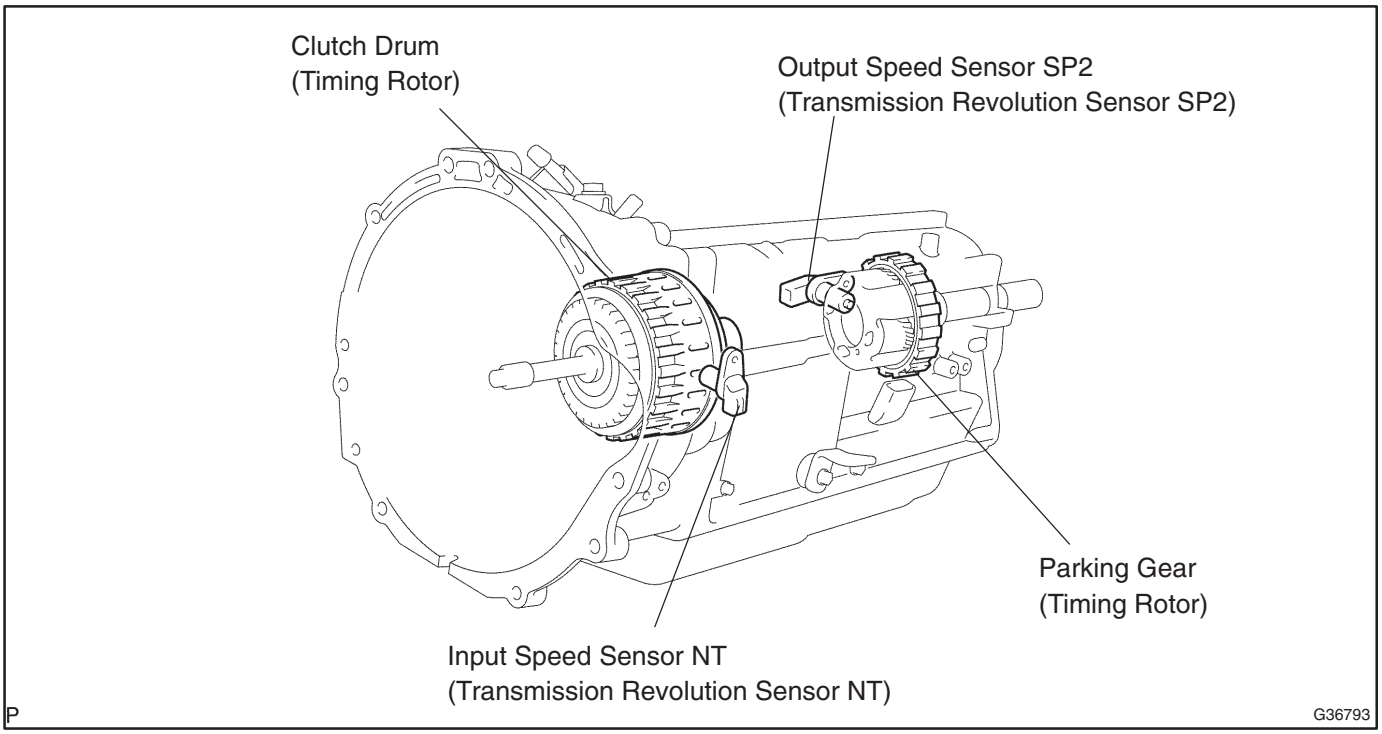
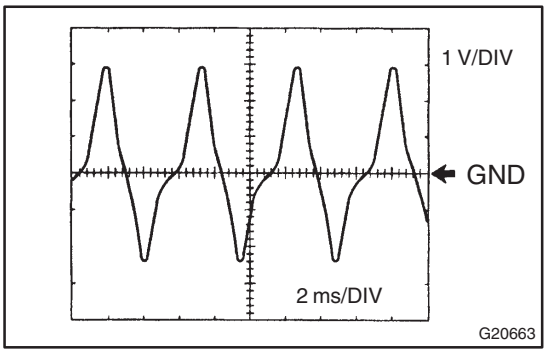
DTC	P0717/37	INPUT SPEED SENSOR CIRCUIT NO SIGNAL

CIRCUIT DESCRIPTION

This sensor detects the rotation speed of the turbine which shows the input revolution of transmission. By comparing the input turbine speed signal (NT) with the counter gear speed sensor signal (SP2), the TCM detects the shift timing of the gears and appropriately controls the engine torque and hydraulic pressure according to various conditions. Thus, providing smooth gear shift.



DTC No.	DTC Detection Condition	Trouble Area
P0717/37	All conditions below are detected for 5 secs. or more (2–trip detection logic) (a) Gear change is not performed (b) Gear position: 4th or 5th (c) T/M input shaft rpm: 300 rpm or less (d) T/M output shaft rpm: 1,000 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 (NT) circuit • Speed sensor (NT) • TCM • Automatic transmission (clutch, brake or gear, etc.)



Reference (Using an oscilloscope):

Check the waveform between terminals NT+ and NT– of the TCM connector.

Standard: Refer to the illustration.

Terminal	NT+ – NT–
Tool setting	1V/DIV, 2ms/DIV
Vehicle condition	Engine idle speed (P or N position)

MONITOR DESCRIPTION

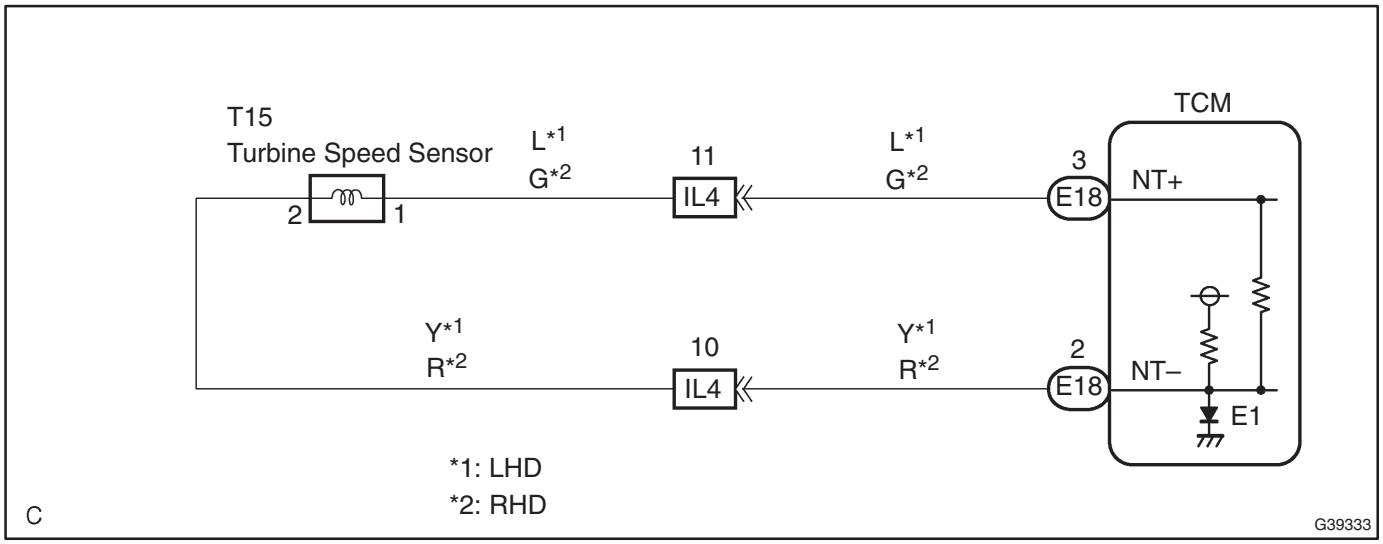
This DTC indicates that pulse is not output from the speed sensor NT (Turbine (input) speed sensor) or is output only little. The NT terminal of the TCM detects the revolving signal from speed sensor (NT) (input RPM). The TCM outputs a gearshift signal comparing the input speed sensor (NT) with the output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

While the vehicle is operating in the 4th or 5th gear position in the shift position of D, if the input shaft revolution is less than 300 rpm*1 although the output shaft revolution is more than 1000 rpm or more*2, the TCM detects the trouble, illuminates the MIL and stores the DTC.

*1: Pulse is not output or is irregularly output.

*2: The vehicle speed is approx. 50 km/h (31 mph) or more.

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.

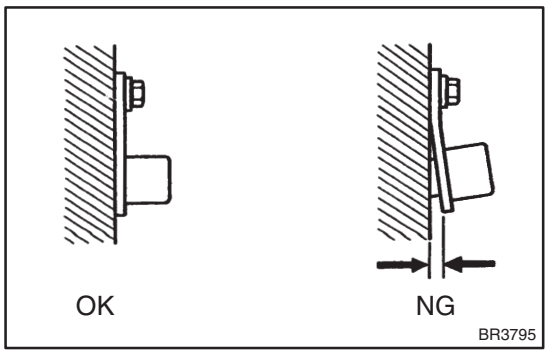
(a) Warm up the engine.
(b) Turn the ignition switch off.
(c) Connect the Intelligent Tester II to the DLC3.
(d) Turn the ignition switch to the ON position.
(e) Turn on the tester.
(f) Select the item "Enter / Power train / ECT / Data List".
(g) Follow the instructions on the tester and read the Data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

Item	Measurement Item/ Range (display)	Normal Condition
SPD (NT)	Input Turbine Speed/ display: 50 r/min	[HINT] • Lock–up ON (After warming up the engine); Input Turbine speed (NT) equal to the engine speed. • Lock–up OFF (Idling at N position); Input Turbine speed (NT) nearly equal to the engine speed.

HINT:

- SPD (NT) is always 0 while driving:
  Open or short in the sensor or circuit.
- SPD (NT) 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

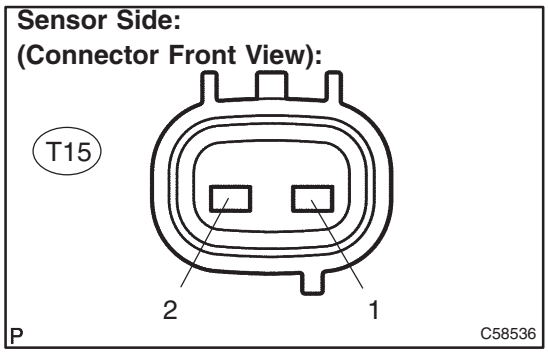


(a) Check the speed sensor (NT) installation.
OK:
The installation bolt is tightened properly and there is no clearance between the sensor and transmission case.

NG → **REPLACE SPEED SENSOR(NT)** **(SEE PAGE 40–67)**

OK

2 INSPECT SPEED SENSOR(NT)



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

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

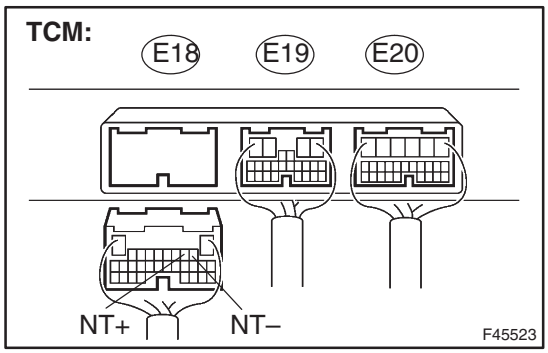
Standard:

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

NG → **REPLACE SPEED SENSOR(NT) (SEE PAGE 40–67)**

OK

3 CHECK HARNESS AND CONNECTOR(SPEED SENSOR – TCM)



(a) Connect the speed sensor connector.

(b) Disconnect the TCM connector.

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

Standard:

Tester Connection	Specified Condition 20°C (68°F)
E18 – 3 (NT+) – E18 – 2 (NT–)	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
E18 – 3 (NT+) – Body ground	10 kΩ or higher
E18 – 2 (NT–) – Body ground	↑

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

OK

REPLACE TCM