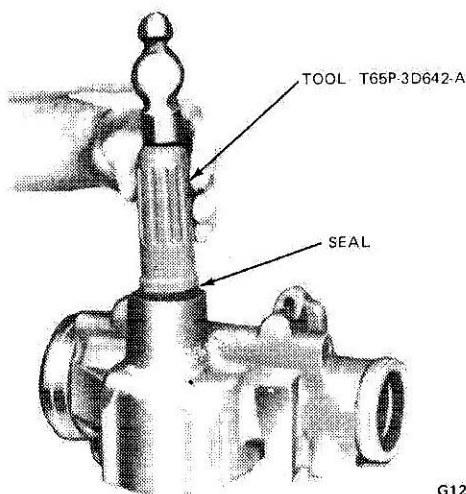


7. To remove a damaged port seat, turn it two turns into the seat with a 5/16-18 inch U.S. thread (coarse) tap. Coat the end of the tap with petrolatum to prevent chips from entering the passage.
8. Install a bolt and nut with a flat washer into the tapped hole (Fig. 27).
9. Hold the bolt to keep it from turning and tighten the nut to extract the seat. Discard the seat.
10. Remove the check valve and spring from the inlet port.
11. Install the spring, check valve and a new seat in the inlet port. Use Tool T65P-3548-A to drive the seat into place (Fig. 28).
12. Install the outlet port seat as described in Step 11.
13. Do not remove the stop ring from the piston bore. Damage to the ring will necessitate replacing the housing assembly.

ADJUSTER PLUG

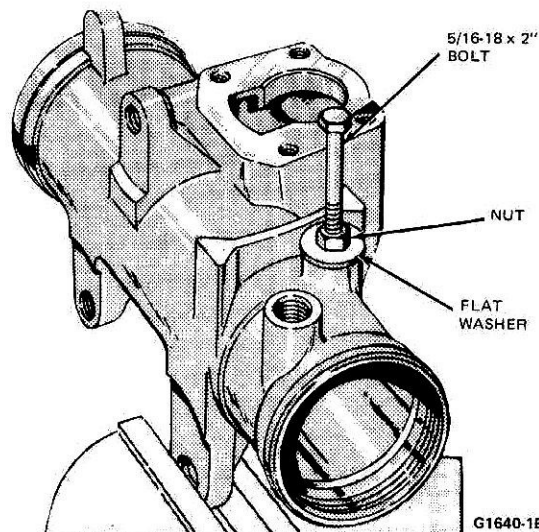
Disassembly and Assembly

1. Remove the adjuster plug from the stub shaft (Fig. 17).
2. Pry the thrust bearing retainer off the adjuster plug as shown in Fig. 29. **Do not score the needle bearing bore.** Discard the retainer.
3. Remove the spacer, thrust bearing, races, and O-ring from plug (Fig. 17). Discard the O-ring.
4. If it is necessary to replace the roller bearing, remove the dust seal retaining ring. Working from the spacer end of the adjuster plug, remove the roller bearing, oil seal and dust seal as shown in Fig. 31. Do not remove the roller bearing if it is not damaged. Pry the dust seal and oil seal from the adjuster plug with a screwdriver.
5. Place a new roller bearing on Tool T65P-3D525-A with the bearing manufacturer's identification facing toward the tool.
6. Insert the bearing and tool in the bore. Drive the bearing into the plug until it is flush with the bottom surface of the stub shaft seal bore.



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FIG. 26 Installing Sector Shaft Seal



G1640-1B

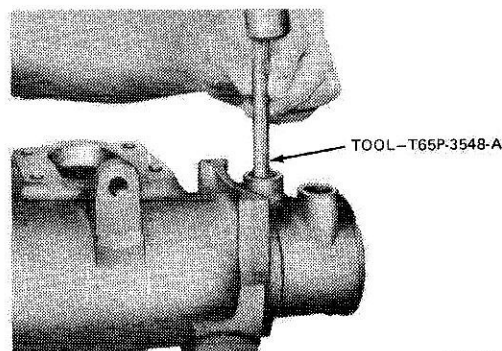
FIG. 27 Removing Port Seat

7. Lubricate a new oil seal with power steering fluid and install the seal with Tool T65P-3D526-A, pressing it into the plug far enough to provide clearance for the dust seal and the snap ring (Fig. 32).
8. Lubricate a new dust seal with power steering fluid and install it with its smooth rubber surface facing out.
9. Install the snap ring. **Be sure the ring is properly seated.**
10. Lubricate a new O-ring seal with Vaseline and install it on the adjuster plug.
11. Install the thrust bearing outer race, thrust bearing inner race, and thrust bearing spacer on the adjuster plug (Fig. 30).
12. Install a new bearing retainer by carefully tapping on the flat surface of the retainer (Fig. 33).

STUB SHAFT AND ROTARY VALVE ASSEMBLY

Disassembly

Do not disassemble the valve (Fig. 34) unless the components are contaminated or the dampener O-ring must be replaced.



G1639-1A

FIG. 28 Installing Inlet Port Seat

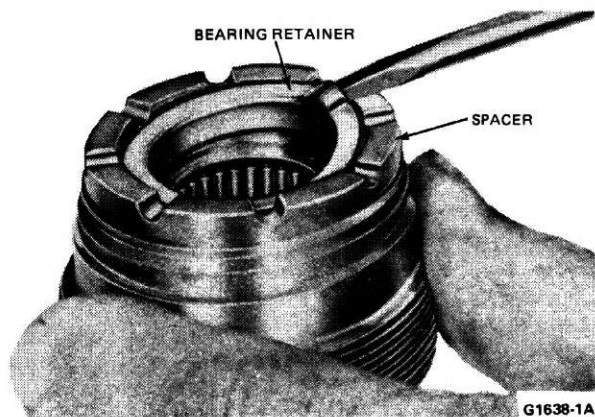


FIG. 29 Removing Thrust Bearing Retainer

1. Place the valve upside down on the workbench and tap the torsion bar end until the torsion bar cap separates from the valve body (Fig. 35). Discard the cap-to-body O-ring.
2. Grasp the stub shaft and push it down through the valve body until the drive pin hole is visible.
3. Tilt the stub shaft so the drive pin disengages from the spool. Remove the stub shaft from the valve body and spool assembly.
4. Slide the spool out through the top of the valve body. **Removing the spool through the bottom may jam or damage it.**

Assembly

Only the O-ring and Teflon Seals can be replaced.

1. Dip the dampener O-ring in power steering fluid and install it on the spool. Insert the spool into the body using a turning motion.
2. Push the spool all the way to the bottom of the valve body. Depress the dampener O-ring with fingertips to prevent it from being cut. Be sure the spool drive pin hole is located directly opposite the deep valve body notch. This will correctly position the cap notch to the body pin.
3. Insert the stub shaft into the spool with the drive pin in line with the mating spool hole.

4. Insert the drive pin into the hole and pull the assembly into the valve body, keeping the cap slot and body pin aligned. When the cap seats correctly in the valve body, the top surface of the cap should be at least 3/32 inch below the deep body notch.
5. Replace the cap-to-body O-ring.

RACK PISTON

Disassembly and Assembly

1. Cut the Teflon ring and O-ring from the piston.
2. Place the assembly on a clean, lint-free cloth and remove the screws that attach the ball return guide clamp to the rack piston. Remove the clamp (Fig. 36).
3. Remove the ball return guides from the rack-piston.
4. Remove Tool T65P-3D517-A from the piston and extract the remaining balls.
5. Thoroughly clean all parts with solvent.
6. Lubricate a **new** O-ring and Teflon ring. Install the O-ring on the piston being careful not to twist it. Slide the Teflon ring into place being careful not to stretch it any more than is necessary.
7. Slide the worm (Fig. 37) all the way into the rack-piston. Slowly rotate the worm counterclockwise and feed 17 balls, alternating black with silver balls, into the hole nearest the Teflon ring.

Apply petrolatum liberally to one of the ball return guides and install both halves of the guide on the rack-piston. Install the remaining 5 balls alternating black with silver balls through the holes in the rack-piston. Install the ball return guide clamp with screws and lock washers. Torque the screws to specification.

8. The worm groove has a high point in the center. When the rack-piston passes over this high point, preload must equal 1 to 4 in-lb. To adjust preload, clamp the rack-piston in a soft-jawed vise with the worm shaft pointing up. Do not make the vise too tight or it will distort the assembly.
9. Place the valve assembly on the worm, engaging the worm drive pins. Rotate the worm until it

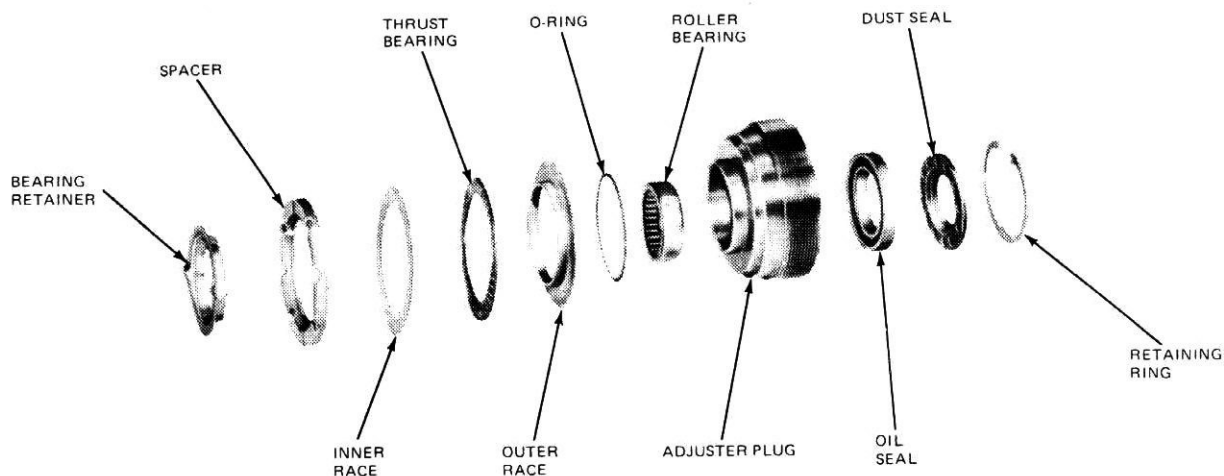
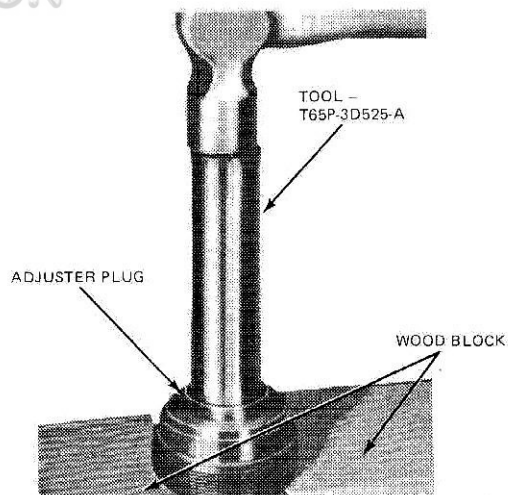
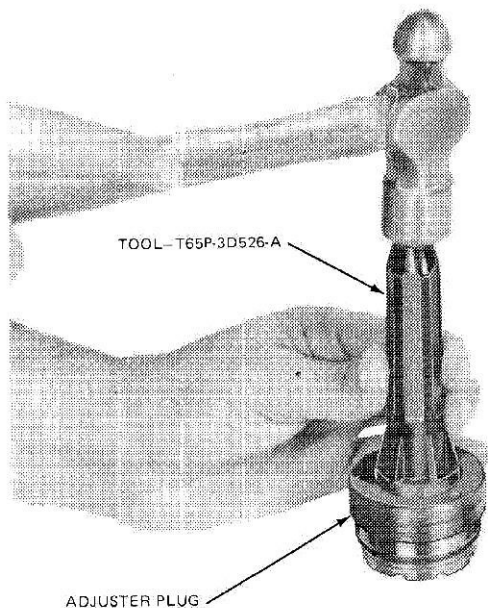


FIG. 30 Adjuster Plug Disassembled



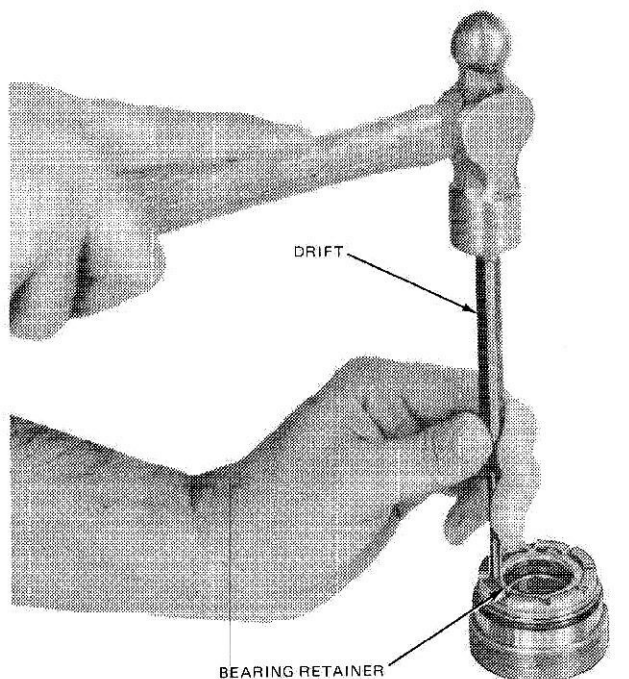
G1636-1A

FIG. 31 Removing or Installing Roller Bearing



G1812-1A

FIG. 32 Installing Oil Seal in Adjuster Plug



G1813-1A

FIG. 33 Installing Thrust Bearing Retainer

extends one and one-quarter inches from the rack piston to the thrust bearing face. **This is the center position.**

10. Place an in-lb torque wrench with a 3/4-inch deep wall 12-point socket on the stub shaft, and rotate the shaft through an arc of approximately 60 degrees in both directions several times. Take a torque reading. The highest average reading obtained with the worm rotating should be between 1 to 4 in-lb.
11. If the reading is too high or too low, install a new worm and rack piston to obtain a suitable reading.
12. Remove the valve assembly from the worm and the rack-piston from the vise.
13. Insert Tool T65P-3D517-A into the plug end of the rack and piston until it contacts the worm shaft (Fig. 38). Apply pressure on the tool while rotating the worm shaft out of the piston and rack. Leave the tool in place until the piston is installed in the housing.