

# Brief Engine Knock/Rattle Noise at Cold Startup

**Service Category** Engine/Hybrid System

**Section** Engine Mechanical

**Market** USA

Toyota Supports  
 ASE Certification 

## Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2009 – 2010	Corolla	Engine(s): 2ZR Transmission(s): 4AT, 5MT VDS(s): BL40E, BU40E, BU4EE
2009 – 2010	Matrix	Drive Type(s): 2WD Engine(s): 2ZR Transmission(s): 4AT, 5MT VDS(s): KU40E, KU4EE

### TSB REVISION NOTICE

- **September 22, 2009 Rev1:**
  - **Applicability has been updated to include 2010 model year Corolla and Matrix vehicles.**
  - **Production Change Information with VIN breaks has been added.**
  - **Parts Information has been updated (Camshaft Timing Gear Assembly).**

**Any previous printed versions of this service bulletin should be discarded.**

## Introduction

Immediately following a cold soak startup, some 2009 – 2010 model year Corolla and Matrix vehicles may exhibit a brief knock/rattle noise from the engine compartment for approximately one second. Follow the repair procedure below to address this condition.

## Production Change Information

This TSB applies to ALL 2009 – 2010 Japan-built Corolla vehicles and to North American vehicles produced **BEFORE** the Production Change Effective VINs shown below.

MODEL	ENGINE	PLANT	PRODUCTION CHANGE EFFECTIVE VIN
Corolla	2ZR-FE	NUMMI	1NXBU4EE#AZ243260
		TMMC	2T1BU4EE#AC257917
Matrix			2T1KU4EE#AC257908

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### Warranty Information

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
EG9006	R & R Camshaft Timing Gear Assembly	1.5	13050-0T010	06	40

#### APPLICABLE WARRANTY

- This repair is covered under the Toyota Powertrain Warranty. This warranty is in effect for 60 months or 60,000 miles, whichever occurs first, from the vehicle's in-service date.
- Warranty application is limited to occurrence of the specified condition described in this bulletin.

### Parts Information

PREVIOUS PART NUMBER	CURRENT PART NUMBER	PART NAME	QTY
13050-0T010	13050-0T011	Gear Assembly, Camshaft Timing	1
11213-37020	Same	Gasket, Cylinder Head Cover	1
11159-37010	Same	Gasket, Camshaft Bearing Cap Oil Hole	2
13552-0T020	Same	Gasket, Timing Chain Tensioner	1

### Required Tools & Equipment

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
TIS Techstream* NOTE: Software version 4.20.018 or later is required.	ADE	TSPKG1	1

#### NOTE

Additional TIS Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.

SPECIAL SERVICE TOOLS (SST'S)	PART NUMBER	QTY
Torque Wrench Adapter*	<a href="#">09249-63010-01</a>	1

#### NOTE

Additional SSTs may be ordered by calling 1-800-933-8335.

REQUIRED MATERIALS	QTY
FIPG Sealant: P/N 08826-00080, or Equivalent	As Needed

\* Essential SST.

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### Repair Procedure

Confirm the customer complaint. See attached video for an example of the engine knock/rattle noise: [Engine Knock/Rattle Noise Example](#)

1. If a knock/rattle noise is present, replace the camshaft timing gear assembly.

#### **HINT**

This repair is simplified by performing the following:

- DO NOT remove the engine — complete the repair in the vehicle.
- Set No. 1 cylinder to TDC/compression.
- DO NOT remove the timing cover or camshaft housing sub-assembly.
- Loosen and remove all camshaft bearing caps. Remove the No. 1 camshaft bearing cap and No. 2 timing chain vibration damper as an assembly — DO NOT separate.
- Remove the intake camshaft with the camshaft gear intact and tie the timing chain to keep tension on the crankshaft timing gear, avoiding separation.
- Ensure the new camshaft gear is unlocked (advanced position) prior to installation and lock the gear (fully retarded position) AFTER tightening to proper torque.

Refer to the Technical Information System (TIS), applicable model and model year Repair Manual:

2009 Corolla:

- *Engine/Hybrid System – Engine Mechanical – “2ZR-FE Engine Mechanical: Timing Gear: [Removal](#) / [Installation](#)”*
- *Engine/Hybrid System – Engine Mechanical – “2ZR-FE Engine Mechanical: Engine Unit: [Disassembly](#) / [Reassembly](#)”*

2010 Corolla:

- *Engine/Hybrid System – Engine Mechanical – “2ZR-FE Engine Mechanical: Timing Gear: [Removal](#) / [Installation](#)”*
- *Engine/Hybrid System – Engine Mechanical – “2ZR-FE Engine Mechanical: Engine Unit: [Disassembly](#) / [Reassembly](#)”*

2009 Matrix:

- *Engine/Hybrid System – Engine Mechanical – “2ZR-FE Engine Mechanical: Timing Gear: [Removal](#) / [Installation](#)”*
- *Engine/Hybrid System – Engine Mechanical – “2ZR-FE Engine Mechanical: Engine Unit: [Disassembly](#) / [Reassembly](#)”*

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### Repair Procedure (Continued)

2010 Matrix:

- *Engine/Hybrid System – Engine Mechanical – “2ZR-FE Engine Mechanical: Timing Gear: [Removal](#) / [Installation](#)”*
- *Engine/Hybrid System – Engine Mechanical – “2ZR-FE Engine Mechanical: Engine Unit: [Disassembly](#) / [Reassembly](#)”*

2. Confirm the repair.