

## REPAIR PROCEDURES FOR P, LT AND LTD CYLINDERS

### Tools & Supplied required:

“Lubriplate” and hydraulic fluid matching the existing fluid in the system for topping off the reservoir when finished. **(Current standard fluid is Dexron III)**

A five- (5) gallon bucket to collect fluid from the cylinders.

Wrenches to disconnect hydraulic fittings.

Emery cloth.

Clean lint free cloths and hose caps.

Clean work surface (butcher paper on top of most surfaces works well), with a means of holding the cylinder in a fixed position for disassembly and re-assembly.

Safety legs supplied with each Advance unit.

### P& LT Series lifts:

(1) Snap ring tool (Waldes Truarc external type #S-660 or Industrial pliers #P-104.)

Cylinders hone (Craftsman glaze breaker #9K4633 or equivalent.)

### LTD Series lifts:

(1) Small screwdriver, (1) 1/8” Allen wrench and a cylinder hone.

### Cylinder Removal, P and LT Series units:

1. Raise the empty lift and settle it securely on its safety bars or leg.
2. Once settled securely, depress the down control an additional 20 seconds to relieve any pressure from the hydraulic system. Remove the power connection to the power unit and mark with a warning label or lock the connection out to prevent unintended reconnection. (Check your company lockout and tag Standard Operating Procedures.)
3. Disconnect the hydraulic hose from the cylinder and cap the hose to prevent contamination.
4. Remove the cylinder from the lift by freeing the upper pin and swinging the cylinder into an easily supported position, then lift from the assembly.
5. Place the hose connection end of the cylinder in a 5-gallon bucket and force the cylinder closed to drain the hydraulic fluid from the cylinder. Do not reuse the fluid unless you are sure it is contamination free by careful straining.

### Cylinder Removal, LTD Series units:

1. Follow steps 1-4, under “cylinder removal, P and LT Series units.
2. Remove the retaining ring from the outside of the lower cylinder pin.
3. Gently push the pin through the cylinder assembly and remove, being careful not to damage the pin surface.
4. Follow step 5, under “cylinder removal, P and LTD Series units.

### P & LT Series (piston style) Cylinder Disassembly:

1. Secure the cylinder with a rod through the clevis or cross tube. Do not use a vise, which will crush or otherwise damage the housing.
2. 3” I.D. Cylinders: Use a small screwdriver to remove the outside retaining ring in front of the cylinder bearing. Remove the spacer ring, slide the front bearing into the cylinder then remove the second retaining ring.

### **P & LT Series (piston style) Cylinder Disassembly: (Continued)**

3. 3-1/2" I.D. Cylinders: Use the snap ring pliers to compress the retaining ring, and continue to hold it compressed.
4. Pull out the rod, bearing and piston assembly. The retaining ring groove in the housing can cut the piston seal upon removal, clean the groove thoroughly before assembly.
5. Remove the hex nut or snap ring adjacent to the piston, then slide the piston and bearing off the rod. The hex nut can be very tight, if difficulty is encountered in removal a small amount of heat can be applied to help break the nut loose. Clean all the parts and place them on a clean surface to avoid contamination.

### **P & LT Series Re-packing and Inspection:**

1. Carefully inspect the entire housing with a flashlight, for any evidence of rust, scratches or surface blemishes. Small blemishes may be removed with fine emery cloth and larger faults will require the use of the hone listed on the previous page. Be sure thoroughly clean the housing when you are done to avoid contamination.
2. Do not become the victim of a false economy by using only part of a re-packing kit. Since you have invested in disassembling the cylinder, use all new packing parts and seals or the reused old parts may fail in the near future causing a repeat of the whole exercise.
3. Remove the rod wiper on the bearing by using a screwdriver to bend the seal inward to collapse and remove it. Inspect the groove.
4. Lubricate and insert a new wiper with your fingers, sliding it into its groove. Depending upon temperature, the rod wiper may slide in much easier if it is warmed in hot water, then dried, lubricated, and inserted. The bearing may now be slid back onto the rod.
5. Begin re-packing the piston by using a screwdriver to carefully remove the old backup rings and seal from the groove. The cylinder is also equipped with a wear ring that shall be removed at this time. Be careful to leave the grooves nick free and clean.
6. Place the static O-ring seal into the clean and dry groove on the cylinder rod. Lubricate the seal surfaces and the I.D. of the piston bore. Slide the piston back into position noting that the flat side, not the chamfered side, shall rest against the retaining ring or nut. Reinstall the retaining ring or nut using Loctite if the fastener is a plain nut; torque the nut to 600ft. /lbs.
7. Clean the grooves on the piston. Place the packing kits and wear ring in place into the clean and dry grooves. Lubricate the OD of the piston seals, wear ring and the housing snap ring grooves, then slide the entire assembly into the housing.
8. Re-assemble the bearing block in the reverse manner that it was disassembled. In all cases, be sure the retaining rings(s) are fully seated into their grooves or the cylinders will come apart when fully extended, causing an accident.

### **LTD Series Cylinder Disassembly:**

1. Secure the cylinder with a rod through the clevis or cross tube. Do not use a vise, which will crush or otherwise damage the housing.
2. Gently pull the cylinder rod out of the housing, when the rod cannot be pulled out any further, push the rod back in approximately 2 inches.

### **LTD Series Cylinder Disassembly (Continued):**

3. Using a quick motion, pull the rod assembly out of the housing by striking the piston against the bearing block assembly. (See page P 8 -13 for descriptions of parts). This process may need to be repeated several times to free a stubborn bearing assembly.
4. Once the rod has been removed from the housing, remove the retaining clip from the end of the rod. The piston may now be removed.
5. Remove all seals and inspect seal grooves for debris, take care to clean each groove carefully. Once parts are disassembled and clean, place all parts on a clean surface to avoid contamination.

### **LTD Series Re-packing and Inspection:**

1. Carefully inspect the entire housing with a flashlight, for any evidence of rust, scratches or surface blemishes. Small blemishes may be removed with fine emery cloth and larger faults will require the use of a cylinder hone. Be sure to thoroughly clean the housing when you are done to avoid contamination.
2. Do not become the victim of a false economy by using only part of a re-packing kit. Since you have invested the time in disassembling the cylinder, use all the new packing parts and seals. Any used parts may fail in the near future causing a repeat of the whole exercise.
3. Lubricate all seal components before attempting to install them.
4. Install the quad ring and backup rings on the inside and outside of the bearing block. Be certain they are orientated as illustrated on page P 8-13, items # 8 and 9.
5. Lubricate the cylinder rod assembly and insert it into the bearing block assembly as shown on page P 8-13.
6. Install the static O-ring seal in the groove provided on the rod end and install the piston assembly and retaining ring
7. Clean the grooves on the piston. Place the packing kits and wear ring in place into the clean and dry grooves. Lubricate the OD of the piston seals and the housing snap ring grooves then slide the entire assembly into the housing.
8. Re-assemble the bearing block in the reverse manner that it was disassembled.  
**Warning!** In all cases, be sure the retaining ring is fully seated into the grooves or the cylinder will come apart when fully extended, causing an accident.