

Engine

Engine Mechanical - 2.0L (LTG) - Repair Instructions - On Vehicle

REPAIR INSTRUCTIONS - ON VEHICLE

INTAKE MANIFOLD COVER REPLACEMENT

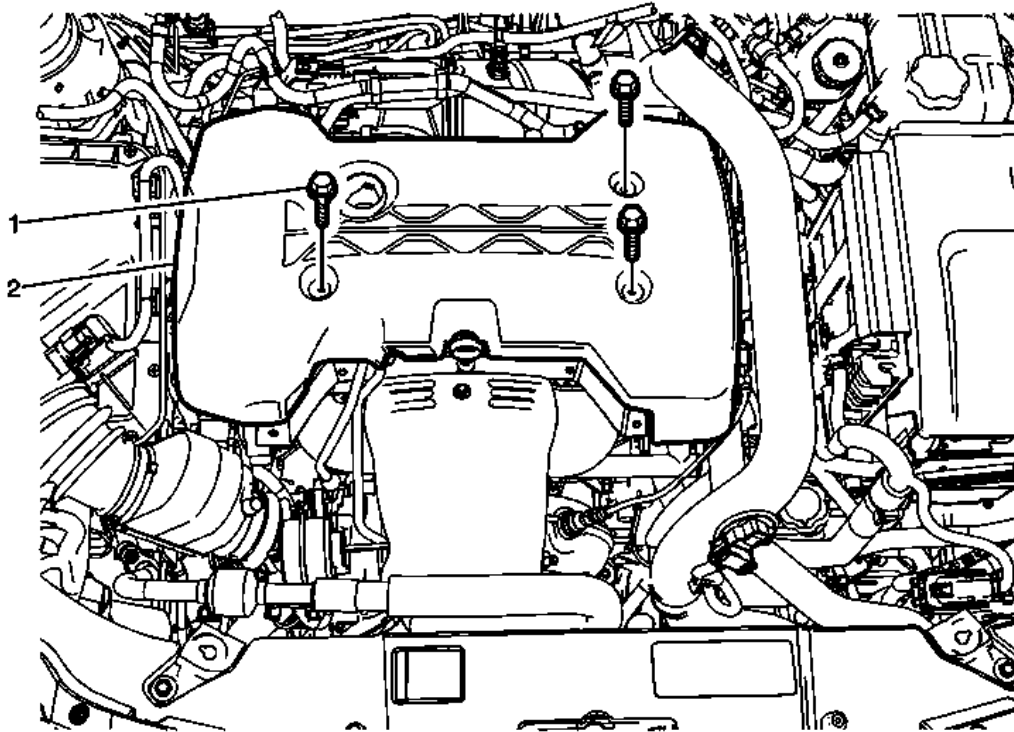


Fig. 1: Intake Manifold Cover (LTG)

Courtesy of GENERAL MOTORS COMPANY

Intake Manifold Cover Replacement

Callout	Component Name
1	Intake Manifold Cover Fastener (Qty,3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 (80 lb in)
2	Intake Manifold Cover Procedure Remove the oil cap before removing the intake manifold cover.

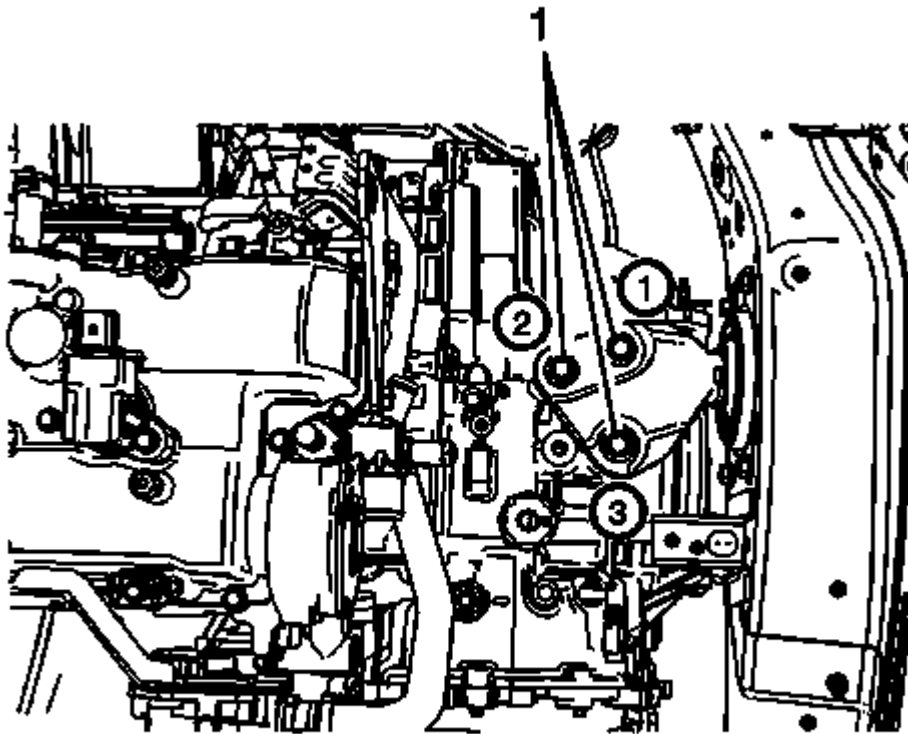


Fig. 7: Transaxle Mount Bolts

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

11. Tighten the transaxle mount bolts (1) to 50 (37 lb ft) in sequence.

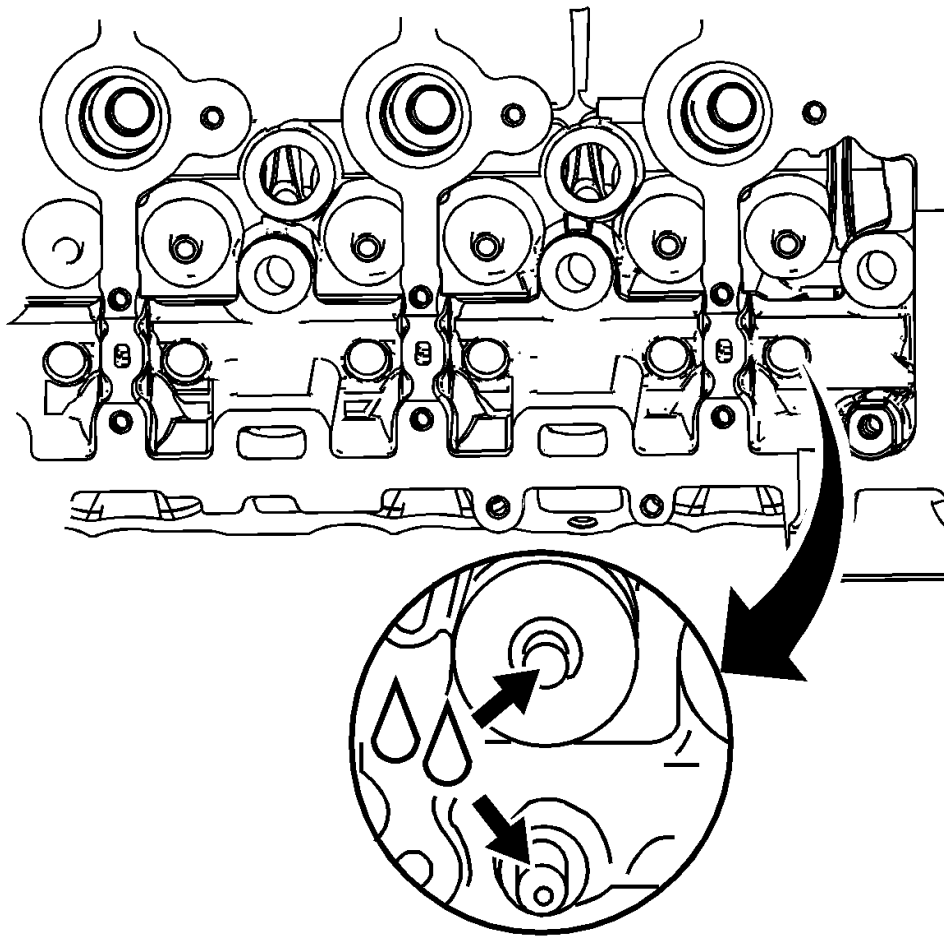


Fig. 51: Valve Tips

Courtesy of GENERAL MOTORS COMPANY

1. Lubricate the valve tips. Refer to Adhesives, Fluids, Lubricants, and Sealers .

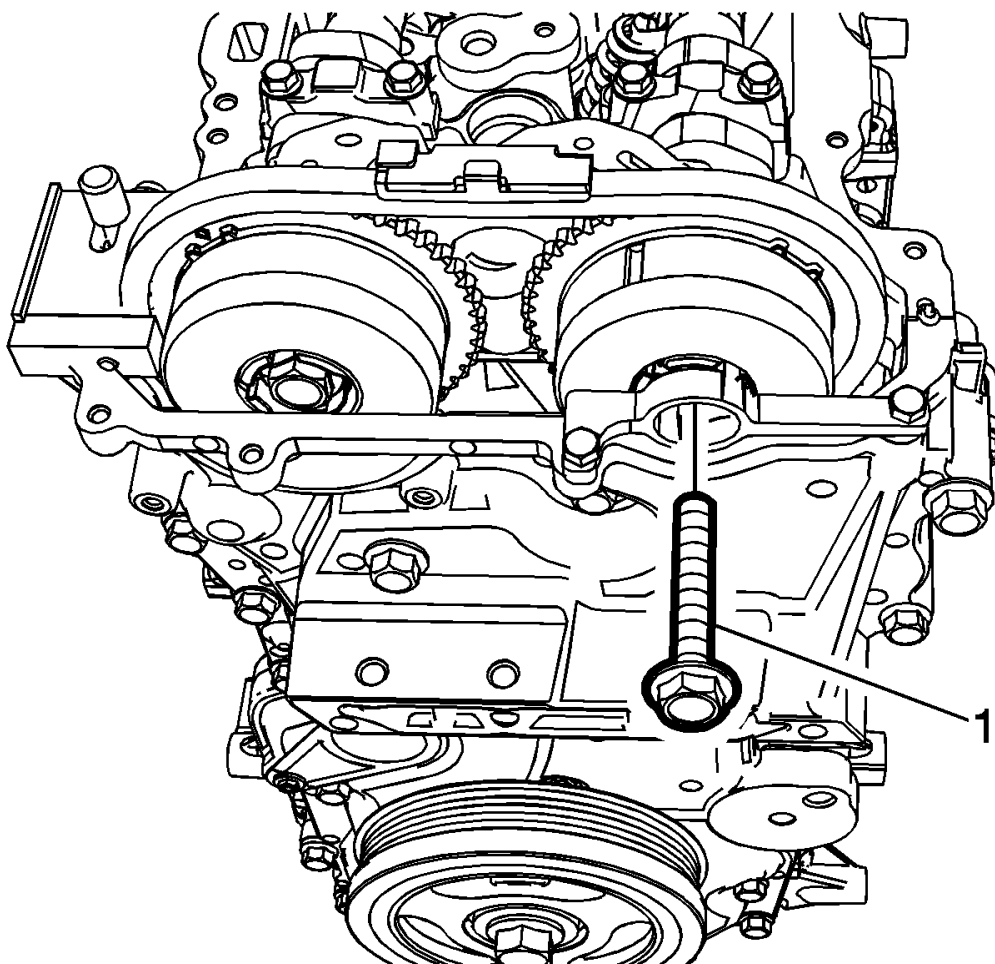


Fig. 113: Camshaft Actuator Bolt
Courtesy of GENERAL MOTORS COMPANY

5. Remove and DISCARD the camshaft actuator bolt (1).

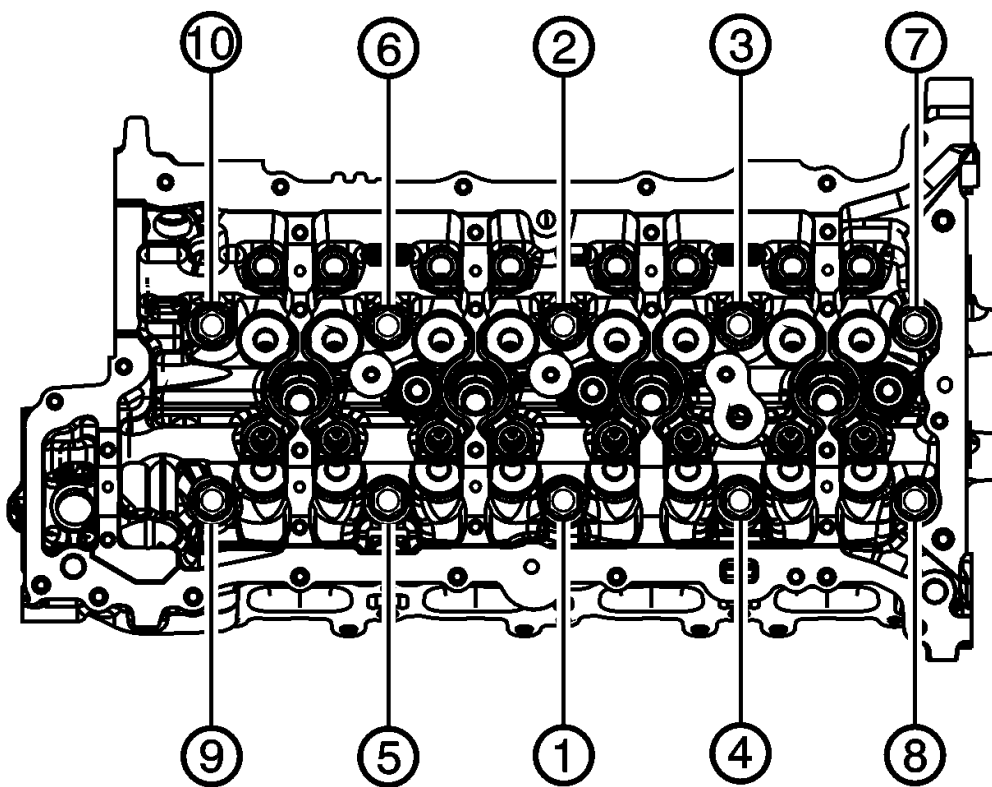


Fig. 160: Cylinder Head Bolt Tightening Sequence
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

NOTE: Always use NEW cylinder head bolts.

4. Install the cylinder head bolts.
 1. Tighten the bolts in sequence to 30 N.m (22 lb ft).
 2. Tighten the bolts an additional 190 degrees in sequence using the **EN 45059** meter.
5. Install the camshaft position actuator and camshaft - Intake. Refer to **Camshaft Position Actuator and Camshaft Replacement - Intake**.
6. Install the engine front cover. Refer to **Engine Front Cover Replacement**.
7. Install the exhaust manifold. Refer to **Exhaust Manifold Replacement (LTG)** .
8. Install the intake manifold. Refer to **Intake Manifold Replacement**.

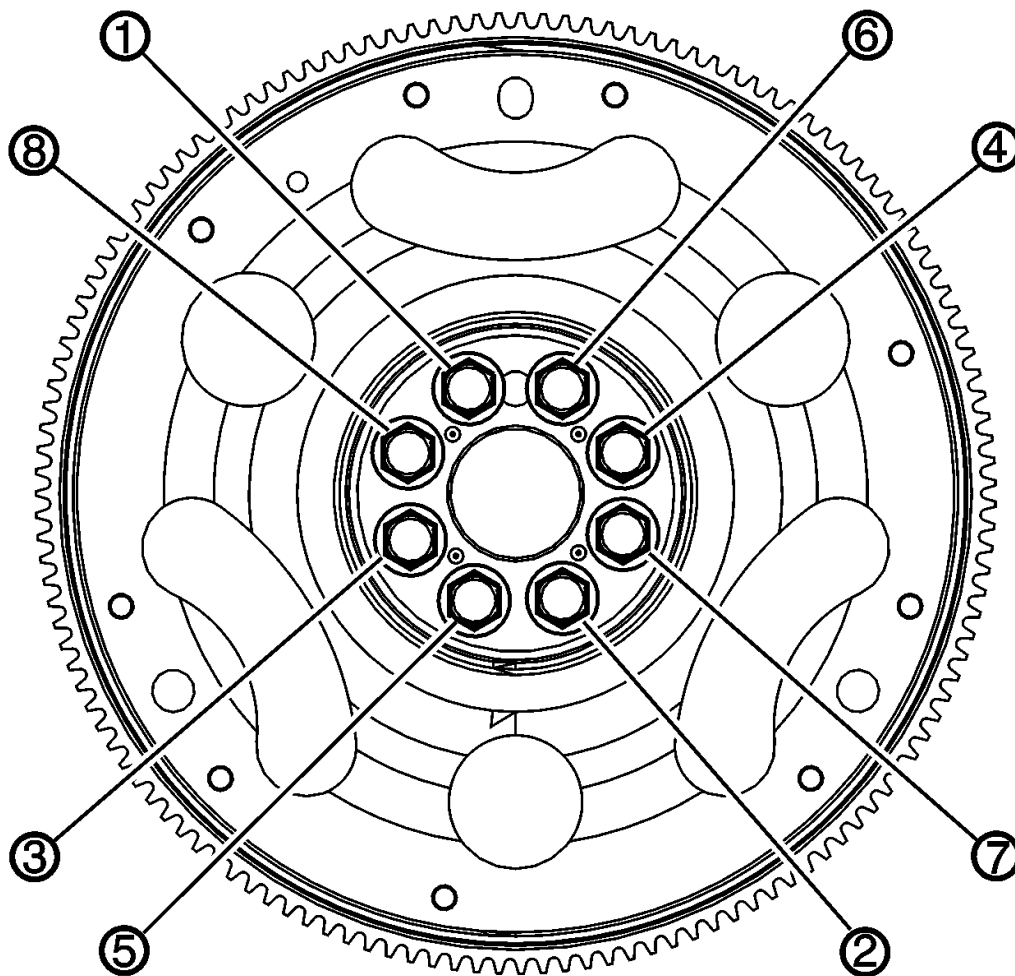


Fig. 221: Flywheel Bolt Tightening Sequence
 Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

3. Tighten the bolts evenly using the following procedure:
 1. Tighten the bolts a first pass in sequence to 20 (15 lb ft).
 2. Tighten the bolts a second pass in sequence to 30 (22 lb ft).
 3. Tighten the bolts a final pass in sequence 40 degrees using the **EN-45059** angle meter.
4. Remove **EN-50792** holding tool.
5. Install the clutch assembly. Refer to **Clutch Assembly Replacement (With DT-6263)** .

AUTOMATIC TRANSMISSION FLEX PLATE REPLACEMENT

Removal Procedure

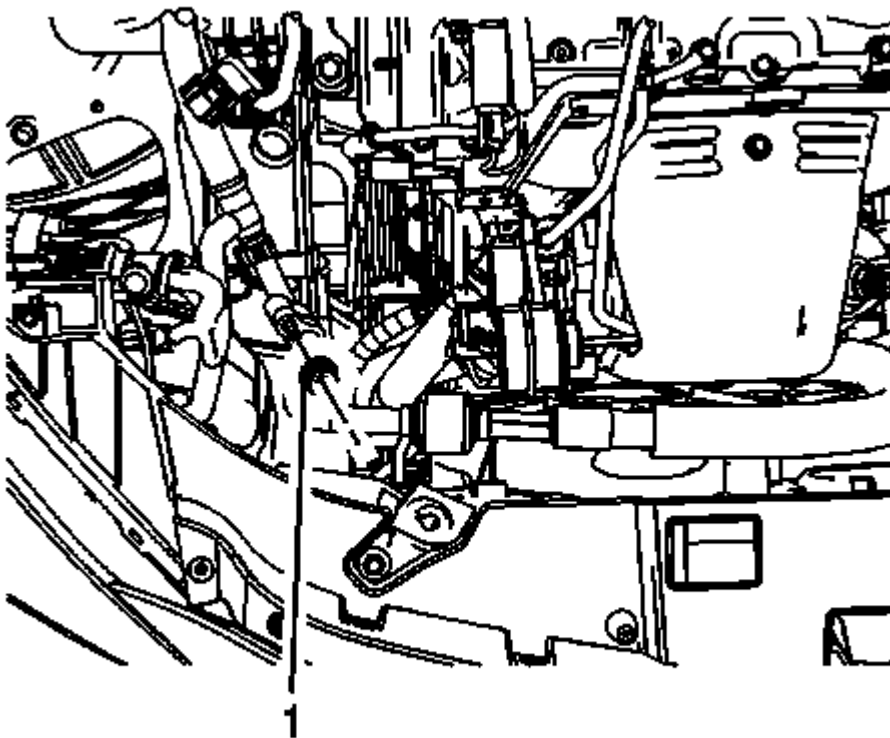


Fig. 255: Air Conditioning Compressor And Condenser Hose
Courtesy of GENERAL MOTORS COMPANY

16. Remove the air conditioning compressor and condenser hose (1).

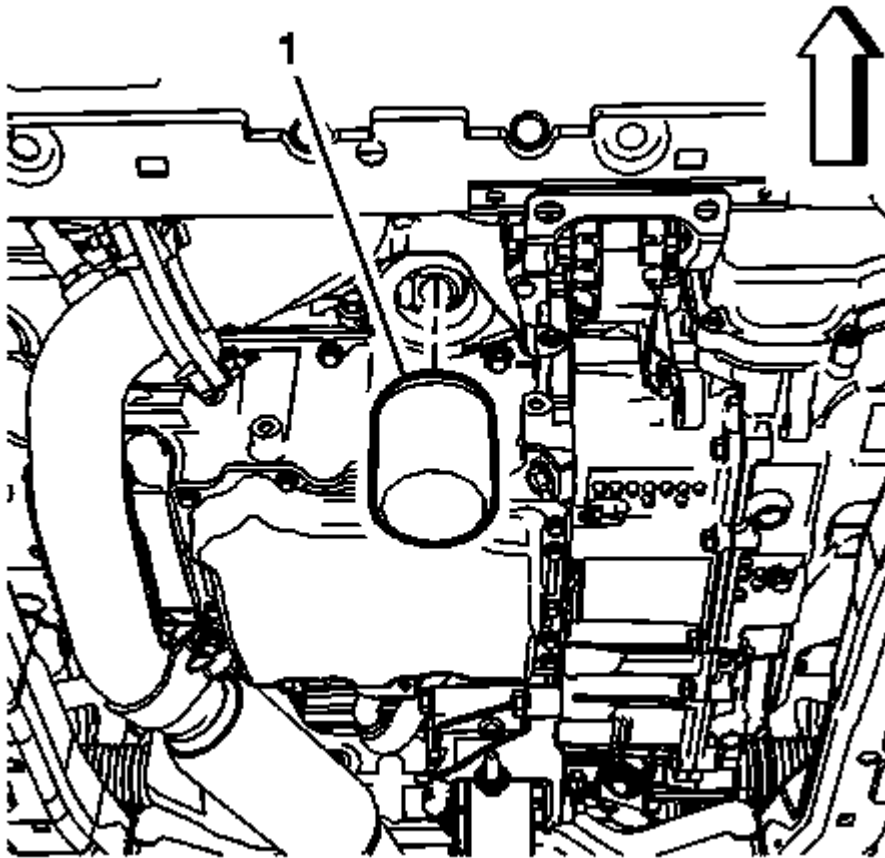


Fig. 271: Oil Filter

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Component Fastener Tightening Caution .

1. Install the oil filter and tighten to 30 (22 lb ft)
2. Remove the oil drain pan from under the vehicle
3. Lower the vehicle.
4. Fill the engine with new engine oil.
5. Start the engine.
6. Inspect for oil leaks after engine start up.

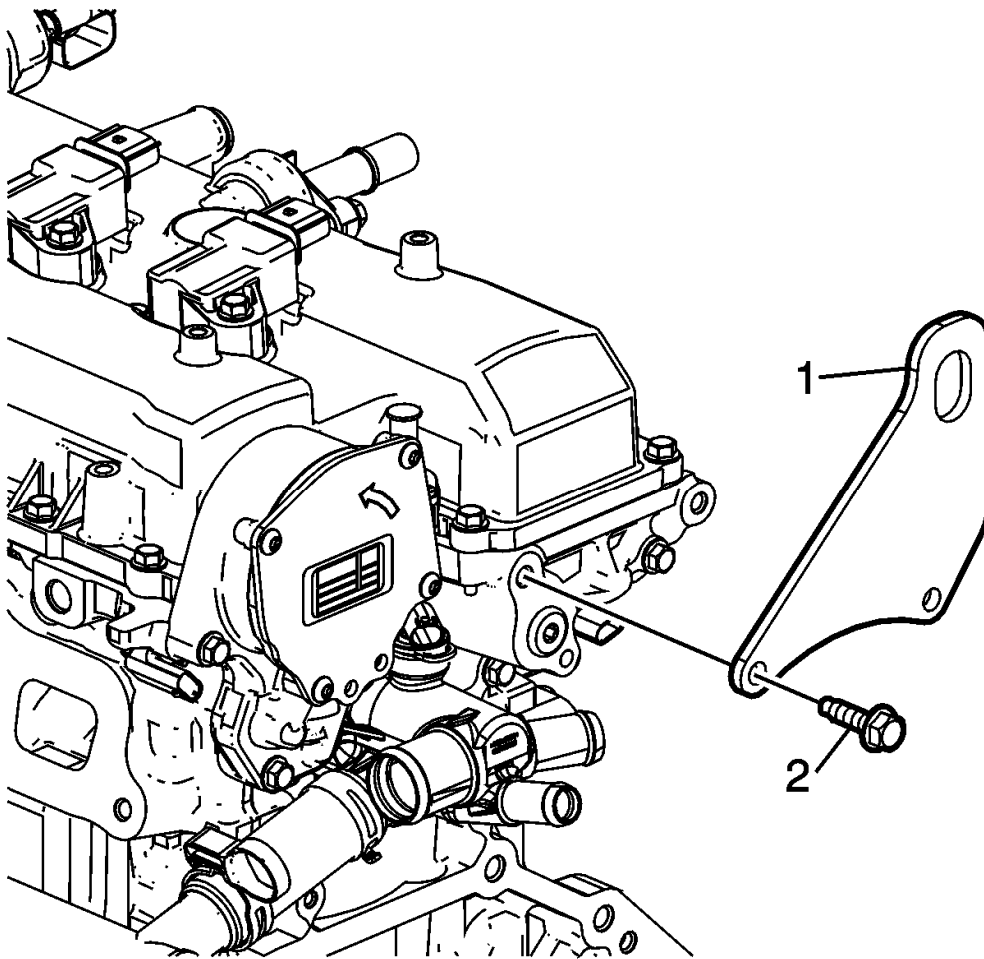


Fig. 31: Rear Lift Bracket And Bolts
Courtesy of GENERAL MOTORS COMPANY

7. Remove the rear lift bracket (1) and bolts (2).

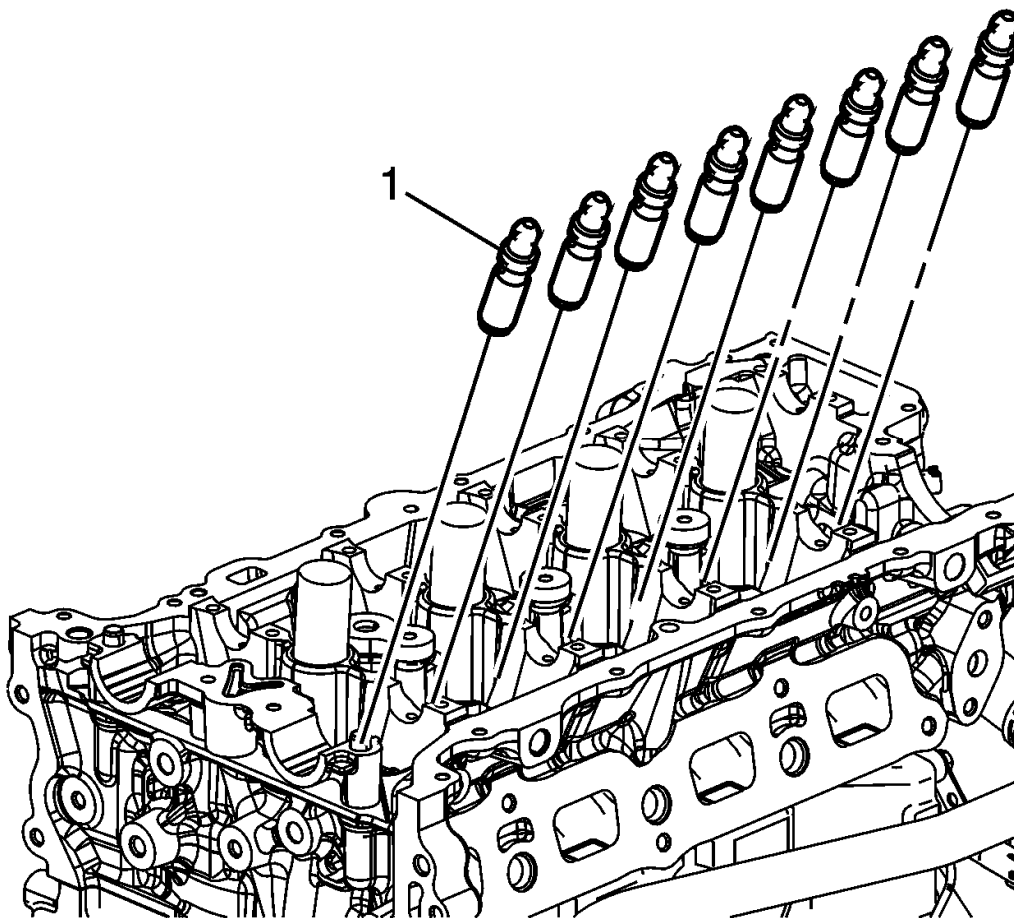


Fig. 59: Hydraulic Lash Adjusters
Courtesy of GENERAL MOTORS COMPANY

6. Remove the hydraulic lash adjusters (1).

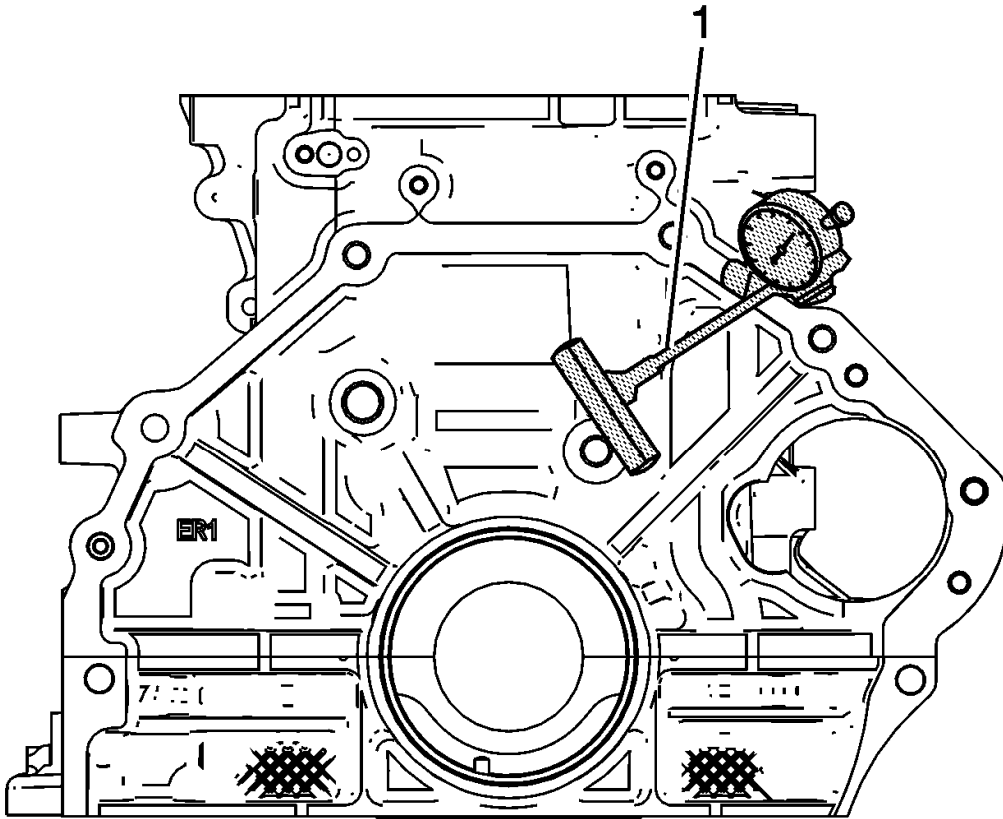


Fig. 83: Measuring Crankshaft Flange Runout Using Dial Indicator
Courtesy of GENERAL MOTORS COMPANY

11. Inspect the mating surfaces of the transmission face.

CAUTION: A broken flywheel may result if the transmission case mating surface is not flat.

12. Use the following procedure in order to measure the engine block flange runout at the mounting bolt hole bosses:
 1. Temporarily install the crankshaft and upper bearings. Measure the crankshaft flange runout using the **GE-7872** dial indicator (1)
 2. Hold the gauge plate flat against the crankshaft flange.
 3. Place the dial indicator stem on the transmission mounting bolt hole boss. Set the indicator to 0.
 4. Record the readings obtained from all of the bolt hole bosses. The measurements should not vary more than 0.203 mm (0.008 in).
 5. Recheck the crankshaft flange runout if the readings vary more than 0.203 mm (0.008 in).

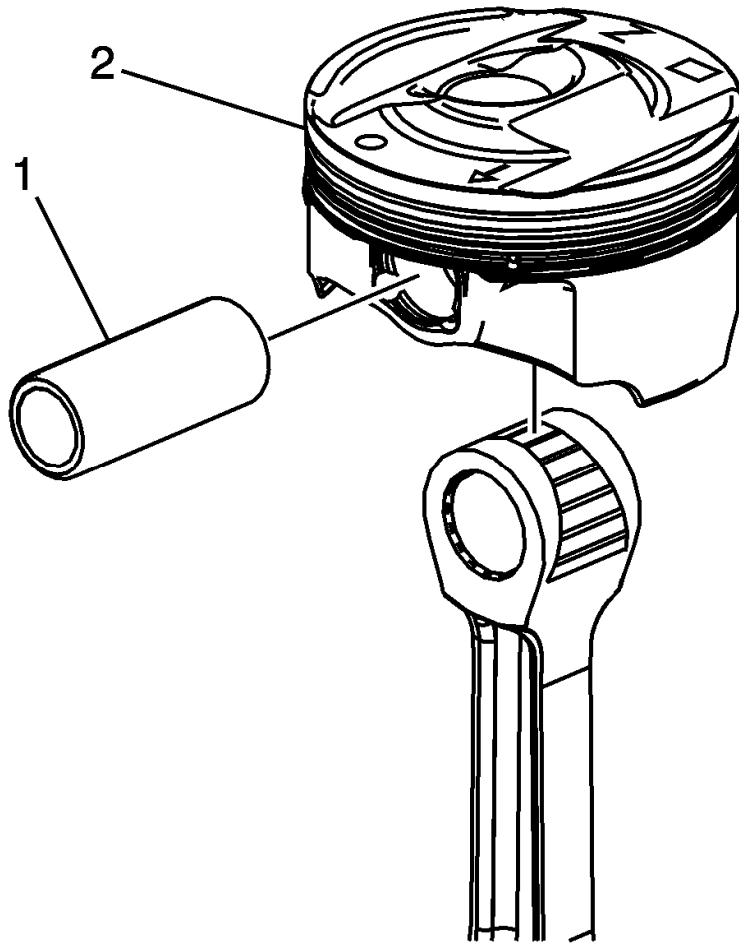


Fig. 96: Piston Pin And Connecting Rod
Courtesy of GENERAL MOTORS COMPANY

3. Remove the piston pin (1) and the connecting rod (3) from the piston (2).

PISTON, CONNECTING ROD, AND BEARING CLEANING AND INSPECTION

Connecting Rod Measurement

3. Perform the following procedure to remove the valve keys, springs, and retainers:
 1. Using the **EN-50717** fixture and the **EN-43963** compressor adapter , compress the valve spring.
 2. Remove the valve keys (1).
 3. Slowly release the compression from the valve spring assembly.
 4. Remove the retainer (2).

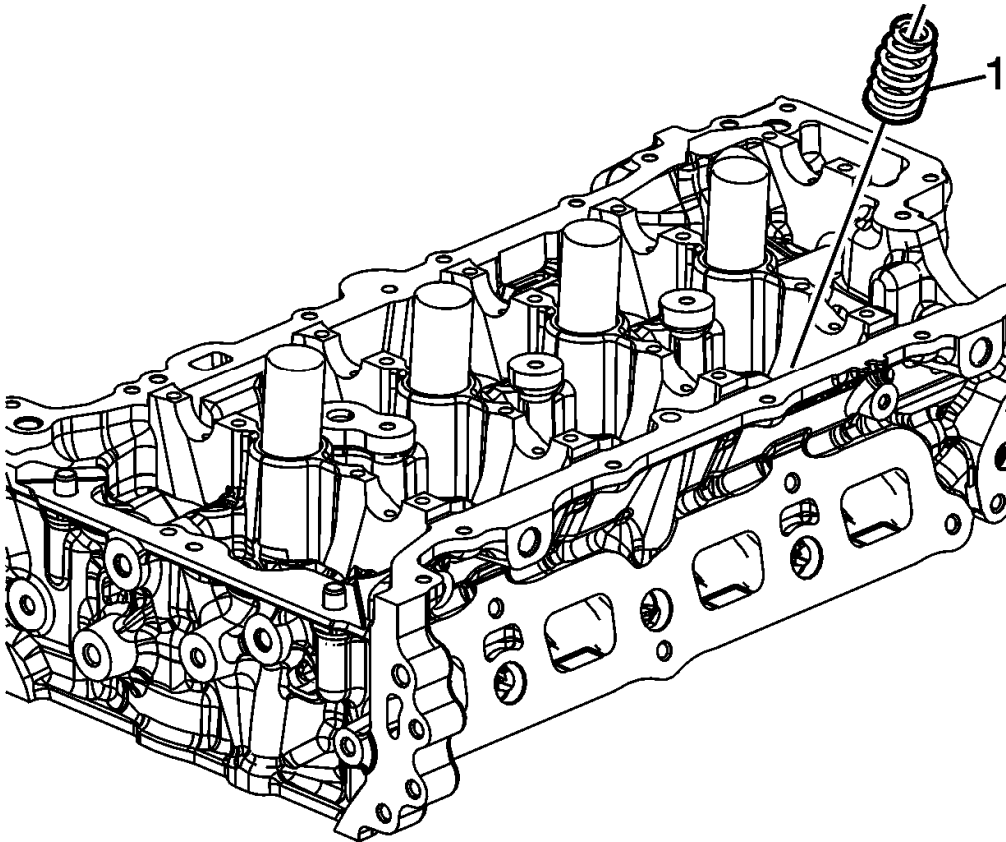


Fig. 115: Springs
Courtesy of GENERAL MOTORS COMPANY

4. Remove the springs (1).

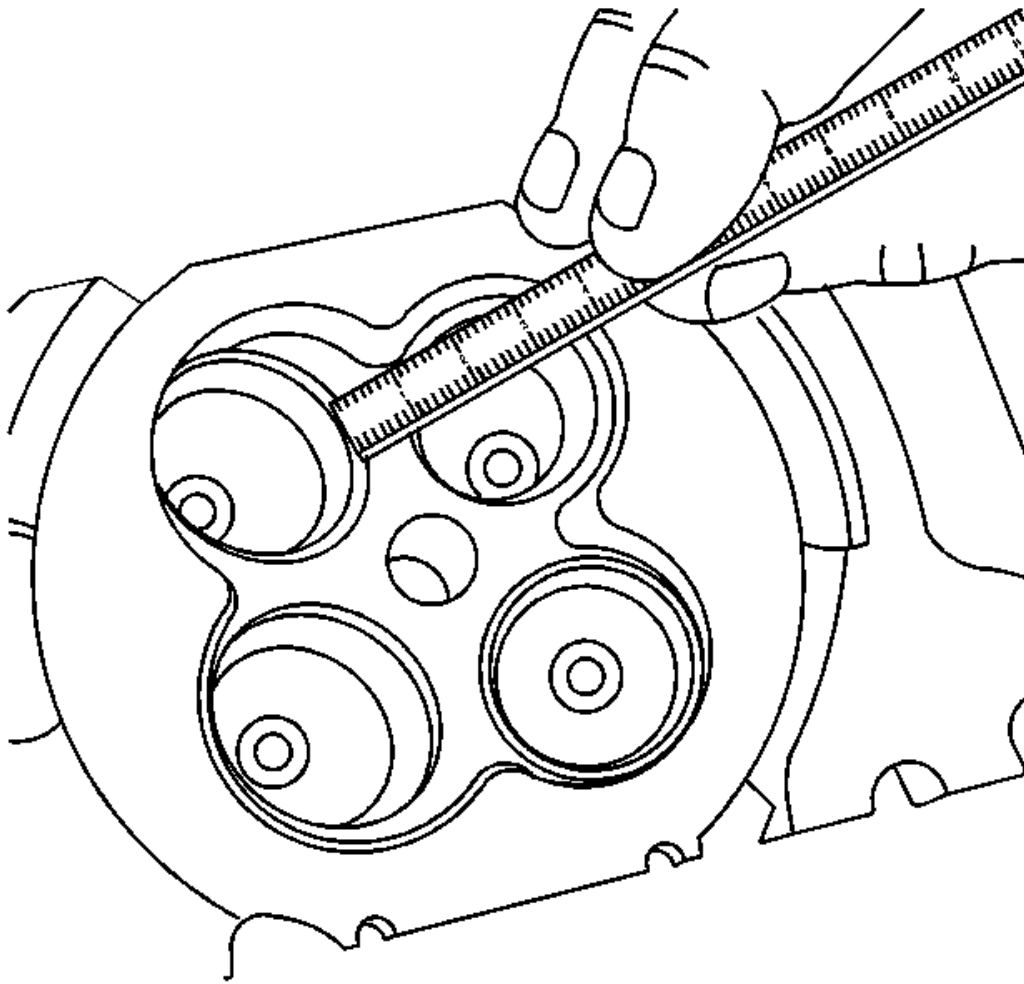


Fig. 132: Checking Valve Seat Width
Courtesy of GENERAL MOTORS COMPANY

1. Measure the valve seat width in the cylinder head using a proper scale.

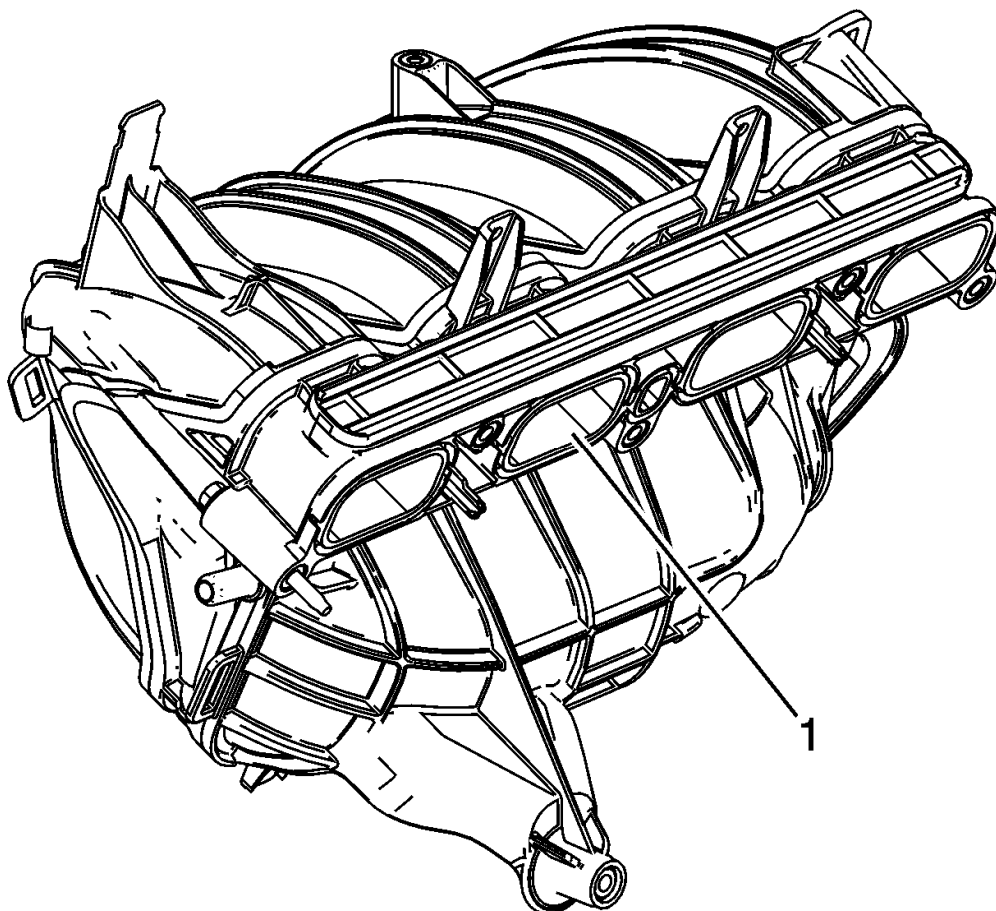


Fig. 168: Crankcase Ventilation Passages
Courtesy of GENERAL MOTORS COMPANY

4. Inspect the crankcase ventilation passages (1) in the intake manifold face for blockage.

WARNING: Refer to Safety Glasses Warning .

5. Clean the crankcase ventilation passages with compressed air if necessary. Use a maximum of 172 kPa (25 psi) of air pressure.
6. Replace the intake manifold as necessary.

EXHAUST MANIFOLD CLEANING AND INSPECTION