

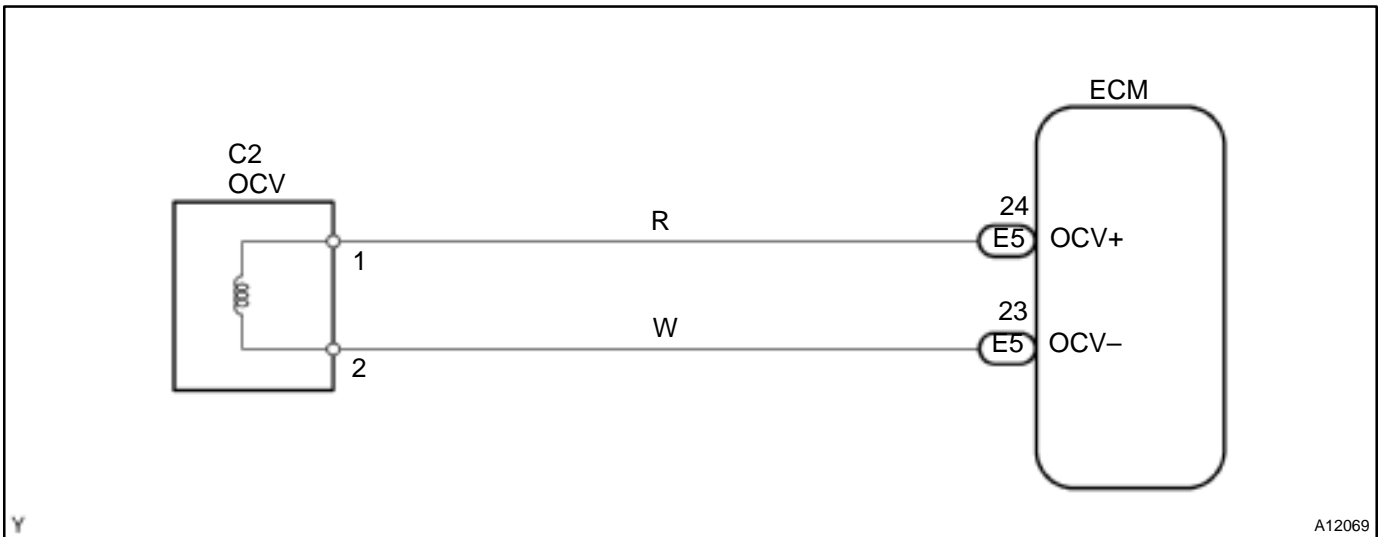
DTC	P1349	VVT System Malfunction (Bank 1)
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CIRCUIT DESCRIPTION

VVT system controls the intake valve timing properly in response to driving condition. ECM controls OCV (Oil Control Valve) to make the intake valve timing properly, and, oil pressure controlled with OCV is supplied to the VVT controller, and then, VVT controller changes relative position between the camshaft and the crankshaft.

DTC No.	DTC Detection Condition	Trouble Area
P1349	Condition (a) or (b) continues for after the engine is warmed up and engine speed at 400 – 4,000 rpm : (a) Valve timing does not change from of current valve timing (b) Current valve timing is fixed.	<ul style="list-style-type: none"> • Valve timing • OCV • VVT controller assembly • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTC P1349 is displayed, check VVT system circuit.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

TOYOTA hand-held tester:

1	Check valve timing (See page EM-13).
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NG	Adjust valve timing.
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OK

2 Check operation of OCV.

PREPARATION:

- Start the engine and warm it up.
- Connect the TOYOTA hand-held tester and select VVT from ACTIVE TEST menu.

CHECK:

Check the engine speed when operating the OCV by the TOYOTA hand-held tester.

OK:

OCV is OFF: Normal engine speed

OCV is ON: Rough idle or engine stall

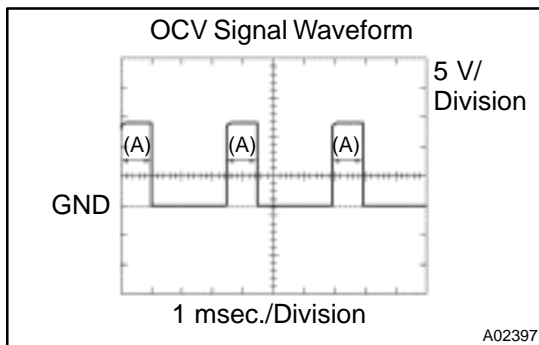
OK

VVT system is OK.*

*: DTC P1349 is also output after the foreign object is caught in some part of the system in the engine oil and the system returns to normal in a short time. As ECM controls so that foreign objects are ejected, there is no problem about VVT. There is also no problem since the oil filter should get the foreign object in the engine oil.

NG

3 Check voltage between terminals OCV+ and OCV- of ECM connector.



Reference: INSPECTION USING OSCILLOSCOPE

Turn the ignition switch ON, check waveform between terminals OCV+ and OCV- of the ECM connector.

HINT:

- The correct waveform is as shown.
- The waveform frequency (A) is lengthened as the engine speed becomes higher.

NG

Check and replace ECM (See page [IN-28](#)).

OK

4 Check VVT controller assembly (See page [EM-33](#)).

NG

Replace VVT controller assembly, and then go to step NO TAG.

OK

5 Check OCV (See page SF-43).

NG Replace OCV, and then go to step NO TAG.

OK

6 Check blockage of OCV, OCV valve and oil pipe No. 1.

NG Repair or replace.

OK

7 Check whether or not DTC P1349 is stored.

PREPARATION:

- (a) Clear the DTC (See page DI-3).
- (b) Perform simulation test.

CHECK:

Check whether or not DTC P1349 is stored (See page DI-3).

OK:

DTC P1349 is not stored.

OK VVT system is OK.*

*: DTC P1349 is also output after the foreign object is caught in some part of the system in the engine oil and the system returns to normal in a short time. As ECM controls so that foreign objects are ejected, there is no problem about VVT. There is also no problem since the oil filter should get the foreign object in the engine oil.

NG

Check and replace ECM (See page IN-28).

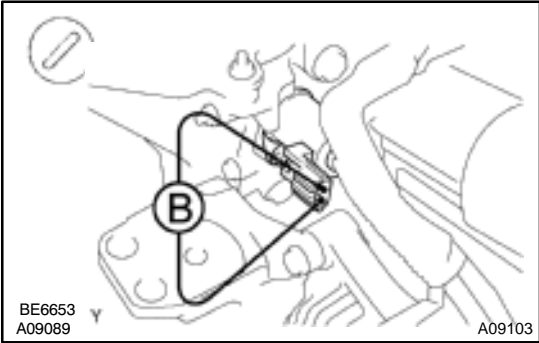
OBD II scan tool (excluding TOYOTA hand-held tester):

1 Check valve timing (See page EM-13).

NG Repair valve timing.

OK

2 Check operation of OCV.



PREPARATION:

Start the engine.

CHECK:

- (a) Check the engine speed when disconnecting the OCV connector.
- (b) Check the engine speed when applying battery positive voltage between terminals of OCV.

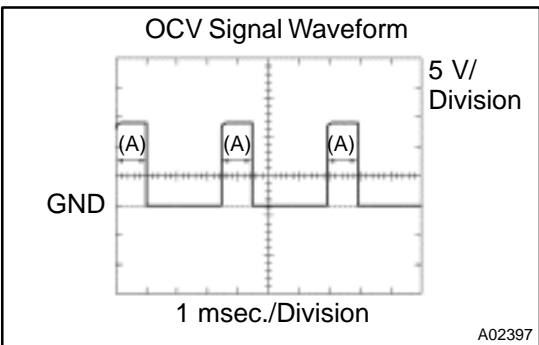
RESULT:

Result	Check (a)	Check (b)
1	Normal engine speed	Rough idle or engine stall
2	Except 1	

2 Go to step NO TAG.

1

3 Check voltage between terminals OCV+ and OCV- of ECM connector.



Reference: INSPECTION USING OSCILLOSCOPE

Turn the ignition switch ON, check waveform between terminals OCV+ and OCV- of the ECM connector.

HINT:

- The correct waveform is as shown.
- The waveform frequency (A) is lengthened as the engine speed becomes higher.

OK VVT system is OK.*

*: DTC P1349 is also output after the foreign object is caught in some part of the system in the engine oil and the system returns to normal in a short time. As ECM controls so that foreign objects are ejected, there is no problem about VVT. There is also no problem since the oil filter should get the foreign object in the engine oil.

NG

Check and replace ECM (See page [IN-28](#)).

4 Check VVT controller assembly (See page [EM-33](#)).

NG

Replace VVT controller assembly, and then go to step 5.

OK

5 Check OCV (See page [SF-43](#)).

NG

Replace OCV, and then go to step 6.

OK

6 Check blockage of OCV, OCV and oil pipe No. 1.

NG

Repair or replace.

OK

7 Check whether or not DTC P1349 is stored.

PREPARATION:

- (a) Clear the DTC (See page [DI-3](#)).
- (b) Perform simulation test.

CHECK:

Check whether or not DTC P1349 is stored (See page [DI-3](#)).

OK:

DTC P1349 is not stored.

OK

VVT system is OK.*

*: DTC P1349 is also output after the foreign object is caught in some part of the system in the engine oil and the system returns to normal in a short time. As ECM controls so that foreign objects are ejected, there is no problem about VVT. There is also no problem since the oil filter should get the foreign object in the engine oil.

The symbol consists of a rectangular box with a downward-pointing arrowhead at the bottom, containing the letters "NG".

NG

Check and replace ECM (See page [IN-28](#)).