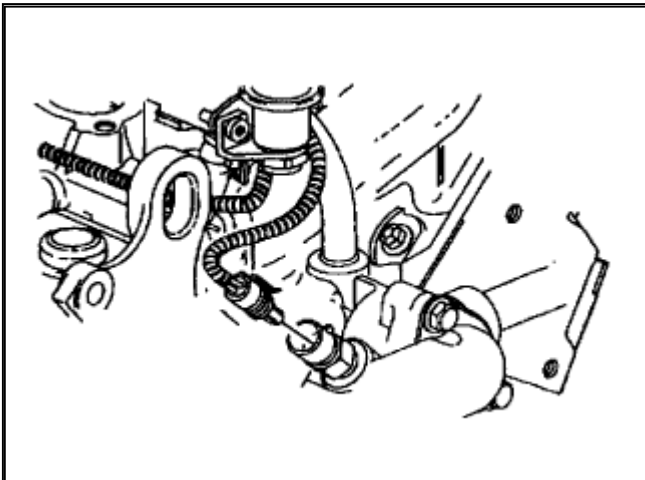


[Select Vehicle](#) | [New TSBs](#) | [Technician's Reference](#)

Component Search:

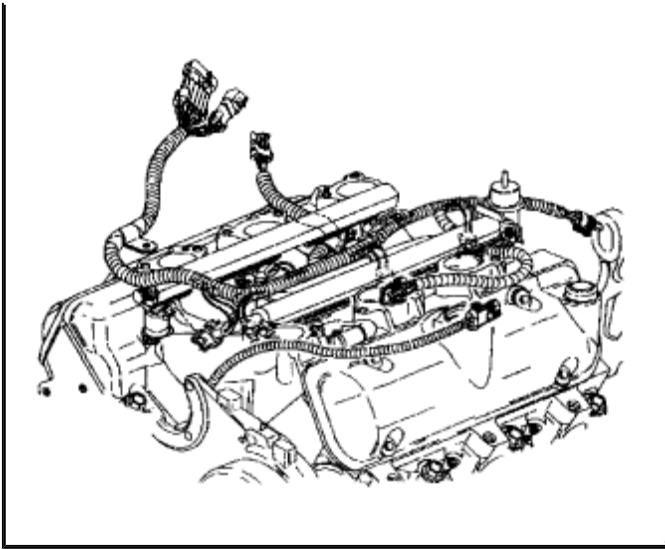
 OK[Conversion Calculator](#)**2002 Chevrolet Impala V6-3.4L VIN E**[Vehicle Level](#) → [Engine, Cooling and Exhaust](#) → [Engine](#) → [Intake Manifold](#) → [Service and Repair](#) → [Intake Manifold Replacement \(Lower\)](#) ←**Intake Manifold Replacement (Lower)**[Notes](#)**Intake Manifold Replacement - Lower****Removal Procedure**

1. Disconnect the negative battery.
2. Remove the upper intake manifold.
3. Remove the left valve rocker arm cover.
4. Remove the right valve rocker arm cover.

[Zoom](#)[Sized for Print](#)

5. Disconnect the Engine Coolant Temperature (ECT) sensor electrical connector.

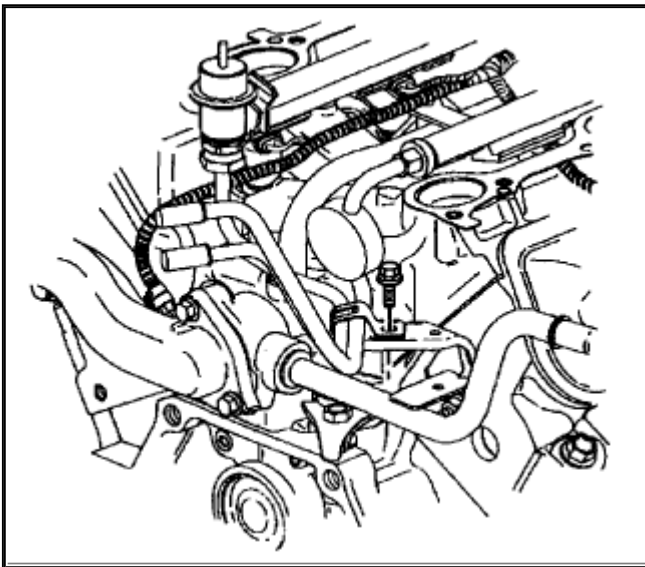




Zoom

Sized for Print

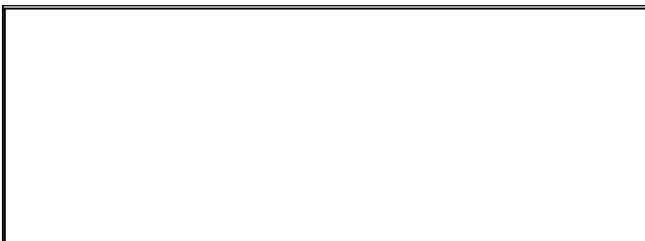
6. Disconnect and remove the fuel injector and the Manifold Absolute Pressure (MAP) sensor wiring harnesses.

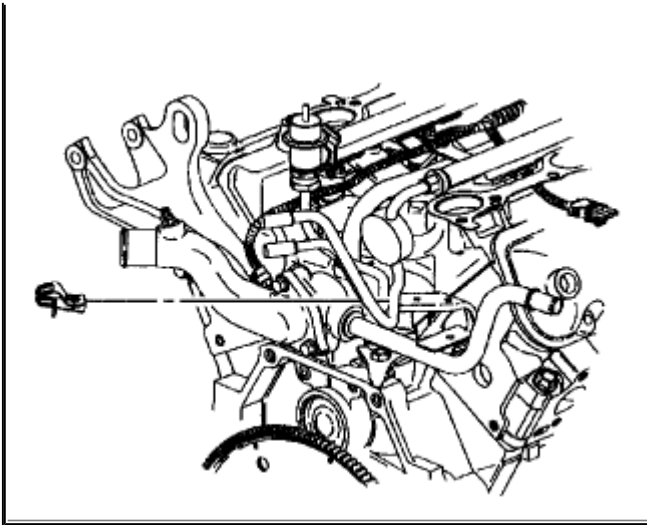


Zoom

Sized for Print

7. Remove the fuel pipe clip bolt.

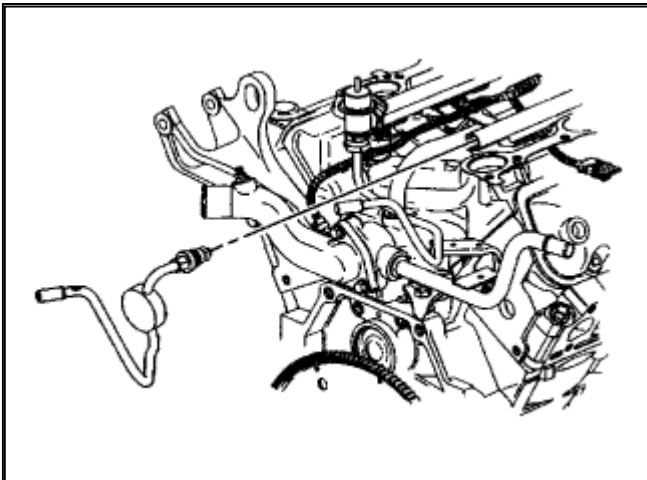




Zoom

Sized for Print

8. Remove the fuel pipe clip.

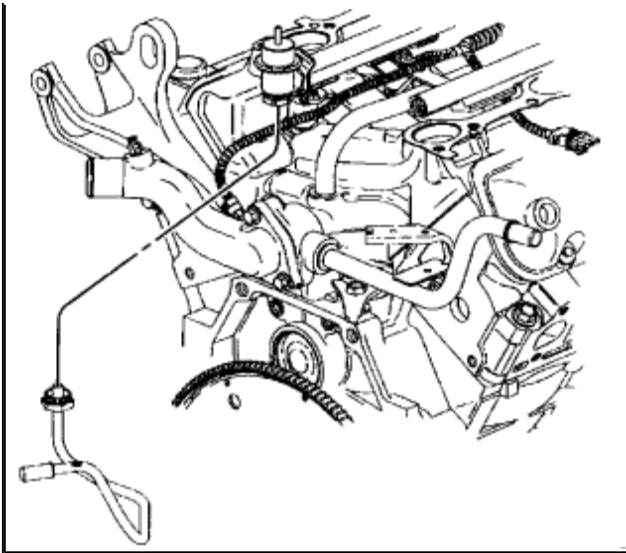


Zoom

Sized for Print

9. Remove the fuel feed pipe from the fuel injector rail.

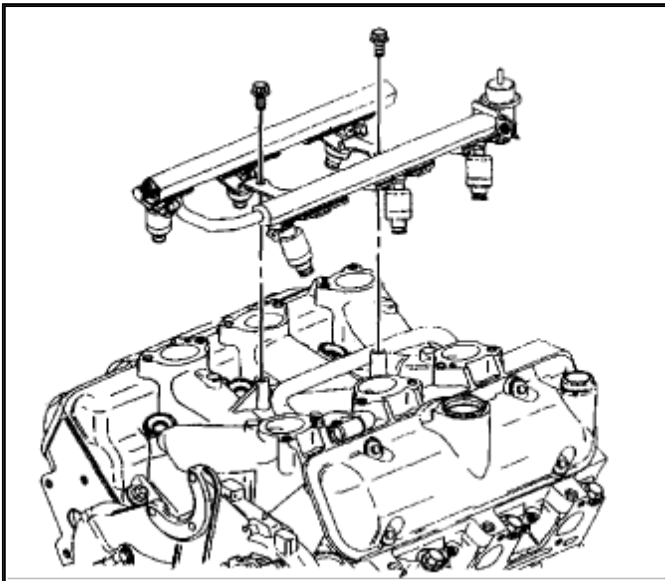




Zoom

Sized for Print

10. Remove the fuel return pipe from the fuel injector rail.



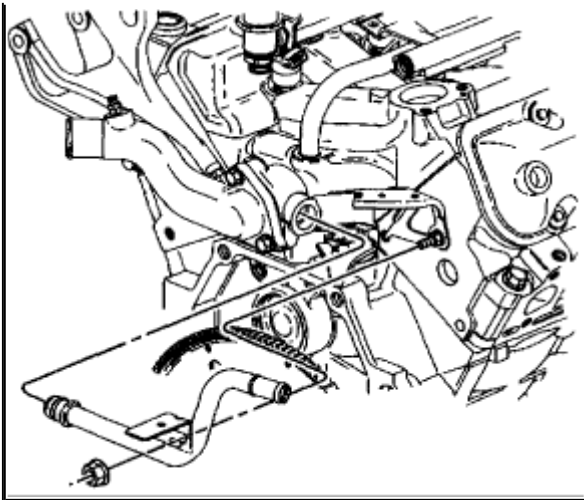
Zoom

Sized for Print

11. Remove the fuel injector rail.

12. Remove the power steering pump from the front engine cover and reposition.

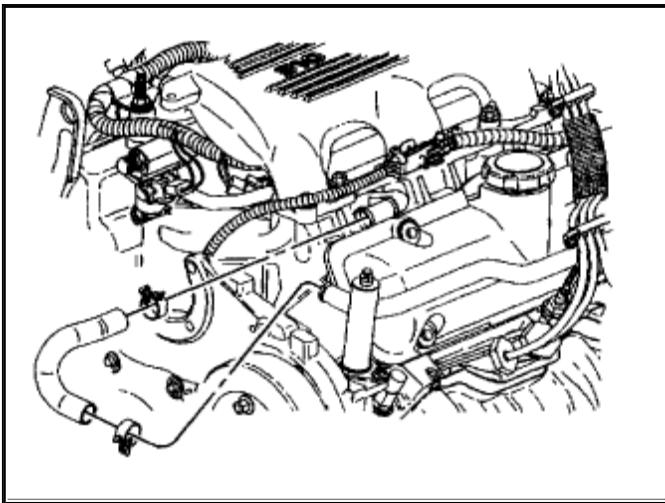




Zoom

Sized for Print

13. Remove the heater inlet pipe with [heater hose](#) from the lower intake manifold and reposition.
14. Remove the [radiator](#) inlet hose from the engine.

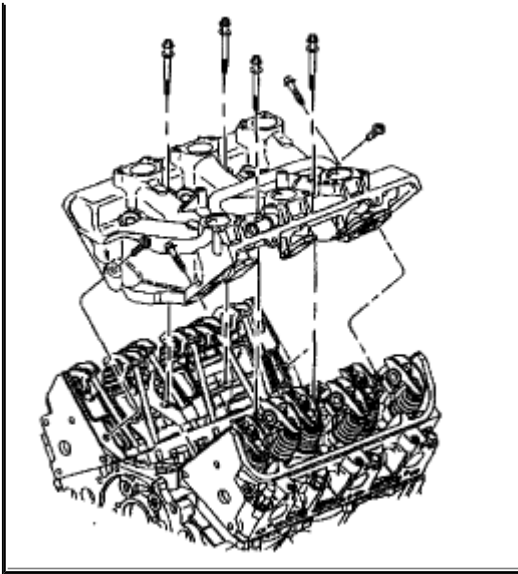


Zoom

Sized for Print

15. Remove the [thermostat bypass hose](#) from the [thermostat](#) bypass pipe and lower intake manifold pipe.

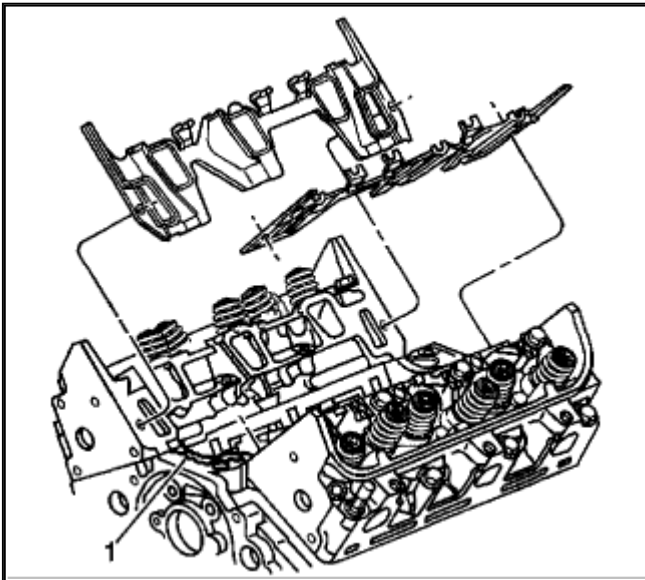




Zoom

Sized for Print

16. Remove the lower intake manifold bolts.
17. Remove the lower intake manifold.
18. Remove the valve rocker arms and pushrods.

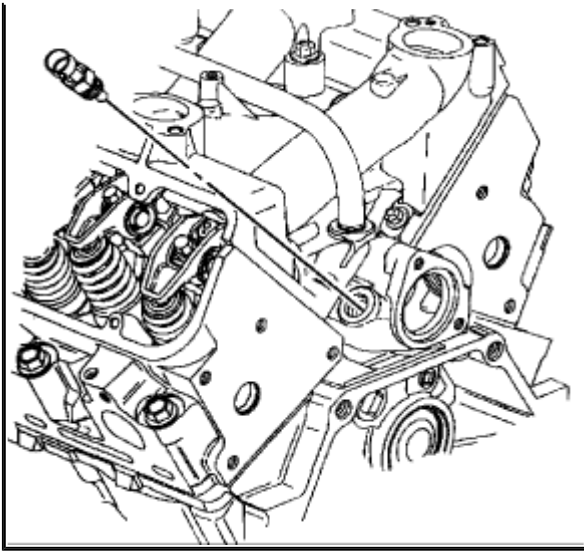


Zoom

Sized for Print

19. Remove the lower intake manifold gaskets and seals.
20. Clean the lower intake manifold gasket mating surfaces.
21. Remove and clean all the RTV sealant from the lower intake manifold and the engine block (1).

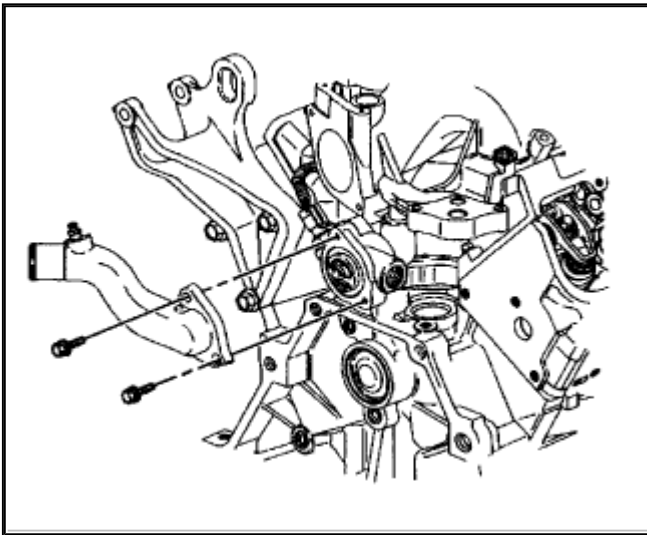




Zoom

Sized for Print

22. Remove the ECT sensor.



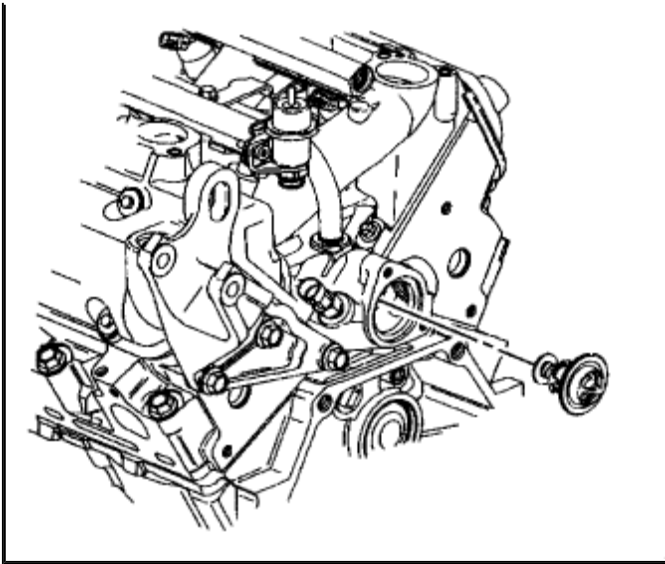
Zoom

Sized for Print

23. Remove the water outlet bolts.

24. Remove the water outlet.



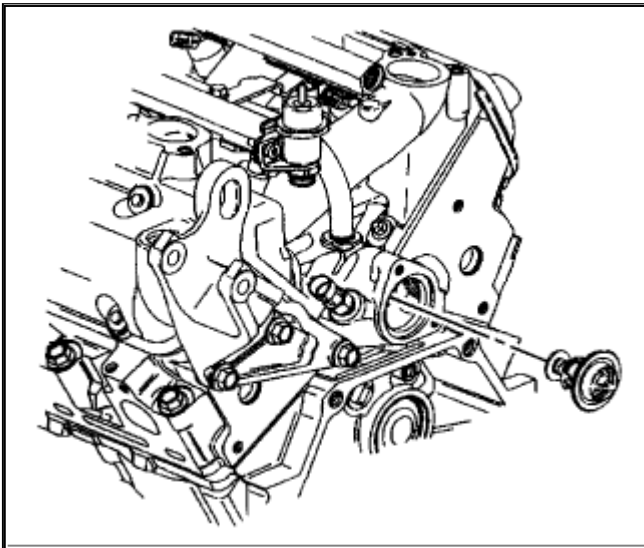


Zoom

Sized for Print

25. Remove the [thermostat](#).

### Installation Procedure

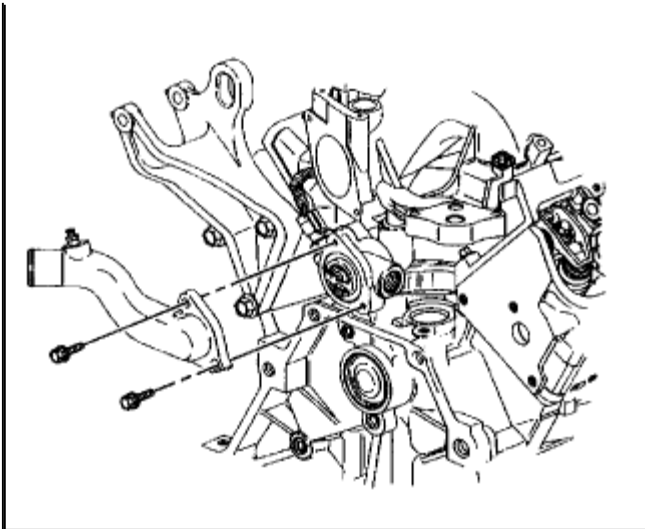


Zoom

Sized for Print

1. Install the [thermostat](#).
2. Install the water outlet. **Notice:** Refer to Fastener Notice in Service Precautions. [See: Service Precautions](#)

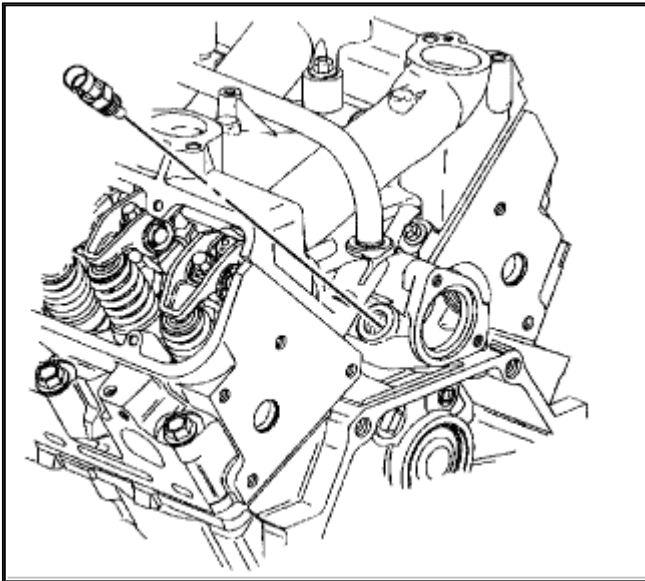




Zoom

Sized for Print

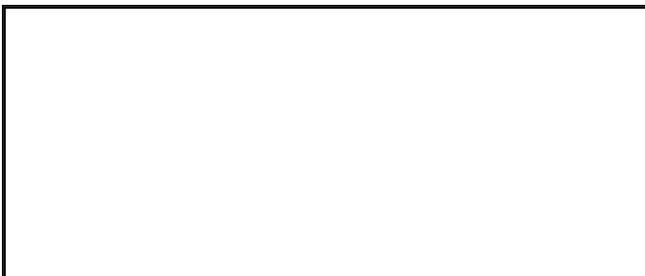
3. Install the water outlet bolts. Tighten the bolts to **25 Nm (18 ft. lbs.)**.

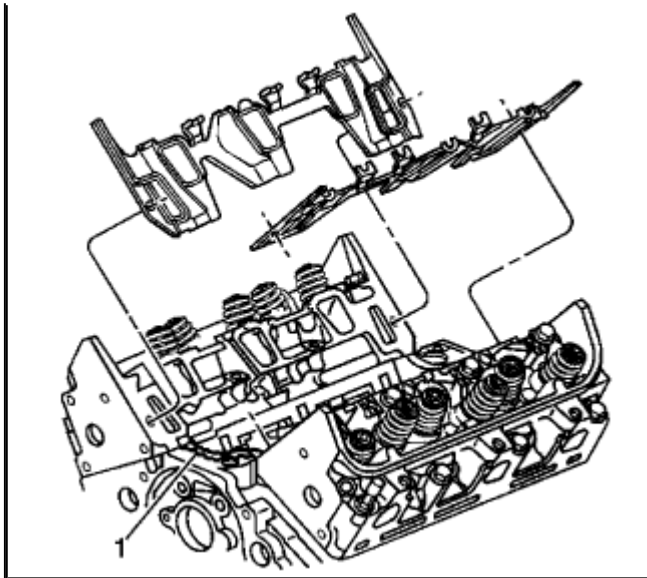


Zoom

Sized for Print

4. Install the ECT sensor. Tighten the sensor to **23 Nm (17 ft. lbs.)**.

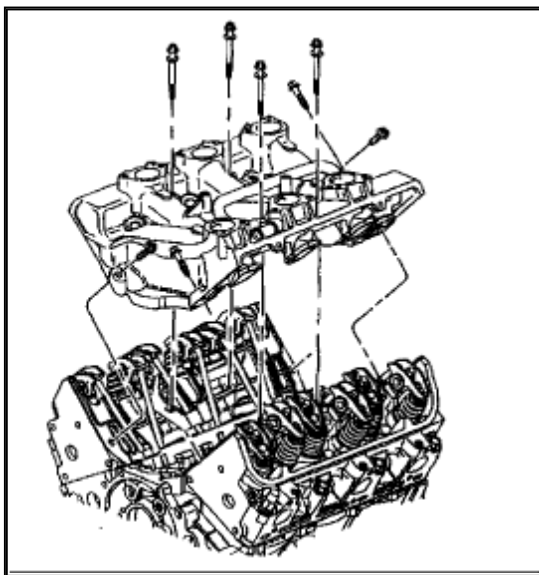




Zoom

Sized for Print

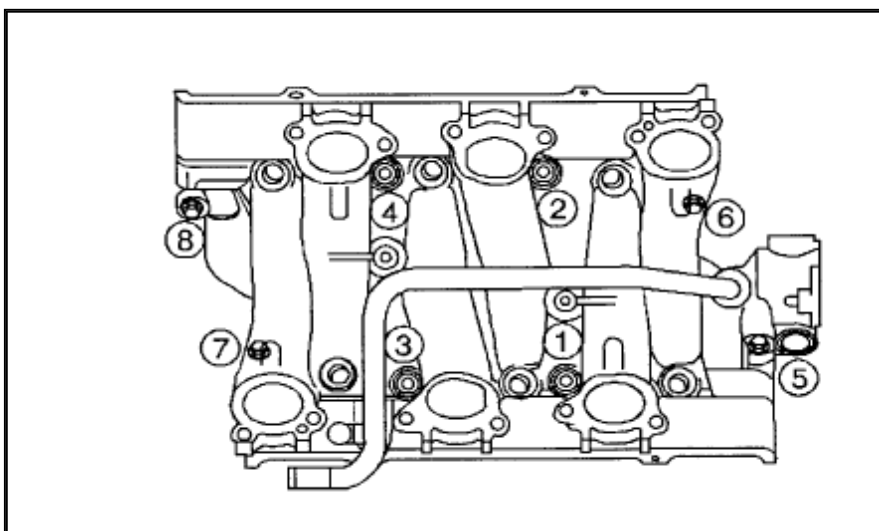
5. Apply **8 - 12 mm (0.08 - 0.11 inch)** bead of RTV Sealer, GM P/N 12345739 Canadian P/N 10953541 or equivalent, on each ridge where front and rear of the lower intake manifold contact the engine block (1).
6. Install the lower intake manifold gaskets.
7. Install the valve rocker arms and pushrods.



Zoom

Sized for Print

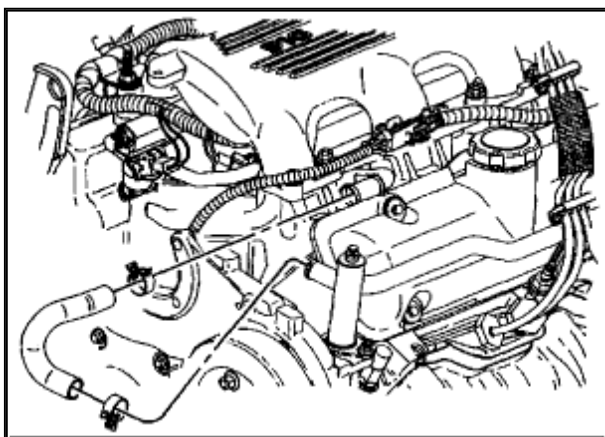
8. Install the lower intake manifold.
9. Apply sealant, GM P/N 12345382 Canadian P/N 10953489 to the threads of the bolts. **Notice:** An oil leak may result if the vertical bolts are not tightened before the diagonal bolts.



Zoom

Sized for Print

10. Install **NEW** lower intake manifold bolts. **Revised Updated Torque Specification, Bulletin #vss20030024** The torque specification is a 2-step process; tighten the vertical lower intake manifold bolts (the four middle ones) to **7 Nm (62 lb in)**. Tighten the diagonal lower intake manifold bolts (two on each end) to **7 Nm (62 lb in)**. Tighten the vertical lower intake manifold bolts (the four middle ones) to **13 Nm (115 lb in)**. Tighten the diagonal lower intake manifold bolts (two on each end) to **25 Nm (18 lb ft)**.

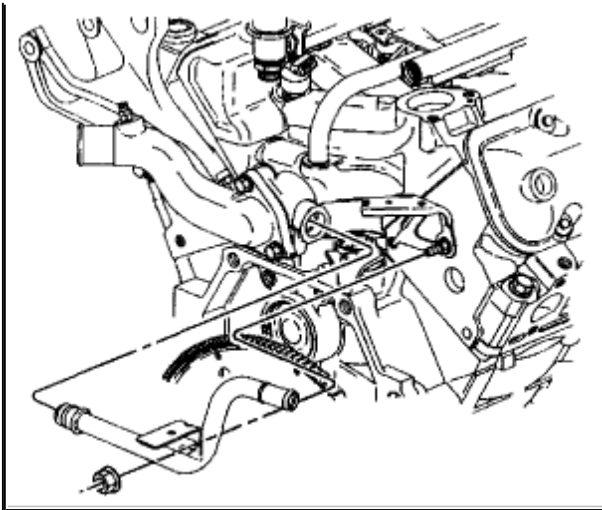


Zoom

Sized for Print

11. Install the [thermostat bypass hose](#) to the [thermostat](#) bypass pipe and lower intake manifold pipe.
12. Install the [radiator](#) inlet hose to the engine.

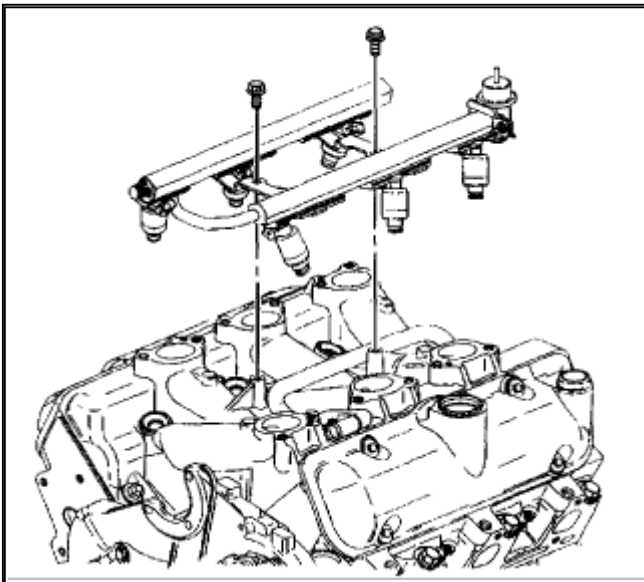




Zoom

Sized for Print

- 13. Install the heater inlet pipe and [heater hose](#) to the lower intake manifold.
- 14. Install the power steering pump to the front engine cover.

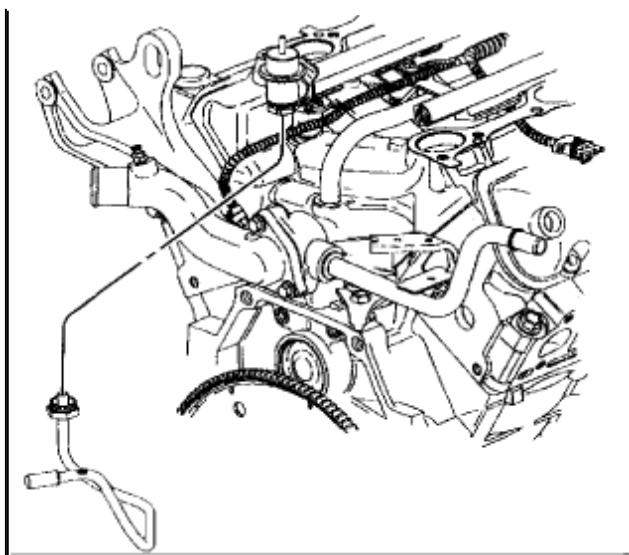


Zoom

Sized for Print

- 15. Install the fuel injector rail.

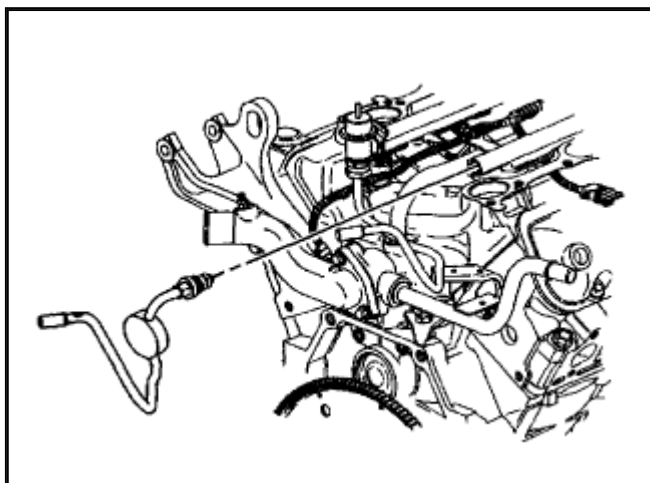




Zoom

Sized for Print

16. Install the fuel return pipe to the fuel injector rail.

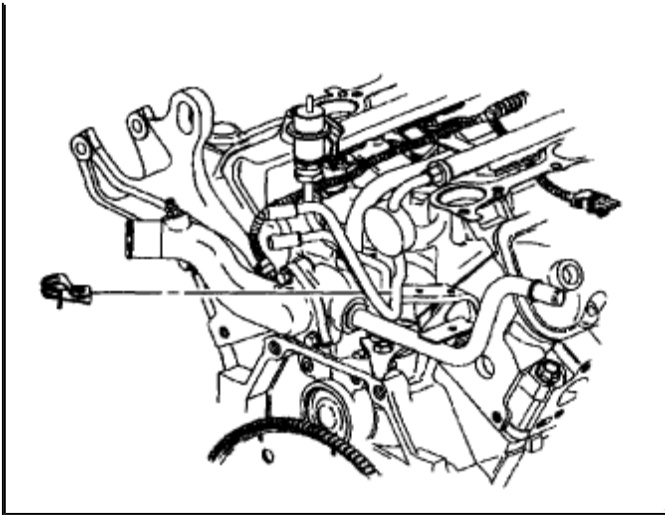


Zoom

Sized for Print

17. Install the fuel feed pipe to the fuel injector rail.

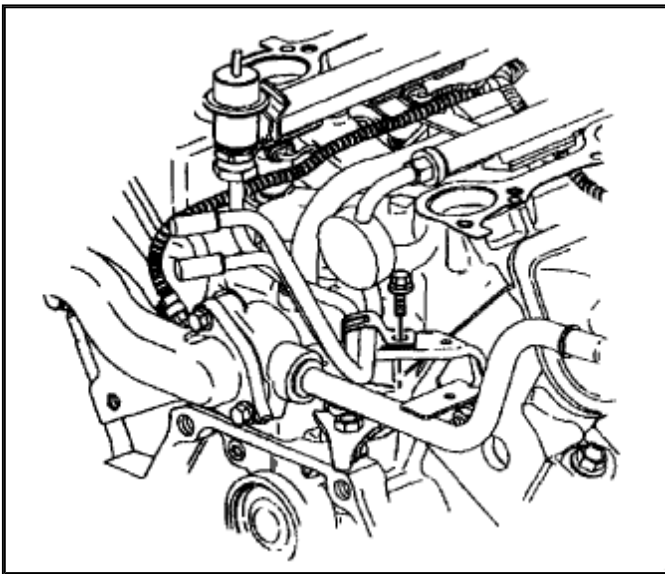




Zoom

Sized for Print

18. Install the fuel pipe clip.

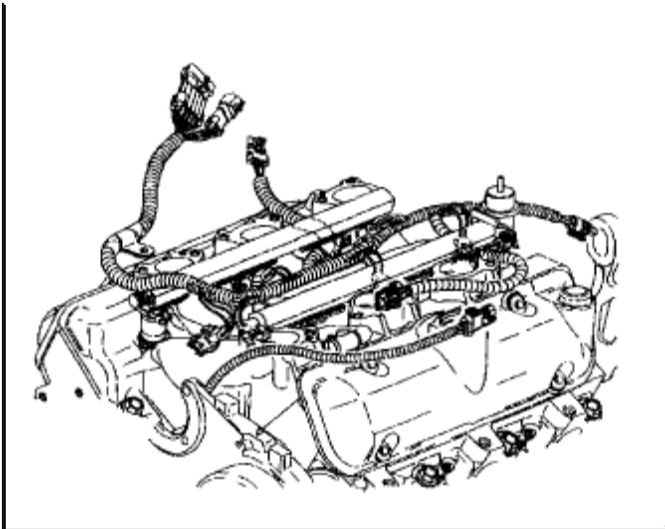


Zoom

Sized for Print

19. Install the fuel pipe clip bolt. Tighten the bolt to **8 Nm (71 inch lbs.)**.

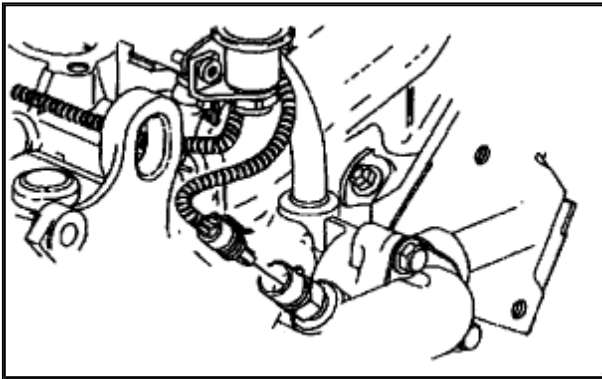




Zoom

Sized for Print

20. Install and connect the fuel injector and the MAP sensor wiring harnesses.



Zoom

Sized for Print

21. Connect the ECT sensor electrical connector.
22. Install the right valve rocker arm cover.
23. Install the left valve rocker arm cover.
24. Install the upper intake manifold.
25. Connect the negative battery cable.
26. Inspect for leaks.