

<b>DTC</b>	<b>P0335</b>	<b>Crankshaft Position Sensor "A" Circuit</b>
<b>DTC</b>	<b>P0339</b>	<b>Crankshaft Position Sensor "A" Circuit Intermittent</b>

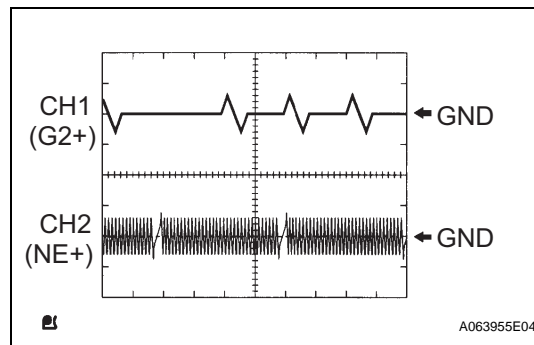
**DESCRIPTION**

The Crankshaft Position (CKP) sensor system consists of a CKP sensor plate and a pickup coil. The sensor plate has 34 teeth and is installed on the crankshaft. The pickup coil is made of an iron core and a magnet. The sensor plate rotates and, as each tooth passes through the pickup coil, a pulse signal is created. The pickup coil generates 34 signals per engine revolution. Based on these signals, the ECM calculates the crankshaft position and engine RPM. Using these calculations, the fuel injection time and ignition timing are controlled.

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DTC No.	DTC Detection Condition	Trouble Area
P0335	<ul style="list-style-type: none"> <li>No Crankshaft Position (CKP) sensor signal to ECM while cranking (2 trip detection logic)</li> <li>No CKP sensor signal to ECM at engine speed of 600 rpm or more (2 trip detection logic)</li> </ul>	<ul style="list-style-type: none"> <li>Open or short in Crankshaft Position (CKP) sensor circuit</li> <li>CKP sensor</li> <li>Crankshaft (sensor plate)</li> <li>ECM</li> </ul>
P0339	Under conditions (a), (b) and (c), no CKP sensor signal to ECM for 0.05 seconds or more (1 trip detection logic): (a) Engine speed 1,000 rpm or more (b) Starter signal OFF (c) 3 seconds or more has lapsed since starter signal switched from ON to OFF	<ul style="list-style-type: none"> <li>Open or short in CKP sensor circuit</li> <li>CKP sensor</li> <li>Crankshaft (sensor plate)</li> <li>ECM</li> </ul>

Reference: Inspection using an oscilloscope.



**HINT:**

- The correct waveform is as shown in the illustration.
- G2+ stands for the Camshaft Position (CMP) sensor signal, and NE+ stands for the CKP sensor signal.

Items	Contents
Terminals	CH1: G2+ - NE- CH2: NE+ - NE-
Equipment Settings	5V/DIV., 20msec./DIV.
Conditions	Cranking or idling

**MONITOR DESCRIPTION**

If there is no signal from the CKP sensor despite the engine revolving, the ECM interprets this as a malfunction of the sensor.

If the malfunction is not repaired successfully, a DTC is set 10 seconds after the engine is next started.

**MONITOR STRATEGY**

Related DTCs	P0335: Crankshaft position sensor range check during cranking P0335: Crankshaft position sensor range check during engine running
Required sensors/components (Main)	Crankshaft Position (CKP) sensor
Required sensors/components (Related)	-
Frequency of operation	Continuous
Duration	4.7 seconds: CKP sensor range check during cranking 0.5 seconds: CKP sensor range check during engine running
MIL operation	Immediate
Sequence of operation	None

**TYPICAL ENABLING CONDITIONS**

Monitor runs whenever following DTCs not present	None
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**Crankshaft Position Sensor Range Check during Cranking P0335:**

Starter	ON
Minimum battery voltage while starter ON	Less than 11 V

**Crankshaft Position Sensor Range Check during Engine Running P0335:**

Engine speed	600 rpm or more
Starter	OFF
Time after starter from ON to OFF	3 seconds or more

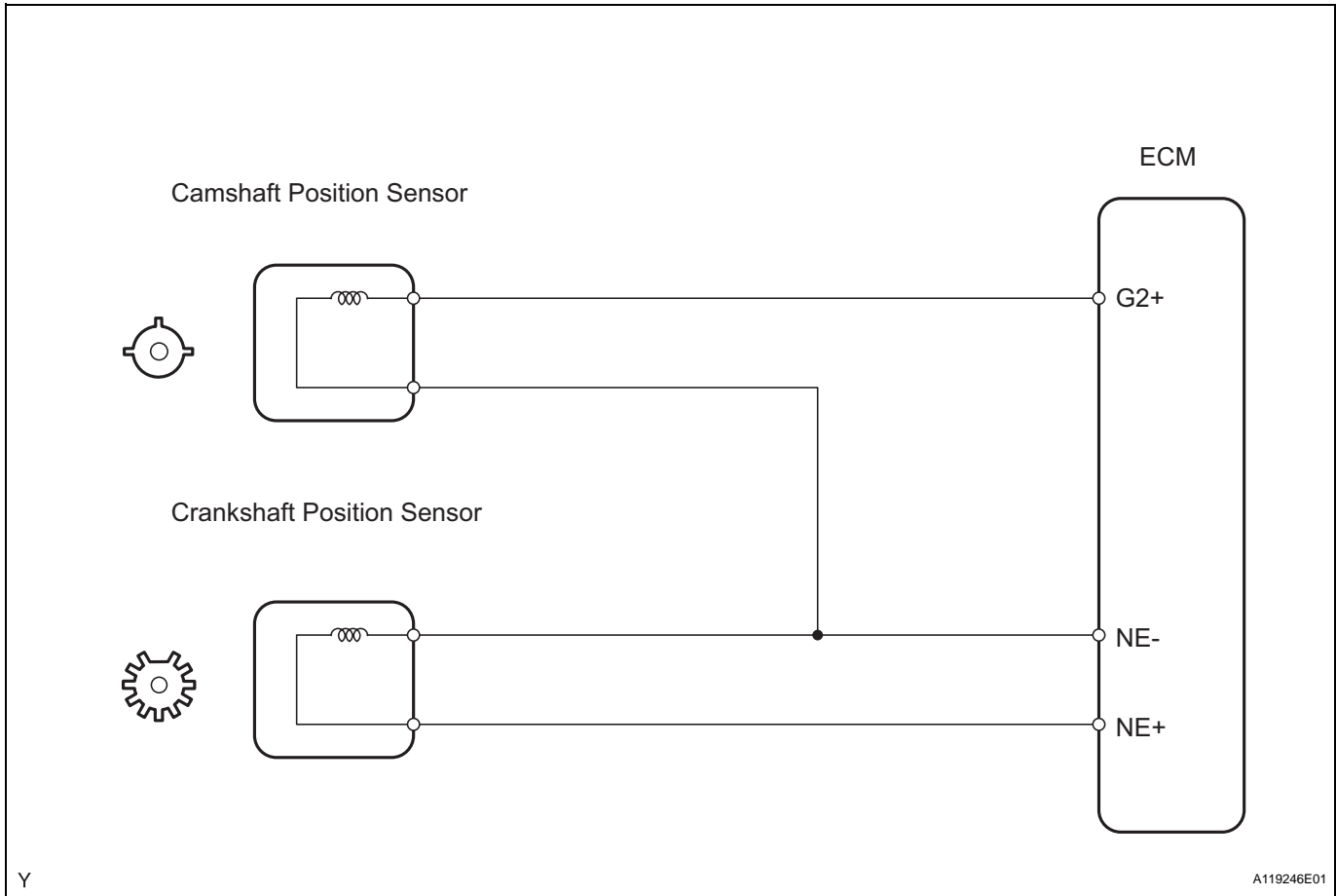
**TYPICAL MALFUNCTION THRESHOLDS****P0335, P0339:**

CKP signal during cranking	No signal for 0.5 seconds
CKP signal during engine running	No signal for 4.7 seconds

**COMPONENT OPERATING RANGE**

CKP sensor	<ul style="list-style-type: none"> <li>• CKP sensor output voltage fluctuates while crankshaft revolving</li> <li>• 34 CKP sensor signals per crankshaft revolution</li> </ul>
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## WIRING DIAGRAM

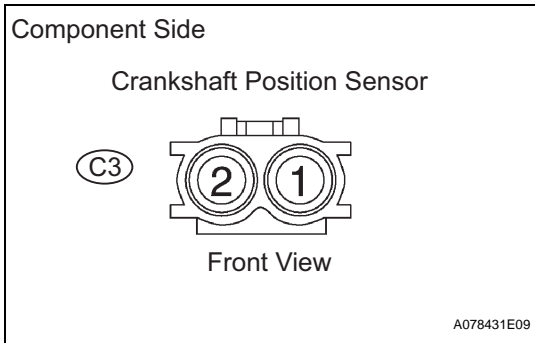


## HINT:

- If no problem is found by this diagnostic troubleshooting procedure, troubleshoot the engine mechanical systems.
- Check the engine speed. The engine speed can be checked by using the intelligent tester. To check, follow the operation below:
  - (a) Connect the intelligent tester to the DLC3.
  - (b) Start the engine.
  - (c) Turn the tester ON.
  - (d) Enter the following menus: DIAGNOSIS / ENHANCED OBD II / DATA LIST / PRIMARY / ENGINE SPD.

The engine speed may be indicated as zero despite the engine revolving normally. This is caused by a lack of NE signals from the Crankshaft Position (CKP) sensor. Alternatively, the engine speed may be indicated as lower than the actual engine speed if the CKP sensor voltage output is insufficient.
- Read freeze frame data using the intelligent tester. Freeze frame data records the engine condition when malfunctions are detected. When troubleshooting, freeze frame data can help determine if the vehicle was moving or stationary, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, and other data from the time the malfunction occurred.

**1 INSPECT CRANKSHAFT POSITION SENSOR (RESISTANCE)**



- (a) Disconnect the C3 Crankshaft Position (CKP) sensor connector.
  - (b) Measure the resistance between terminals 1 and 2.
- Standard resistance**

Tester Connection	Specified Condition
1 - 2	985 to 1,600 Ω at cold
1 - 2	1,265 to 1,890 Ω at hot

**HINT:**

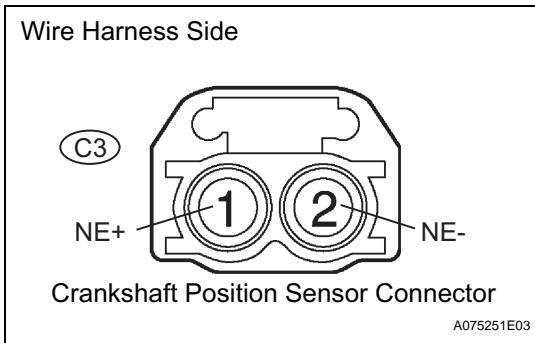
The terms cold and hot refer to the temperature of the sensor. Cold means approximately -10 to 50°C (14 to 122°F). Hot means approximately 50 to 100°C (122 to 212°F).

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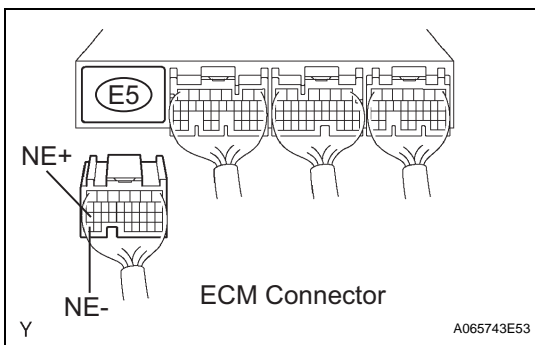
**NG** → **REPLACE CRANKSHAFT POSITION SENSOR**

**OK**

**2 CHECK HARNESS AND CONNECTOR (CRANKSHAFT POSITION SENSOR - ECM)**



- (a) Disconnect the C3 CKP sensor connector.



- (b) Disconnect the E5 ECM connector.
  - (c) Measure the resistance of the harness and connectors.
- Standard resistance (Check for open)**

Tester connection	Specified Condition
NE+ (C3-1) - NE+ (E5-27)	Below 1 Ω
NE- (C3-2) - NE- (E5-34)	Below 1 Ω

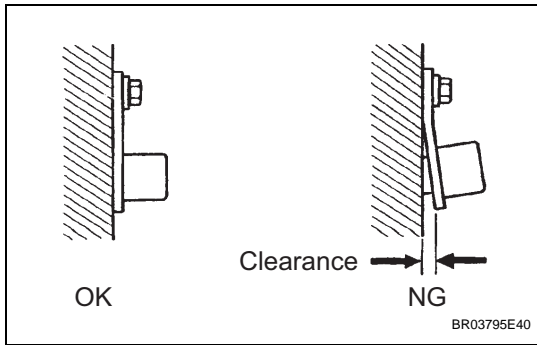
**Standard resistance (Check for short)**

Tester connection	Specified Condition
NE+ (C3-1) or NE+ (E5-27) - Body ground	10 kΩ or higher
NE- (C3-2) or NE- (E5-34) - Body ground	10 kΩ or higher

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**3 CHECK SENSOR INSTALLATION (CRANKSHAFT POSITION SENSOR)**



(a) Check the CKP sensor installation.

**OK:**

**Sensor is installed correctly.**

**NG** → **SECURELY REINSTALL SENSOR**

**OK**

**4 CHECK CRANKSHAFT (TEETH OF SENSOR PLATE)**

(a) Check the teeth of the sensor plate.

**OK:**

**Sensor plate teeth do not have any cracks or deformation.**

**NG** → **REPLACE CRANKSHAFT**

**OK**

**REPLACE ECM**

**ES**