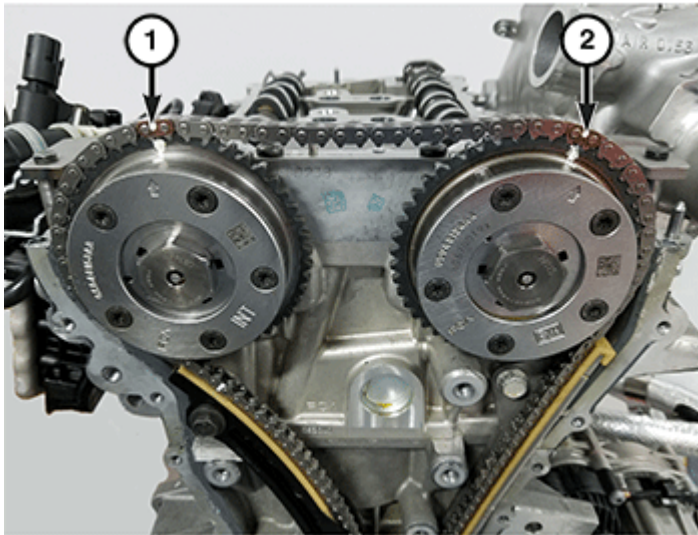


# Your Ultimate Source for OEM Repair Manuals

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.

## 2009 JEEP Cherokee/Liberty OEM Service and Repair Workshop Manual

[Go to manual page](#)

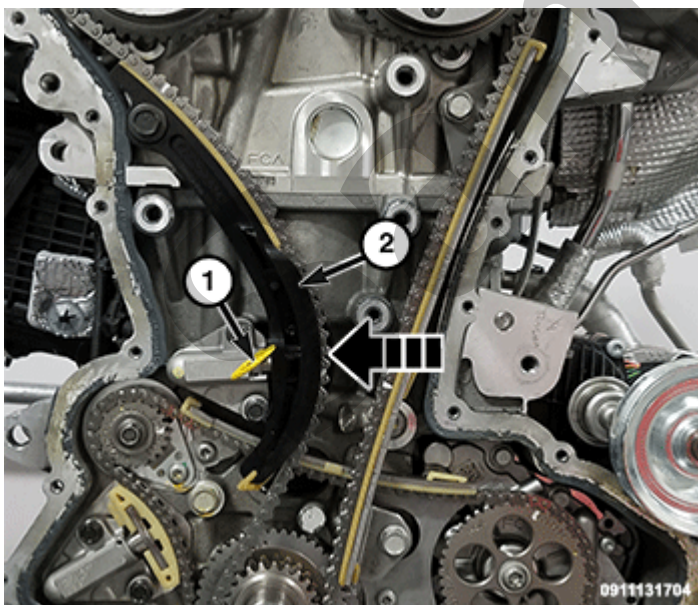


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1 - Camshaft Sprocket Timing To Corresponding Chain Link Marks

2 - Camshaft Sprocket Timing To Corresponding Chain Link Marks

3. Using a paint pen or equivalent, mark both camshaft sprocket timing marks and corresponding chain links to aid in reassembly.



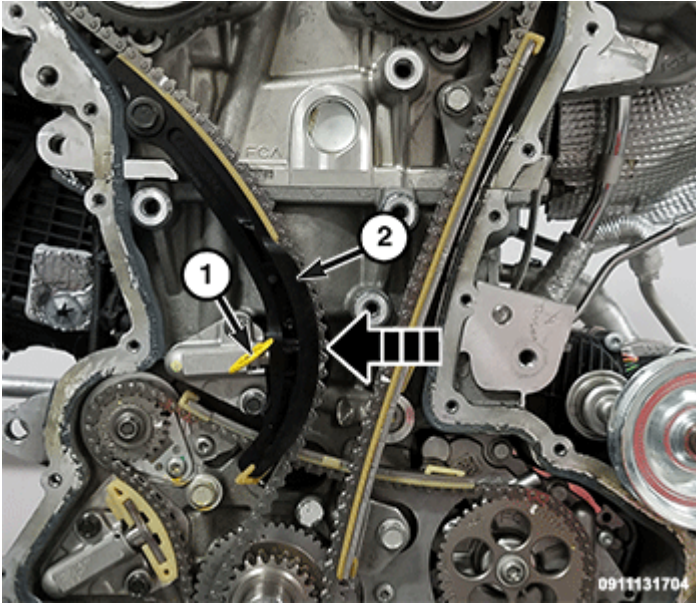
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1 - Tensioner Pin

2 - Cam Chain Tensioner Arm

## 2 - Cam Chain Tensioner

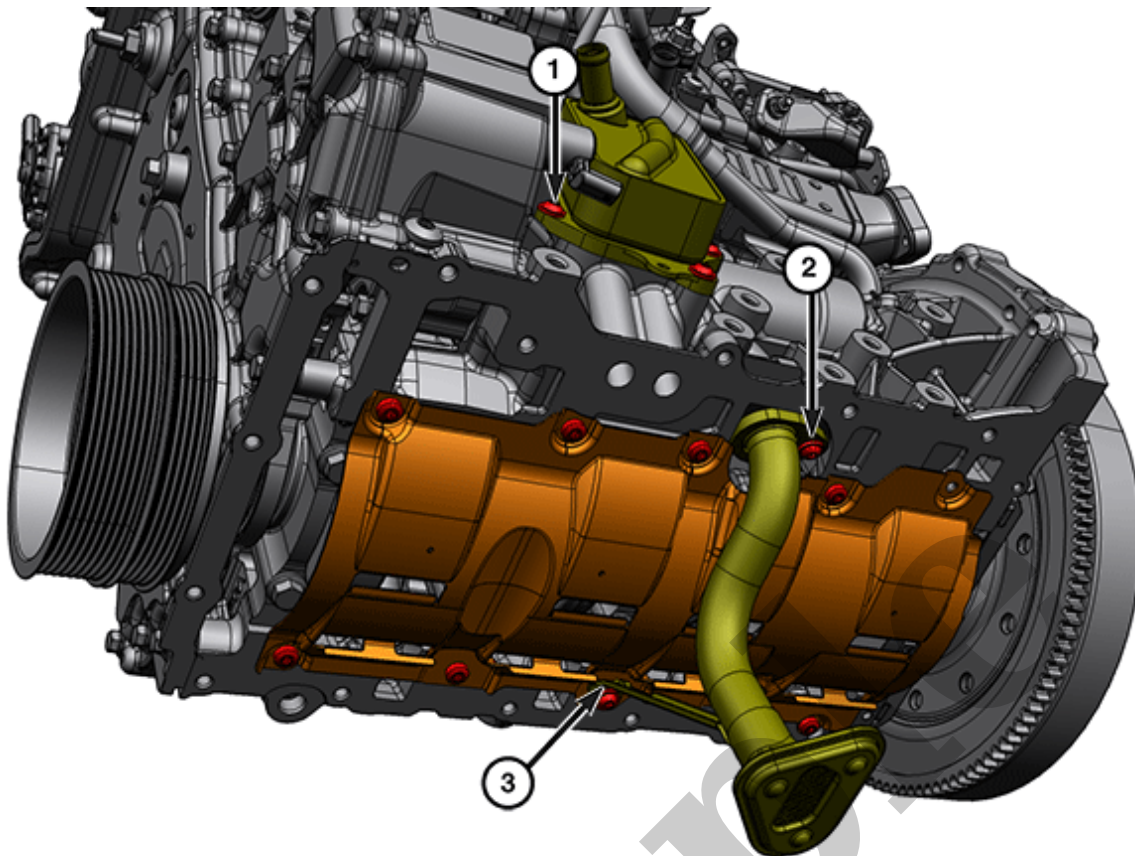
2. Install the cam chain tensioner and tighten the cam chain tensioner bolts to the proper torque specifications.



1 - Tensioner Pin

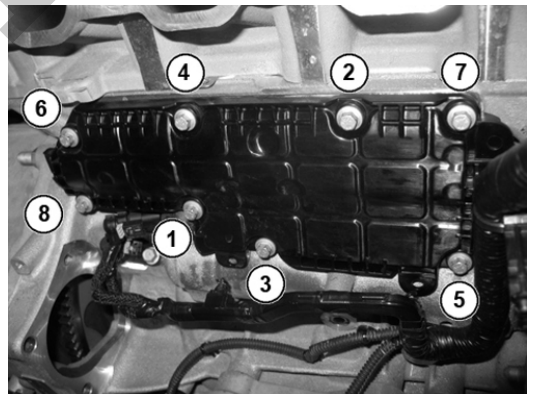
2 - Cam Chain Tensioner Arm

3. Hold the cam chain tensioner arm against the tensioner piston, remove the Pins, Tensioner



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CALLOUT	DESCRIPTION	SPECIFICATION	COMMENTS
1	Engine Oil Cooler M6 Bolts	12 N·m (9 Ft. Lbs.)	<p>Tightening Sequence</p> <p>Do not reuse these fasteners. If removed, a <b>NEW</b> fastener must be installed and tightened to specifications.</p>

CALLOUT	DESCRIPTION	SPECIFICATION	COMMENTS
-	Oil Galley Pipe Plugs M10 Plug	<b>Torque Procedure:</b> 1. <b>4 N·m (35 In. Lbs.)</b> 2. <b>+ 450°</b>	Do not reuse these fasteners. If removed, a <b>NEW</b> fastener must be installed and tightened to specifications.
-	Oil Galley Pipe Plugs M14 Plug	<b>+ 1.5 mm (+ 0.06 In.) to - 0.5 mm (- 0.02 In.) flush with the block boss face</b>	Do not reuse these fasteners. If removed, a <b>NEW</b> fastener must be installed and tightened to specifications.
-	Oil Galley Pipe Plugs M18 Plug	<b>+ 1.5 mm (+ 0.06 In.) to - 0.5 mm (- 0.02 In.) flush with the block boss face</b>	Do not reuse these fasteners. If removed, a <b>NEW</b> fastener must be installed and tightened to specifications.
-	Oil Vapor Separator M6 Bolts	<b>9 N·m (80 In. Lbs.)</b>	<p>Tightening sequence</p> <p>Do not reuse these fasteners. If removed, a <b>NEW</b> fastener must be installed and tightened to specifications. Tighten in sequence</p> 

#### Refer To List:

##### List 1

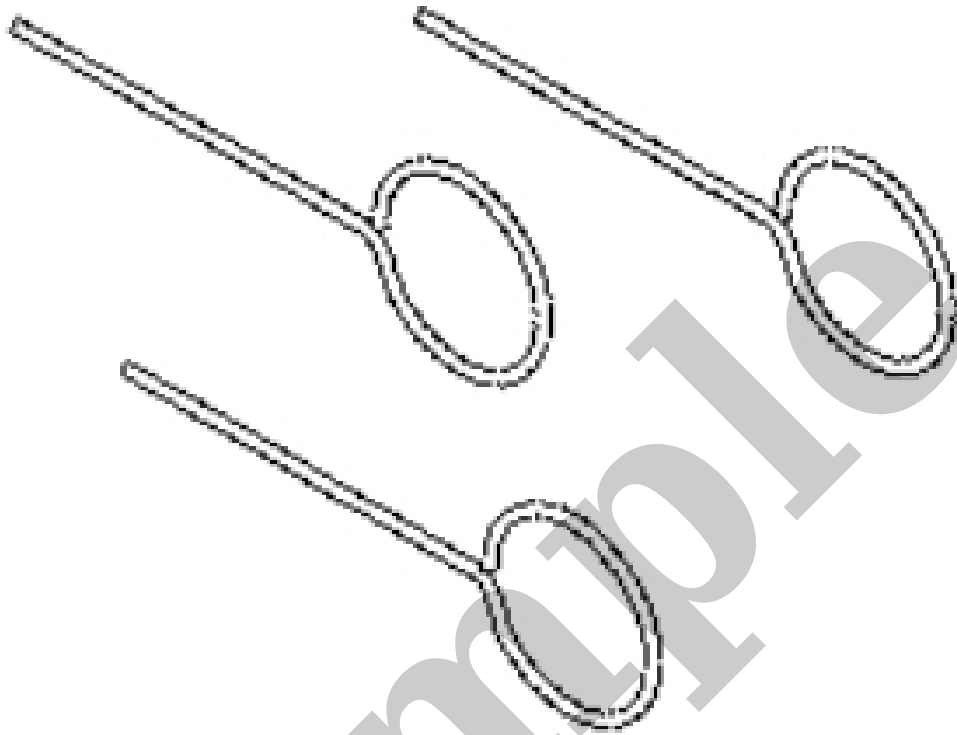
- [09 - Engine, 2.0L / Valve Timing / COVER\(S\), Engine Timing / Removal and Installation](#)
- [09 - Engine, 3.6L / Valve Timing / COVER\(S\), Engine Timing / Removal and Installation](#)
- [09 - Engine, 5.7L / Valve Timing / COVER\(S\), Engine Timing / Removal and Installation](#)

##### List 2

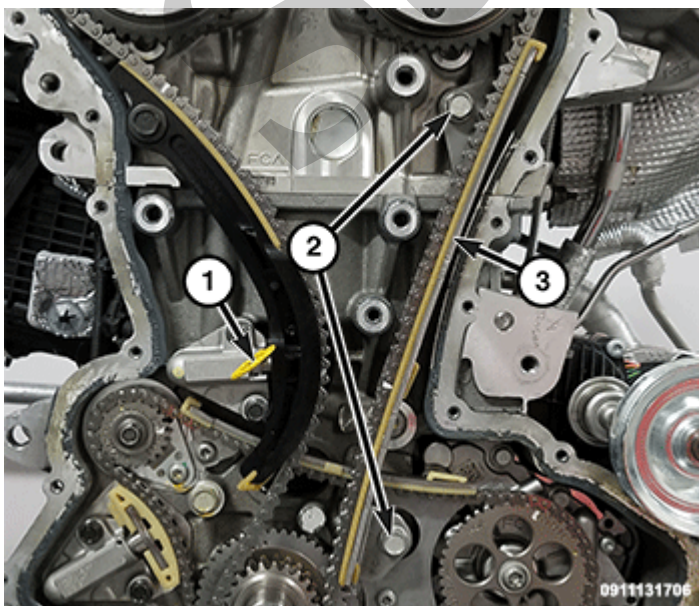


4. Use the timing chain tensioner arm to push in the tensioner piston and insert the

Pins, Tensioner



to hold the tensioner piston in the retracted position. If the pin can not be inserted, the tensioner will have to be reset ([Refer to Engine/Valve Timing/Standard Procedure](#))(Refer To List 2).

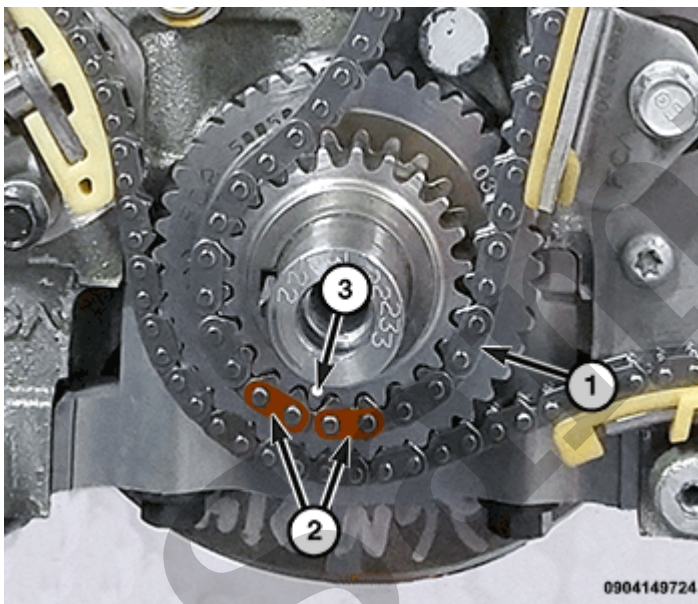


## Timing Chain Tensioner Arm

### TIMING CHAIN TENSIONER ARM

#### REMOVAL

1. Remove the timing chain cover (Refer to Engine/Valve Timing/COVER(S), Engine Timing/Removal and Installation)(Refer To List 1).

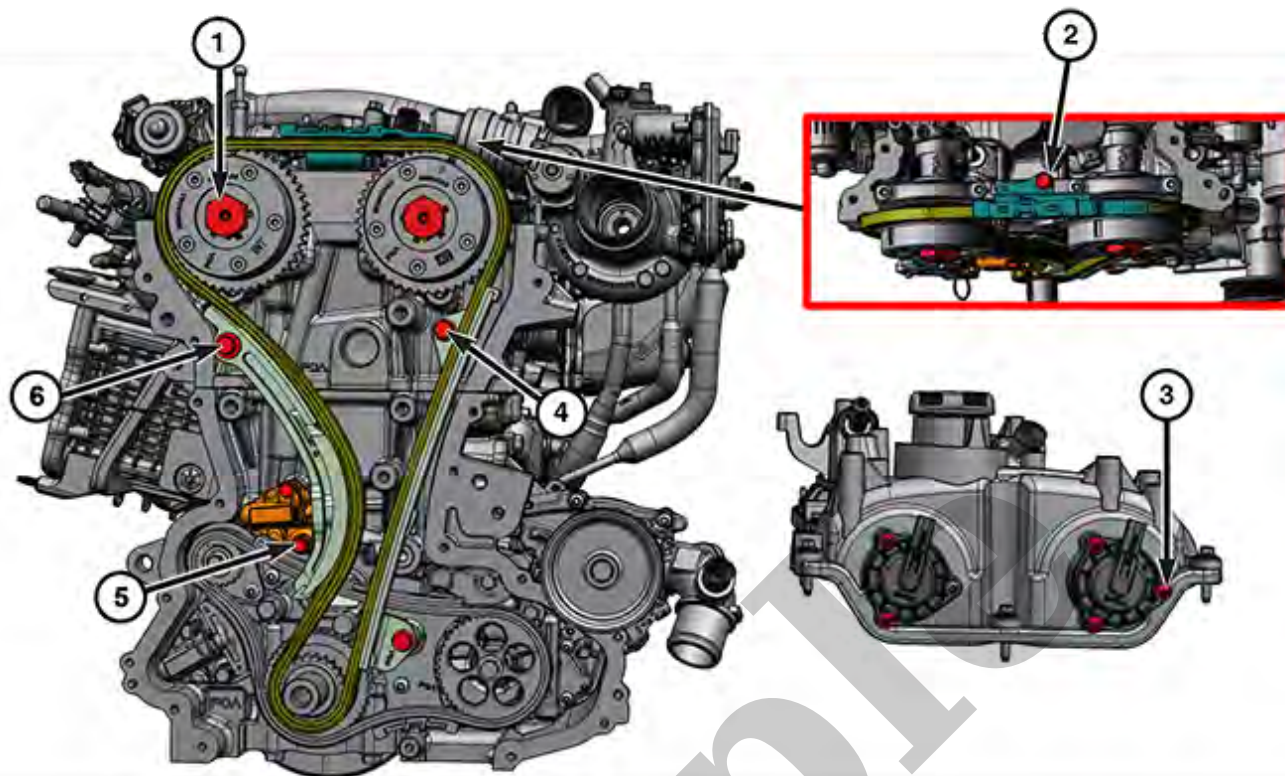


1 - Timing Chain

2 - Timing Chain Plated Links

3 - Crankshaft Sprocket Timing Mark

2. Using a paint pen or equivalent, mark chain links corresponding to crankshaft sprocket timing mark.



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CALLOUT	DESCRIPTION	SPECIFICATION	COMMENTS
1	Variable Valve Timing Phaser/Exhaust Oil Control Valve Bolt	<b>150 N·m (110 Ft. Lbs.)</b>	–
2	Cam to Cam Guide Bolt	<b>10 N·m (89 In. Lbs.)</b>	–
3	Actuator to Valve Cover	<b>4 N·m (35 In. Lbs.)</b>	–
4	Timing Chain Guide M8 Bolts	<b>23 N·m (16 Ft. Lbs.)</b>	–
5	Timing Chain Tensioner M6 Bolts	<b>10 N·m (89 In. Lbs.)</b>	–
6	Primary Tensioner Arm M8 Bolt	<b>28 N·m (21 Ft. Lbs.)</b>	–

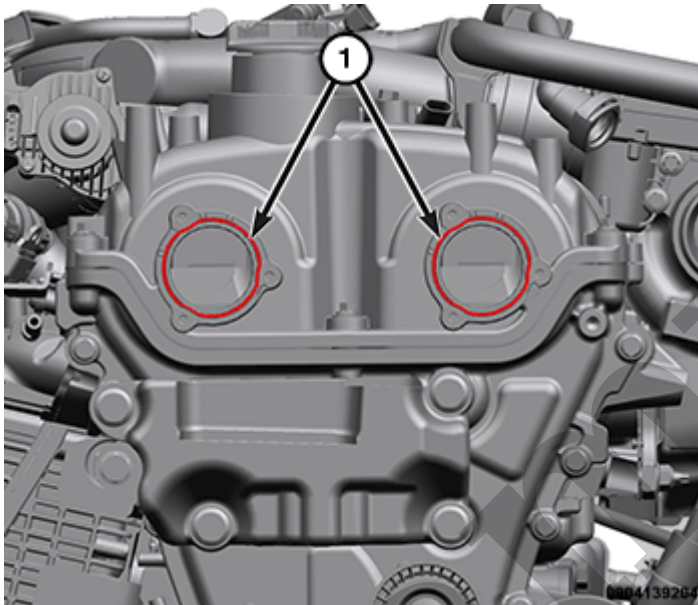
## TORQUE SPECIFICATIONS - FRONT ENGINE



1 - VVT Solenoid Mounting Bolt
2 - Wire Harness Connector
3 - Exhaust VVT Solenoid
4 - Intake VVT Solenoid

2. Disconnect the Variable Valve Timing (VVT) solenoid wire harness connector.

3. Remove the bolts and the VVT solenoid.



1 - VVT Gasket
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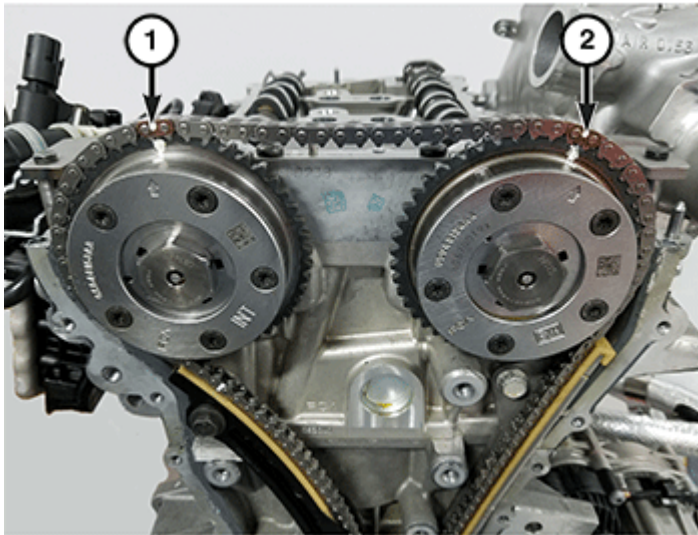
4. Remove and discard the gasket.

## INSTALLATION

Follow the removal procedure in reverse for general reassembly of the components on the vehicle. The steps listed below are calling out specific procedures that should be followed during installation.

- Inspect and install **NEW** gasket as needed.

## TORQUE SPECIFICATIONS - FRONT ENGINE

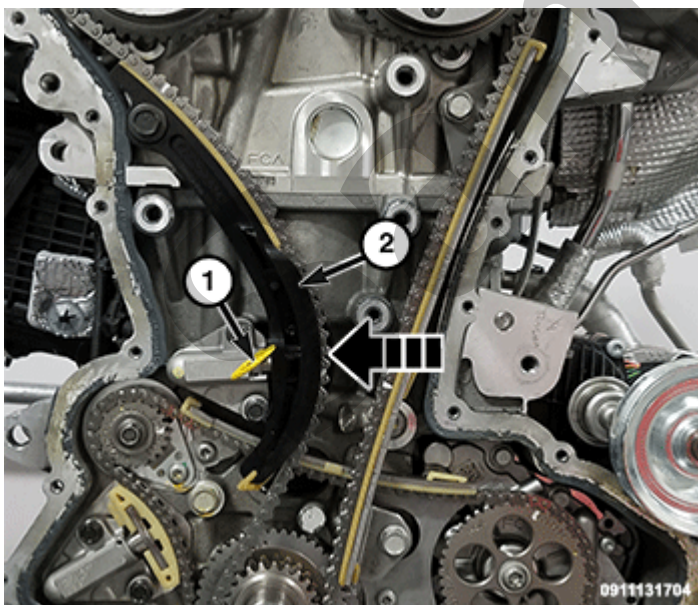


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1 - Intake Sprocket Paint Pen Marks

2 - Exhaust Sprocket Paint Pen Marks

3. Using a paint pen or equivalent, mark both camshaft sprocket timing marks (1 and 2) and corresponding chain links to aid in reassembly.



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1 - Tensioner Pins

2 - Cam Chain Tensioner Arm