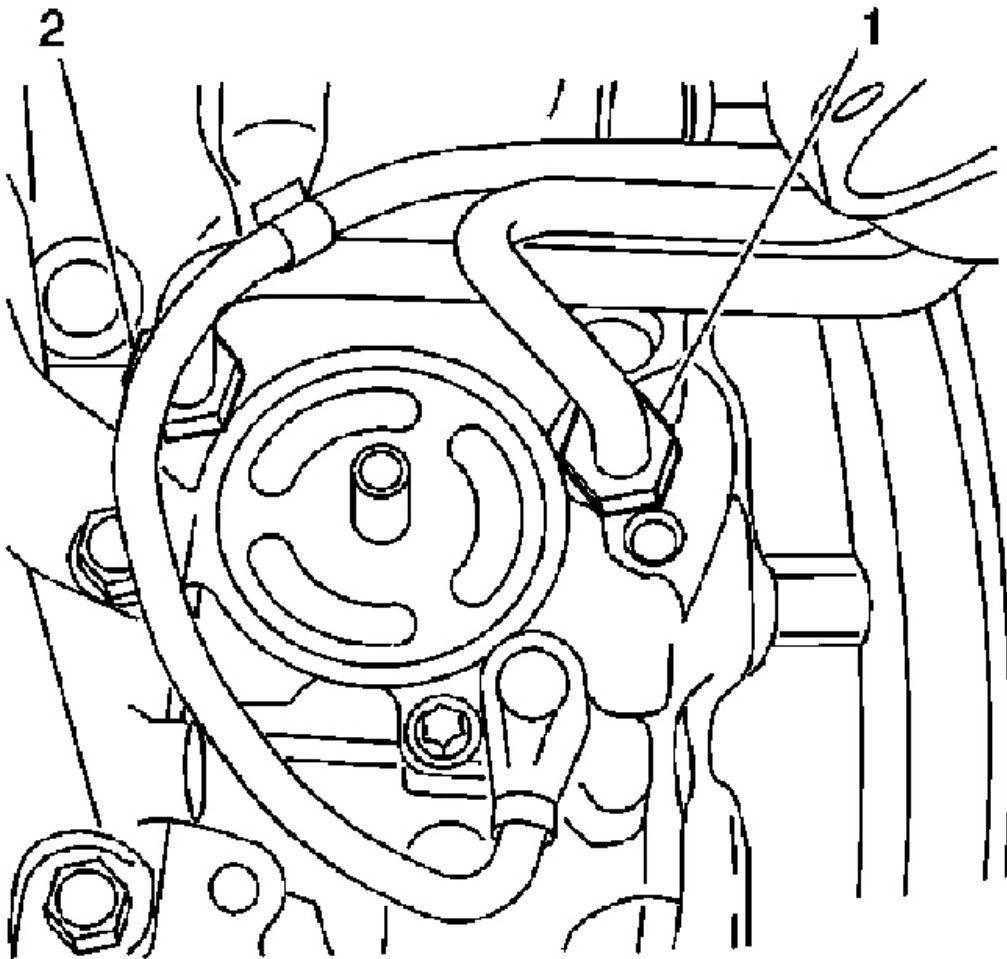


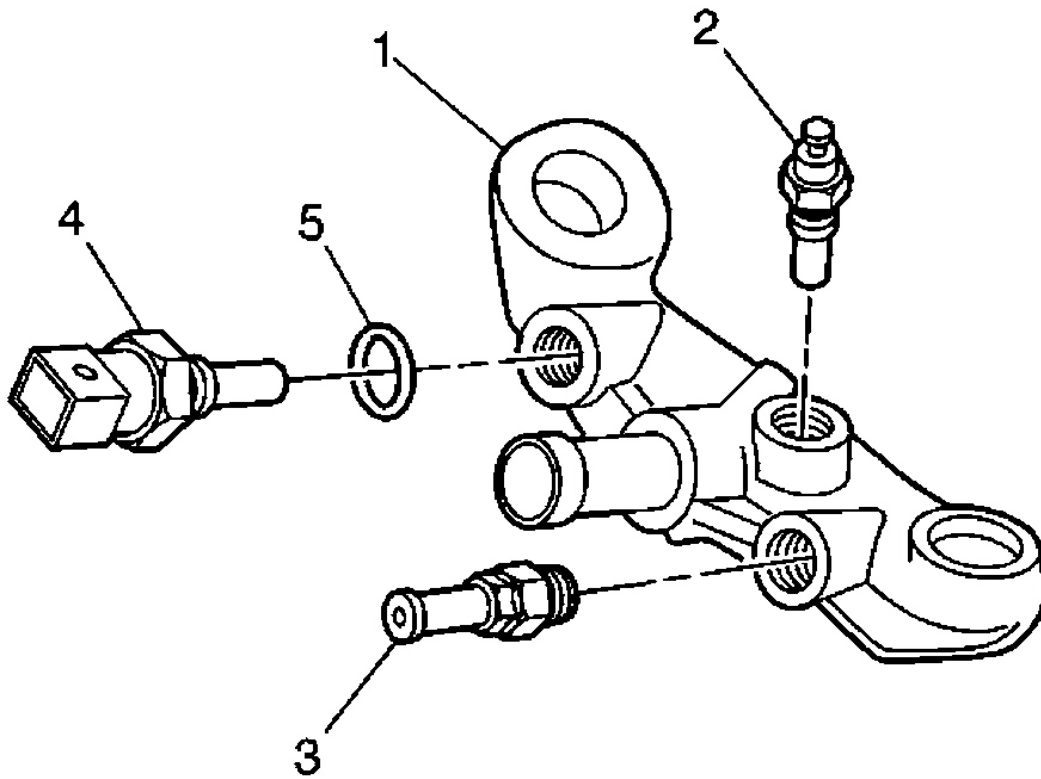
**OIL COOLER****Removal**

1. Raise and support the vehicle.
2. Drain the engine oil and remove the oil filter housing.
3. Loosen the oil cooler outlet (1) and the inlet (2) lines from engine block. See **Fig. 16** .
4. Lower the vehicle.
5. Remove the intake plenum. See **INTAKE PLENUM** .
6. Remove the intake manifold. See **INTAKE MANIFOLD & SPACER** .
7. Disconnect the following electrical connectors from the water crossover:
  - The engine coolant temperature sender (2).
  - The engine coolant temperature sensor (4). See **Fig. 17** .
8. Remove the water crossover bolts (1).
9. Remove the water crossover upper and lower seals (2). See **Fig. 18** .
10. Loosen the upper heat shield bolts on the left side of the exhaust manifold. See **Fig. 19** .
11. Remove the oil cooler outlet line from the engine oil cooler. See **Fig. 20** .
12. Remove the oil cooler inlet line from the engine oil cooler.
13. Note the positioning of the 4 seals. See **Fig. 21** .
14. Position oil feed and return lines aside and secure with mechanic wire.
15. Remove the engine oil cooler inlet and outlet nuts (1). See **Fig. 22** .
16. Remove the engine oil cooler cover bolts (2).
17. Remove the engine oil cooler cover.
18. Remove the engine oil cooler.
19. Clean all sealing surfaces.



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**Fig. 16: Removing/Installing Oil Cooler Lines At Engine Block**  
Courtesy of GENERAL MOTORS CORP.

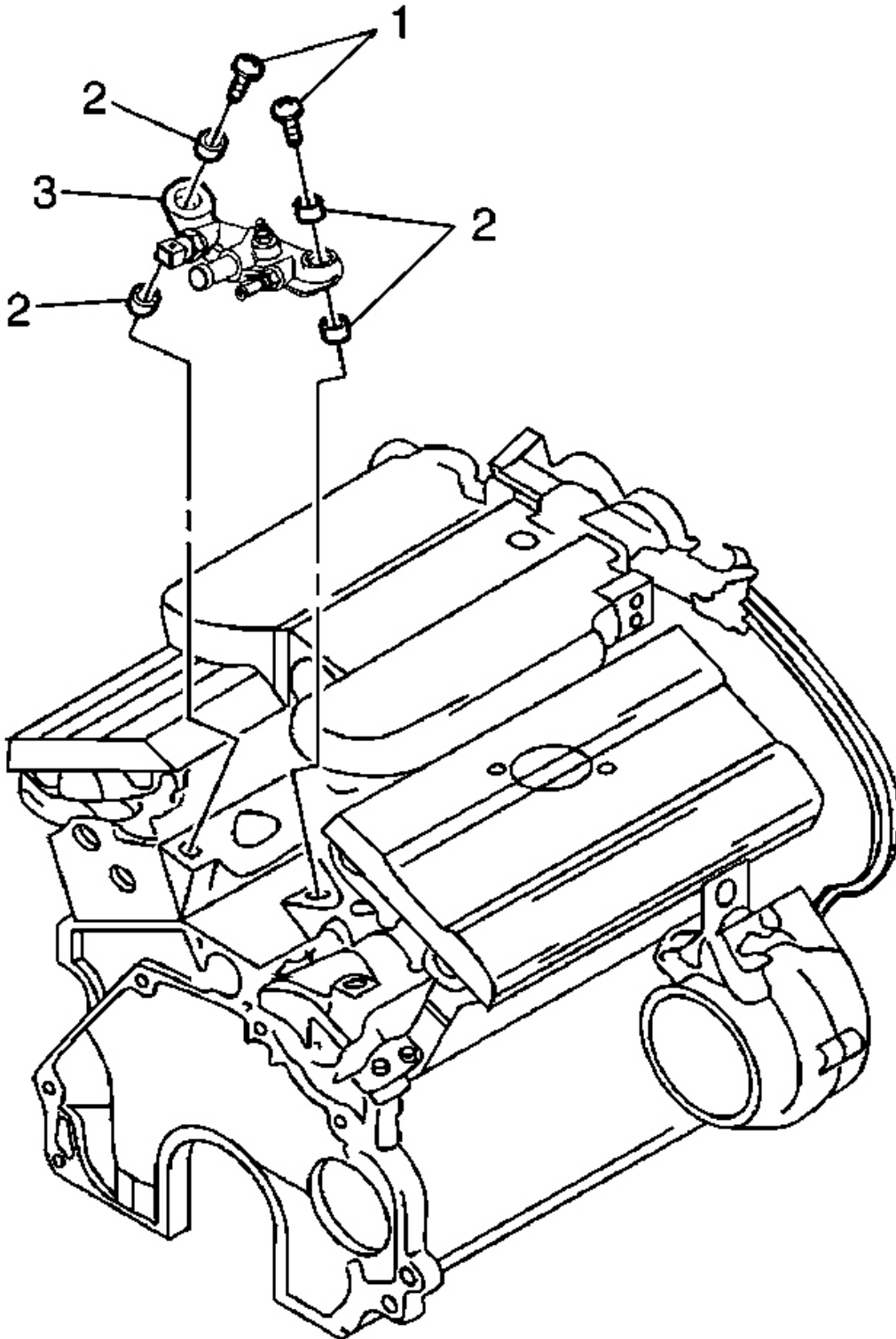


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**Fig. 17: Removing Electrical Connectors From Coolant Sensor/Sender**  
Courtesy of GENERAL MOTORS CORP.

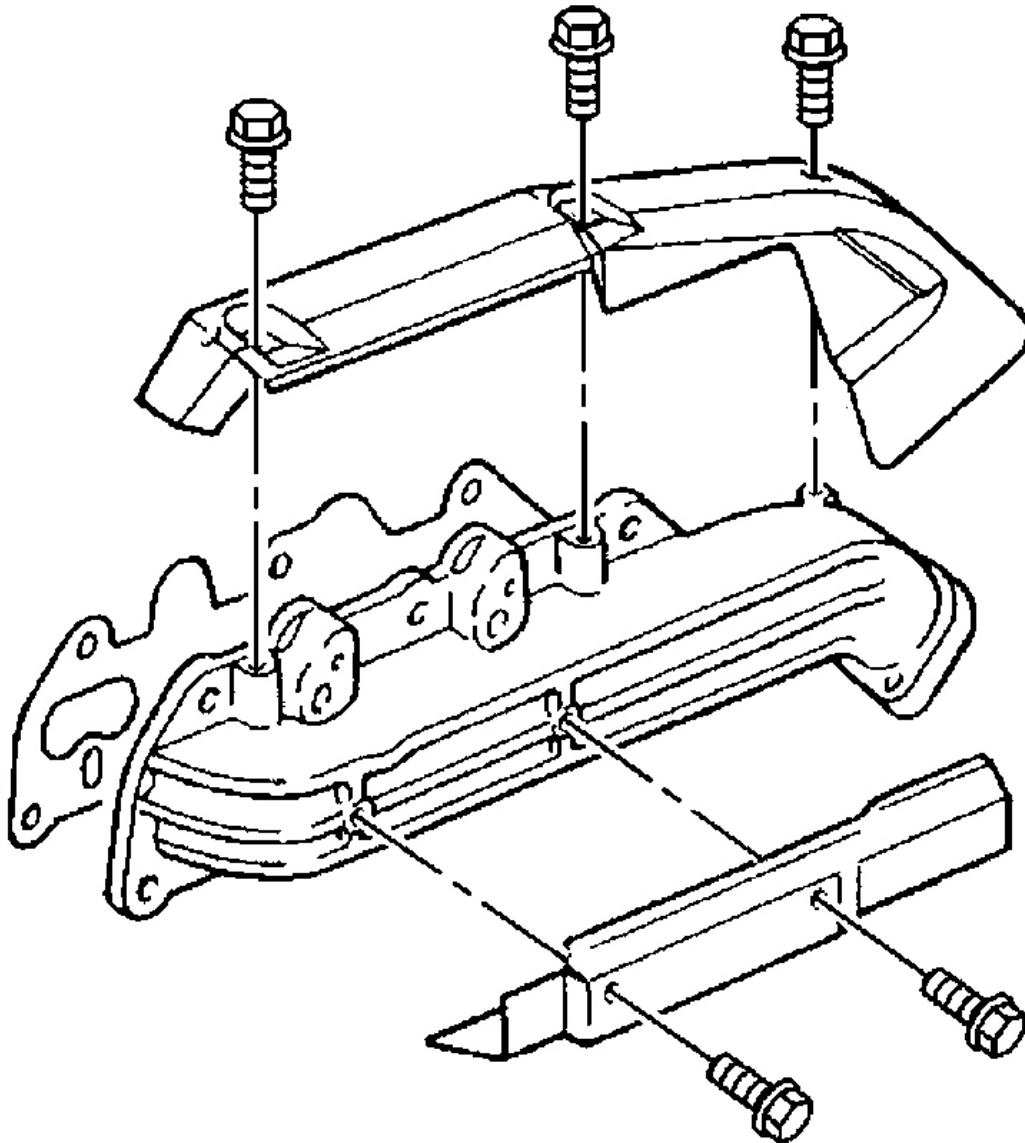
1998 Cadillac Catera

1998-99 ENGINE 3.0L DOHC V6



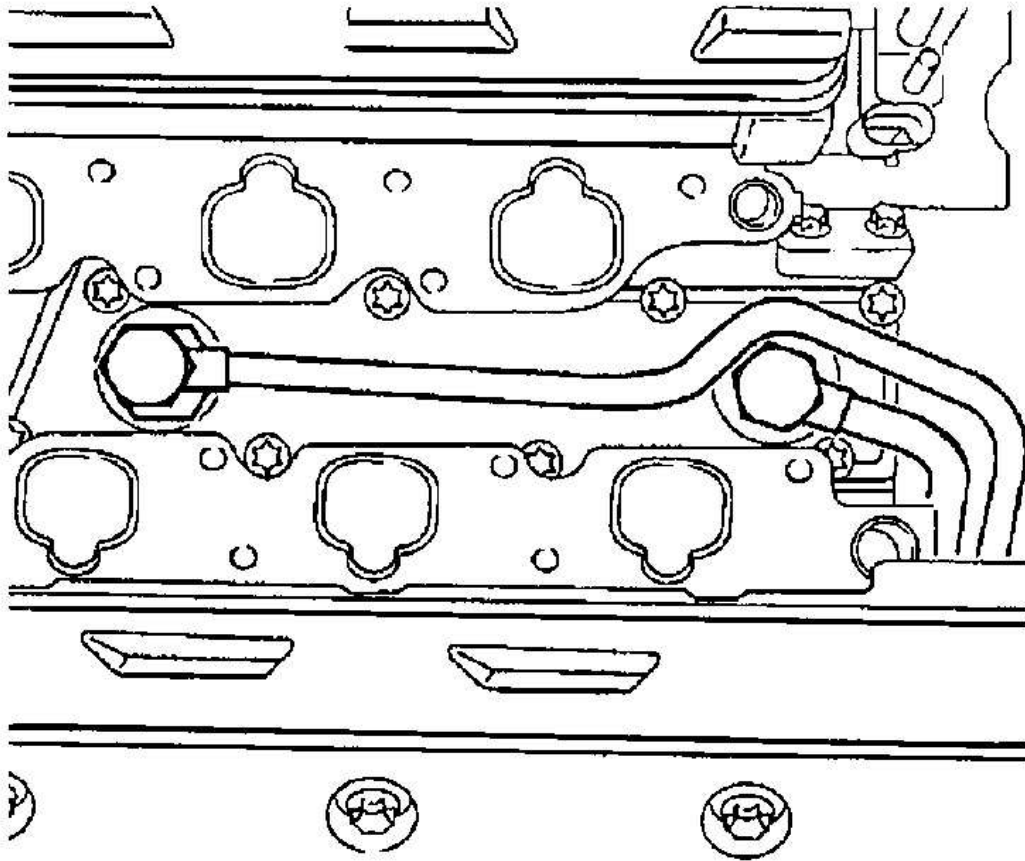
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**Fig. 18: Removing/Installing Water Crossover**  
Courtesy of GENERAL MOTORS CORP.



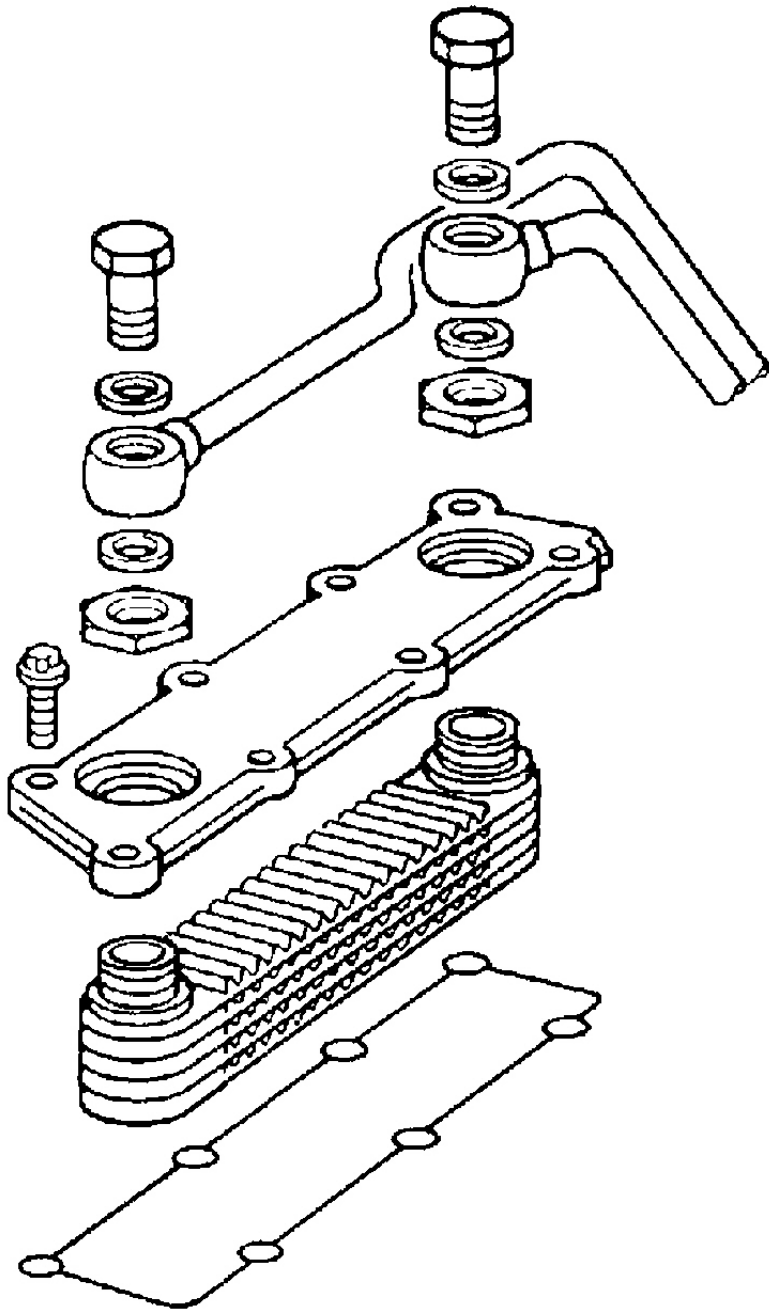
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**Fig. 19: Removing Left Exhaust Manifold Heat Shield**  
Courtesy of GENERAL MOTORS CORP.



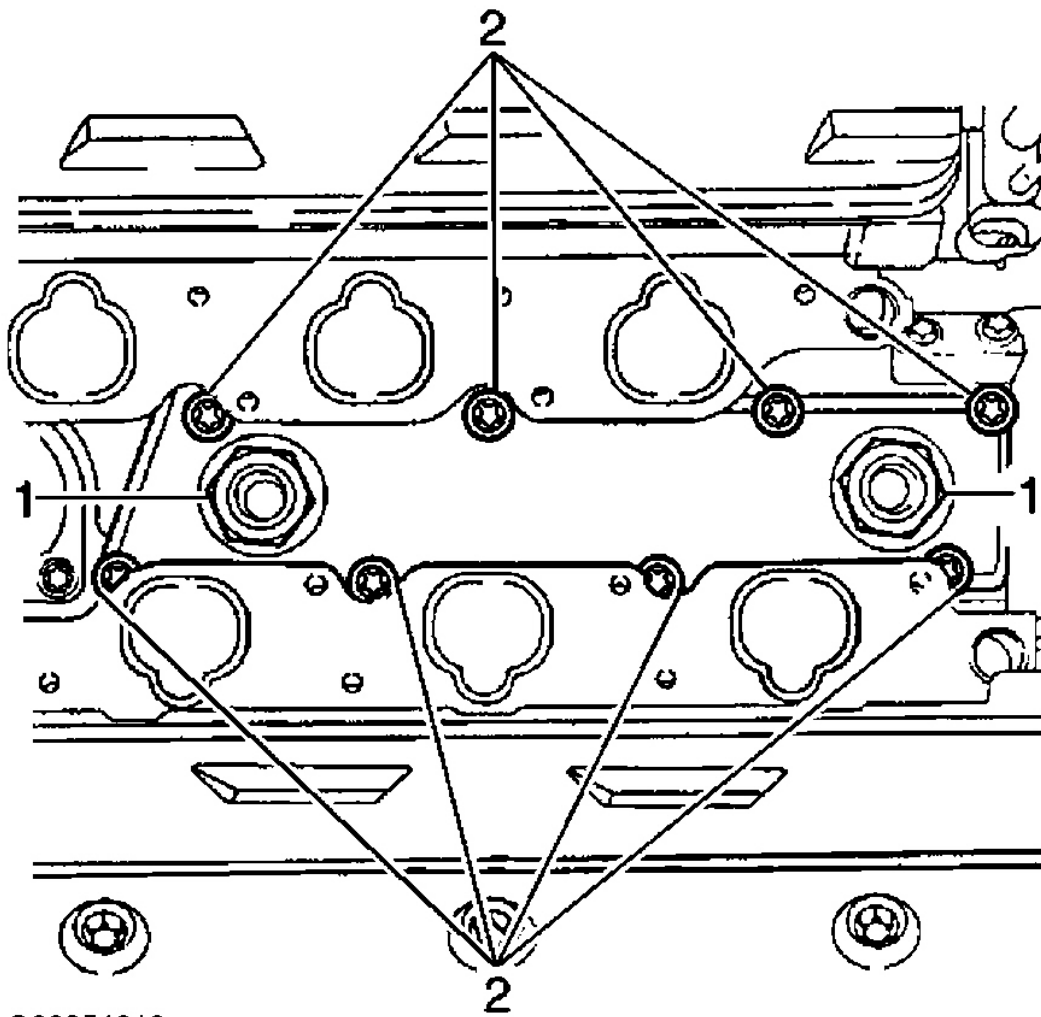
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**Fig. 20: Removing Oil Cooler Inlet & Outlet Lines**  
Courtesy of GENERAL MOTORS CORP.



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**Fig. 21: Exploded View Of Oil Cooler & Seals**  
Courtesy of GENERAL MOTORS CORP.



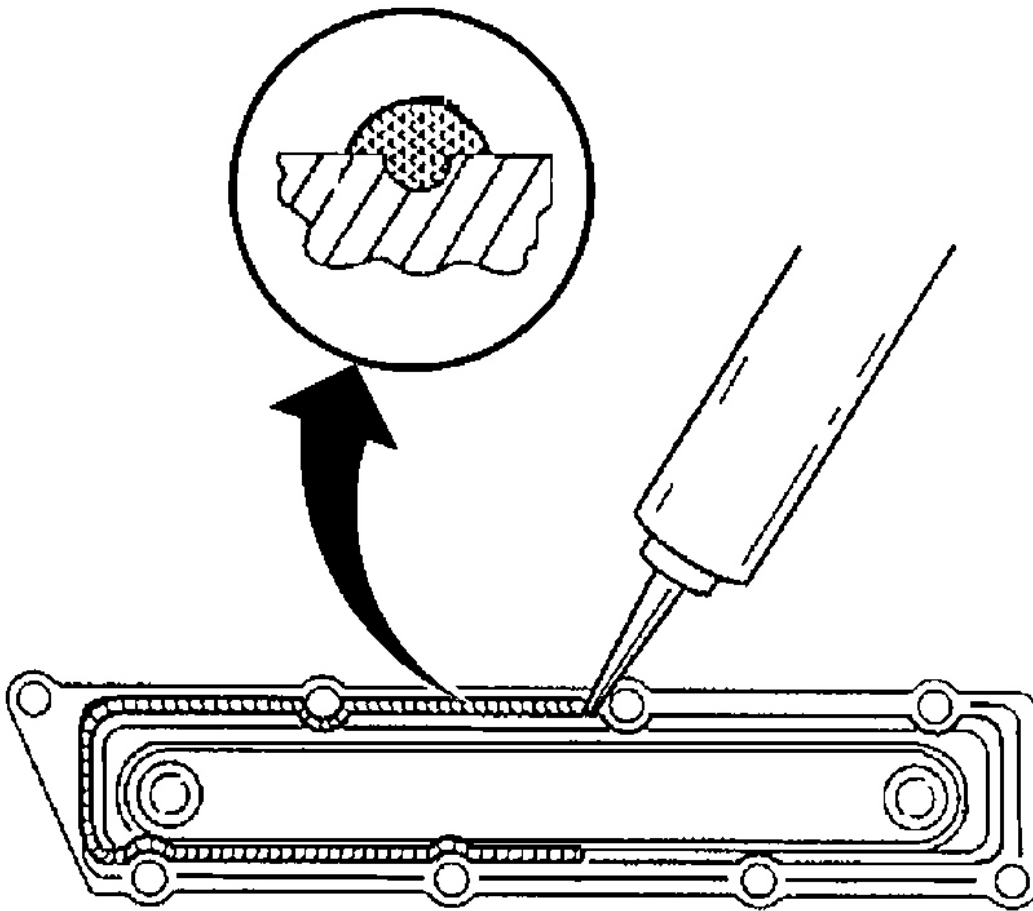
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**Fig. 22: Removing/Installing Oil Cooler Inlet/Outlet Nuts & Cover Bolts**  
 Courtesy of GENERAL MOTORS CORP.

#### Installation

**NOTE:** 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.

1. Install the engine oil cooler.
2. Apply a 2 mm (0.08 in) bead of RTV silicone sealant, GM P/N 12346240, in the groove around the engine oil cooler cover. See **Fig. 23**.
3. Install the engine oil cooler cover.
4. Install the engine oil cooler cover bolts (2). See **Fig. 22**. Tighten the engine oil cooler cover bolts to 22 lb ft (30 N.m).
5. Install the engine oil cooler inlet and outlet nuts (1). See **Fig. 22**. Tighten the engine oil cooler inlet and outlet nuts to 15 lb ft (20 N.m).
6. Reposition the oil feed and return lines.
7. Install the oil cooler outlet and install the oil cooler inlet lines to the engine oil cooler. Use 4 new seals. Tighten the oil feed and return lines to 22 lb ft (30 N.m).
8. Install the water crossover
  - Position the crossover.
  - Install the upper and lower seals (2). See **Fig. 18**.
  - Install the water crossover bolts (1). Tighten the water crossover bolts to 22 lb ft (30 N.m).
- ∴
9. Connect the electrical connectors at the following locations:
  - The engine coolant temperature sensor (4)
  - The engine coolant temperature sender (2).
10. Install the intake manifold.. See **INTAKE MANIFOLD & SPACER**.
11. Install the intake plenum. See **INTAKE PLENUM**.
12. Raise the vehicle.
13. Install the oil cooler outlet (1) line to the engine block. See **Fig. 16**. Tighten oil cooler outlet (1) line to 22 lb ft (30 N.m).
14. Install the oil cooler inlet (2) line to the engine block. Tighten oil cooler inlet (2) line to 22 lb ft (30 N.m).
15. Install the oil filter housing to the engine block. Tighten the oil filter housing to 33 lb ft (45 N.m).
16. Lower the vehicle.
17. Fill the crankcase with engine oil.



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**Fig. 23: Applying RTV Sealant To Oil Cooler Cover**  
Courtesy of GENERAL MOTORS CORP.