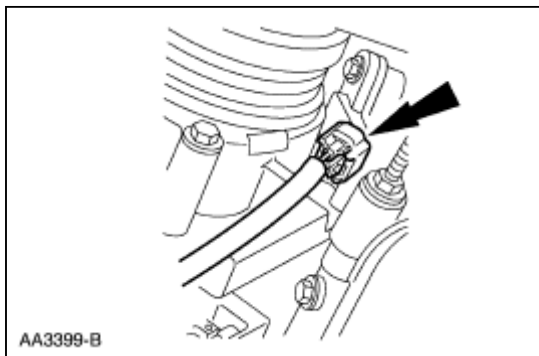


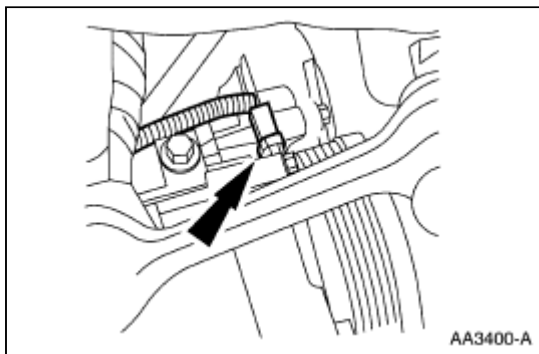
Intake Manifold —Gasoline Engines

Removal

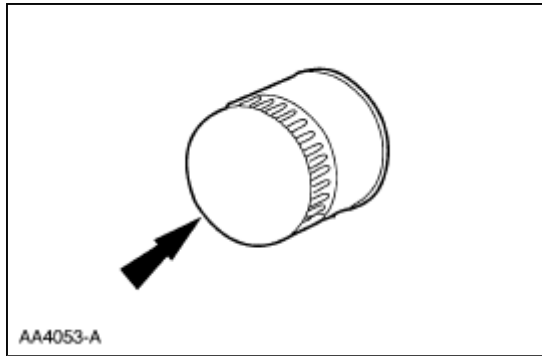
1. Disconnect the battery ground cable. For additional information, refer to [Section 414-01](#).
2. Drain the engine cooling system. For additional information, refer to [Section 303-03](#).
3. Remove the air cleaner outlet tube. For additional information, refer to [Section 303-12](#).
4. Disconnect the fuel line. For additional information, refer to [Section 310-00A](#) or [Section 310-00B](#).
5. Remove the wiper mounting arm and pivot shaft. For additional information, refer to [Section 501-16](#).
6. Remove the drive belt. For additional information, refer to [Section 303-05](#).
7. Raise the vehicle on a hoist. For additional information, refer to [Section 100-02](#).
8. Disconnect the electrical connector at the crankshaft position (CKP) sensor.
 - Disconnect the pin-type retainer from the A/C compressor bracket.



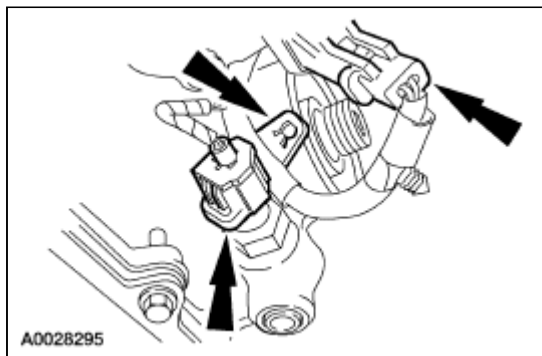
9. Disconnect the electrical connector from the A/C compressor.



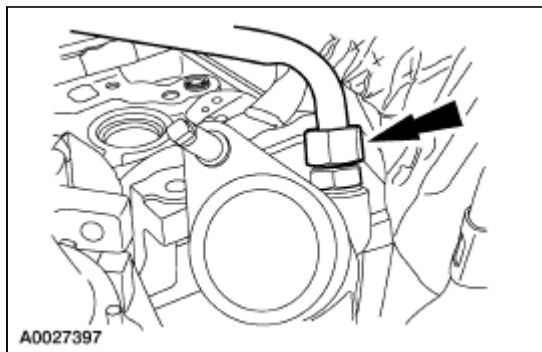
10. Remove the oil bypass filter.



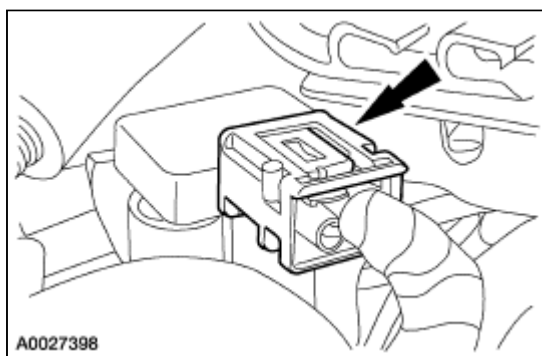
11. Disconnect the oil pressure sensor electrical connector and the power steering pressure (PSP) switch electrical connector.



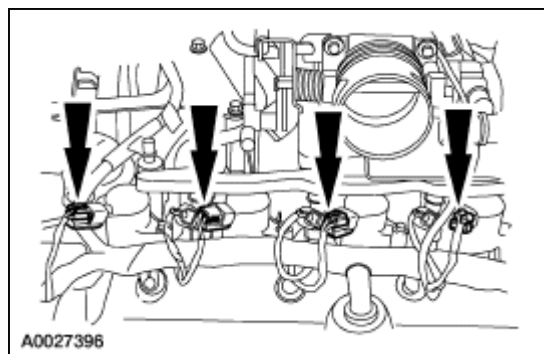
12. Remove the RH catalytic converter assembly. For additional information, refer to [Section 309-00](#).
13. Disconnect the exhaust gas recirculation (EGR) tube from the exhaust manifold.



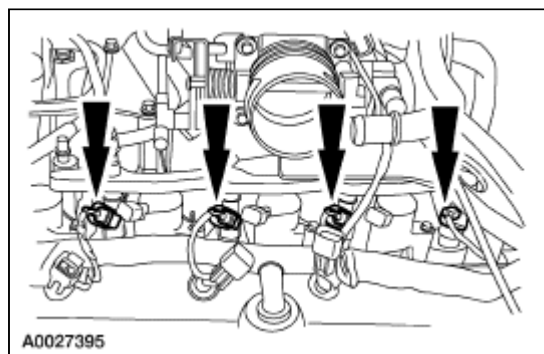
14. Lower the vehicle.
15. Disconnect the differential pressure feedback EGR electrical connector.



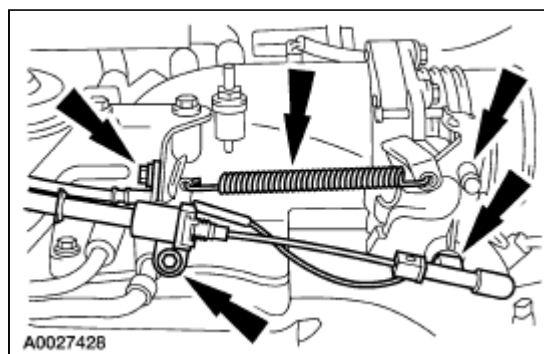
16. Disconnect the fuel charging wiring electrical connectors from the eight ignition coils.



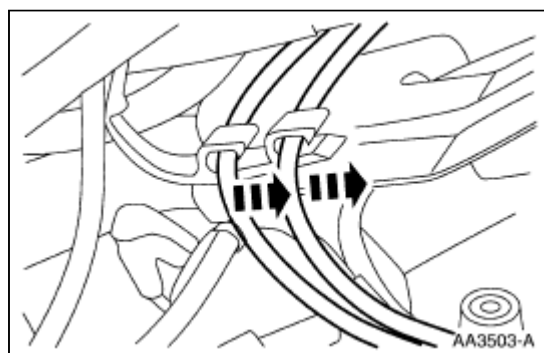
17. Disconnect the fuel charging wiring electrical connectors from the eight fuel injectors.



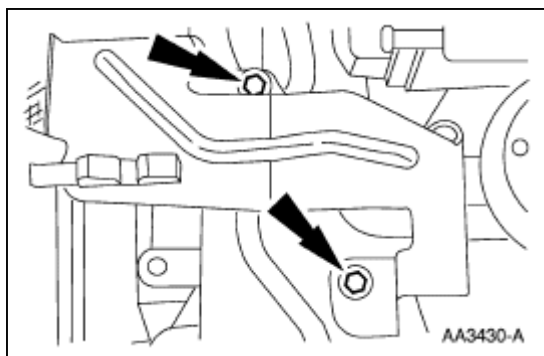
18. Disconnect the accelerator cable, the speed control actuator cable and the throttle return spring.



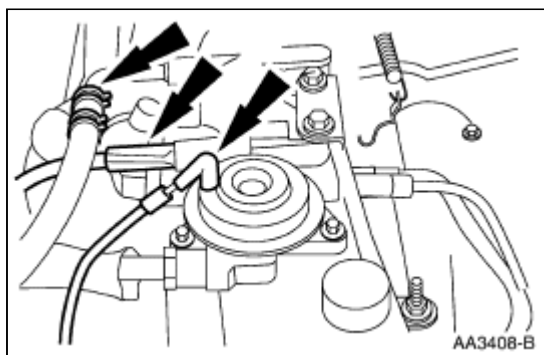
19. Remove the cables from the EGR tube heat shield and position out of the way.



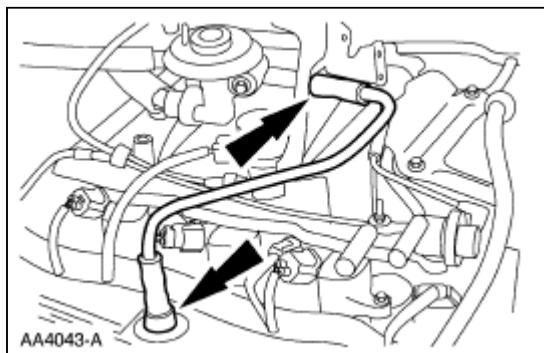
20. Remove the bolts and the EGR tube heat shield.



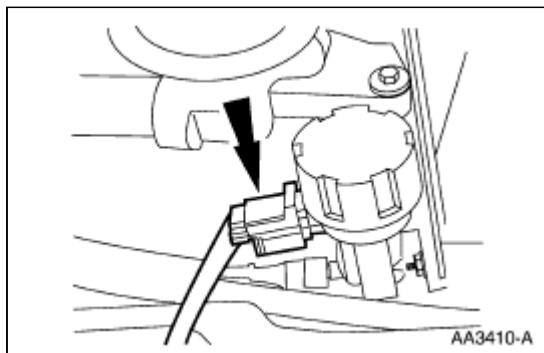
21. Disconnect the evaporative emissions (EVAP) return tube, the main chassis vacuum supply line, and the EGR valve vacuum supply.



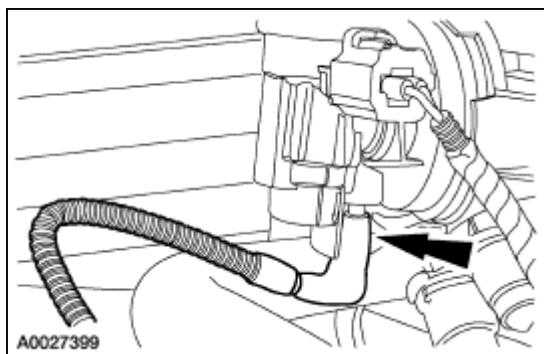
22. Disconnect the positive crankcase ventilation (PCV) tube assembly at two locations and remove.



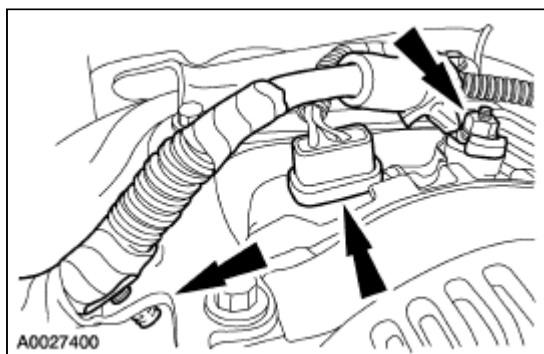
23. Disconnect the electrical connector from the EGR vacuum regulator solenoid.



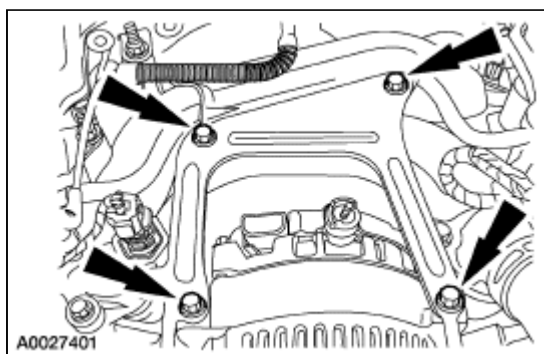
24. Disconnect the vacuum line from the EVAP canister purge valve.



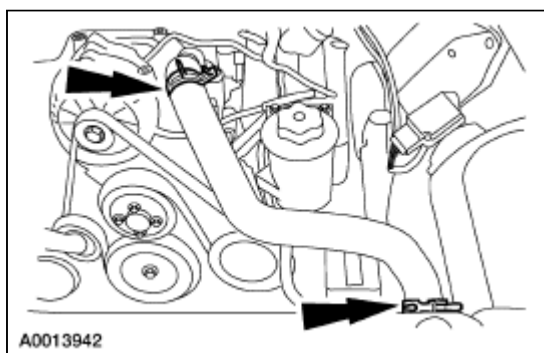
25. Disconnect the generator cable, the electrical connector and the harness pin-type retainer.



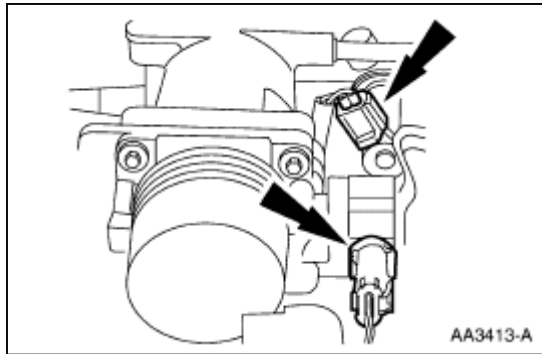
26. Remove the bolts and the generator mounting bracket.



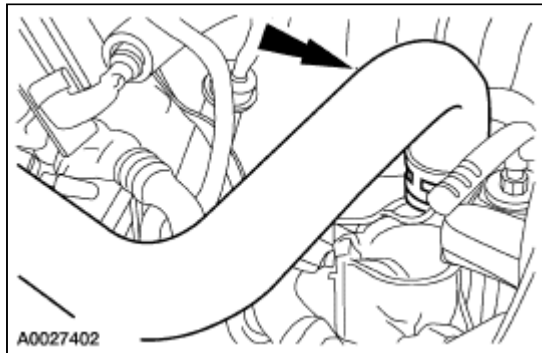
27. Remove the upper radiator hose.



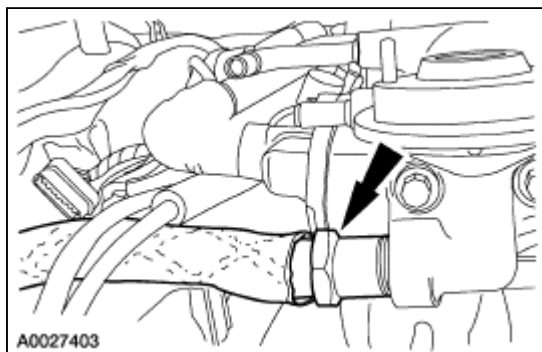
28. Disconnect the electrical connector from the idle air control (IAC) valve and the throttle position (TP) sensor.



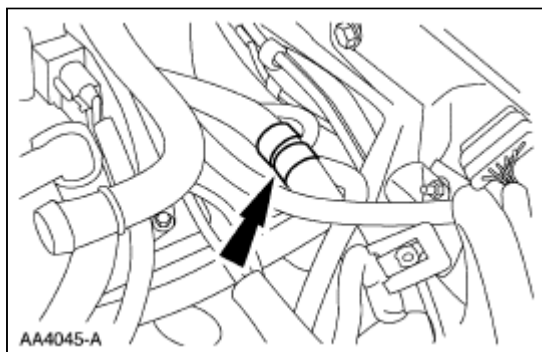
29. Disconnect the heater water hose.



30. Disconnect the EGR tube nut from the EGR valve.



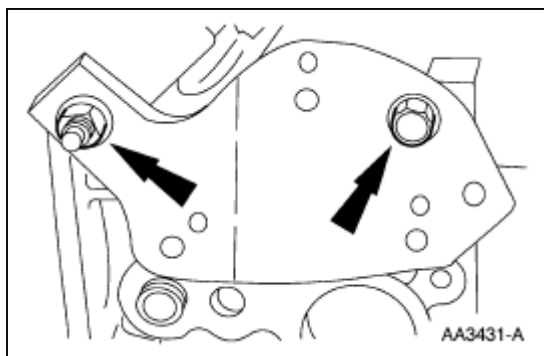
31. Separate the fuel charging wiring harness pin-type retainer from the crash bracket.



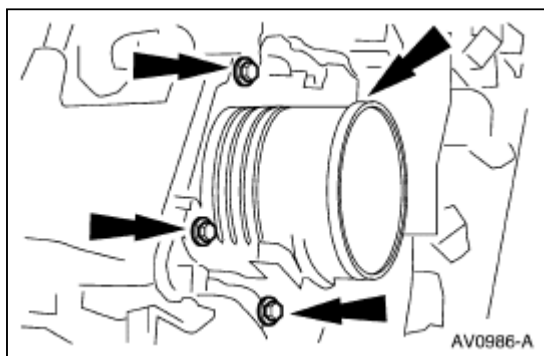
32. **NOTE:** The LH heated oxygen sensor and the transmission electrical connectors are attached to the wiring bracket and must be separated from the bracket.

Remove the wiring bracket.

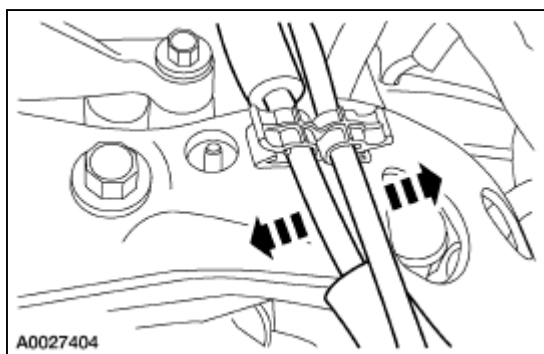
- Disconnect the wiring connectors.
- Separate the transmission harness from the stud.
- Remove the nut and the bolt and remove the bracket.



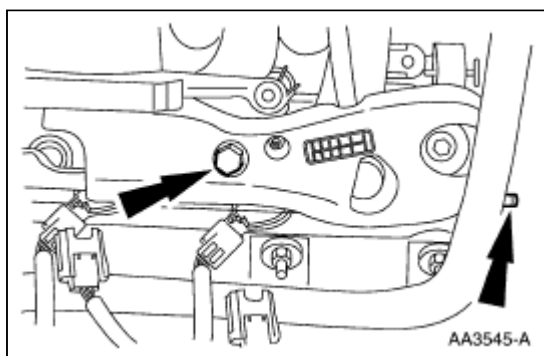
33. Remove the bolts and the throttle body.



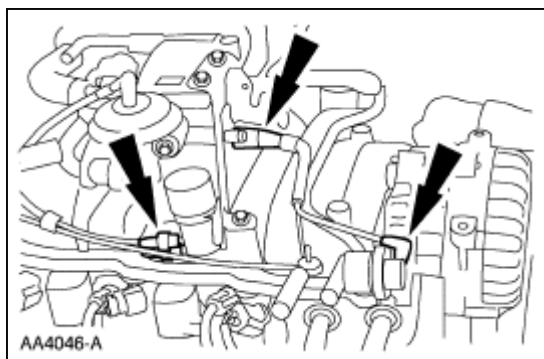
34. Remove the cables from the crash bracket.



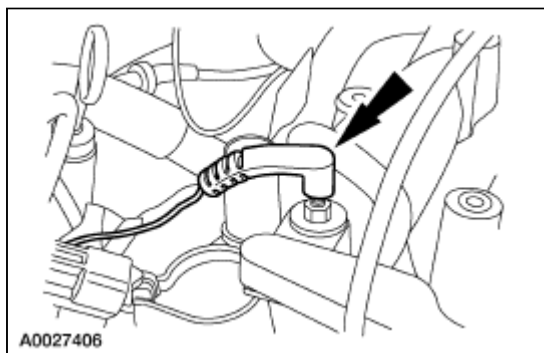
35. Remove the bolt and the stud and remove the crash bracket.



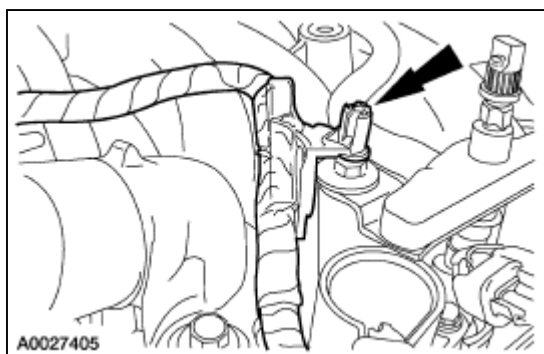
36. Disconnect the vacuum lines and remove the vacuum harness.



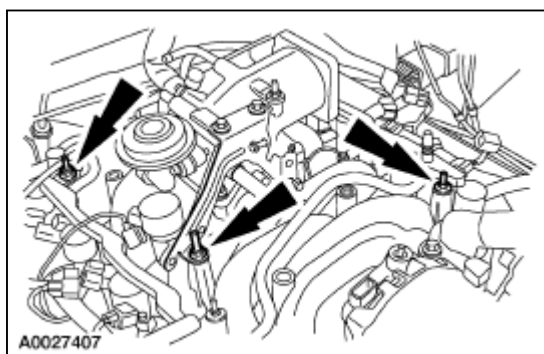
37. Remove the ground connector from the RH rear stud.



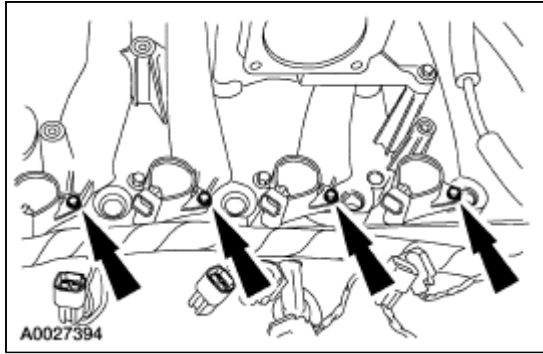
38. Remove the generator harness pin-type retainer from LH front stud.



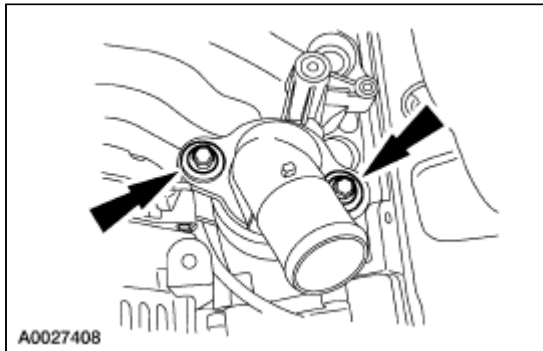
39. Remove the four studs and the fuel injection supply manifold and fuel injectors as an assembly.



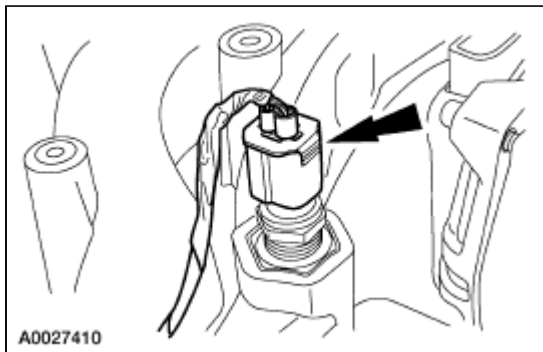
40. Remove the eight bolts and the eight ignition coils.



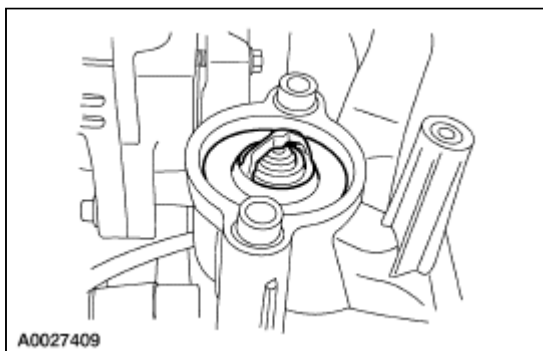
41. Remove the bolts and the water outlet adapter.



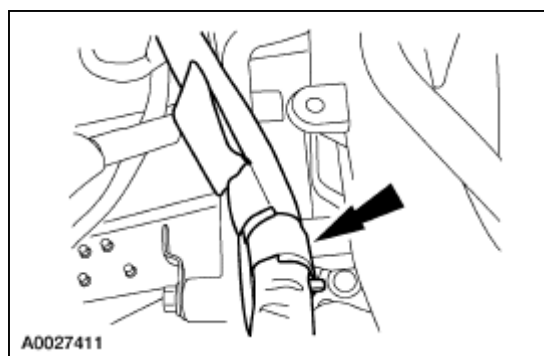
42. Disconnect the cooling sensor electrical connector.



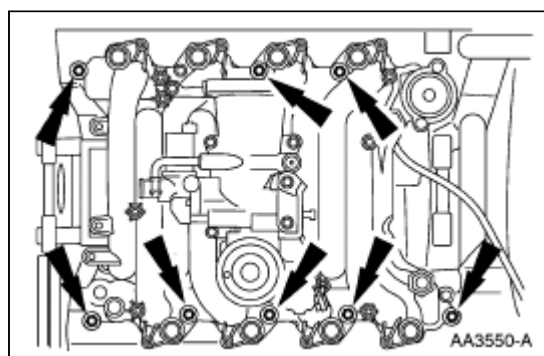
43. Remove the water thermostat.



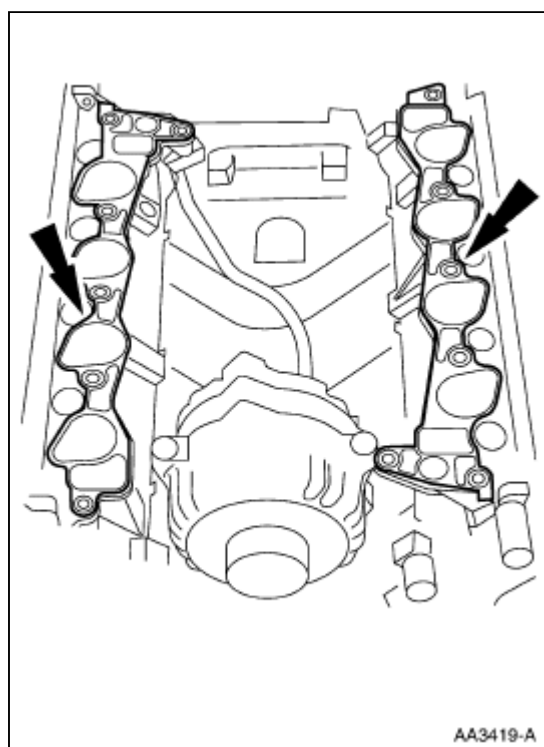
44. Remove the fuel charging wiring position retainer from the rear of the intake manifold.



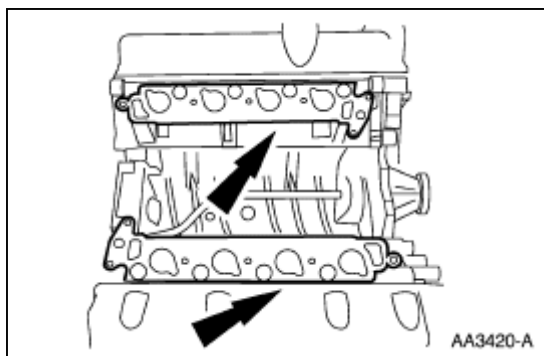
45. Remove the bolts and the intake manifold.



46. Remove the intake manifold gaskets.



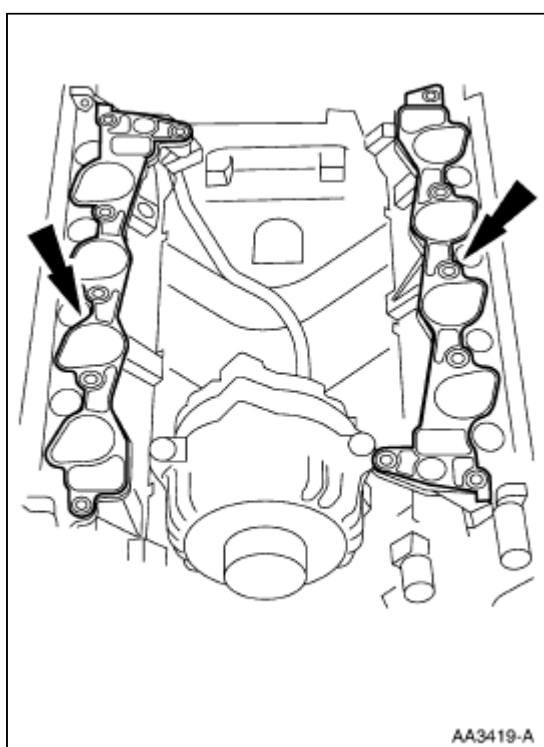
47. Clean the sealing surfaces.



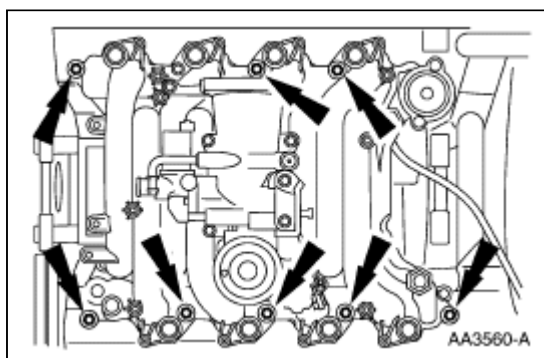
Installation

1. **NOTE:** Align the gasket tabs with the slots in the block.

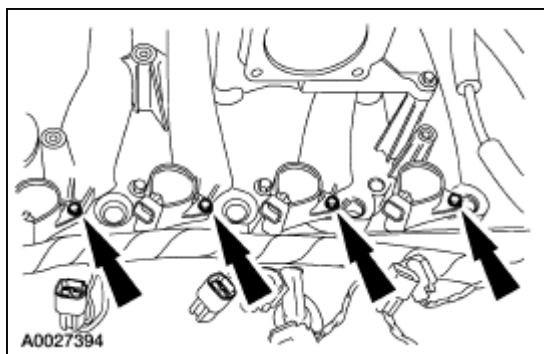
Install the new intake manifold gaskets.



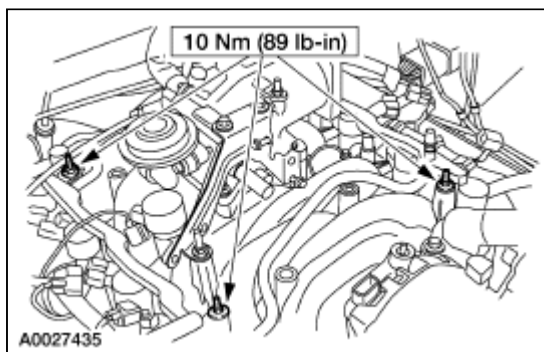
2. Install the intake manifold and hand-tighten the bolts at the locations shown.



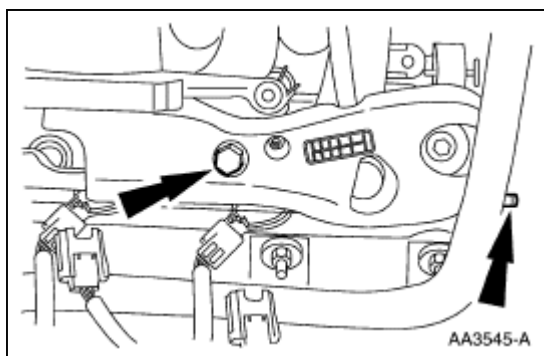
3. Install the eight ignition coils and tighten the eight bolts.



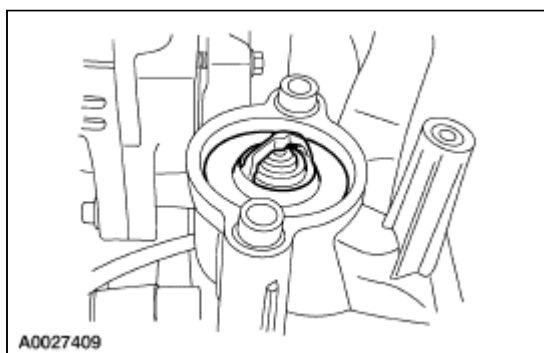
4. Install the fuel injection supply manifold and tighten the four studs.



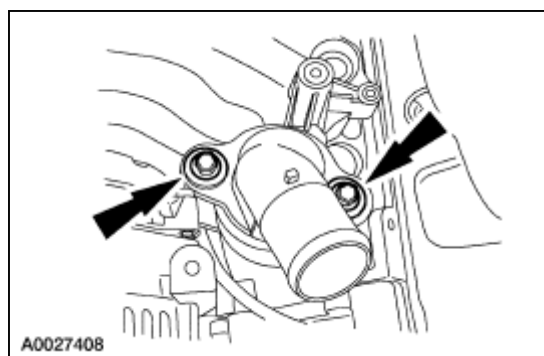
5. Install the crash bracket and loosely install the bolt and the stud.



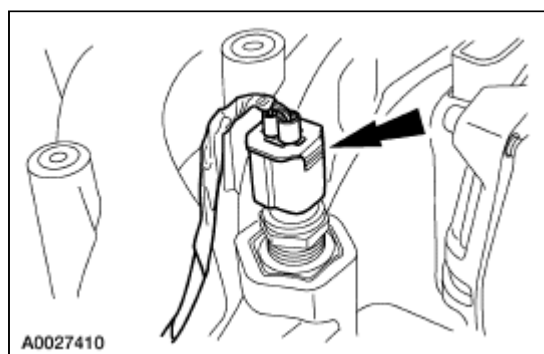
6. Install the water thermostat.



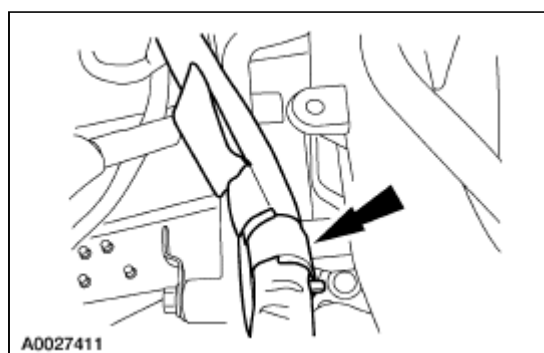
7. Install the water outlet adapter and loosely install the bolts.



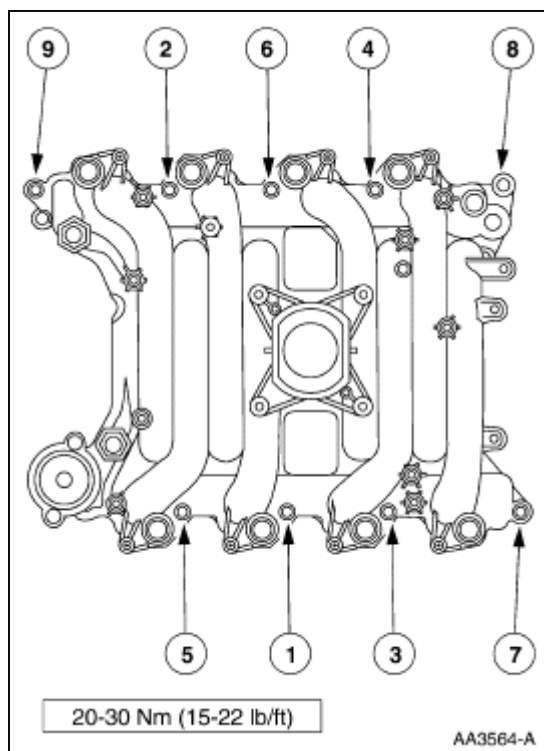
8. Connect the coolant sensor connector.



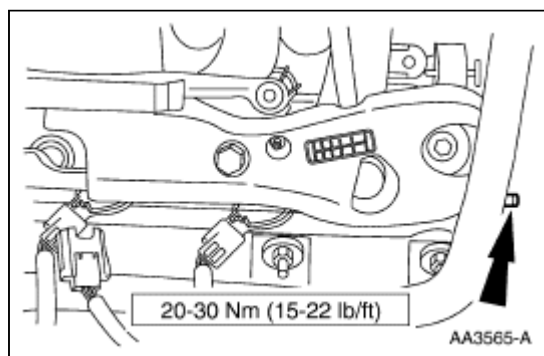
9. Connect the fuel charging wiring harness position retainer to rear of the intake manifold.



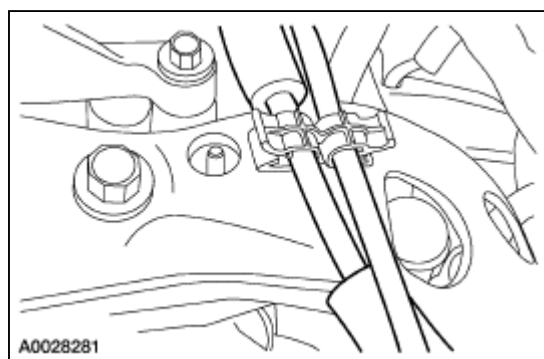
10. Tighten the bolts in the sequence shown.



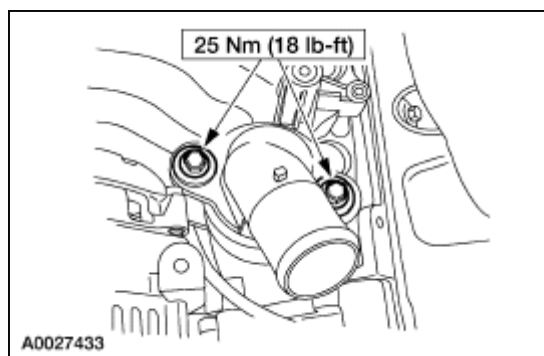
11. Tighten the stud.



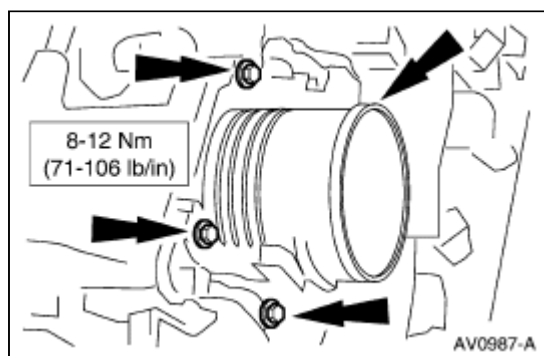
12. Install the cables to the crash bracket.



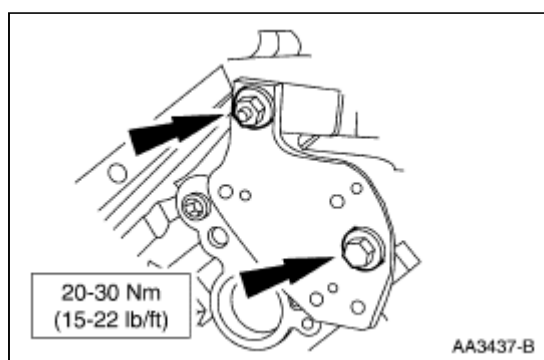
13. Tighten the bolts.



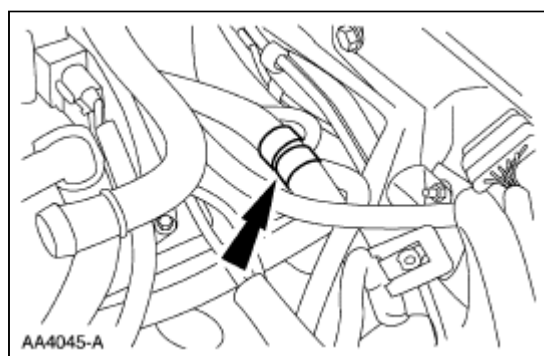
14. Install the throttle body and tighten the bolts.



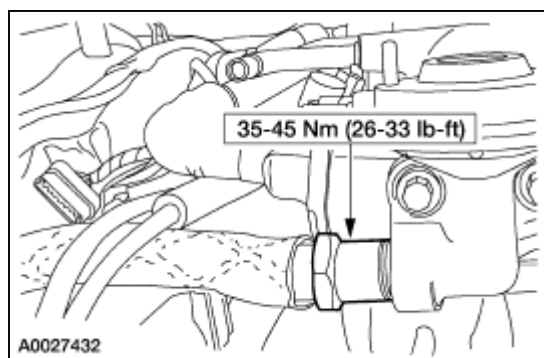
15. Install the wiring bracket.
- Position the bracket.
 - Install the nut and the bolt.
 - Attach the wiring connectors to the wiring bracket.
 - Connect the LH heated oxygen sensor electrical connector.



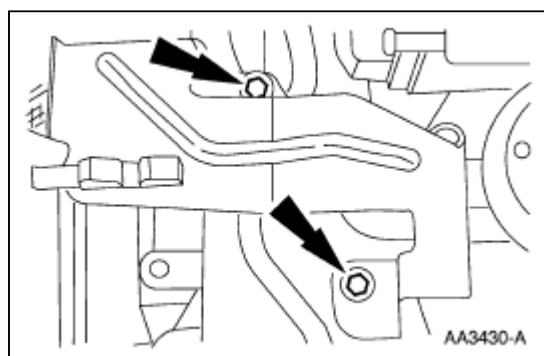
16. Attach the fuel charging wiring harness pin-type retainer to the crash bracket.



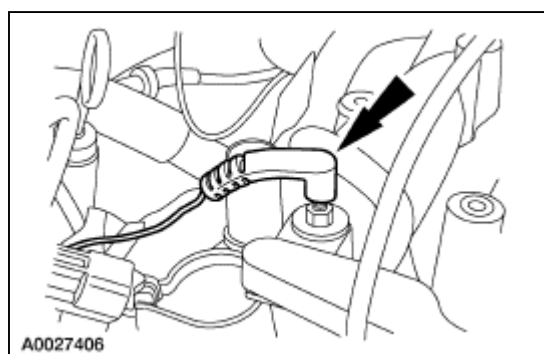
17. Connect the EGR tube to the EGR valve.



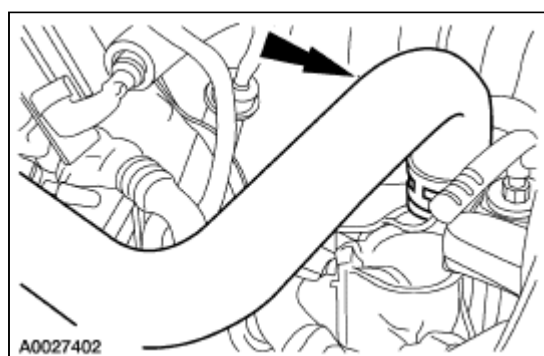
18. Position the EGR tube heat shield and install the bolts.



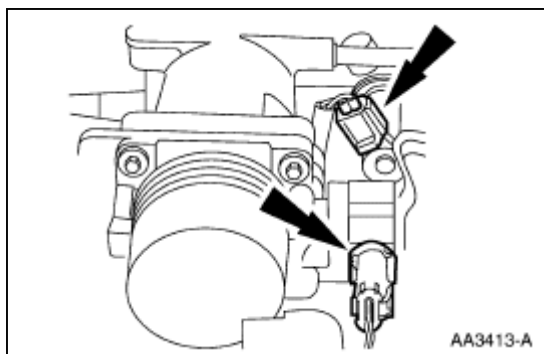
19. Connect the ground connector to RH rear stud.



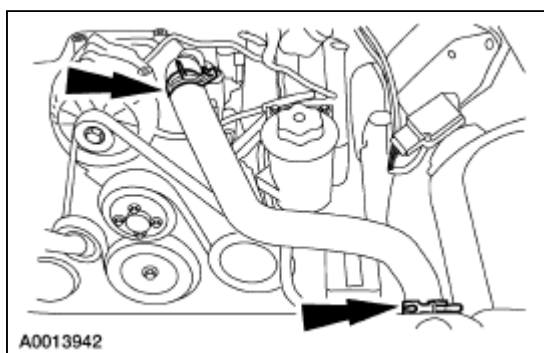
20. Connect the heater water hose and position the clamp.



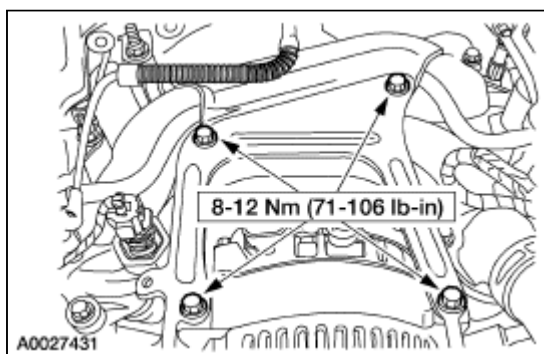
21. Connect the electrical connector to the:
- IAC control valve.
 - TP sensor.



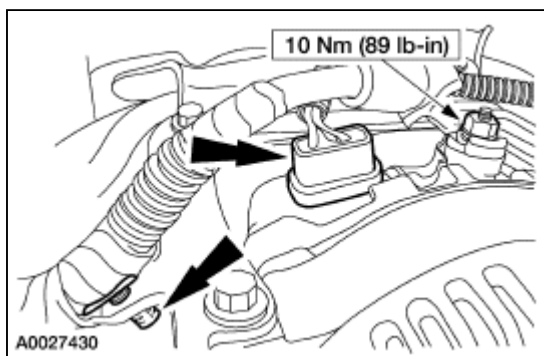
22. Install the upper radiator hose:
- Install the upper radiator hose.
 - Position the clamps.



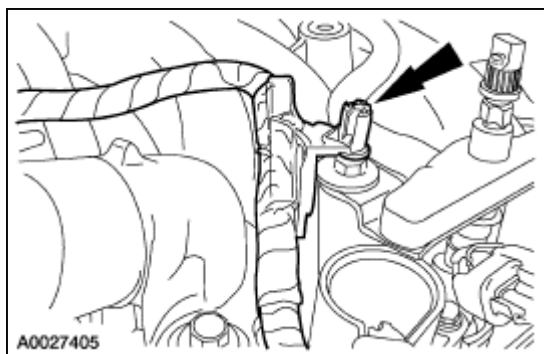
23. Install the generator mounting bracket and the bolts.



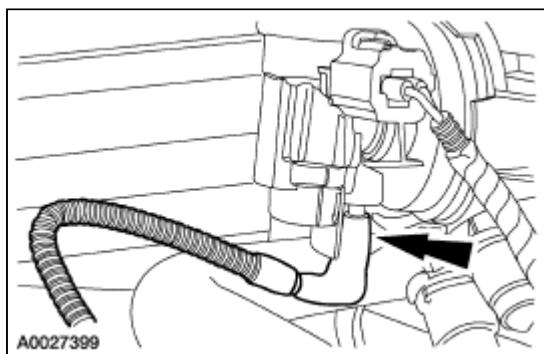
24. Connect the generator electrical connector, the cable and the harness pin-type retainer.



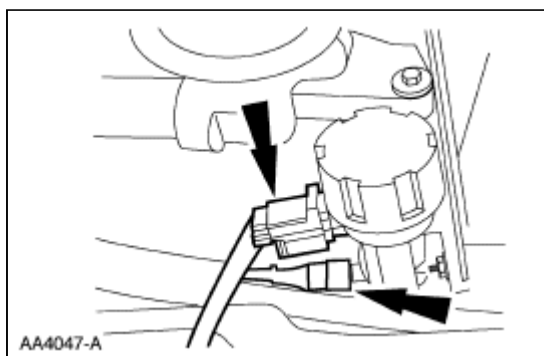
25. Install the generator harness position retainer to LH front studs.



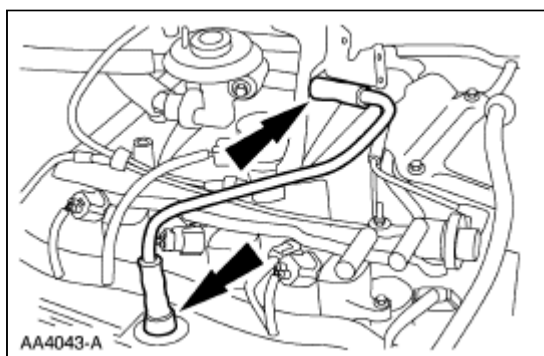
26. Position the vacuum harness and connect the vacuum line to the EVAP canister purge valve.



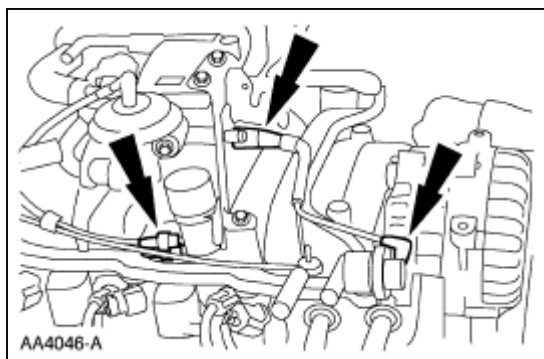
27. Connect the electrical connector and the vacuum lines to the EGR vacuum regulator solenoid.



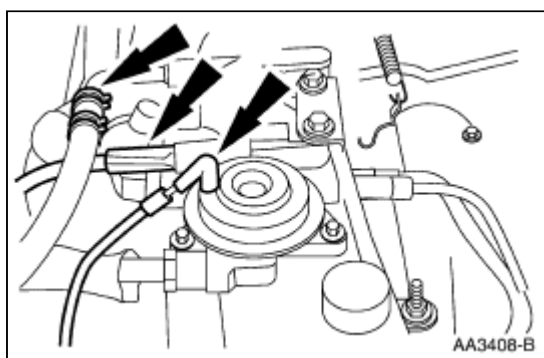
28. Install and connect the PCV tube.



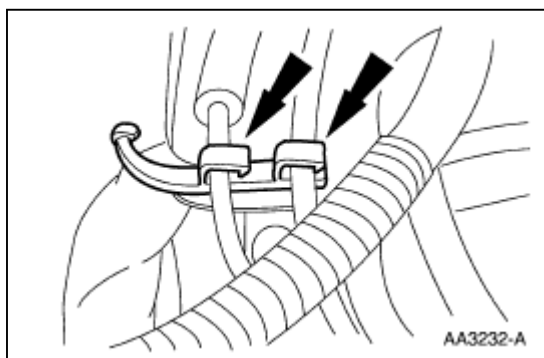
29. Connect the vacuum harness.



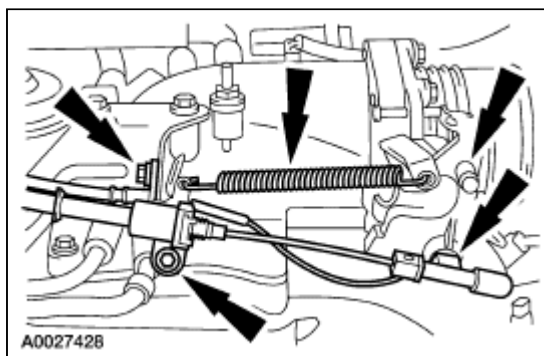
30. Connect the vacuum lines for the EVAP canister purge valve, the main chassis vacuum supply line and the EGR valve.



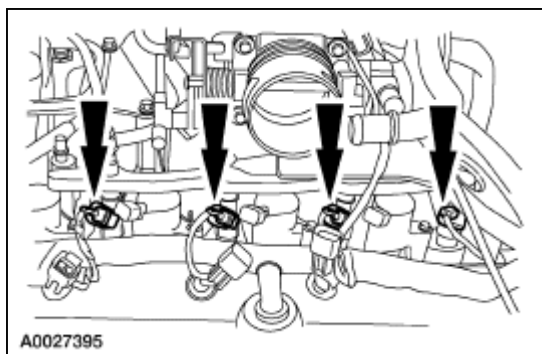
31. Reposition and attach the cables to the EGR tube heat shield.



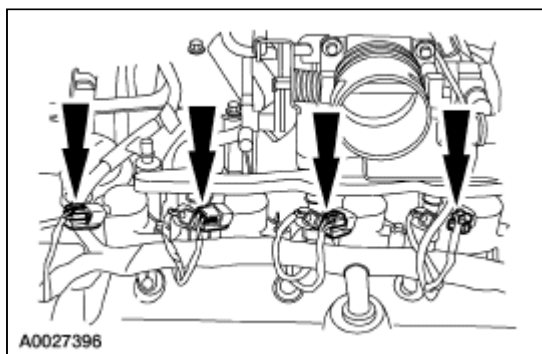
32. Connect the accelerator cable and the speed control actuator cable, and the throttle return spring.



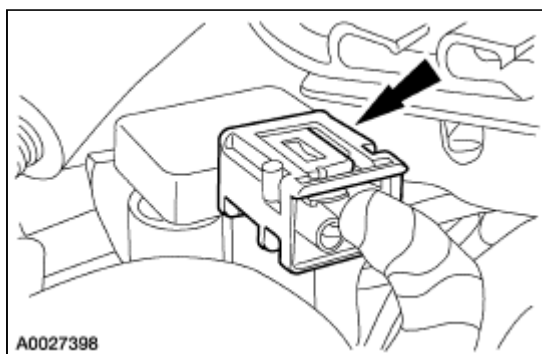
33. Connect the fuel charging wiring electrical connectors to the eight fuel injectors.



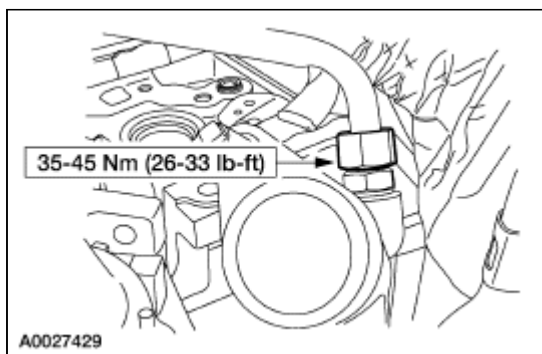
34. Connect the fuel charging wiring electrical connectors to the eight ignition coils.



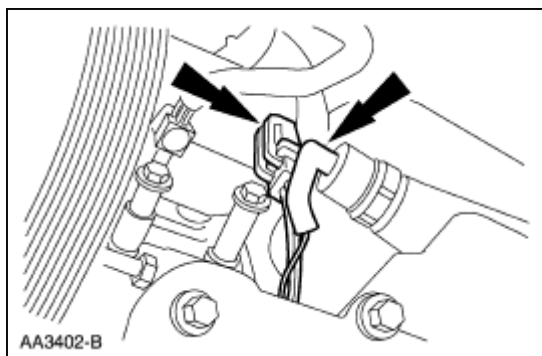
35. Connect the differential pressure feedback EGR electrical connectors.



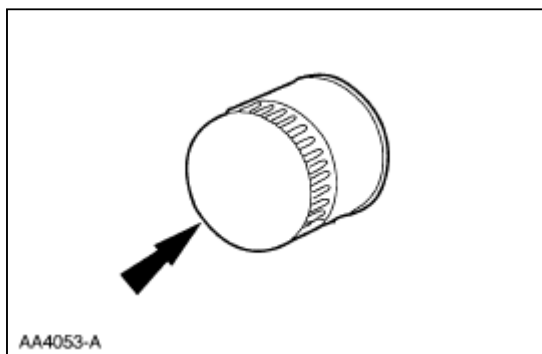
36. Raise the vehicle. For additional information, refer to [Section 100-02](#).
37. Connect the EGR tube to the exhaust manifold.



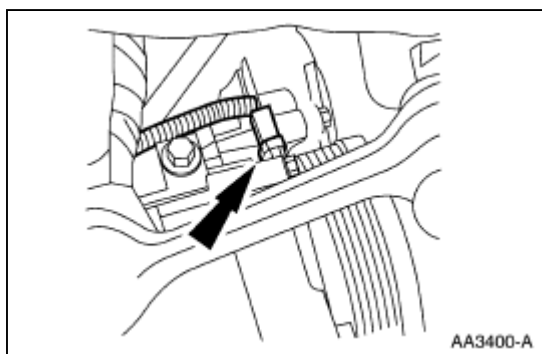
38. Connect the electrical connector to the oil pressure sensor and the PSP switch.



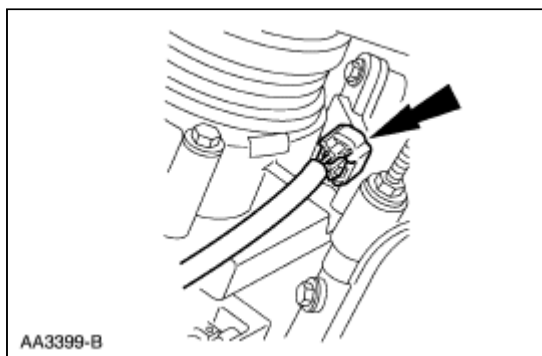
39. Install the oil bypass filter.



40. Connect the electrical connector to the A/C compressor.



41. Connect the electrical connector to the CKP sensor.
- Connect the pin-type retainer to the A/C Compressor bracket.



42. Install the RH catalytic converter assembly. For additional information, refer to [Section 309-00](#).
43. Lower the vehicle.
44. Install the drive belt. For additional information, refer to [Section 303-05](#).

45. Install the wiper mounting arm and pivot shaft. For additional information, refer to [Section 501-16](#).
 46. Connect the fuel line. For additional information, refer to [Section 310-00A](#) or [Section 310-00B](#).
 47. Install the air cleaner outlet tube. For additional information, refer to [Section 303-12](#).
 48. Connect the battery ground cable. For additional information, refer to [Section 414-01](#).
 49. Check the engine oil.
 50. Fill the engine cooling system. For additional information, refer to [Section 303-03](#).
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