

DTC	P1340	Camshaft Position Sensor "A" (Bank 1 Sensor 1)
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DTC	P1341	Camshaft Position Sensor "A" (Bank 1 Sensor 1)
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CIRCUIT DESCRIPTION

Camshaft position sensor (G signal) consists of a magnet, iron core and pickup coil.

The camshaft drive gear (LH) has 3 teeth on its inner circumference. When the camshaft gear rotates, air gap changes between the protrusion on the gear and the pickup coil. The change affects the magnetic field and result in change in the resistance of the MRE element.

The crankshaft signal plate has 32 teeth and is mounted on the crankshaft. The crankshaft position sensor generates 32 signals at every engine revolution. The ECM detects the standard crankshaft angle based on the G signal and the actual crankshaft angle and the engine speed by the NE signal.

DTC No.	DTC Detecting Condition	Trouble Area
P1340	No camshaft position sensor signal to ECM during cranking (2 trip detection logic)	<ul style="list-style-type: none"> • Open or short in camshaft position sensor circuit • Camshaft position sensor • LH camshaft timing pulley • ECM
P1341	No camshaft position sensor signal to ECM with engine speed 600 rpm or more	

MONITOR DESCRIPTION

The camshaft position sensor (G signal) consists of a magnet and MRE element.

The camshaft drive gear has 5 teeth on its inner circumference. When the camshaft gear rotates, air gap changes between the protrusion on the gear and the pickup coil. The change affects the magnetic field and result in change in the resistance of the MRE element. The crankshaft angle sensor plate has 32 teeth and output 32 signals every engine revolution. The ECM detects the standard crankshaft angle based on the G signal and actual crankshaft angle and engine speed by NE signal.

MONITOR STRATEGY

Related DTCs	P1340	Camshaft position sensor (Bank 1) range check or rationality
	P1341	Camshaft position sensor (Bank 1) range check or rationality
Required sensors/components	Main sensors/components	Camshaft position sensor
	Related sensors/components	Crankshaft position sensor, Engine speed sensor
Frequency of operation	Continuous	
Duration	5 sec.	
MIL operation	P1340 case 1 (no signal): 2 driving cycles P1340 case 2 (mis-aligned), P1341: Immediate	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever these DTCs are not present	See page DI-437	
P1340 Case 1 (No signal):		
Starter	ON	
Minimum battery voltage while starter ON	–	11 V
P1340 Case 2 (Mis-aligned):		
Engine RPM	600 rpm	–
Starter	OFF	
P1341:		
Starter	After OFF to ON timing	

TYPICAL MALFUNCTION THRESHOLDS

Detection Criteria	Threshold
P1340 Case 1 (No signal):	
Camshaft position sensor signal	No signal
P1340 Case 2 (Mis-aligned):	
Crankshaft/camshaft alignment is mis-aligned (judged by comparing the crankshaft position to the camshaft position)	
Camshaft position sensor signal: No input in appropriate timing.	
P1341:	
Crankshaft/Camshaft alignment	Mis-aligned
Camshaft position sensor count	12 or more / 720°CA (= Engine 2 revolutions)

COMPONENT OPERATING RANGE

Parameter	Standard Value
Camshaft position sensor signal input at every 720°CA	3

WIRING DIAGRAM

Refer to DTC P0335 on page [DI-632](#).

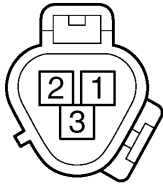
INSPECTION PROCEDURE

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 was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

1 Check voltage of camshaft position sensor power source circuit.

Wire Harness Side:



Camshaft Position Sensor

N

B17445

PREPARATION:

- (a) Disconnect the Camshaft position sensor connector.
- (b) Turn the ignition switch to ON.

CHECK:

Measure the voltage between terminal 3 of the camshaft position sensor connector and body ground.

OK:

Standard: 4.5 to 5.5 V

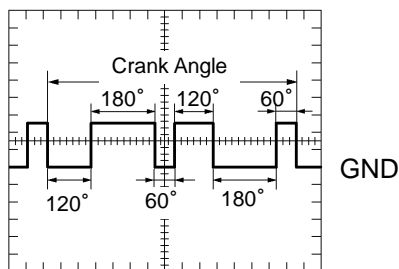
NG

Repair or replace harness or connector.

OK

2 Check camshaft position sensor signal.

2 V / DIV



Y

200 ms / DIV A23559

PREPARATION:

Start the engine.

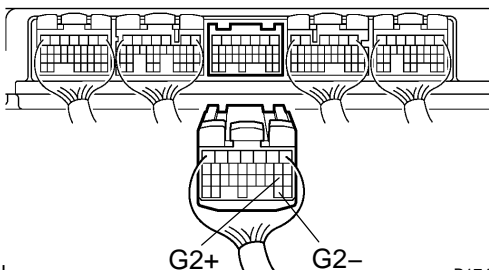
CHECK:

Check the waveform between the G2+ (E5-19) and G2- (E5-29) of the ECM connector.

OK:

Standard: Correct waveform is as shown.

E5 ECM Connector



N

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OK

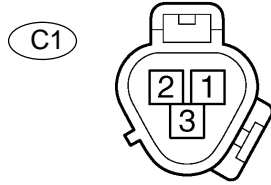
Replace ECM (See page SF-82).

NG

3

Check for open and short in harness and connector between ECM and camshaft position sensor.

Wire Harness Side:



Camshaft Position Sensor

N

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PREPARATION:

- (a) Disconnect the Camshaft position sensor connector.
- (b) Disconnect the E5 ECM connector.

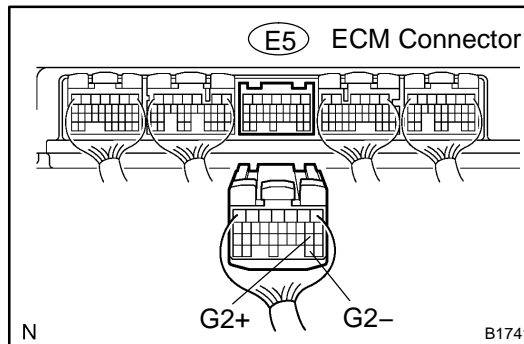
CHECK:

Measure the resistance between wire harness side connectors.

OK:

Standard:

Tester Connection	Specified Condition
Camshaft position sensor (C1-2) – G2+ (E5-19)	Below 1 Ω
Camshaft position sensor (C1-1) – G2– (E5-29)	Below 1 Ω
Camshaft position sensor (C1-2) or G2+ (E5-19) – Body ground	10 k Ω or higher
Camshaft position sensor (C1-1) or G2– (E5-29) – Body ground	10 k Ω or higher



N

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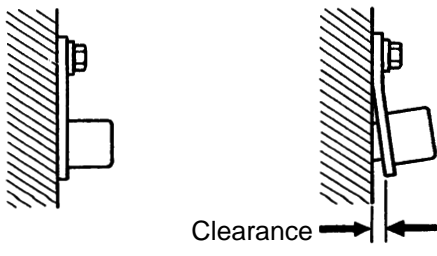
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Repair or replace harness or connector.

OK

4

Inspect sensor installation and signal plate tooth of LH camshaft timing pulley.



OK

NG

BR3795

CHECK:

Check the camshaft position sensor installation.

OK:

The camshaft position sensor is installed properly.

NG

Tighten sensor installation bolt.

OK

5	Inspect signal plate tooth of LH camshaft timing pulley.
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NG**Replace LH camshaft timing pulley.****OK****Replace camshaft position sensor.**