

Cylinder Heads

Removal

⚠ WARNING Make sure jacks and safety stands are placed properly and hoist brackets are attached to the correct positions on the engine.

CAUTION:

- Use fender covers to avoid damaging painted surfaces.
- Unplug the wiring connectors carefully while holding the connector portion to avoid damage.
- To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 100°F (38°C) before loosening the retaining bolts.

NOTE:

- Unspecified items are common.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses or interfere with other parts.
- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 piston is at top dead center (TDC).
- Do the PCM Memory Setting after reconnecting the battery (see [section 11](#)).

1. Remove the support struts from the hood. Fix the hood in a vertical position, then reinstall the support struts by using 6 x 1.0 mm bolts (see page [5-3](#)).
2. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
3. Disconnect the battery negative terminal first, then the positive terminal.
4. Drain the engine coolant (see page [10-5](#)).
5. Remove the strut brace (see page [5-3](#)).
6. Remove the engine cover (see page [5-3](#)).
7. Remove the intake air duct and air cleaner housing assembly (see page [5-4](#)).

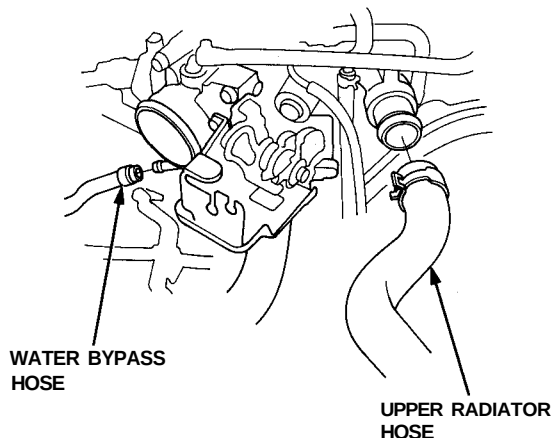
8. Remove the throttle cover (see page [5-4](#)).

9. Remove the throttle cable and cruise control cable by loosening the locknuts, then slip the cable ends out of the accelerator linkage (see page [5-4](#)).

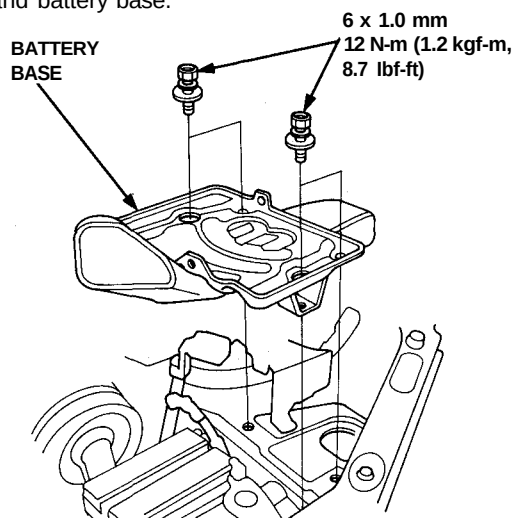
NOTE:

- 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](#)).
- Adjust the cruise control cable when installing (see [section 23](#)).

10. Remove the upper radiator hose and water bypass hose.

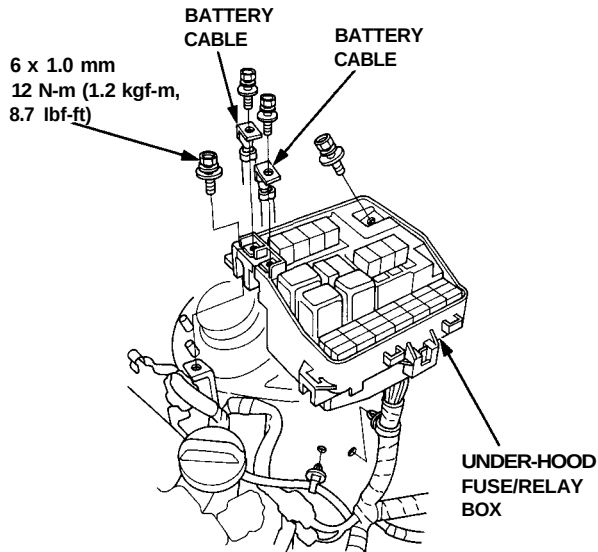


11. Raise the coolant reservoir, then remove the battery and battery base.





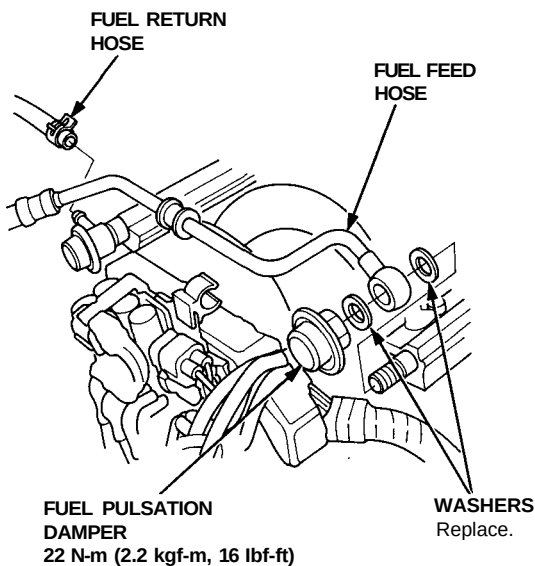
12. Remove the vacuum hoses, then remove the clamp from the under-hood fuse/relay box (see page 5-5).
13. Remove the battery cables from the under-hood fuse/relay box, then remove the under-hood fuse/relay box.



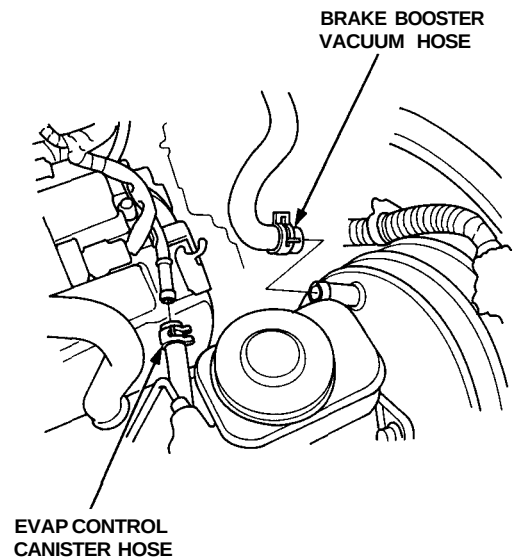
14. Relieve fuel pressure by loosening the service bolt on the fuel filter about one turn (see section 11).

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

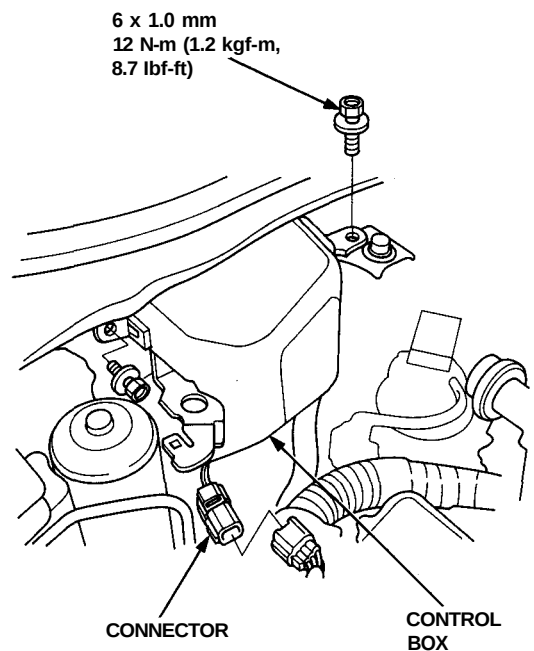
15. Remove the fuel feed hose and fuel return hose.



16. Remove the evaporative emission (EVAP) canister hose and brake booster vacuum hose.



17. Disconnect the connector, then remove the control box.

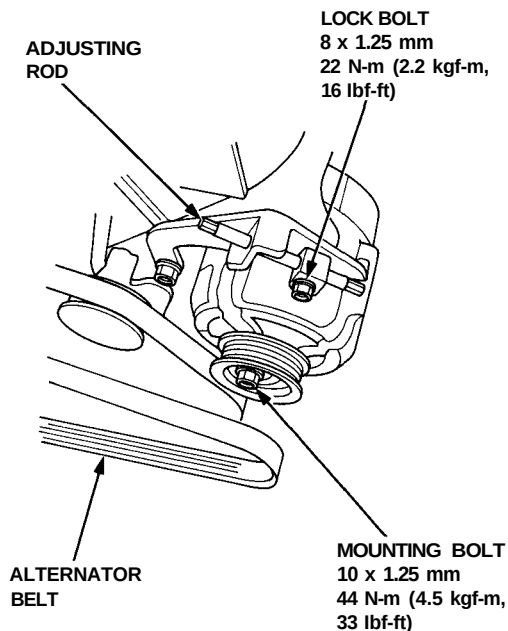


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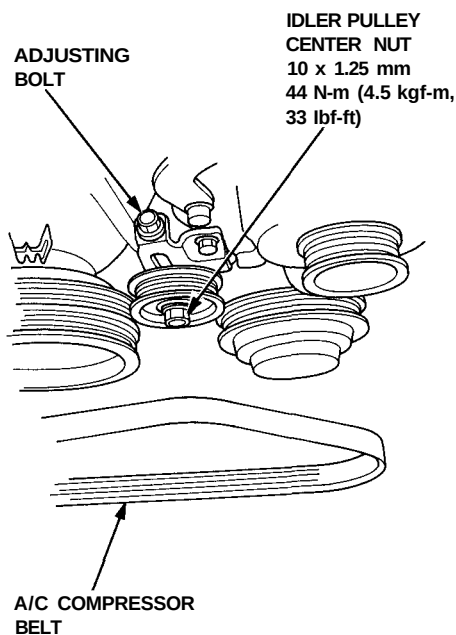
Cylinder Heads

Removal (cont'd)

18. Loosen the mounting bolt, lock bolt and adjusting rod, then remove the alternator belt.

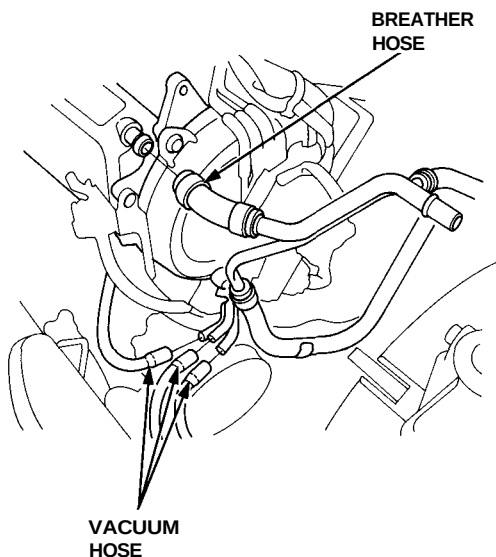


19. Loosen the idler pulley center nut and adjusting bolt, then remove the air conditioning (A/C) compressor belt.



20. Loosen the adjusting bolt, locknut and mounting bolt, then remove the power steering (P/S) pump belt (see page 6-6).

21. Remove the vacuum hoses and breather hose.



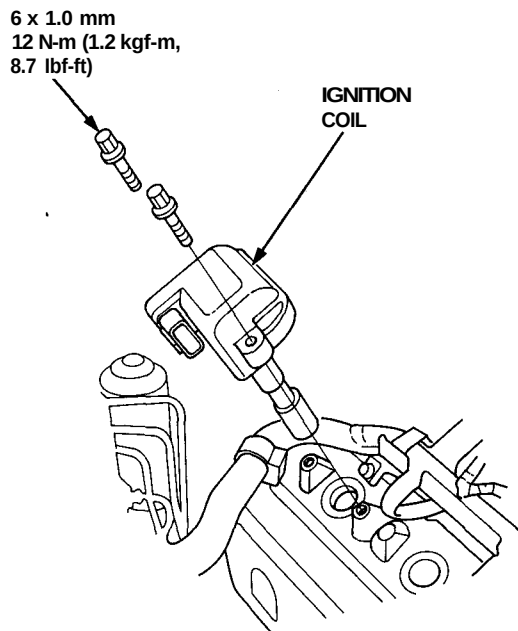
22. Remove the vacuum hoses, then remove the ignition control module (ICM) bracket (see page 6-9).

23. Remove the engine wire harness connectors and wire harness clamps from the cylinder heads and intake manifold.

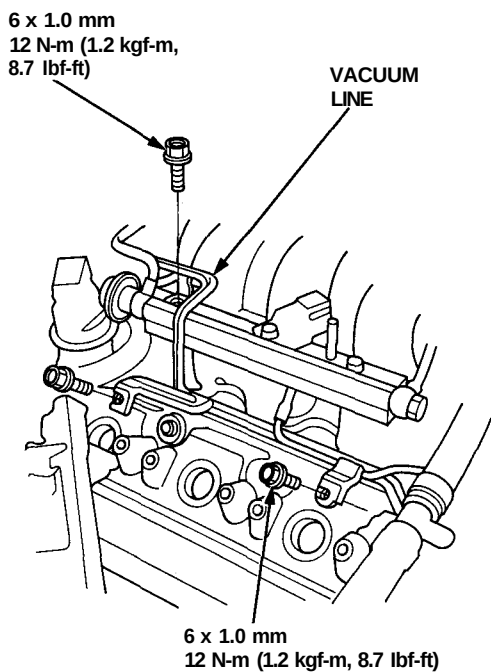
- Six injector connectors
- Six ignition coil connectors
- Throttle position sensor connector
- CKP/CYP sensor connector
- Intake air temperature (IAT) sensor connector
- Exhaust gas recirculation (EGR) valve connector
- Idle air control (IAC) valve connector
- Engine coolant temperature (ECT) sensor connector
- ECT gauge sending unit connector
- Manifold absolute pressure (MAP) sensor connector
- Vehicle speed sensor (VSS) sub-connector
- Left primary heated oxygen sensor (left primary HO2S) connector
- Right primary heated oxygen sensor (right primary HO2S) connector
- Ground cable (throttle body base)



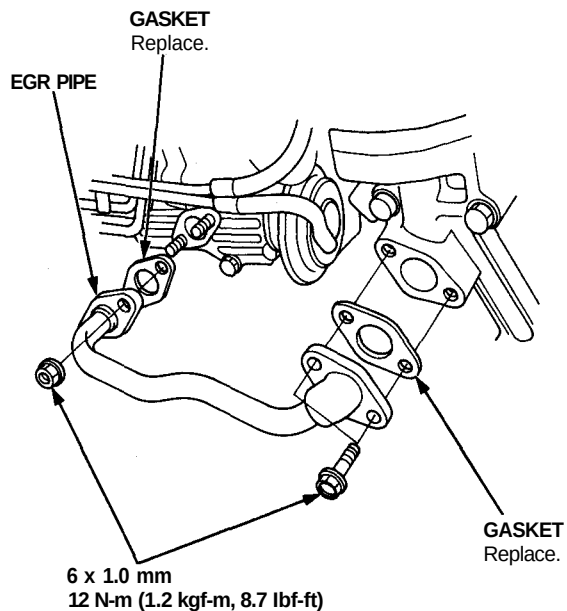
24. Remove the six ignition coils from the left and right cylinder head covers.



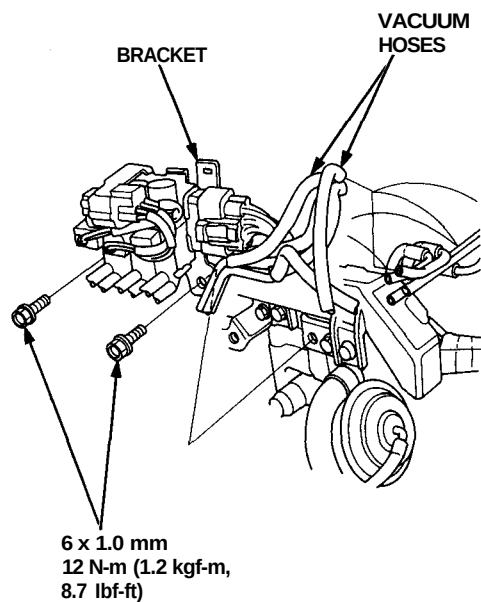
25. Remove the vacuum line mounting bolts from the right cylinder head cover and intake manifold.



26. Remove the EGR pipe.



27. Remove the vacuum hoses, then remove the Intake Manifold Runner Control (IMRC) solenoid valve/ mount control solenoid valve assembly bracket.

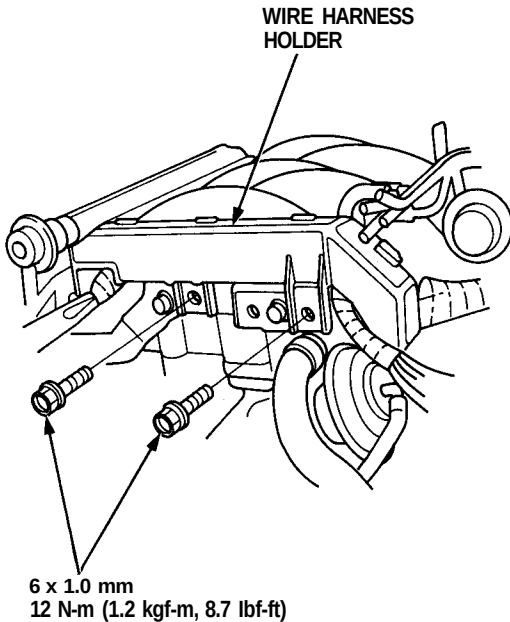


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Cylinder Heads

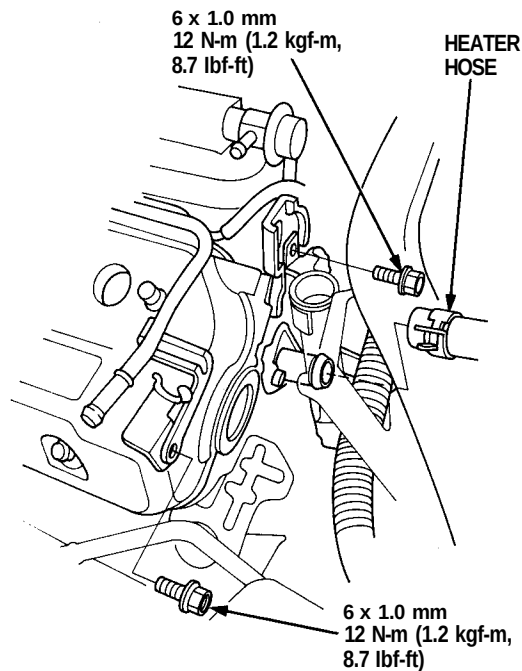
Removal (cont'd)

28. Remove the wire harness holder mounting bolts.

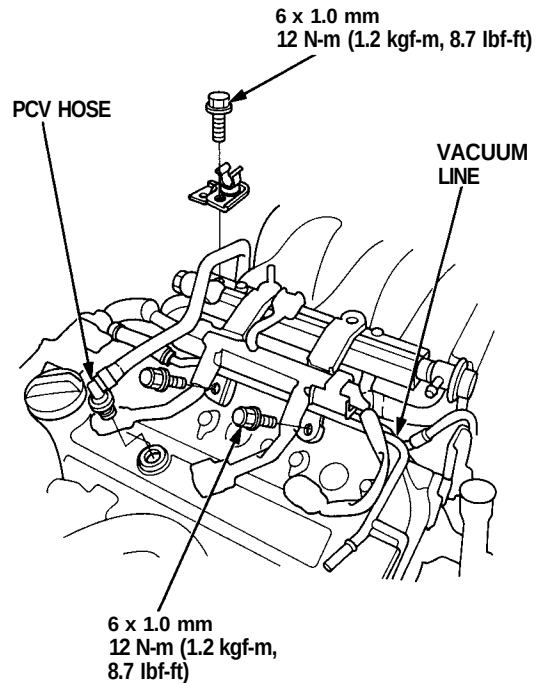


29. Remove the bolt securing the automatic transmission fluid (ATF) dipstick tube bracket.

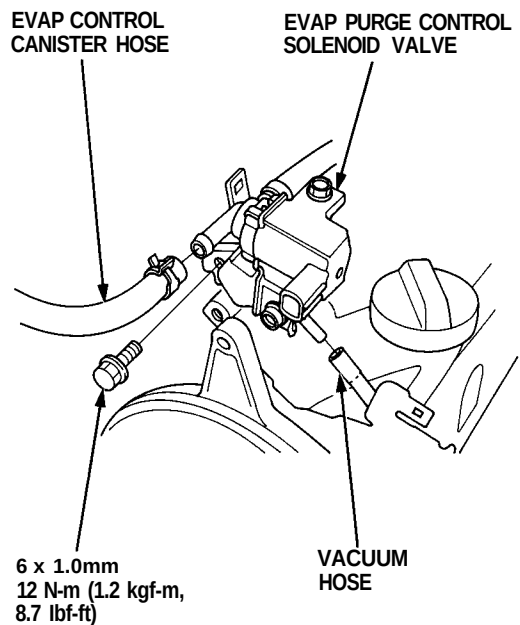
30. Remove the heater hose.



31. Remove the vacuum line mounting bolts, wire harness holder and positive crankcase ventilation (PCV) hose.



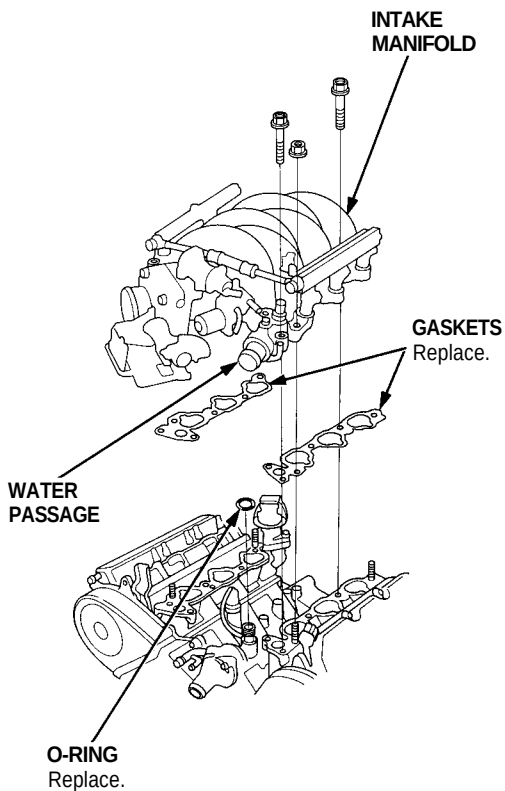
32. Remove the EVAP canister hose, EVAP purge solenoid valve and vacuum hose.





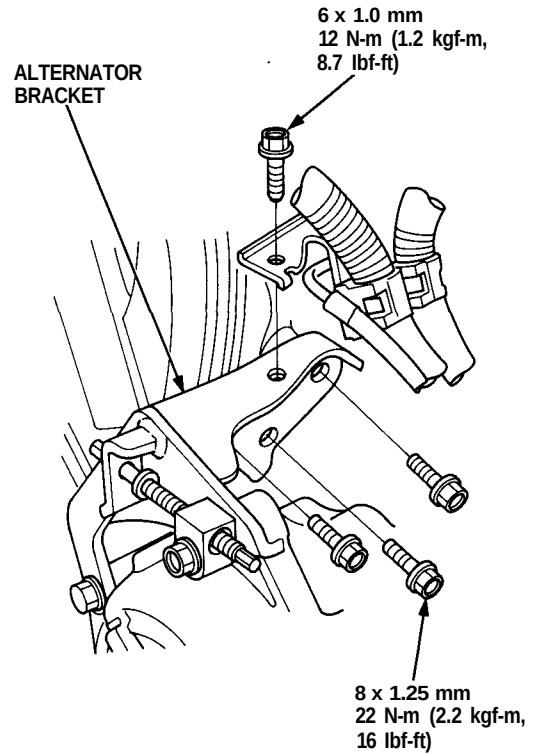
33. Remove the TCS control valve upper and lower brackets (see page 6-8).
34. Disconnect the TCS throttle position sensor connector and TCS throttle actuator connector, then remove the TCS control valve assembly (see page 6-8).
35. Remove the intake manifold and water passage.

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

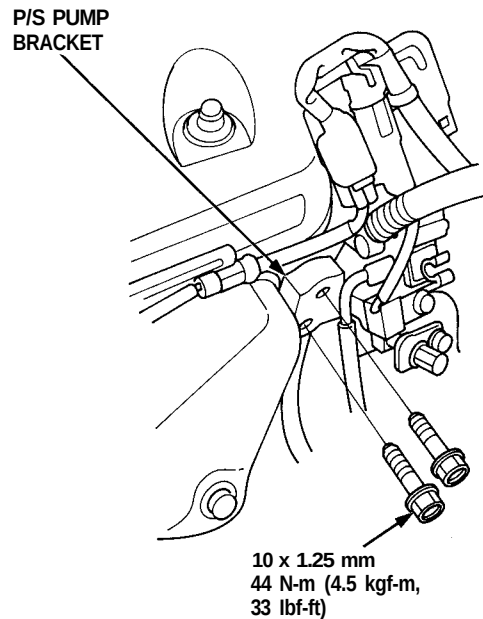


36. Remove the covers, then remove the left and right exhaust manifolds (see page 9-4).
37. Remove the balancer belt and timing belt (see page 6-8).

38. Remove the three bolts securing the alternator bracket.



39. Remove the two bolts securing the P/S pump bracket.

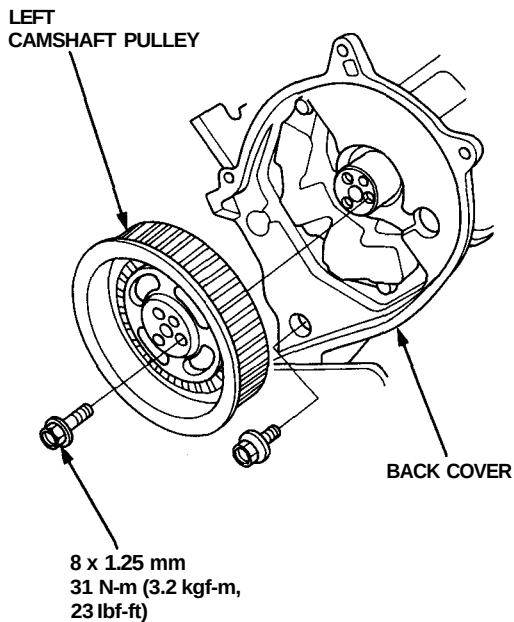
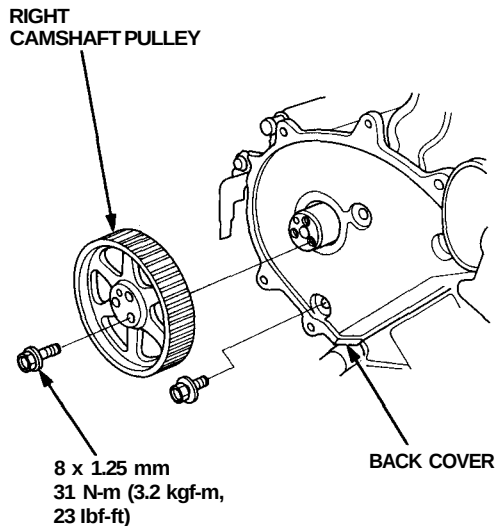


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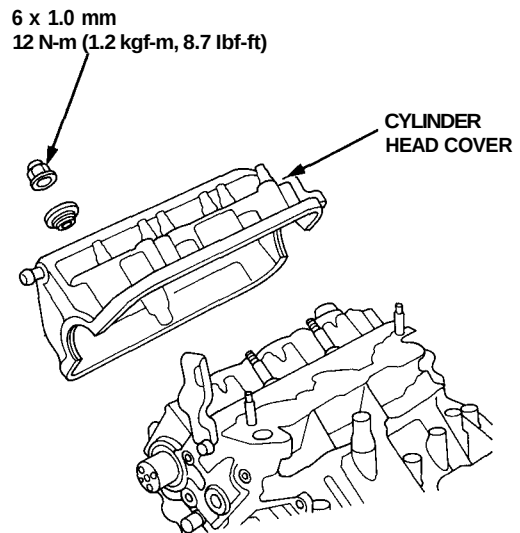
Cylinder Heads

Removal (cont'd)

40. Remove the left and right camshaft pulleys, then remove the back covers.



41. Remove the left and right cylinder head covers.



42. 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 the sequence until all bolts are loose.

CYLINDER HEAD BOLTS LOOSENING SEQUENCE:

