

DTC	P1350	VVT Sensor/Camshaft Position Sensor Circuit Malfunction (Bank 2)
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CIRCUIT DESCRIPTION

VVT sensor (VV signal) consists of a magnet, iron core and pickup coil.

The VV signal plate has 3 teeth on its outer circumference and is installed the camshaft timing gear.

When the camshafts rotate, the protrusion on the signal plate and the air gap on the pickup coil change, causing fluctuations in the magnetic field and generating an electromotive force in the pickup coil.

The actual camshaft angle is detected by the VVT sensor and it provides feedback to the ECM to control the intake valve timing in response to during condition.

DTC No.	DTC Detecting Condition	Trouble Area
P1345 P1350	No VVT sensor (Camshaft position sensor) signal to ECM during cranking at 4 sec. or more	• Open or short in VVT sensor (camshaft position sensor) circuit • VVT sensor (camshaft position sensor) • Camshaft timing gear • ECM
	No VVT sensor (Camshaft position sensor) signal to ECM with 5 sec. or more engine speed 600 rpm or more	
	While crankshaft rotates twice, VVT sensor (Camshaft position sensor) signal will be input to ECM 5 times.	

WIRING DIAGRAM

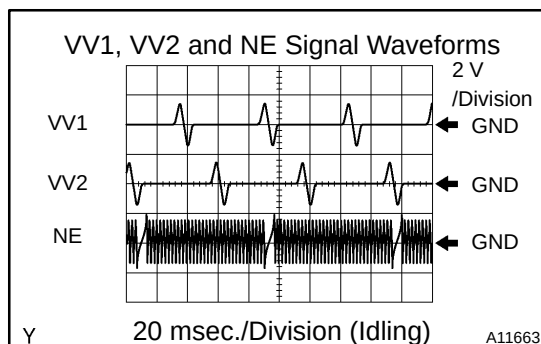
Refer to DTC P0335 on page [DI-65](#).

INSPECTION PROCEDURE

HINT:

- If DTC P1345 is displayed, check left bank VVT sensor (camshaft position sensor).
- If DTC P1350 is displayed, check right bank VVT sensor (camshaft position sensor).
- 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.

1	Check resistance of VVT sensor (See page IG-7).
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Reference: INSPECTION USING OSCILLOSCOPE

During idling, check the waveforms between terminals VV1 and NE+, and VV2 and NE- of the ECM connector.

HINT:

- The correct waveforms are as shown.
- The waveform frequency is shortened as the engine speed becomes higher.

NG

Replace VVT sensor.

OK

2	Check for open and short in harness and connector between ECM and VVT sensor (See page IN-31).
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NG	Repair or replace harness or connector.
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OK

3	Inspect sensor installation and signal plate teeth of camshaft timing gear.
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NG	Tighten sensor. Replace camshaft timing gear.
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OK

Check and replace ECM (See page IN-31).
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