

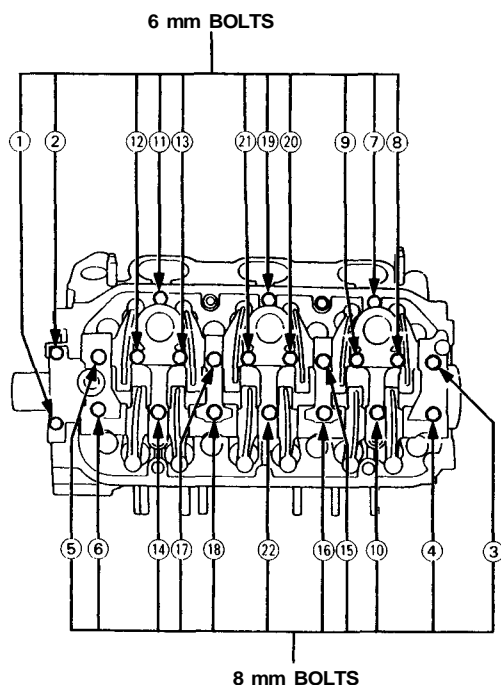
# Rocker Arms and Shafts

## Removal

### NOTE:

- Unscrew the camshaft holder bolts, two turns at a time in a crisscross pattern, to prevent damaging the valves or rocker arm assembly.
- When removing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the camshaft holders, the springs and the rocker arms on the shafts.

### CAMSHAFT HOLDER BOLT LOOSENING SEQUENCE



NOTE: Refer to page 6-25 when installing.

# Camshaft

## Inspection

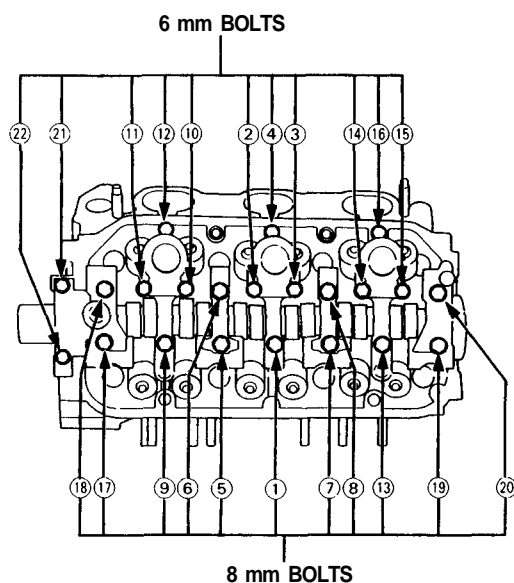
### NOTE:

- Do not rotate the camshaft during inspection.
  - Remove the rocker arms and rocker shafts.
1. Put the camshaft and the camshaft holders on the cylinder head, then tighten the bolts to the specified torque.

### Specified torque:

8 mm bolts: 22 N·m (2.2 kg-m, 16 lb-ft)

6 mm bolts: 12 N·m (1.2 kg-m, 9 lb-ft)

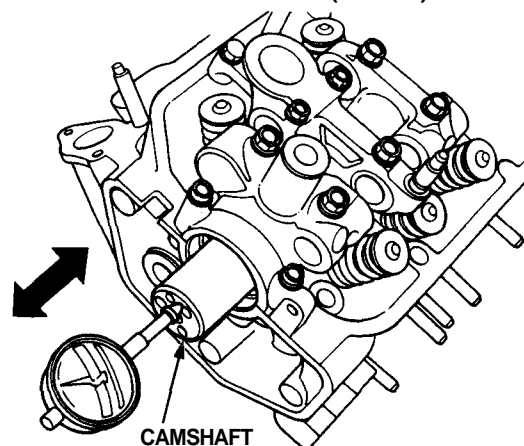


2. Seat the camshaft by pushing it toward rear end of cylinder head.
3. Zero the dial indicator against the rear end. Push the camshaft back and forth, and read the end play.

### Camshaft End Play:

Standard (New): 0.05 — 0.15 mm  
(0.002 — 0.006 in)

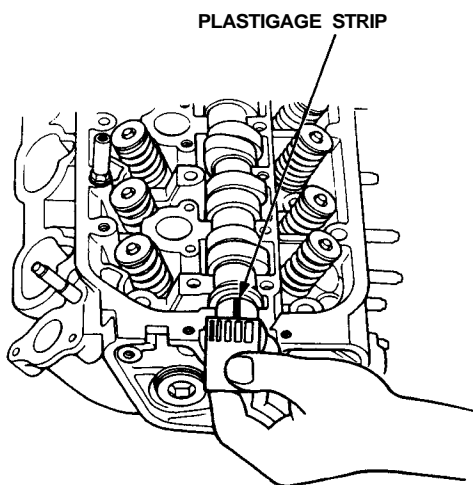
Service Limit: 0.15 mm (0.006 in)





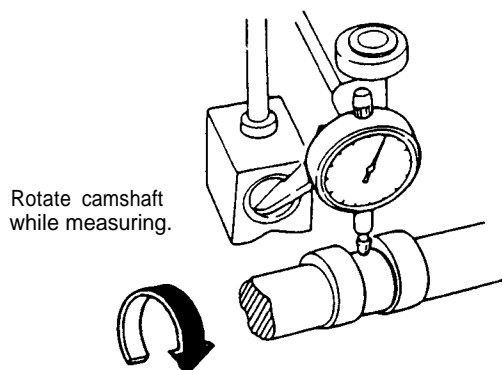
4. Remove the bolts, then remove the camshaft holders from the cylinder head.
  - Lift camshaft out of cylinder head, wipe clean, then inspect lift ramps. Replace camshaft if lobes are pitted, scored, or excessively worn.
  - Clean the camshaft bearing surfaces in the cylinder head, then set camshaft back in place.
  - Insert plastigage strip across each journal.
5. Install the camshaft holders and tighten the bolts to the specified torque as shown in the previous page.
6. Measure widest portion of plastigage on each journal.

**Camshaft-to-Holder Oil Clearance:**  
**Standard (New): 0.050 — 0.089 mm**  
**(0.0020 — 0.0035 in)**  
**Service Limit: 0.10 mm (0.004 in)**



7. If camshaft-to-holder oil clearance is out of service limit:
  - And camshaft has already been replaced, you must replace the cylinder head.
  - If camshaft has not been replaced, first check total runout with the camshaft supported on V-blocks.

**Camshaft Total Runout:**  
**Standard (New): 0.03 mm (0.001 in) max.**  
**Service Limit: 0.04 mm (0.002 in)**



- If the total runout of the camshaft is within service limit, replace the cylinder head.
- If the total runout is out of service limit, replace the camshaft and recheck. If the oil clearance is still out of service limit, replace the cylinder head.

8. Check cam lobe height wear.

**Cam Lobe Height Standard (New):**  
**GS model:**  
**INTAKE 40.345 mm (1.5884 in)**  
**EXHAUST 37.934 mm (1.4935 in)**  
**Except GS model:**  
**INTAKE 40.005 mm (1.5750 in)**  
**EXHAUST 37.766 mm (1.4868 in)**

