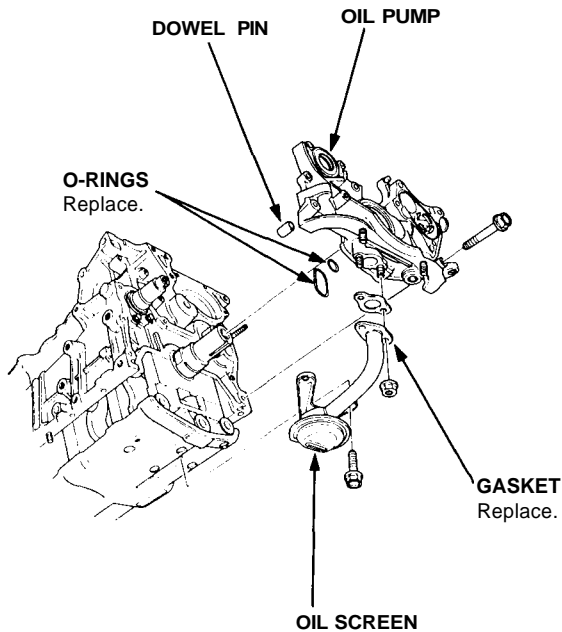


# Oil Pump

## Removal/Inspection/Installation

1. Drain the engine oil.
2. Turn the crankshaft so that the No. 1 cylinder is at top dead center (page 6-25).
3. Remove the timing belt and the timing balancer belt (page 6-28).
4. Remove the timing belt tensioner and the timing balancer belt tensioner.
5. Remove the timing belt drive pulley and the timing balancer belt driven pulley.
6. Remove the balancer drive gear case and the balancer driven gear (page 7-10).
7. Remove the oil pan and the oil screen.
8. Remove the mounting bolts and the oil pump assembly.



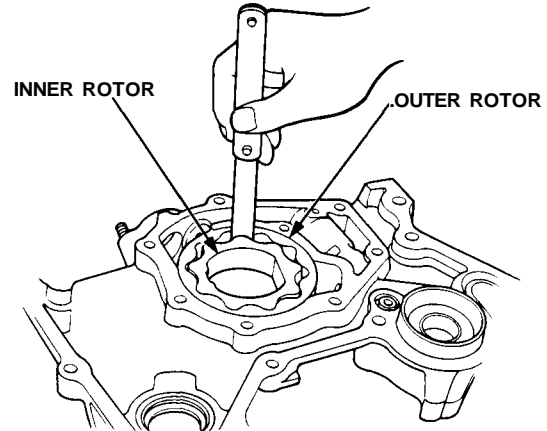
9. Remove the screws from the pump housing, then separate the housing and cover.
10. Check the inner-to-outer rotor radial clearance on the pump rotor.

### Inner Rotor-to-Outer Rotor Radial Clearance

**Standard (New):** 0.02 — 0.16 mm

(0.001 — 0.006 in)

**Service Limit:** 0.20 mm (0.008 in)



— If the radial clearance exceeds the service limit, replace the inner and outer rotors as a set.

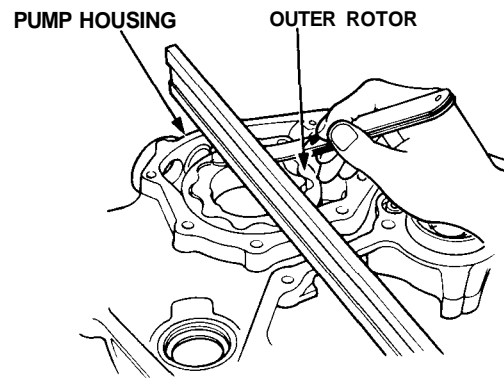
11. Check the housing-to-rotor axial clearance on the pump rotor.

### Housing-to-Rotor Axial Clearance

**Standard (New):** 0.02 — 0.07 mm

(0.001 — 0.003 in)

**Service Limit:** 0.12 mm (0.005 in)



— If the axial clearance exceeds the service limit, replace the set of inner and outer rotors and/or the pump housing.

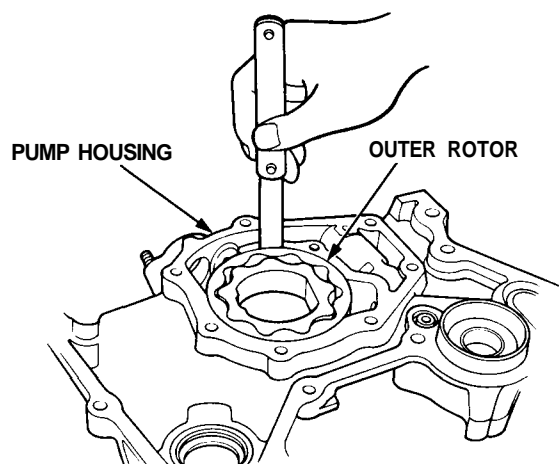


12. Check the housing-to-outer rotor radial clearance.

**Housing-to-Outer Rotor Radial Clearance**

**Standard (New): 0.10—0.19 mm  
(0.004-0.007 in)**

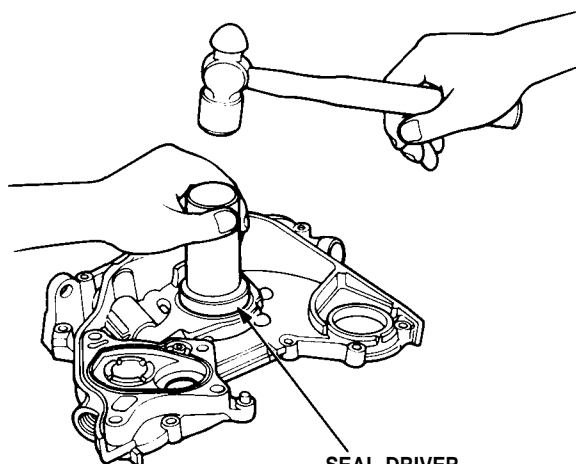
**Service Limit: 0.21 mm (0.008 in)**



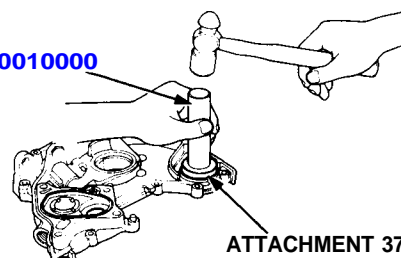
— If the radial clearance exceeds the service limit, replace the set of inner and outer rotors and/or the pump housing.

13. Inspect both rotors and the pump housing for scoring or other damage. Replace parts if necessary.
14. Remove the old oil seals from the oil pump.
15. Gently tap in the new oil seals until the tool bottoms on the pump.

**NOTE:** The oil seals alone can be replaced without removing the oil pump using the special tool.



**DRIVER  
07749-0010000**



16. Reassemble the oil pump, applying locking fluid to the pump housing screws.

17. Check that the oil pump turns freely.

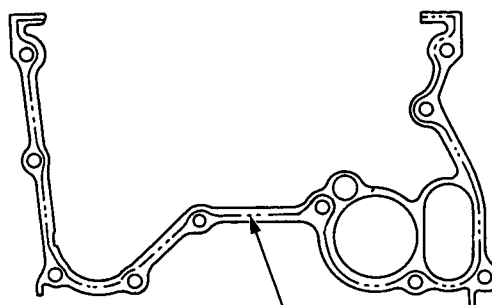
18. Install a dowel pin and the new O-rings on the pump.

**NOTE:**

- Use liquid gasket. Part No. 08718 — 0001.
- Check that the mating surfaces are clean and dry before applying liquid gasket.
- Apply liquid gasket evenly, in a narrow bead centered on the mating surface.
- To prevent leakage of oil, apply liquid gasket to the inner threads of the bolt holes.
- Do not install the parts if 20 minutes or more have elapsed since applying liquid gasket. Instead reapply liquid gasket after removing the old residue.
- After assembly, wait at least 30 minutes before filling the engine with oil.

19. Apply liquid gasket to the block mating surface of the oil pump, then install it on the engine block.

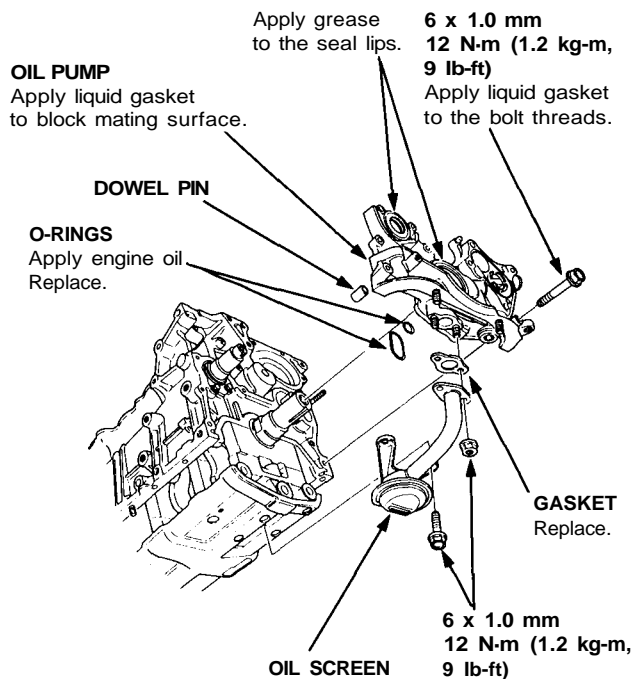
- Apply grease to the lips of the oil pump seal and the balancer seal. Then, install the oil pump inner rotor onto the crankshaft. When the pump is in place, clean any excess grease off the crankshaft and the balancer shaft, then check that the oil seal lips are not distorted.



(cont'd)

# Oil Pump

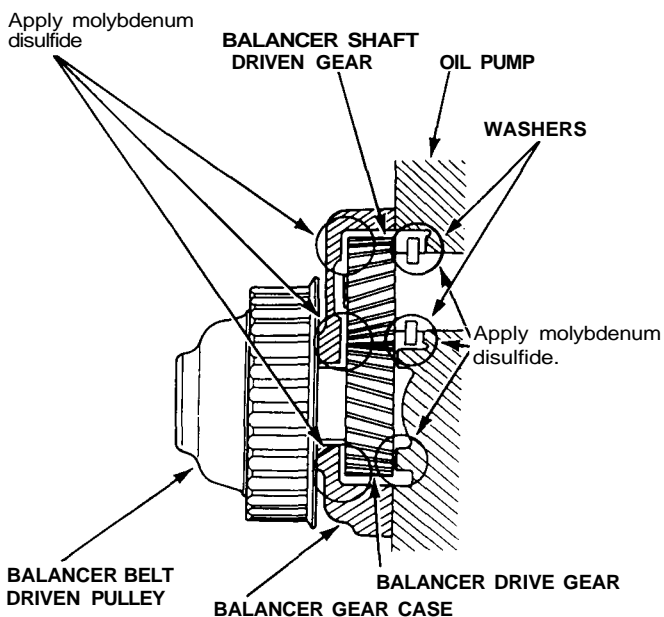
## Removal/Inspection/Installation (cont'd)



20. Install the baffle plate.

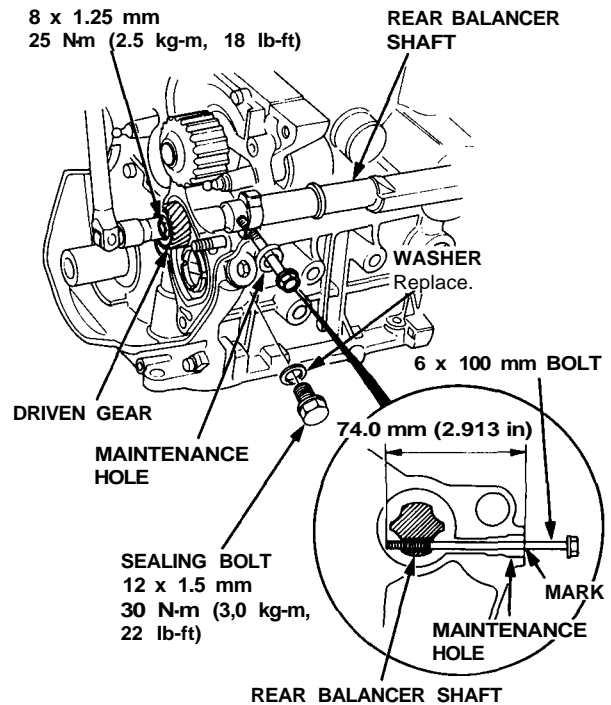
21. Install the oil screen.

22. Apply molybdenum disulfide to the thrust surfaces of the balancer gears, as shown, before installing the balancer driven gear and the balancer drive gear case.



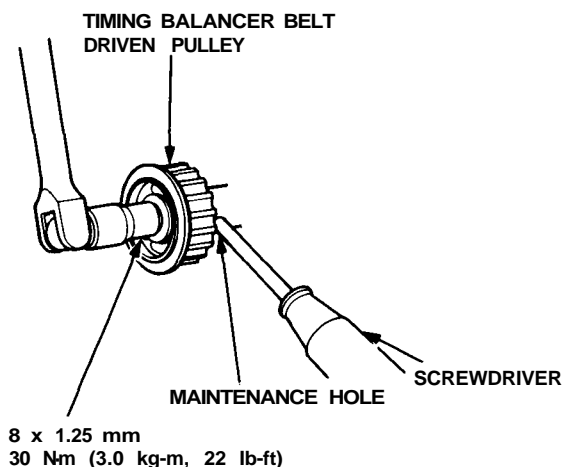
23. Hold the rear balancer shaft with the 6 x 100 mm bolt, then install the balancer driven gear.

### REAR BALANCER:



24. Hold the front balancer shaft with a screwdriver, then install the timing balancer belt driven pulley.

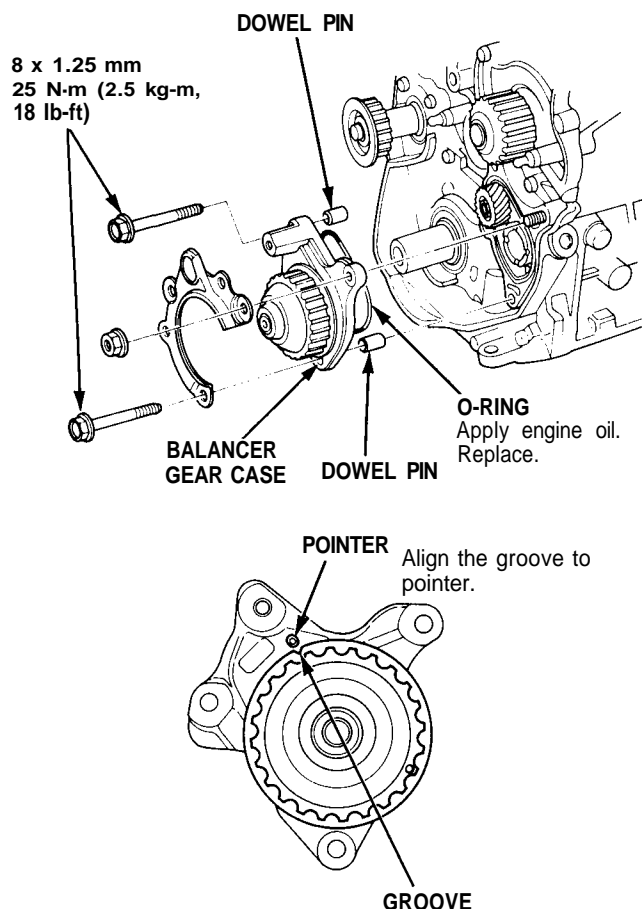
### FRONT BALANCER:



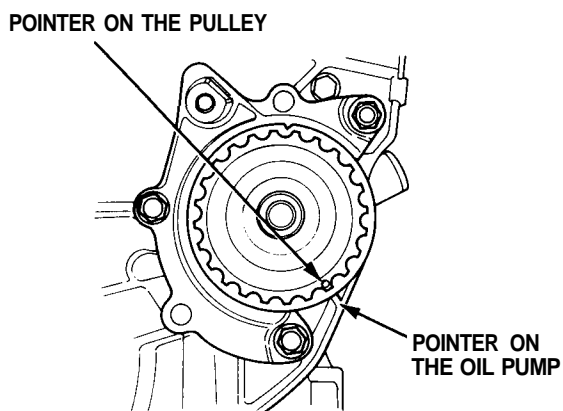


25. Install the balancer gear case to the oil pump.

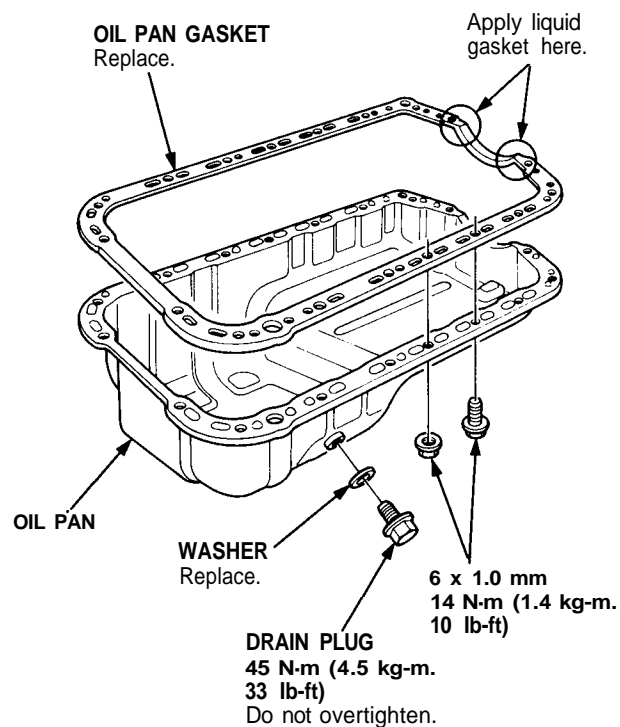
NOTE: Align the groove on the pulley edge with the pointer on the gear case while holding the rear balancer with the 6 x 100 mm bolt, then install the gear case.



26. Check alignment of pointers after installing the gear case.

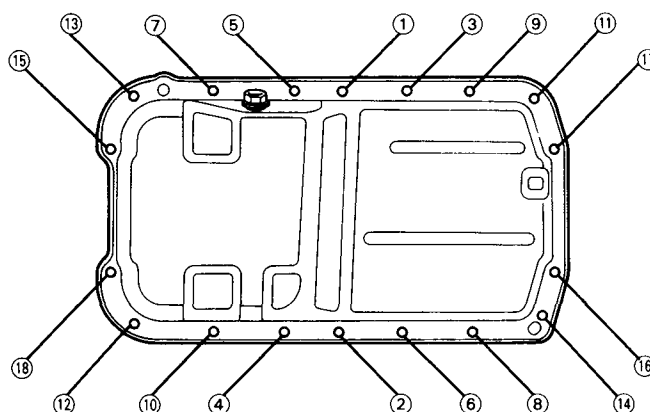


27. Install the oil pan.



28. Tighten the bolts and nuts as shown below.

Torque: 14 N-m (1.4 kg-m, 10 lb-ft)



NOTE: Tighten the bolts and nuts in two steps and torque them in a criss-cross pattern.