DIC2E–03

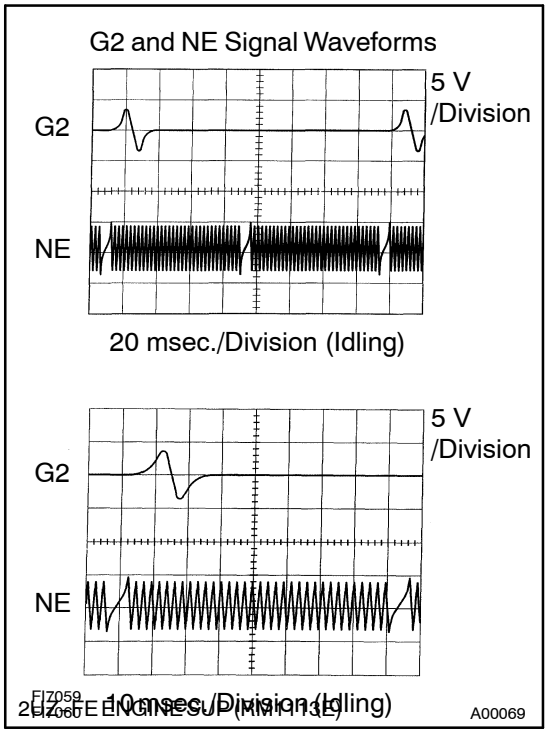
DTC	P0340/ 12	Camshaft Position Sensor "A" Circuit (Bank 1 or Single Sensor)

DTC	P034 1/12	Camshaft Position Sensor "A" Circuit Range/Performance (Single Sensor)

CIRCUIT DESCRIPTION

The camshaft position sensor (G signal) consists of a magnet iron core and pickup coil.
The G signal plate has 1 tooth on its outer circumference and is installed on the LH camshaft timing pulley. When the camshafts rotate, protrusion on the signal plate and air gap on the pickup coil change, causing fluctuations in the magnetic field and generating a voltage in the pickup coil.
The NE signal plate has 34 teeth and is mounted on the crankshaft. The NE signal sensor generates 34 signals at every engine revolution. The engine control ECU detects the crankshaft angle and the engine revolution based on the NE signals, and the cylinder and the angle of the G2 based on the combination of the G and NE signals.

DTC No.	DTC Detection Condition	Trouble Area
P0340/12	No camshaft position sensor signal to engine control ECU during cranking (2 trip detection logic)	• Open or short in camshaft position sensor circuit • Camshaft position sensor • LH camshaft timing pulley • Jumping teeth of timing belt • Engine control ECU
	No camshaft position sensor signal to engine control ECU with engine speed 600 rpm or more (1 trip detection logic)	
P0341/12	While crankshaft rotates twice, camshaft position sensor signal will be input to engine control ECU 12 times or more (1 trip detection logic) • Hint: Under normal condition, the camshaft position signal is input into the engine control ECU 1 times per 2 engine revolutions	



Reference: Inspection using the oscilloscope.
The correct waveform is as shown.

Tester Connection	Specified Condition
G2+ (E7 –27) – G2– (E7–32)	Correct waveform is as shown
NE+ (E7 –25) – NE– (E7–24)	

MONITOR DESCRIPTION

If there is no signal from the camshaft position sensor even though the engine is turning, or if the rotation of the camshaft and the crankshaft is not synchronized, the engine control ECU interprets this as a malfunction of the sensor.
This monitor runs for 10 seconds (the first 10 seconds of engine idle) after the engine is started.

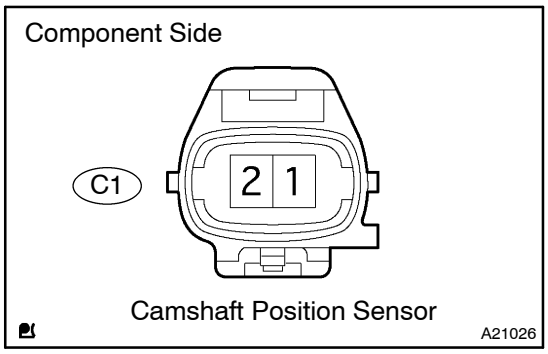
WIRING DIAGRAM

Refer to DTC P0335 on page DI–152.

INSPECTION PROCEDURE

HINT:
Read freeze frame data using the hand –held tester. 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, as well as other data from the time when a malfunction occurred.

1	**Check resistance of camshaft position sensor.**



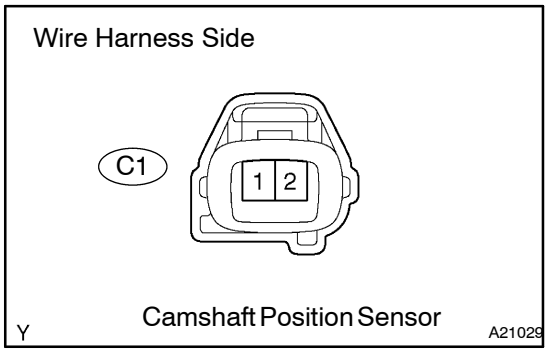
PREPARATION:
Disconnect the C1 camshaft position sensor connector.
CHECK:
Measure the resistance between terminals 1 and 2.
OK:

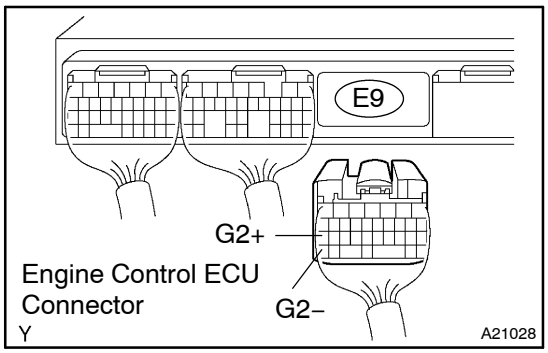
Tester Connection	Specified Condition
1 – 2	950 to 1,250 Ω (at 20 °C (68 °F))

NG → **Replace camshaft position sensor.**

OK

2	Check for open and short in harness and connector between engine control ECU and camshaft position sensor.





PREPARATION:

(a) Disconnect the C1 camshaft position sensor connector.

(b) Disconnect the E9 engine control ECU connector.

CHECK:

Measure the resistance between the wire harness side connectors.

OK:

Tester Connection	Specified Condition
Camshaft position sensor (C1 –1) – G2+ (E9 –27)	Below 1 Ω
Camshaft position sensor (C1 –2) – G2– (E9–32)	Below 1 Ω
Camshaft position sensor (C1 –1) or G2+ (E9 –27) – Body ground	10 k Ω or higher
Camshaft position sensor (C1 –2) or G2– (E9–32) – Body ground	10 k Ω or higher

NG → **Repair or replace harness or connector.**

OK

3	Check sensor installation (Camshaft position sensor).

CHECK:

Check the camshaft position sensor installation.

NG → **Tighten sensor.**

OK

4	**Inspect teeth of LH camshaft timing belt pulley.**

PREPARATION:

Remove the LH camshaft timing belt pulley (See Pub. No. RM630E, page EM –14).

CHECK:

Check the LH camshaft timing belt pulley.

NG → **Replace LH camshaft timing pulley.**

OK

Replace engine control ECU (See Pub. No. RM630E, page FI –74).