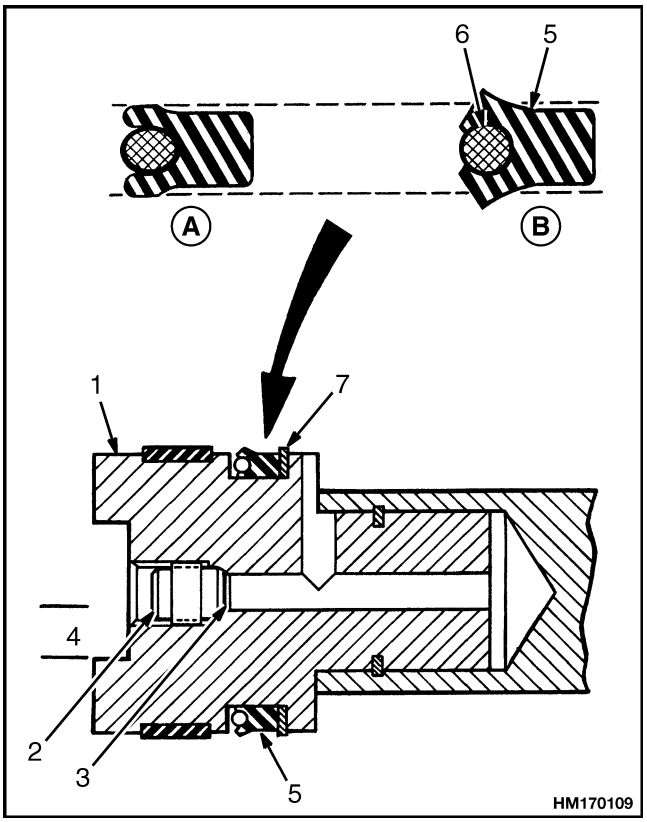
3. Remove the snap rings and washers from the top of each main lift cylinder. Remove the cylinder clamps near the top of each lift cylinder. Each cylinder clamp is fastened to the top crossmember of the inner mast by two capscrews and washers.

4. Support the cylinder. Connect a crane to the top of the inner mast using chains. Raise the inner mast from the outer mast approximately 30 cm (12 in.). Disengage the piston rod ends of lift cylinders from the top crossmember of the inner mast. Remove the lift cylinders from the mount plates at the bottom of the outer mast.



A. INSTALLED

B. NOT INSTALLED

1. PISTON AND ROD ASSEMBLY
2. CHECK VALVE
3. O-RING
4. INLET AND OUTLET PORT
5. SINGLE-LIP SEAL
6. O-RING
7. BACKUP RING

Figure 19. Internal Check Valve and Single-Lip Seal

DISASSEMBLE

WARNING

Use slings and a crane to handle and disassemble the lift cylinders of most lift trucks. Make sure that the crane and slings can lift the load correctly. See Table 2 for weight guide.

CAUTION

Carefully disassemble and assemble the lift cylinders so that the piston rods and sliding surfaces are not damaged.

NOTE: Disassembly of the main lift cylinders and the free-lift cylinder is similar. All of the lift cylinders are disassembled from the rod end of the cylinder shell.

1. Loosen the retainer with a spanner. Disconnect the retainer from the shell.

2. Remove the protective cap from the inlet and slide the rod and piston assembly from the shell. Drain the hydraulic oil into a container.

NOTE: To remove the retainer, the piston rod and piston assembly must be disassembled if the lift cylinder is the type shown in Figure 18. Use the following procedure:

   a. Put a round bar through the 7.9 mm (0.31 in.) hole in the piston. Hold the rod in a vise or clamp so that it does not turn. Use the round bar and turn the threaded piston from the piston rod.

   b. If an adhesive was used on the threaded rod and piston, heat the rod to a maximum of 170 to 225°C (300 to 400°F) to loosen the adhesive.

3. Remove the retainer from the piston rod. Remove and discard the O-rings, seals, and bearings.

4. Remove the internal check valve from the base of the lift cylinder.

5. Clean all the parts. Check the sliding surfaces for damage. Repair or replace any damaged parts.

ASSEMBLE

NOTE:
- Lubricate all internal parts of the lift cylinder with hydraulic oil during assembly.
- Use new O-rings, seals, and bearings. Apply lubricant (hydraulic oil) during assembly. Packing lubricant (Part No. 186061) is also available.
- Make sure the single-lip seal assemblies are installed with the O-ring toward the base of the lift cylinder. (See Figure 19.)

⚠ CAUTION

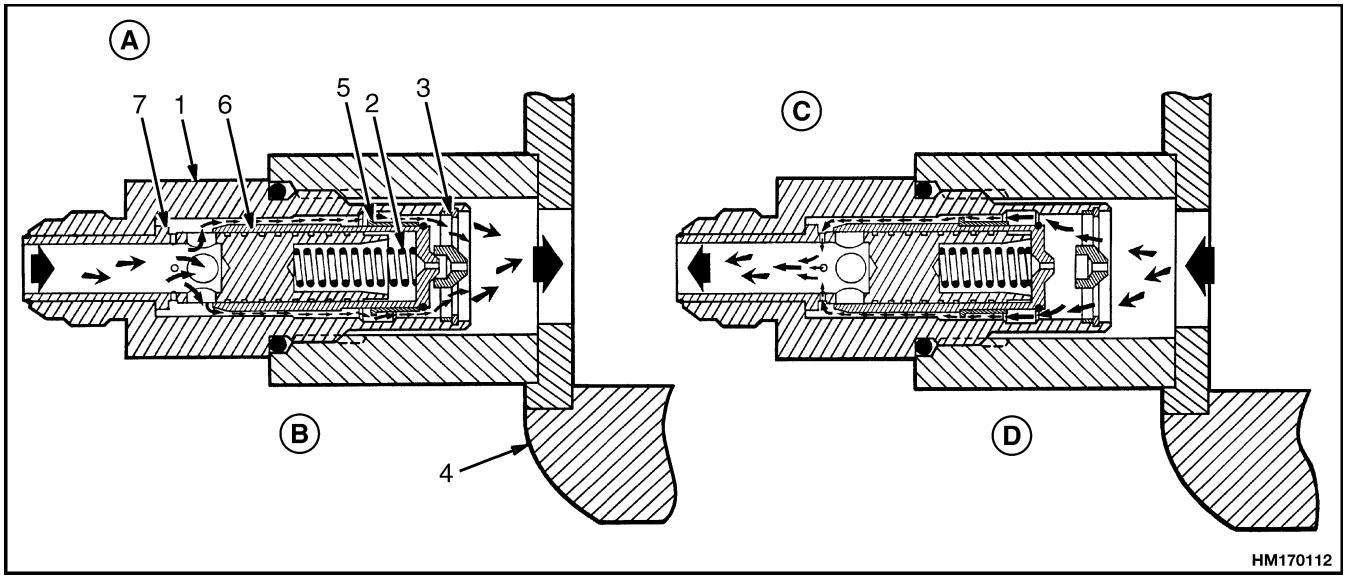
A difficult and important step in assembling lift cylinders is the correct installation of the seals. Most lift cylinder maintenance is caused by seal leaks.

1. Install the internal check valve, if installed. Make sure the arrow on the internal check valve is toward the base of the piston.
2. Install the wear ring, single lip seal, and backup ring onto the piston assembly. If a spacer sleeve is used, install it. Use shim material and a clamp as a guide to move the single-lip seal over the threads of the shell.
3. Carefully push the piston and rod assembly into the shell. Release the clamp on the seal when the seal travels past the threads of the shell.

NOTE: When a main lift cylinder of the type shown in Figure 18 is assembled, use the following procedure:

   a. Install the seal ring and wiper ring into the retainer. Assemble the retainer onto the piston rod.

   b. Install the piston to the threaded part of the piston rod. Use a round bar through the hole in the piston and tighten the piston to the piston rod. Hold the piston rod in a vise or clamp by the two flats on the top end of the piston rod.



A. FREE FLOW
B. LIFTING
C. RESTRICTED FLOW
D. LOWERING

1. VALVE BODY
2. SPRING
3. WASHER
4. CYLINDER
5. ORIFICE SLEEVE
6. PLUNGER
7. MAIN SLEEVE

Figure 20. Lowering Control Valve