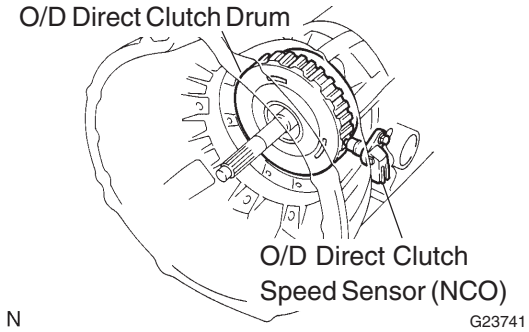
DTC	P0717/67	INPUT SPEED SENSOR CIRCUIT NO SIGNAL

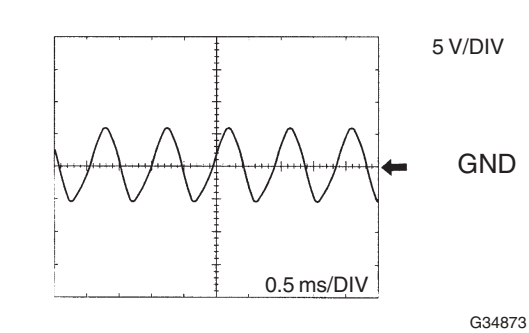
CIRCUIT DESCRIPTION



The O/D direct clutch speed sensor (NCO) detects the rotation speed of the O/D input shaft from the rotation of the O/D direct clutch drum. Its construction is the same as that of the speed sensor (SP2).

By comparing the O/D direct clutch speed signal and speed sensor (SP2) signal, the ECM detects the shift timing of the gears and appropriately controls the engine torque and hydraulic pressure in response to various conditions, thus achieving smooth gear shift.

DTC No.	DTC Detection Condition	Trouble Area
P0717/67	All conditions below are detected for 5 secs. or more (1–trip detection logic) (a) Gear change is not performed (b) Gear position: 1st, 2nd or 3rd (c) T/M input shaft rpm: 300 rpm or less (d) T/M output shaft rpm: 500 rpm or more (e) Park/neutral position switch: • NSW input signal is OFF • R input signal is OFF • L input signal is OFF (f) Shift solenoid valves and park/neutral position switch are in normal operation	• Open or short in speed sensor (NCO) circuit • Speed sensor (NCO) • ECM • Automatic transmission (clutch, brake or gear, etc.)



Reference (Using an oscilloscope):

Check the waveform between terminals NCO+ and NCO– of the ECM connector.

Standard: Refer to the illustration.

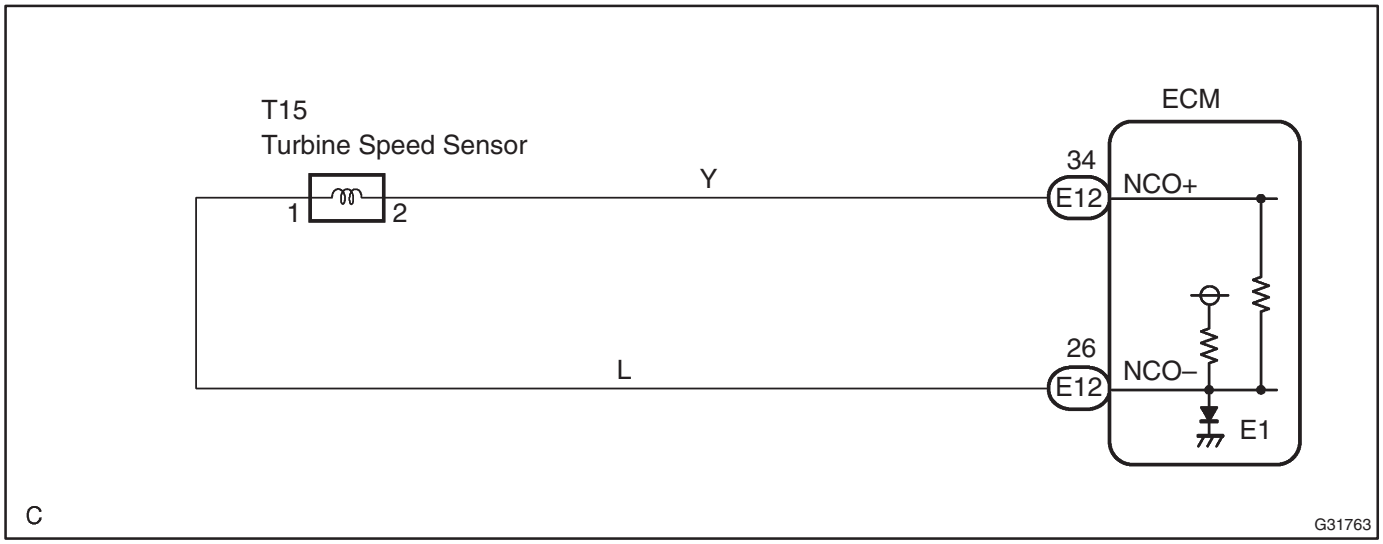
Terminal	NCO+ – NCO–
Tool setting	5V/DIV, 0.5ms/DIV
Vehicle condition	Engine idle speed (P or N position)

MONITOR DESCRIPTION

This DTC indicates that pulse is not output from the speed sensor NCO (O/D (input) speed sensor) or is output only little. The NCO terminal of the ECM detects the revolving signal from speed sensor (NCO) (input RPM). The ECM outputs a gearshift signal comparing the input speed sensor (NCO) with the output speed sensor (SP2).

When the output shaft speed is higher than the expected value and the input shaft speed is 300 rpm or less while running with the shift lever on D, the TCM will conclude that there is a malfunction of the input speed sensor (NCO). The TCM will illuminate the MIL and a DTC is set.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Using the Intelligent Tester II Data List allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the Data List early in troubleshooting is one way to shorten labor time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

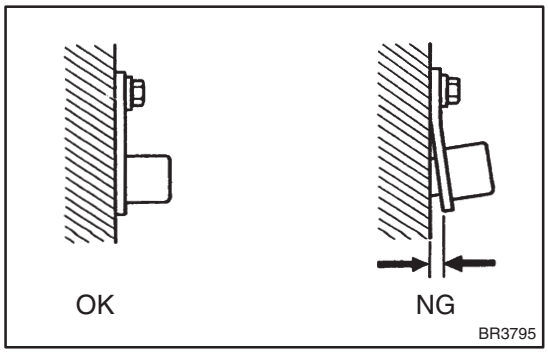
(a) Warm up the engine.
(b) Turn the ignition switch off.
(c) Connect the Intelligent Tester II to the DLC3.
(d) Turn the ignition switch to the ON position.
(e) Turn on the tester.
(f) Select the item "Enter / Power train / Engine and ECT / Data List".
(g) Follow the instructions on the tester and read the Data List.

Item	Measurement Item/ Range (display)	Normal Condition
SPD (NCO)	Input Turbine Speed/ display: 50 r/min	[HINT] • Lock–up ON (warmed up engine, other than O/D): Input Turbine Speed (NCO) is equal to engine speed • Lock–up ON (warmed up engine, O/D): Input Turbine Speed (NCO) is 0 rpm • Lock–up OFF (Idling with shift lever on N): Input Turbine Speed (NCO) is nearly equal to engine speed

HINT:

- SPD (NCO) is always 0 while driving:
  Open or short in the sensor or circuit.
- SPD (NCO) is always more than 0 and less than 300 rpm while driving the vehicle at 50 km/h (31 mph) or more:
  Sensor trouble, improper installation, or intermittent connection trouble of the circuit.

1	INSPECT SPEED SENSOR INSTALLATION

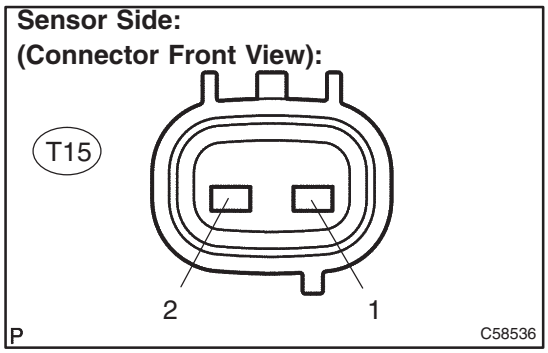


(a) Check the speed sensor (NCO) installation.
OK:
The installation bolt is tightened properly and there is no clearance between the sensor and transmission case.

NG → **REPLACE SPEED SENSOR(NCO)**

OK

2 INSPECT SPEED SENSOR(NCO)



(a) Disconnect the speed sensor connector from the transmission.

(b) Measure the resistance according to the value(s) in the table below.

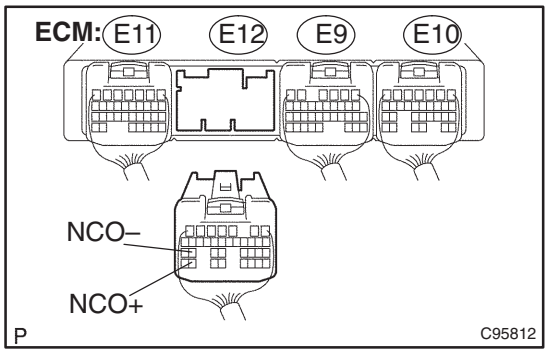
Standard:

Tester Connection	Specified Condition 20°C (68°F)
1 – 2	560 to 680 Ω

NG → **REPLACE SPEED SENSOR(NCO)**

OK

3 CHECK HARNESS AND CONNECTOR(SPEED SENSOR – ECM)



(a) Connect the speed sensor connector.

(b) Disconnect the ECM connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition 20°C (68°F)
E12 – 34 (NCO+) – E12 – 26 (NCO–)	560 to 680 Ω

(d) Measure the resistance according to the value(s) in the table below.

Standard (Check for short):

Tester Connection	Specified Condition
E12 – 34 (NCO+) – Body ground	10 kΩ or higher
E12 – 26 (NCO–) – Body ground	↑

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (SEE PAGE 01–36)**

OK

REPLACE ECM (SEE PAGE 10–12)