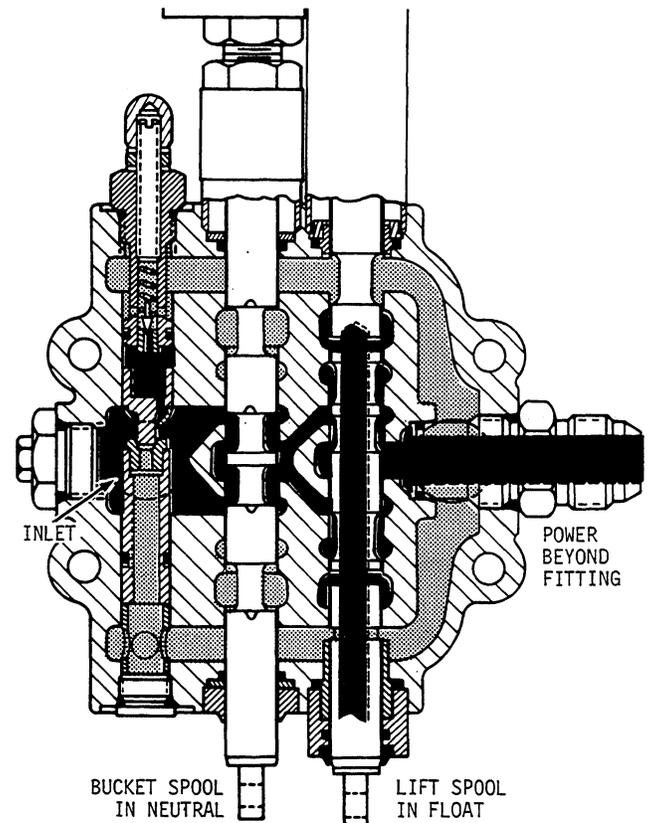


Oil Flow - Lift Spool in Float

When the lift spool is in the float position, oil from the pump flows through the open center passage to the outlet. The two work ports are directly connected through the hollow center of the spool. Openings next to the narrow, outer lands permits oil to enter the hollow center of the spool. Oil in the lift cylinders is then free to flow through the spool in either direction. Another opening which is positioned in the return passage allows a small portion of oil to be diverted to the reservoir. The loader frame will lower because of its weight if raised, or follow the contour of the ground as in back filling.



- PUMP FLOW
- OIL TRANSFERING BETWEEN ENDS OF LIFT CYLINDERS
- ▨ STATIC OIL

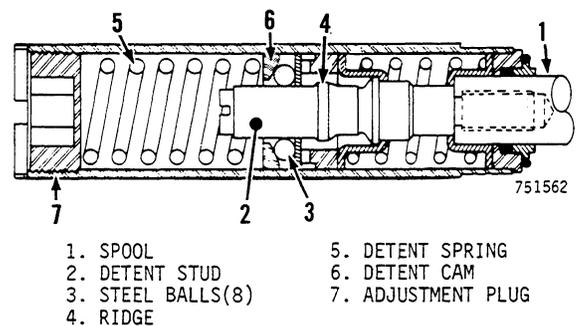
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Figure 6 - Oil Flow - Lift Spool in Float

Float Detent

The float detent holds the lift spool in the float position mechanically. Refer to Figure 7. As the spool is pushed into the valve body, the detent stud forces the steel balls outward, allowing the spool to be positioned in float. When the ridge on the detent stud passes the balls, the detent spring and the tapered surface of the detent cam hold the balls in the groove on the stud, preventing the spool from returning to neutral when the control lever is released. A light tug on the control lever will allow the spool to return to neutral.

mined by the position of the adjustment plug in the detent housing.



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Figure 7 - Float Detent (Spool in Neutral)

The amount of pressure required to engage or disengage the detent is deter-

Secondary Relief Valve

Secondary relief valve are connected to the A and B ports of the bucket spool.

The relief valves protect the hydraulic circuits, and the bucket and related linkage from damage due to excessive pressure when the bucket spool is in Neutral.

Refer to Figure 8. Assume that the loader arm is being raised and the bucket is held by an immovable object and the following actions take place.

1. Pressure in rod end of bucket cylinders rises to pressure setting of relief valve.
2. Relief valve poppet is unseated.
3. Pistons move in bucket cylinders (allowing bucket to move) because oil can be displaced from the pistons through the relief valve.
4. Poppet closes when bucket moves past the obstruction.

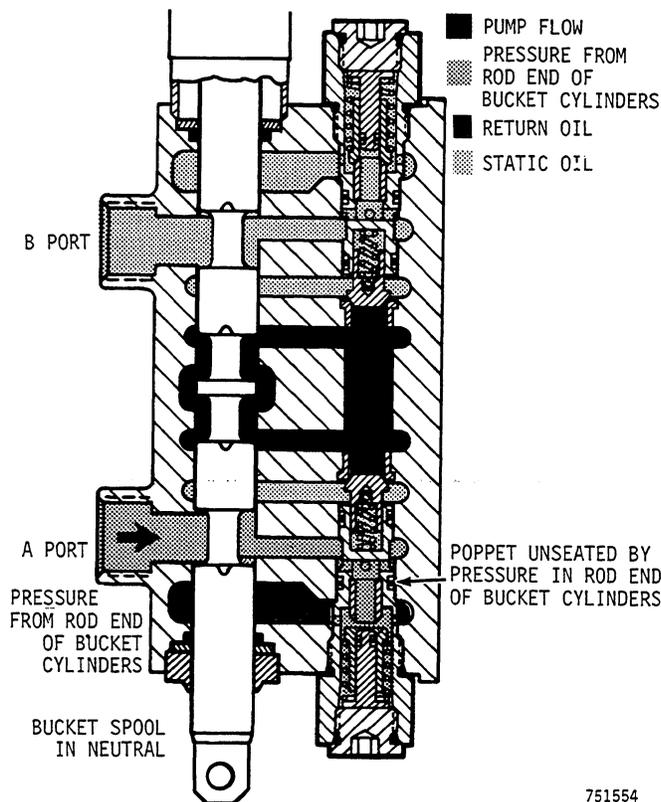


Figure 8 - Secondary Relief Valve Operation

SERVICING THE LOADER CONTROL VALVE

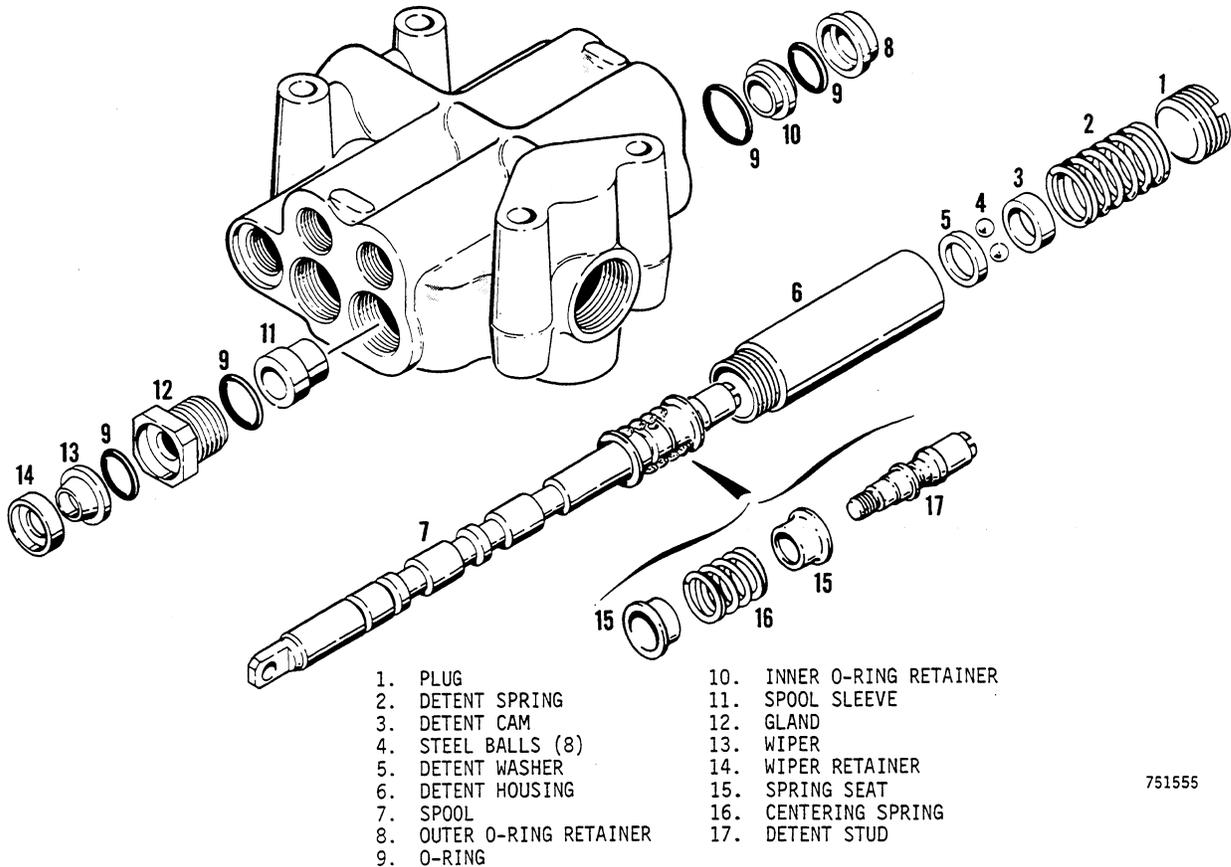
Removal

1. Remove accumulated dirt from the control valve and surrounding area.
2. Rest the loader bucket flat on the floor.
3. With the engine stopped, move the control lever(s) in all directions to equalize circuit pressures.
4. Swing battery out of way for easy access to the control valve.
5. Disconnect control linkage at the spools. Disconnect magnetic detent wiring from harness.
6. Remove the two outlet tubes.
7. Loosen lift cylinder tube clamp on frame. Disconnect cylinder tubes and hoses at control valve.
8. Disconnect inlet hose at tee fitting.
9. Remove nuts and washers from valve mounting bolts and hold valve in place. Then remove spacers and washers from top of valve.
10. Disengage valve from lift cylinder tubes and remove valve.

Disassembly

Lift Spool

1. Remove the detent adjusting plug and spring from the detent housing. Figure 9.
2. Remove the detent spring, cam, steel balls (8), and detent washer from the detent housing.



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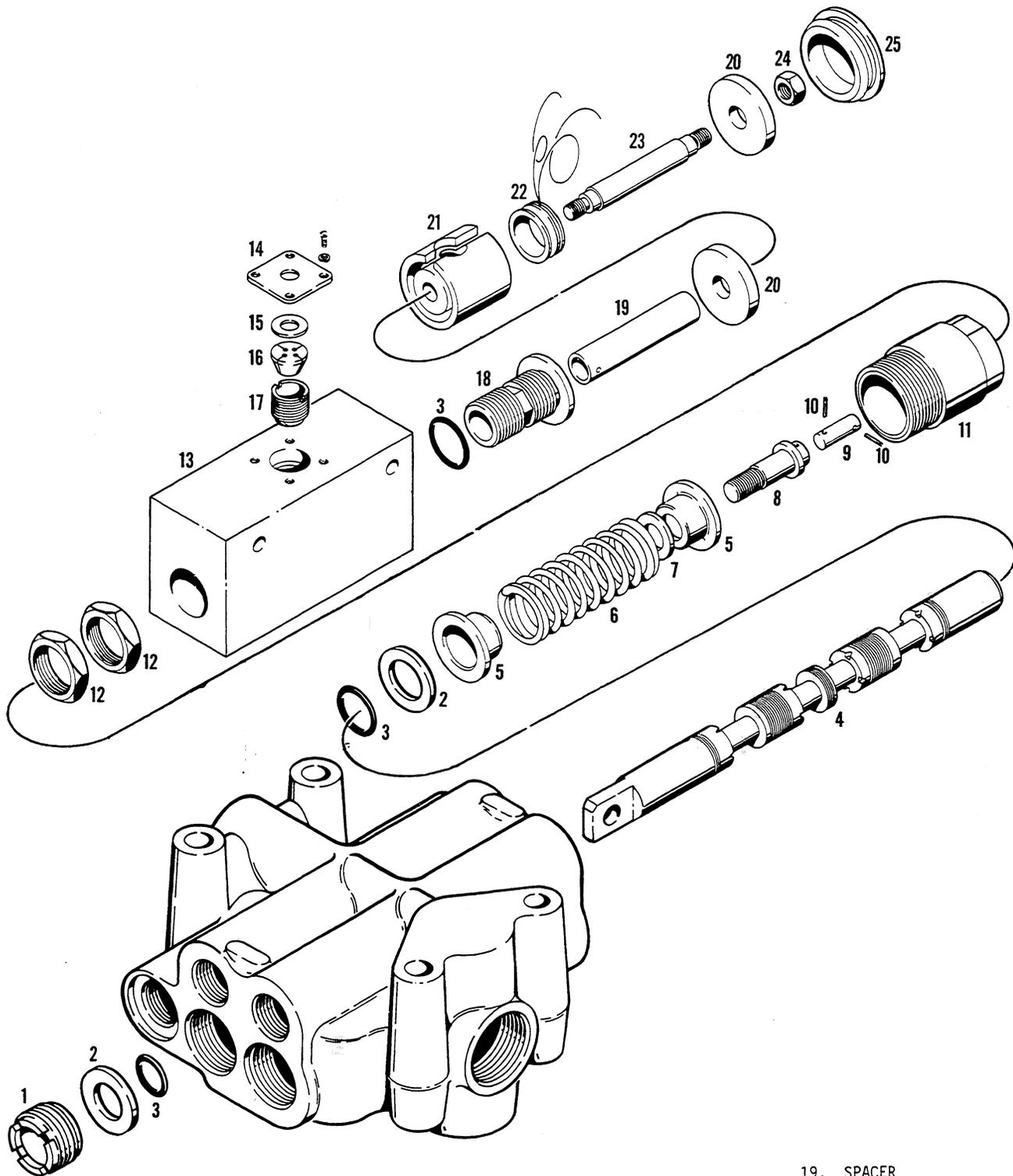
Figure 9 - Lift Spool

3. Unscrew detent housing from control valve.
4. Grasp spool centering spring and pull spool from valve body. Then remove the two O-ring retainers and O-rings from the spool.
5. Do not remove the centering spring unless 271 (red) Loctite is available for use during assembly. To remove the spring, secure the spool in a soft jawed vise and install the spring compressor shown in Figure 1. Compress spring and unscrew the detent stud. Remove spring compressor from spring.
6. Remove spool gland and sleeve from control valve. Then remove the wiper retainer, wiper and O-rings from the gland.
7. Do not remove the spool eye. The eye and an O-ring are not serviced.

Bucket Spool

NOTE: The bucket spool can be removed without removing the lift spool detent housing. Loosen the detent housing lock nut; then unscrew spring cap and pull spool from valve body and proceed to step 3.

1. Unscrew spring cap from valve body and pull spool from body.
2. Remove gland, O-ring retainer and O-ring from valve body.
3. Loosen spring cap lock nut and unscrew connector from spring cap.
4. Secure spring cap in a vise with the spool horizontal. Be careful not to distort the spring cap.
5. Pull the connector/detent assembly away from the spring cap. Push the spool into the spring cap to expose the link to spacer roll pin and drive the pin out of these parts. Have someone hold the detent housing to prevent it from falling to the floor.



- | | | | |
|---------------------|-----------------|-----------------------------|------------------|
| 1. GLAND | 7. SPACER | 13. DETENT HOUSING | 19. SPACER |
| 2. O-RING RETAINER | 8. SPRING SCREW | 14. COVER | 20. WASHER |
| 3. O-RING | 9. LINK | 15. WASHER | 21. COIL HOUSING |
| 4. SPOOL | 10. ROLL PIN | 16. SEAL | 22. COIL |
| 5. SPRING SEAT | 11. SPRING CAP | 17. COIL HOUSING LOCK SCREW | 23. DETENT STUD |
| 6. CENTERING SPRING | 12. LOCK NUT | 18. CONNECTOR | 24. NUT |
| | | | 25. PLUG |

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Figure 10 - Bucket Spool

6. Remove the spring cap.
7. To remove the centering spring, secure the spool in a soft jawed vise and install the spring compressor illustrated in Figure 1. Use a pair of pliers or vise grips and remove the spring screw. Use care not to distort end of screw. Remove spring compressor from spring.

NOTE: Do not disassemble the detent assembly unless necessary.

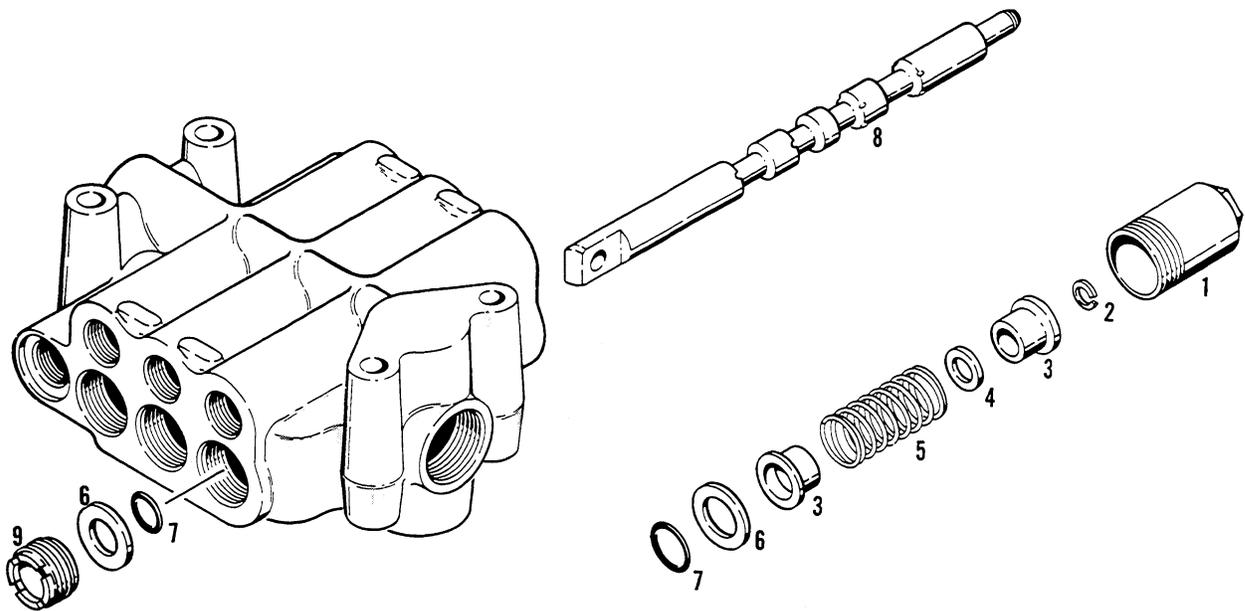
8. Remove plug from detent housing. Push the detent stud in until the washer touches the coil housing. Grasp spacer with vise grips and remove nut from detent stud.
9. Remove the cover, washer and seal from the detent housing.
10. Loosen coil housing lock screw enough to allow the coil housing to be removed. Remove the washer and coil housing assembly. Be sure coil leads remain in

slot in coil housing or the leads may be cut off during removal.

11. Remove detent stud and spacer assembly.
12. Remove lock nuts from connector and remove connector. Check condition of O-ring on connector and replace if necessary.

Clam Spool

1. Unscrew spring cap from valve body.
2. Grasp the spool centering spring and pull spool from valve body. Then remove O-ring and O-ring retainer from spool.
3. To remove the centering spring, secure spool in a soft jawed vise and install the spring compressor illustrated in Figure 1. Compress the spring and remove snap ring. Remove spring compressor from spring.
4. Remove spool gland, O-ring retainer and O-ring from valve body.



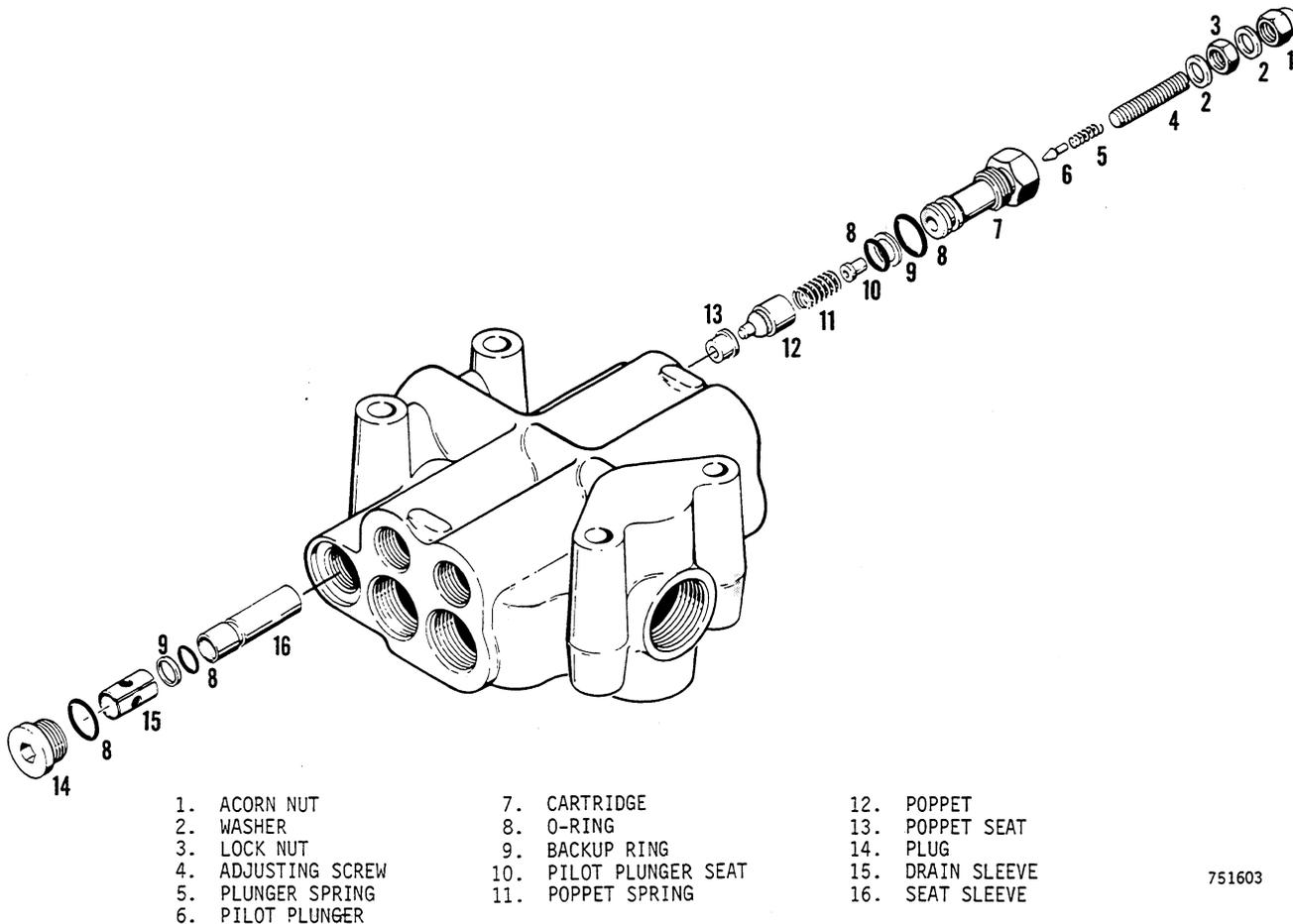
- | | |
|---------------------|--------------------|
| 1. SPOOL CAP | 6. O-RING RETAINER |
| 2. SNAP RING | 7. O-RING |
| 3. SPRING SEAT | 8. SPOOL |
| 4. SPACER | 9. GLAND |
| 5. CENTERING SPRING | |

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Figure 11 - Clam Spool

Main Relief Valve

1. Unscrew the main relief valve cartridge from the valve body. Then pull cartridge from valve body, Figure 12.
2. Remove poppet spring and poppet from valve body.
3. Remove plug from opposite end of valve body and remove the drain sleeve and seat sleeve from the relief valve bore. Then remove the O-ring from the plug and O-ring and backup ring from the seat sleeve. Do not remove the poppet seat from the seat sleeve unless it is to be replaced.
4. Disassemble the relief valve cartridge.
 - a. Remove the acorn nut and loosen the lock nut. Then remove the adjusting screw.
 - b. Remove the seal washers from the adjusting screw.
 - c. Remove the spring and pilot plunger from the relief valve cartridge. Do not remove the plunger seat unless it is to be replaced.



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Figure 12 - Main Relief Valve