

# Power Steering Gearbox

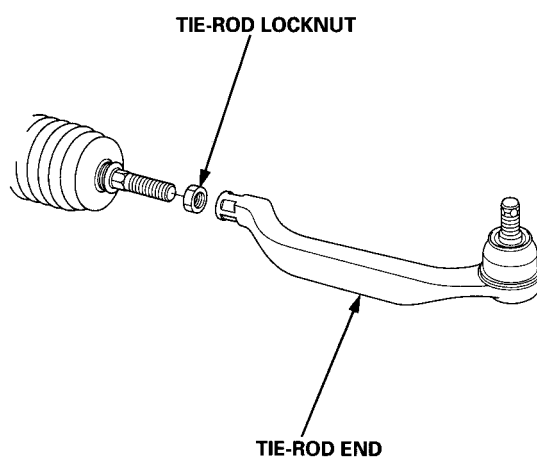
## Disassembly

### Steering Rack Disassembly

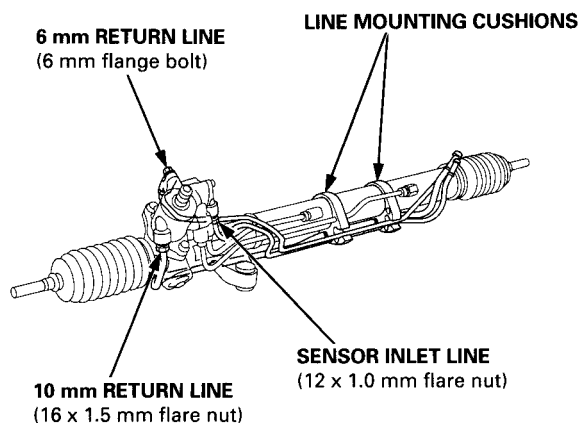
NOTE:

- Before disassembling the gearbox, wash it off with solvent and a brush.
- Do not dip seals and O-rings in solvent.

1. Remove the steering gearbox (see page [17-30](#)).
2. Remove the both tie-rod ends.

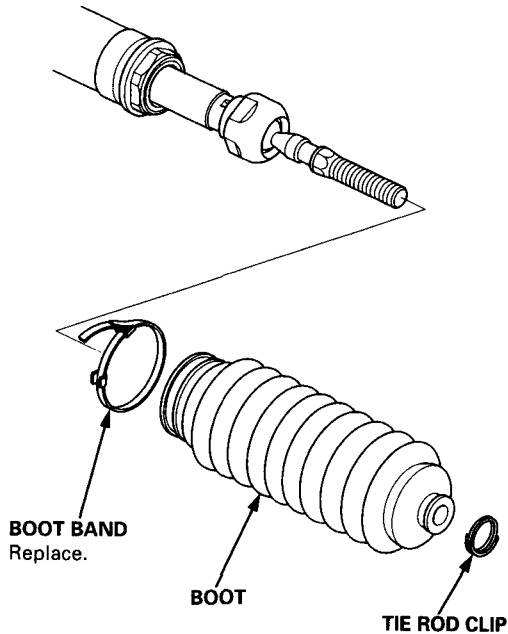


3. Remove the three lines (sensor inlet line, 10 mm return line and 6 mm return line) from the valve body unit.
4. Remove the line mounting cushions.





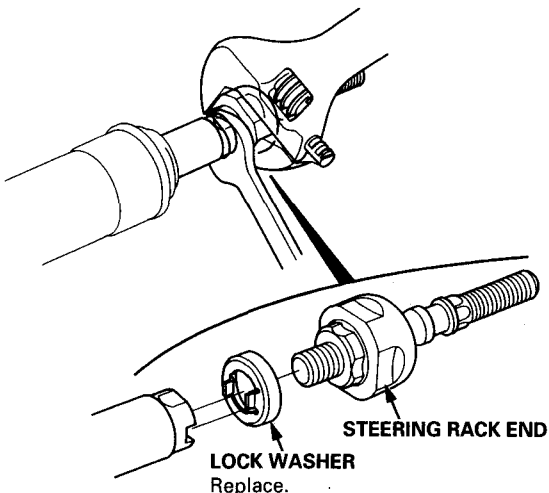
5. Remove the boot bands and tie-rod clips. Pull the boots away from the ends of the gearbox.



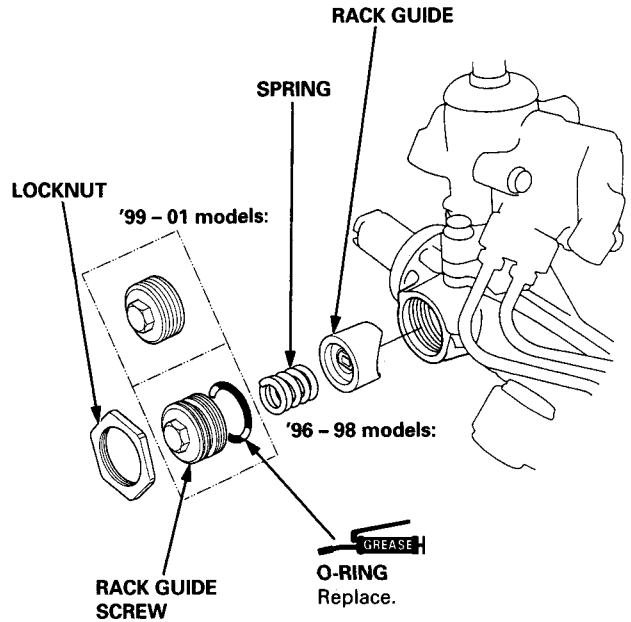
6. Hold the steering rack with one wrench ('99 - 01 models: left end only), and unscrew the rack end with another wrench.

NOTE: '96 - 98 models shown.

**CAUTION:** Be careful not to damage the rack surface with the wrench.

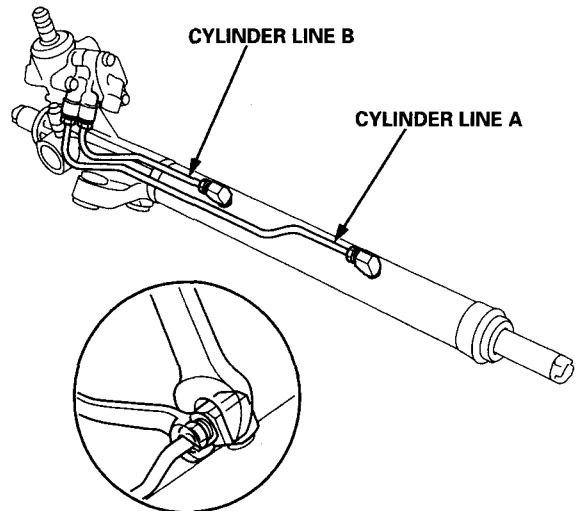


7. Loosen the locknut, then remove the rack guide screw and O-ring ('96 - 98 models only).



8. Remove the spring and rack guide from the gearbox housing.

9. Remove cylinder lines A and B from the gearbox.



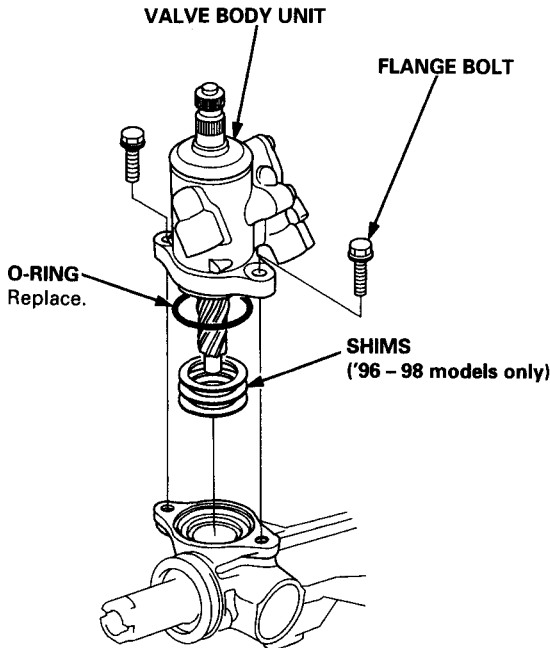
10. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.

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# Power Steering Gearbox

## Disassembly (cont'd)

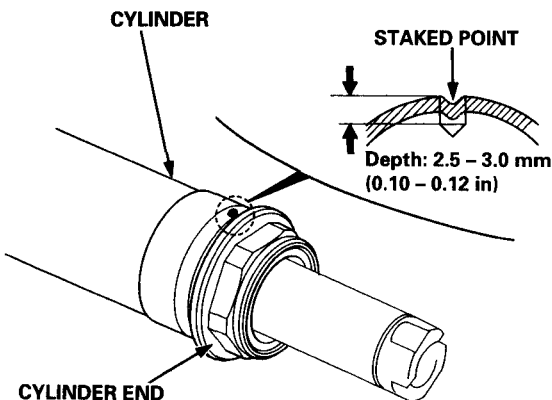
11. Remove the two flange bolts, then remove the valve body unit from the gearbox (see page 17-36 for valve body unit disassembly).



12. Drill a 3 mm (0.12 in) diameter hole approximately 2.5 - 3.0 mm (0.10 - 0.12 in) in depth in the staked-point on the cylinder.

### NOTE:

- Do not allow metal shavings to enter the cylinder.
- After removing the cylinder end, remove any burrs at the stake point.



13. Install the special tool on the gearbox housing.

**CAUTION: Do not clamp the cylinder housing.**

### PULLER YOKE:

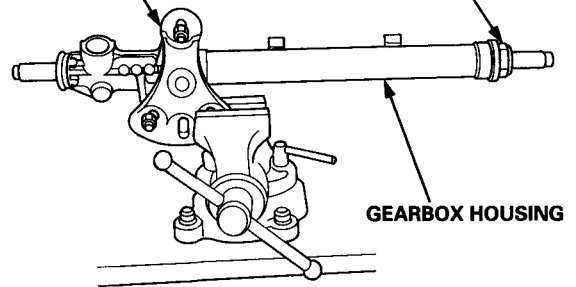
(Commercially available)

Snap-On® T/N CJ123-1

OTC® T/N 7372  
or equivalent

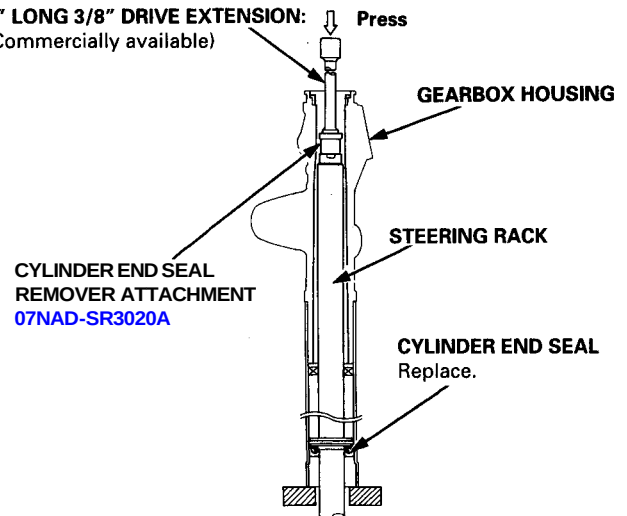
### CYLINDER END

Check the rubber stop in the cylinder end for damage or deterioration. If the rubber stop is damaged, replace the cylinder end.



14. Clamp the tool in a vise with soft jaws as shown, then loosen and remove the cylinder end.
15. Remove the gearbox housing from the vise, and set it in a press so the gearbox points upward.
16. Insert a 6" long, 3/8" drive extension into the special tool.

**6" LONG 3/8" DRIVE EXTENSION:**  
(Commercially available)



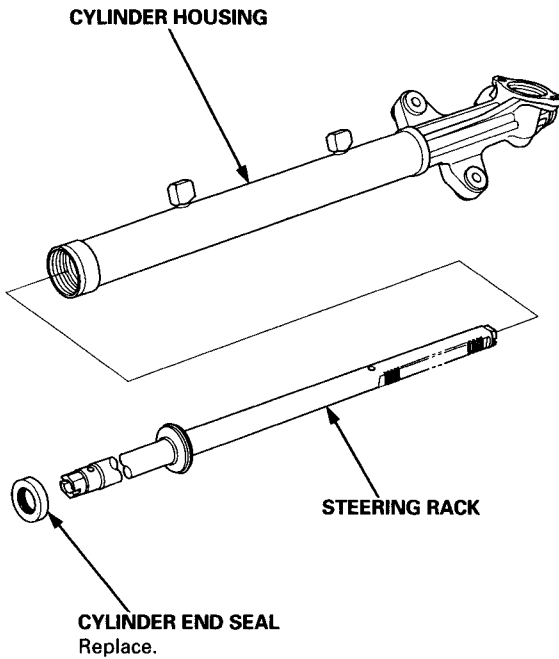
17. Press the cylinder end seal and steering rack out of the gearbox housing.

**NOTE:** Hold the steering rack to keep it from falling when pressed clear.

**CAUTION:** Be careful not to damage to inner surface of the cylinder wall with the tool.

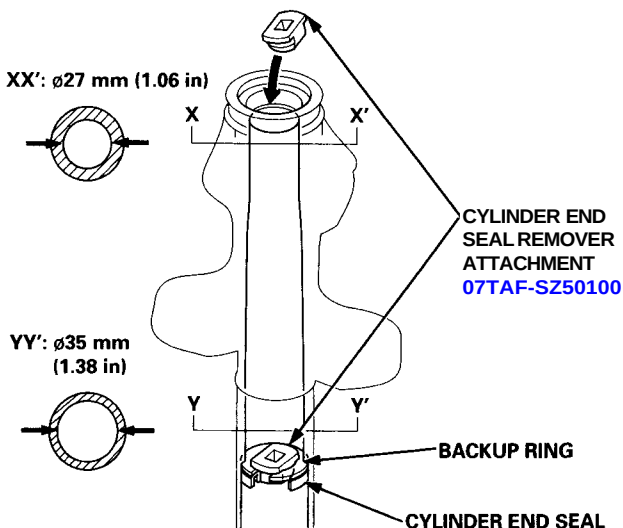


18. Remove the cylinder end seal from the steering rack.



19. Turn the special tool so it will fit through the end of the gearbox housing, then position special tool on the backup ring as shown below.

NOTE: Make sure that the special tool is securely positioned on the backup ring edges.



20. Insert a 24" long 3/8" drive extension into the cylinder and the special tool from the gearbox side.

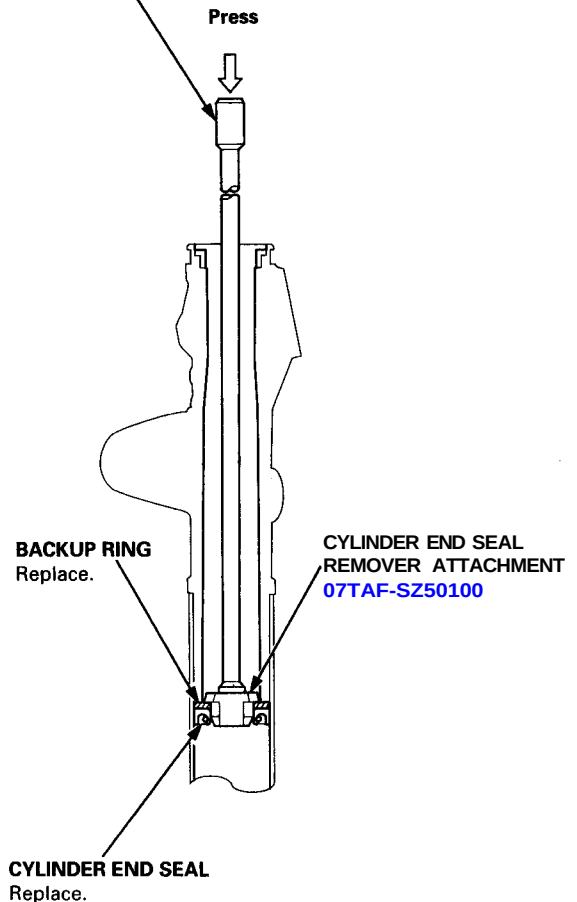
**CAUTION:** Be careful not to damage the inside surface of the cylinder wall with the tools.

21. Set the gearbox housing in a press, then press out the cylinder end seal and backup ring from the gearbox housing.

**CAUTION:**

- Keep the tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.
- Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool. It will break the backup ring, and the cylinder end seal will remain in the gearbox housing.

24" LONG 3/8" DRIVE EXTENSION  
(Commercially available)



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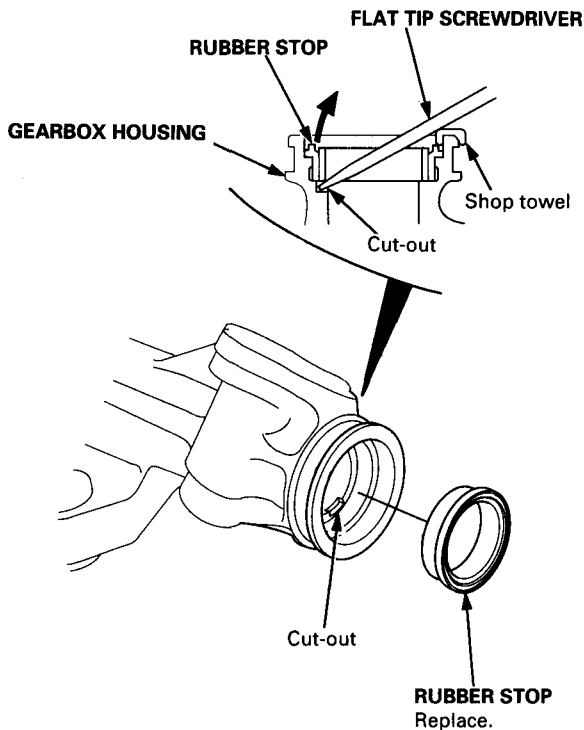
# Power Steering Gearbox

## Disassembly (cont'd)

22. Check the rubber stop for damage or deterioration; if OK, go on step 23; if not, replace the rubber stop as shown below:

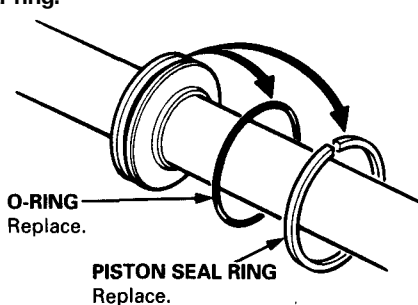
Remove the rubber stop by prying it out of the gearbox housing with a flat tip screwdriver.

**CAUTION:** Protect the pry point on the gearbox housing with shop towel.



23. Carefully pry the piston seal ring and O-ring off the rack piston.

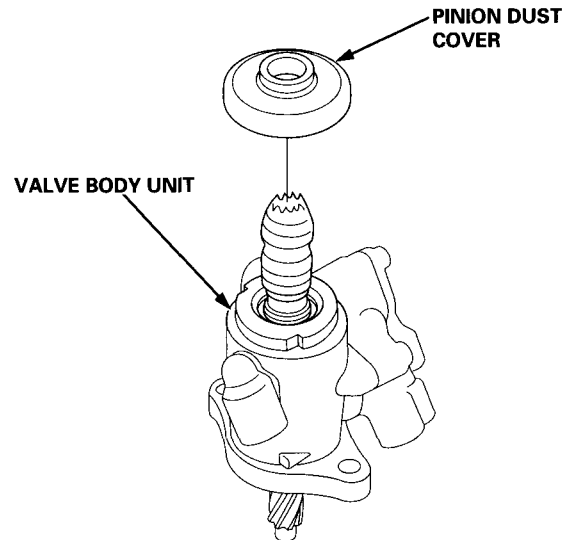
**CAUTION:** Be careful not to damage the inside of seal ring groove and piston edges when removing the seal ring.



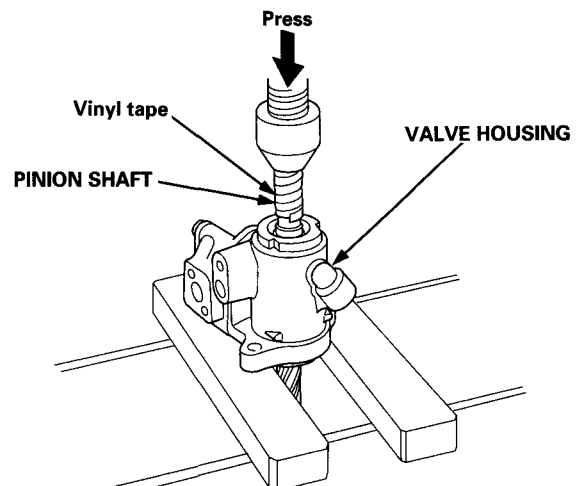
## Valve Body Unit Disassembly

Valve body unit:

24. Remove the pinion dust cover.



25. Before removing the valve housing, apply vinyl tape to splines of the pinion shaft.
26. Separate the valve housing from the pinion shaft/valve using a press.



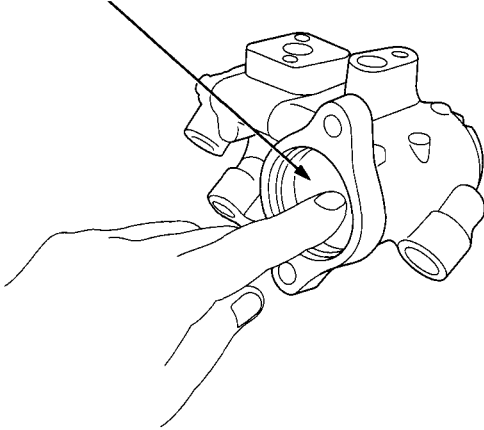


27. Check the inner wall of the valve housing where the seal ring slides with your finger. If there is a step in the wall, the valve housing is worn. Replace the valve housing.

**NOTE:**

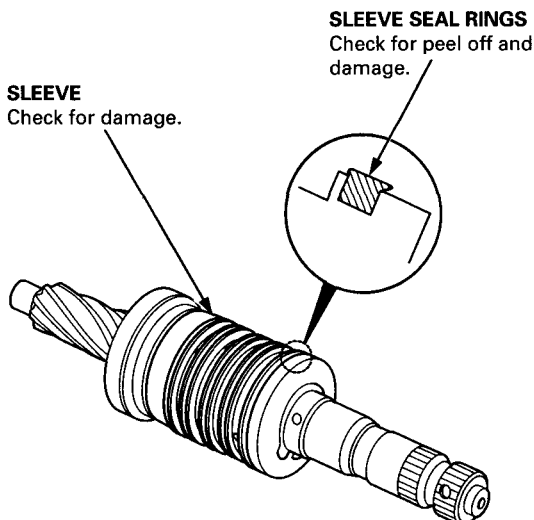
- There may be the sliding marks from the seal ring on the wall of the valve housing. Replace the valve housing only if the wall is stepped.
- '96 - 98 model only; when the valve housing is replaced, install new 44 mm shim(s) on the bearing surface of the housing to adjust the thickness.

Check the inside of valve housing whether the wall is stepped.

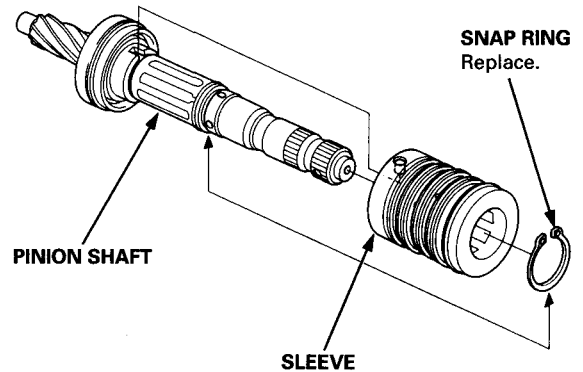


28. Check for wear, burrs and other damage to the edges of the grooves in the sleeve.

**NOTE:** The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.

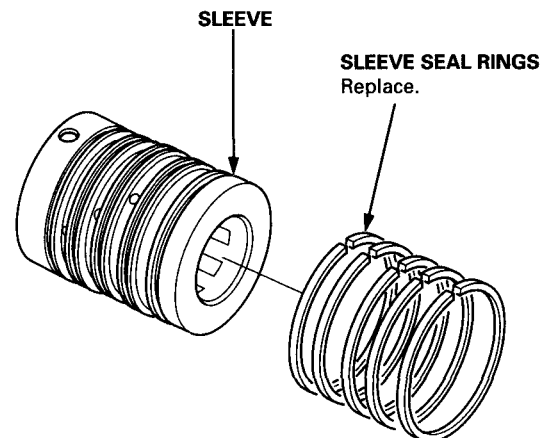


29. Remove the snap ring and pinion shaft sleeve from the pinion shaft.



30. Using a cutter or an equivalent tool, cut and remove the five seal rings from the sleeve.

**CAUTION:** Be careful not to damage the edges of the sleeve grooves and outer surface when removing the seal rings.



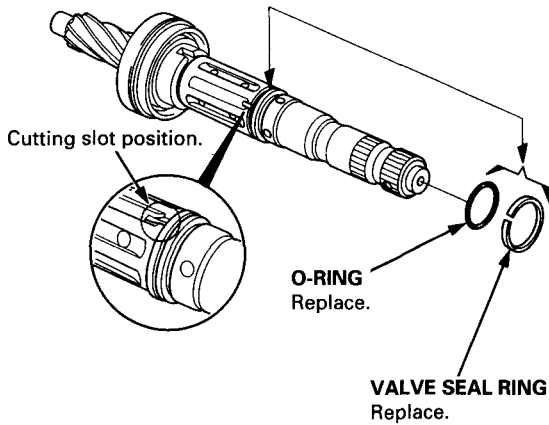
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# Power Steering Gearbox

## Disassembly (cont'd)

31. Using a cutter or an equivalent tool, cut the valve seal ring and O-ring at the groove the pinion shaft. Remove the valve seal ring and O-ring.

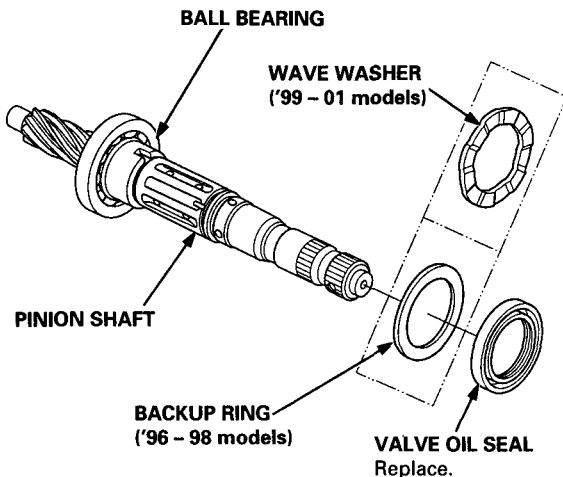
**CAUTION:** Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.



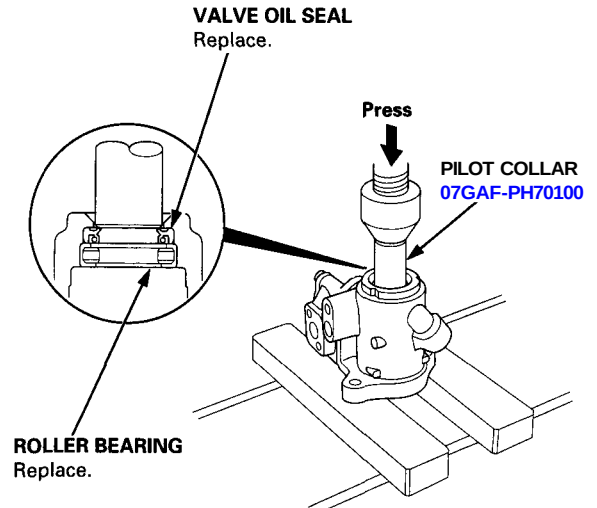
32. Remove the valve oil seal and backup ring ('96 - 98 models) or wave washer ('99 - 01 models) from the pinion shaft.

**NOTE:**

- Inspect the ball bearing by rotating the outer race slowly. If there is any excessive play, replace the pinion shaft and sleeve as an assembly.
- The pinion shaft and sleeve are a precise fit; do not intermix old and new pinion shafts and sleeves.

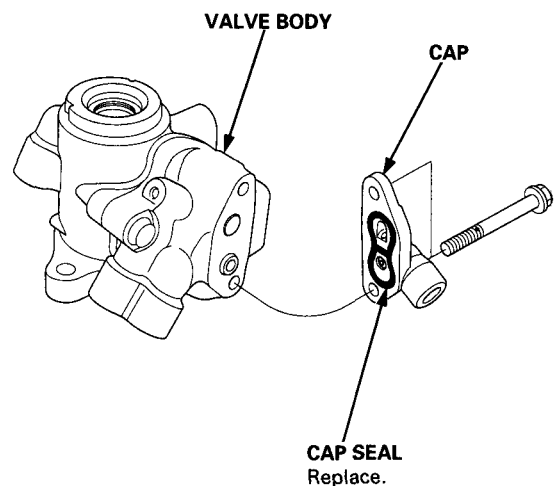


33. Press the valve oil seal and roller bearing out of the valve housing using a hydraulic press and the special tool shown below.



### Assist control valve unit:

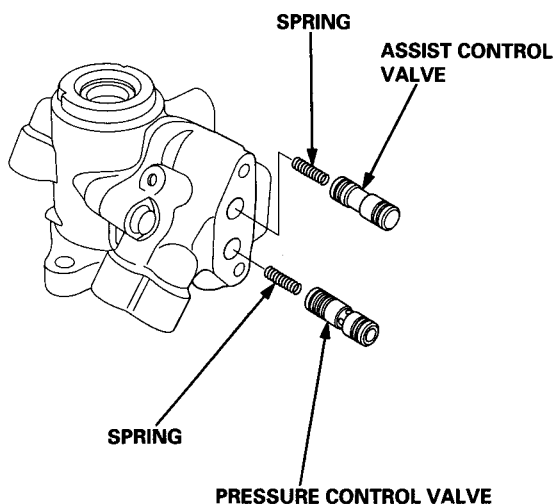
34. Remove the cap from the valve body.



35. Remove the cap seal from the cap.



36. Remove the pressure control valve, assist control valve and springs from the valve body.

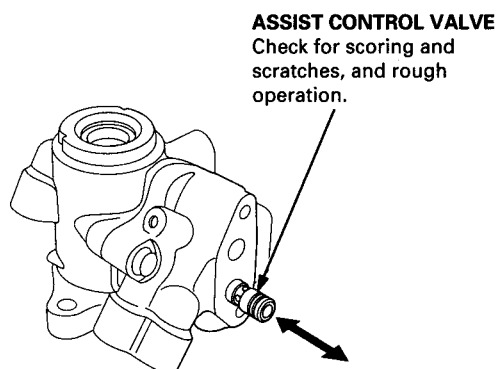


37. Check the two control valves.

**NOTE:** If the valves are damaged, replace the steering gearbox as an assembly.

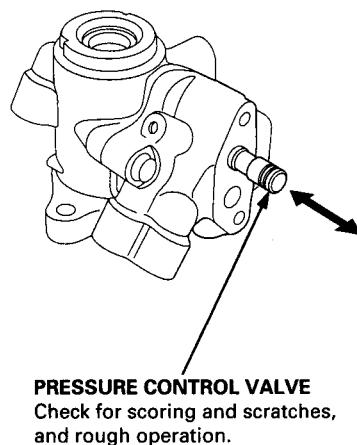
**Assist Control Valve:**

- Inspect its surface for scoring and scratches.
- Slip it back into the valve body unit, and make sure it slides smoothly without drag or side play.



**Pressure Control Valve:**

- Inspect its surface for scoring and scratches.
- Slip it back into the valve body unit, and make sure it slides smoothly without drag or side play.



38. Separate the valve body and valve housing.

39. Remove the housing seal and dowel pins from the valve body unit.

