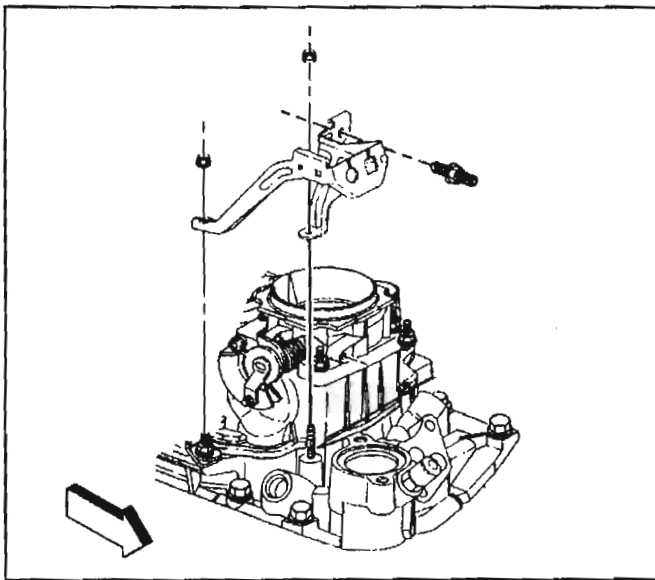
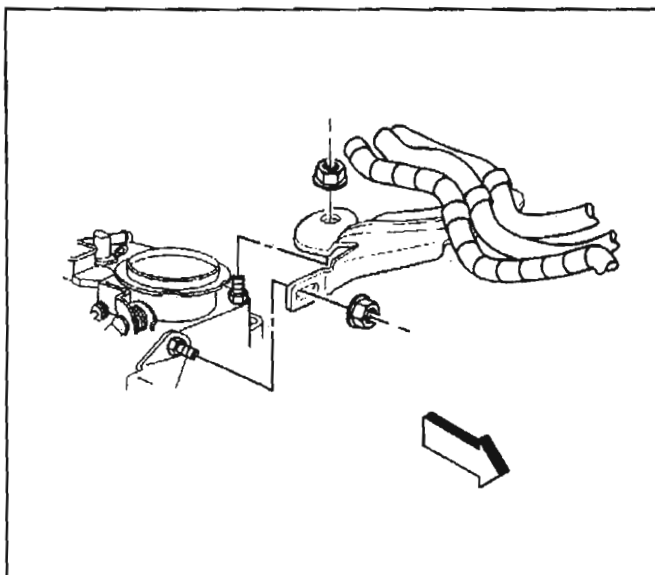


1386



398027



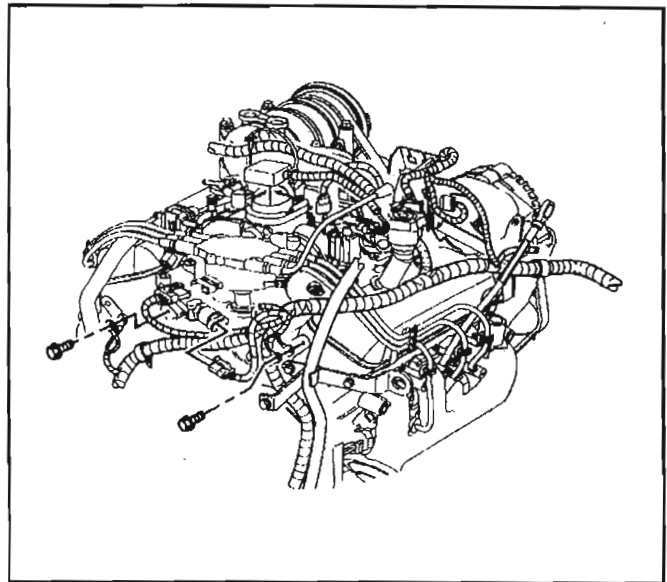
339439

## Intake Manifold Replacement (Lower)

### Removal Procedure

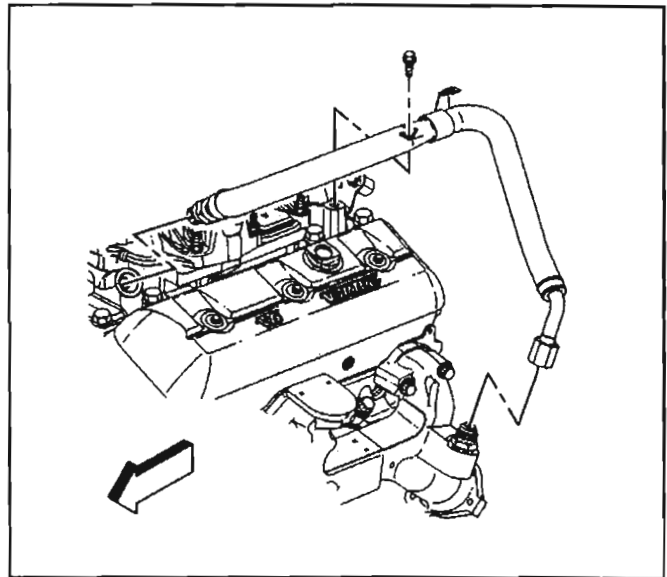
1. Disconnect the battery negative cable. Refer to *Battery Replacement* in Engine Electrical.
2. Remove the air cleaner outlet duct from the throttle body. Refer to *Air Cleaner Outlet Duct Replacement* in Engine Controls.
3. Remove the air cleaner assembly. Refer to *Air Cleaner Assembly Replacement* in Engine Controls.
4. Drain the cooling system. Refer to *Draining and Filling Cooling System* in Engine Cooling.
5. Remove the radiator inlet hose at the water outlet.
6. Remove the heater hose from the intake manifold.
7. Remove the water pump inlet hose from the intake manifold.
8. Disconnect the accelerator control cable from the throttle shaft and the accelerator cable bracket. Refer to *Accelerator Controls Cable Replacement* in Engine Controls.
9. Disconnect the cruise control cable, if equipped from the throttle shaft and the accelerator cable bracket. Refer to *Cruise Control Cable Replacement (4.3L)* in Cruise Control.
10. Remove the accelerator cable bracket from the throttle body and the intake manifold.
11. Remove the accelerator and the cruise control cable bracket from the throttle bracket.  
Leave the accelerator and cruise control cables and the wiring harness on the bracket.

12. Remove the following electrical connectors:
  - The fuel meter body assembly
  - The EVAP canister purge solenoid valve
  - The idle air control (IAC) motor
  - The throttle position (TP) sensor
  - The A/C compressor high pressure switch, if equipped
  - The A/C clutch switch, if equipped
  - The exhaust gas recirculation (EGR) valve
  - The engine coolant temperature (ECT) sensor
  - The ignition coil
  - The ignition control module (ICM)
13. Remove the engine wiring harness from the retainers.
14. Move the engine wiring harness aside.
15. Remove the distributor. Refer to *Distributor Replacement* in Engine Electrical.
16. Remove the exhaust gas recirculation (EGR) valve inlet pipe from the intake and exhaust manifold.
17. Disconnect the fuel supply and return pipes at the rear of the intake manifold. Refer to *Fuel Hose/Pipes Replacement (Engine Compartment)* in Engine Controls.

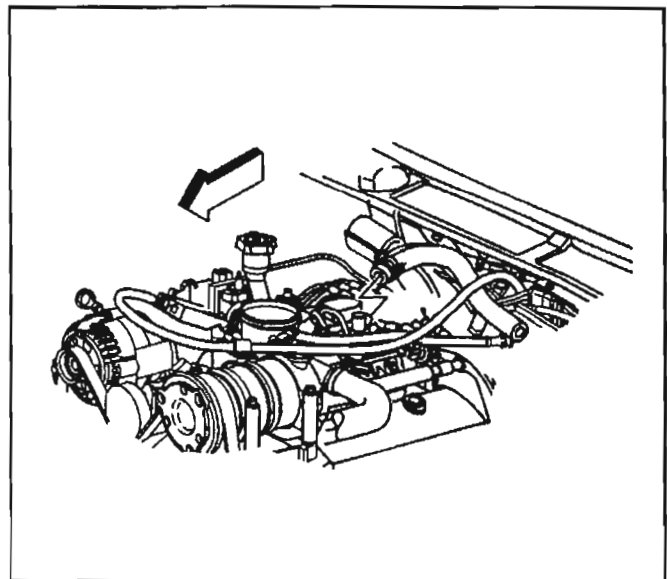


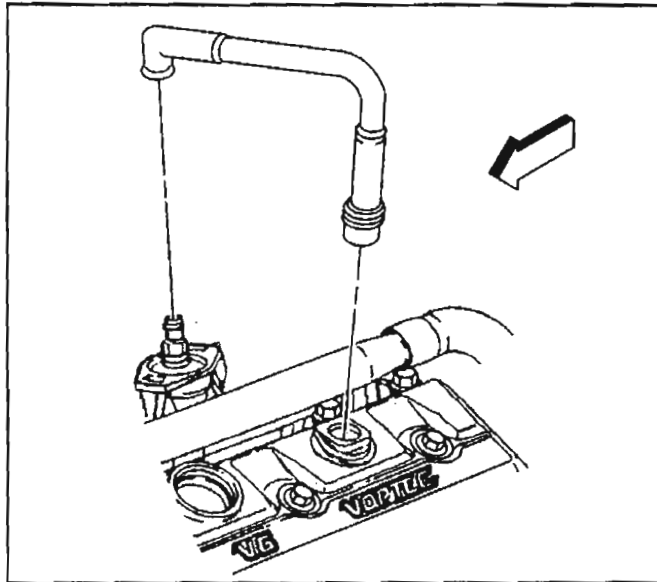
229077

18. Disconnect the vacuum hose from the intake manifold, if equipped with A/C.
19. Disconnect the vacuum brake booster hose

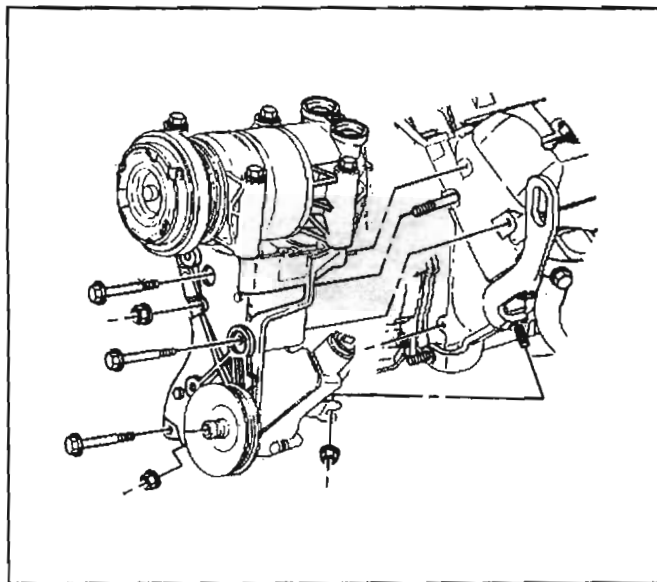


172982





172995



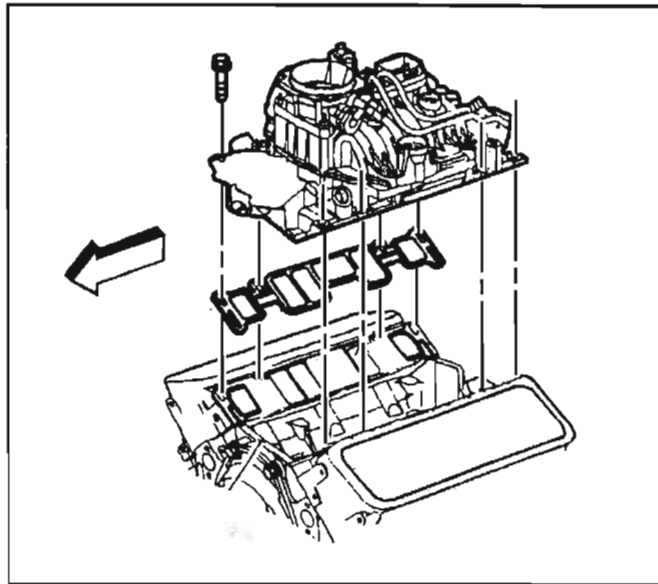
340090

20. Disconnect the PCV hose assembly from the intake manifold and the valve rocker arm cover.
21. Remove the EVAP canister purge solenoid valve. Refer to *EVAP Canister Purge Solenoid Valve Replacement* in Engine Controls.

**Important:** Do not discharge the refrigerant.

22. Perform the following in order to remove the left front bolt for the intake manifold:
  - 22.1. Remove the drive belt. Refer to *Drive Belt Replacement*.
  - 22.2. Loosen the nut for the power steering pump rear bracket at the side of the engine.
  - 22.3. Remove the secondary air injection (AIR) reactor pipe bracket nut from the power steering pump rear bracket front stud, if equipped.
  - 22.4. Remove the nut for the power steering pump rear bracket at the front of the engine.
  - 22.5. Remove the bolts and the nut for the power steering pump mounting bracket.
  - 22.6. Leave the A/C compressor, if equipped, and the power steering pump on the power steering pump mounting bracket.
  - 22.7. Slide the power steering pump bracket forward to access the bolt at the front of the intake manifold.

23. Remove the lower intake manifold. Refer to *Intake Manifold Removal*.
24. Clean all sealing surfaces. Refer to *Intake Manifold Clean and Inspect*.

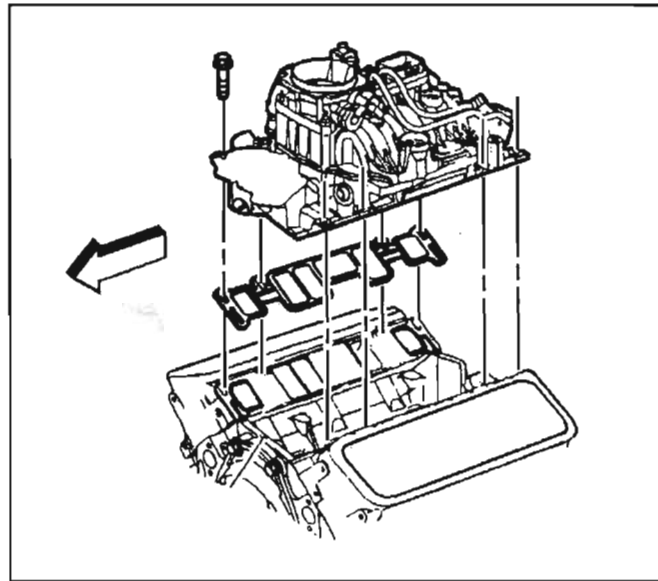


31510

**Installation Procedure**

**Notice:** Proper lower intake manifold fastener tightening sequence and torque is critical. Always follow the tightening sequence, and torque the intake manifold bolts using the 3 step method. Failing to do so may distort the crankshaft bearing bore alignment and cause damage to the crankshaft bearings.

1. Install the lower intake manifold. Refer to *Intake Manifold Installation*.



31510

2. Position the power steering pump mounting bracket.
3. Loosely install the power steering pump mounting bracket bolts and nuts.

**Notice:** Refer to *Fastener Notice* in Cautions and Notices.

4. Install the nut for the power steering pump rear bracket at the front of the engine.

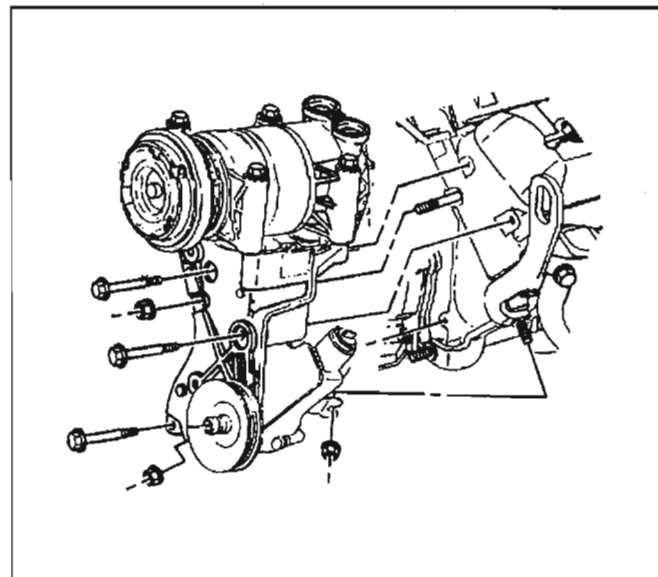
**Tighten**

Tighten the power steering pump mounting bracket bolts and the power steering pump rear bracket nuts to 41 N·m (30 lb ft).

5. Install the AIR reactor pipe bracket nut to the power steering pump rear bracket front stud, if equipped.

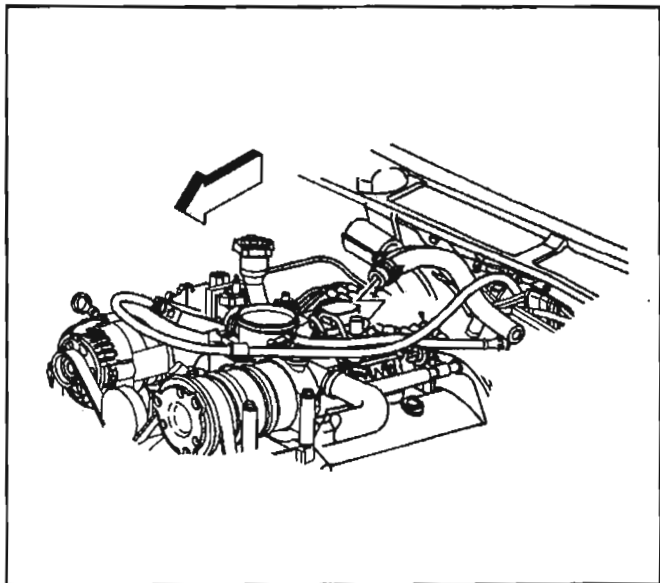
**Tighten**

Tighten the AIR reactor pipe bracket nut to 41 N·m (30 lb ft).

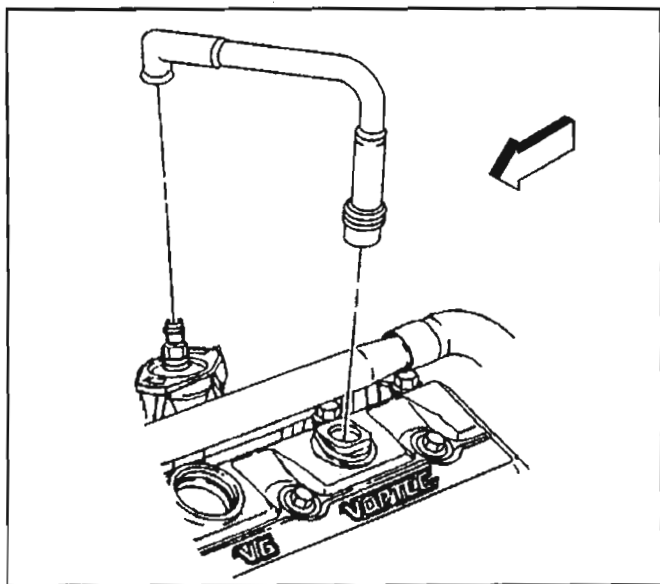


340090

6. Install the drive belt. Refer to *Drive Belt Replacement*.
7. Install the EVAP canister purge solenoid valve. Refer to *EVAP Canister Purge Solenoid Valve Replacement* in Engine Controls.
8. Connect the vacuum brake booster hose.
9. Connect the vacuum hose to the intake manifold, if equipped with A/C.



346148



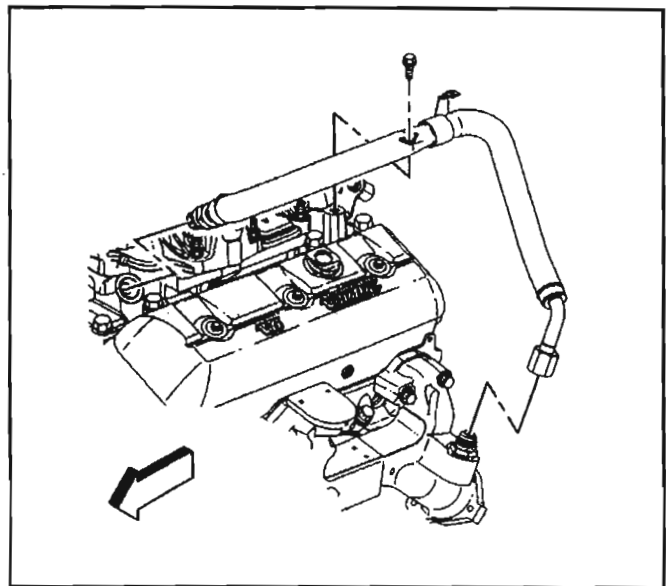
172995

10. Install the PCV hose assembly to the intake manifold and the valve rocker arm cover.
11. Install the fuel supply and return pipes to the rear of the intake manifold. Refer to *Fuel Hose/Pipes Replacement (Engine Compartment)* in Engine Controls.

12. Install the exhaust gas recirculation (EGR) valve inlet pipe to the intake manifold and the exhaust manifold.

**Tighten**

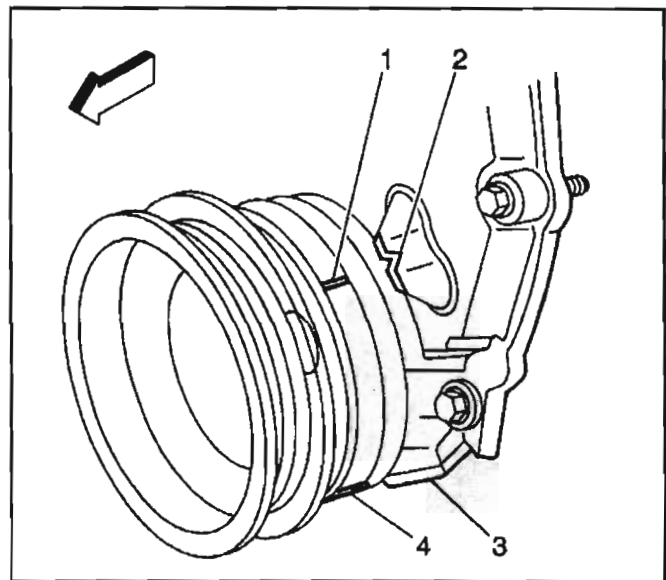
- 12.1. Tighten the EGR valve inlet pipe intake manifold nut to 25 N·m (18 lb ft).
- 12.2. Tighten the EGR valve inlet pipe exhaust manifold nut to 30 N·m (22 lb ft).
- 12.3. Tighten the EGR valve inlet pipe clamp bolt to 25 N·m (18 lb ft).



172982

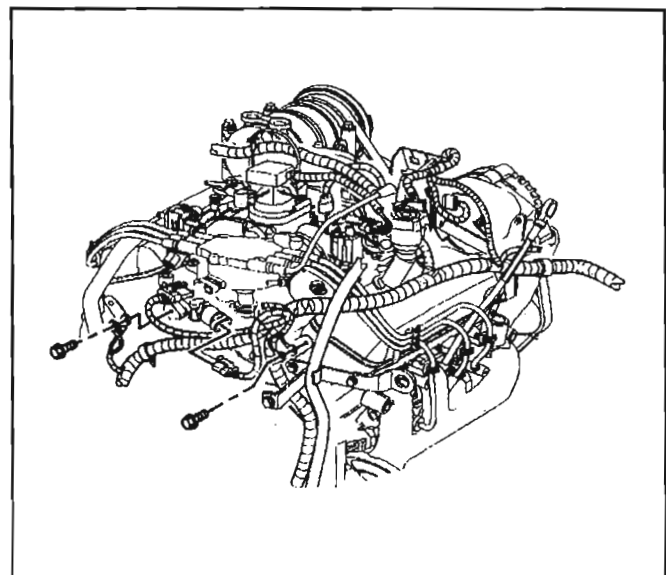
**important:** In order to install the distributor for the correct engine timing, position the engine to number one cylinder top dead center.

13. Remove the spark plug for number one cylinder.
14. Rotate the crankshaft until number one cylinder is in the compression stroke.
15. Align the two reference marks on the crankshaft balancer (1) and (4) with the two alignment marks (2) and (3) on the front cover.
16. Install the spark plug. Refer to *Spark Plug Replacement (4.3L)* in Engine Electrical.
17. Install the distributor. Refer to *Distributor Replacement* in Engine Electrical.

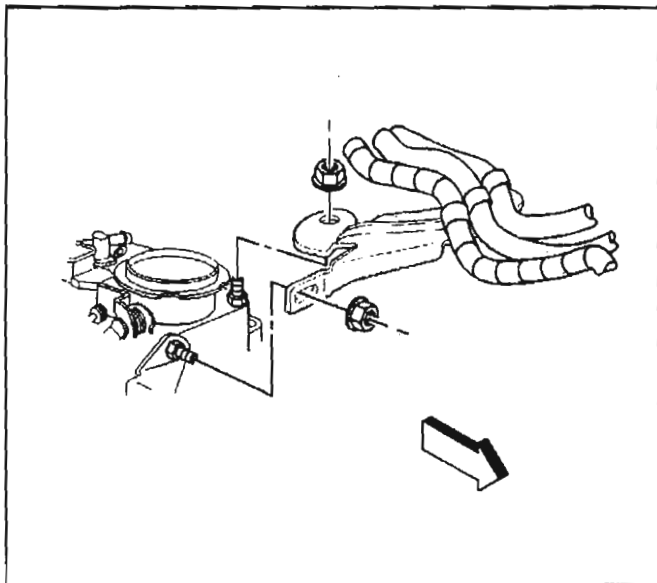


334551

18. Position the engine wiring harness.
19. Install the engine wiring harness in the retainers.
20. Install the following electrical connectors:
  - The fuel meter body assembly
  - The EVAP canister purge solenoid valve
  - The idle air control (IAC) motor
  - The throttle position (TP) sensor
  - The A/C compressor high pressure switch, if equipped.
  - The A/C compressor clutch switch, if equipped.
  - The exhaust gas recirculation (EGR) valve
  - The engine coolant temperature (ECT) sensor
  - The ignition coil
  - The ignition control module (ICM)



229077

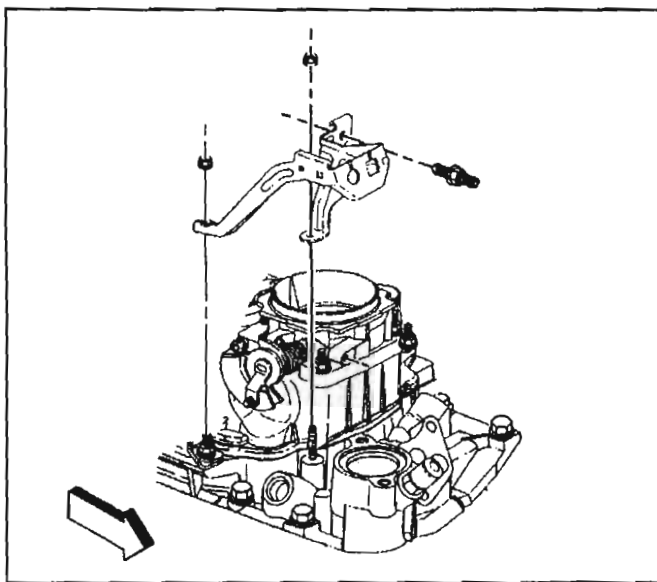


339439

21. Install the accelerator cable and cruise control bracket to the throttle body.

**Tighten**

Tighten the accelerator cable and cruise control bracket nuts to 9 N·m (80 lb in).



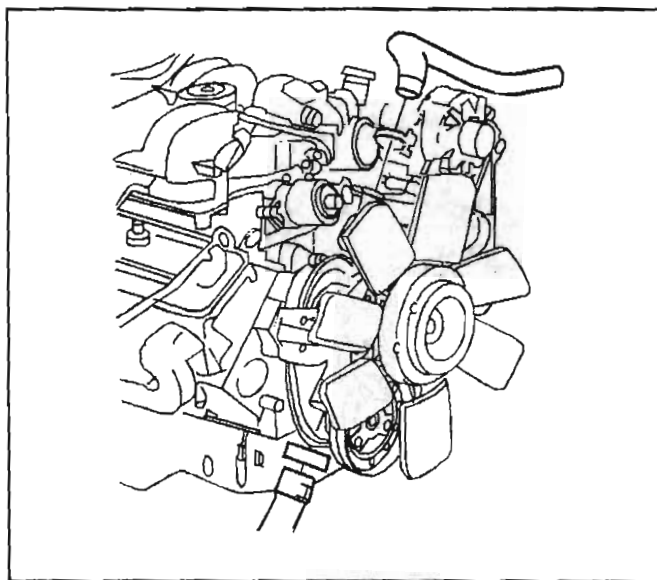
398027

22. Install the accelerator cable bracket to the intake manifold and the throttle body.

**Tighten**

Tighten the accelerator cable bracket studs and nuts to 12 N·m (106 lb in).

23. Install the accelerator control cable to the bracket and the throttle shaft. Refer to *Accelerator Controls Cable Replacement* in Engine Controls.
24. Install the cruise control cable, if equipped to the bracket and the throttle shaft. Refer to *Cruise Control Cable Replacement (4.3L)* in Cruise Control.



1386

25. Install the water pump inlet hose to the intake manifold.
26. Install the heater hose to the intake manifold.
27. Install the radiator inlet hose to the water outlet. Refer to *Radiator Hose Replacement (4.3L)* in Engine Cooling.
28. Fill the cooling system. Refer to *Draining and Filling Cooling System* in Engine Cooling.
29. Install the air cleaner assembly. Refer to *Air Cleaner Assembly Replacement* in Engine Controls.
30. Install the air cleaner outlet duct to the throttle body. Refer to *Air Cleaner Outlet Duct Replacement* in Engine Controls.
31. Connect the battery negative cable. Refer to *Battery Replacement* in Engine Electrical.