUMBER

21, 22

SCHEDULED REPLACEMENT INTERVAL

Whenever the cylinder rod does not hold its position and drifts downward while under full system pressure.

POSSIBLE PROBLEMS

Leakage, resulting in inability to hold pressure, or sluggish action

POSSIBLE CAUSE

Normal wear, or damage due to:

1. Contaminated fluid
2. Extreme pressure
3. Extreme temperature
4. Fluid incompatibility
5. Scored barrel
6. Excessive side loads

CORRECTIVE ACTION

Replace seals.

Repair or replace barrel and piston, if scored or damaged.

PREVENTIVE MEASURES

1. See Paragraph 1.0 regarding fluid
2. Use adequate filtration
3. P max. = 5,000 PSI
4. Temperature range = - 10° F. to + 165° F.

ITEM: CYLINDER BARREL SEALS

ITEM NUMBER

24

SCHEDULED REPLACEMENT INTERVAL

Whenever rod head (4) and/or basehead (5) is removed from cylinder.

POSSIBLE PROBLEMS

External leakage.

POSSIBLE CAUSE

1. Fluid incompatibility
2. Extreme pressure
3. Extreme temperature

CORRECTIVE ACTION

Replace.

PREVENTIVE MEASURES

1. See Paragraph 1.0 regarding fluid
2. P max. = 5,000 PSI
3. Temperature range = - 10° F. to + 165° F.

APPENDIX II

TORQUE CHARTS

TORQUE CHART

SCREWS

Item #	Description	Thread Size	Torque (Ft. lbs.)
7	Packing Cap Screw	.312-18 UNF	32 +/- 3
3, 5	Head Screws	.625-18 UNF	146 +/- 15