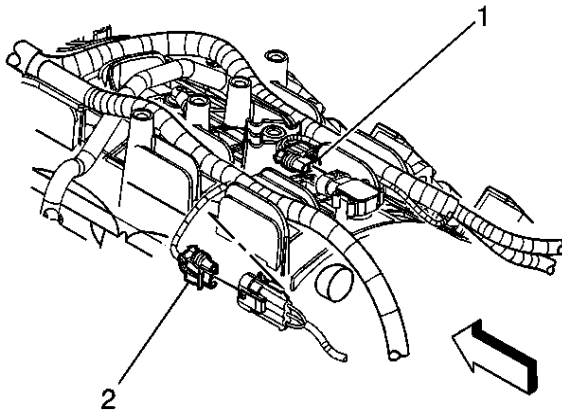


# Intake Manifold Replacement

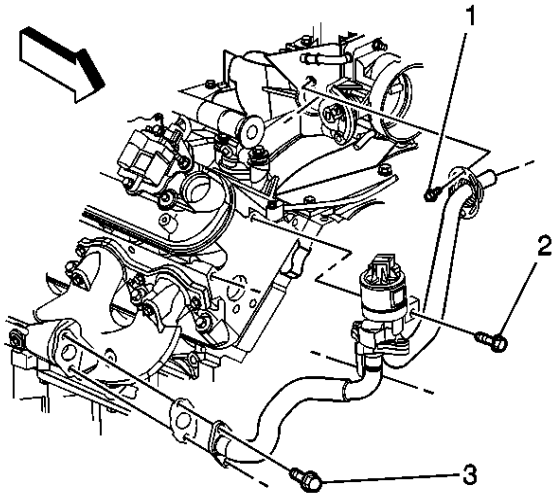
## Removal Procedure

**Important:** The intake manifold, throttle body, fuel rail, and injectors may be removed as an assembly. If not servicing the individual components, remove the manifold as a complete assembly.

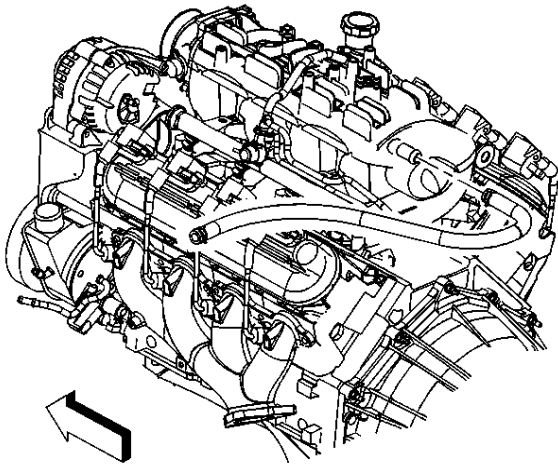
1. Remove the throttle body. Refer to [Throttle Body Assembly Replacement](#) in Engine Controls - 4.8L, 5.3L, and 6.0L.
2. Remove the fuel injectors. Refer to [Fuel Injector Replacement](#) in Engine Controls - 4.8L, 5.3L, and 6.0L.



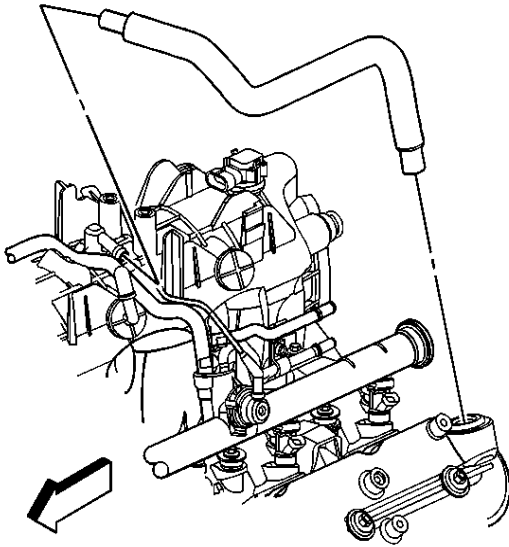
3. Disconnect the following electrical connectors:
  - Manifold absolute pressure (MAP) sensor (1)
  - Knock sensor (2)
  - Exhaust gas recirculation (EGR) valve, if equipped.
4. Remove the knock sensor harness electrical connector from the intake manifold.
5. Set the electrical harness aside.



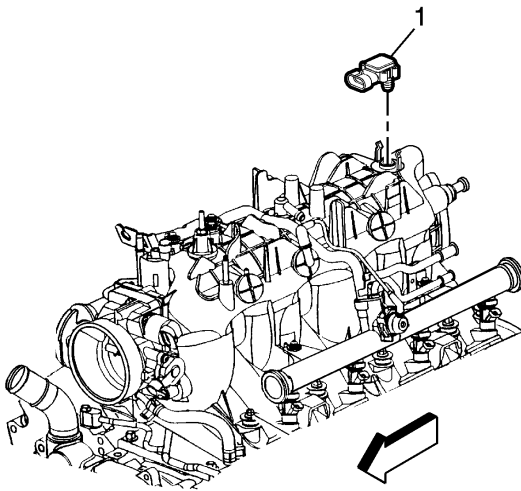
6. If equipped, remove the following EGR pipe bolts:
  - Intake manifold (1)
  - Cylinder head (2)
  - Exhaust manifold (3)
7. If equipped, remove the EGR pipe with valve.
8. If equipped, remove the EGR pipe gasket from the exhaust manifold.



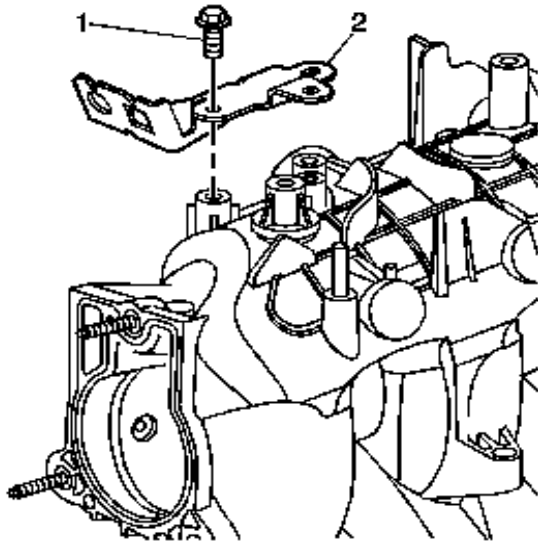
9. If equipped with vacuum assisted brakes, remove the vacuum brake booster hose from the rear of the intake manifold.



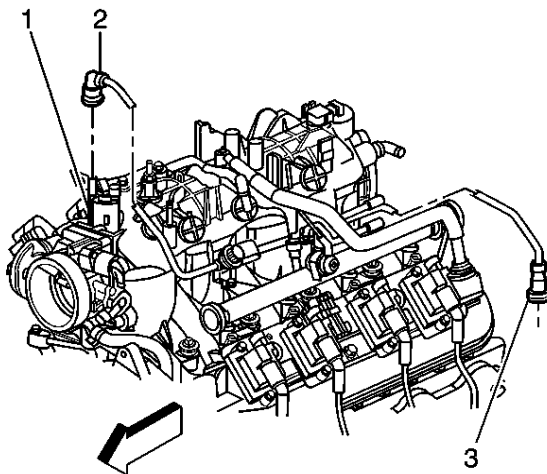
10. Remove the positive crankcase ventilation (PCV) hose with valve.



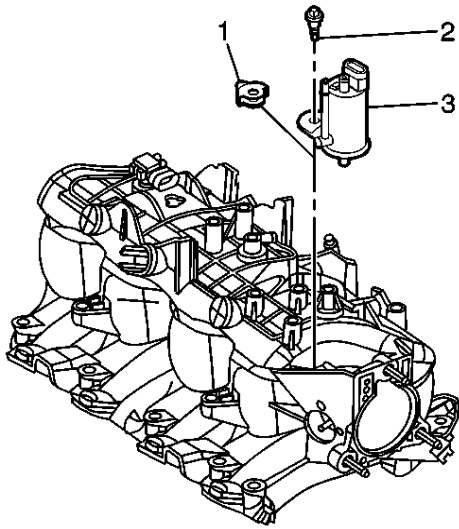
11. Remove the MAP sensor (1) from the intake manifold.



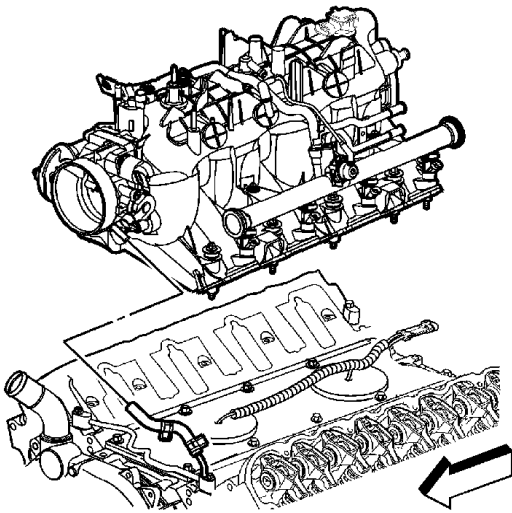
12. Remove the accelerator control cable bracket bolts (1).
13. Remove the accelerator control cable bracket (2) from the intake manifold.



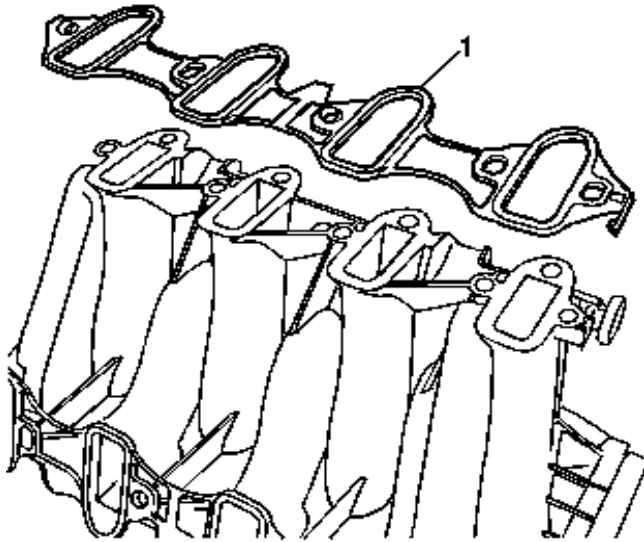
14. Remove the evaporative emission (EVAP) purge solenoid vent tube by performing the following:
  - A. Remove the EVAP tube end (2) from the solenoid (1).
  - B. Squeeze the EVAP pipe quick connect fitting (3) retainer together.
  - C. Remove the EVAP tube end (3) from the vapor pipe.



15. Remove the EVAP purge solenoid bolt (2), solenoid (3), and isolator (1) from the intake manifold.

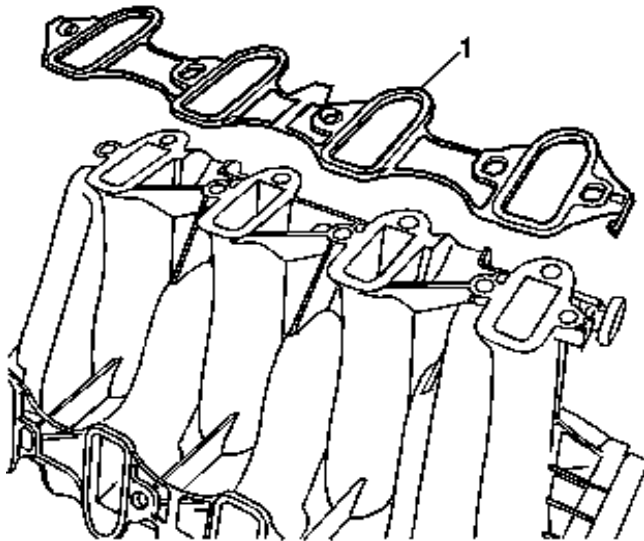


16. Remove the intake manifold bolts.
17. Remove the intake manifold.

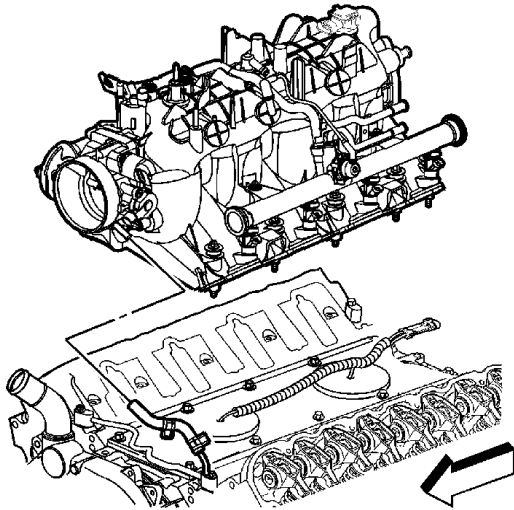


18. Remove the intake manifold gaskets (1) from the intake manifold.
19. Discard the old intake manifold gaskets.
20. Clean and inspect the intake manifold. Refer to [Intake Manifold Cleaning and Inspection](#) in the Engine Mechanical - 4.8L, 5.3L, and 6.0L Unit Repair.
21. If equipped with EGR, clean the gasket surfaces of the EGR pipe and the exhaust manifold.

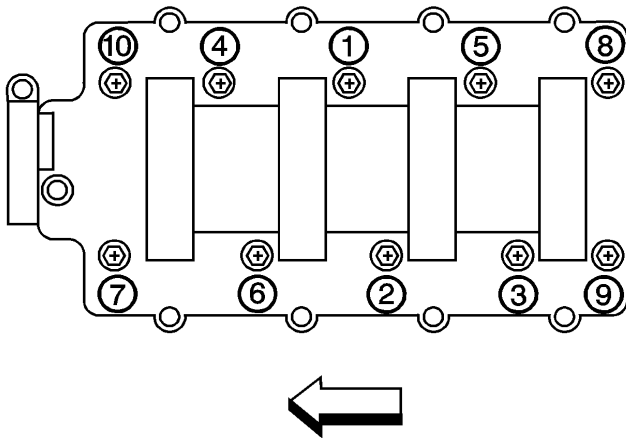
#### Installation Procedure



1. Install new intake manifold gaskets (1) to the intake manifold.



2. Install the intake manifold.
3. Apply a 5 mm (0.20 in) band of threadlock GM U.S. P/N 12345382, Canada P/N 10953489, or equivalent to the threads of the intake manifold bolts.



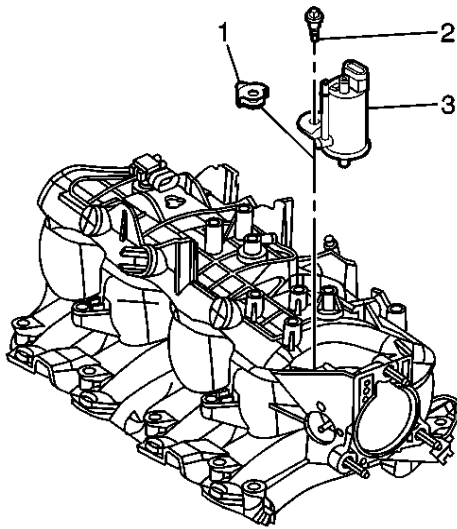
**Notice:** Use the correct fastener in the correct location. Replacement fasteners must be the correct part number for that application. Fasteners requiring replacement or fasteners requiring the use of thread locking compound or sealant are identified in the service procedure. Do not use paints, lubricants, or corrosion inhibitors on fasteners or fastener joint surfaces unless specified. These coatings affect fastener torque and joint clamping force and may damage the fastener. Use the correct tightening sequence and specifications when installing fasteners in order to avoid damage to parts and systems.

4. Install the intake manifold bolts.

**Tighten**

- a. Tighten the intake manifold bolts a first pass in sequence to 5 N·m (44 lb in).

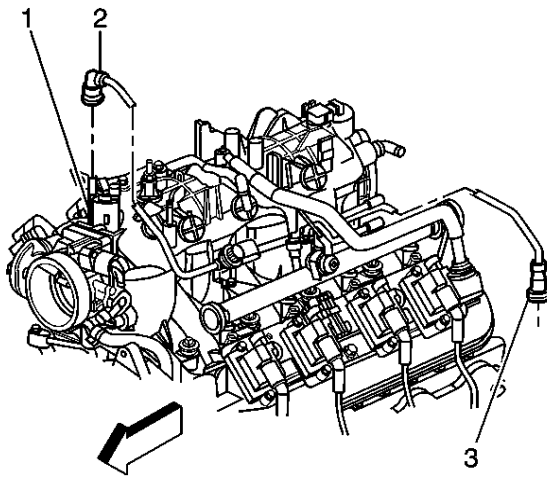
- b. Tighten the intake manifold bolts a final pass in sequence to 10 N·m (89 lb in).



5. Install the EVAP purge solenoid (3), isolator (1), and bolt (2) to the intake manifold.

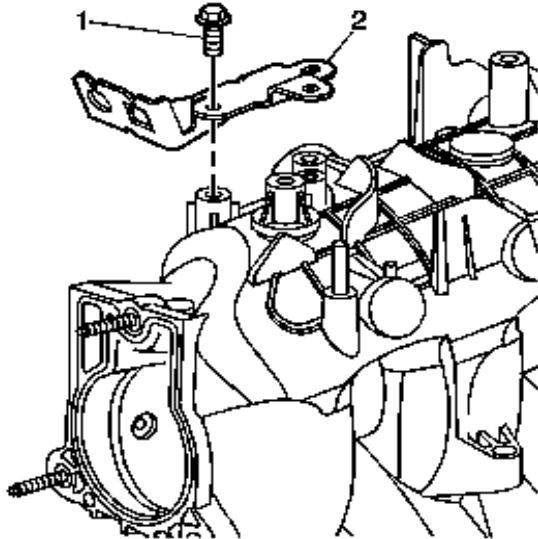
**Tighten**

Tighten the EVAP purge solenoid bolt to 10 N·m (89 lb in).



6. Install the EVAP purge solenoid vent tube to the solenoid (1) and vapor pipe.

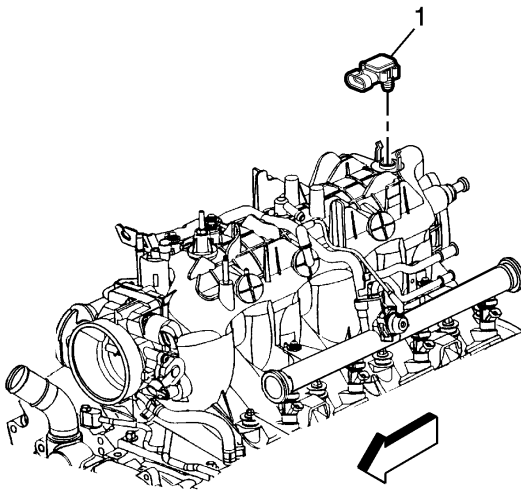




7. Install the accelerator control cable bracket (2) to the intake manifold.
8. Install the accelerator control cable bracket bolts (1).

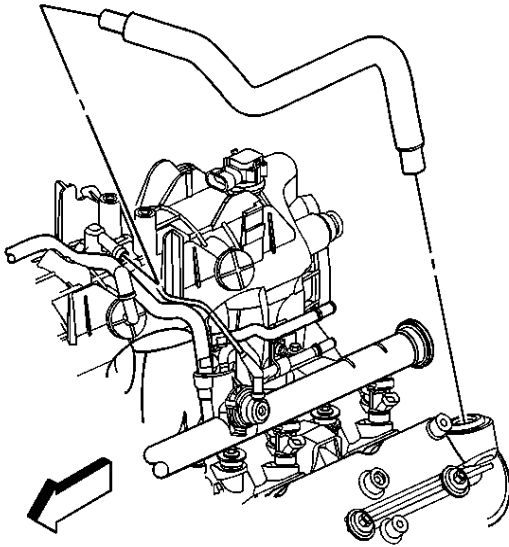
### **Tighten**

Tighten the accelerator control cable bracket bolts to 10 N·m (89 lb in).

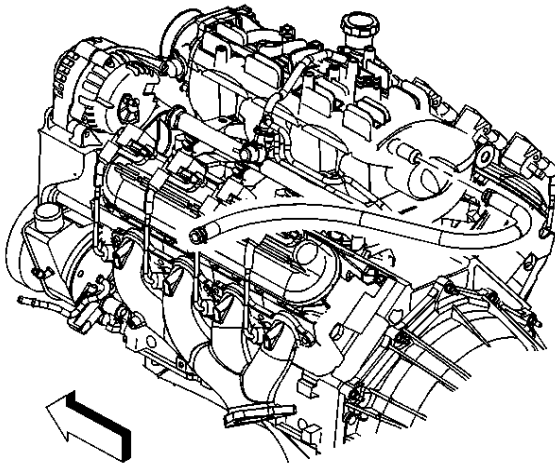


**Important:** Lightly coat the MAP sensor seal with clean engine oil before installing.

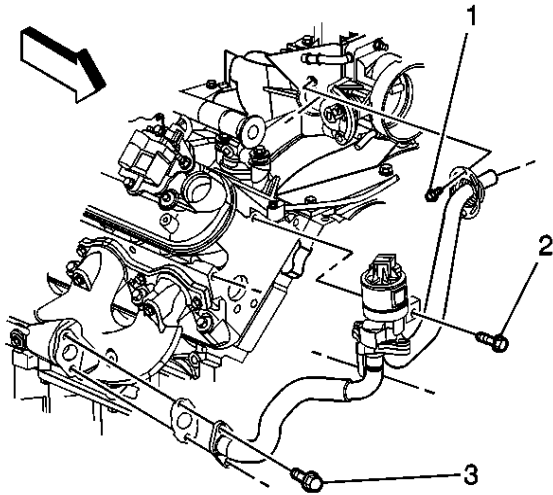
9. Install the MAP sensor (1) to the intake manifold.



10. Install the PCV hose with valve.



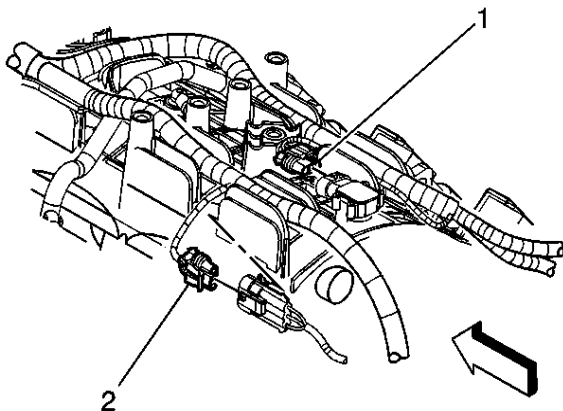
11. If equipped with vacuum assisted brakes, install the vacuum brake booster hose to the rear of the intake manifold.



12. If equipped, position a new EGR pipe gasket on the exhaust manifold.
13. If equipped, install the EGR pipe with valve.
14. If equipped, install the following EGR pipe bolts until snug:
  - Intake manifold (1)
  - Cylinder head (2)
  - Exhaust manifold (3)
15. If equipped, tighten the EGR pipe bolts.

**Tighten**

- Tighten the EGR valve pipe-to-intake manifold bolts to 10 N·m (89 lb in).
  - Tighten the EGR valve pipe-to-cylinder head bolts to 50 N·m (37 lb ft).
  - Tighten the EGR valve pipe-to-exhaust manifold bolts to 30 N·m (22 lb ft).
16. Route the electrical harness into position over the engine.



17. Connect the knock sensor harness electrical connector to the intake manifold.
  18. Connect the following electrical connectors.
    - MAP sensor (1)
    - Knock sensor (2)
    - EGR valve, if equipped
  19. Install the fuel injectors. Refer to [Fuel Injector Replacement](#) in Engine Controls - 4.8L, 5.3L, and 6.0L.
  20. Install the throttle body. Refer to [Throttle Body Assembly Replacement](#) in Engine Controls - 4.8L, 5.3L, and 6.0L.
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