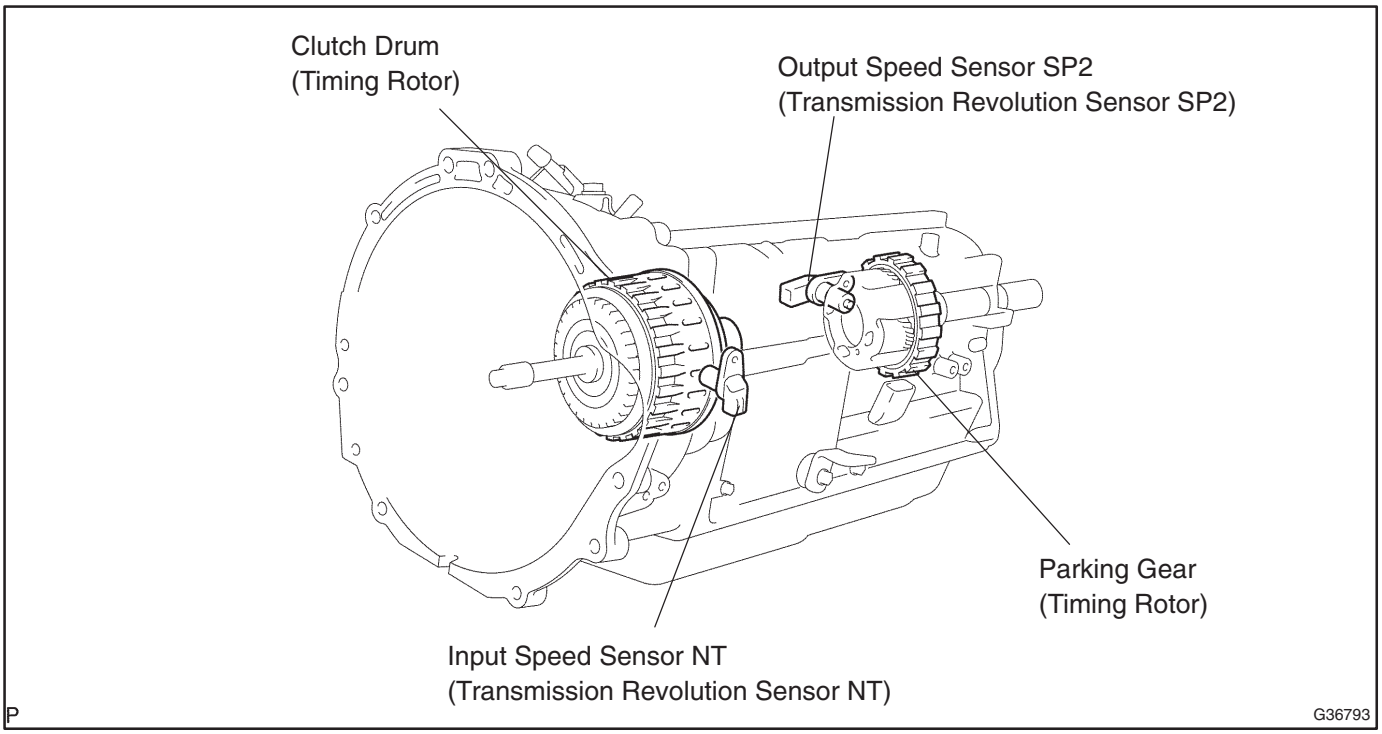
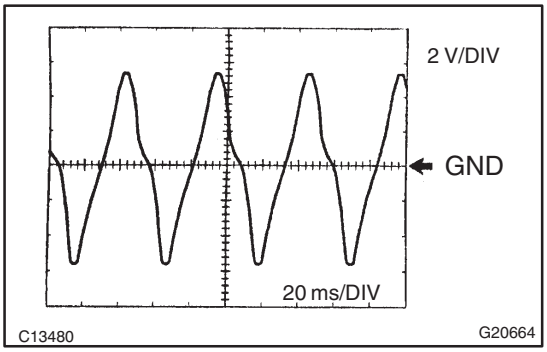
DTC	P0722	OUTPUT SPEED SENSOR CIRCUIT NO SIGNAL

CIRCUIT DESCRIPTION

The speed sensor SP2 detects the rotation speed of the transmission output shaft and sends signals to the ECM. The ECM determines the vehicle speed based on these signals. An AC voltage is generated in the speed sensor SP2 coil as the parking gear mounted on the rear planetary gear assy rotates, and this voltage is sent to the ECM. The parking gear on the rear planetary gear is used as the timing rotor for this sensor. The gear shift point and lock–up timing are controlled by the ECM based on the signals from this vehicle speed sensor and the throttle position sensor signal.



DTC No.	DTC Detection Condition	Trouble Area
P0722	All conditions below are detected 500 times or more continuously (1–trip detection logic) (a) No signal from speed sensor (SP2) is input to ECM while 4 pulses of No. 1 vehicle speed sensor signal are sent (b) Vehicle speed is 9 km/h (6 mph) or more for at least 4 sec. (c) Park/neutral position switch is OFF. (d) Transfer position is except neutral (4WD).	• Open or short in speed sensor (SP2) circuit • Speed sensor (SP2) • ECM • Automatic transmission (clutch, brake or gear, etc.)



Reference (Using an oscilloscope):

Check the waveform between terminals SP2+ and SP2– of the ECM connector.

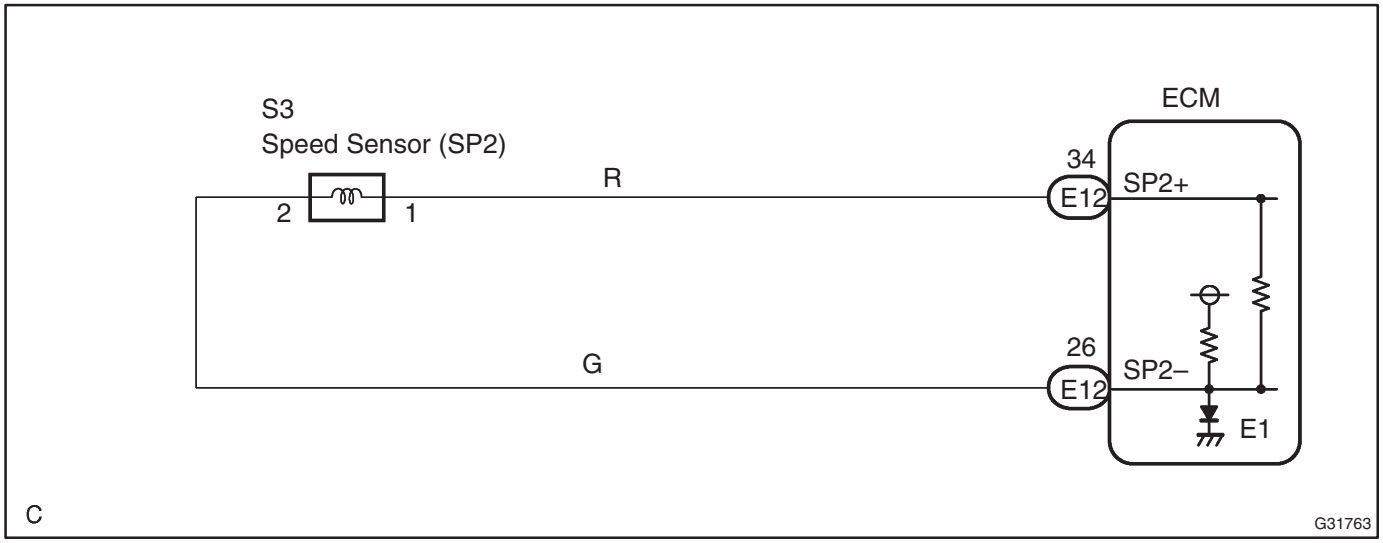
Standard: Refer to the illustration.

Terminal	SP2+ – SP2–
Tool setting	2V/DIV, 20ms/DIV
Vehicle condition	Vehicle speed 20 km/h (12 mph)

MONITOR DESCRIPTION

The output speed sensor SP2 monitors the output shaft speed. The ECM controls the gearshift point and the lock up timing based on the signals from the output speed sensor SP2 and throttle position sensor.
If the ECM detects no signal from the output shaft speed sensor SP2 even while the vehicle is moving, it will conclude that is a malfunction of the output speed sensor SP2. The ECM will illuminate the MIL and set a DTC.

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.

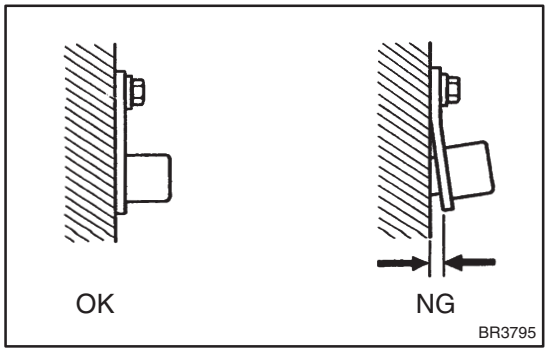
(a) Warm up the engine.
(b) Turn the ignition switch off.
(c) Connect the Intelligent Tester II to the DLC3.
(d) Turn the ignition switch to the ON position.
(e) Turn on the tester.
(f) Select the item ”Enter / Power train / Engine and ECT / Data List”.
(g) Follow the instructions on the tester and read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

Item	Measurement Item/ Range (display)	Normal Condition
SPD (SP2)	Output shaft Speed/ min.: 0 km/h (0 mph) max.: 255 km/h (158 mph)	Vehicle stopped: 0 km/h (0 mph) [HINT] Equal to vehicle speed

HINT:

- SPD (SP2) is always 0 while driving:
  Open or short in the sensor or circuit.
- The SPD (SP2) value displayed on the tester is much lower than the actual vehicle speed:
  Sensor trouble, improper installation, or intermittent connection trouble of the circuit.

1	INSPECT SPEED SENSOR INSTALLATION

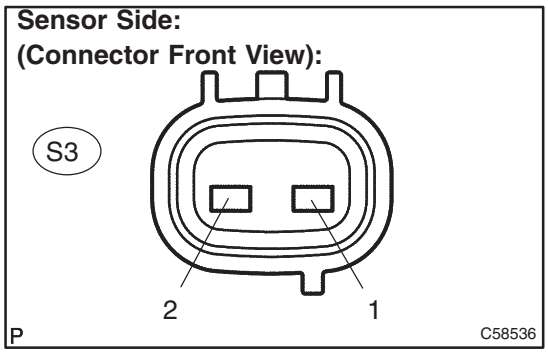


(a) Check the speed sensor (SP2) installation.
OK:
The installation bolt is tightened properly and there is no clearance between the sensor and transmission case.

NG → **REPLACE SPEED SENSOR(SP2)**

OK

2 INSPECT SPEED SENSOR(SP2)



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

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

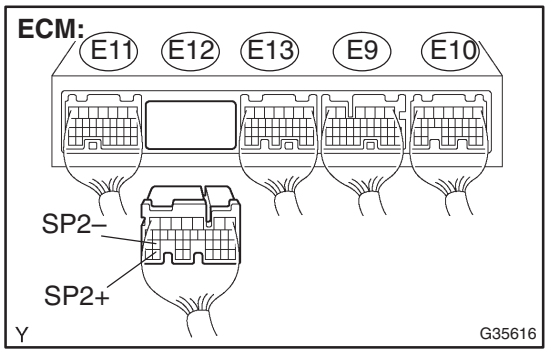
Standard:

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

NG → **REPLACE SPEED SENSOR(SP2)**

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 (SP2+) – E12 – 26 (SP2–)	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 (SP2+) – Body ground	10 kΩ or higher
E12 – 26 (SP2–) – Body ground	↑

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

OK

REPLACE ECM