



# Cylinder Heads

## Removal

Engine removal is not required for this procedure.

### CAUTION:

- To avoid damaging the cylinder heads, wait until the engine coolant temperature drops below 100°F (38 C) before loosening the retaining bolts.
- Take care not to bend the suction pipe when removing the cylinder heads.

### NOTE:

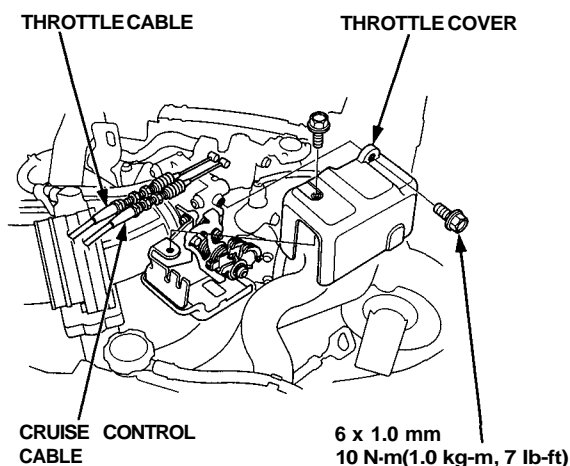
- Inspect the timing belt before removing the cylinder heads.
- Turn the crankshaft so that the No. 1 piston is at top dead center (see page 6-34).
- Mark all emission hoses before disconnecting them.
- Anti-theft radios have a coded theft protection circuit. Be sure to get the customer's code number before
  - Disconnecting the battery.
  - Removing the No. 56 (7.5 A) fuse in the under-hood fuse/relay box.
  - Removing the radio.

After service, reconnect power to the radio and turn it on. When the word "CODE" is displayed, enter the customer's 5-digit code to restore radio operation.

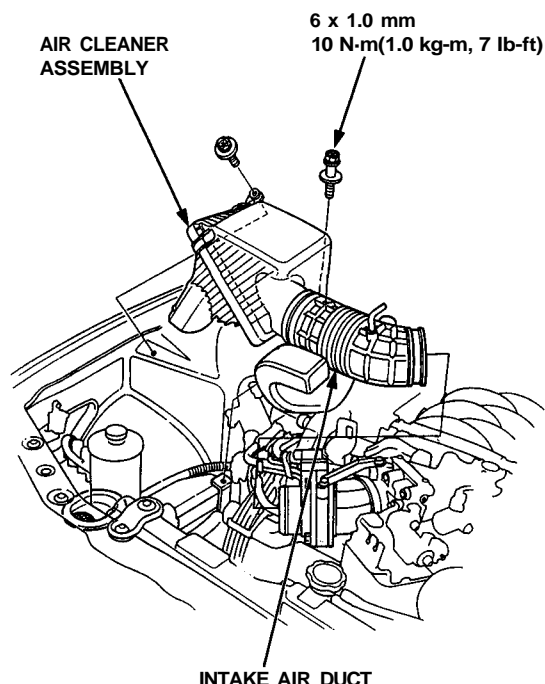
1. Disconnect the negative terminal first, then the positive terminal.
2. Remove the battery and battery base.
3. Remove the throttle cover.
4. Remove the throttle cable and cruise control cable by loosening the locknuts, then slip the cable ends out of the throttle bracket and throttle linkage.

### NOTE:

- Take care not to bend the cable when removing it. Always replace any kinked cable with a new one.
- Adjust the throttle cable when installing (see section 11).



5. Remove air cleaner assembly and intake air duct.



6. Drain the engine coolant (see page 10-5).
7. Remove the strut bar, bracket and suction pipe clamps (see page 5-3 and 5-4).
8. Remove the engine ground wire and battery ground cable from the cylinder head and cylinder block.
9. Relieve fuel pressure by slowly loosening the service bolt on the fuel filter about one turn (see section 11).

**⚠ WARNING** Do not smoke while working on the fuel system. Keep open flame away from work area. Drain fuel only into an approved container.

### CAUTION:

- Before disconnecting any fuel line, the fuel pressure should be relieved as described above.
- Place a shop towel over the fuel filter to prevent pressurized fuel from spraying over the engine.

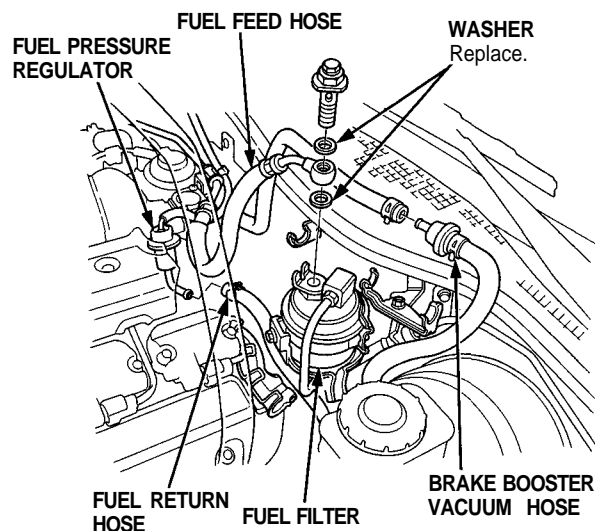
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# Cylinder Heads

## Removal (cont'd)

10. Remove the fuel feed hose from the fuel filter and the fuel return hose from the fuel pressure regulator.

11. Disconnect the brake booster vacuum hose.

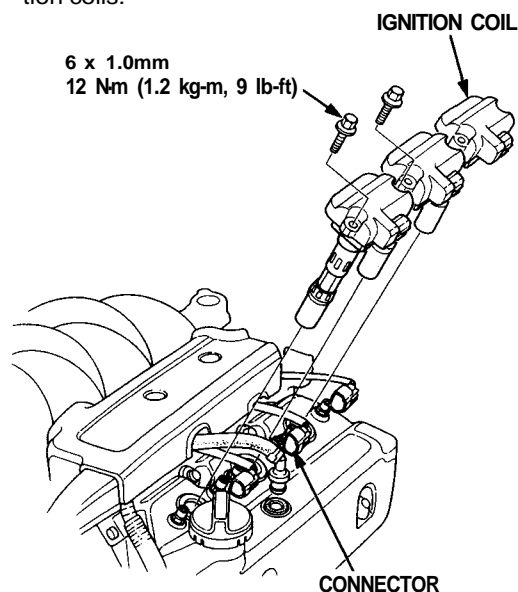


12. Disconnect the evaporative emission (EVAP) control canister hose at the throttle body.

13. Disconnect the terminal and connectors, then remove the under-hood fuse/relay box (see page 5-4).

14. Remove the injector resistor and the connector (see section 11).

15. Disconnect the connectors, then remove the ignition coils.



16. Remove the wire harness covers.

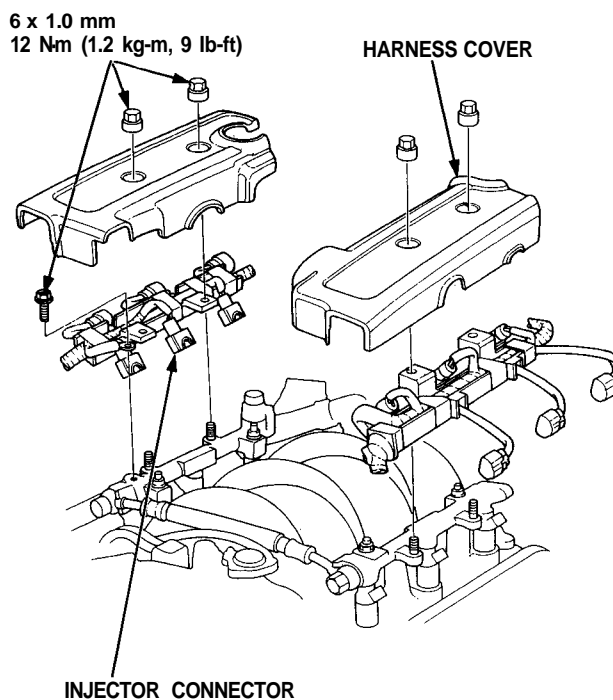
17. Disconnect the engine wire harness connectors and the clamps from the cylinder head and intake manifold.

Right cylinder head:

- Three injector connectors (cylinders No. 1, 2, and 3)
- Engine coolant temperature (ECT) sensor connector
- Exhaust gas recirculation (EGR) valve lift sensor connector

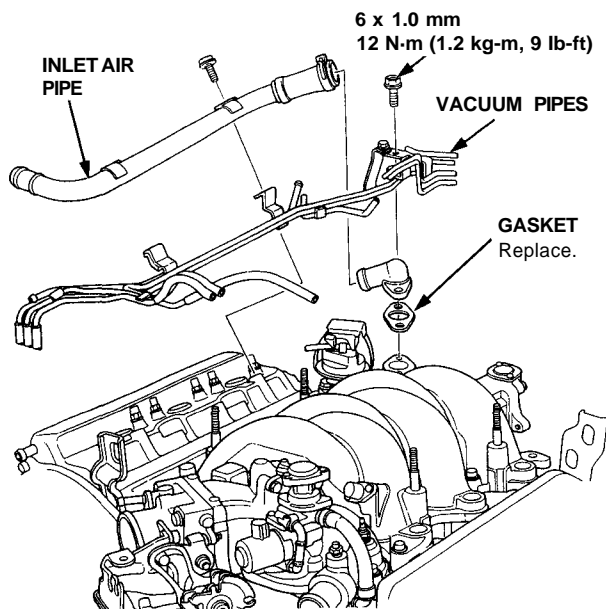
Left cylinder head:

- Three injector connectors (cylinders No. 4, 5, and 6)
- CKP/CYP sensor connector
- ECT gauge sending unit connector
- Intake air temperature (IAT) sensor connector
- Left and right knock sensor connector



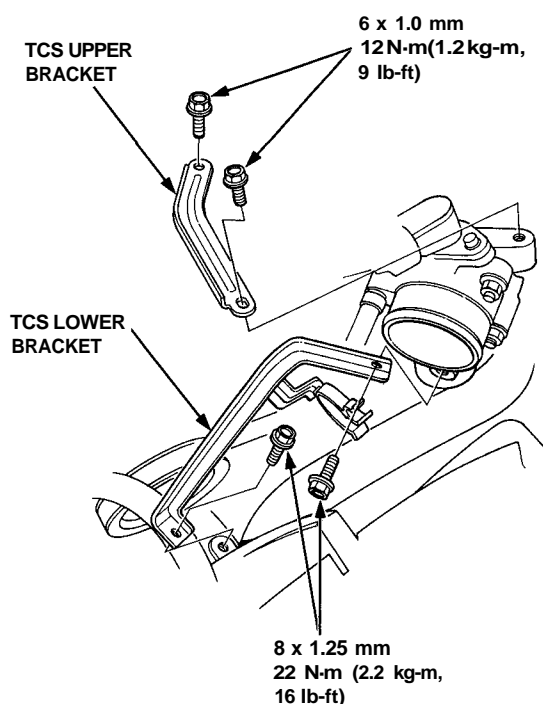


18. Remove the inlet air pipe.
19. Remove the vacuum pipes and hoses.

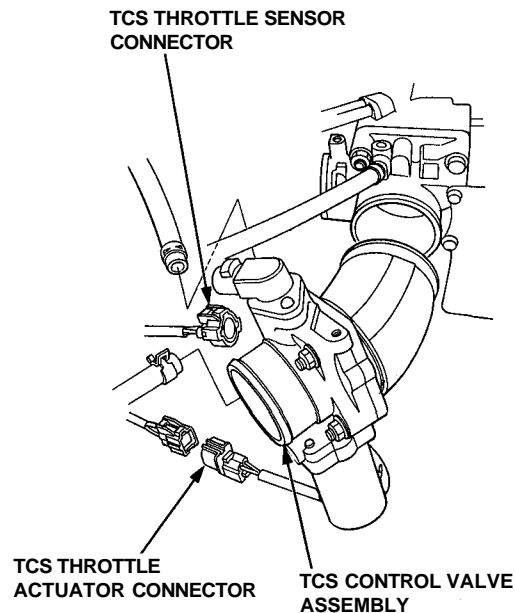


20. Remove the TCS upper and lower brackets.

NOTE: Refer to [section 19](#) when installing the brackets.



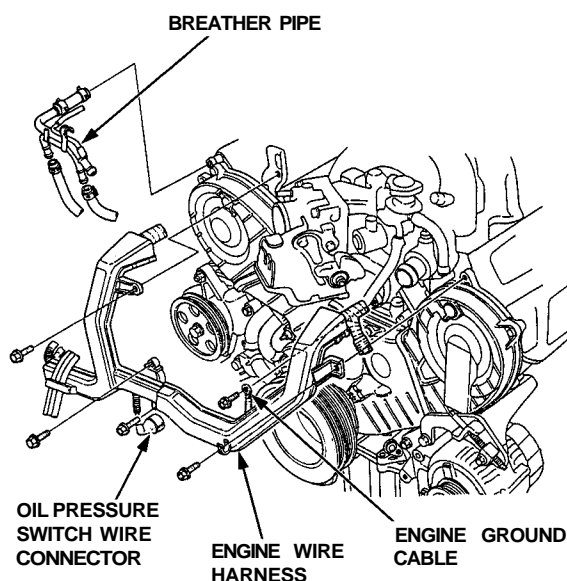
21. Disconnect the TCS throttle sensor connector and TCS throttle actuator connector, then remove the TCS control valve assembly.



22. Remove the connectors and the clamps, then remove the engine wire harness.

- Throttle position (TP) sensor connectors (Throttle body).
- Left and right heated oxygen sensors (HO2S) (see page [9-3](#)).

23. Remove the breather pipe.



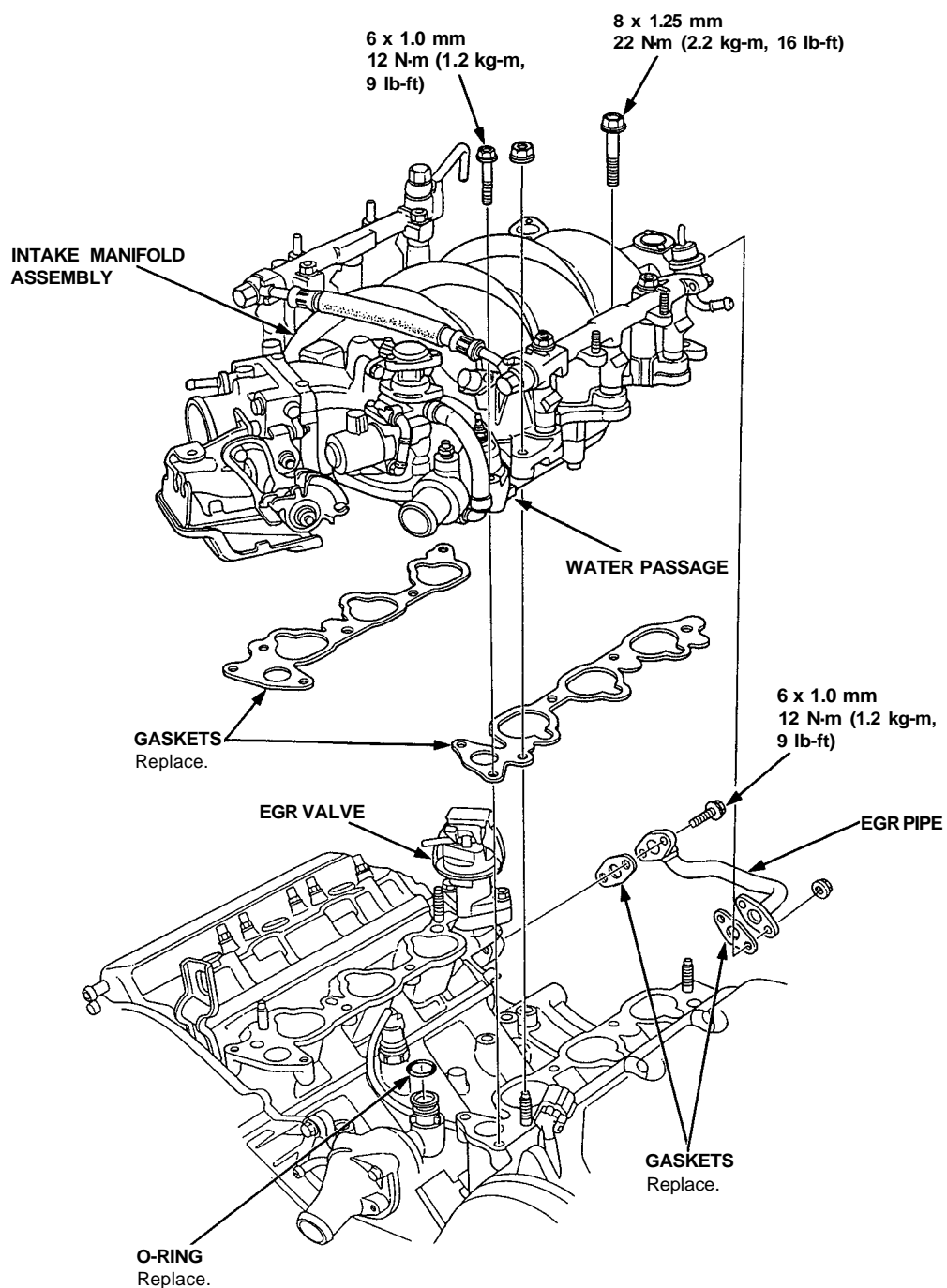
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# Cylinder Heads

## Removal(cont'd)

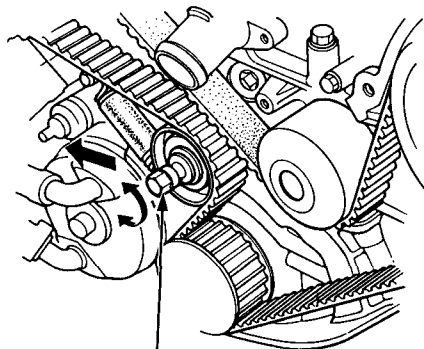
24. Remove the EGR pipe.
25. Remove the water passage along with the intake manifold assembly.

NOTE: Fill the cylinder head intake ports with clean shop towels to prevent foreign materials from getting into the cylinders.





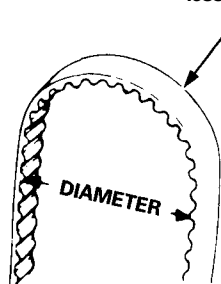
26. Remove the upper covers.
27. Loosen the adjusting bolt 180°.
28. Push on belt by the right camshaft pulley to release tension, then retighten the adjusting bolt.



**ADJUSTING BOLT**  
Do not remove.  
Loosen it 180°.

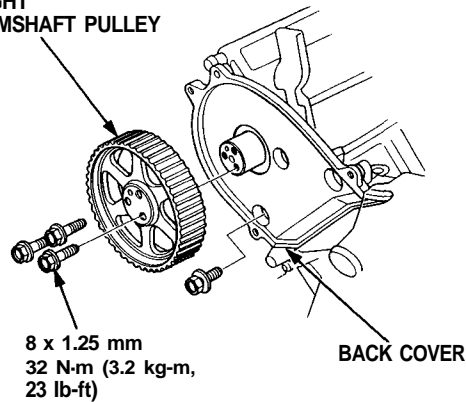
29. Remove the timing belt from the camshaft pulleys.

**CAUTION:** Do not crimp or bend the timing belt more than 90° or less than 25 mm (1 in) in diameter.



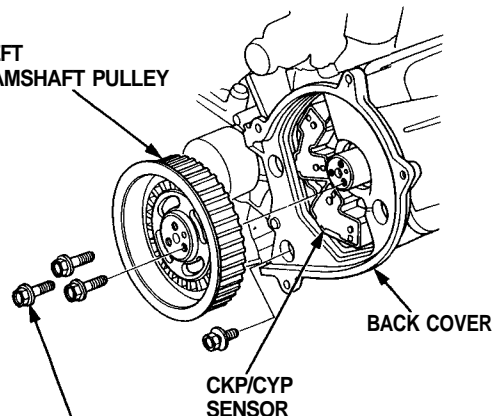
30. Remove the camshaft pulleys.

**RIGHT CAMSHAFT PULLEY**



8 x 1.25 mm  
32 N·m (3.2 kg-m,  
23 lb-ft)

**LEFT CAMSHAFT PULLEY**



8 x 1.25 mm  
32 N·m (3.2 kg-m,  
23 lb-ft)

31. Remove the back covers.
32. Remove the CKP/CYP sensor from the left cylinder head.

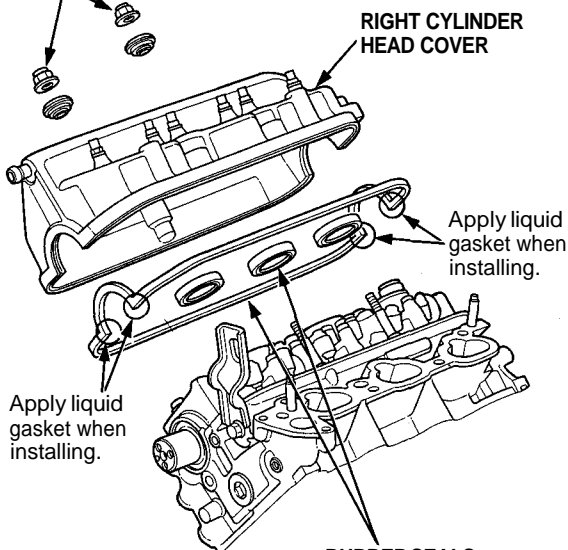
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# Cylinder Heads

## Removal(cont'd)

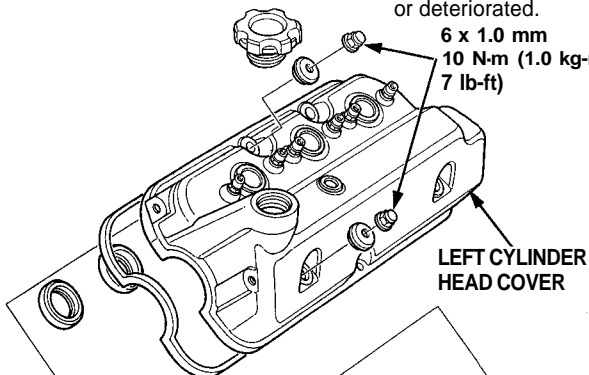
33. Remove the cylinder head covers.

6 x 1.0 mm  
10 Nm (1.0 kg-m, 7 lb-ft)



RUBBER SEALS  
Replace when damaged or deteriorated.

6 x 1.0 mm  
10 N-m (1.0 kg-m, 7 lb-ft)



Apply liquid gasket when installing.

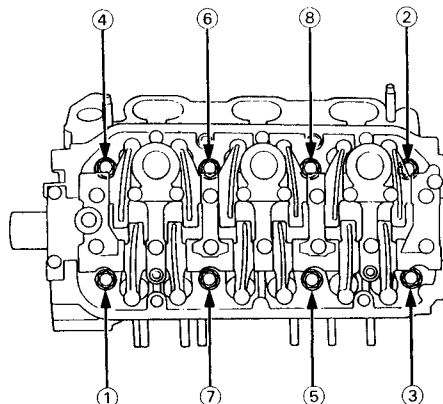
34. Remove three bolts from the alternator bracket, and remove two bolts from the power steering bracket (see page 5-15).

35. Remove the self-locking nuts on the warm up three way catalytic converters, then disconnect the warm up three way catalytic converters from the exhaust manifolds (see section 9).

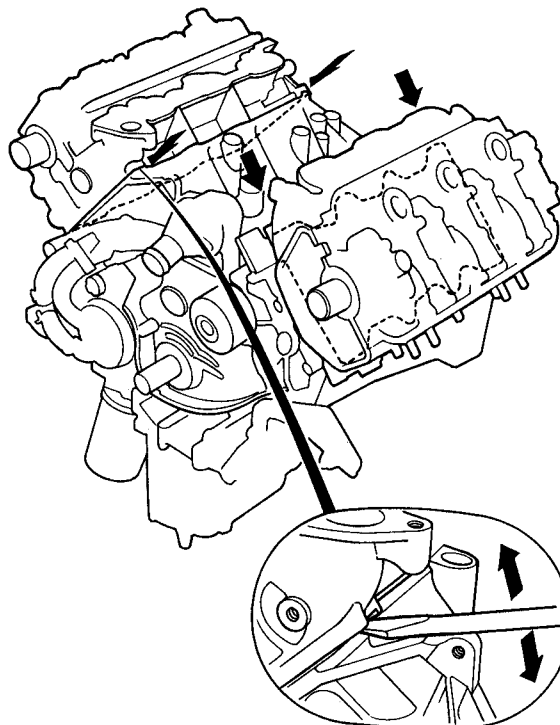
36. Remove the cylinder head bolts, then remove the cylinder heads.

**CAUTION:** To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat until all bolts are loosened.

### CYLINDER HEAD BOLT LOOSENING SEQUENCE



**NOTE:** Separate the cylinder heads from the block with a flat blade screwdriver as shown.



37. Remove the left and right exhaust manifold covers, then remove the left and right exhaust manifolds.

**CAUTION:** Do not use an air wrench or hammer to remove the exhaust manifolds unless you first remove the HO2S.