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2013 Jeep Grand Cherokee Service and Repair Manual

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DESCRIPTION	SPECIFICATION	
	Metric	**Standard**
Body Diameter	21.387 - 21.405 mm	0.8420 - 0.8427 in.
Clearance (to bore)	0.020 - 0.063 mm	0.0008 - 0.0025 in.
Dry Lash	3.0 mm (at the valve)	0.1181 in. (at the valve)

VALVES

DESCRIPTION	SPECIFICATION	
	Metric	**Standard**
Face Angle		
Intake	45.5° - 46.0°	
Exhaust	45.0° - 45.5°	
Head Diameter		
Intake	51.94 - 52.20 mm	2.04 - 2.06 in.
Exhaust	39.27 - 39.53 mm	1.55 - 1.56 in.
Length (overall)		
Intake	130.87 - 131.51 mm	5.152 - 5.178 in.
Exhaust	130.101 - 130.741 mm	5.122 - 5.147 in.
Stem Diameter		
Intake	7.935 - 7.953 mm	0.312 - 0.313 in.
Exhaust	7.932 - 7.950 mm	0.312 - 0.313 in.
Stem - to - Guide Clearance		

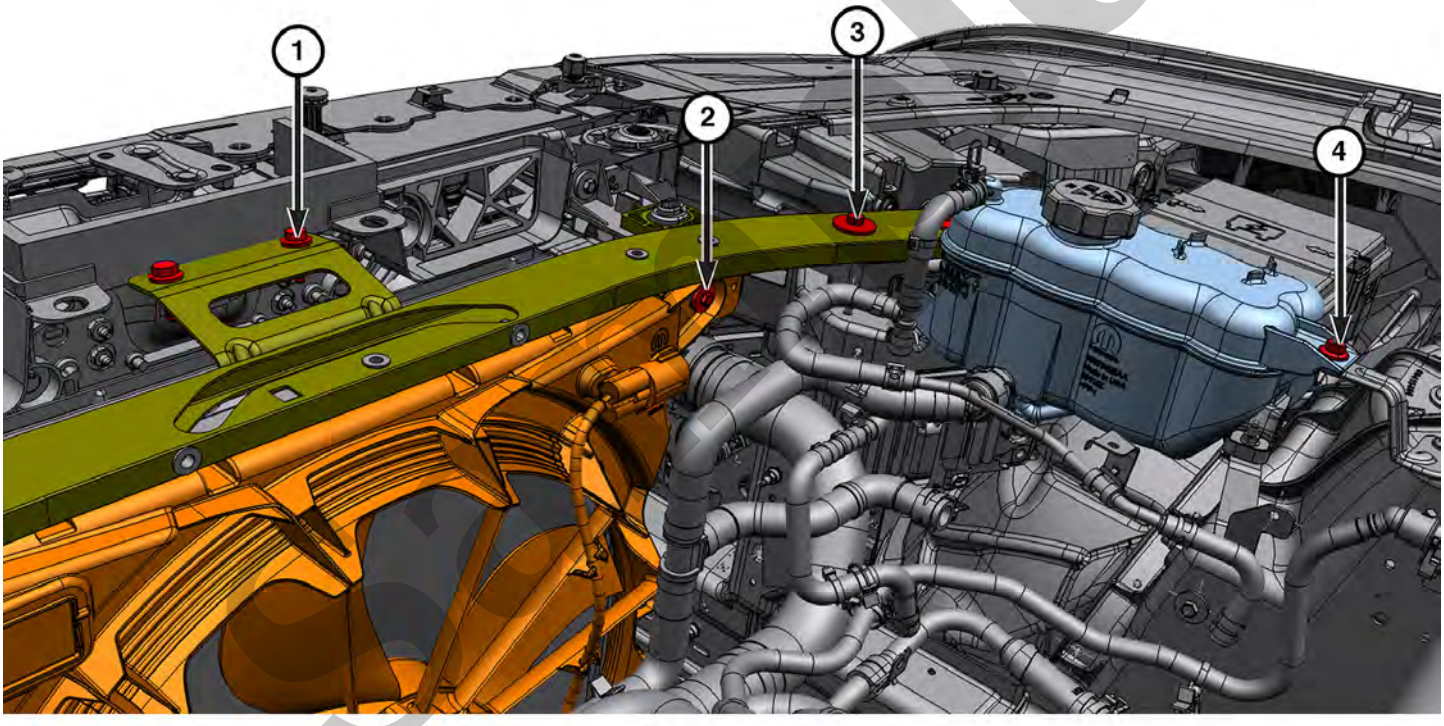
YOUR CURRENT VEHICLE

Ignition Coil Resistance

IGNITION COIL RESISTANCE

Engine	Primary Resistance 21°C - 27°C (70°F - 80°F)	Secondary Resistance 21°C - 27°C (70°F - 80°F)
3.6L	0.6 to 0.9 ohms	6.0K to 9.0K ohms
5.7L	0.540 to 0.660 ohms	* 9.24K to 11.76K ohms
6.2L	0.540 to 0.660 ohms	* 9.24K to 11.76K ohms
6.4L	0.540 to 0.660 ohms	* 9.24K to 11.76K ohms
* Not directly measurable due to diode in circuit.		

1	Thermostat Housing Bolts	**28 N·m (21 Ft. Lbs.)**	–
2	Water Pump Bolts Short	**28 N·m (21 Ft. Lbs.)**	–
3	Bleed Plug	**6 N·m (53 In. Lbs.)**	–
4	Coolant Tube Nut	**25 N·m (18 Ft. Lbs.)**	–
5	Coolant Tube Stud Bolt	**28 N·m (21 Ft. Lbs.)**	–
6	Water Pump Bolts - Long	**28 N·m (21 Ft. Lbs.)**	–



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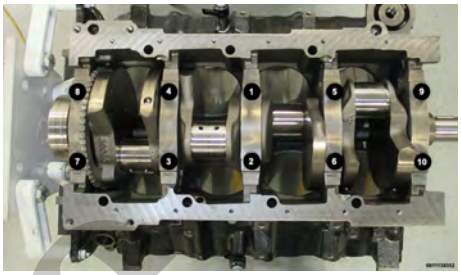
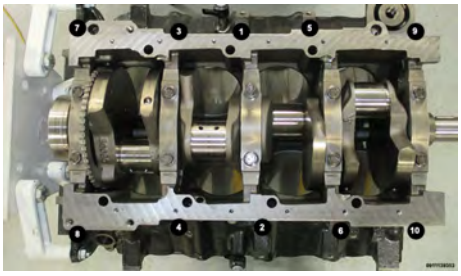
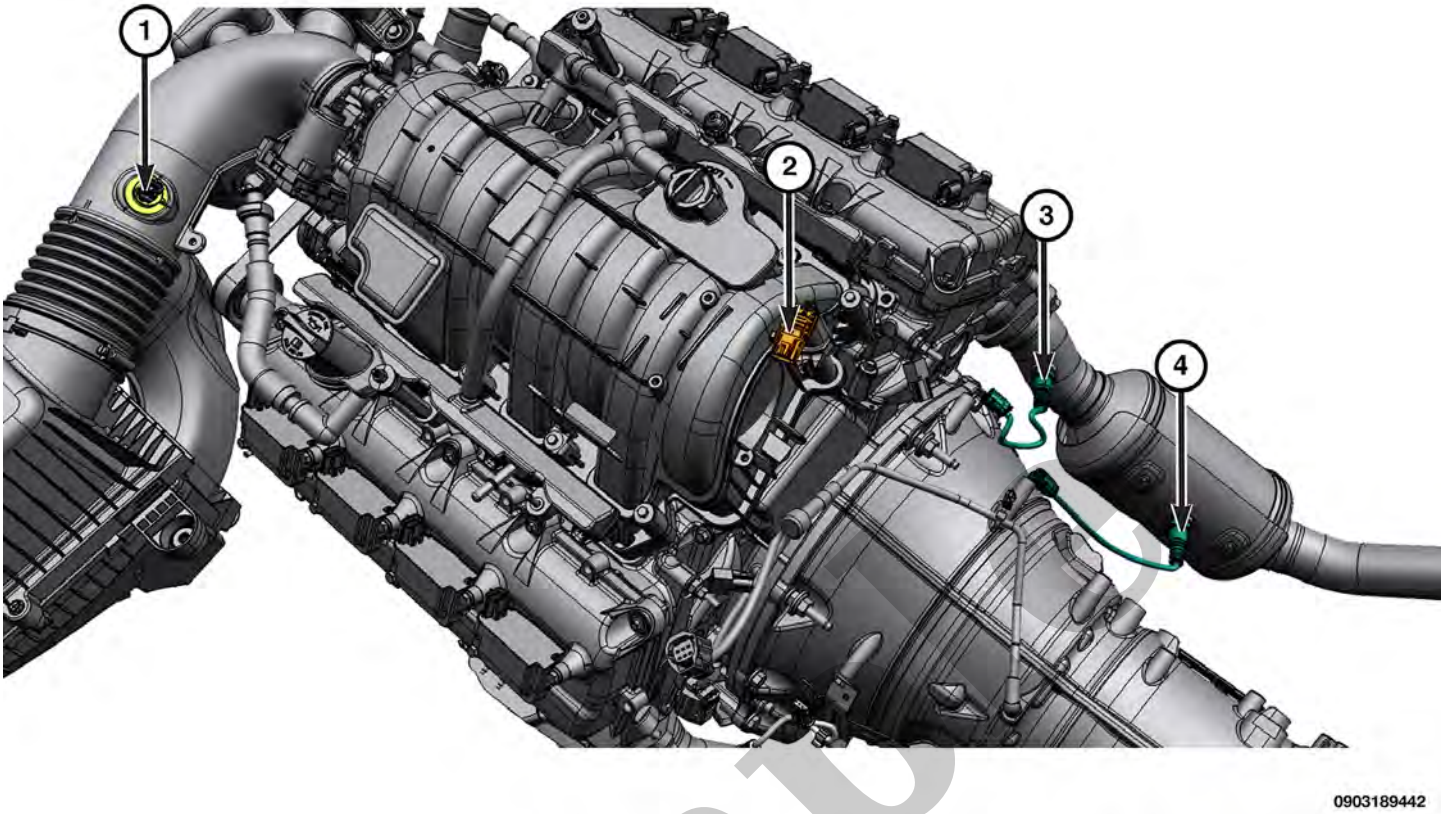
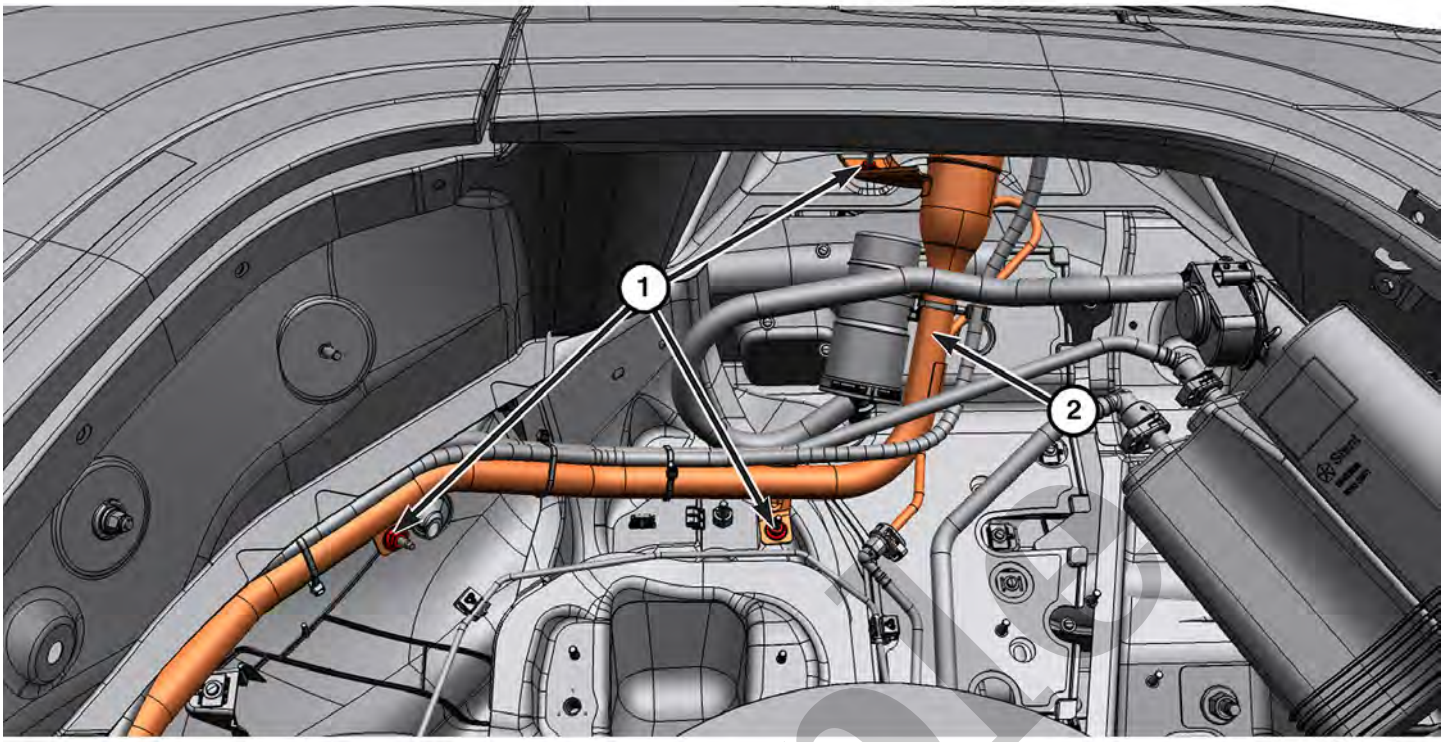
CALLOUT	DESCRIPTION	SPECIFICATION	COMMENTS
1	Radiator Crossmember Bracket Bolts	**12 N·m (9 Ft. Lbs.)**	–
2	Electric Cooling Fan Bolts	**7 N·m (62 In. Lbs.)**	–

CALLOUT	DESCRIPTION	SPECIFICATION	COMMENTS
1	Connecting Rod Cap Bolts	**20 N·m + 90° Turn (15 Ft. Lbs. + 90° Turn)**	—
2	Main Bearing Cap Bolts	**Torque Procedure** 1. **Tighten bolts to 13 N·m (10 ft. lbs.)** 2. **Tighten bolts to 28 N·m (21 ft. lbs.)** 3. **Rotate an additional 90°**	Tightening Sequence 
3	Main Bearing Cap Cross-Bolts **NOTE** The main cap cross-bolts are torqued after final torque of the main cap bolts.	**Torque Procedure** 1. **Tighten bolts to 31 N·m (23 ft. lbs.)** 2. **Repeat cross-bolt tightening using the sequence shown**	Tightening Sequence **NOTE** Always use a NEW washer/seal on cross-bolts. 



CALLOUT	DESCRIPTION	SPECIFICATION	COMMENTS
1	Intake Air Temperature Sensor	**1/4 Turn**	–
2	MAP Sensor	**1/4 Turn**	–
3	Upstream Oxygen Sensors	**50 N·m (37 Ft. Lbs.)**	–
4	Down stream Oxygen Sensors	**50 N·m (37 Ft. Lbs.)**	–



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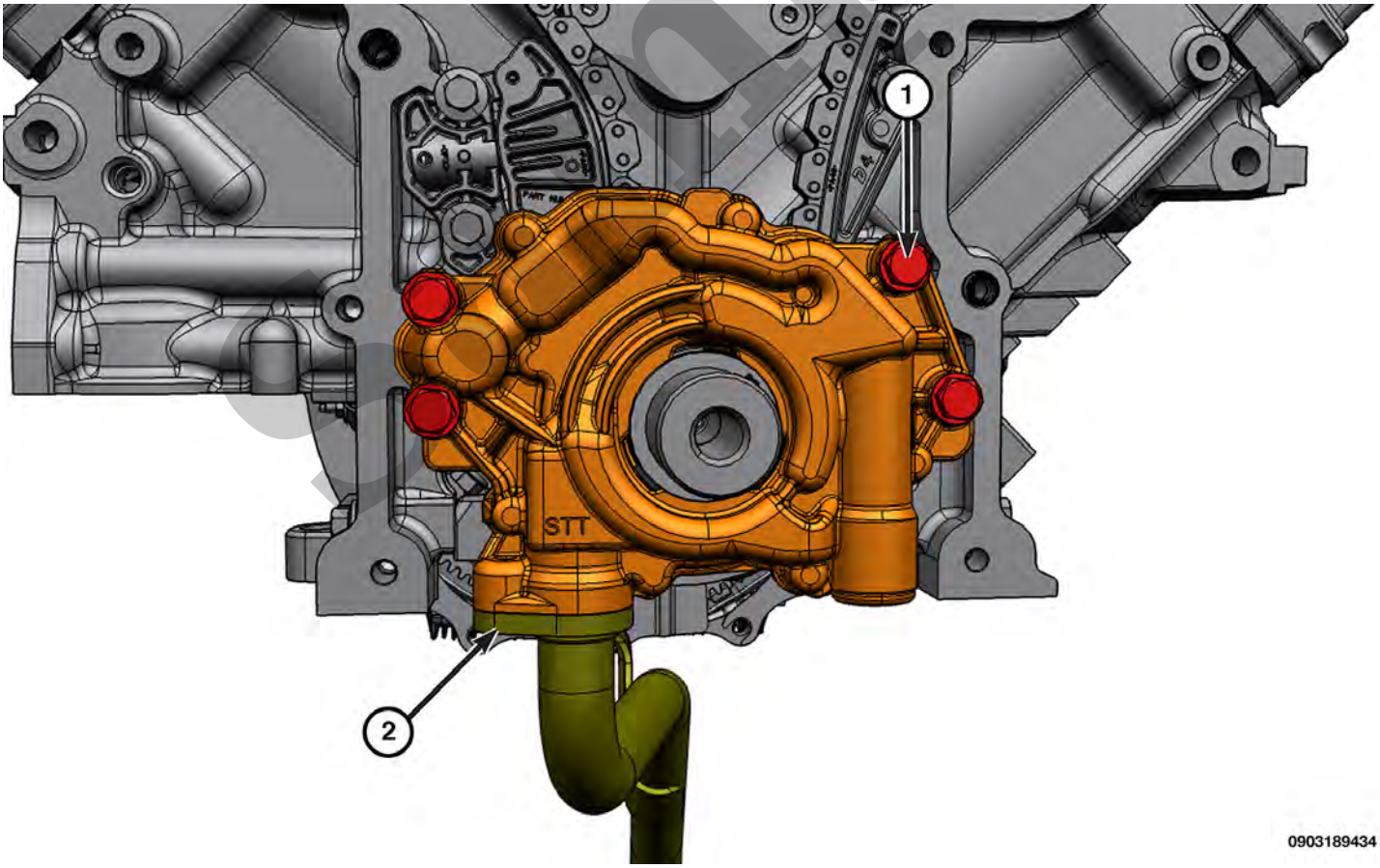
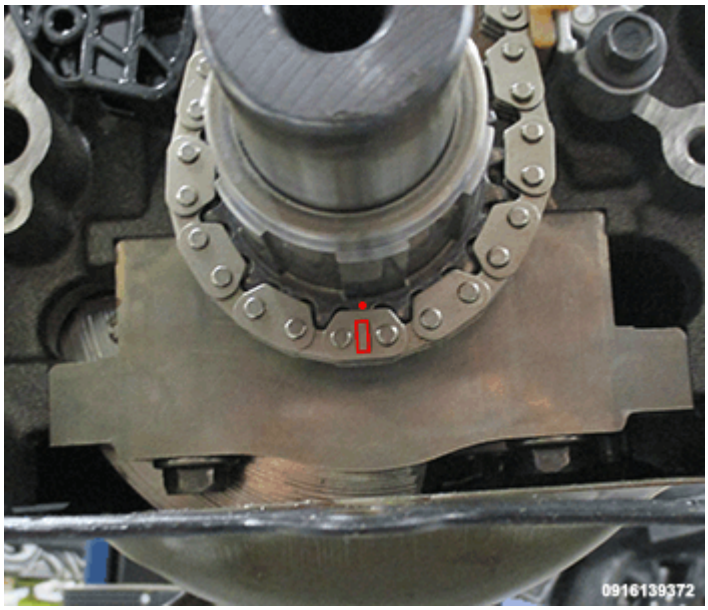
CALLOUT	DESCRIPTION	SPECIFICATION	COMMENTS
1	Fuel Filler Tube to Body Nut(s)	**8 N·m (71 In. Lbs.)**	–

4	Oil Filter Adapter to Engine Block Bolts	**12 N·m (9 Ft. Lbs.)**	–
5	Oil Filter Adapter to Oil Filter Housing	**12 N·m (9 Ft. Lbs.)**	–
6	Oil Filter Housing to Oil Pan Bolts	**25 N·m (18 Ft. Lbs.)**	–
7	Oil Pan Drain Plug	**34 N·m (25 Ft. Lbs.)**	–
8	Oil Pan to Transmission Bolts	**54 N·m (40 Ft. Lbs.)**	–

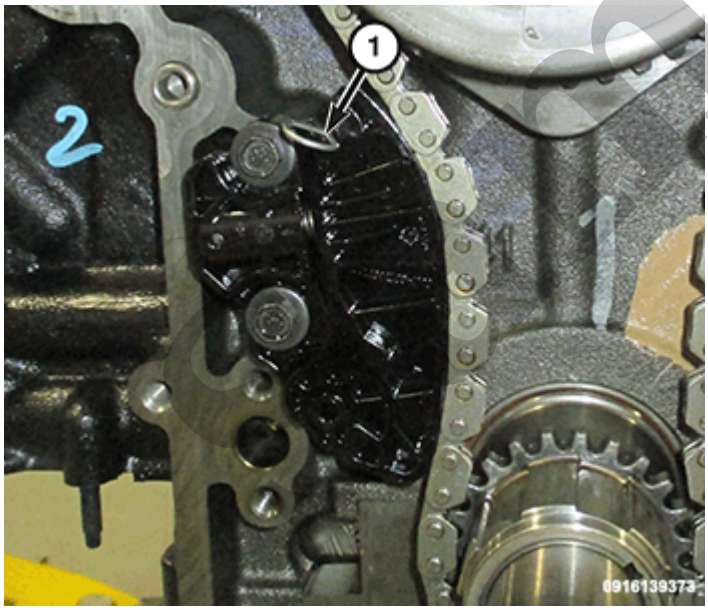


CALLOUT	**DESCRIPTION**	**SPECIFICATION**	**COMMENTS**



Crankshaft Timing Mark

3. Install the vibration damper bolt finger tight. Using a suitable socket and breaker bar, rotate the crankshaft to align the timing marks with the timing chain sprockets as shown.

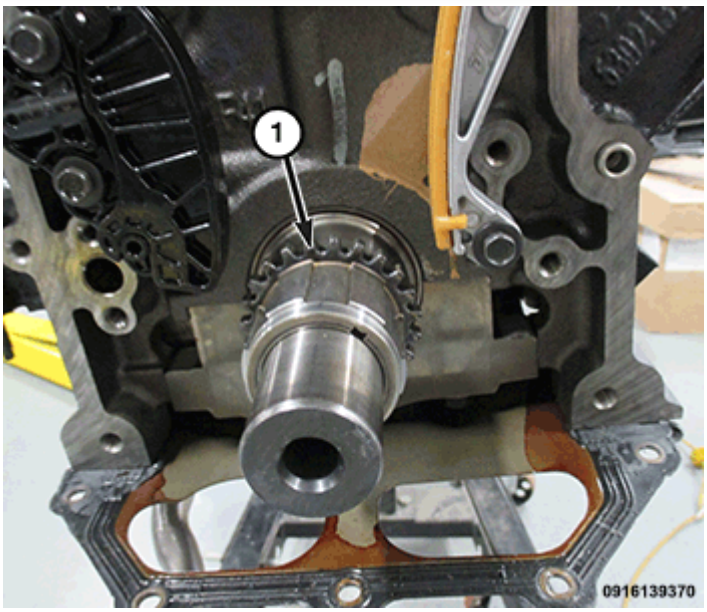


1 - Tensioner Pin

4. Install the Tensioner Pin

Pins, Tensioner

This is a Zero-Tolerance engine. Failure to properly align the timing chain to the timing gears will cause severe engine damage. It is imperative that the Timing Marks shown in the subsequent steps be properly aligned during assembly.



1 - Crankshaft Sprocket

CAUTION

Do not rotate the camshaft more than a few degrees independently of the crankshaft. Valve to piston contact could occur resulting in possible valve damage. If the camshaft need to be rotated more than a few degrees, first move the pistons away from the cylinder heads by rotating the crankshaft counterclockwise to a position 30°before-top-dead-center. Once the camshaft is returned to their top-dead-center position, rotate the crankshaft clockwise to return the crankshaft to top-dead-center.

1. Install the crankshaft sprocket and position halfway onto the crankshaft.