

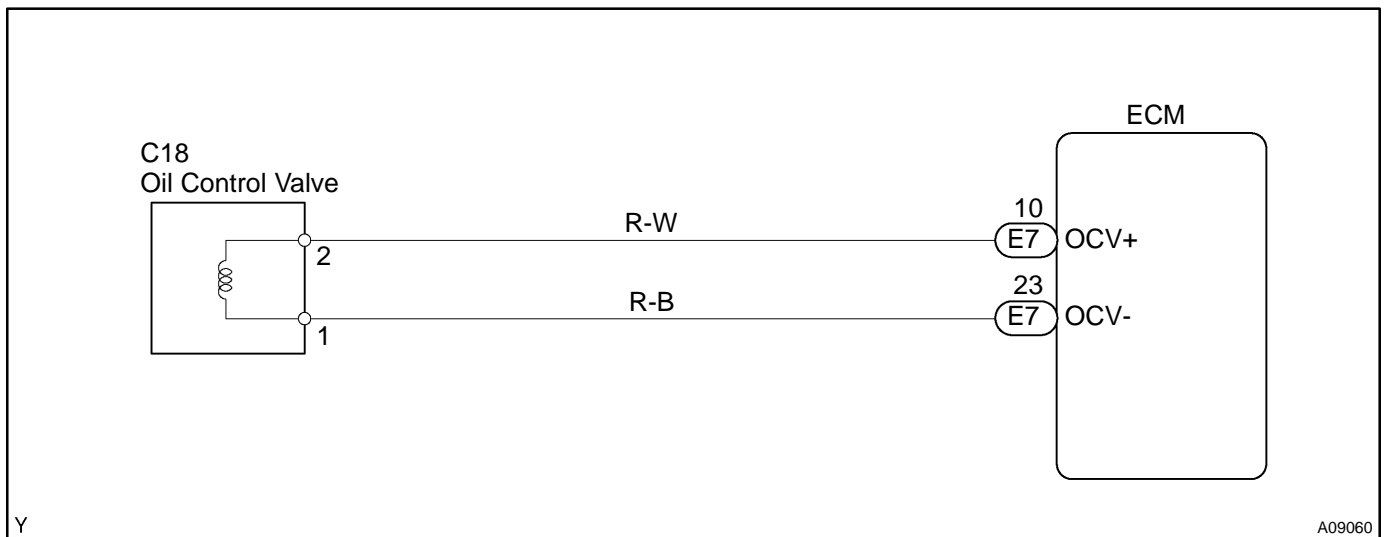
DTC	P1349	VVT System Malfunction
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CIRCUIT DESCRIPTION

The VVT system constantly adjusts intake valve timing based upon operating conditions. The ECM controls the Oil Control Valve (OCV) with a variable duty cycle. The Oil Control Valve then supplies oil to the advance or retard side of the VVT Controller. The oil applied to the VVT Controller will cause the intake cam to advance or retard depending on the position of the Oil Control Valve. The ECM verifies that the desired camshaft angle has been achieved by monitoring the camshaft position sensor.

DTC No.	DTC Detecting 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 • Oil control valve • VVT controller assembly • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTC P1349 is displayed, check left bank 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 warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

TOYOTA hand-held tester

1	Check valve timing (See page EM-20).
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NG	Repair valve timing.
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OK

2	Check operation of OCV.
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PREPARATION:

- (a) Start the engine and warmed it up.
- (b) Connect the TOYOTA hand-held tester and select VVT from ACTIVE TEST menu.

CHECK:

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

OK:

OCV is OFF: Normal engine speed

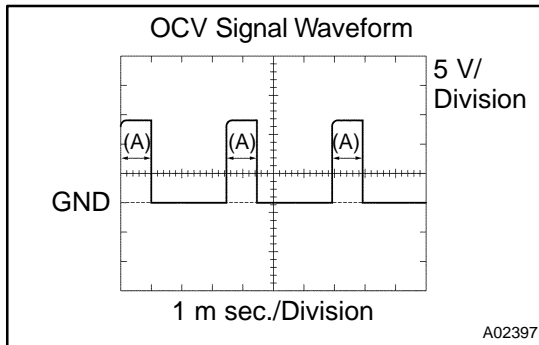
OCV is ON: Rough idle or engine stall

OK	VVT system is OK.*
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*: 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-29](#)).

OK

4 Check VVT controller assembly (See page [EM-32](#)).

NG

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

OK

5 Check oil control valve (See page [SF-45](#)).

NG

Replace oil control valve, and then go to step 6.

OK

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

NG

Repair or replace.

OK

7	Check whether or not DTC P1349 is stored.
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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.*
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NG

Replace ECM (See page IN-29).

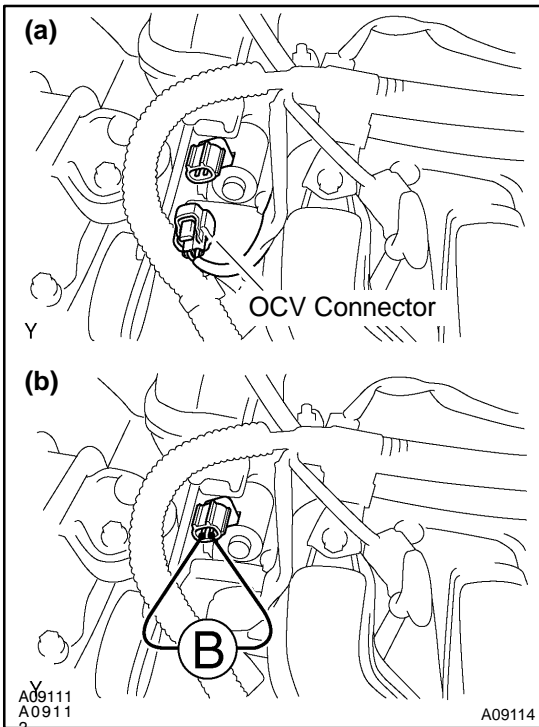
OBD II scan tool (excluding TOYOTA hand-held tester)

1	Check valve timing (See page EM-20).
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NG	Repair valve timing.
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OK

2	Check operation of OCV.
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PREPARATION:

Start the engine.

CHECK:

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

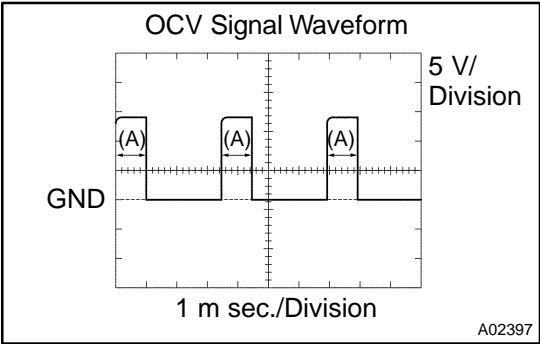
RESULT:

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

1

2
Go to step 4.

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-29).

4 Check VVT controller assembly (See page EM-32).

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

OK

5 Check oil control valve (See page SF-45).

NG → **Replace oil control valve, and then go to step 6.**

OK

6	Check blockage of oil control valve, oil check valve and oil pipe No.1.
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NG	Repair or replace.
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OK

7	Check whether or not DTC P1349 is stored.
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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.*
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*: 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-29).
