DTC	P0340/12	CAMSHAFT POSITION SENSOR ”A” CIRCUIT (BANK 1 OR SINGLE SENSOR)

CIRCUIT DESCRIPTION

Camshaft position sensor (G signal) consists of a magnet, iron core and pickup coil.
The G signal plate has 5 teeth on its outer circumference and is installed the pump drive shaft pulley. When the pump drive shaft pulley rotate, the protrusion on the signal plate and the air gap on the pickup coil change, causing fluctuations in the magnetic field and generating an electromotive force in the pickup coil.
The NE signal plate has 34 teeth and is mounted on the crank angle sensor plate. The NE signal sensor generates 34 signals at every engine revolution. The ECM detects the standard crankshaft angle based on the G signal and the actual crankshaft angle and the engine speed by the NE signal.

DTC No.	DTC Detection Condition	Trouble Area
P0340/12	No camshaft position sensor signal to ECM while cranking (1 trip detection logic)	• Open or short in camshaft position sensor circuit • Camshaft position sensor • Pump drive shaft pulley • ECM
P0340/12	No camshaft position sensor signal to ECM at engine speed of 650 rpm or more (1 trip detection logic)	• Open or short in camshaft position sensor circuit • Camshaft position sensor • Pump drive shaft pulley • ECM

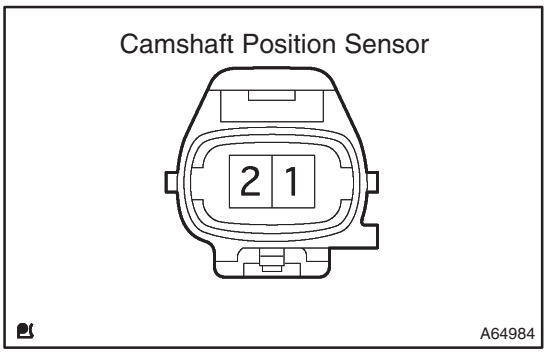
WIRING DIAGRAM

Refer to DTC P0335/12 on page 05–560.

INSPECTION PROCEDURE

HINT:
Read freeze frame data using the intelligent tester II. 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, and other data from the time the malfunction occurred.

1 INSPECT CAMSHAFT POSITION SENSOR (RESISTANCE)



(a) Disconnect the C1 sensor connector.
(b) Measure the resistance of the sensor.

Standard:

Tester Connection	Condition	Specified Condition
1 – 2	Cold	835 to 1,400 Ω
1 – 2	Hot	1,060 to 1,645 Ω

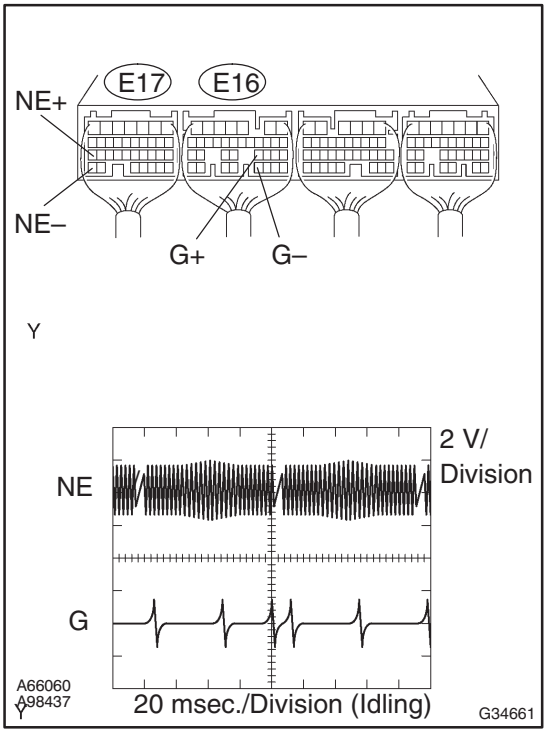
NOTICE:

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

HINT:

While cranking or idling the engine, check the waveform of the ECM connectors using an oscilloscope.

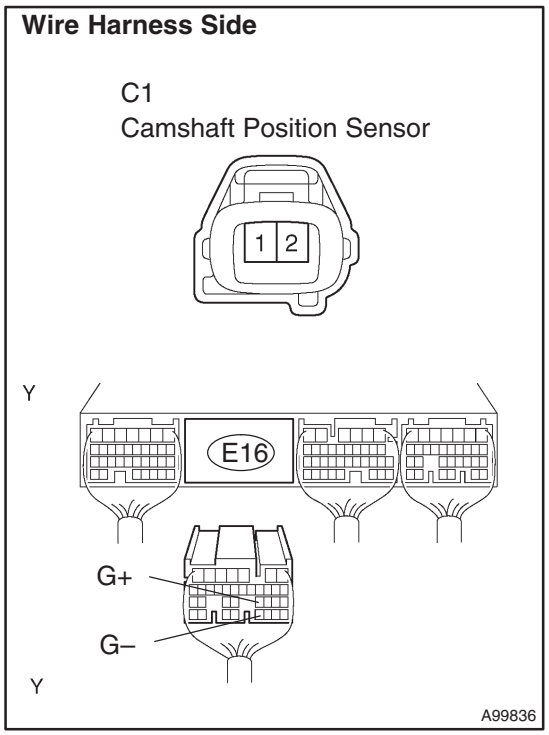
Tester Connection	Specified Condition
E16–23 (G+) – E16–31 (G–) E17–27 (NE+) – E17–34 (NE–)	Correct waveform is as shown



NG → **REPLACE CAMSHAFT POSITION SENSOR**

OK

2 CHECK WIRE HARNESS (CAMSHAFT POSITION SENSOR – ECM)



(a) Disconnect the C1 sensor connector.
(b) Disconnect the E16 ECM connector.
(c) Measure the resistance of the wire harness side connectors.

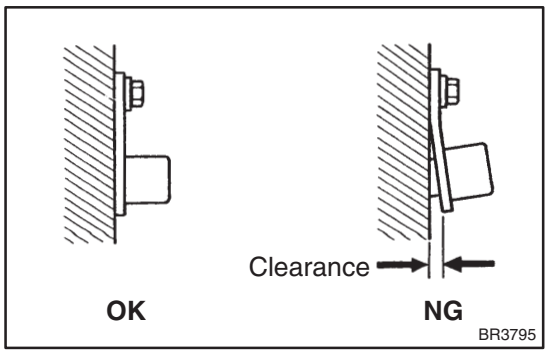
Standard:

Tester Connection	Specified Condition
C1–1 – E16–23 (G+)	Below 1 Ω
C1–2 – E16–31 (G–)	Below 1 Ω
C1–1 or E16–23 (G+) – Body ground	10 kΩ or higher
C1–2 or E16–31 (G–) – Body ground	10 kΩ or higher

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

OK

3 CHECK SENSOR INSTALLATION (CAMSHAFT POSITION SENSOR)



(a) Check the sensor installation.

OK: Sensor is installed correctly.

NG → **SECURELY REINSTALL SENSOR**

OK

4	CHECK PUMP DRIVE SHAFT PULLEY

(a) Check the teeth of the pump drive shaft pulley.
OK: Pulley's teeth do not have any cracks or deformation.

NG → **REPLACE PUMP DRIVE SHAFT PULLEY**

OK

REPLACE ECM (See Pub. No. RM990E, page 10–34)

NOTICE:
After replacing the ECM, allow for ECM learning start the engine and idle it until it is fully warmed up.