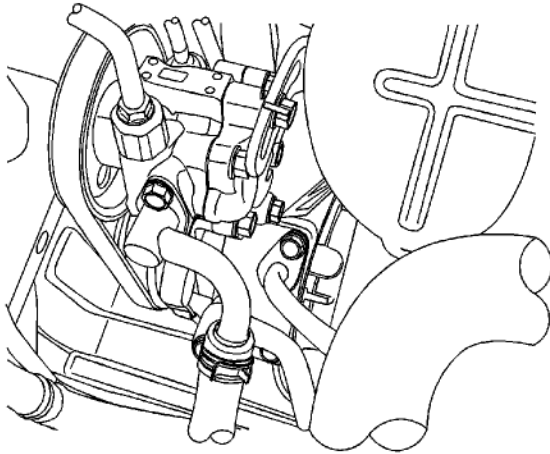


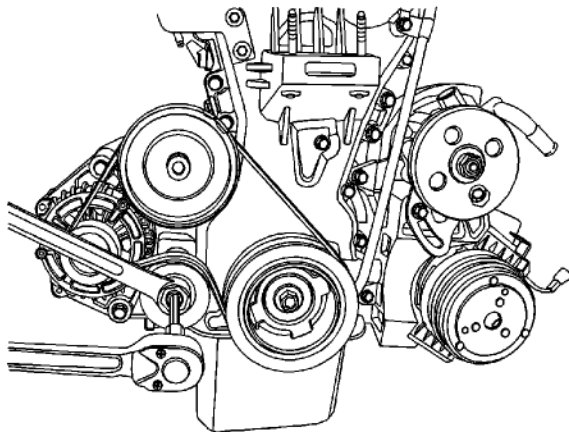
Drive Belt Replacement

Removal Procedure

1. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#)
2. Lift the vehicle up.
3. Remove the front-right tire and wheel.

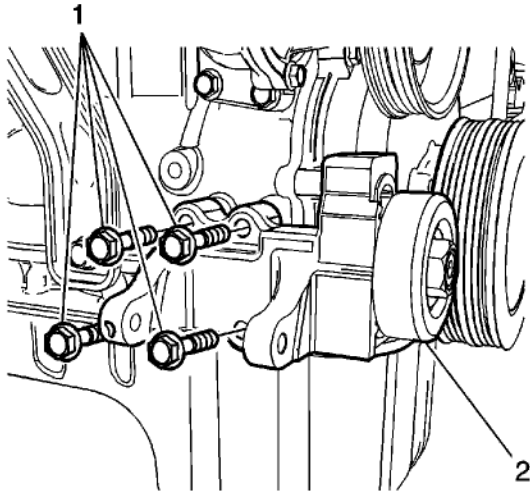


4. Remove the engine under cover.
5. Remove the power steering pump bracket retaining bolts and loosen the belt.
6. Remove the power steering pump-air compressor belt.



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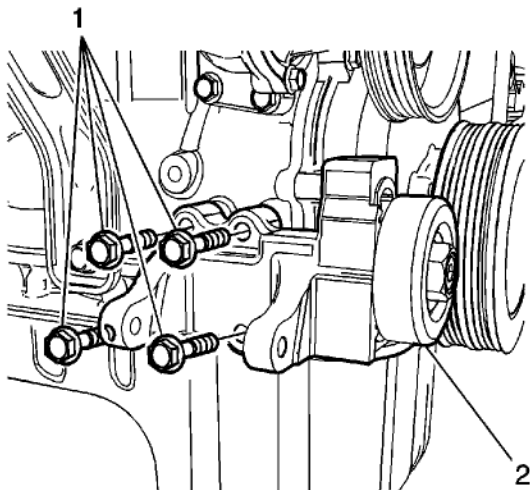
7. Rotate the inner hex of the tensioner nut counterclockwise and loosen the nut.
8. Rotate the outer hex of the tensioner nut clockwise and put down the tensioner.
9. Remove the water pump-generator belt.



10. Remove the generator. Refer to [Generator Replacement](#).
11. Remove the accessory tensioner (2).

Installation Procedure

Caution: Refer to [Fastener Caution](#) in the Preface section.

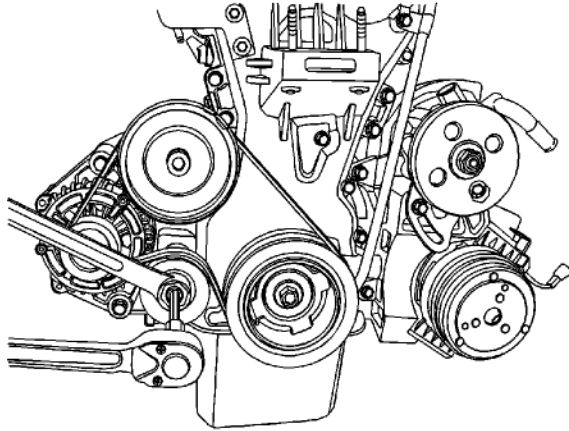


1. Install the accessory tensioner (2).

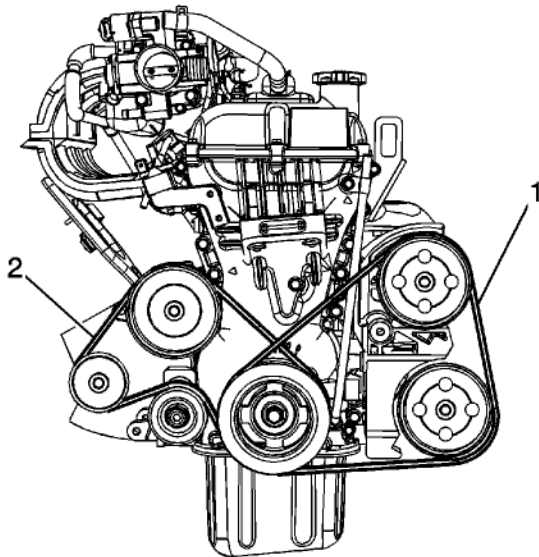
Tighten

Tighten the accessory tensioner retaining bolts (1) to 33 N·m (24.3 lb ft).

2. Install the generator. Refer to [Generator Replacement](#).



3. Rotate the outer hex of the tensioner nut counterclockwise and put up the tensioner.
4. Rotate the inner hex of the tensioner nut clockwise and tighten the nut, installing the water pump-generator belt.



5. Install the power steering pump-air compressor belt (1), tightening power steering pump bracket retaining bolts.

Tighten

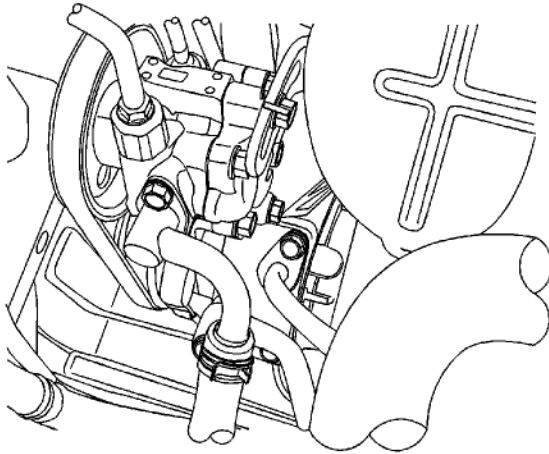
Tighten the power steering pump bracket mounting bolts to 20 N·m (14.7 lb ft).

6. Install the engine undercover.
7. Lower the vehicle.
8. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).

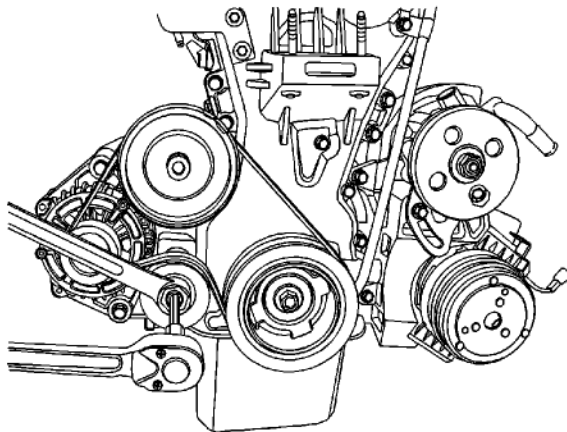
Drive Belt Tensioner Replacement

Removal Procedure

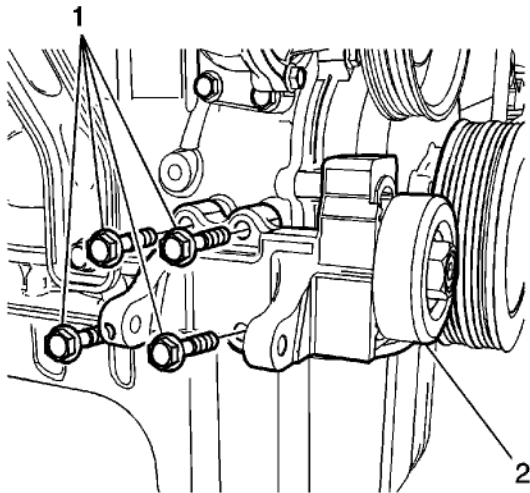
1. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).
2. Lift the vehicle up.
3. Remove the front-right tire and wheel.



4. Remove the engine under cover.
5. Remove the power steering pump bracket retaining bolts and loosen the belt.
6. Remove the power steering pump-air compressor belt.



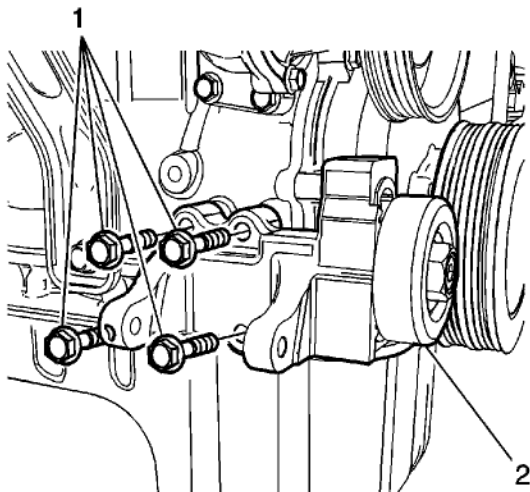
7. Rotate the inner hex of the tensioner nut counterclockwise and loosen the nut.
8. Rotate the outer hex of the tensioner nut clockwise and put down the tensioner.
9. Remove the water pump-generator belt.



10. Remove the generator. Refer to [Generator Replacement](#)
11. Remove the accessory tensioner (2).

Installation Procedure

Caution: Refer to [Fastener Caution](#) in the Preface section.

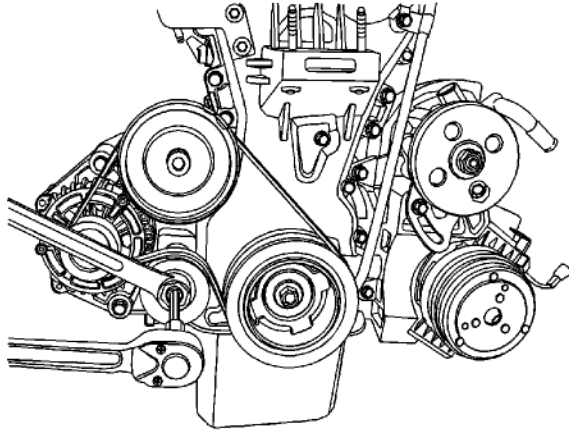


1. Install the accessory tensioner (2).

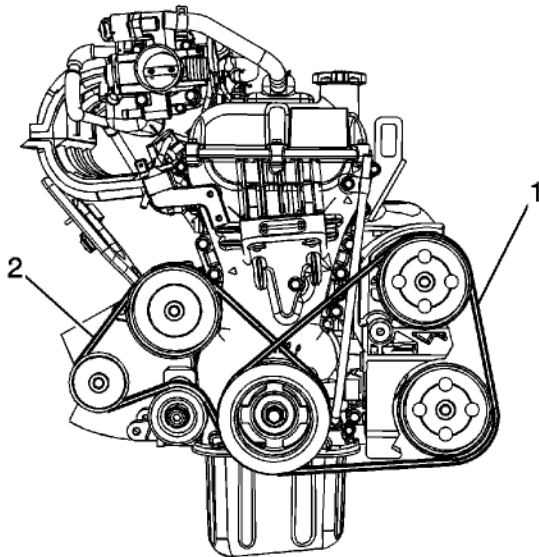
Tighten

Tighten the accessory tensioner retaining bolts (1) to 33 N·m (24.3 lb ft).

2. Install the generator. Refer to [Generator Replacement](#).



3. Rotate the outer hex of the tensioner nut counterclockwise and put up the tensioner.
4. Rotate the inner hex of the tensioner nut clockwise and tighten the nut, installing the water pump-generator belt.



5. Install the power steering pump-air compressor belt (1), tightening power steering pump bracket retaining bolts.

Tighten

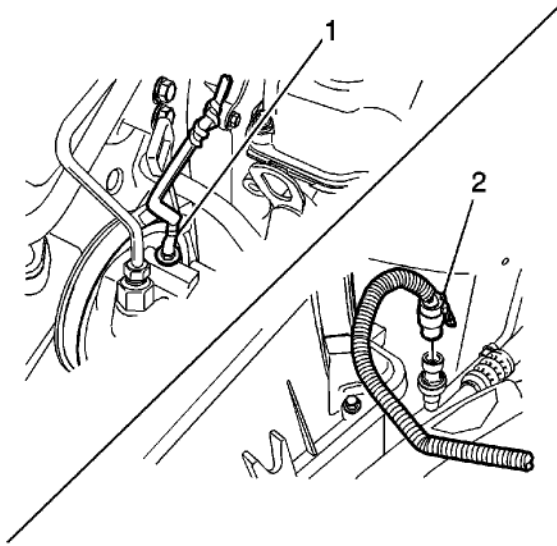
Tighten the power steering pump bracket mounting bolts to 20 N·m (14.7 lb ft).

6. Install the engine undercover.
7. Lower the vehicle.
8. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).

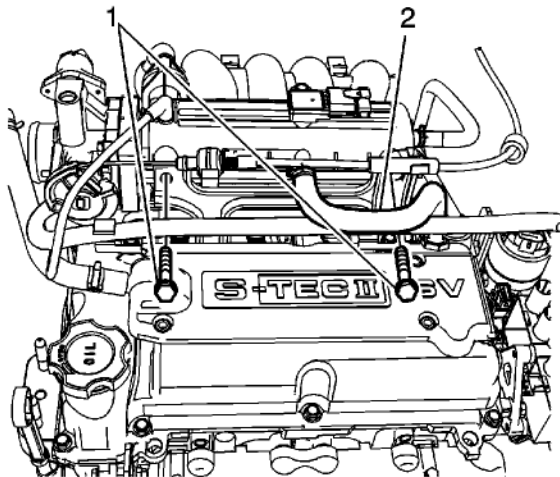
Intake Manifold Replacement

Removal Procedure

1. Disconnect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).
2. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).



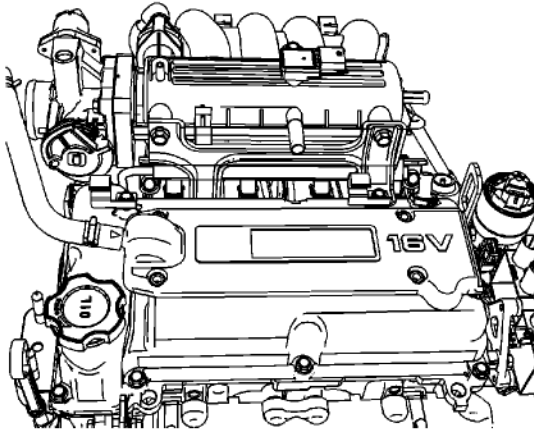
3. Disconnect the power steering oil pressure switch connector (1) and the air conditioner pressure sensor connector (2).



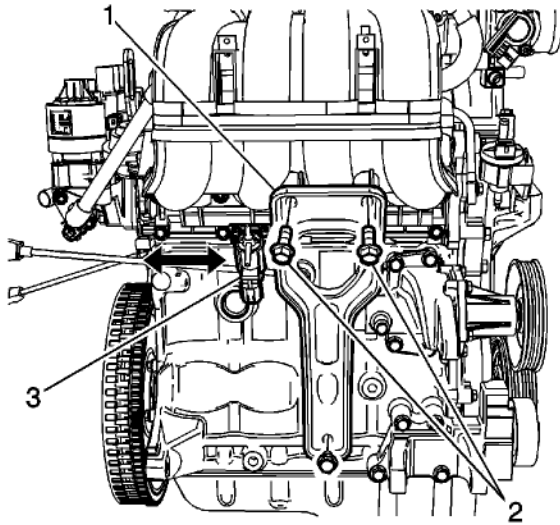
4. Disconnect the brake vacuum hose.

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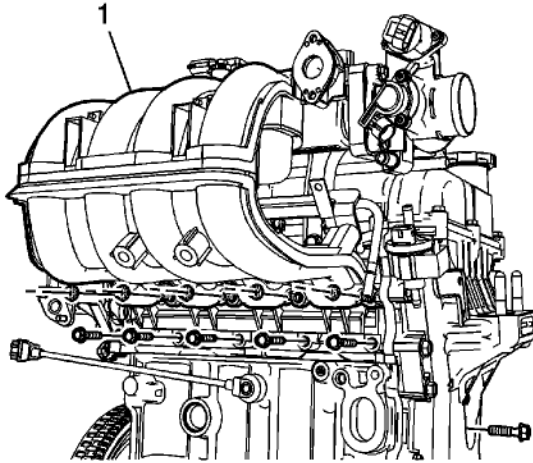
5. Disconnect the PCV breather hose.
6. Disconnect the intake temperature/pressure sensor connector.
7. Disconnect the accelerator cable.
8. Disconnect the canister hose from the intake manifold.
9. Remove intake manifold front bracket upper retaining bolts (1).



10. Remove the fuel rail.
11. Remove the EGR pipe.

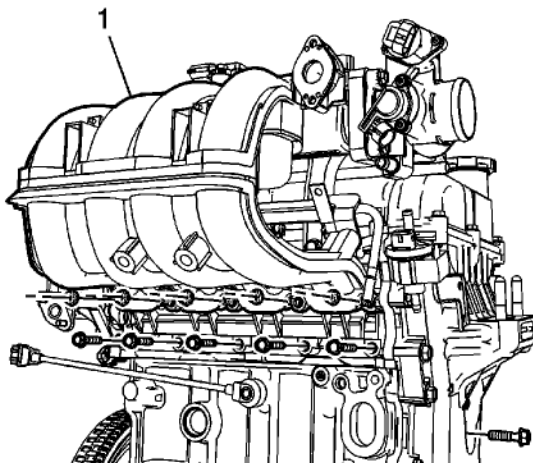


12. Disconnect the VGIS solenoid valve (3).
13. Remove the intake manifold rear bracket bolts (2).
14. Remove the intake manifold rear bracket (1).



15. Remove the engine wiring harness from the intake manifold.
16. Remove the intake manifold (1).
17. Remove the intake manifold gasket.

Installation Procedure



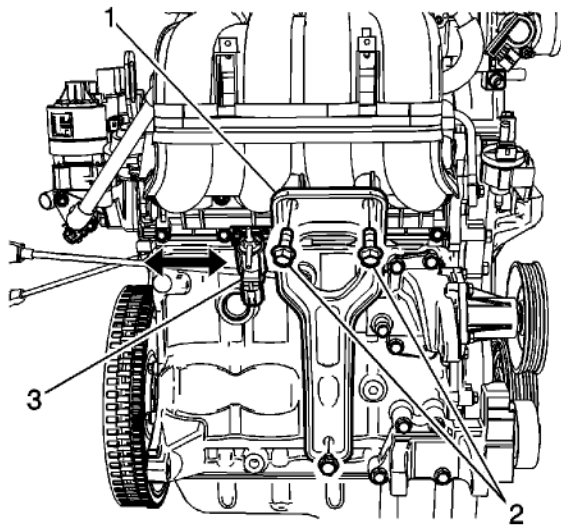
1. Install the intake manifold (1) with the new gasket.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the intake manifold bolts.

Tighten

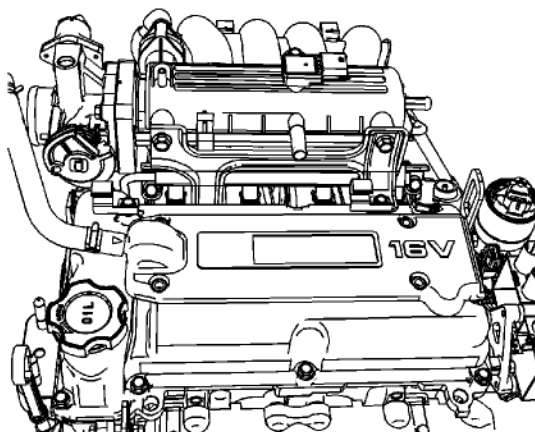
Tighten the intake manifold retaining bolts to 10 N·m (7.4 lb ft).



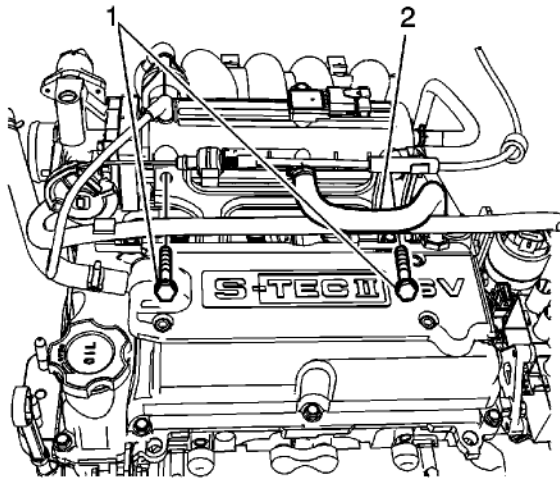
3. Install the intake manifold rear bracket (1).
4. Install the intake manifold rear bracket retaining bolts (2).

Tighten

- Tighten the bracket upper bolts to 25 N·m (18.4 lb ft).
- Tighten the bracket lower bolts to 50 N·m (36.8 lb ft).



5. Install the EGR pipe.
6. Install the fuel rail. Refer to [Fuel Injection Fuel Rail Assembly Replacement](#).

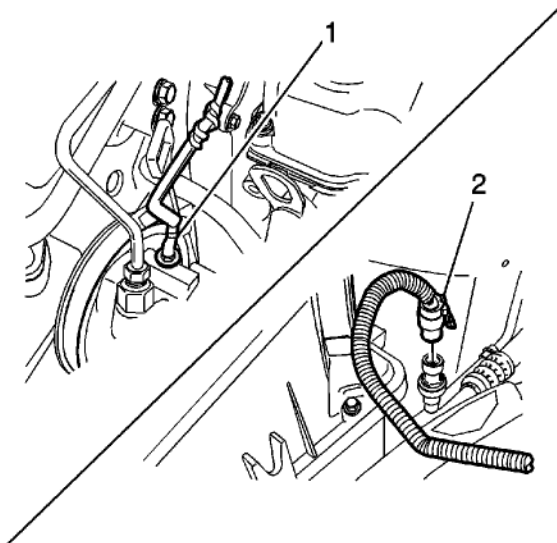


7. Install the intake manifold front bracket upper retaining bolts (1).

Tighten

Tighten the intake manifold support bracket upper bolts to 2 N·m (1.5 lb ft).

8. Connect the brake vacuum hose.
9. Connect the PCV breather hose.
10. Connect the intake temperature/pressure sensor connector.
11. Connect the accelerator cable.
12. Connect the canister hose from the intake manifold.



13. Connect the power steering oil pressure switch connector (1) and the air conditioner pressure sensor connector (2).
14. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).

15. Connect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).

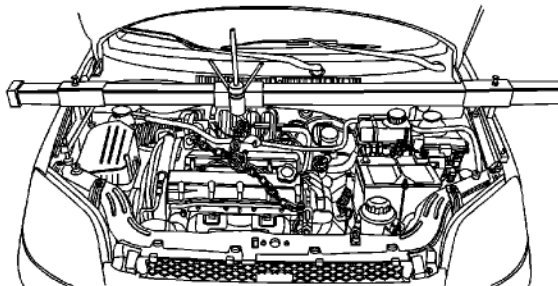
Camshaft Timing Chain, Sprocket, and Tensioner Replacement

Special Tools

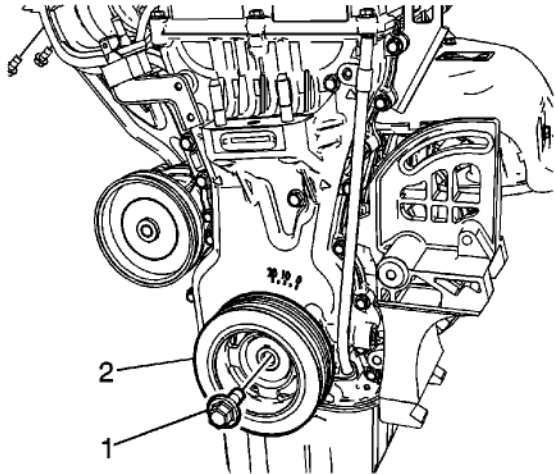
- EN-48356 Engine Fixture
- EN-49073 Timing Chain Tensioner

Removal Procedure

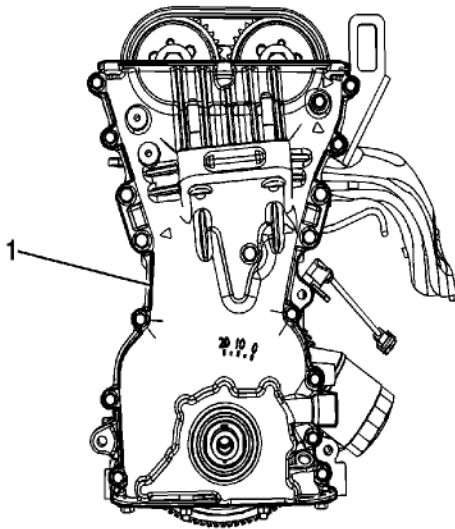
1. Disconnect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).
2. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).
3. Remove the cylinder head cover. Refer to [Valve Rocker Arm Cover Replacement](#).
4. Remove the accessory belt and tensioner. Refer to [Drive Belt Replacement](#) and [Drive Belt Tensioner Replacement](#).



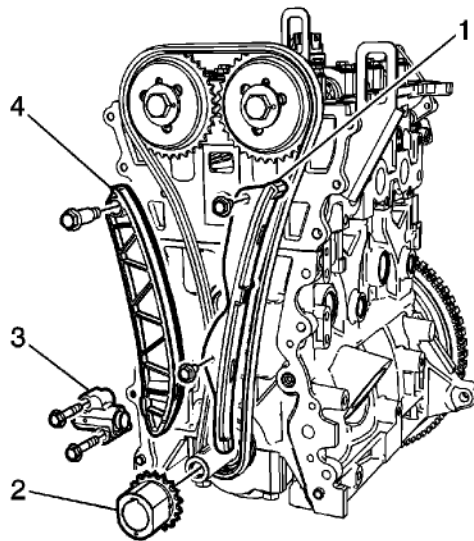
5. Install the EN-48356 fixture .
6. Remove the engine mount. Refer to [Engine Mount Replacement](#).
7. Remove the oil pan. Refer to [Oil Pan Replacement](#).



8. Remove the crankshaft pulley (2).
9. Remove the oil level gauge tube.

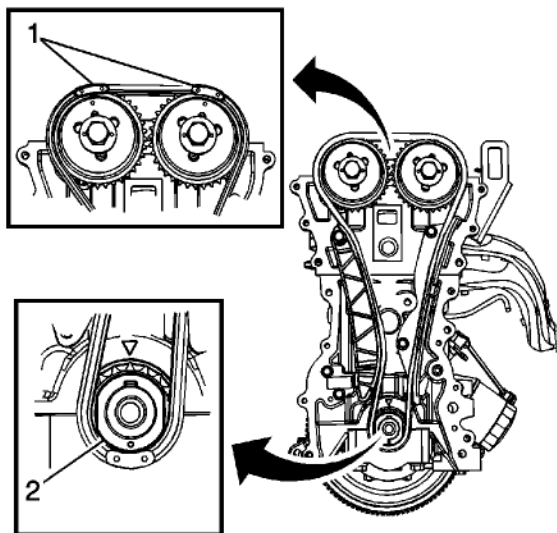


10. Remove the timing chain cover (1).

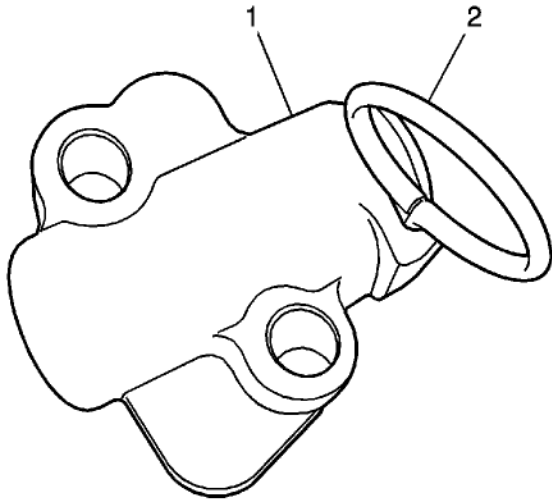


11. Remove the timing chain tensioner (3).
12. Remove the left timing chain lever (4).
13. Remove the right timing chain guide (1).
14. Remove the timing chain.

Installation Procedure

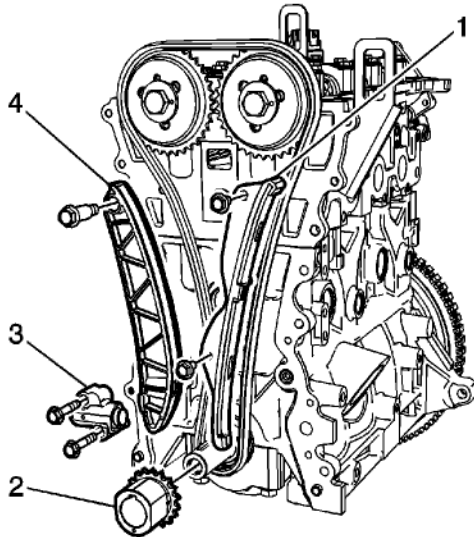


1. Install the timing chain after aligning both the mark (1) on the camshaft sprocket and on the timing chain.
2. Align both the timing mark (2) on the crankshaft sprocket and on the timing chain.



3. Push the timing chain tensioner lever and fix the lever by installing the *EN-49073* tensioner (2).

Caution: Refer to [Fastener Caution](#) in the Preface section.



4. Assemble the timing chain guide (1).

Tighten

Tighten the timing chain guide retaining bolts to 10 N·m (7.4 lb in)

5. Assemble the timing chain lever (4).

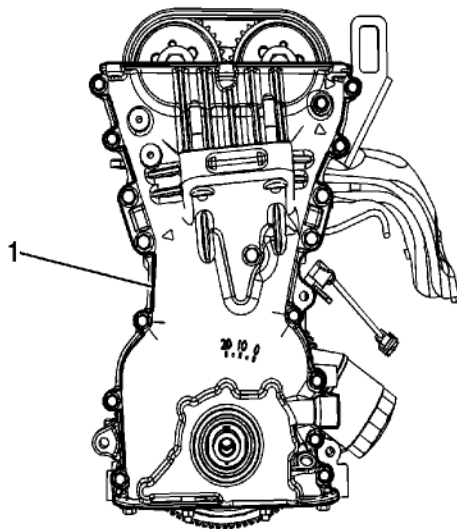
Tighten

Tighten the timing chain lever retaining bolts to 10 N·m (7.4 lb in)

6. Assemble the timing chain tensioner (3).

Tighten

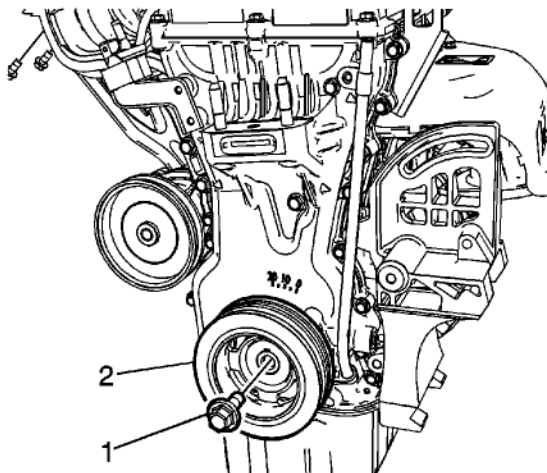
Tighten the timing chain tensioner retaining bolts to 12 N·m (8.8 lb in)



7. Install the timing chain cover (1).

Tighten

- Tighten the timing chain cover retaining bolts (M6 x 1.0) to 10.5 N·m (7.7 lb in).
- Tighten the timing chain cover retaining bolts (M8 x 1.25) to 20 N·m (14.7 lb ft).





8. Install the crankshaft pulley (2).

Tighten

Tighten the crankshaft pulley bolt to 85 N·m (62.7 lb ft).

9. Install the oil level gage tube.

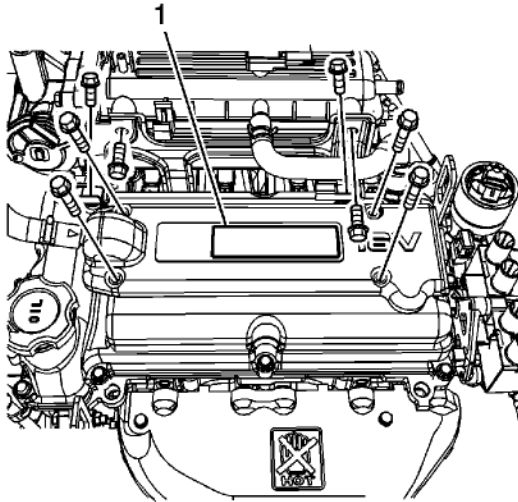
Tighten

Tighten the oil level gage tube retaining bolt to 10.5 N·m (7.7 lb in).

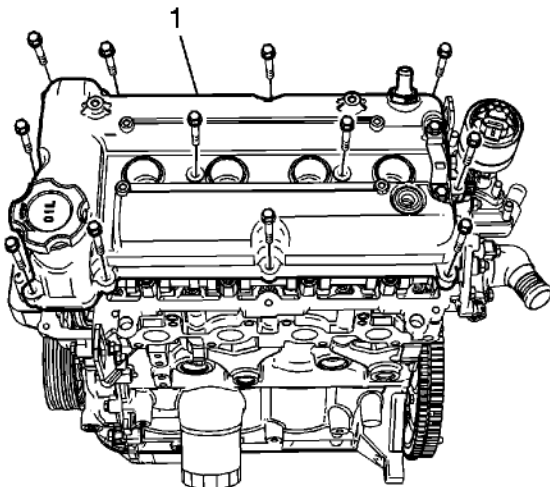
10. Install the oil pan. Refer to [Oil Pan Replacement](#)
11. Install the engine mount. Refer to [Engine Mount Replacement](#)
12. Install the accessory belt and tensioner. Refer to [Drive Belt Replacement](#) and [Drive Belt Tensioner Replacement](#).

Valve Rocker Arm Cover Replacement

Removal Procedure



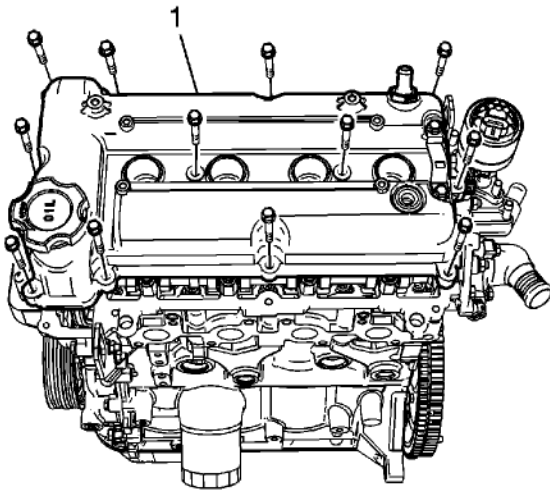
1. Disconnect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).
2. Disconnect the PCV hose.
3. Remove the cylinder head cover bracket and bolts.
4. Remove the spark plug cable cover (1).
5. Disconnect the spark plug cable.





6. Remove the cylinder head cover retaining bolts.
7. Remove the cylinder head cover (1) with the gasket.

Installation Procedure



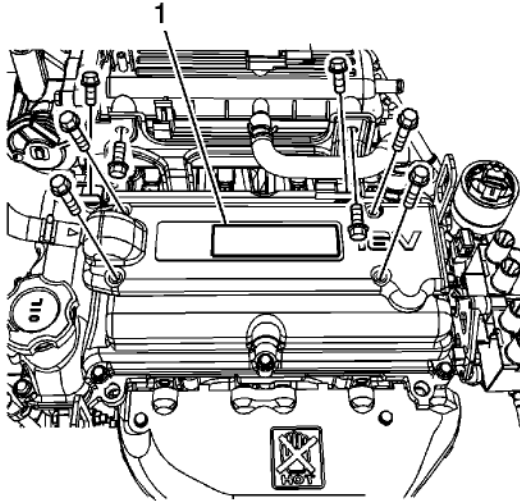
1. Install the cylinder head cover (1) with the gasket.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the cylinder head cover retaining bolts.

Tighten

Tighten the cylinder head cover bolts to 10 N·m (7.4 lb ft).



3. Connect the ignition cable.
4. Install the ignition cable cover (1).
5. Install the cylinder head cover bracket retaining bolts.

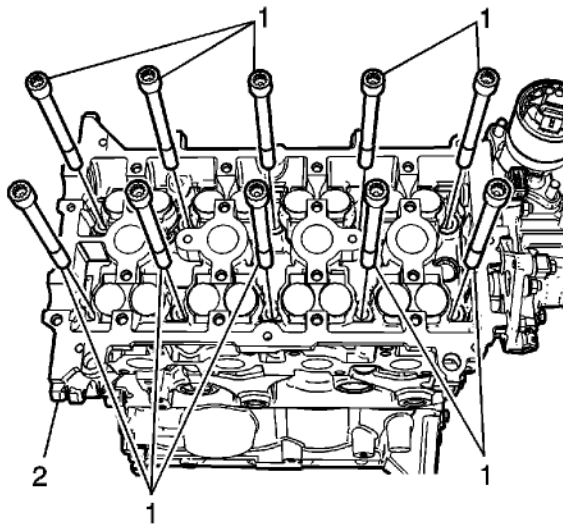
Tighten

- Tighten the cylinder head cover bracket bolts to 10 N·m (7.4 lb ft).
 - Tighten the spark plugs cable cover bolts to 10 N·m (7.4 lb ft).
6. Connect the PCV hose.
 7. Connect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).

Cylinder Head Replacement

Removal Procedure

1. Disconnect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).
2. Drain the engine coolant. Refer to [Cooling System Draining and Filling](#).
3. Relieve the fuel pressure. Refer to [Fuel Pressure Relief](#).
4. Remove the cylinder head cover. Refer to [Valve Rocker Arm Cover Replacement](#).
5. Remove the timing chain cover. Refer to [Camshaft Timing Chain, Sprocket, and Tensioner Replacement](#).
6. Remove the camshaft. Refer to [Camshaft Replacement](#).
7. Remove the intake manifold. Refer to [Intake Manifold Replacement](#).
8. Remove the exhaust manifold. Refer to [Exhaust Manifold Replacement](#).

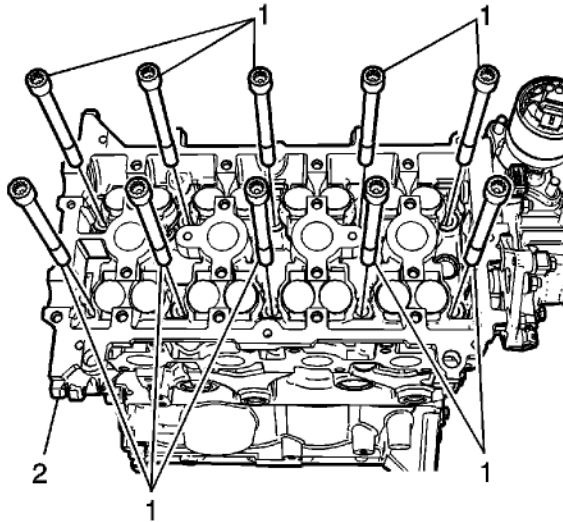


9. Remove the cylinder head bolts (1).
10. Remove the cylinder head (2) with the gasket.

Cleaning Procedure

1. Clean the cylinder head sealing surface.
2. Clean the cylinder block sealing surface.
3. Clean the cylinder head cover bolts.
4. Clean the cylinder head cover bolt holes.

Installation Procedure



1. Install the cylinder head assembly (2) and the NEW gasket.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the cylinder head bolts (1).

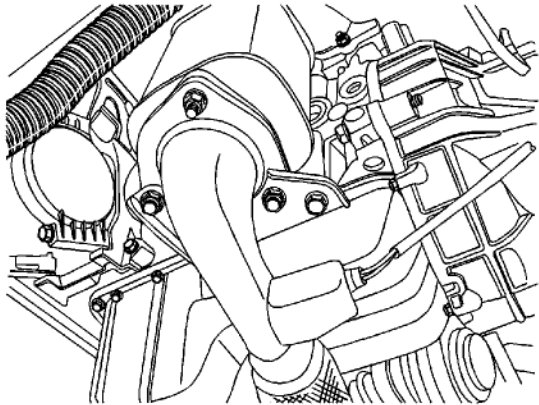
Tighten

Tighten the cylinder head bolts to 22 N·m+ 82 degrees.

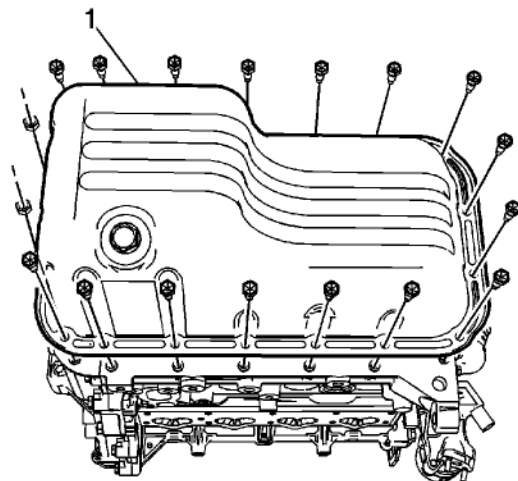
3. Install the exhaust manifold. Refer to [Exhaust Manifold Replacement](#).
4. Install the intake manifold. Refer to [Intake Manifold Replacement](#).
5. Install the camshaft. Refer to [Camshaft Replacement](#).
6. Install the timing chain. Refer to [Camshaft Timing Chain, Sprocket, and Tensioner Replacement](#).
7. Install the cylinder head cover. Refer to [Valve Rocker Arm Cover Replacement](#).
8. Refill the engine cooling system. Refer to [Cooling System Draining and Filling](#).
9. Connect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).

Oil Pan Replacement

Removal Procedure



1. Disconnect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).
2. Drain the engine oil.
3. Remove the front exhaust pipe. Refer to [Front Pipe Replacement](#).

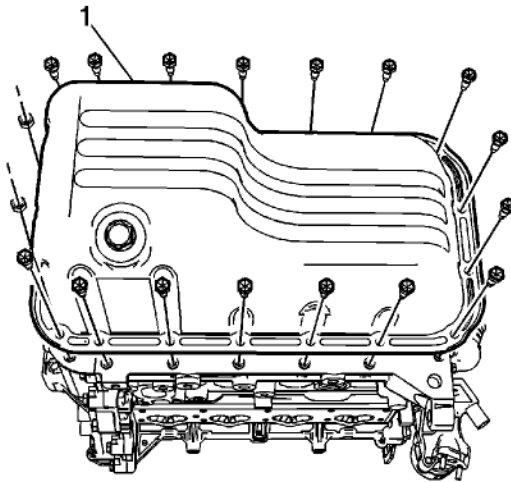


4. Remove the oil pan retaining bolts.

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5. Remove the oil pan (1).
6. Remove the gasket between the oil pan and the sealing surface of the engine block.

Installation Procedure



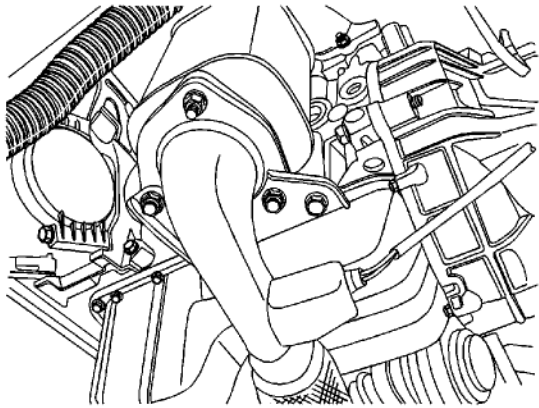
1. Apply the liquid gasket to the oil pan.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the oil pan (1) to the engine block and tighten the oil pan retaining bolts.

Tighten

Tighten the oil pan retaining bolts to 10.5 N·m (7.7 lb ft).



3. Install the front exhaust pipe. Refer to [Front Pipe Replacement](#).
4. Refill the engine oil.
5. Connect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).

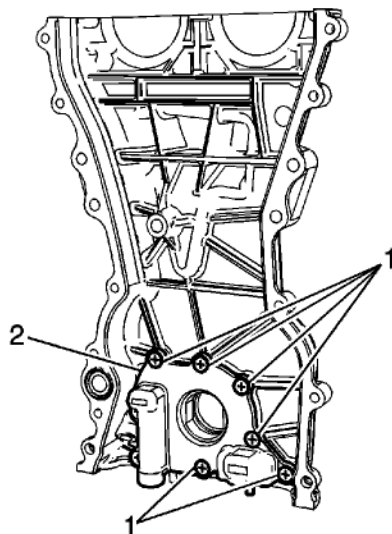
Oil Pump Replacement

Special Tools

EN-49072 Crankshaft Front Seal Installer

Removal Procedure

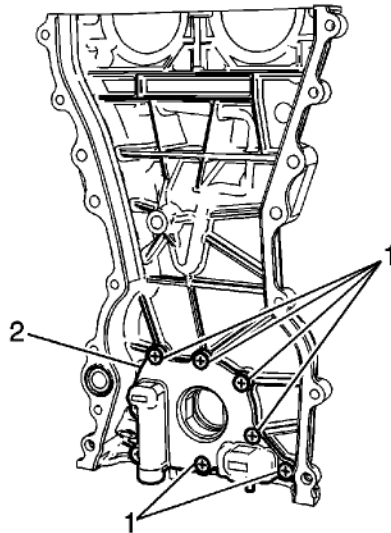
1. Disconnect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).
2. Remove the cylinder head cover. Refer to [Valve Rocker Arm Cover Replacement](#).
3. Remove the front exhaust pipe. Refer to [Front Pipe Replacement](#).
4. Remove the oil pan. Refer to [Oil Pan Replacement](#).
5. Remove the timing chain cover. Refer to [Camshaft Timing Chain, Sprocket, and Tensioner Replacement](#).
6. Remove the gasket between the oil pan and the sealing surface of the engine block.



7. Remove the oil pump retaining bolts (1) from the timing chain cover.

Installation Procedure

Caution: Refer to [Fastener Caution](#) in the Preface section.



1. Tighten the oil pump retaining bolts (1) to the timing chain cover and install the oil pump.

Tighten

Tighten the oil pump cover bolts to 10N·m (7.4 lb ft).

2. Install the timing chain cover. Refer to [Camshaft Timing Chain, Sprocket, and Tensioner Replacement](#).

Note: If the crankshaft front oil seal is damaged, replace it with new oil seal. When installing the crankshaft front oil seal to the oil pump, make the oil seal groove faced toward the oil pump case contact.

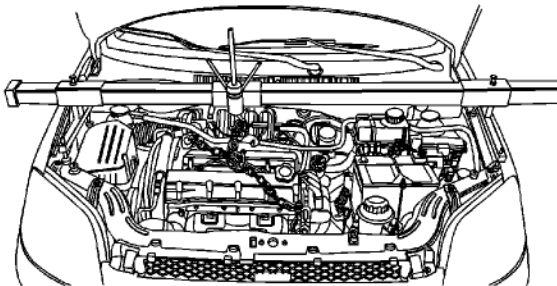
3. Install the *EN-49072* installer .
4. Install the oil pan. Refer to [Oil Pan Replacement](#).
5. Install the cylinder head cover. Refer to [Valve Rocker Arm Cover Replacement](#).
6. Install the spark plug cable cover.
7. Connect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#)

Engine Mount Replacement

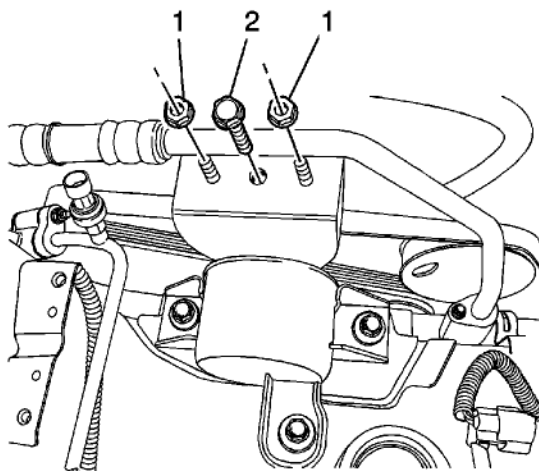
Special Tools

DW-110-060 Engine Assembly Support Fixture

Removal Procedure

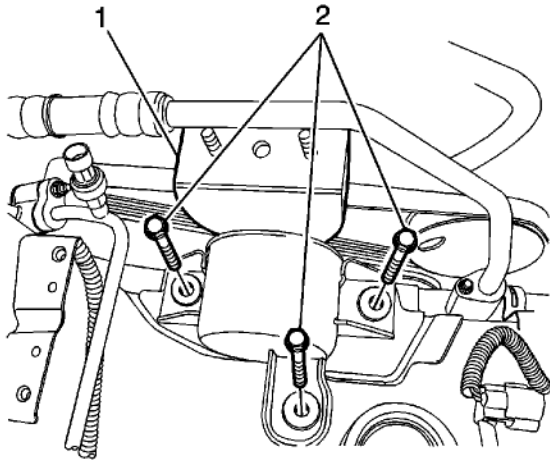


1. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).
2. Support the engine assembly using DW-110-060 support fixture .



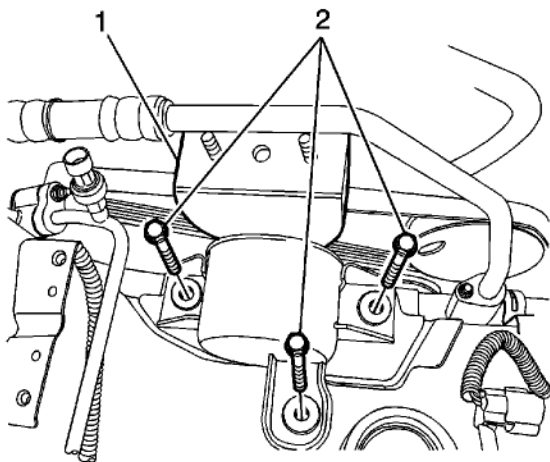


3. Remove the engine mount bracket retaining bolts (2)/nuts (1).



4. Remove the engine mount retaining bolts (2).
5. Remove the engine mount assembly (1).

Installation Procedure



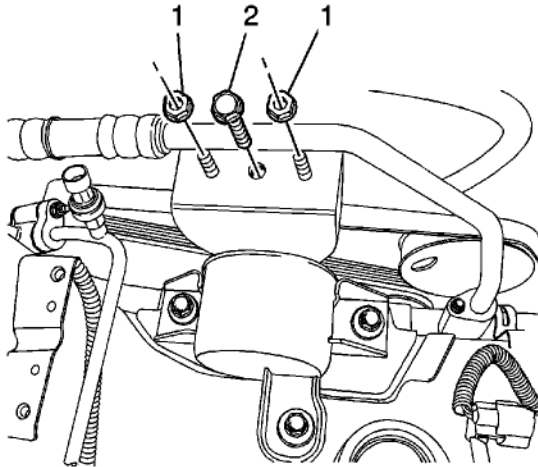
1. Install the engine mount assembly (1).

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the engine mount retaining bolts (2).

Tighten

Tighten the engine mount retaining bolts to 55 N·m (40.5 lb ft).



3. Tighten the engine mount bracket retaining bolts (2)/nuts (1).

Tighten

Tighten the engine mount bracket retaining bolts/nuts to 65 N·m (47.9 lb ft).

4. Remove the *DW-110-060* support fixture .
5. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).

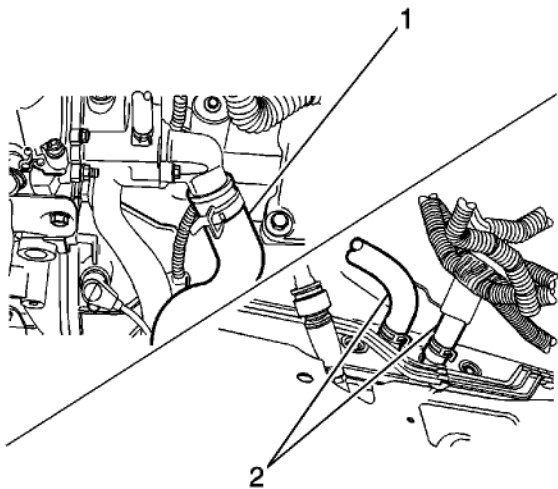
Engine Replacement

Special Tools

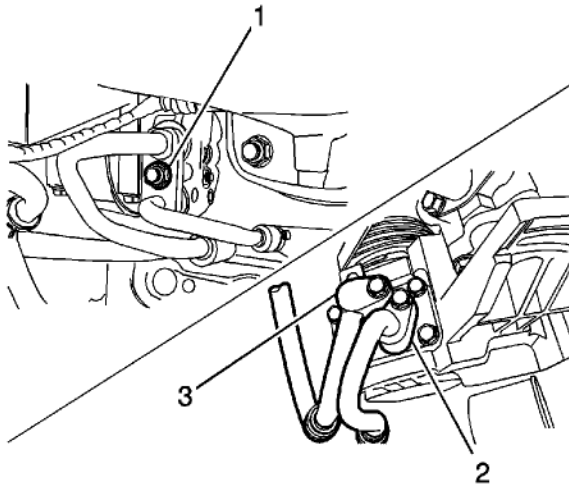
DW010-010 Assembly Support Remover/Installer

Removal Procedure

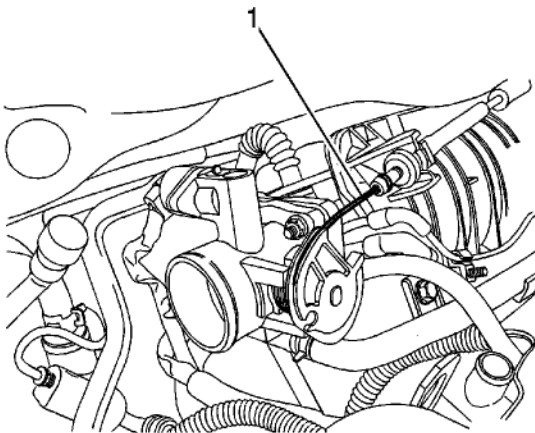
1. Discharge the air condition (A/C) system, if equipped.
2. Drain the power steering oil, if equipped.
3. Drain the engine coolant. Refer to [Cooling System Draining and Filling](#).
4. Remove the battery and battery tray. Refer to [Battery Tray Replacement](#).
5. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).



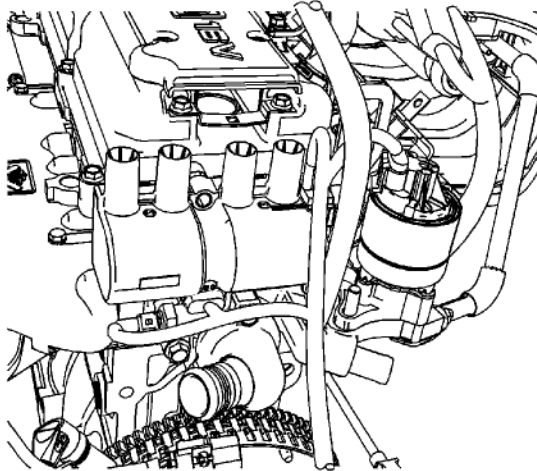
6. Disconnect the radiator inlet and outlet hose (1).
7. Disconnect the heater core inlet and outlet hose (2).



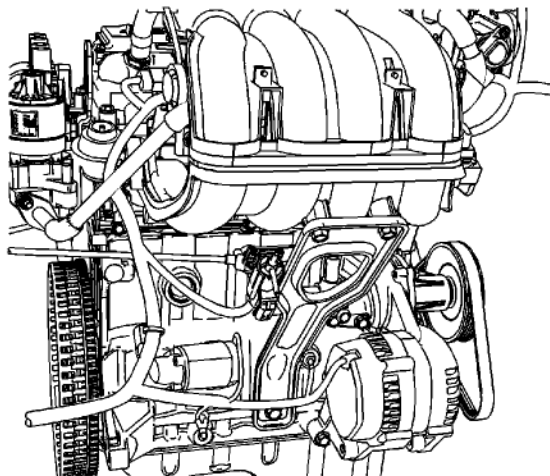
8. Remove the power steering hose from the power steering pump. Refer to [Power Steering Pump Replacement](#).
9. Remove the A/C compressor hose (2, 3) from the compressor.



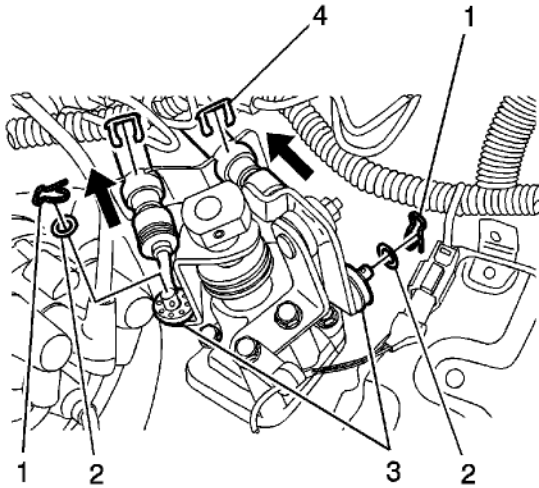
10. Disconnect the accelerator cable (1).
11. Disconnect the TPS connector.
12. Disconnect the IACV connector.
13. Disconnect the A/C pressure sensor connector.
14. Disconnect the power steering oil pressure switch cable.



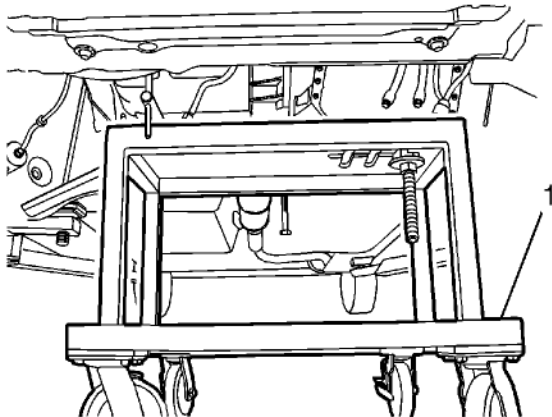
15. Disconnect the coolant temperature sensor connector.
16. Disconnect the EGR valve connector.
17. Disconnect the camshaft sensor connector.
18. Disconnect the ignition coil connector.
19. Disconnect the oxygen sensor connector.
20. Disconnect the crank position sensor connector.



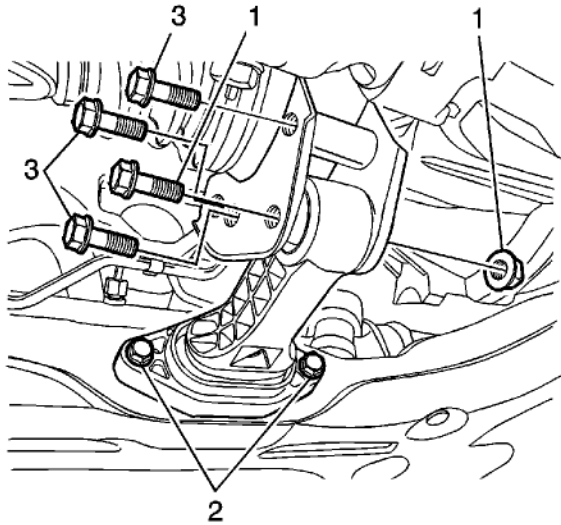
21. Disconnect the injector main connector.
22. Disconnect the canister solenoid connector.
23. Disconnect the VGIS solenoid connector.
24. Disconnect the starter connector.
25. Disconnect the alternator connector.



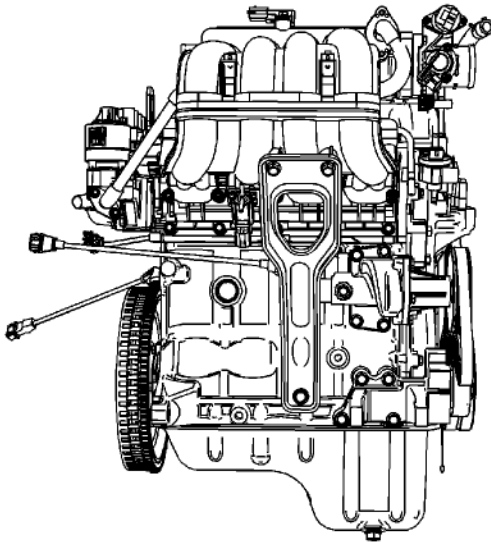
26. Remove the clutch cable (3) and connectors on manual transmission vehicles.
27. Remove the shift control cable from the auto transaxle.



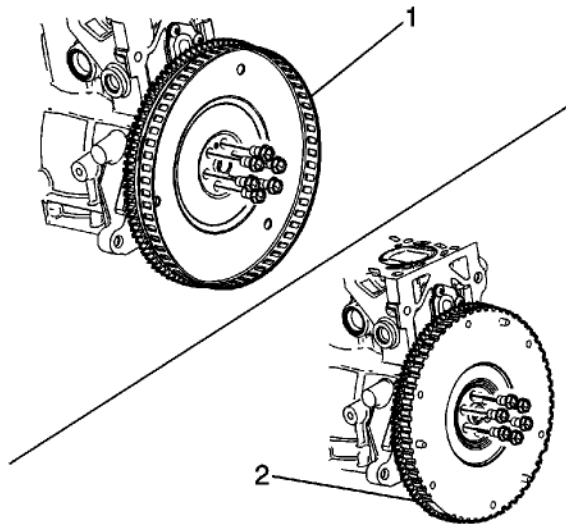
28. Support the engine assembly using the *DW010-010* remover/installer (1).
29. Remove the engine mount bracket. Refer to [Engine Mount Replacement](#).
30. Remove the transaxle mount bracket.



31. Remove the transaxle rear mount bolts (1,2, 3) and the rear mount.



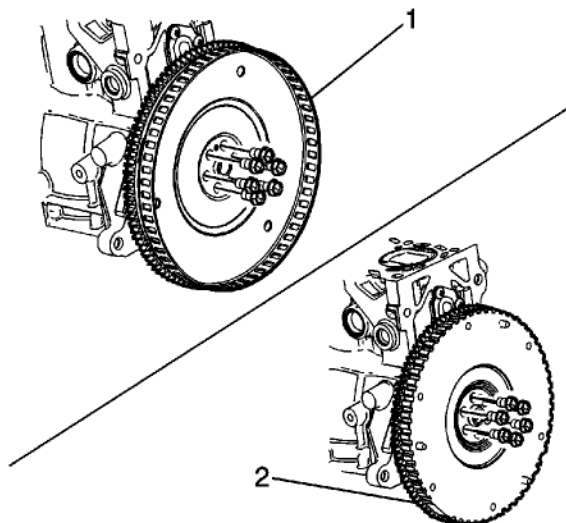
- 32. Remove the engine assembly.
- 33. Remove the transmission from the engine assembly.



34. Remove the flywheel (2) (manual transmission) or flexible plate (1) (auto transmission).

Installation Procedure

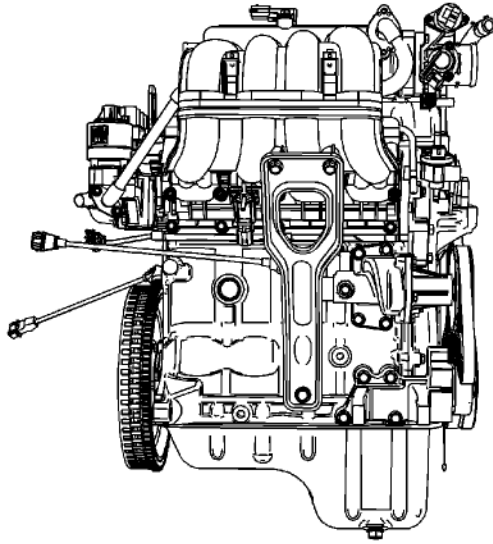
Caution: Refer to [Fastener Caution](#) in the Preface section.



1. Install the flywheel (2) (manual transmission) or flexible plate (1) (auto transmission).

Tighten

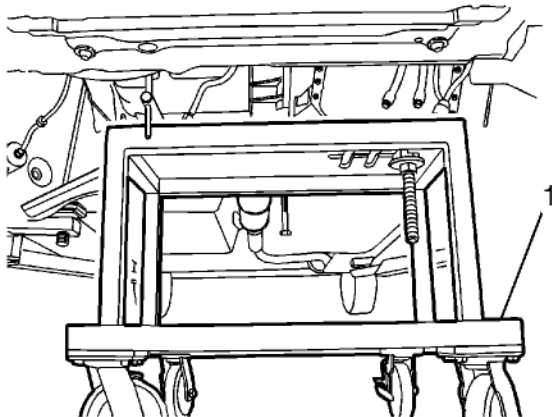
Tighten the flywheel/flexible plate bolts to 45 N·m (33.2 lb ft).



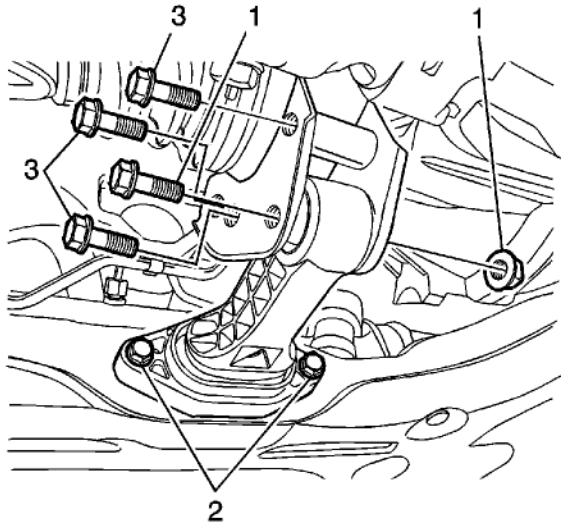
2. Install the transmission to the engine assembly.

Tighten

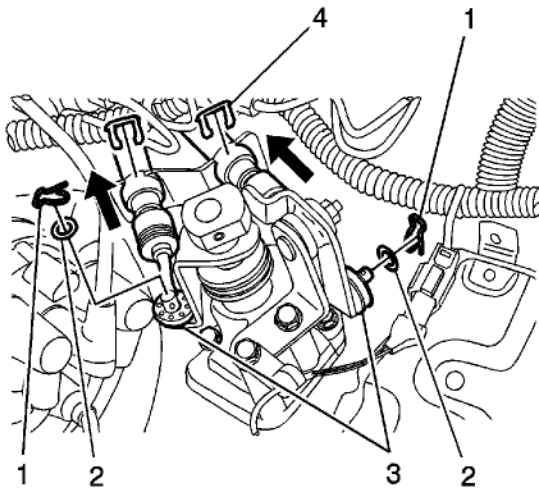
Tighten the transmission assembly bolts to 60 N·m (44.2 lb ft).



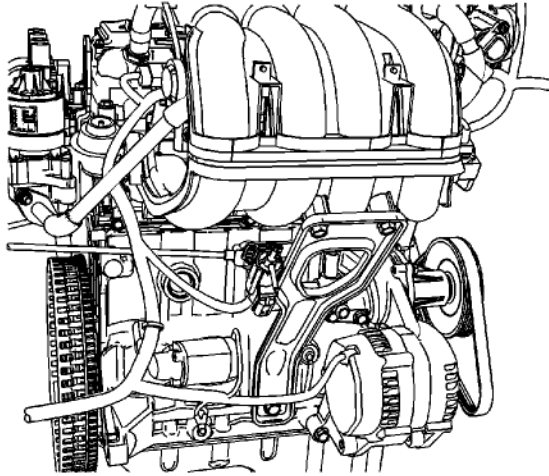
3. Support the engine assembly using the *DW010-010* remover/installer (1).
4. Install the engine mount bracket. Refer to [Engine Mount Replacement](#).
5. Install the transaxle mount bracket. Refer to [Engine Mount Replacement](#).



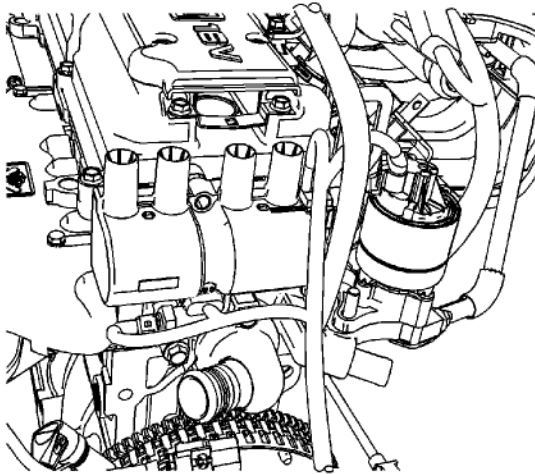
6. Install the transaxle rear mount secure with bolts (1, 2, 3).



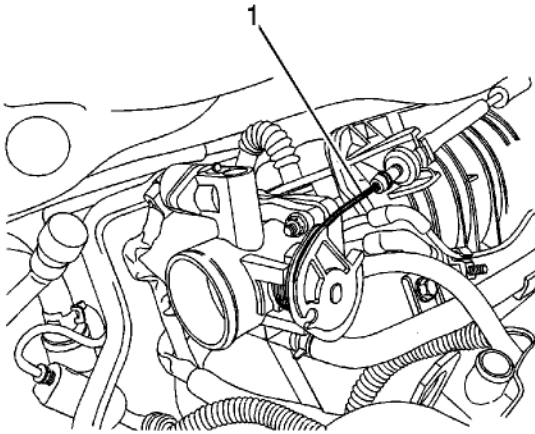
7. Connect the clutch cable (3) and connectors on manual transmission vehicles.
8. Connect the shift control cable from the auto-transaxle.



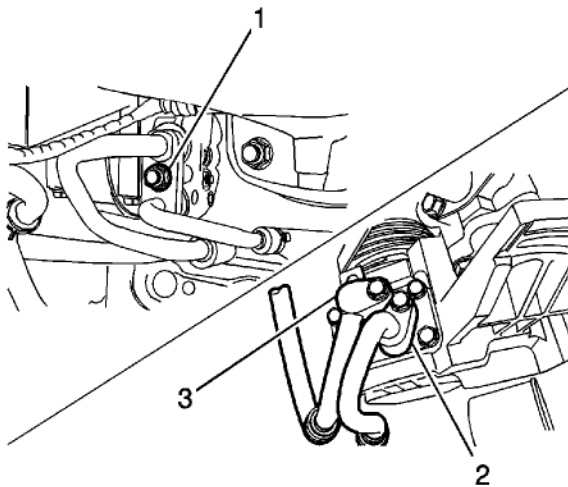
9. Connect the injector main connector.
10. Connect the canister solenoid connector.
11. Connect the VGIS solenoid connector.
12. Connect the starter connector.
13. Connect the alternator connector.



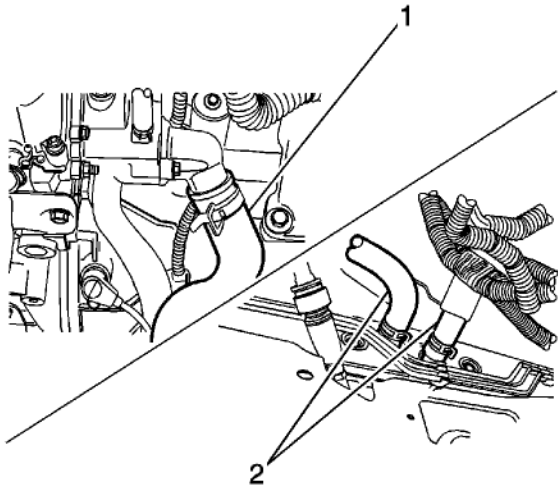
14. Connect the coolant temperature sensor connector.
15. Connect the EGR valve connector.
16. Connect the camshaft sensor connector.
17. Connect the ignition coil connector.
18. Connect the oxygen sensor connector.
19. Connect the crank position sensor connector.



20. Connect the accelerator cable (1).
21. Connect the TPS connector.
22. Connect the IACV connector.
23. Connect the A/C pressure sensor connector.
24. Connect the power steering oil pressure switch cable.



25. Install the power steering hose from the power steering pump.
26. Install the A/C compressor hose (2, 3) from the compressor.



27. Connect the radiator inlet and outlet hose (1).
28. Connect the heater core inlet and outlet hose (2).
29. Refill the engine coolant system. Refer to [Cooling System Draining and Filling](#).
30. Install the battery and battery tray. Refer to [Battery Tray Replacement](#).
31. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).

Crankshaft Replacement

Removal Procedure

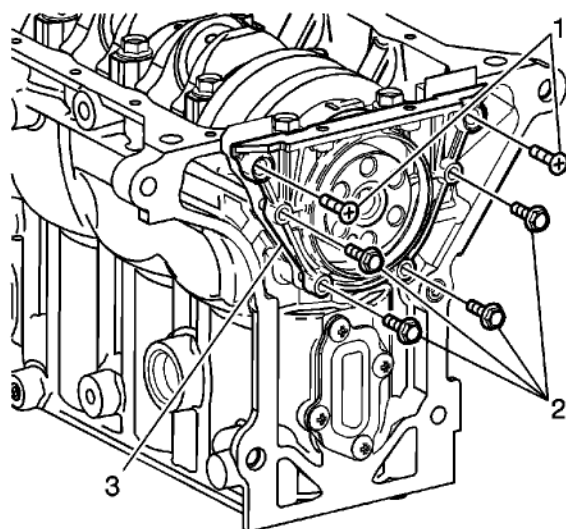
Special Tools

EN-49071 Crankshaft Rear Oil Seal Installer

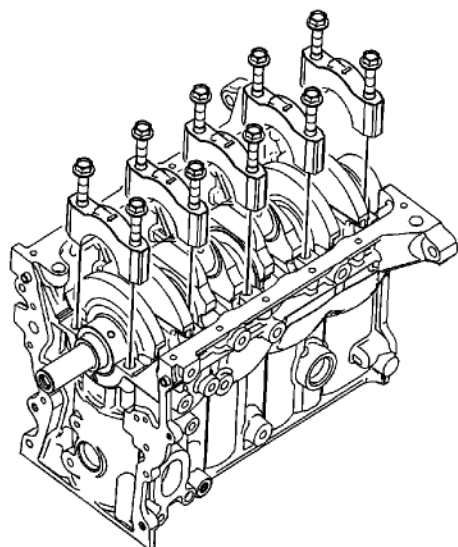
Note: Take extreme care to prevent any scratches, nicks or damage to the inner side of the cylinder and bearings.

Note: Check and confirm the sequence of the crankshaft caps and bearings.

1. Remove the pistons and connecting rods. Refer to [Piston, Connecting Rod, and Bearing Replacement](#).



2. Remove the crankshaft rear oil seal with housing (3).



3. Remove the crankshaft cap bolts.
4. Remove the crankshaft caps with journal bearings.
5. Remove the crankshaft.

Installation Procedure

Note: Take extreme care to prevent any scratches, nicks or damage to the inner side of the cylinder and bearings.

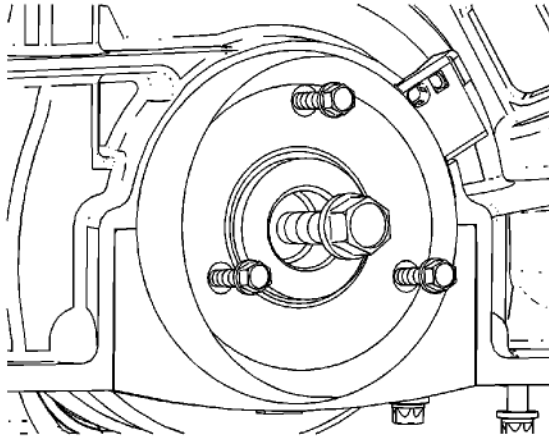
Note: Check and confirm the sequence of the crankshaft caps and bearings.

1. Coat and lubricate the crankshaft caps and bearings.
2. Install the crankshaft with bearings in sequence.
3. Install the crankshaft caps with bearings.

Tighten

Tighten the crankshaft cap bolts to 57.5 N·m (42.4 lb ft).

4. Install the crankshaft rear oil seal using the *EN-49071* seal installer .



5. Install the crankshaft rear oil seal housing.

Tighten

Tighten the crankshaft rear oil seal housing bolts to 10.5 N·m (7.7 lb ft).

6. Install the pistons and connecting rods. Refer to [Piston, Connecting Rod, and Bearing Replacement](#).

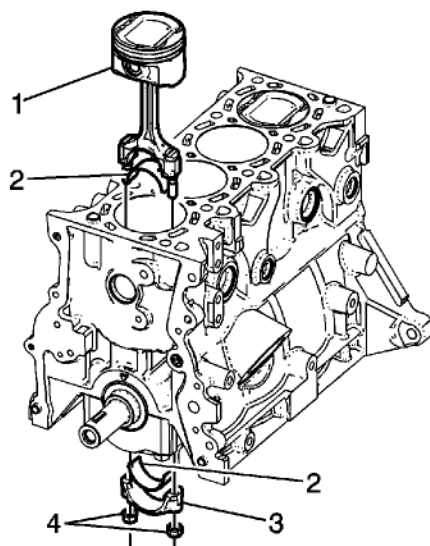
Piston, Connecting Rod, and Bearing Replacement

Special Tools

EN-49078 Piston Installer

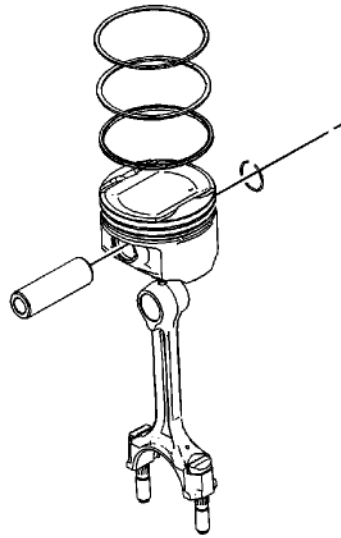
Removal Procedure

1. Remove the cylinder head. Refer to [Cylinder Head Replacement](#).
2. Remove the oil pan. Refer to [Oil Pan Replacement](#).



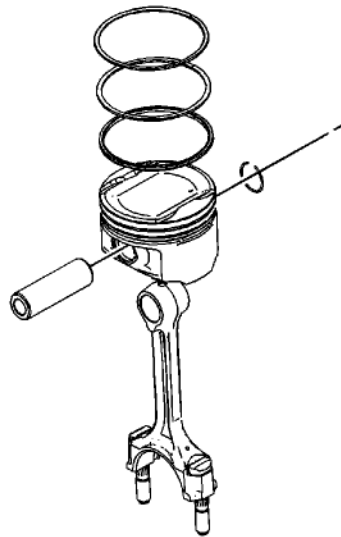
Note: Check and confirm the piston assembly sequence and the connecting rod bearing sequence.

3. Remove the connecting rod cap nuts (4) and rod cap (3).
4. Remove the piston and rod assembly (1).



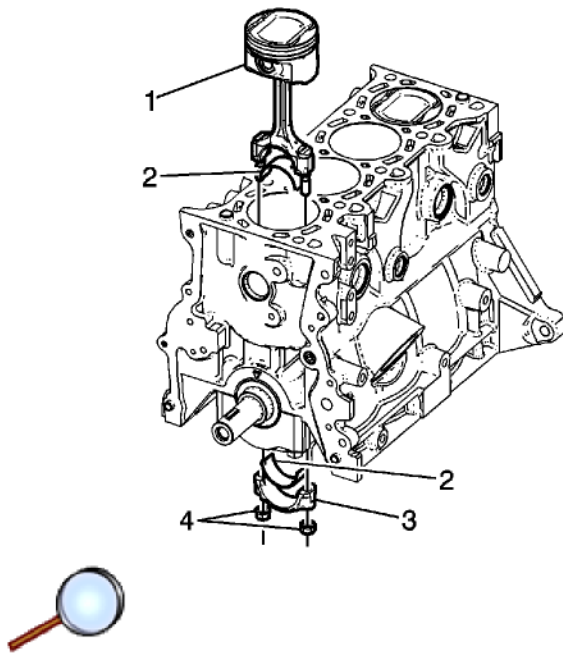
5. Separate the piston pin from the piston.
6. Separate the piston rings from the piston.

Installation Procedure



Note: Take extreme care to prevent any scratches or damage to the inner side of the cylinder, piston, and connecting rod cap bearings.

1. Install the piston pin to the piston.
2. Install the piston rings to the piston.



Note: Check and confirm the piston assembly sequence and the connecting rod bearing sequence.

3. Install the piston assembly (1) using the *EN-49078* installer .
4. Install the connecting rod cap (3) with bearings (2).

Caution: Refer to [Fastener Caution](#) in the Preface section.

5. Install the connecting rod cap nuts (4).

Tighten

Tighten the connecting rod caps nuts to 33 N·m(24.3 lb ft).

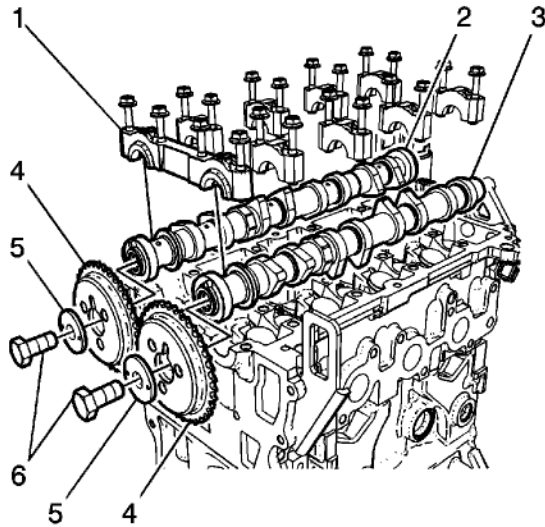
6. Install the oil pan. Refer to [Oil Pan Replacement](#).
7. Install the cylinder head. Refer to [Cylinder Head Replacement](#).

Camshaft Replacement

Removal Procedure

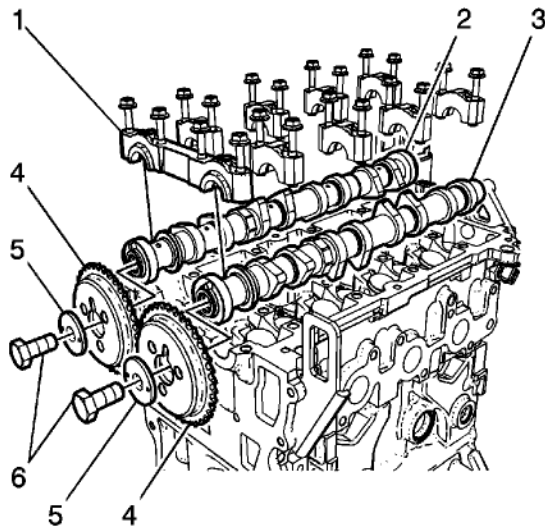
Note: Ensure that camshaft caps are set on the original position and direction.

1. Remove the timing chain. Refer to [Camshaft Timing Chain, Sprocket, and Tensioner Replacement](#).



2. Remove the camshaft sprocket bolts (6).
3. Remove the camshaft sprocket (4).
4. Remove the camshaft caps (1).
5. Remove the camshaft (2, 3).

Installation Procedure



1. Lubricate the camshaft journals and the camshaft caps with engine oil.
2. Install the camshafts (1, 2).

Caution: Refer to [Fastener Caution](#) in the Preface section.

3. Install the camshaft caps (1) in their original positions.

Tighten

Tighten the camshaft cap bolts to 10 N·m (7.4 lb in).

4. Install the camshaft sprocket (4).

Tighten

Tighten the camshaft sprocket retaining bolts (1) to 60 N·m (44.2 lb ft).

5. Install the timing chain. Refer to [Camshaft Timing Chain, Sprocket, and Tensioner Replacement](#).

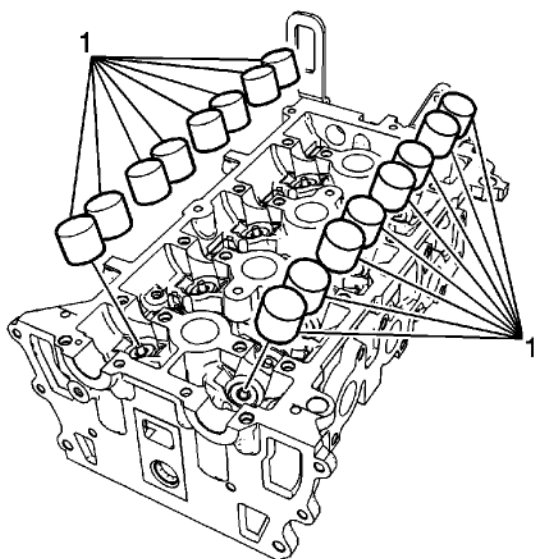
Valve Stem Oil Seal and Valve Spring Replacement

Special Tools

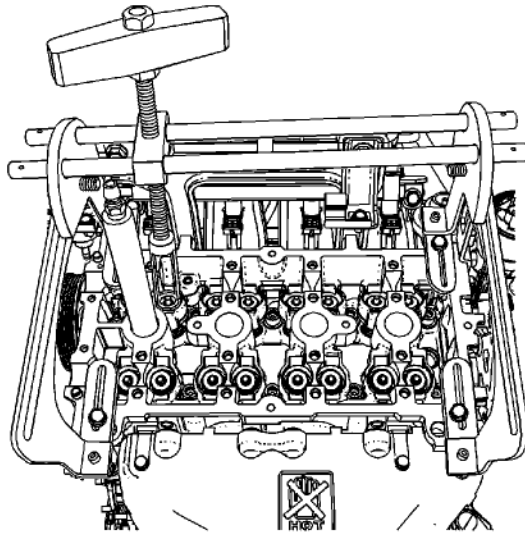
- EN-49074 Universal Valve Spring Compressor
- EN-49075 Valve Spring Compressor Adapter
- EN-49076 Cylinder Pressure Adapter

Removal Procedure

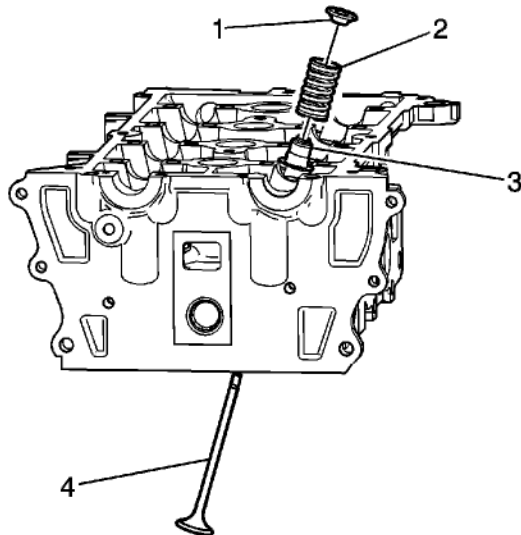
1. Remove the camshaft. Refer to [Camshaft Replacement](#).



2. Remove the valve tappet (1).

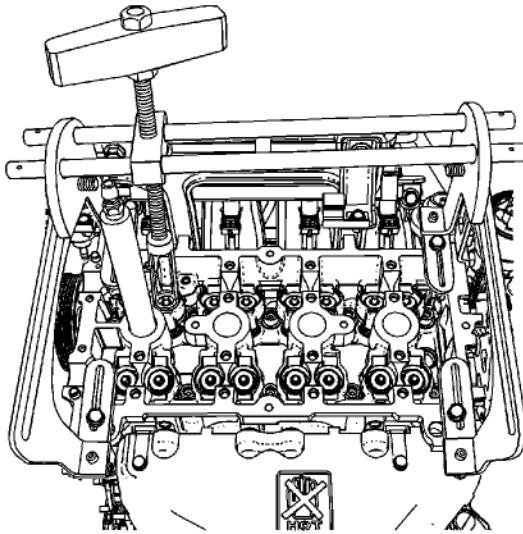


3. Install the *EN-49074* compressor and *EN-49075* adapter .
4. Remove the spark plug and install the *EN-49076* adapter .
5. Install the compressed air hose to *EN-49076* adapter . It keeps the valve not slip into the cylinder by blowing compressed air into the cylinder.

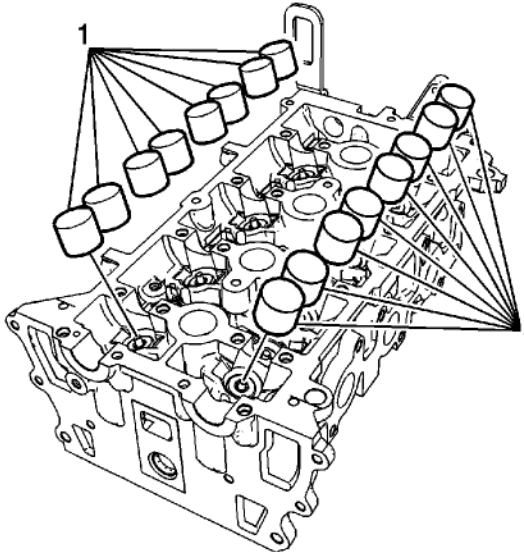


6. Remove the valve spring (2), retainer (1), and seal (3).

Installation Procedure



1. Install the *EN-49074* compressor and *EN-49075* adapter .
2. Remove the spark plug and install the *EN-49076* adapter .
3. Install the *EN-49076* adapter . It keeps the valve not slip into the cylinder by blowing compressed air into the cylinder.
4. Install the valve spring (2), retainer (1), and seal (3).



5. Install the valve tappet. (1)
6. Install the camshaft. Refer to [Camshaft Replacement](#).