



Technical Service BULLETIN

May 5, 2003

Title:

M.I.L. "ON" DTC P1349 - VVTi ACTUATOR

Models:

'02 Camry & Solara, '01 – '02 Highlander
& RAV4

ENGINE
EG007-03

Introduction Under certain conditions customers may experience a MIL "ON" condition with DTC P1349, indicating a variable valve timing (VVTi) malfunction. In some cases, the cause of this DTC may be the VVTi actuator. Use the procedures in this bulletin to verify the operation of the actuator.

- Applicable Vehicles**
- **2002** model year **Camry** and **Solara** vehicles produced **BEFORE** the Production Change Effective VINs shown below.
 - **2001 – 2002** model year **Highlander** and **RAV4** vehicles produced **BEFORE** the Production Change Effective VINs shown below.

**Production
Change
Information**

MODEL	ENGINE	PLANT	PRODUCTION CHANGE EFFECTIVE VIN
Highlander	2AZ-FE	Kyushu	JTEGD21A120024229
			JTEHD21A920011622
RAV4	1AZ-FE	Tahara	JTEGH20V520056450
			JTEHH20V720147160
		Shokki	JTEHH20V326031466
Solara	2AZ-FE	TMMC	2T1C#2#P#2C007550
Camry		Tsutsumi	JTDBE3#K120028970
		TMMK Line 1	4T1BE3#K#2U037000
		TMMK Line 2	4T1BE3#K#2U542000

**Parts
Information**

PREVIOUS PART NUMBER	CURRENT PART NUMBER	PART NAME	QTY
13050-28011	Same	Gear Assembly, Camshaft	1
13552-0H010	Same	Gasket (For Chain Tensioner)	1

**Warranty
Information**

OP CODE	DESCRIPTION	MODEL	TIME	OFF	T1	T2
140021	Camshaft Timing Sprocket	Camry & Solara	1.9	13050-28011	99	19
		Highlander	1.8			
		RAV4	4.0			

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 correction of a problem based upon a customer's specific complaint.



**Required
Tools &
Material**

TOOLS & MATERIALS	PART NUMBER	QUANTITY
Tube of FIPG Sealant (or equivalent)	08826-00100	1

**Required
SSTs**

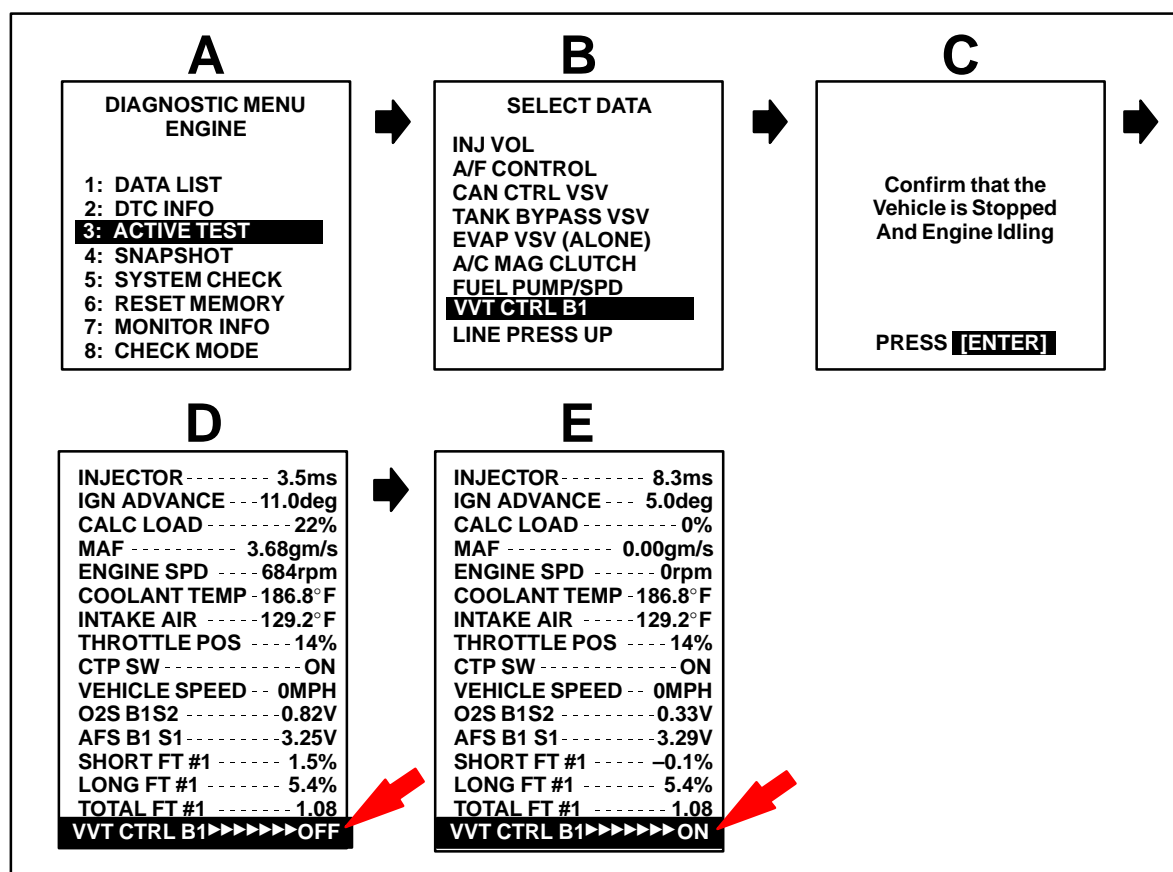
SPECIAL SERVICE TOOLS	PART NUMBER	QUANTITY
Toyota Diagnostic Tester Kit* 	01001271	1
12 Megabyte Diagnostic Tester Program Card with version 10.0a Software (or later)* 	01002593-005	1

* Essential SSTs.

NOTE: Additional Diagnostic Tester Kits, Program Cards or SSTs may be ordered by calling SPX/OTC at 1-800-933-8335.

**Repair
Procedure**

1. Make sure the vehicle is at rest, in "PARK" with the engine idling.
2. Referring to the screen flow below, connect the Toyota Diagnostic Tester to the vehicle and select the VVT Control Bank One Active Test (VVT CTRL B1) from the Active Test Menu.



3. Using the right arrow key, toggle the VVTi actuator "ON."

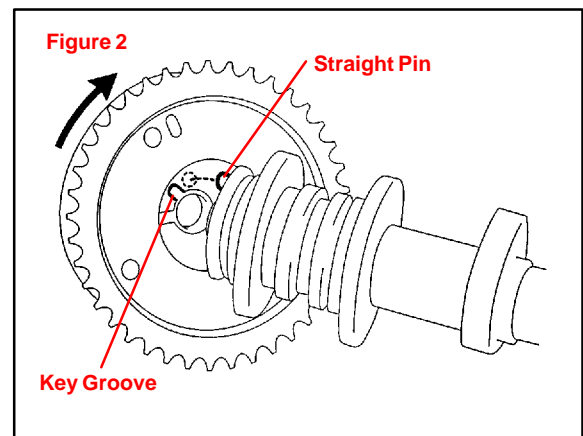
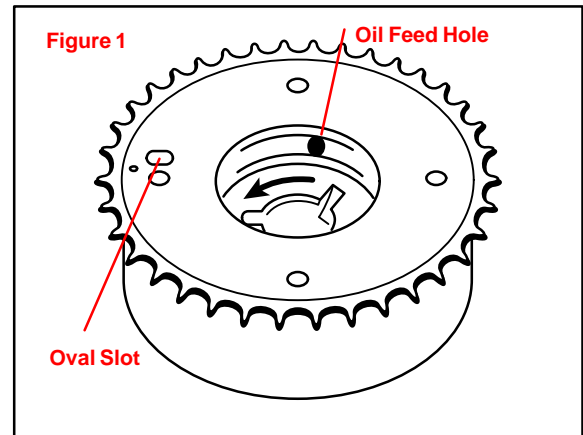
**Repair
Procedure**
(Continued)

4. If at this point the vehicle **does not** run rough and/or stalls when the active test is performed, proceed with Repair Manual P1349 VVTi Fault Isolation Procedure (FIP).

If the vehicle **does** stall and/or run rough, this indicates that the VVTi control system is operating. Proceed to replace the VVTi actuator following the repair procedures listed on the Technical Information System (TIS): Engine Mechanical Section, Camshaft, Replacement.

Service Tip Camshaft Timing Gear Assembly Installation

- A. The camshaft timing gear should come in the unlocked position from the factory. If it is difficult to install the camshaft timing gear, the lock pin may be engaged. To disengage the lock pin, apply and hold approximately 20 psi of air pressure at the oil feed hole located 90 degrees clockwise of the oval slot. (See Figure 1.) Once the pin has released, turn the interior assembly counterclockwise. (See black arrow in Figure 1.)
- B. Put the camshaft timing gear assembly and the camshaft together with the straight pin off the key groove.
- C. Turn the camshaft timing gear assembly (as shown in Figure 2) while pushing it lightly against the camshaft. Push further at the position where the pin fits into the groove.



NOTE:

Be sure not to turn the camshaft timing gear to the retard angle side (in the clockwise direction).

- D. Check that there is no clearance between the end of the camshaft and the camshaft timing gear.
- E. Tighten the camshaft bolt with the camshaft timing gear fixed.

Torque: 54 N•m (551 kgf•cm, 40 ft•lbf)

- F. Check that the camshaft timing gear assembly can move to either side and is not locked.