

## Repair Procedures for 3", 3-1/4, 3-1/2", & 4" Cylinders

Cylinders for models 1045, 1055, 6568, 2000K & L, T-Series, 3000, 4000, 6000

### Tools & Supplies Required:

- (2) Small screwdrivers to remove retaining rings and rod wipers.
- (1) snap ring tool (Waldes Truarc external type #S-660 or Industrial pliers #P-104.)
- A (5) gallon bucket to collect fluid from the cylinders.
- Wrenches to disconnect hydraulic fittings.
- Cylinder hone (Craftsman glaze breaker #9K4633 or equivalent).
- 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 cylinder end fixed position for disassembly and assembly.
- "Lubriplate Grease" and hydraulic fluid matching the existing fluid in the system for topping off when finished.
- Safety leg supplied with each Advance unit.

### Cylinder Removal:

1. Raise the empty lift and settle it securely on its safety leg. (Note that models 1045 & 1055 are the only units that will allow cylinder removal in the fully lowered position.)
2. Once settled securely, depress the down button an additional 20 seconds to relieve any pressure from the cylinders. Remove the power connection to the power unit and mark with a warning label or lock the connection out to prevent unintended reconnection.
3. Disconnect the hydraulic hoses from the cylinders, on units made after April 1<sup>st</sup> 2000 remove the internal "Hexagonal" flow control from the cylinder fitting nipple and cap the hose ends to prevent contamination, refer to page P 8-12 for proper orientation.
4. Remove the cylinder from the lift by freeing the upper pin first and swinging the cylinder into an easily supported position then remove the lower pin.
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.
6. Note that if you are going to repack one cylinder on a lift, it is usually a good idea to do all cylinders at the same time. Packing's generally wear at the same rate and if you only repack one cylinder, you may have to pull the lift out of service soon thereafter to do the others.

### 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. Using snap ring pliers (or screwdrivers with spiral type retaining rings); remove the retaining rings in front of the cylinder bearings. Some cylinders also have spacer rings, which are easily removed if the bearing is pushed back into the housing slightly, and these units will have a second retaining ring to remove.

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

3. Carefully remove any debris from the retaining grooves, and then pull out the entire rod, bearing, & piston assembly. Note that the groove in the cylinder housing has a sharp edge on the front side and a beveled back edge. The sharp edge is necessary for proper snap ring retention and will probably cut the packing when it is pulled out, but the beveled back edge will allow the new packing to slide in uncut.
4. Remove the hex nut or snap ring adjacent to the piston, then slide the piston and bearing off of the rod. If the hex nut is assembled with Loctite, a small amount of heat may help break the nut loose. Be sure that all components are placed on clean surfaces to avoid contamination.

### **Repacking and Inspection:**

1. Carefully inspect the entire housing with a flashlight, looking 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 above. 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 repacking kit. Since you have invested in disassembling the cylinder, use all new packing parts and seals of 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 and remove any debris.
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 repacking the piston by using a screwdriver to carefully remove the old backup rings and seal from the groove. Newer cylinders are also equipped with a wear ring that should be removed at this time. Be careful to leave the grooves nick free and clean.
6. Lubricate the new backup rings, seal and wear ring and gently stretch them into place. Note that the seal fits between the rings.
7. Inspect the static seal groove on the cylinder rod, then lubricate the groove and slide a new static seal in place. Slide the piston back into position noting that the flat side, not the chamfered side, should rest against the retaining ring or nut. Reinstall the retaining ring or nut using Loctite if the fastener is a plain nut.

### **Assembly:**

1. Liberally lubricate the outside of the new packing kit and the groove in the cylinder housing, align the piston carefully and slide the entire assembly back into the housing.
2. With 3-1/2" & 4" cylinders you may simply compress the retaining ring and slide the bearing into position and release the ring into its groove. With 3" cylinders you must slide the bearing beyond its normal position to install the inner retaining ring, insert the spacer washer, then install the outer ring. In all cases be sure that the retaining rings are fully seated in their grooves or the cylinders will come apart when fully extended, causing an accident.

## Reinstallation:

1. Remount the cylinders in the lift.
2. On units made after 4/1/00 reinstall the "Hexagonal" flow controls in the cylinder-housing nipple, care must be taken to insure the flow controls are installed with the flat side visible and the grooved side down as illustrated below.
3. Reattach the hoses with special care to avoid contamination.
4. Clean up any spilled oil to insure that it is not later misinterpreted as a new oil leak.
5. Connect the electrical power and cycle the lift several times, holding the down button an extra 20 seconds each time to help bleed air from the hydraulic system. This will eliminate any "Spongy" operation. Check the oil level and top off ½" from the top of the reservoir with the same type fluid originally used.
6. The lift is now ready to go back into service.

