TOYOTA SERVICE BULLETIN

Group: 04 No.: 03 Date: Mar, 17

Model: RAV4

Subject: Corrections to Repair Manual RM01N3E

Please ensure these pages are distributed to all relevant staff for their information; and a copy made available for future reference, with the above repair manual.

Section	Title	Paragraph
2GR-FE ENGINE CONTROL SYSTEM	SFI SYSTEM	DIAGNOSTIC TROUBLE CODE CHART
		P0014, P0015, P0024, P0025

The revised pages listed above are attached.

(The corrected parts are indicated by arrows.)

This bulletin does not cause the Flat Rate Manual to be changed

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Tester Display	Test Part	Control Range	Diagnostic Note
Control the VVT Exhaust Linear (Bank 1)	Control VVT (bank 1)	-128 to 127% This valve added to present OCV control duty 100%: Maximum advance -100%: Maximum retard	-
Control the VVT Exhaust Linear (Bank 2)	Control VVT (bank 2)	Between -128 and 127%	Same as above
Activate the VSV for AICV	AICV	ON/OFF	-
Control the Cylinder #1 Fuel Cut	Cylinder #1 injector fuel cut	ON/OFF	Test possible during vehicle stopping and engine idling
Control the Cylinder #2 Fuel Cut	Cylinder #2 injector fuel cut	ON/OFF	Same as above
Control the Cylinder #3 Fuel Cut	Cylinder #3 injector fuel cut	ON/OFF	Same as above
Control the Cylinder #4 Fuel Cut	Cylinder #4 injector fuel cut	ON/OFF	Same as above
Control the Cylinder #5 Fuel Cut	Cylinder #5 injector fuel cut	ON/OFF	Same as above
Control the Cylinder #6 Fuel Cut	Cylinder #6 injector fuel cut	ON/OFF	Same as above
Control the Voltage of Alternator	Request output voltage of generator regulator during forced activation	-12.5 to 14.8	Test possible during vehicle stopping and engine idling

ES

DIAGNOSTIC TROUBLE CODE CHART

HINT:
Parameters listed in the chart may not be exactly the same as your readings due to the type of instrument or other factors. If a trouble code is displayed during the DTC check, inspect the trouble areas listed for that code. For details of the code, refer to the "See page" below.
*: MIL flashes when a catalyst damaged misfire is detected.

ENGINE CONTROL SYSTEM:

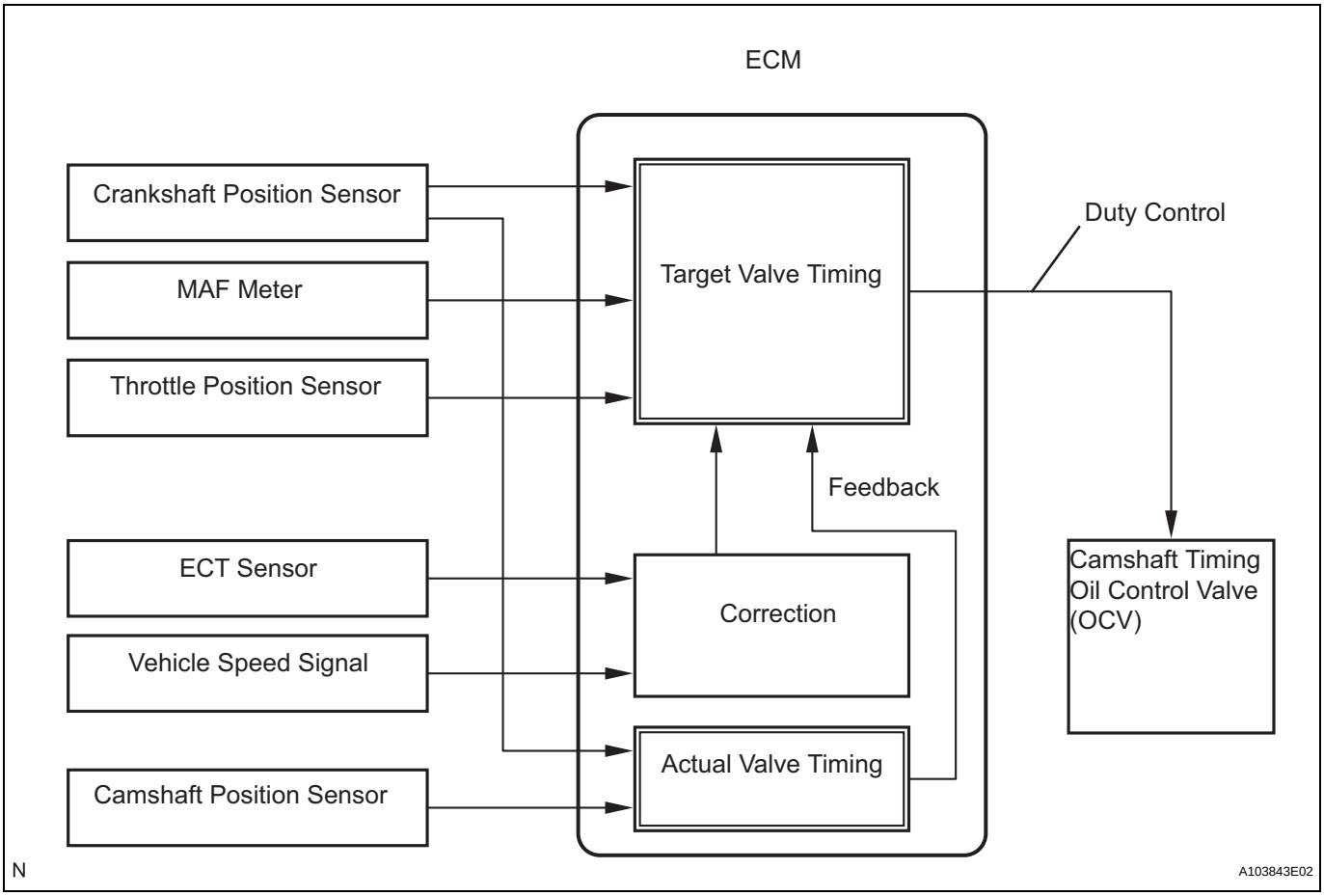
DTC Code	Detection Item	Trouble Area	MIL	Memory	See page
P0010	Camshaft Position "A" Actuator Circuit (Bank 1)	1. Open or short in OCV for intake camshaft (bank 1) circuit 2. OCV for intake camshaft (bank 1) 3. ECM	Comes on	DTC stored	ES-54
P0011	Camshaft Position "A" - Timing Over-Advanced or System Performance (Bank 1)	1. Valve timing 2. Oil control valve (OCV) for intake camshaft (bank 1) 3. OCV filter (bank 1) 4. Intake camshaft (bank 1) timing gear assembly 5. ECM	Comes on	DTC stored	ES-58
P0012	Camshaft Position "A" - Timing Over-Retarded (Bank 1)	1. Valve timing 2. OCV for intake camshaft (bank 1) 3. OCV filter (bank 1) 4. Intake camshaft (bank 1) timing gear assembly 5. ECM	Comes on	DTC stored	ES-58
P0013	Camshaft Position "B" Actuator Circuit / Open (Bank 1)	1. Open or short in OCV for exhaust camshaft (bank 1) circuit 2. OCV for exhaust camshaft (bank 1) 3. ECM	Comes on	DTC stored	ES-64
P0014	Camshaft Position "B" - Timing Over-Advanced or System Performance (Bank 1) [Corrected]	1. Valve timing 2. Oil control valve (OCV) for exhaust camshaft (bank 1) 3. OCV filter (bank 1) 4. Exhaust camshaft (bank 1) timing gear assembly 5. ECM	Comes on	DTC stored	ES-68

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DTC Code	Detection Item	Trouble Area	MIL	Memory	See page
P0015	Camshaft Position "B" - Timing Over-Retarded (Bank 1) [Corrected]	1. Valve timing 2. OCV for exhaust camshaft (bank 1) 3. OCV filter (bank 1) 4. Exhaust camshaft (bank 1) timing gear assembly 5. ECM	Comes on	DTC stored	ES-68
P0016	Crankshaft Position - Camshaft Position Correlation (Bank 1 Sensor A)	1. Valve timing 2. Intake camshaft OCV 3. Oil control valve filter 4. Intake camshaft timing gear 5. ECM	Comes on	DTC stored	ES-75
P0017	Crankshaft Position - Camshaft Position Correlation (Bank 1 Sensor B)	1. Valve timing 2. Intake camshaft OCV 3. Oil control valve filter 4. Intake camshaft timing gear 5. ECM	Comes on	DTC stored	ES-75
P0018	Crankshaft Position - Camshaft Position Correlation (Bank 2 Sensor A)	1. Valve timing 2. Exhaust camshaft OCV 3. Oil control valve filter 4. Exhaust camshaft timing gear 5. ECM	Comes on	DTC stored	ES-75
P0019	Crankshaft Position - Camshaft Position Correlation (Bank 2 Sensor B)	1. Valve timing 2. Exhaust camshaft OCV 3. Oil control valve filter 4. Exhaust camshaft timing gear 5. ECM	Comes on	DTC stored	ES-75
P0020	Camshaft Position "A" Actuator Circuit (Bank 2)	1. Open or short in OCV for intake camshaft (bank 2) circuit 2. OCV for intake camshaft (bank 2) 3. ECM	Comes on	DTC stored	ES-54
P0021	Camshaft Position "A" - Timing Over-Advanced or System Performance (Bank 2)	1. Valve timing 2. Oil control valve (OCV) for intake camshaft (bank 2) 3. OCV filter (bank 2) 4. Intake camshaft (bank 2) timing gear assembly 5. ECM	Comes on	DTC stored	ES-58
P0022	Camshaft Position "A" - Timing Over-Retarded (Bank 2)	1. Valve timing 2. OCV for intake camshaft (bank 2) 3. OCV filter (bank 2) 4. Intake camshaft (bank 2) timing gear assembly 5. ECM	Comes on	DTC stored	ES-58
P0023	Camshaft Position "B" Actuator Circuit / Open (Bank 2)	1. Open or short in OCV for exhaust camshaft (bank 2) circuit 2. OCV for exhaust camshaft (bank 2) 3. ECM	Comes on	DTC stored	ES-64
P0024	Camshaft Position "B" - Timing Over-Advanced or System Performance (Bank 2) [Corrected]	1. Valve timing 2. Oil control valve (OCV) for exhaust camshaft (bank 2) 3. OCV filter (bank 2) 4. Exhaust camshaft (bank 2) timing gear assembly 5. ECM	Comes on	DTC stored	ES-68
P0025	Camshaft Position "B" - Timing Over-Retarded (Bank 2) [Corrected]	1. Valve timing 2. OCV for exhaust camshaft (bank 2) 3. OCV filter (bank 2) 4. Exhaust camshaft (bank 2) timing gear assembly 5. ECM	Comes on	DTC stored	ES-68
P0031	Oxygen (A/F) Sensor Heater Control Circuit Low (Bank 1 Sensor 1)	1. Open in A/F sensor heater (bank 1 sensor 1) circuit 2. A/F sensor heater (bank 1 sensor 1) 3. A/F relay 4. ECM	Comes on	DTC stored	ES-80

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DTC No.	DTC Detection Condition	Trouble Area
P0014 P0024	Advanced cam timing: With engine warmed up and engine speed of between 500 rpm and 4000 rpm, all conditions (a), (b) and (c) are met (2 trip detection logic): (a) Difference between target and actual exhaust valve timing is more than 5°CA (Crankshaft Angle) for 4.5 seconds (b) Current exhaust valve timing is fixed (timing changes less than 5°CA in 5 seconds) (c) Variations in VVT controller timing are more than 19°CA of maximum delayed timing (advanced)	• Valve timing • Oil control valve (OCV) for exhaust camshaft (bank 1, 2) • OCV filter (bank 1, 2) • Exhaust camshaft (bank 1, 2) timing gear assembly • ECM [Corrected]
P0015 P0025	Retarded cam timing: With engine warmed up and engine speed of between 500 rpm and 4000 rpm, all conditions (a), (b) and (c) are met (1 trip detection logic): (a) Difference between target and actual exhaust valve timing is more than 5°CA (Crankshaft Angle) for 4.5 seconds (b) Current exhaust valve timing is fixed (timing changes less than 5°CA in 5 seconds) (c) Variations in VVT controller timing are more than 19°CA or less of maximum delayed timing (retarded)	• Valve timing • OCV for exhaust camshaft (bank 1, 2) • OCV filter (bank 1, 2) • Exhaust camshaft (bank 1, 2) timing gear assembly • ECM [Corrected]

WIRING DIAGRAM

Refer to DTC P0013 (See page ES-65).

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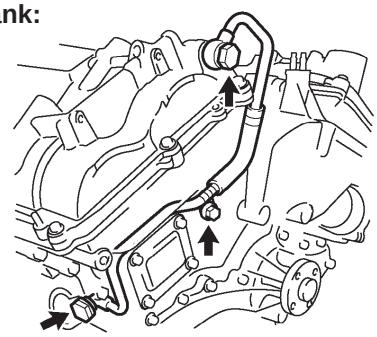
NG → **REPLACE CAMSHAFT TIMING OIL CONTROL VALVE ASSEMBLY (FOR EXHAUST CAMSHAFT) (See page)**

OK

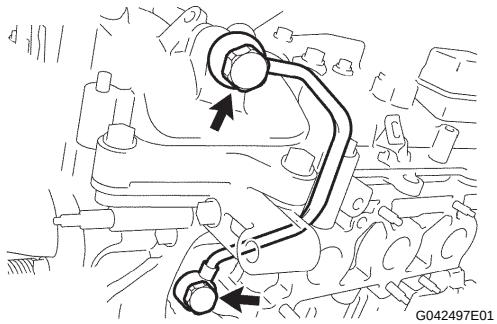
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6 INSPECT OIL CONTROL VALVE FILTER AND PIPE

RH Bank:



LH Bank:



(a) Remove the oil pipe No. 1 or No. 2.
(b) Remove the oil control valve filter.
(c) Check that the filter and pipe are not clogged.
OK:
Filter is not clogged.

NG → **REPLACE OIL CONTROL VALVE FILTER OR PIPE**

OK

7 REPLACE EXHAUST CAMSHAFT TIMING GEAR ASSEMBLY

[Corrected]

NEXT

8 CHECK WHETHER DTC OUTPUT RECURS

(a) Clear the DTCs.
  (1) Operate the intelligent tester, or disconnect the EFI and ETCS fuses for more than 60 seconds to erase the codes.
(b) Start the engine and warm up the engine.
(c) Switch the ECM from normal mode to check mode using the intelligent tester (See page ES-31).
(d) Drive the vehicle for more than 10 minutes or more.
(e) Read the output DTCs using the intelligent tester.
OK:
No DTC output.

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