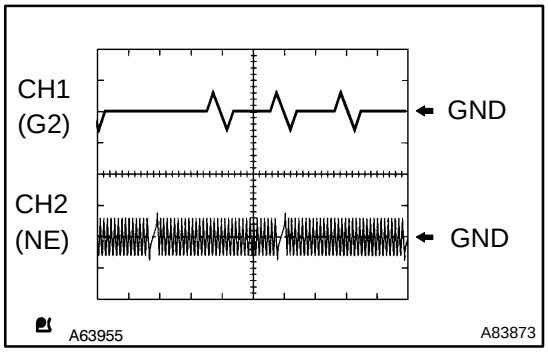
DTC	P0335	CRANKSHAFT POSITION SENSOR ”A” CIRCUIT

CIRCUIT DESCRIPTION

The crankshaft position sensor (CKP) system consists of a crankshaft position sensor plate and a pick–up coil. The sensor plate has 34 teeth and is installed on the crankshaft. The pick–up coil is made of an iron core and magnet. The sensor plate rotates and as each tooth passes through the pick–up coil, a pulse signal is created. The pick–up 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.

DTC No.	DTC Detection Condition	Trouble Area
P0335	No crankshaft position sensor signal to ECM with engine speed 600 rpm or more (2 trip detection logic)	• Open or short in crankshaft position sensor circuit • Crankshaft position sensor • Signal plate (crankshaft) • ECM



Reference: Inspection using an oscilloscope.
HINT:
The correct waveform is as shown on the left.

Item	Contents
Terminal	CH1: G2 – NE– CH2: NE+ – NE–
Equipment Setting	5 V/Division, 20 ms/Division
Condition	During cranking or idling

MONITOR DESCRIPTION

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

MONITOR STRATEGY

Related DTCs	P0335: Crankshaft position sensor range check or rationality
Required sensors/components	Crankshaft position sensor
Frequency of operation	Continuous
Duration	4.7 seconds
MIL operation	2 driving cycles
Sequence of operation	None

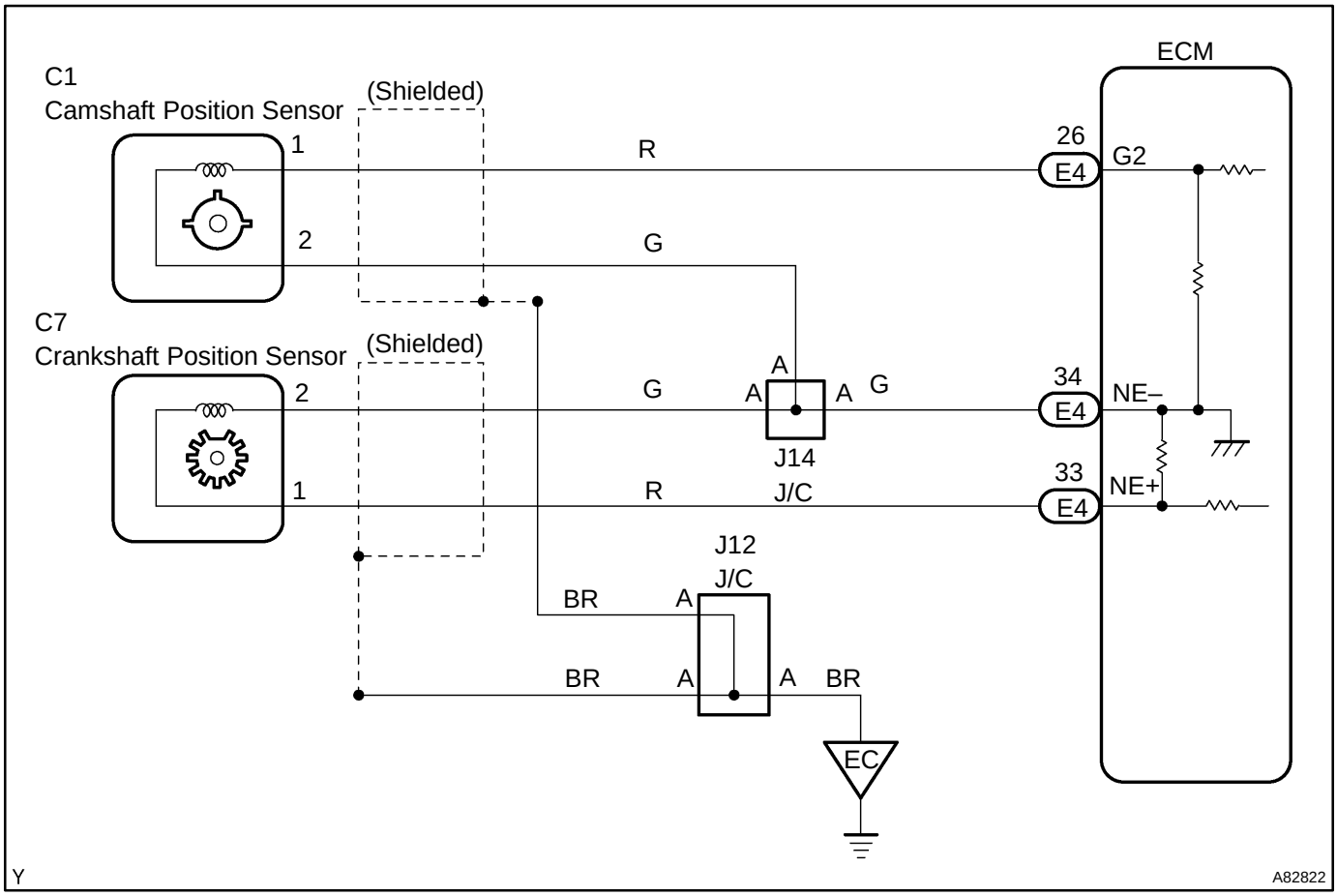
TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not present	See page 05–20
Power switch	ON
Engine rotating signal from HV ECU	HV ECU judges that the engine is running

TYPICAL MALFUNCTION THRESHOLDS

Engine speed signal	No signal for 4.7 seconds

WIRING DIAGRAM



INSPECTION PROCEDURE

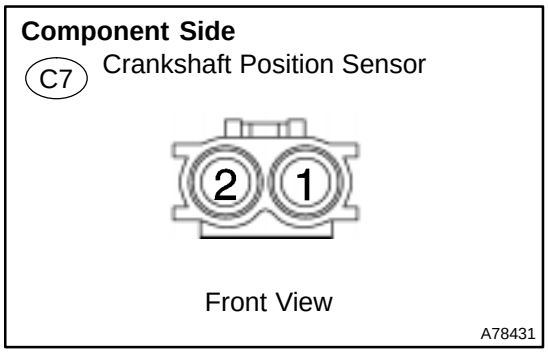
HINT:

- Perform troubleshooting on DTC P0335 first. If no trouble is found, troubleshoot the engine mechanical systems.
- Read freeze frame data using the hand−held tester or the OBD II scan tool. Freeze frame data records the engine condition when 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 VALUE OF HAND–HELD TESTER OR OBD II SCAN TOOL
  (a) Connect the hand–held tester or the OBD II scan tool to the DLC3.
  (b) Turn the power switch ON (IG).
  (c) Turn the hand–held tester or the OBD II scan tool ON.
  (d) Put the engine in inspection mode (see page 05–1).
  (e) Start the engine.
  (f) On the hand–held tester, select the item: DIAGNOSIS / ENHANCED OBD II / ENGINE AND ECT / DATA LIST / ALL / ENGINE SPD.
  (g) Read the value using the hand–held tester or the OBD II scan tool.

The engine speed can be observed in DATA LIST using the hand–held tester or OBD II scan tool. If there is no NE signal from the crankshaft position sensor despite the engine revolving, the engine speed will be indicated as zero. If voltage output from the crankshaft position sensor is insufficient, the engine speed will be indicated as lower PRM (than the actual RPM).

1 INSPECT CRANKSHAFT POSITION SENSOR(RESISTANCE)



(a) Disconnect the C7 crankshaft position sensor connector.
(b) Measure the resistance between the terminals of the crankshaft position sensor connector.

Standard:

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

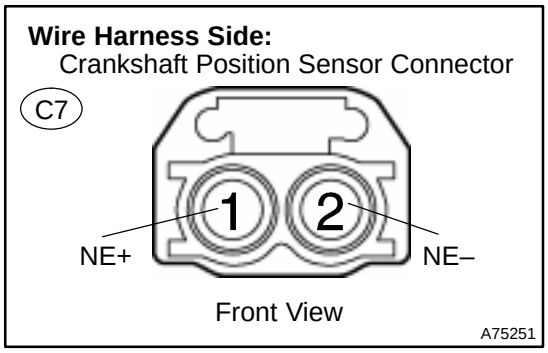
NOTICE:
Terms "cold" and "hot" refer to the temperature of the coils. "Cold" means approximately –10°C to 50°C (14°F to 122°F). "Hot" means approximately 50°C to 100°C (122°F to 212°F).

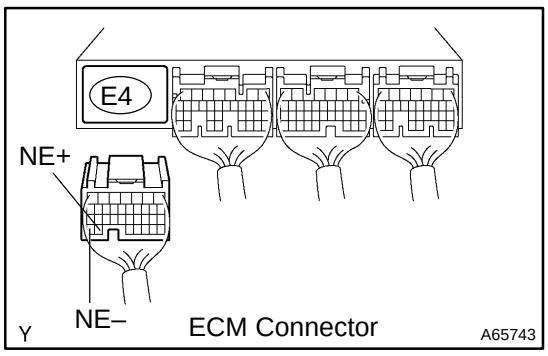
(c) Reconnect the crankshaft position sensor connector.

NG → **REPLACE CRANKSHAFT POSITION SENSOR (See page 18–10)**

OK

2 CHECK HARNESS AND CONNECTOR(CRANKSHAFT POSITION SENSOR – ECM)





(a) Disconnect the C7 crankshaft position sensor connector.
(b) Disconnect the E4 ECM connector.
(c) Check the resistance between the wire harness side connectors.

Standard (Check for open):

Tester Connection	Specified Condition
NE+ (C7–1) – NE+ (E4–33)	Below 1 Ω
NE– (C7–2) – NE– (E4–34)	Below 1 Ω

Standard (Check for short):

Tester Connection	Specified Condition
NE+ (C7–1) or NE+ (E4–33) – Body ground	10 kΩ or higher
NE– (C7–2) or NE– (E4–34) – Body ground	10 kΩ or higher

(d) Reconnect the crankshaft position sensor connector.
(e) Reconnect the ECM connector.

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

OK

3	CHECK SENSOR INSTALLATION(CRANKSHAFT POSITION SENSOR)

(a) Check that the crankshaft position sensor is properly installed.
OK: Sensor is installed correctly.

NG → **SECURELY REINSTALL SENSOR**

OK

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

(a) Check the teeth of the sensor plate.
OK: No deformation on the teeth of sensor plate.

NG → **REPLACE CRANKSHAFT POSITION SENSOR PLATE**

OK

REPLACE ECM (See page 10–24)