Accumulator Seal Replacement Instructions

WARNING: ***THIS COMPONENT CONTAINS HIGH PRESSURE HYDRAULIC FLUID AND NITROGEN GAS. EXERCISE CAUTION WHEN PERFORMING ANY TYPE OF MAINTENANCE. WEAR PROPER SAFETY ATTIRE INCLUDING SAFETY GLASSES.***

A. Disassembly

1. Close the Power Oil Isolation Valve.
2. Isolate the Accumulator to be repaired on both the hydraulic and nitrogen side.
3. Open the System By-Pass Valve and drain the hydraulic fluid and pressure from the Accumulator.
4. Vent the nitrogen pressure from the top of the accumulator piston.
5. Remove the Accumulator from the skid.

   Note: If the hydraulic power unit contains more than one accumulator, all other accumulators may be returned to service once the accumulator to be repaired has been removed from the skid.

6. Place the Accumulator horizontally on a workbench and secure.
7. Remove all piping components connected to the upper and lower heads. ***Do Not Remove Plugs From Heads.***
8. To remove the Upper Head, install two 5/8-18 x 4" (100 mm) long hex head cap screws into the upper head. Place a pry-bar between the two cap screws and turn in a counter-clockwise direction (See Figure 1) until the upper head is free of the cylinder.

   CAUTION: ***The accumulator upper head weighs approximately 65 pounds (30 kilograms). Use caution as to not damage the threads when removing the upper head from the cylinder.***

9. To remove the Lower Head, install two 3/4-10 x 4" (100 mm) long hex head cap screws into the lower head. Place a pry-bar between the two cap screws and turn in a counter-clockwise direction (See Figure 2) until the lower head is free of the cylinder.

   CAUTION: ***The accumulator lower head weighs approximately 100 pounds (45 kilograms). Use caution as to not damage the threads when removing the lower head from the cylinder.***

10. If the Accumulator is equipped with a Piston Stop, remove it through the end of the cylinder that held the upper head. Take precautions to protect the accumulator cylinder and piston stop from damage. Retain the nylon guides located in each end of the piston stop (total of 6).
11. Remove the Piston from the accumulator through the end of the cylinder that held the upper head. If the piston is at the bottom of the cylinder, push towards the top. Take precautions to protect the accumulator cylinder and piston from damage. The center of the piston contains a ½-13 tapped hole that can be used to install an eyebolt or standard bolt, to ease in the removal of the piston from the

cylinder. ***Use caution to not damage the threads when removing the piston from the cylinder.***

12. With all components removed, visually inspect the accumulator cylinder for any damage, such as grooves or nicks.
13. Remove and discard all seals and back-up rings from the accumulator components.
14. Clean all components, and inspect for damage to interior surfaces. Give close attention to the seal grooves.

B. Reassembly

At this time the new seals are to be installed and the accumulator re-assembled. For reassembly, a thread lubricant such as "NEVER-SEEZ®" and a, PTFE/petroleum base all-purpose, grease such as "ACCROLUBE®" will be required.

1. Install the Lower Head first. Using the Accumulator Sub-Assembly drawing Figure 4 as a guide, place the Back-Up Ring into the seal groove first. Carefully install the O-Ring next to the Back-Up Ring.

   CAUTION: ***Do not overstretch the "o-ring" or push the "o-ring" across the threads of the accumulator lower head.***

2. Apply grease to the O-Ring and Back-Up Ring.
3. Apply thread lubricant to the external threads of the Lower Head.
4. Carefully insert the Lower Head into the Cylinder. Do not allow the seals in the Lower Head to scrape against the internal threads of the Cylinder.
5. By hand, begin screwing the Lower Head into the Cylinder turning the Lower Head in a clockwise direction. A pry-bar may be used after the Lower Head has started correctly (See Figure 2).

   Note: The Cylinder is tapered to allow the seals to start into the cylinder bore without shearing them.

6. Continue screwing in the Lower Head until it is tight against the cylinder wall (See Figure 3).
7. Insert the Piston next. Use the Accumulator Sub-Assembly drawing (Figure 4) as a guide for the location of the T-Seal and wear bands.
8. Carefully place the T-Seal into its groove. Place the T-Seal's back-up rings next to the seal as shown and apply grease to the seal.
9. Apply grease to the wear band groove.
10. Place the wear band into the groove and grease again. (This will help prevent the bands from coming off the piston, when it is being placed into the accumulator cylinder)
11. Carefully insert the Piston into the Cylinder. Do not allow the seals to scrape against the internal threads of the Cylinder.
12. As the Piston enters the Cylinder, it may require a "gentle nudge" to get the T-Seal started into the bore. Use a soft or rubber mallet to strike the piston. **Do Not Use A Metal Hammer.** Strike the Piston side to side, across the diameter, to avoid binding of the Piston.

13. If a Piston Stop is used, it must be inserted next. Place grease in and around the holes that hold the nylon guides (this will help hold them in place). Place the nylon guides into the holes and insert the Piston Stop into the Cylinder.

    Note: The piston may have to be pushed lower into the Cylinder to accommodate the length of the Piston Stop

14. Install the Upper Head. Using the Accumulator Sub-Assembly drawing (Figure 4) as a guide, place the Back-Up Ring into the seal groove first. Carefully install the O-Ring next to the Back-Up Ring.

    CAUTION: ***Do not overstretch the "o-ring" or push the "o-ring" across the threads of the accumulator lower head.***

15. Apply grease to the O-Ring and Back-Up Ring.
16. Apply thread lubricant to the external threads of the Upper Head.
17. Carefully insert the Upper Head into the Cylinder. Do not allow the seals in the Upper Head to scrape against the internal threads of the Cylinder.
18. By hand, begin screwing the Upper Head into the Cylinder turning the Upper Head in a clockwise direction. A pry-bar may be used after the Upper Head has started correctly (See Figure 1).

    Note: The Cylinder is tapered to allow the seals to start into the cylinder bore without shearing them.

19. Continue screwing in the Upper Head until it is tight against the cylinder wall (See Figure 3).

The procedure is now complete and the Accumulator may be re-installed on the skid. It is recommended that a hydrostatic test be performed to check the integrity of the seals before replacing the accumulator on the skid. If no hydrostatic test is performed, use clean compressed air to push the Piston to the Lower Head.

After the Accumulator has been re-installed on the skid and all connections have been made, the nitrogen should be introduced into the Accumulator first. After the nitrogen has filled the top of the Accumulator, the hydraulic supply may be established (this will allow the system to act as if oil volume had been discharged from the hydraulic power unit)

For problems, which cannot be handled by our customers, we have qualified service personnel available upon request. If the need should arise, please feel free to contact:

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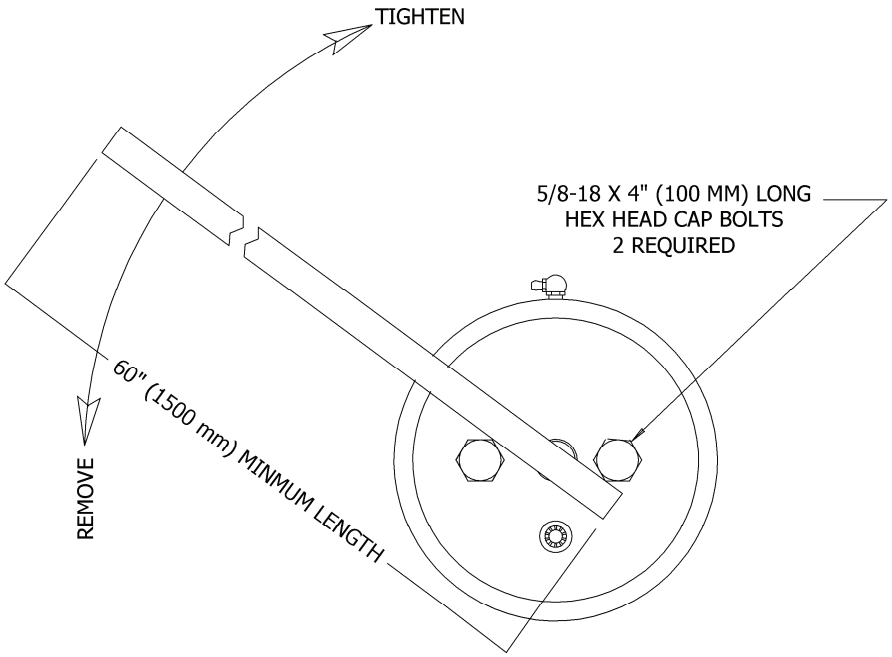


Figure 1: Accumulator Upper Head

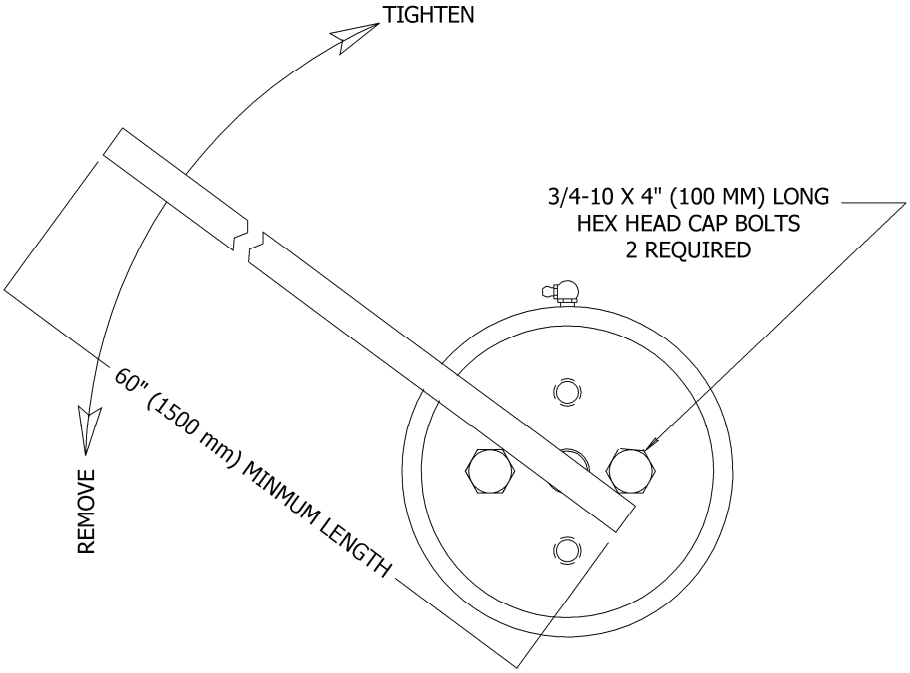
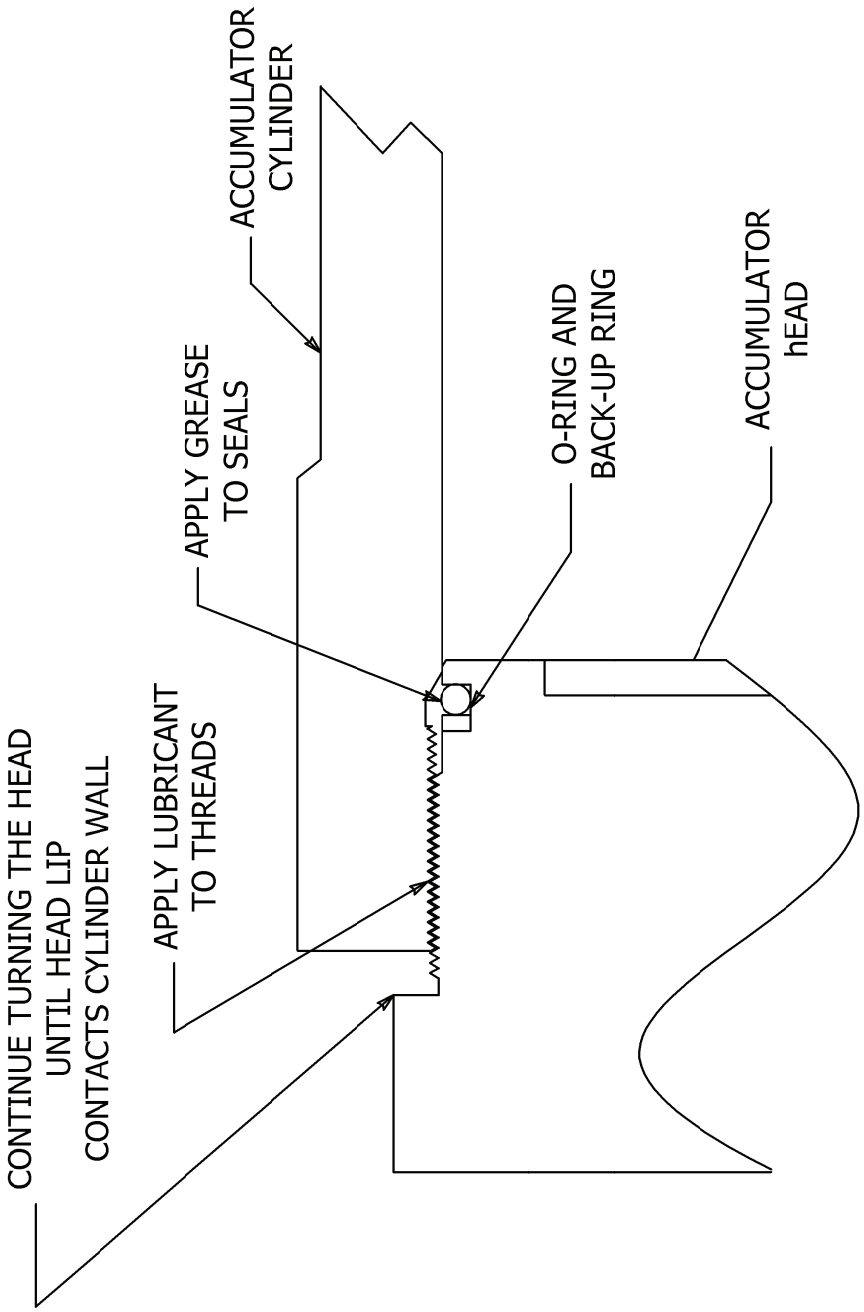


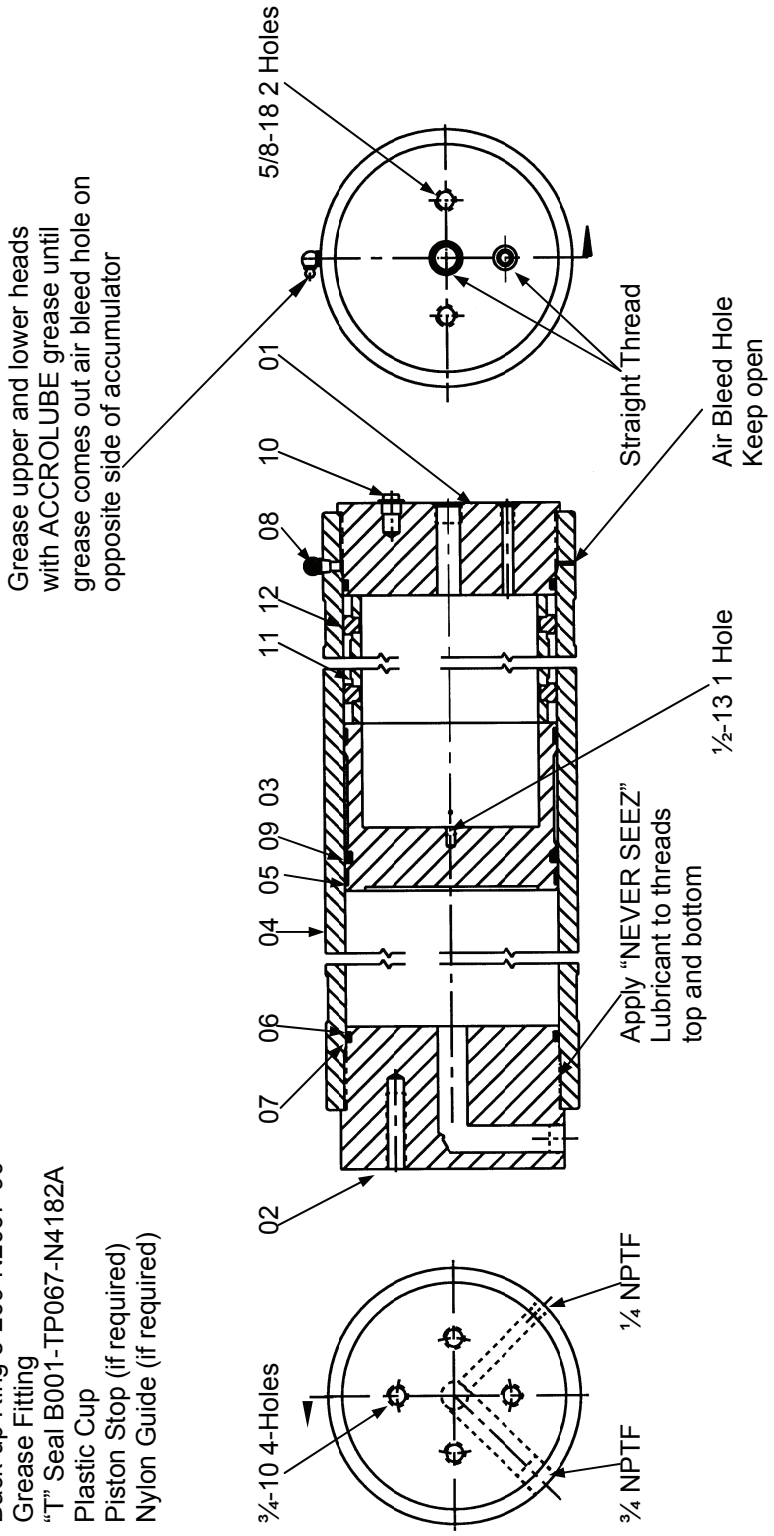
Figure 2 Accumulator Lower Head



Head to Cylinder Joint Figure 3

Head to Cylinder Joint Figure 3

Accumulator Service



Accumulator Sub-Assembly Figure 4

Pc	Qty.	Description
01	1	Upper Head
02	1	Lower Head
03	1	Piston
04	1	Cylinder
05	2	Wear Ring 79007-023
06	2	O-ring 568-269-479-70
07	2	Back-up Ring 8-269-N2067-90
08	2	Grease Fitting
09	1	"T" Seal B001-TP067-N4182A
10	2	Plastic Cup
11	1	Piston Stop (if required)
12	6	Nylon Guide (if required)

Accumulator Sub-Assembly Figure 4

Please visit our website for up to date product data.www.shafervalve.com