

<b>DTC</b>	<b>P0335</b>	<b>CRANKSHAFT POSITION SENSOR "A" CIRCUIT</b>
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<b>DTC</b>	<b>P0339</b>	<b>CRANKSHAFT POSITION SENSOR "A" CIRCUIT INTERMITTENT</b>
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## CIRCUIT DESCRIPTION

The crankshaft position (CKP) sensor system consists of a crankshaft position 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 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 for each 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.

DTC No.	DTC Detection Condition	Trouble Area
P0335	No crankshaft position sensor signal to ECM during cranking (2 trip detection logic)	<ul style="list-style-type: none"> <li>• Open or short in crankshaft position sensor circuit</li> <li>• Crankshaft position sensor</li> <li>• Crankshaft timing pulley</li> <li>• ECM</li> </ul>
P0335	No crankshaft position sensor signal to ECM with engine speed 600 rpm or more (2 trip detection logic)	<ul style="list-style-type: none"> <li>• Open or short in crankshaft position sensor circuit</li> <li>• Crankshaft position sensor</li> <li>• Crankshaft timing pulley</li> <li>• ECM</li> </ul>
P0339	No crankshaft position sensor signal to ECM is input for 0.05 seconds or more, and conditions (a), (b) and (c) are met: (a) Engine is at 1,000 rpm or more (b) STA signal is OFF (c) 3 seconds or more have elapsed after STA signal is switched from ON to OFF	<ul style="list-style-type: none"> <li>• Open or short in crankshaft position sensor circuit</li> <li>• Crankshaft position sensor</li> <li>• Crankshaft timing pulley</li> <li>• ECM</li> </ul>

## MONITOR DESCRIPTION

If there is no signal from the crankshaft sensor even though the engine is revolving, the ECM interprets this as a malfunction of the sensor.

## 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 sensor
Required sensors / components (Related)	–
Frequency of operation	Continuous
Duration	4.7 seconds: Crankshaft Position Sensor Range Check During Cranking 0.016 seconds: Crankshaft Position Sensor Range Check During Engine Running
MIL operation	2 driving cycles
Sequence operation	None

## TYPICAL ENABLING CONDITIONS

All:

The monitor will run whenever these DTCs are not present	See page 05-507
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### Crankshaft Position Sensor Range Check During Cranking:

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

### Crankshaft Position Sensor Check During Engine Running:

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

## TYPICAL MALFUNCTION THRESHOLDS

### Crankshaft Position Sensor Range Check During Cranking:

Crankshaft position signal during cranking	No signal for 4.7 seconds
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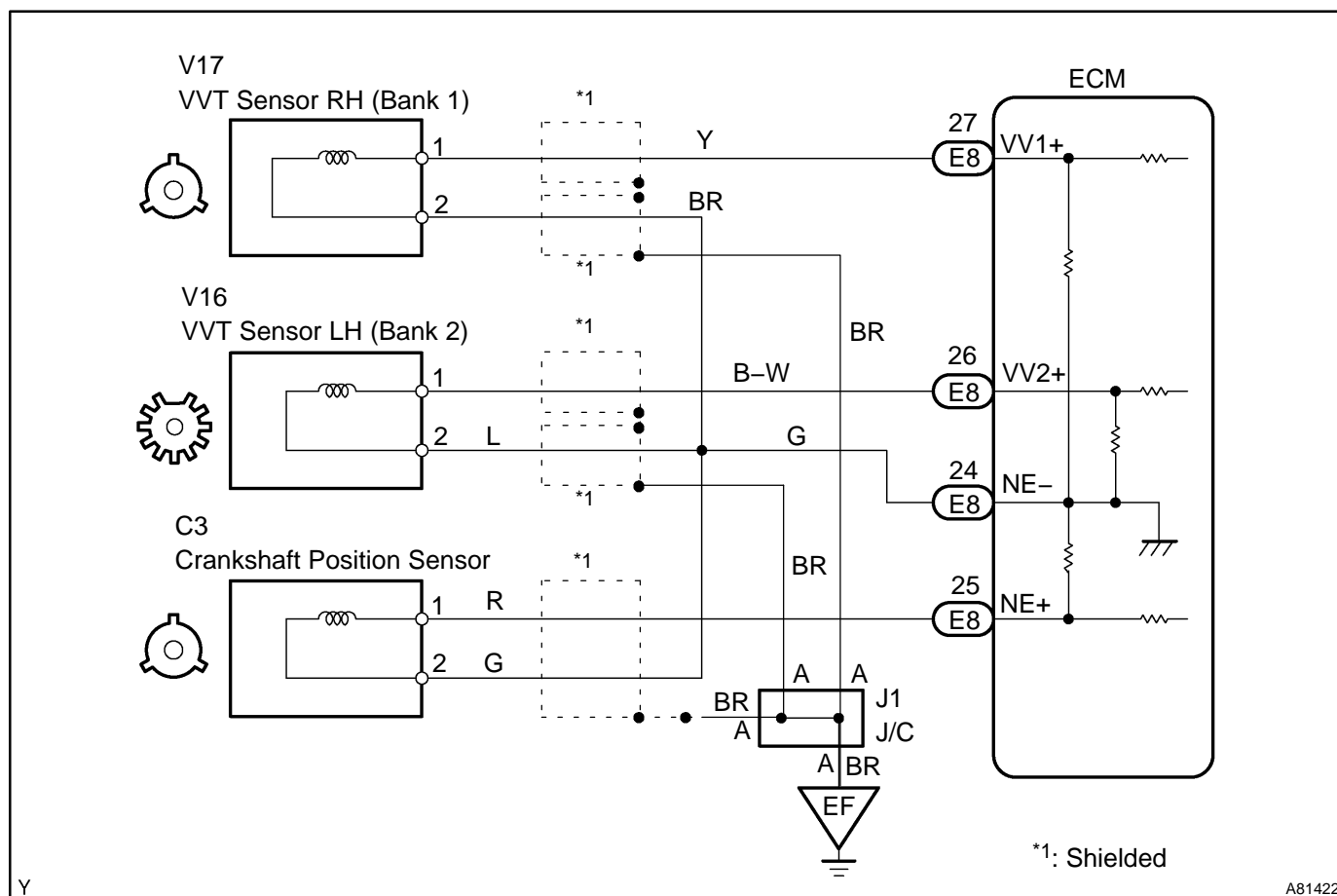
### Crankshaft Position Sensor Check During Engine Running:

Crankshaft position signal during engine running	No signal for 0.016 seconds
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## COMPONENT OPERATING RANGE

Crankshaft position sensor signal	Crankshaft position sensor voltage fluctuates when the crankshaft rotates 34 crankshaft position sensor signals per 1 revolution crankshaft
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## WIRING DIAGRAM

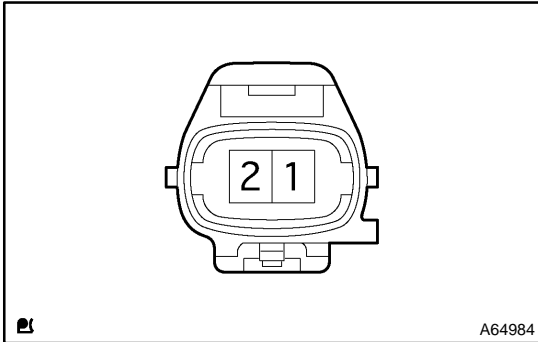


## INSPECTION PROCEDURE

### HINT:

- Read freeze frame data using the hand-held tester or the OBD II scan tool. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, 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.
- Read values on the hand-held tester or OBD II scan tool.
  - (a) Connect the hand-held tester or the OBD II scan tool to the DLC3.
  - (b) Start the engine and push the hand-held tester or the OBD II scan tool main switch ON.
  - (c) Select the item "DIAGNOSIS / ENHANCED OBD II / DATA LIST / ALL / ENGINE SPD".
- The engine speed can be confirmed in DATA LIST using the hand-held tester or OBD II scan tool. If there are no NE signals from the crankshaft position sensor despite the engine revolving, the engine speed will be indicated as zero. If voltage output of the crankshaft position sensor is insufficient, the engine speed will be indicated as lower than the actual rpm.

# 1 INSPECT CRANKSHAFT POSITION SENSOR (RESISTANCE)



- Disconnect the C3 sensor connector.
- Check the resistance between of the terminals.

## Standard:

Tester Connection	Condition	Specified Condition
1 - 2	Cold	1,630 to 2,740 $\Omega$
1 - 2	Hot	2,065 to 2,740 $\Omega$

## NOTICE:

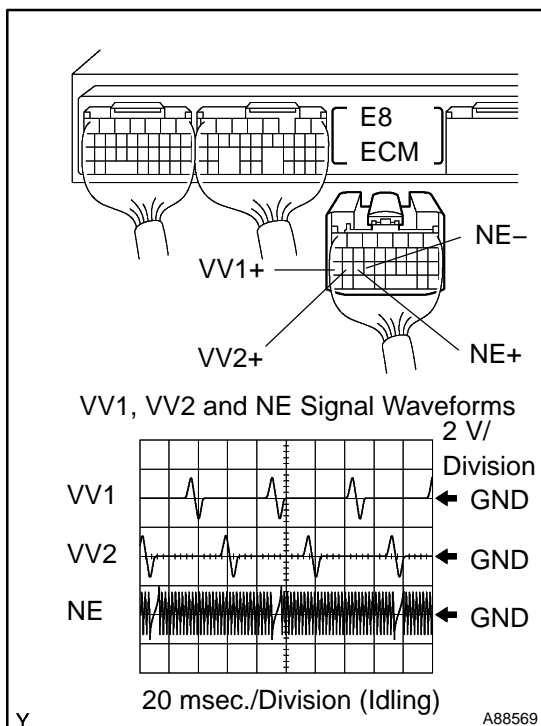
In the above section, the terms "cold" and "hot" refer to the temperature of the coils. "Cold" means approximately  $-10^{\circ}\text{C}$  to  $50^{\circ}\text{C}$  ( $14^{\circ}\text{F}$  to  $122^{\circ}\text{F}$ ). "Hot" means approximately  $50^{\circ}\text{C}$  to  $100^{\circ}\text{C}$  ( $122^{\circ}\text{F}$  to  $212^{\circ}\text{F}$ ).

## HINT:

Reference: Inspection using the oscilloscope.

During cranking or idling, check the waveform between the terminals of the ECM connector.

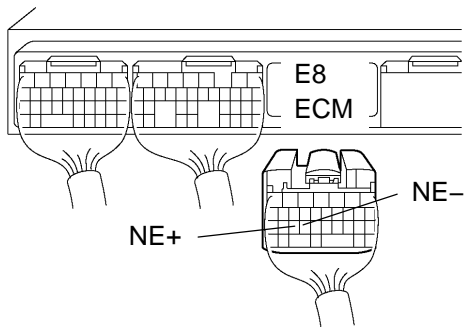
Tester Connection	Specified Condition
E8-27 (VV1+) - E8-24 (NE-) E8-26 (VV2+) - E8-24 (NE-) E8-25 (NE+) - E8-24 (NE-)	Correct waveform is as shown



NG

**REPLACE CRANKSHAFT POSITION SENSOR**  
(See page 18-9)

OK

**2 CHECK WIRE HARNESS (CRANKSHAFT POSITION SENSOR – ECM)****Wire Harness Side**Y  
A54385  
A81699

A85533

- (a) Disconnect the C3 sensor connector.
- (b) Disconnect the E8 ECM connector.
- (c) Check the resistance of the wire harness side connectors.

**Standard:**

Tester Connection	Specified Condition
C3-1 – E8-25 (NE+) C3-2 – E8-24 (NE-)	Below 1 $\Omega$
C3-1 or E8-25 (NE+) – Body ground C3-2 or E8-24 (NE-) – Body ground	10 k $\Omega$ or higher

**NG****REPAIR OR REPLACE HARNESS AND CONNECTOR****OK****3 CHECK SENSOR INSTALLATION (CRANKSHAFT POSITION SENSOR)**

- (a) Check the crankshaft position sensor installation.

**OK: Sensor is installed correctly.****NG****TIGHTEN SENSOR****OK****4 CHECK CRANKSHAFT TIMING PULLEY**

- (a) Check the teeth of the crankshaft timing pulley.

**OK The pulley does not have any cracks or deformation.****NG****REPLACE CRANKSHAFT TIMING PULLEY****OK****REPLACE ECM (See page 10-25)**