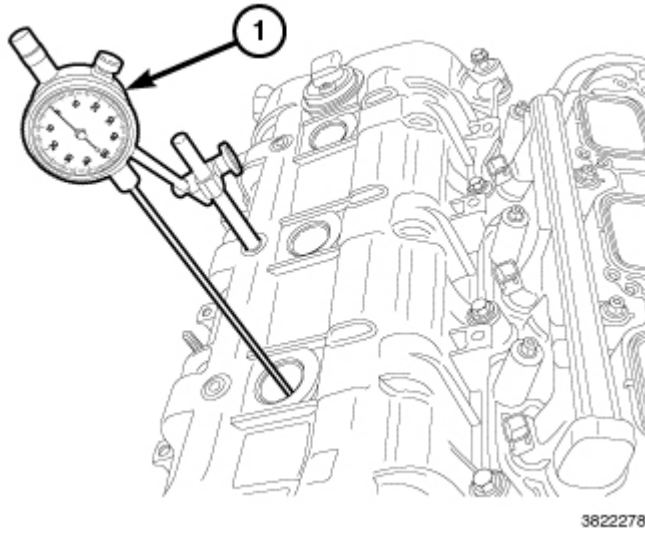


# Your Ultimate Source for OEM Repair Manuals

FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

## 2011 JEEP Patriot OEM Service and Repair Workshop Manual

[Go to manual page](#)



1 - Dial Indicator Set

#### CAUTION

When aligning timing marks, always rotate engine by turning the crankshaft. Failure to do so will result in valve or piston damage.

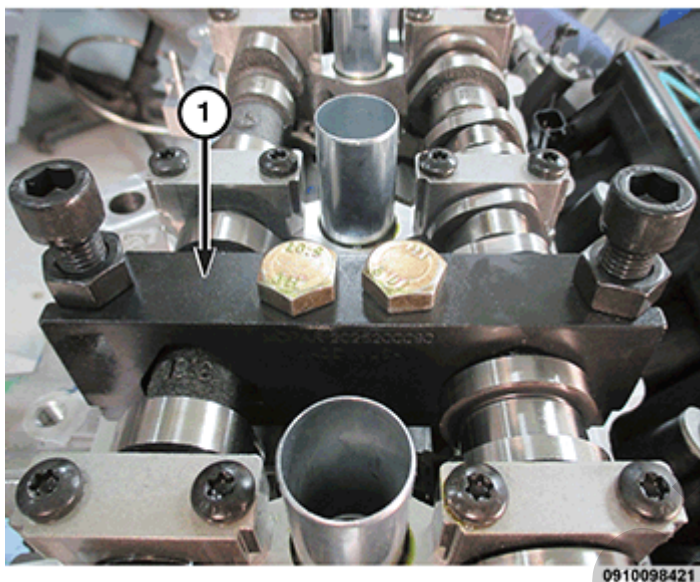
3. Mount the Dial Indicator Set

Set, Dial Indicator

7. The camshafts should be at top-dead-center, with the alignment holes positioned vertically.

#### NOTE

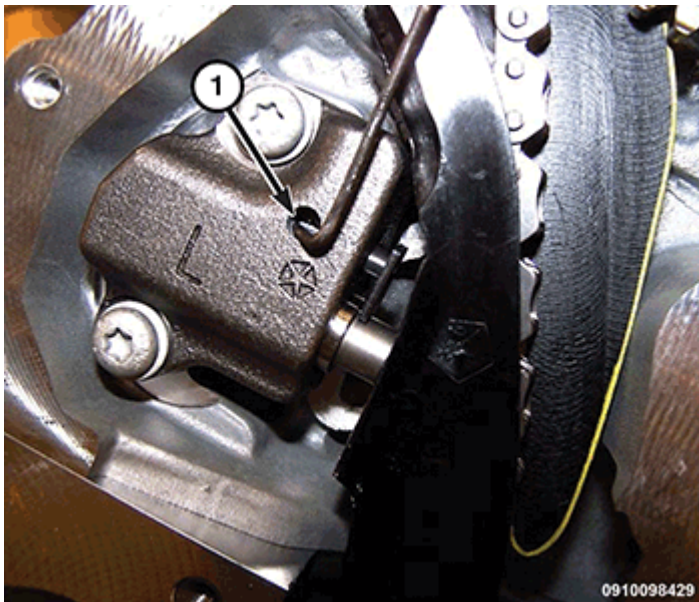
It may be necessary to rock the camshaft slightly (a few degrees) with a wrench when installing the camshaft holder.



1 - Camshaft Holder Tool

8. Install the  
Holder, Camshaft

Engine timing cover removed for clarity.

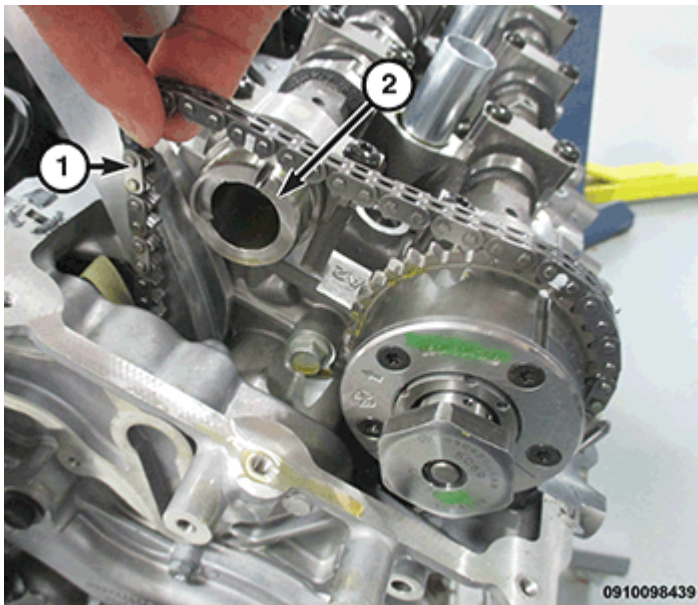


1 - Chain Tensioner Pin

13. Using the  
Pin, Chain Tensioner



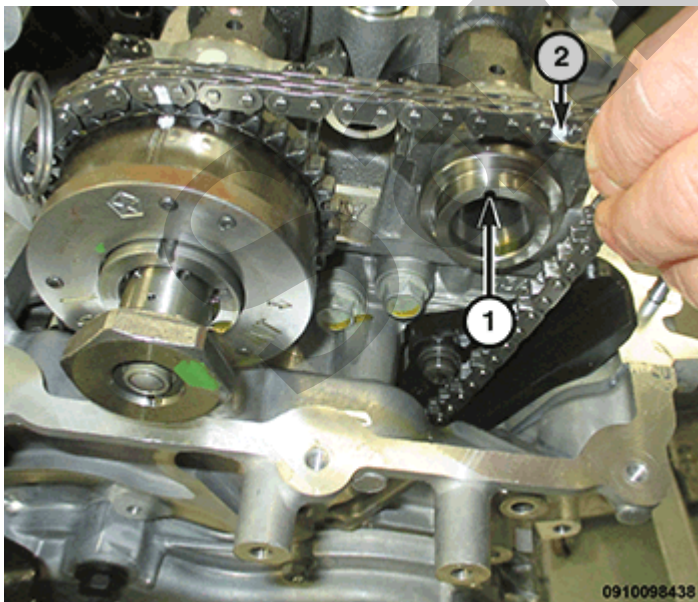
, lift the pawl off of the rack.



1 - Timing Chain

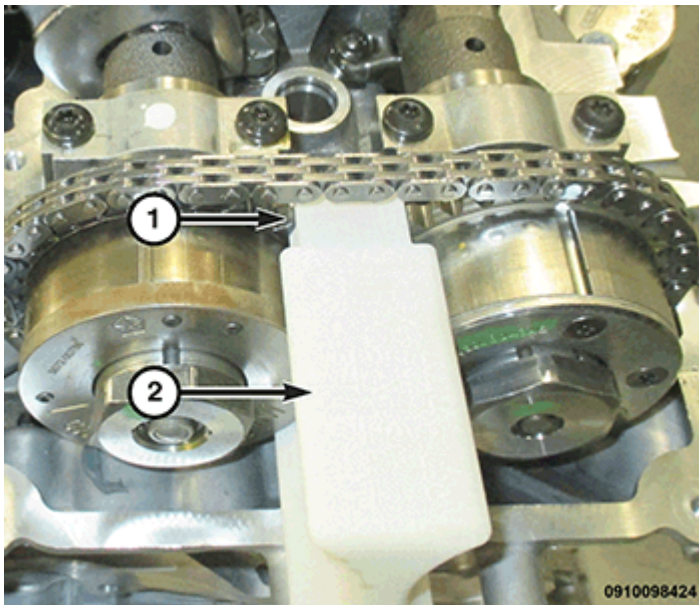
2 - Camshaft

2. Route the timing chain around the left intake cam phaser while aligning the paint mark with the phaser timing mark. Press the left intake cam phaser onto the intake camshaft. Install and hand tighten the oil control valve.



1 - Camshaft

2 - Timing Chain



1 - Intake And Exhaust Phasers

2 - Camshaft Phaser Holder

8. Remove the  
Holder, Camshaft Phaser - Left-Front Cyl Head

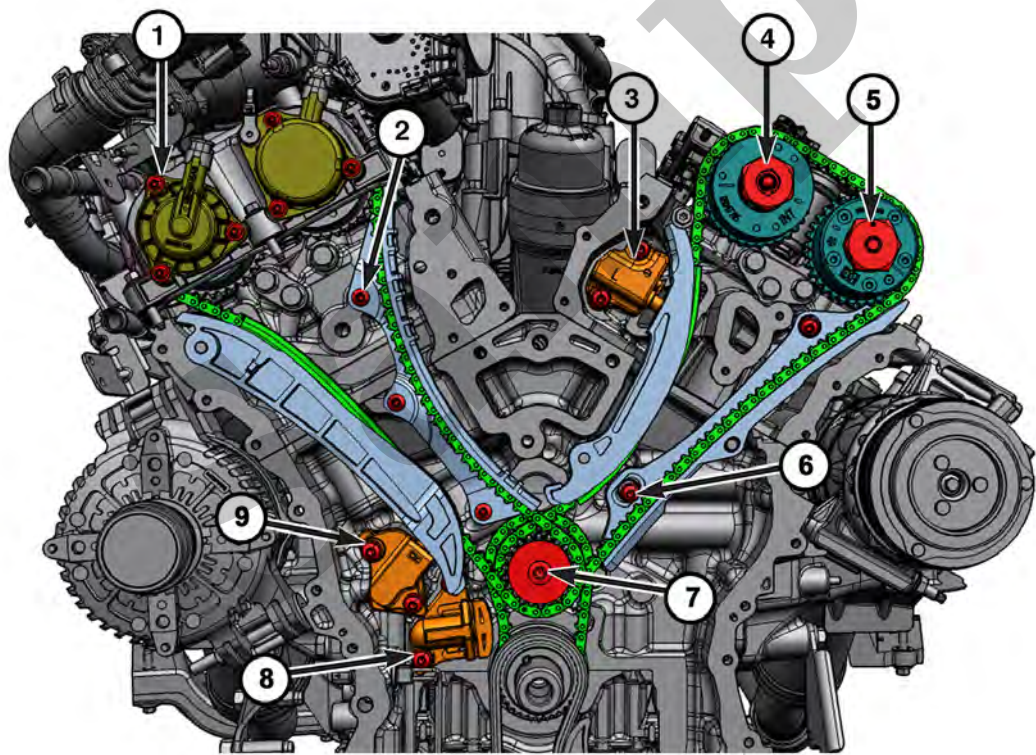


14. Install the right side spark plugs ([Refer to Engine/Ignition Control/SPARK PLUG/Removal and Installation](#)) ([Refer To List 2](#)).
15. Start the engine and perform the following Powertrain Verification Tests ([Refer to DTC-Based Diagnostics/MODULE, Powertrain Control \(PCM\) - Standard Procedure](#))([Refer To List 6](#)):
- Cam/Crank Variation Relearn
  - Target Coefficient Relearn

**NOTE**

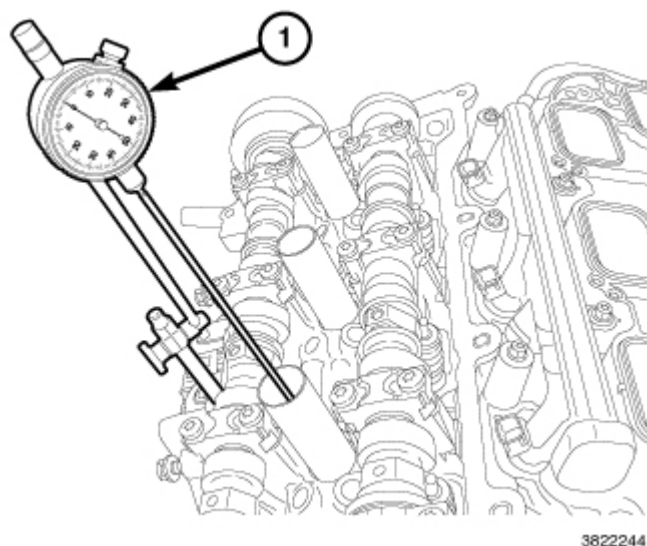
Following the first restart after a DTC driven phaser replacement, clear all DTCs and verify that subsequent restarts do not set any additional codes ([Refer to DTC-Based Diagnostics/MODULE, Powertrain Control \(PCM\) - Diagnosis and Testing](#))([Refer To List 7](#)) for any DTCs that reset.

**TORQUE SPECIFICATIONS - VALVE TIMING**



0903189852

CALLOUT	DESCRIPTION	SPECIFICATION	COMMENTS
1	Variable Valve Timing Solenoids	10 N·m (7 Ft. Lbs.)	—



1 - Dial Indicator Set

#### CAUTION

When aligning timing marks, always rotate engine by turning the crankshaft. Failure to do so will result in valve or piston damage.

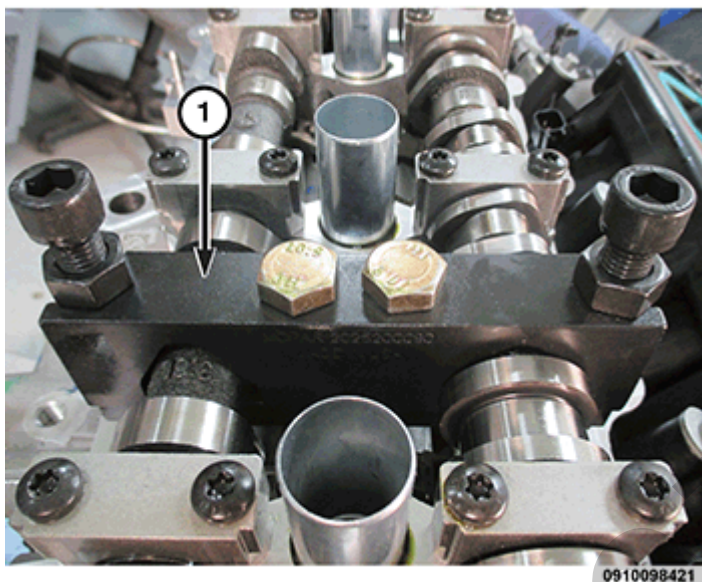
3. Mount the Dial Indicator Set

Set, Dial Indicator

7. The camshafts should be at top-dead-center, with the alignment holes positioned vertically.

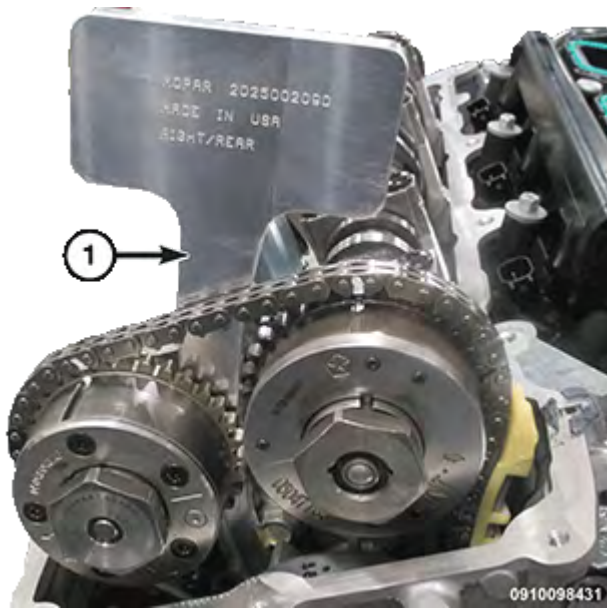
#### NOTE

It may be necessary to rock the camshaft slightly (a few degrees) with a wrench when installing the camshaft holder.



1 - Camshaft Holder Tool

8. Install the  
Holder, Camshaft



1 - Timing Chain Tensioner Holder

13. Insert the  
Holder, Timing Chain Tensioner, Right-Rear



into place between the cylinder head boss and the tensioner arm to hold the tensioner in the compressed position. The Timing Chain Tensioner Holder remains in place while the phasers are removed.