DTC	P0340/12	CAMSHAFT POSITION SENSOR CIRCUIT MALFUNCTION

CIRCUIT DESCRIPTION

Camshaft position sensor (G signal) consists of a magnet, iron core and pickup coil.
The G signal rotor has 3 teeth on the outside and is mounted on the intake camshaft.
When the camshafts rotate, the protrusion on the signal plate and the air gap on the pickup coil changes, causing fluctuations in the magnetic field and generating an electromotive force in the pickup coil.
The NE signal plate (crank angle sensor plate) has 34 teeth and is installed in the crankshaft. The NE signal sensor generates 34 signals at every engine revolution. The enginre ECM detects the crankshaft angle and the engine speed based on the NE signals, and the cylinder detection and the VVT palse based on the combination of the G2 and NE signals.

DTC No.	DTC Detecting Condition	Trouble Area
P0340/12	No camshaft position sensor signal to ECM during cranking (2 trip detection logic)	• Open or short in camshaft position sensor circuit • Camshaft position sensor • Intake camshaft • ECM
	No camshaft position sensor signal to ECM with engine speed 600 rpm or more	

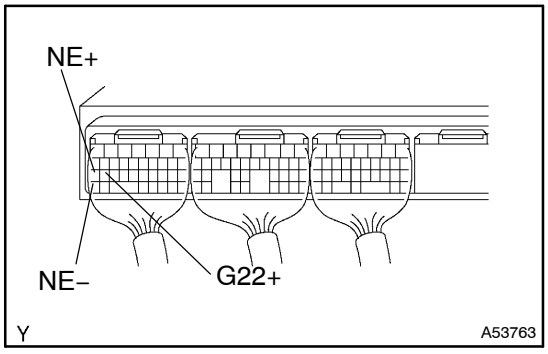
WIRING DIAGRAM

Refer to DTC P0335/12 on page 05–56.

INSPECTION PROCEDURE

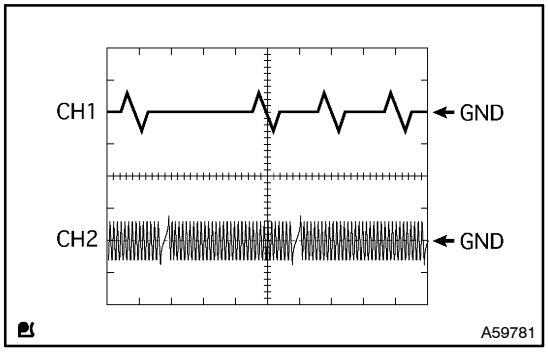
HINT:
Read freeze frame data using the hand–held tester, as freeze frame data records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air–fuel ratio was lean or rich, etc. at the time of the malfunction.

1	INSPECT CAMSHAFT POSITION SENSOR



(a) Check the camshaft position sensor for resistance.
(See page 18–2)
Rsistance:
835 – 1,400 Ω (Cold)
1,060 – 1,645 Ω (Hot)

HINT:
”Cold” and ”Hot” above express the temperature of the part itself. ”Cold” is from –10°C (14°F) to 50°C (122°F) and ”Hot” is from 50°C (122°F) to 100°C (212°F)



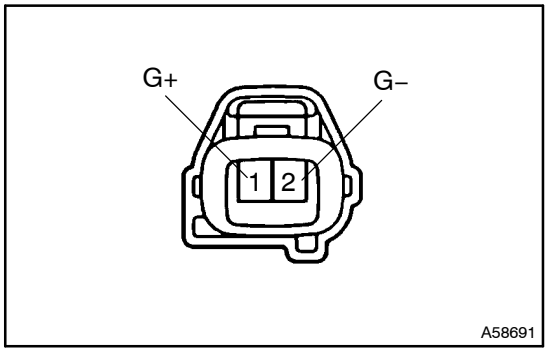
(b) Reference:
Inspection using the oscilloscope.
(1) During cranking or idling, check the waveform between terminals G22+ and NE–, and NE+ and NE– of the ECM connector.

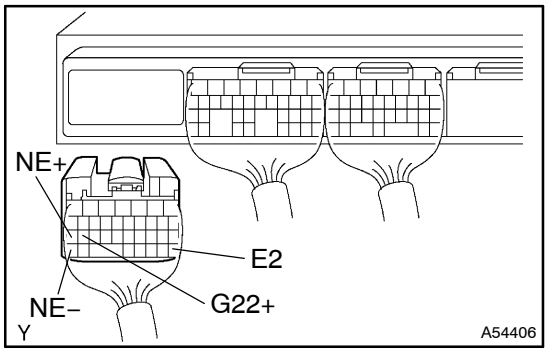
HINT:
The correct waveforms are as shown in the left.

NG → REPLACE CAMSHAFT POSITION SENSOR

OK

2 CHECK WIRE HARNESS OR CONNECTOR(ECM–CAMSHAFT POSITION SENSOR)





(a) Disconnect the camshaft position sensor connector.
(b) Disconnect the ECM E10 connector.
(c) Check continuity between the terminals G+ of the camshaft position sensor connector and G22+ of the ECM connector.
Resistance: 1 Ω or less
(d) Check for short between the terminals G22+ and E2 of the ECM connector.
Resistance: 1 MΩ or more
(e) Check continuity between the terminals G– of the camshaft position sensor connector and NE– of the ECM connector.
Resistance: 1 Ω or less
(f) Check for short between the terminals NE– and E2 of the ECM connector.
Resistance: 1 MΩ or more

NG → REPAIR OR REPLACE WIRE HARNESS OR CONNECTOR

OK

3 CHECK SENSOR ATTACHMENT PART

(a) Inspect the camshaft position sensor installation.

NG → REPAIR OR REPLACE SENSOR ATTACHMENT PART

OK

4 INSPECT CAMSHAFT

(a) Remove the camshafts.
(b) Check the camshaft lobes.

NG → REPAIR OR REPLACE CAMSHAFT

OK

CHECK AND REPLACE ECM