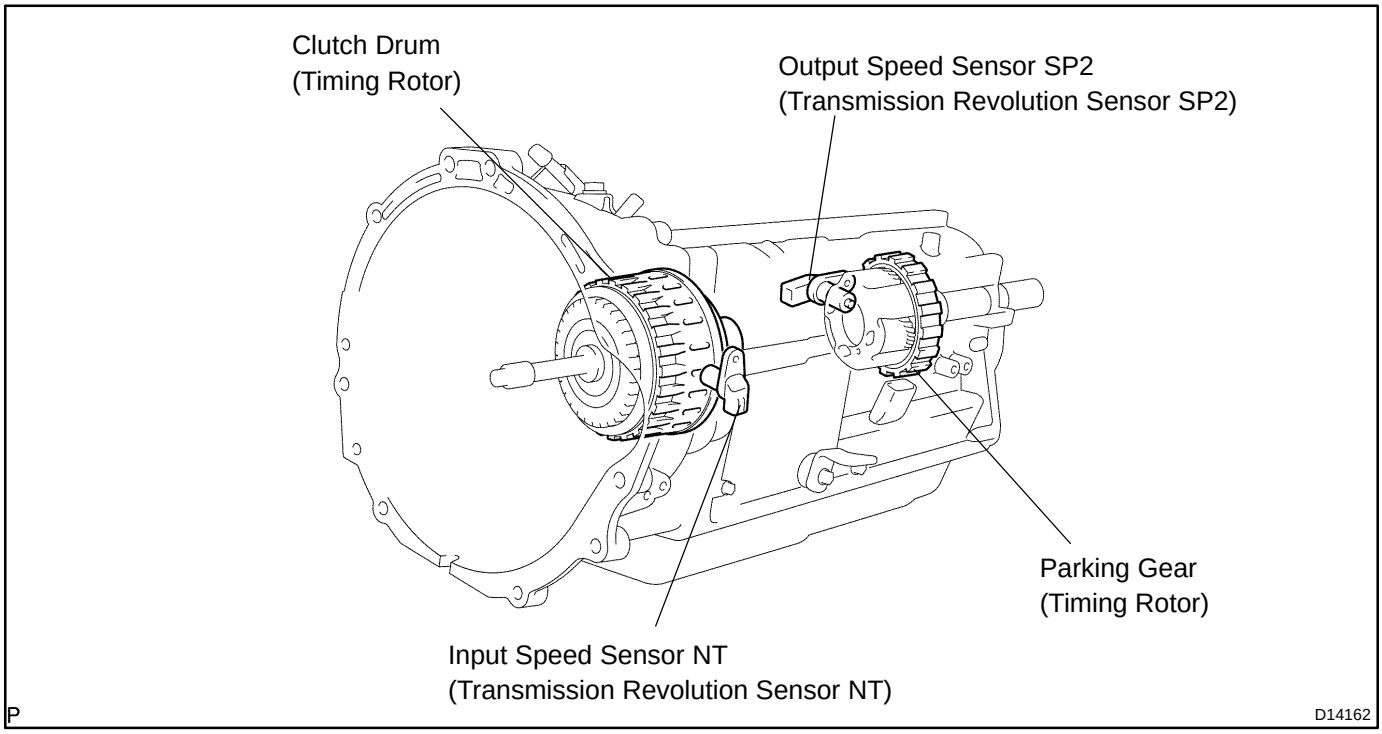
DIDVC−01

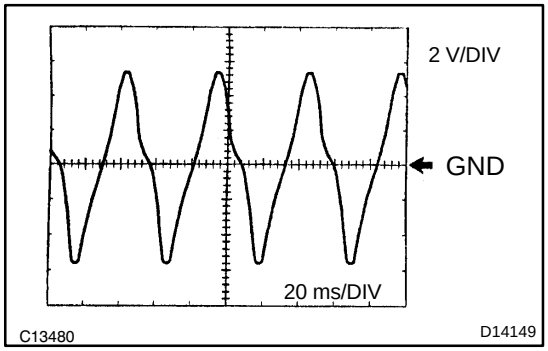
DTC	P0722	Output Speed Sensor Circuit No Signal

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.

MONITOR STRATEGY

Related DTCs	P0722	Speed sensor SP2/Verify pulse input
Required sensors/Components	Speed sensor SP2	
Frequency of operation	Continuous	
Duration	500 output shaft revolution	
MIL operation	Immediate	
Sequence of operation	None	

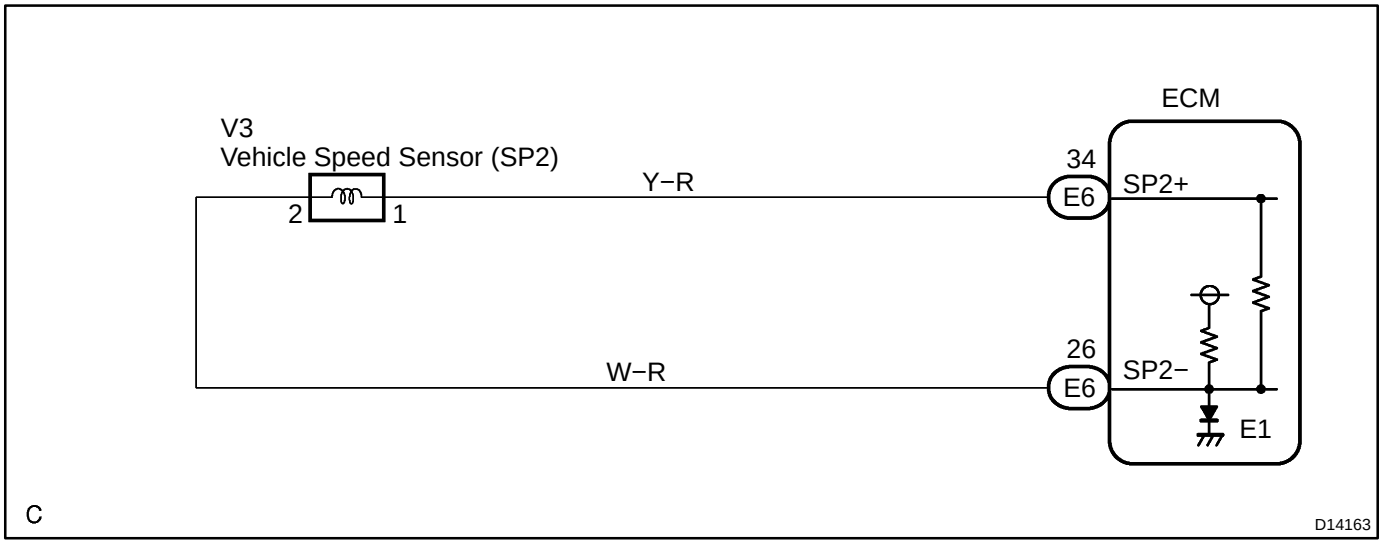
TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever this DTC is not present.	See page DI−963	
Vehicle speed sensor pulse input	4	
Vehicle speed range (4 sec. or more)	9 km/h (5.59 mph) or more	−
NSW switch	OFF	
Battery voltage	8 V or more	−
Ignition switch	ON	
Starter	OFF	

TYPICAL MALFUNCTION THRESHOLDS

Detection criteria	Threshold
Output speed sensor pulse input	No input

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

According to the DATA LIST displayed by the OBD II scan tool or hand−held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as the first step of troubleshooting is one method to shorten labor time.

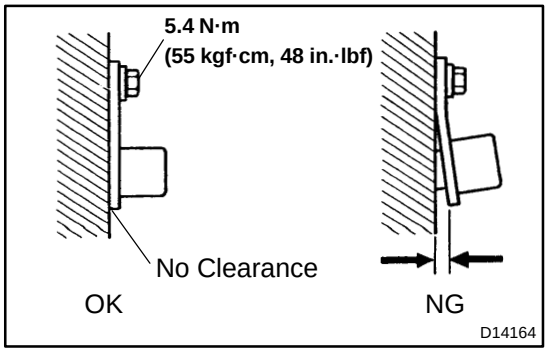
(a) Warm up the engine.
(b) Turn the ignition switch off.
(c) Connect the OBD II scan tool or hand−held tester to the DLC3.
(d) Turn the ignition switch to the ON position.
(e) Push the ”ON” button of the OBD II scan tool or the hand−held tester.
(f) When you use the hand−held tester:
Select the item ”DIAGNOSIS / ENHANCED OBD II / DATA LIST”.
(g) According to the display on the tester, 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.
- SPD (SP2) 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.**



PREPARATION:

Jack up the vehicle.

CHECK:

Check the speed sensor (SP2) installation.

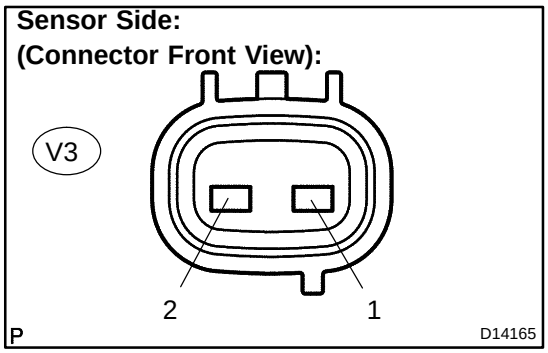
OK:

The installation bolt is tightened properly and there is no clearance between the sensor and transmission case.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

NG → **Replace speed sensor SP2 (See page AT−8).**

OK

2	Inspect speed sensor SP2.



PREPARATION:

Disconnect the speed sensor connector from the transmission.

CHECK:

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

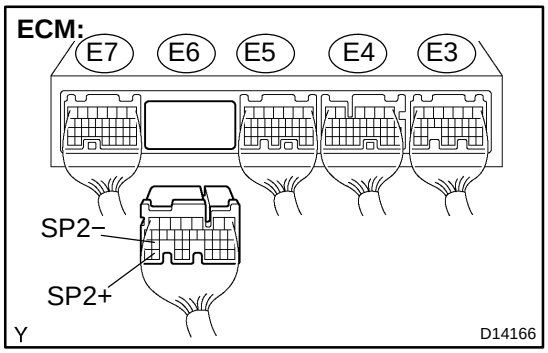
OK:

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

NG → **Replace speed sensor SP2 (See page AT−8).**

OK

3	Check harness and connector (ECM − speed sensor SP2).



PREPARATION:

(a) Connect the speed sensor connector.

(b) Disconnect the ECM connector.

CHECK:

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

OK:

Tester Connection	Specified Condition 20°C (68°F)
E6 − 34 (SP2+) − E6 − 26 (SP2−)	560 to 680 Ω

CHECK:

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

OK:

Tester Connection	Specified Condition
E6 − 34 (SP2+) − Body ground	10 kΩ or higher
E6 − 26 (SP2−) − Body ground	↑

NG → **Repair or replace harness or connector (See page IN−30).**

OK

Replace the ECM (See page SF−66).