


# 2GR-FE, 2GR-FSE, 3GR-FSE, 4GR-FSE Valve Timing Procedure

**Service Category** Engine/Hybrid System

**Section** Engine Mechanical

**Market** USA

Lexus Supports  
ASE Certification 

## Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2007 – 2009	ES350	
2006	GS300	
2007 – 2009	GS350	
2007 – 2009	GS450H	
2006 – 2009	IS250	
2006 – 2009	IS350	
2007 – 2009	RX350	

### TSB REVISION NOTICE

- **September 11, 2008 Rev1:**
  - **Figures 5 and 6 have been updated.**

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

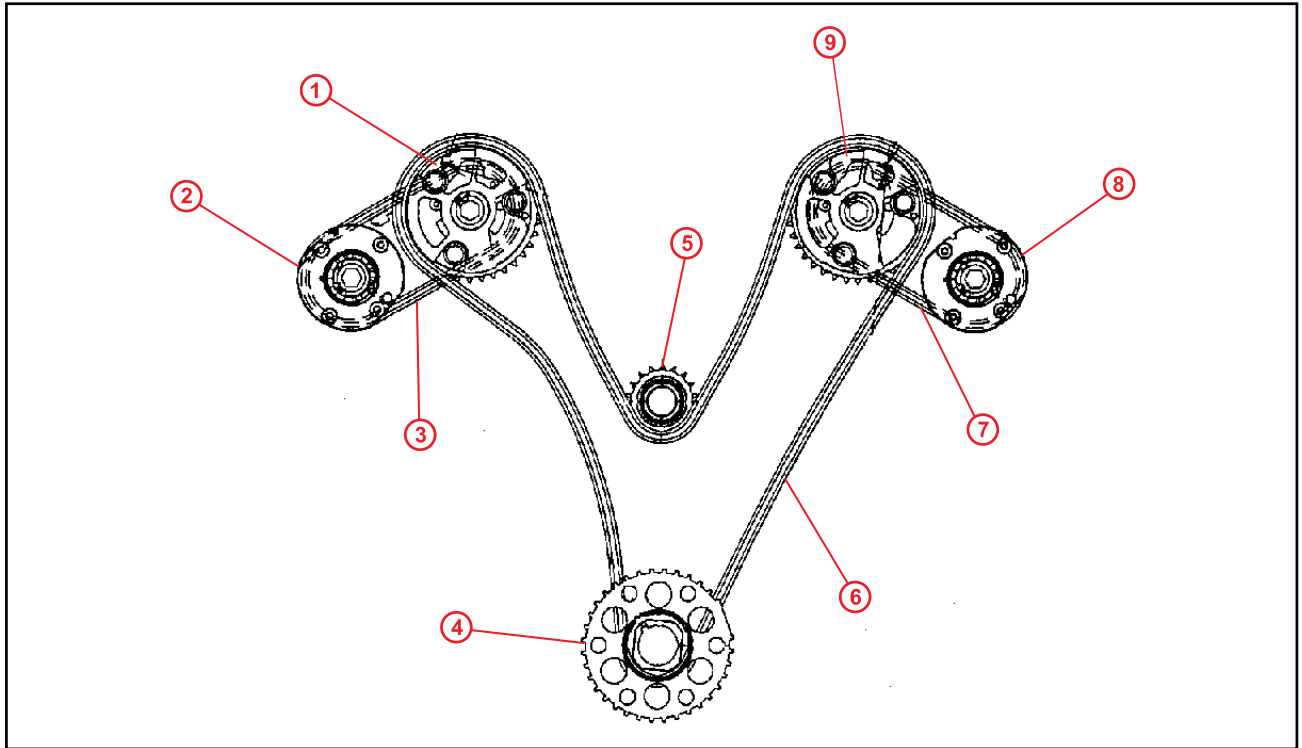
## Introduction

This service bulletin provides information regarding valve timing inspection and service guidelines for vehicles equipped with 2GR-FE, 2GR-FSE, 3GR-FSE, and 4GR-FSE engines.

## 2GR-FE, 2GR-FSE, 3GR-FSE, 4GR-FSE Valve Timing Procedure

### Introduction (Continued)

Figure 1.



1	RH Bank Intake Camshaft Timing Gear
2	RH Bank Exhaust Camshaft Timing Gear
3	RH Bank No. 2 Timing Chain
4	Crankshaft
5	Idler Gear

6	Timing Chain
7	LH Bank No. 2 Timing Chain
8	LH Bank Exhaust Camshaft Timing Gear
9	LH Bank Intake Camshaft Timing Gear

### Warranty Information

OP CODE	DESCRIPTION	TIME	OFP	T1	T2
N/A	Not Applicable to Warranty	-	-	-	-

## 2GR-FE, 2GR-FSE, 3GR-FSE, 4GR-FSE Valve Timing Procedure

### Inspection

1. Set the No. 1 cylinder to TDC/compression.
  - A. Set the timing mark to 0° on the timing chain cover by rotating the crankshaft clockwise.
  - B. Verify the timing marks on the camshaft timing gears are in general alignment with the timing marks of the camshaft bearing cap:

TIMING MARK IDENTIFICATION		
CYLINDER BANK	INTAKE GEAR MARK	EXHAUST GEAR MARK
RH Bank (Bank 1)	Small Mark	Single Line
LH Bank (Bank 2)	Large Mark	Double Line

**HINT**

When the engine is correctly timed, the timing marks will NOT perfectly align.

Figure 2.

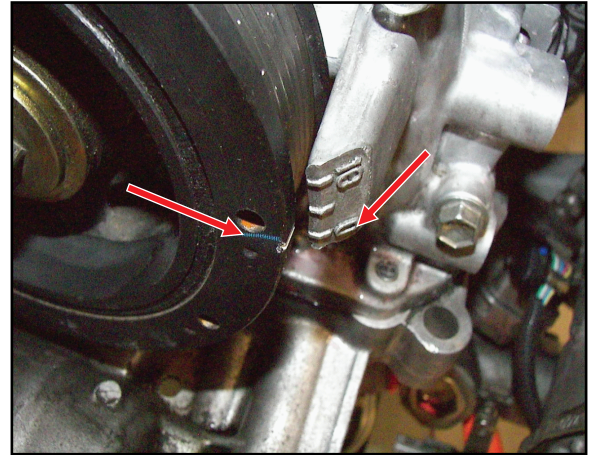
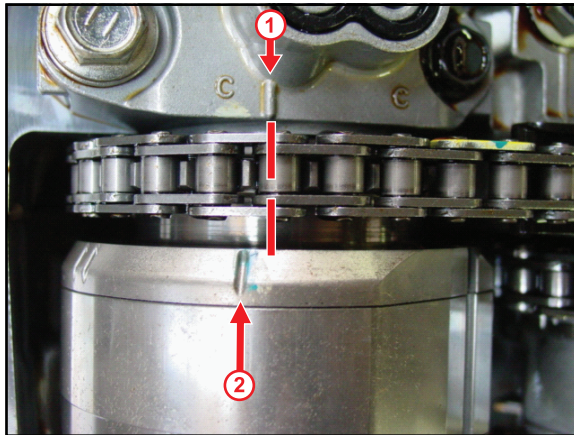
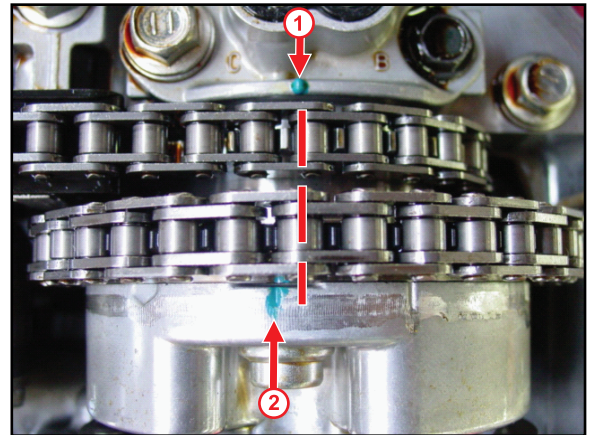


Figure 3. RH Bank Exhaust Camshaft Timing Gear



1	Bearing Cap Timing Mark
2	Gear Timing Mark

Figure 4. RH Bank Intake Camshaft Timing Gear

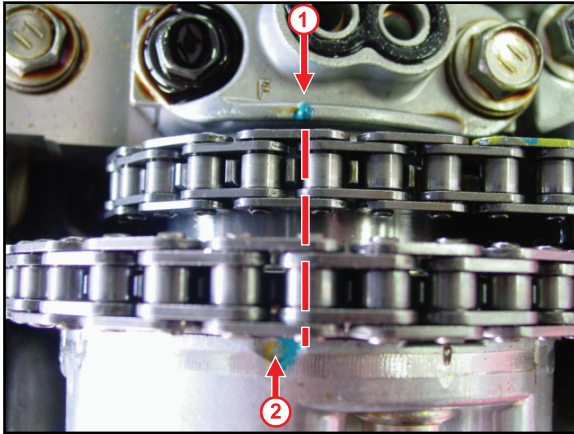


1	Bearing Cap Timing Mark
2	Gear Timing Mark

## 2GR-FE, 2GR-FSE, 3GR-FSE, 4GR-FSE Valve Timing Procedure

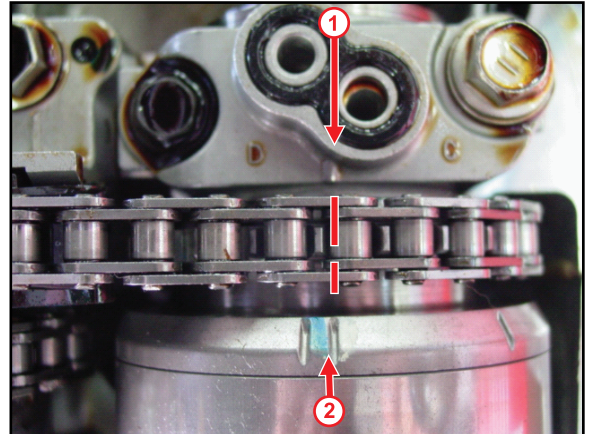
### Inspection (Continued)

Figure 5. LH Bank Intake Camshaft Timing Gear



1	Bearing Cap Timing Mark
2	Gear Timing Mark

Figure 6. LH Bank Exhaust Camshaft Timing Gear



1	Bearing Cap Timing Mark
2	Gear Timing Mark

**HINT**

If the timing marks appear vastly out of alignment, turn the crankshaft one revolution (360°) clockwise and note the position of the timing marks.

### Component Removal Guidelines

1. If engine disassembly is required that involves removing the camshafts or timing gears, set the #1 cylinder to TDC compression, wipe away any oil, and mark the following items in relation to each other prior to disassembly:
  - Timing gears
  - Timing chain
  - Timing chain No. 2

**NOTE**

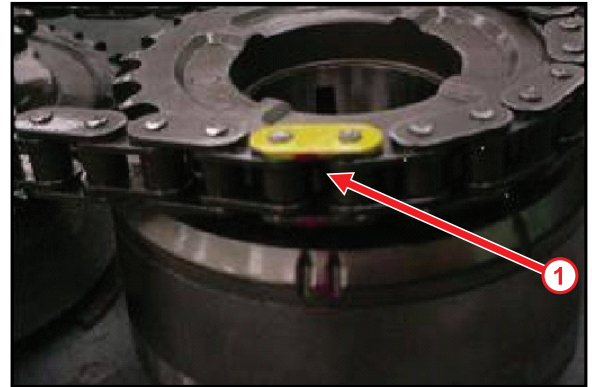
This relationship **MUST** be maintained. The intake gear is timed in relation to the crankshaft via the timing chain; the exhaust gear is timed in relation to the intake gear via the No. 2 timing chain.

## 2GR-FE, 2GR-FSE, 3GR-FSE, 4GR-FSE Valve Timing Procedure

### Component Removal Guidelines (Continued)

2. If NEW camshaft timing gears or the No. 2 timing chain are being installed, the two yellow links on the No. 2 timing chain can be used to ensure correct relationship between the intake timing gear and the exhaust timing gear.

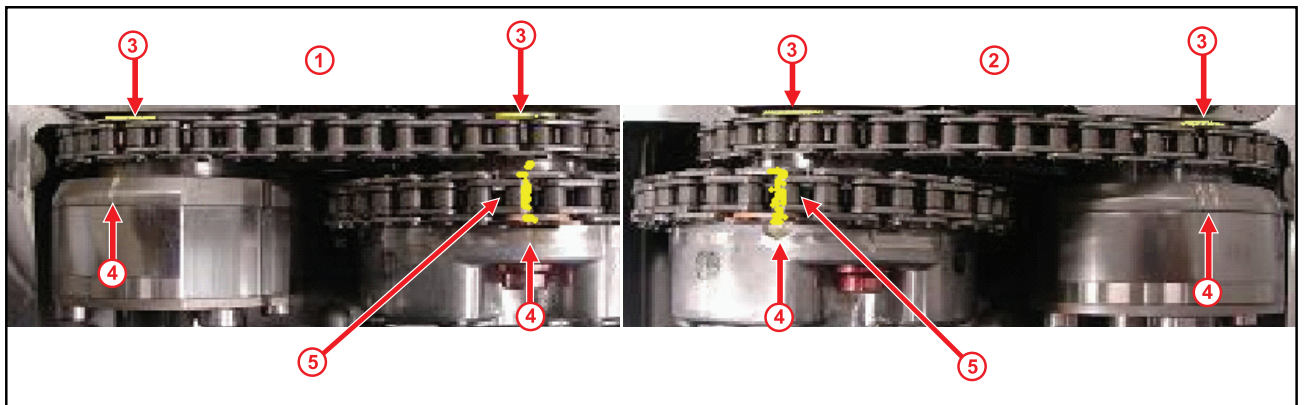
Figure 7.



1	Yellow Link
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- A. Align the paint mark on the timing chain with the intake gear timing mark (to ensure the intake gear is correctly timed to the crankshaft).

Figure 8. RH Bank and LH Bank



1	RH Bank
2	LH Bank
3	Yellow Link

4	Gear Timing Mark
5	Timing Chain Paint Mark

- B. Align the two yellow links on the No. 2 timing chain to the timing marks on the new camshaft gears (to ensure the exhaust gear is correctly timed to the intake gear).