

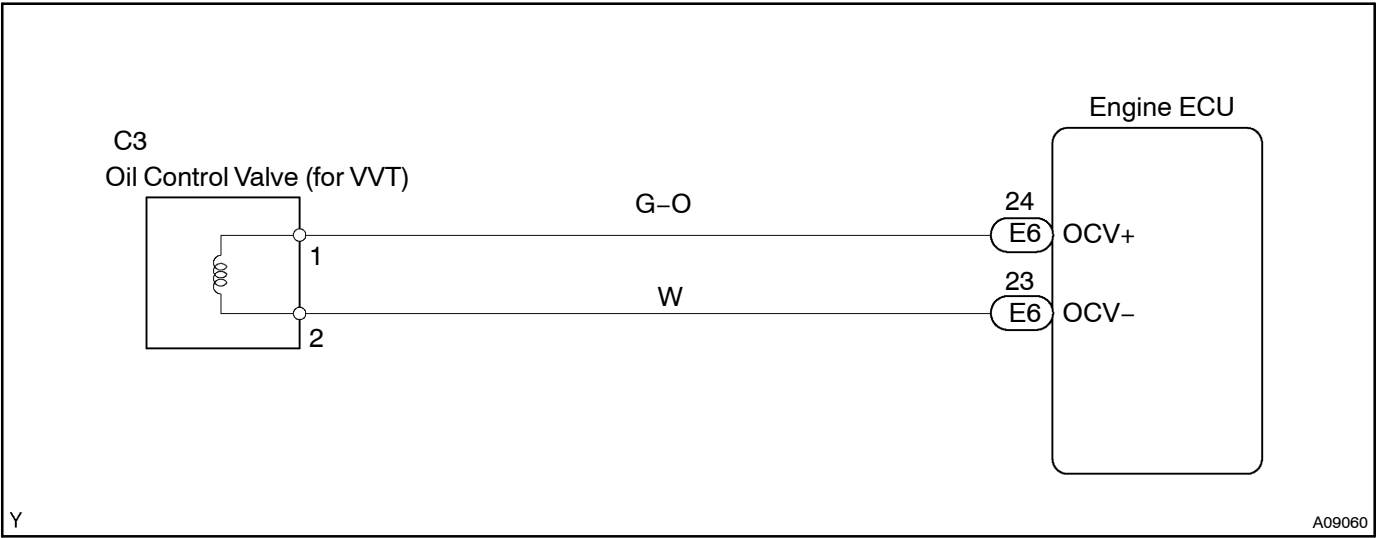
DTC	P1349/59	VVT System Malfunction
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CIRCUIT DESCRIPTION

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

DTC No.	DTC Detecting Condition	Trouble Area
P1349/59	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	• Valve timing • Oil control valve for VVT • VVT controller assembly • Engine ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Read freeze frame data using hand-held tester. 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.

When using hand-held tester

1	Check valve timing (See page EM-26).
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NG

Repair valve timing.

OK

2	Check operation of OCV for VVT.
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PREPARATION:

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

CHECK:

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

OK:

OCV is OFF:

Normal engine speed

OCV is ON:

Rough idle or engine stall

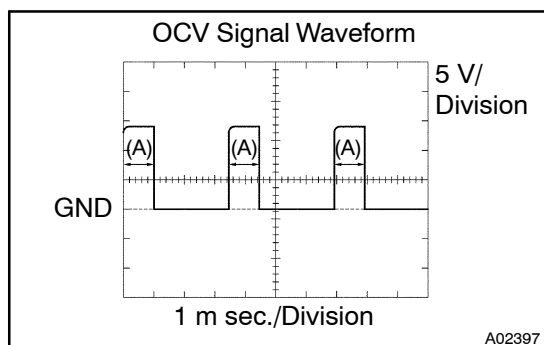
OK

VVT system is OK.*

*: DTCs P1349/59 are 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 engine ECU 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 engine ECU connector.



Reference: INSPECTION USING OSCILLOSCOPE

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

HINT:

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

NG

Check and replace engine ECU ([See page IN-20](#)).

OK

4 Check valve timing controller assembly ([See page EM-49](#)).

NG

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

OK

5 Check OCV for VVT ([See page FI-42](#)).

NG

Replace OCV for VVT, and then go to step 6.

OK

6 Check blockage of OCV for VVT and oil filter.

NG

Repair or replace.

OK

7	Check whether or not DTC P1349/59 is stored.
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PREPARATION:

- (a) Clear the DTC ([See page DI-4](#)).
- (b) Perform simulation test.

CHECK:

Check whether or not DTC P1349/59 is stored ([See page DI-4](#)).

OK:

DTC P1349/19 is not stored

OK

VVT system is OK.*

*: DTCs P1349/59 are 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 engine ECU 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

Replace engine ECU

When not using hand-held tester

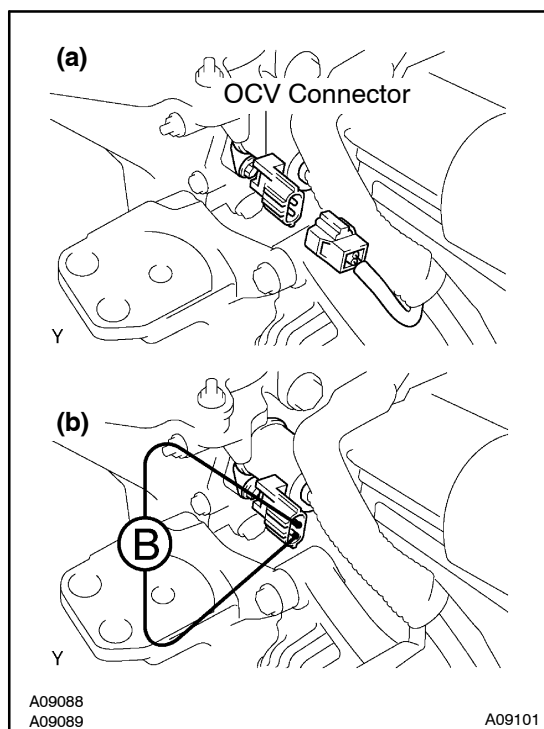
1	Check valve timing (See page EM-26).
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NG

Repair valve timing.

OK

2 Check operation of OCV for VVT.



PREPARATION:

Start the engine.

CHECK:

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

RESULT:

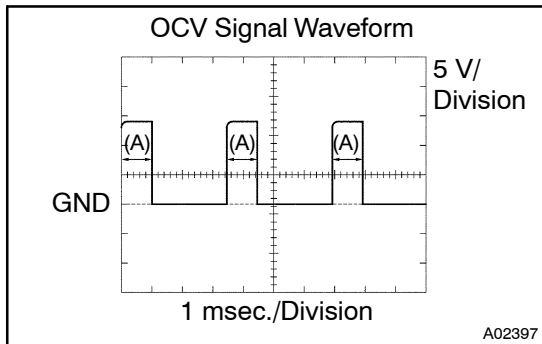
Result	Check (a)	Check (b)
1	Normal engine speed	Rough idle or engine stall
2	Except 1	

2

Go to step 4.

1

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



Reference: INSPECTION USING OSCILLOSCOPE

Turn the ignition switch ON, check waveform between terminals OCV+ and OCV- of the engine ECU 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.*

*: DTCs P1349/59 are 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 engine ECU 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 engine ECU ([See page IN-20](#)).

4 Check valve timing controller assembly.

NG

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

OK

5 Check OCV for VVT ([See page FI-42](#)).

NG

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

OK

6 Check blockage of OCV for VVT and oil filter.

NG

Repair or replace.

OK

7 Check whether or not DTC P1349/59 is stored.

PREPARATION:

- (a) Clear the DTC ([See page DI-4](#)).
- (b) Perform simulation test.

CHECK:

Check whether or not DTC P1349/19 is stored ([See page DI-4](#)).

OK:

DTC P1349/19 is not stored

OK

VVT system is OK.*

*: DTCs P1349/59 are 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 engine ECU 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

Replace engine ECU.