

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*	09249-63010-01	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.