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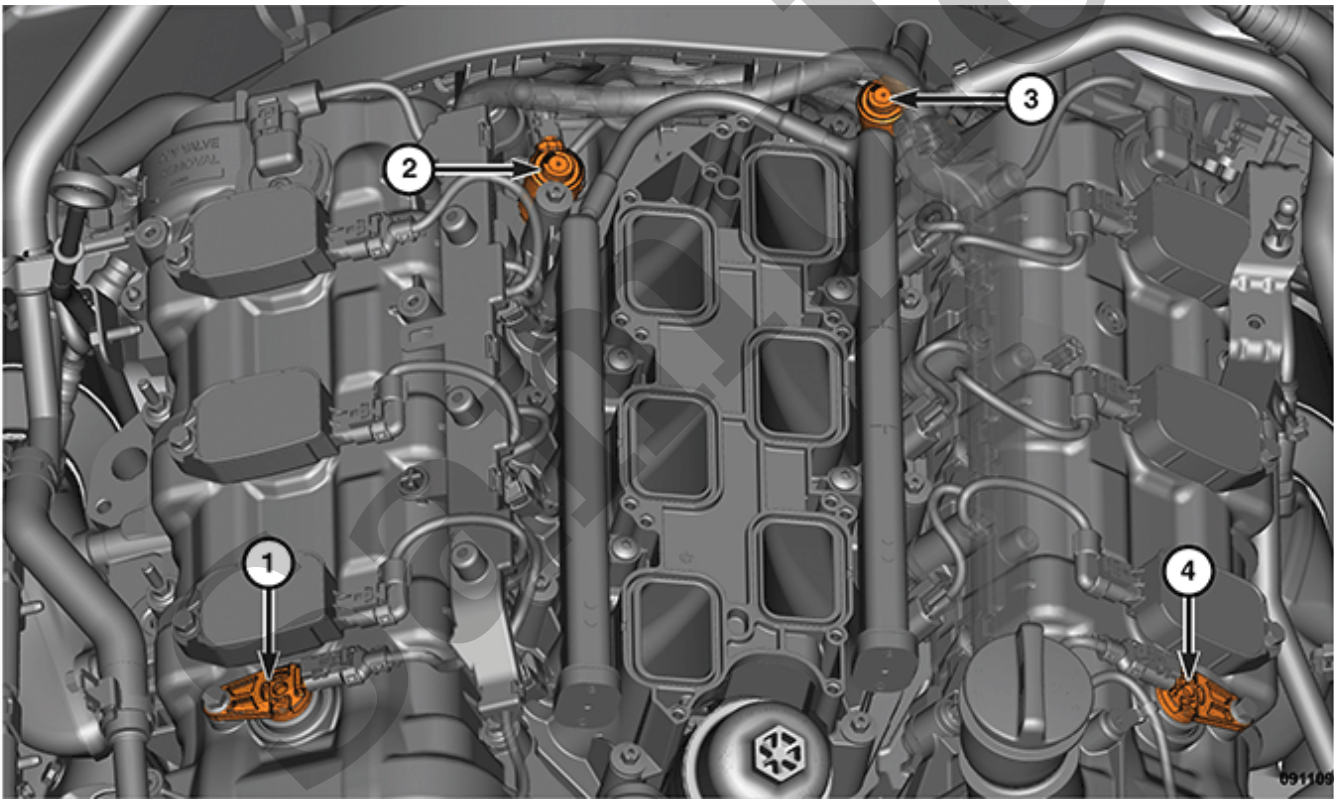
2009 Jeep LIBERTY Service Manual

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VVL Solenoid

VVL SOLENOID

There are four Variable Valve Lift (VVL) solenoids that control the operation of the Intake rocker arms for all six cylinders. See the figure and table below for the VVL Solenoid locations and cylinder control:



VVL SOLENOID	PHYSICAL LOCATION	CYLINDERS CONTROLLED
VVL SOLENOID 1/1	BANK 1 FRONT SOLENOID (1)	CYLINDER 1 INTAKE VALVES
VVL SOLENOID 1/2	BANK 1 REAR SOLENOID (2)	CYLINDERS 3 AND 5 INTAKE VALVES
VVL SOLENOID 2/1	BANK 2 FRONT SOLENOID (4)	CYLINDER 2 INTAKE VALVES



or equivalent. Perform the test following the procedures supplied with the tool kit.

Refer To List:

List 1

- [09 - Engine, 2.0L / Diagnosis and Testing](#)
- [09 - Engine, 3.6L / Diagnosis and Testing](#)
- [09 - Engine, 5.7L / Diagnosis and Testing](#)

Refer To List:

List 1

- 09 - Engine, 2.0L / Cylinder Head / LIFTER(S), Hydraulic / Removal and Installation
- 09 - Engine, 3.6L / Cylinder Head / LIFTER(S), Hydraulic / Removal and Installation

List 2

- 09 - Engine, 2.0L / Lubrication / Diagnosis and Testing
- 09 - Engine, 3.6L / Lubrication / Diagnosis and Testing
- 09 - Engine, 5.7L / Lubrication / Diagnosis and Testing

List 3

- 09 - Engine, 2.0L / Engine Block / Standard Procedure
- 09 - Engine, 3.6L / Engine Block / Standard Procedure
- 09 - Engine, 5.7L / Engine Block / Standard Procedure

List 4

- 09 - Engine, 2.0L / Cylinder Head / CAMSHAFT, Engine / Removal and Installation
- 09 - Engine, 3.6L / Cylinder Head / CAMSHAFT, Engine / Removal and Installation

List 5

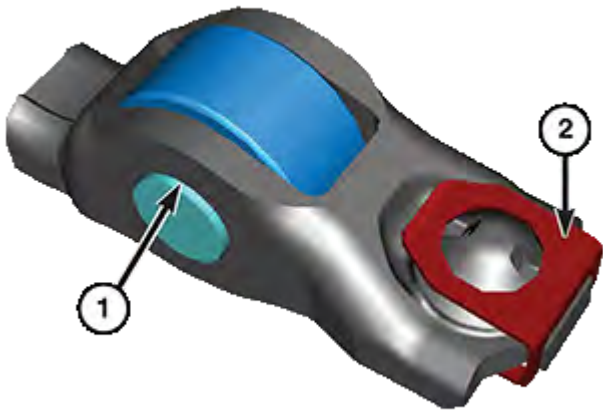
- 09 - Engine, 2.0L / Cylinder Head / Inspection
- 09 - Engine, 3.6L / Cylinder Head / Inspection

List 6

- 09 - Engine, 2.0L / Cylinder Head / ROCKER ARM, Valve / Removal and Installation
- 09 - Engine, 3.6L / Cylinder Head / ROCKER ARM, Valve / Removal and Installation
- 09 - Engine, 5.7L / Cylinder Head / ROCKER ARM, Valve / Removal and Installation

List 7

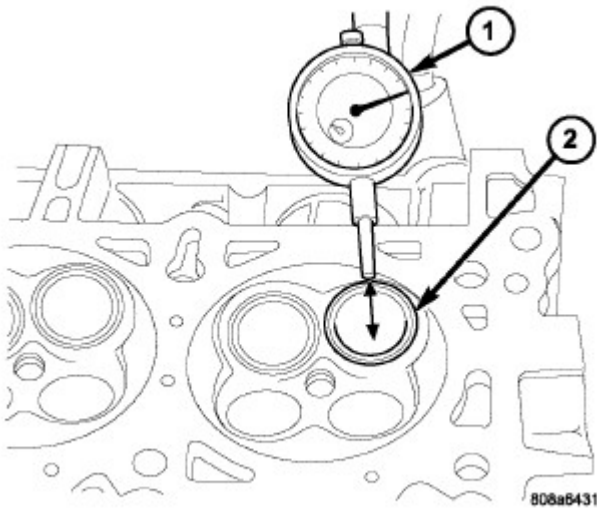
- 09 - Engine, 2.0L / Lubrication / PICK-UP, Oil Pump / Removal and Installation
- 09 - Engine, 3.6L / Lubrication / PICK-UP, Oil Pump / Removal and Installation



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1 - Rocker Arm Assembly
2 - Retaining Clip

Inspect the exhaust rocker arm assembly for wear or damage. Replace as necessary.

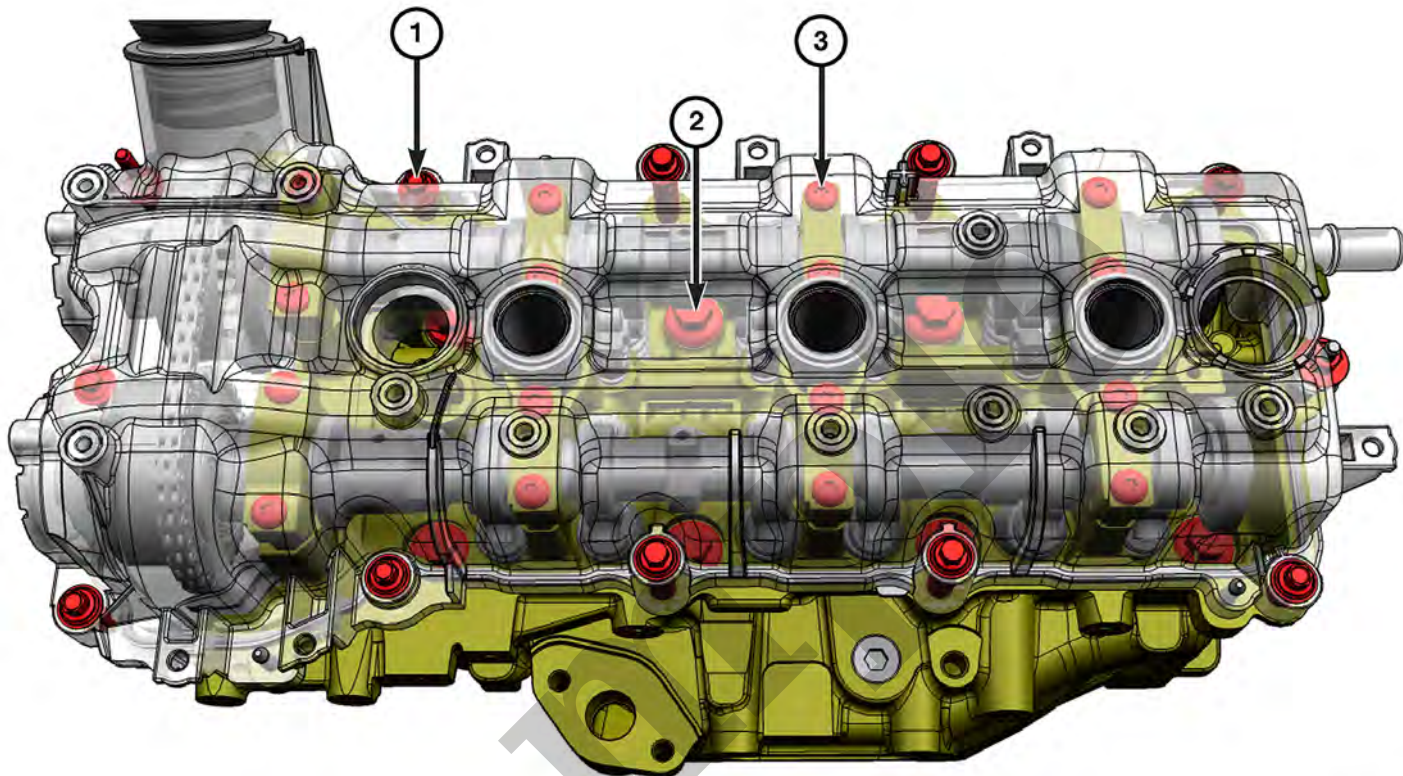


1. Remove carbon and varnish deposits from inside of the valve guides with a reliable guide cleaner.
2. Measure valve stem-to-guide clearance as follows:
3. Install the valve (2) into the cylinder head so that it is 15 mm (0.590 in.) from the valve seat. A small piece of hose may be used to hold the valve in place.
4. Attach the Dial Indicator Set

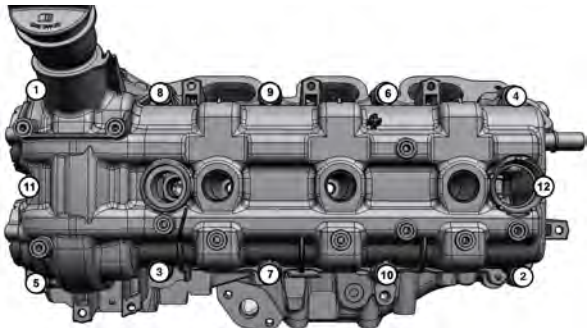
Set, Dial Indicator

- The exhaust hydraulic lifters must never be interchanged with any other hydraulic lifters than what is specifically designated for this vehicle. The internal check ball is reversed and could cause engine damage if an incorrect part is installed.
- If the rocker arms or lifters are being reused, reassemble them into their original locations.

TORQUE SPECIFICATIONS - CYLINDER HEAD



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CALLOUT	DESCRIPTION	SPECIFICATION	COMMENTS
1	Cylinder Head Cover M6 Bolts	12 N·m (9 Ft. Lbs.)	<p>Tightening Sequence - Left</p>  <p>Tightening Sequence - Right</p>

YOUR CURRENT VEHICLE

Rocker Arms

ROCKER ARMS

REMOVAL

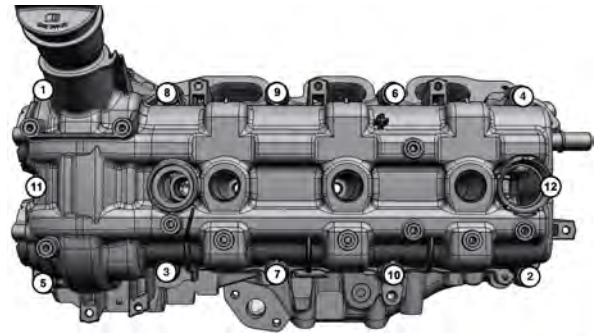
NOTE

The LH cylinder head rocker arms are shown, the RH cylinder head rocker arms are similar.

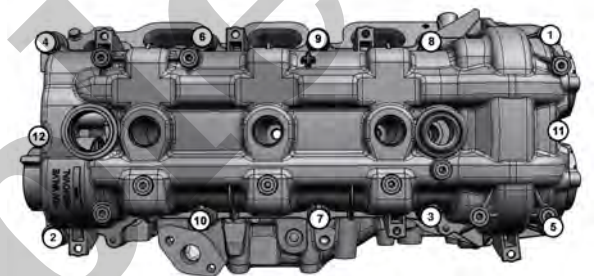
1. Remove the camshaft(s) ([Refer to Engine/Cylinder Head/CAMSHAFT, Engine/Removal and Installation](#)) ([Refer To List 1](#)).

NOTE

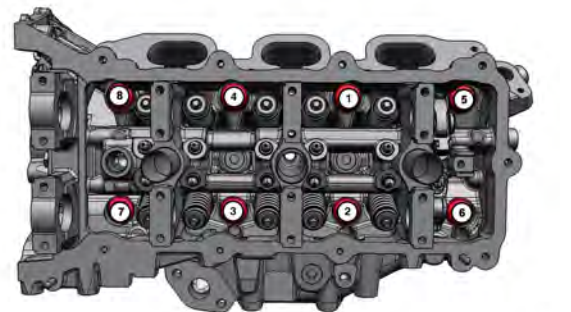
If the rocker arms are to be reused, identify their positions so that they can be reassembled into their original locations.



Tightening Sequence - Right



Tightening Sequence - Left



Tightening Sequence - Right

2

Cylinder Head
Bolts

Torque Procedure

For engine builds using a new block follow steps 1-9. For engine re-builds (reuse block) follow step 6-9.

1. 30 N·m (22 ft. lbs.)
2. 45 N·m (33 ft. lbs.)
3. Re-tighten all to 45 N·m (33 ft. lbs.)
4. All + 125° Turn. Do not use a torque wrench for this step.
5. Loosen all fasteners in reverse of sequence shown

YOUR CURRENT VEHICLE

Valve Guide Seals

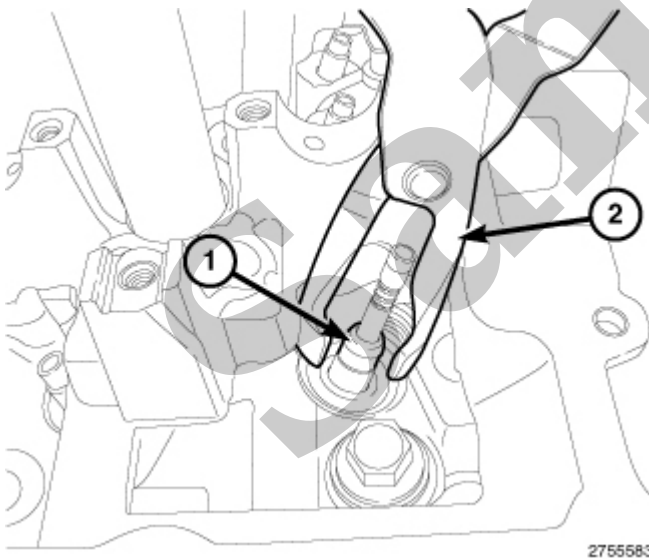
VALVE GUIDE SEALS

REMOVAL

NOTE

If the springs are to be reused, identify their positions so that they can be reassembled into their original locations.

1. Remove the valve spring(s) ([Refer to Engine/Cylinder Head/SPRING\(S\), Valve/Removal and Installation](#)) ([Refer To List 1](#)).



1 - Valve Guide Seal

2 - Valve Seal Tool

NOTE