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| DTC | P0335 | CRANKSHAFT POSITION SENSOR "A" CIRCUIT |
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| DTC | P0339 | CRANKSHAFT POSITION SENSOR "A" CIRCUIT INTERMITTENT |
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CIRCUIT DESCRIPTION

The crankshaft position sensor (CKP) 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 | <ul style="list-style-type: none"> No crankshaft position sensor signal to ECM during cranking (2 trip detection logic) No crankshaft position sensor signal to ECM with engine speed 600 rpm or more (2 trip detection logic) | <ul style="list-style-type: none"> Open or short in crankshaft position sensor circuit Crankshaft position sensor Signal plate (Crankshaft position sensor plate No. 1) ECM |
| 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"> Same as DTC No. P0335 |

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

Except PZEV:

| | |
|---------------------------------------|---|
| Related DTCs | P0335: Crankshaft position sensor range check |
| Required Sensors/Components (Main) | Crankshaft position sensor |
| Required Sensors/Components (Related) | – |
| Frequency of Operation | Continuous |
| Duration | 3 times |
| MIL Operation | Immediate |
| Sequence Operation | None |

PZEV:

| | |
|---------------------------------------|--|
| Related DTCs | P0335: Crankshaft position sensor range check |
| Required Sensors/Components (Main) | Crankshaft position sensor |
| Required Sensors/Components (Related) | – |
| Frequency of Operation | Continuous |
| Duration | 4.7 seconds: Crankshaft position sensor range check (while starting engine) 0.016 seconds: Crankshaft position sensor range check (after starting engine) |
| MIL Operation | 2 driving cycles |
| Sequence Operation | None |

TYPICAL ENABLING CONDITIONS

Except PZEV:

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|--|--------------------------------|
| The monitor will run whenever these DTCs are not present | See page 05-16 |
| Starter | OFF |
| Engine RPM | 600 rpm or more |
| Time after starter turns from ON to OFF | 3 seconds or more |

PZEV:

All:

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|--|--------------------------------|
| The monitor will run whenever these DTCs are not present | See page 05-16 |
|--|--------------------------------|

Crankshaft position sensor range check (while starting engine)

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

Crankshaft position sensor range check (after starting engine)

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

TYPICAL MALFUNCTION THRESHOLDS

Except PZEV:

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|-----------------------------------|-----------|
| Crankshaft position sensor signal | No signal |
|-----------------------------------|-----------|

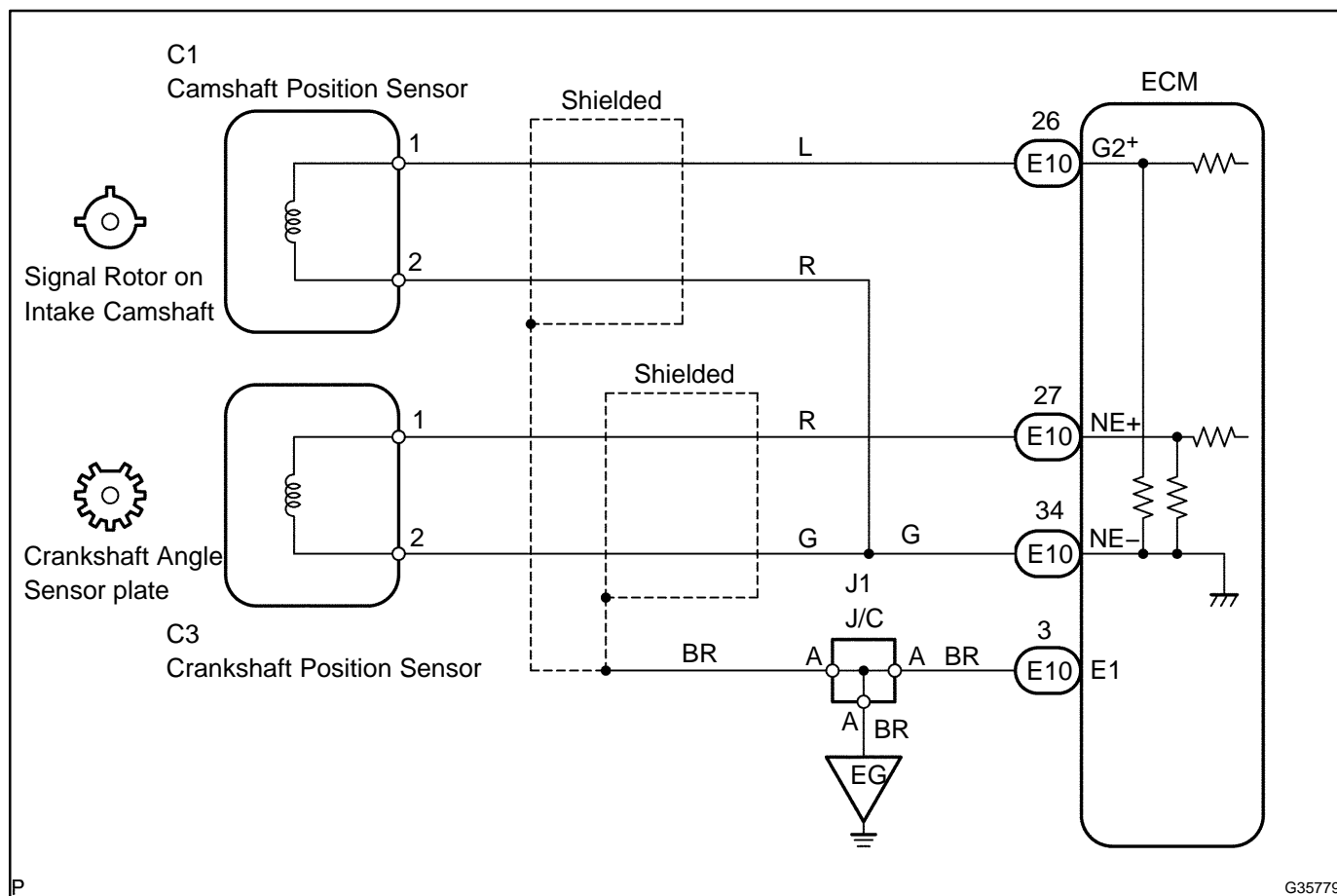
PZEV:

| | |
|-----------------------------------|-----------|
| Crankshaft position sensor signal | No signal |
|-----------------------------------|-----------|

COMPONENT OPERATING RANGE

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|-----------------------------------|--|
| Crankshaft position sensor signal | <ul style="list-style-type: none"> • Crankshaft position sensor voltage fluctuates when crankshaft rotates • 34 signals per revolution of crankshaft |
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WIRING DIAGRAM



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G35779

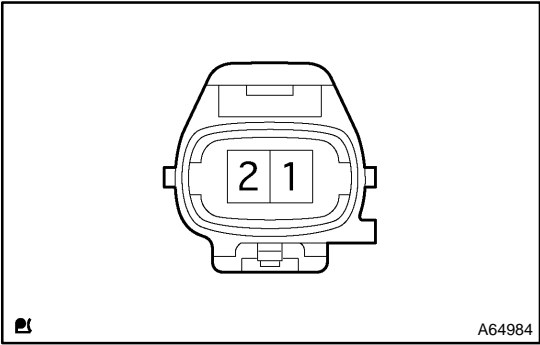
INSPECTION PROCEDURE

HINT:

- 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) Enter the following menus: "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.
- 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.

1

INSPECT CRANKSHAFT POSITION SENSOR (RESISTANCE)



- (a) Disconnect the C3 sensor connector.
- (b) Check the resistance between the terminals of the sensor.

Standard:

| Tester Connection | Condition | Specified Condition |
|-------------------|-----------|---------------------|
| 1 – 2 | Cold | 985 to 1,600 Ω |
| 1 – 2 | Hot | 1,265 to 1,890 Ω |

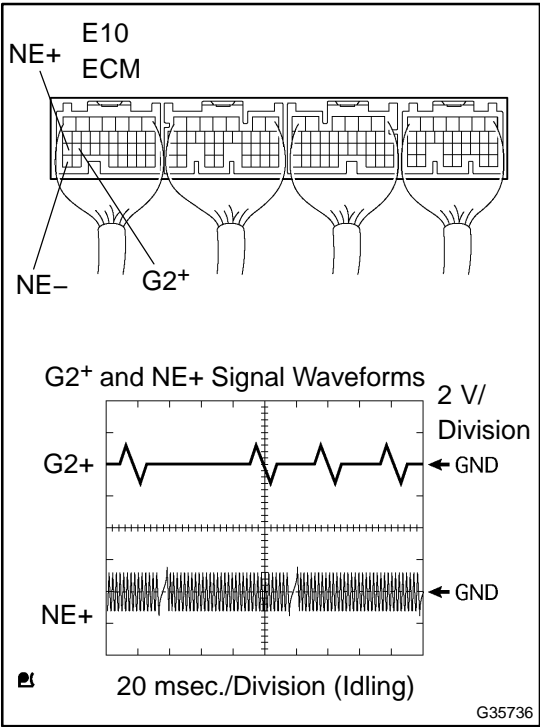
NOTICE:

In the above section, the terms "cold" and "hot" refer to the temperature of the coils. "Cold" means approximately -10°C to 50°C (14°F to 122°F). "Hot" means approximately 50°C to 100°C (122°F to 212°F).

HINT:

Reference: Inspection using the oscilloscope.
During cranking or idling, check the waveform between the terminals of the E10 ECM connector.

| Tester Connection | Specified Condition |
|--|------------------------------|
| E10-26 (G2+) – E10-34 (NE-) E10-27 (NE+) – E10-34 (NE-) | Correct waveform is as shown |



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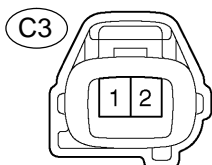
REPLACE CRANKSHAFT POSITION SENSOR
(See page 18-6)

OK

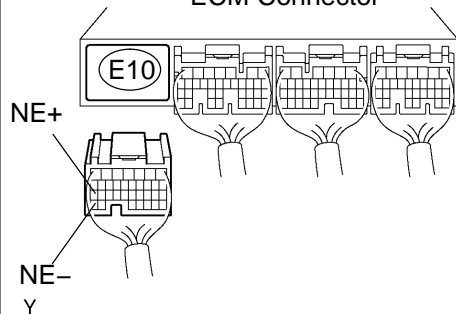
2 CHECK WIRE HARNESS (CRANKSHAFT POSITION SENSOR – ECM)

Wire Harness Side:

Crankshaft Position Sensor Connector



ECM Connector



G35737

- Disconnect the C3 sensor connector.
- Disconnect the E10 ECM connector.
- Check the resistance of the wire harness side connectors.

Standard:

| Tester Connection | Specified Condition |
|--|-------------------------|
| C3-1 – E10-27 (NE+) C3-2 – E10-34 (NE-) | Below 1 Ω |
| C3-1 or E10-27 (NE+) – Body ground C3-2 or E10-34 (NE-) – Body ground | 10 k Ω or higher |

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REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

3 CHECK SENSOR INSTALLATION (CRANKSHAFT POSITION SENSOR)

- Check the crankshaft position sensor installation.

OK: Sensor is installed correctly.

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TIGHTEN SENSOR

OK

4 INSPECT CRANKSHAFT POSITION SENSOR PLATE NO.1 (TEETH OF SIGNAL PLATE)

- Remove the crankshaft position sensor plate No. 1 (see page 14-47).
- Check the teeth of the signal plate.

OK: The pulley does not have any cracks or deformation.

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REPLACE CRANKSHAFT POSITION SENSOR PLATE NO.1

OK

REPLACE ECM (See page 10-9)