

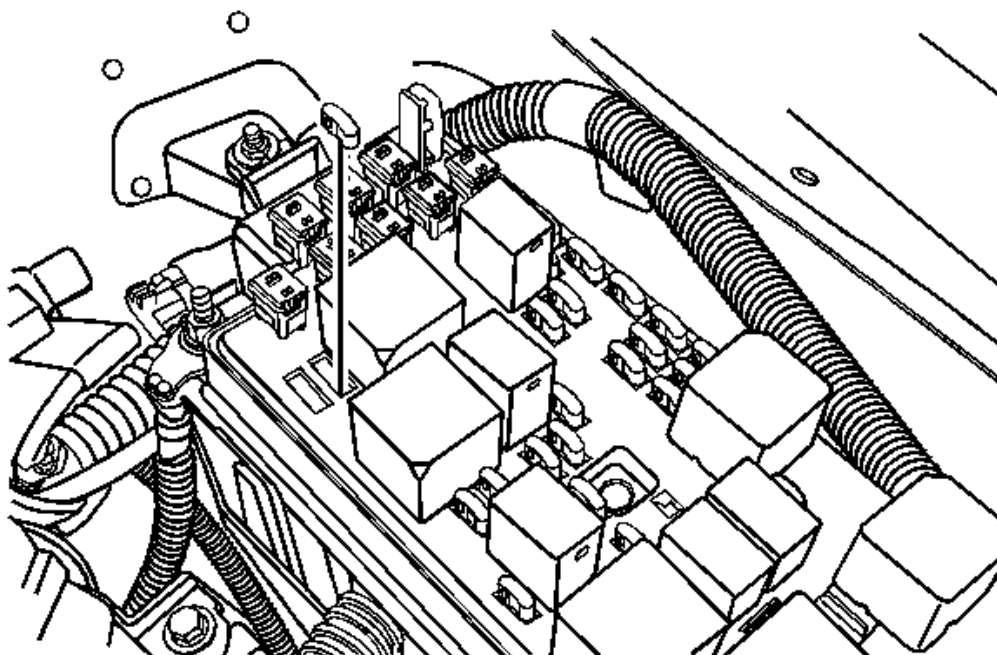
**2004 ENGINE**

**Engine Mechanical - 2.0L (L34 GMDAT) - Epica**

**REPAIR INSTRUCTIONS**

**INTAKE MANIFOLD REPLACEMENT**

**Removal Procedure**

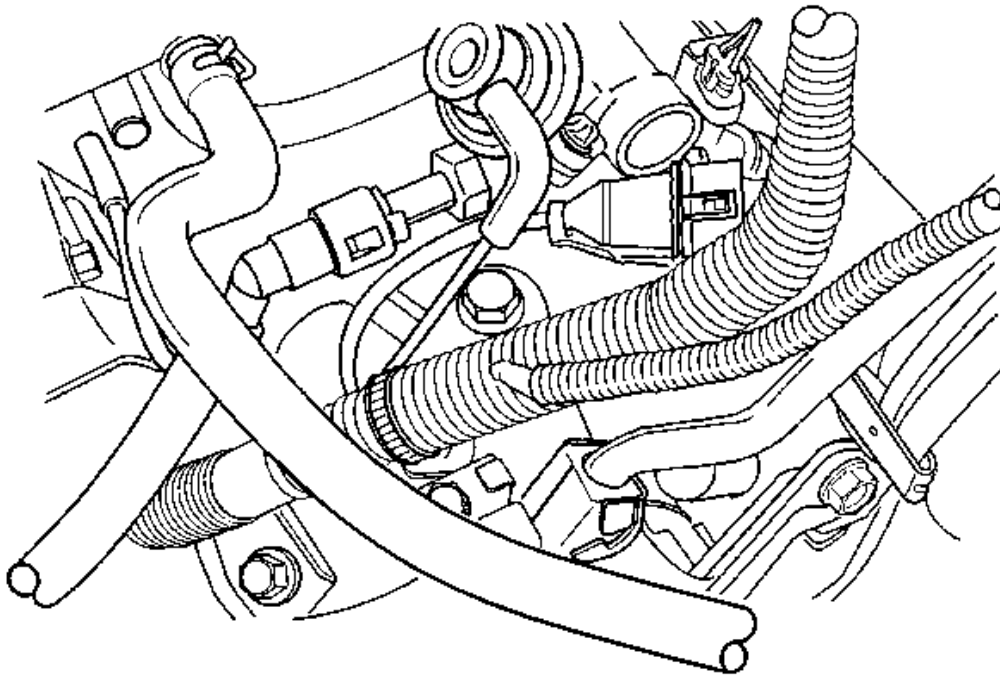


**Fig. 1: Identifying Fuel Pump Fuse**  
Courtesy of GENERAL MOTORS CORP.

1. Remove the fuel pump fuse.
2. Start the engine. After it stalls, crank the engine for 10 seconds to rid the fuel system of fuel pressure.

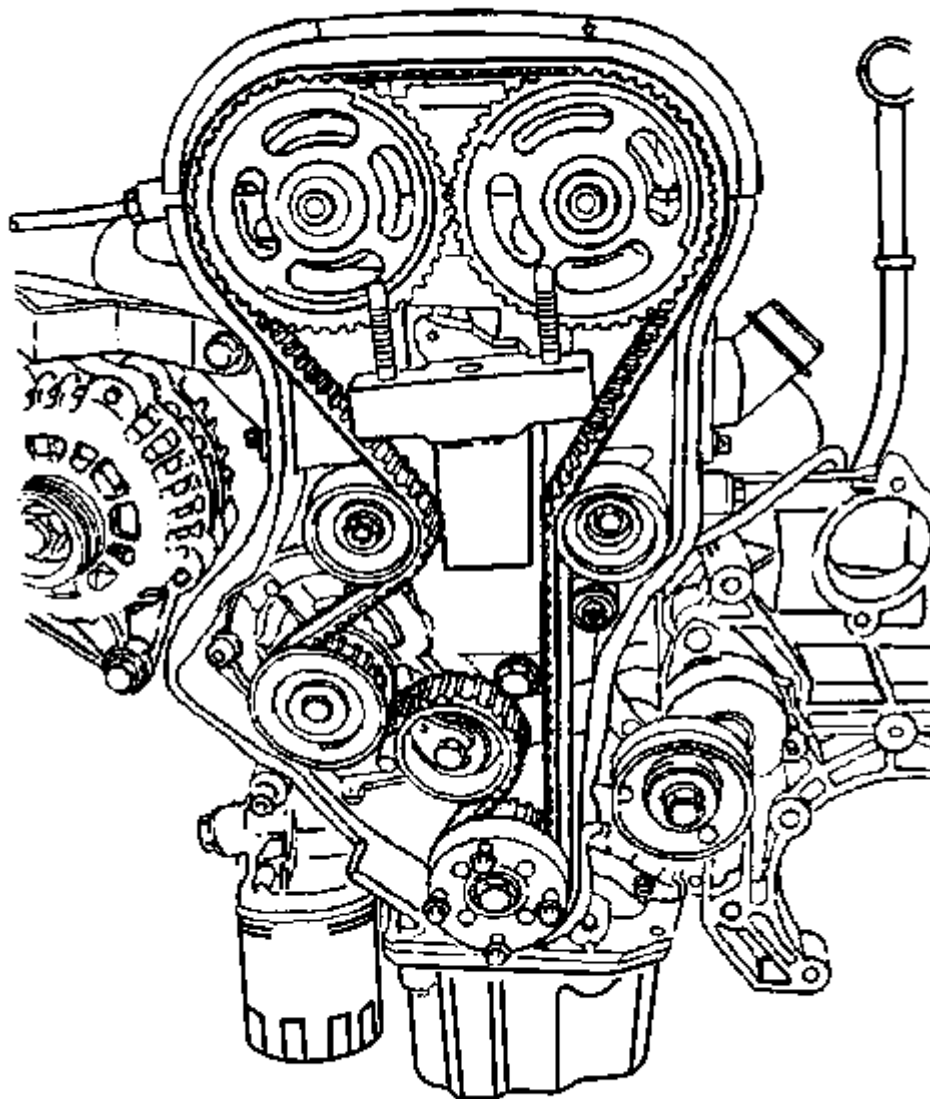
**CAUTION:** Refer to Battery Disconnect Caution in Cautions and Notices.

3. Disconnect the negative battery cable.



**Fig. 5: View Of Surge Tank Coolant Hose**  
**Courtesy of GENERAL MOTORS CORP.**

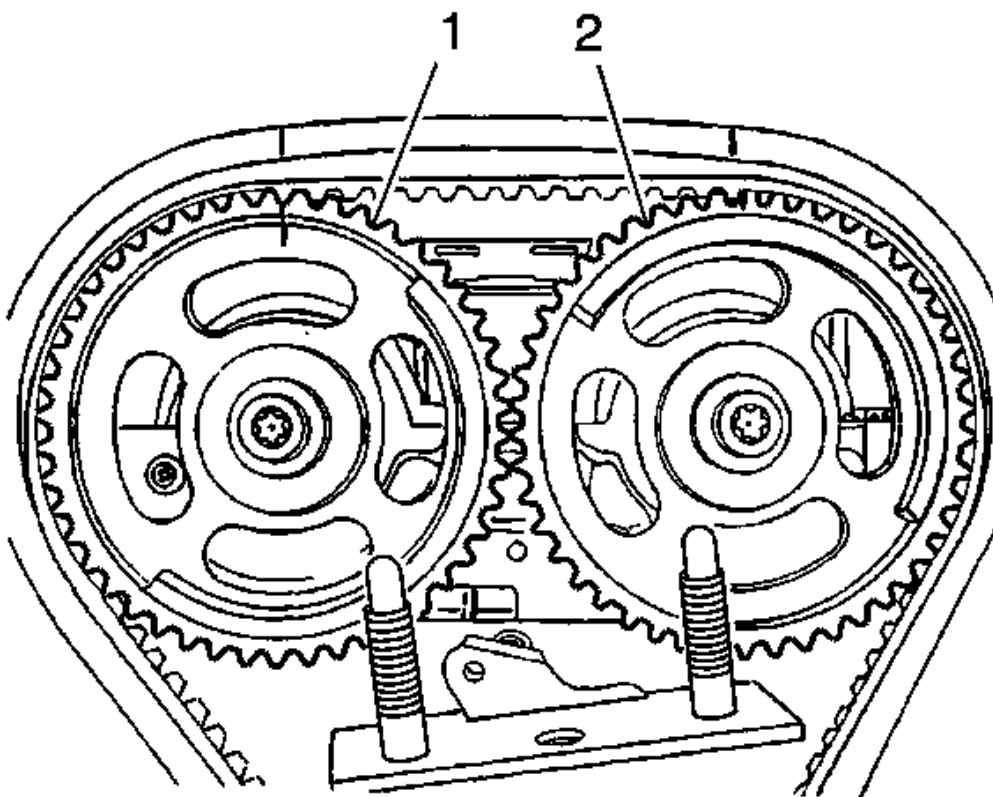
18. Remove the fuel rail and the injector cover. Refer to **Fuel Rail Assembly Replacement** in Engine Controls-2.0 L.
19. Remove the alternator-to-intake manifold support bracket bolts.
20. Remove the alternator-to-intake manifold support bracket.
21. Remove the intake manifold support bracket bolt at the engine block and the intake manifold.
22. Remove the intake manifold support bracket.



**Fig. 18: View Of Timing Belt And Components**  
Courtesy of GENERAL MOTORS CORP.

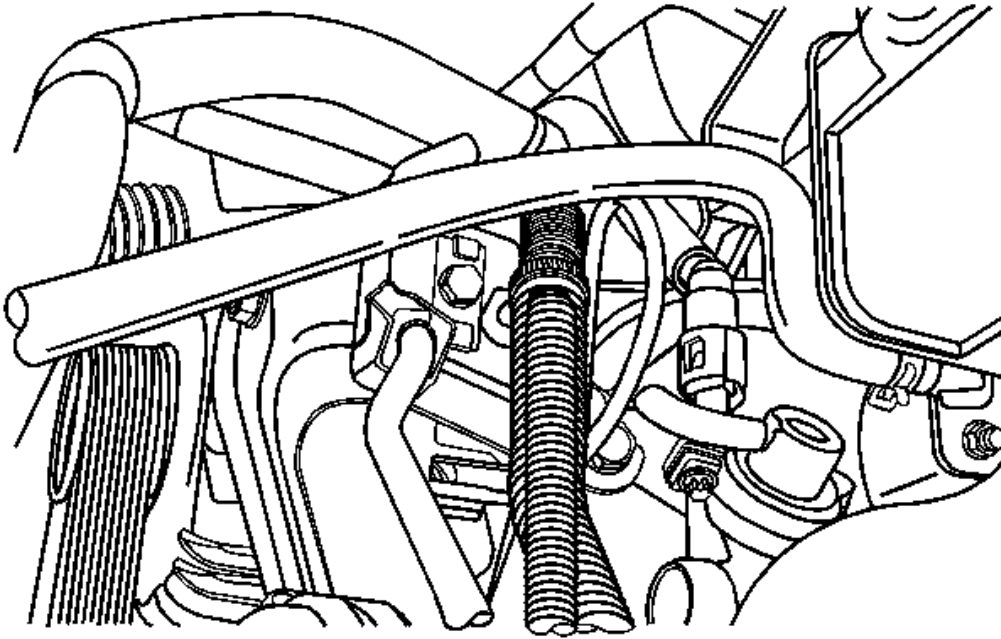
16. Loosen the automatic tensioner bolt. Turn the hex key tab to relieve the belt tension.
17. Remove the timing belt.

#### **Installation Procedure**



**Fig. 31: View Of Intake And Exhaust Gears**  
**Courtesy of GENERAL MOTORS CORP.**

17. Align the camshaft gear timing marks. Use the exhaust gear mark for the exhaust gear (2) and the intake gear mark for the intake gear (1), since the gears are interchangeable.



**Fig. 49: View Of Vacuum Hoses**  
**Courtesy of GENERAL MOTORS CORP.**

6. Connect the ignition wires to the spark plugs.
7. Install the spark plug cover.
8. Install the spark plug cover bolts.

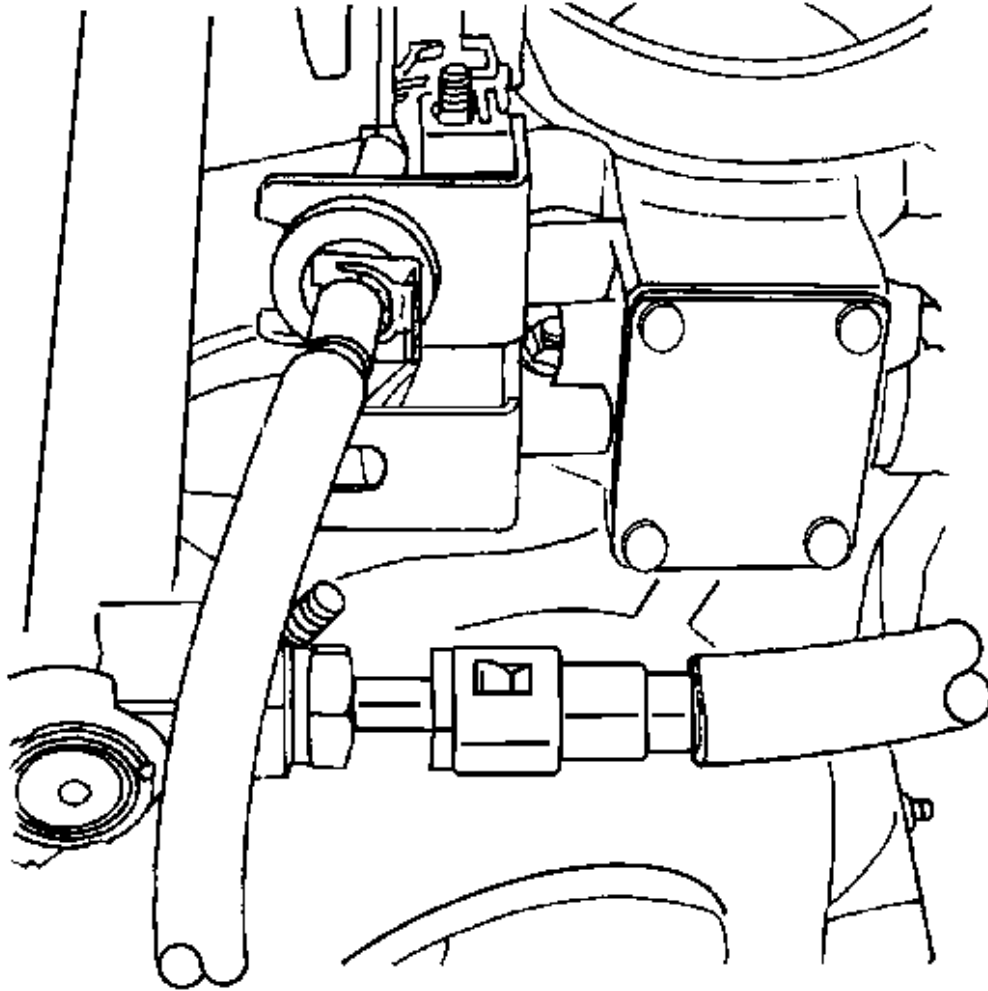
**Tighten:** Tighten the spark plug cover bolts to **3 N.m (27 lb in)** .

9. Connect the vacuum line to the valve cover.
10. Connect the crankshaft ventilation tube to the valve cover.
11. Connect the breather tube to the valve cover.
12. Connect the CMP sensor connector.
13. Position the power steering pressure hose in place and install the bolt.

**Tighten:** Tighten the power steering hose clamp bolt to **8 N.m (71 lb in)** .

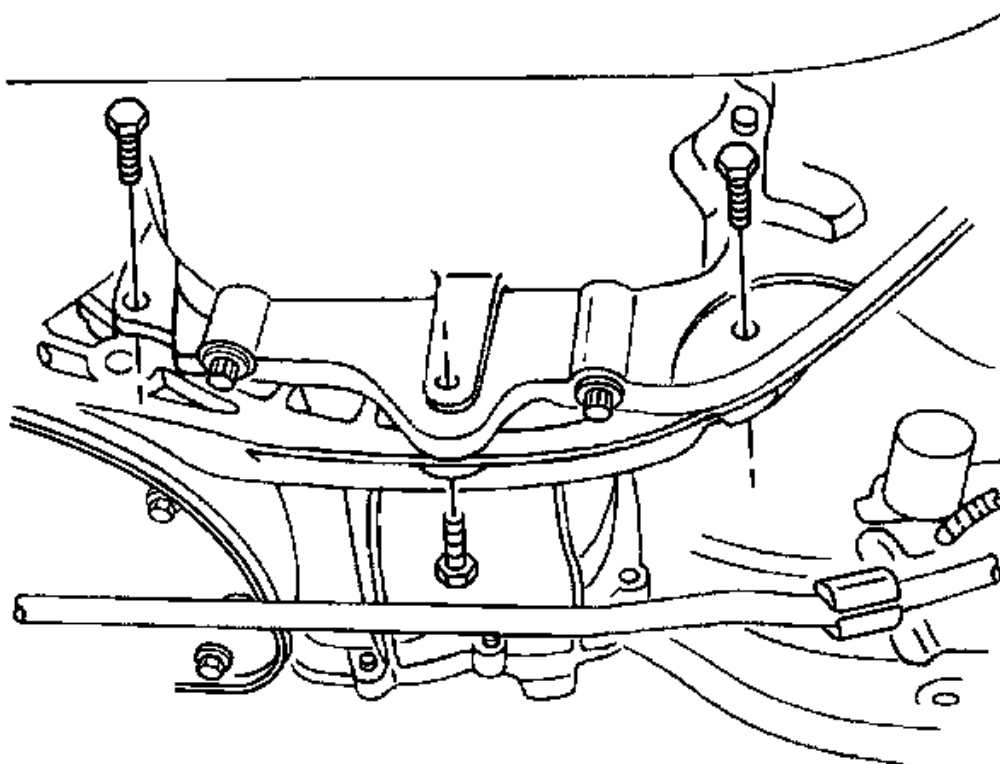
14. Connect the negative battery cable.

## **CYLINDER HEAD REPLACEMENT**



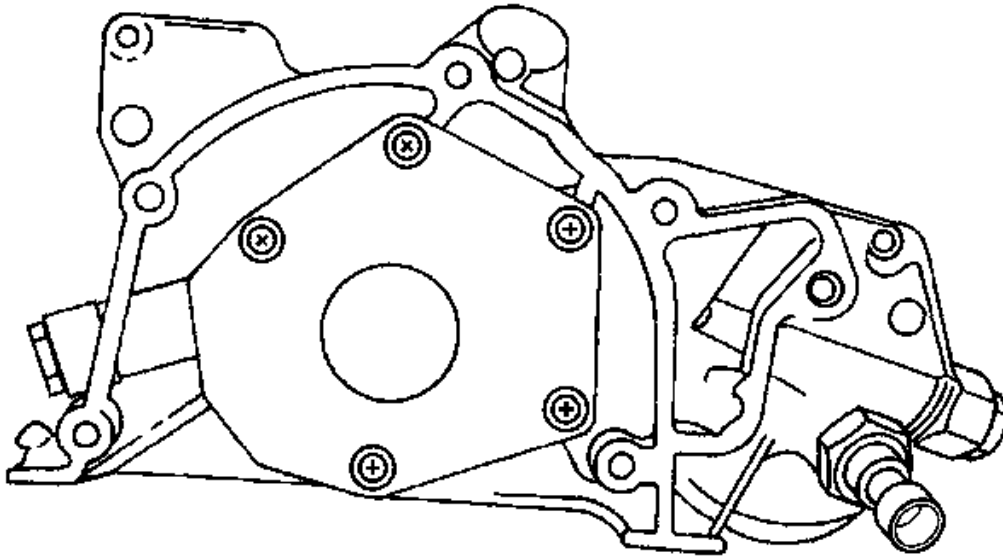
**Fig. 67: View Of Fuel Return Line And Fuel Feed Line**  
**Courtesy of GENERAL MOTORS CORP.**

9. Connect the surge tank coolant hose at the throttle body.
10. Connect the coolant hose to the rear cylinder head and ignition coil EGR bracket.
11. Connect the fuel feed line at the fuel rail.
12. Connect the fuel return line at the fuel rail.
13. Connect all of the necessary vacuum hoses.
14. Install the fuel rail assembly. Refer to **Fuel Rail Assembly Replacement** in Engine Controls - 2.0L.



**Fig. 86: View Of Oil Pan Flange-To-Transaxle Retaining Bolts**  
Courtesy of GENERAL MOTORS CORP.

8. Drain the engine oil from the engine crankcase.
9. Remove the oil pan flange-to-transaxle retaining bolts.



**Fig. 103: Rear View Of Oil Pump**  
Courtesy of GENERAL MOTORS CORP.

1. Inspect all parts for signs of wear. Refer to Engine Mechanical Specifications .
2. Coat all oil pump parts with clean engine oil and install.

**NOTE:** Pack the oil pump gear cavity with petroleum jelly to ensure an oil pump prime, or engine damage could result.

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

3. Apply LOCTITE® 242 to the rear cover bolts and install the cover and the bolts.

**Tighten:** Tighten the rear cover bolts to **6 N.m (53 lb in)** .

4. Install the safety relief valve, the spring, the washer, and the bolt.

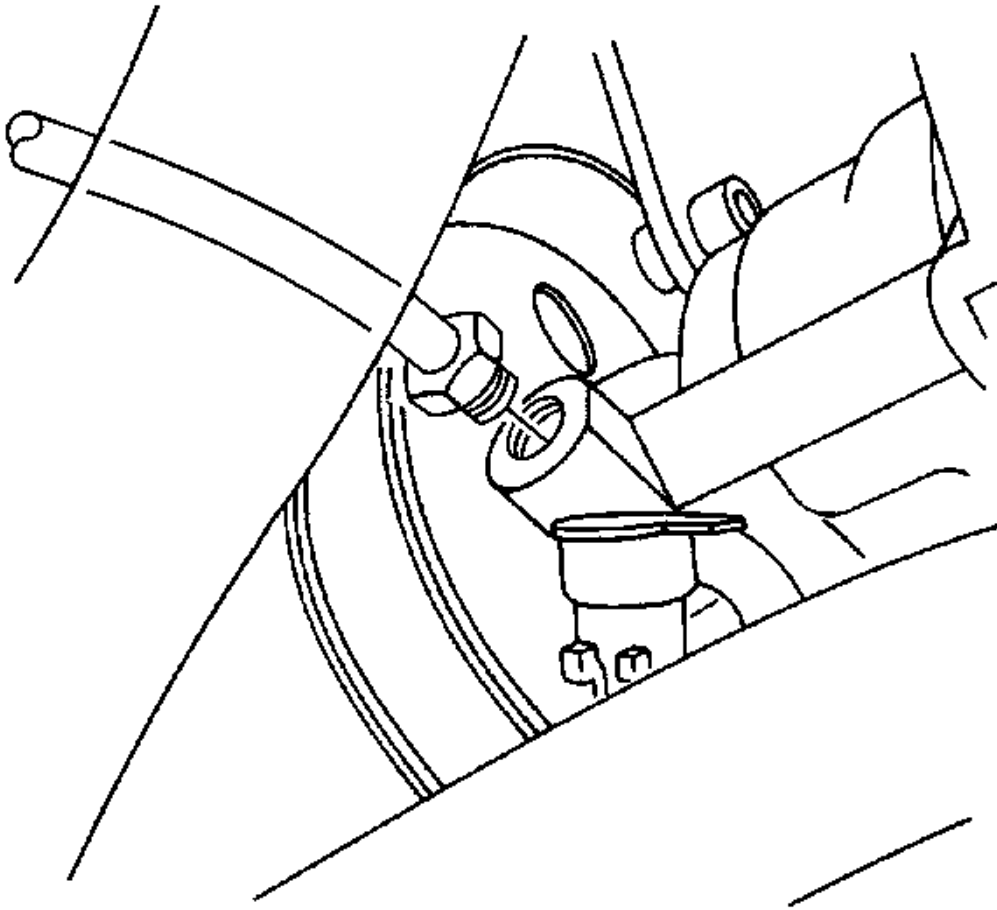
**Tighten:** Tighten the safety relief valve bolt to **30 N.m (22 lb ft)** .

## ENGINE MOUNT REPLACEMENT (RIGHT SIDE)

### Tools Required

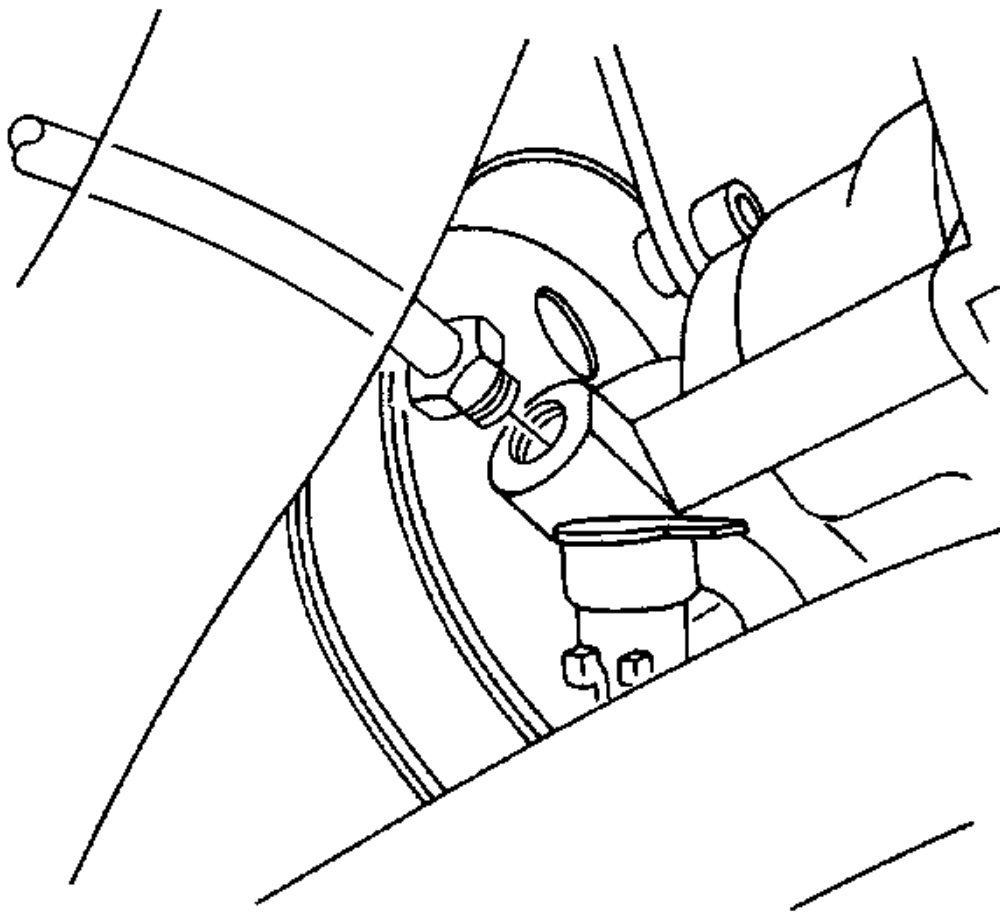
**J 28467-B** Universal Engine Support Fixture. See Special Tools .





**Fig. 118: View Of Power Steering Pressure Hose**  
Courtesy of GENERAL MOTORS CORP.

14. Drain the engine coolant. Refer to **Draining and Filling Cooling System (2.0L)** in Engine Cooling.
15. Remove the cooling system radiator and the engine cooling fans. Refer to **Radiator Replacement (2.0L)** in Engine Cooling.
16. Disconnect the upper radiator hose from the thermostat housing.
17. Disconnect the power steering return hose from the power steering pump. Collect the oil in a suitable container.
18. Disconnect the power steering pressure hose from the power steering pump. Collect the oil in a suitable container.
19. Disconnect the electrical connector at the ignition coil and the engine control module (ECM) ground terminal.

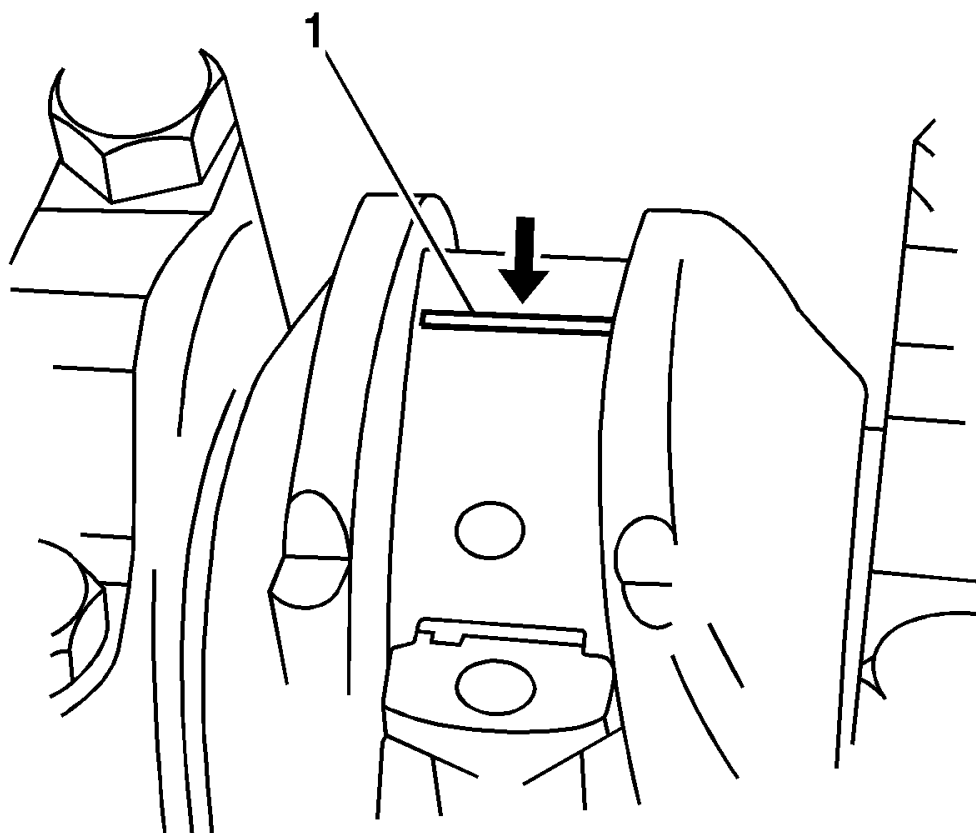


**Fig. 134: View Of Power Steering Pressure Hose**  
Courtesy of GENERAL MOTORS CORP.

22. Install the exhaust flex pipe retaining nuts to the catalytic converter or the 3rd muffler.

**Tighten:** Tighten the exhaust flex pipe retaining nuts to the catalytic converter or the 3rd muffler to **30 N.m (22 lb ft)** .

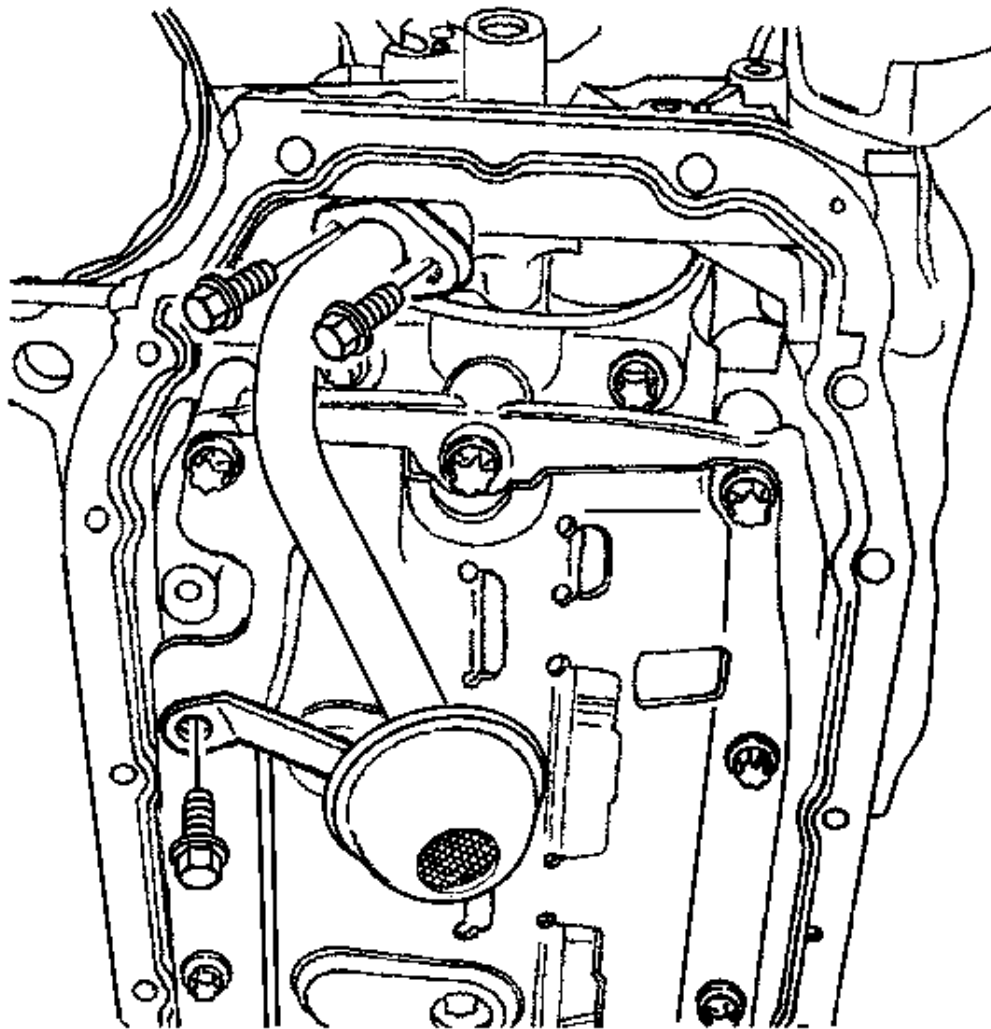
23. Connect the power steering pressure hose.
24. Connect the power steering return hose.
25. Install the A/C compressor, if equipped. Refer to **Compressor Replacement** in Heating, Ventilation, and Air Conditioning.



**Fig. 145: View Of Plastigage On Journal**  
Courtesy of GENERAL MOTORS CORP.

**IMPORTANT:** Grease the crankshaft journals and lubricate the crankshaft bearings slightly so that the plastic gaging thread does not tear when the crankshaft bearing caps are removed.

8. Measure all of the crankshaft bearing clearances using a commercially available plastic gaging, ductile plastic threads.
9. Cut the plastic gaging threads (1) to the length of the bearing width. Lay them axially between the crankshaft journals and the crankshaft bearings.

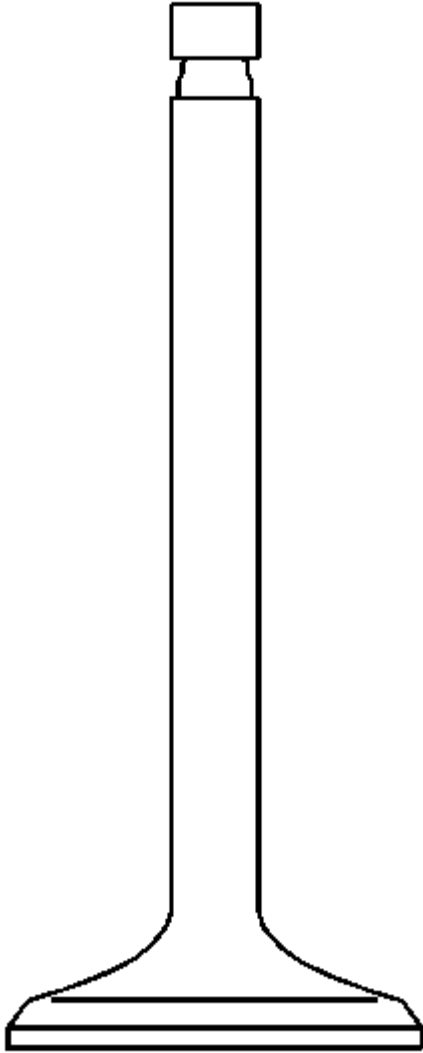


**Fig. 162: View Of Oil Pump Pickup Tube And Bolts**  
Courtesy of GENERAL MOTORS CORP.

22. Install the oil pump/pickup tube.
23. Install the oil pump/pickup tube bolts.

**Tighten:** Tighten the oil pump/pickup tube bolts to **8 N.m (71 lb in)** .

24. Install the oil pan. Refer to **Oil Pan Replacement**.
25. Install the cylinder head with the intake manifold and exhaust manifold attached. Refer to **Cylinder Head Replacement**.

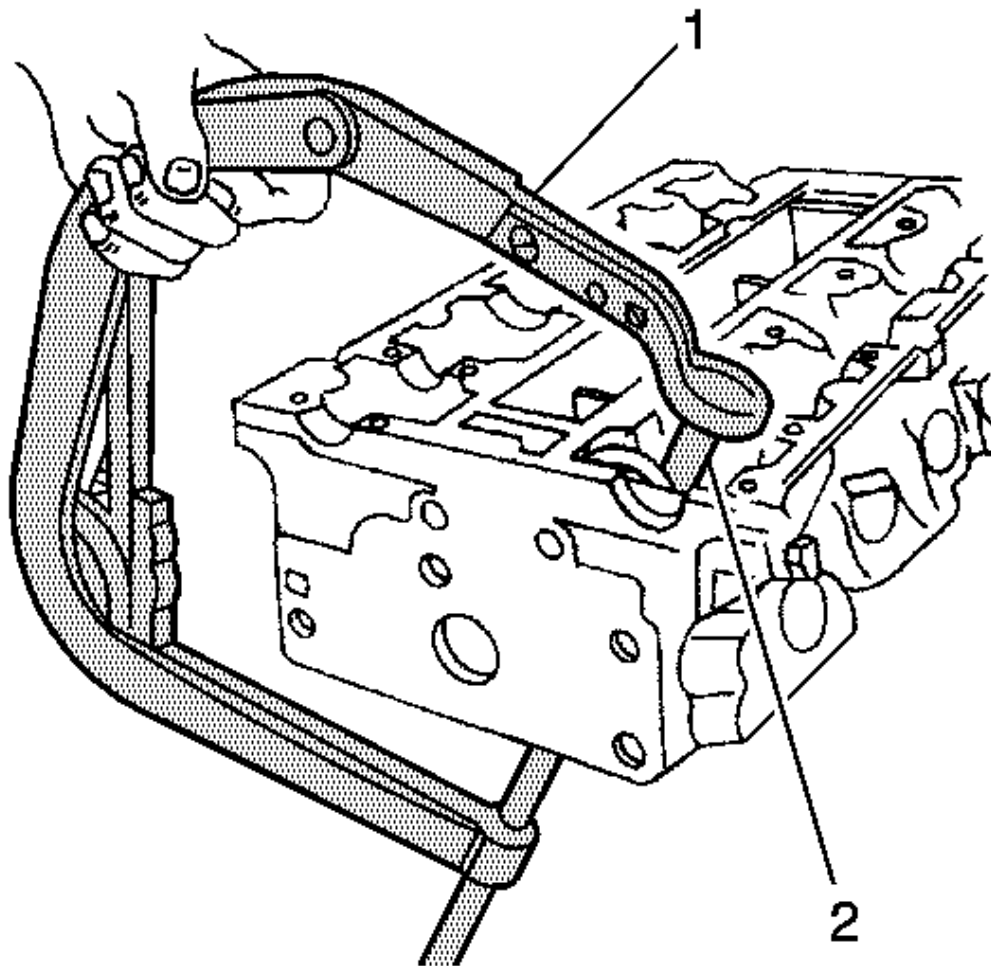


**Fig. 180: View Of Valve**

**Courtesy of GENERAL MOTORS CORP.**

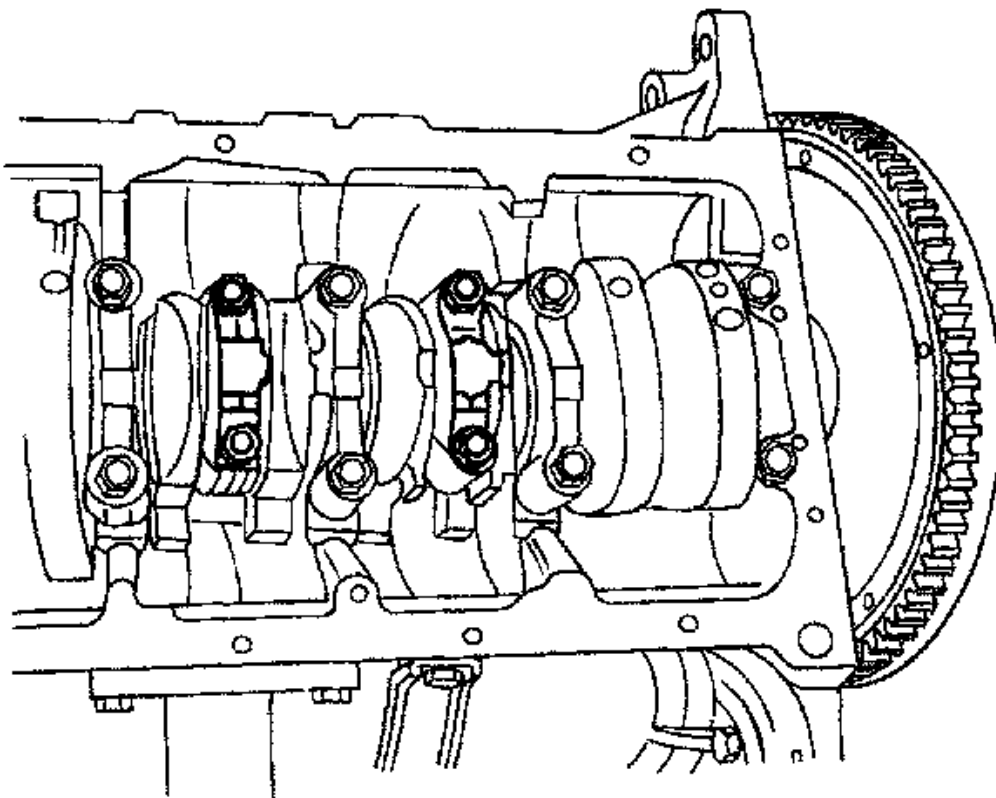
**CAUTION: Refer to Safety Glasses Caution in Cautions and Notices.**

1. Inspect the valve stem tip for wear.
2. Inspect the valve retainer grooves and the oil seal grooves for chips and wear.
3. Inspect the valves for burns or cracks.



**Fig. 194: Compressing Valve Springs**  
Courtesy of GENERAL MOTORS CORP.

27. Compress the valve springs with the **J 8062** (1) and the **KM-653-A** (2). See **Special Tools** .
28. Remove the valve retainers.
29. Remove the **J 8062** (1) and **KM-653-A** (2). See **Special Tools** .
30. Remove the valve spring caps.
31. Remove the valve springs. Maintain the original position of the valve springs for installation.



**Fig. 218: View Of Connecting Rods And Bearing Caps**  
Courtesy of GENERAL MOTORS CORP.

41. Mark the order of the connecting rod bearing caps.
42. Remove the connecting rod bearing cap bolts for all of the pistons.
43. Remove the connecting rod bearing caps and the lower connecting rod bearings.