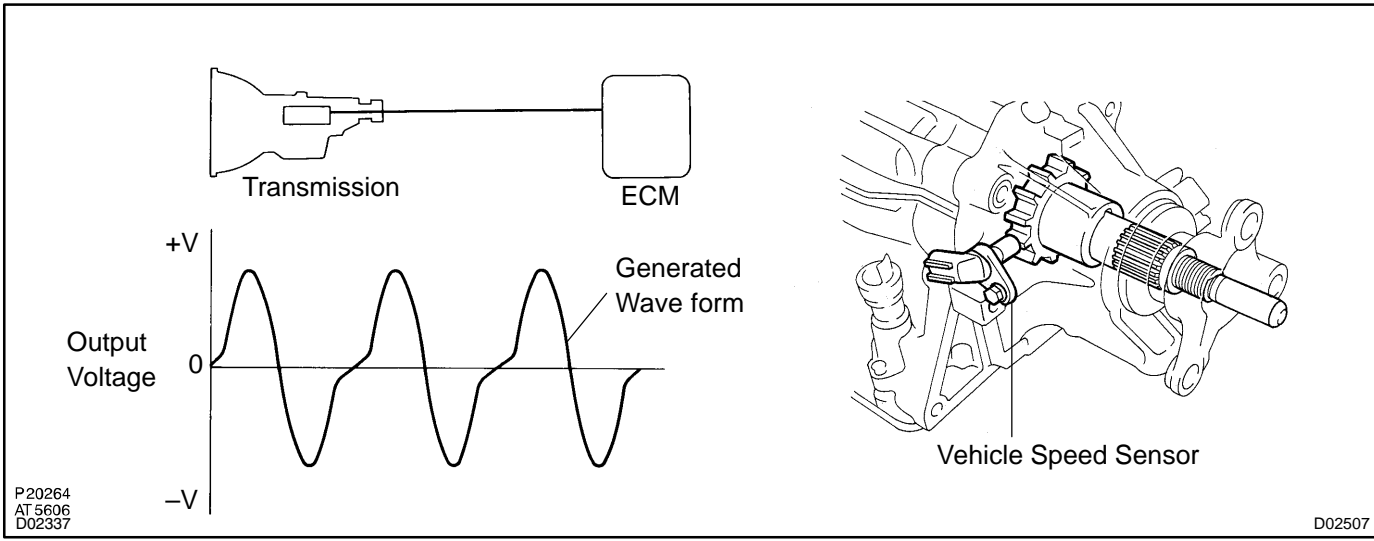


# CIRCUIT INSPECTION

|            |              |   |
|------------|--------------|---|
| <b>DTC</b> | <b>P0500</b> | <b>Vehicle Speed Sensor Malfunction</b> |
|------------|--------------|---|

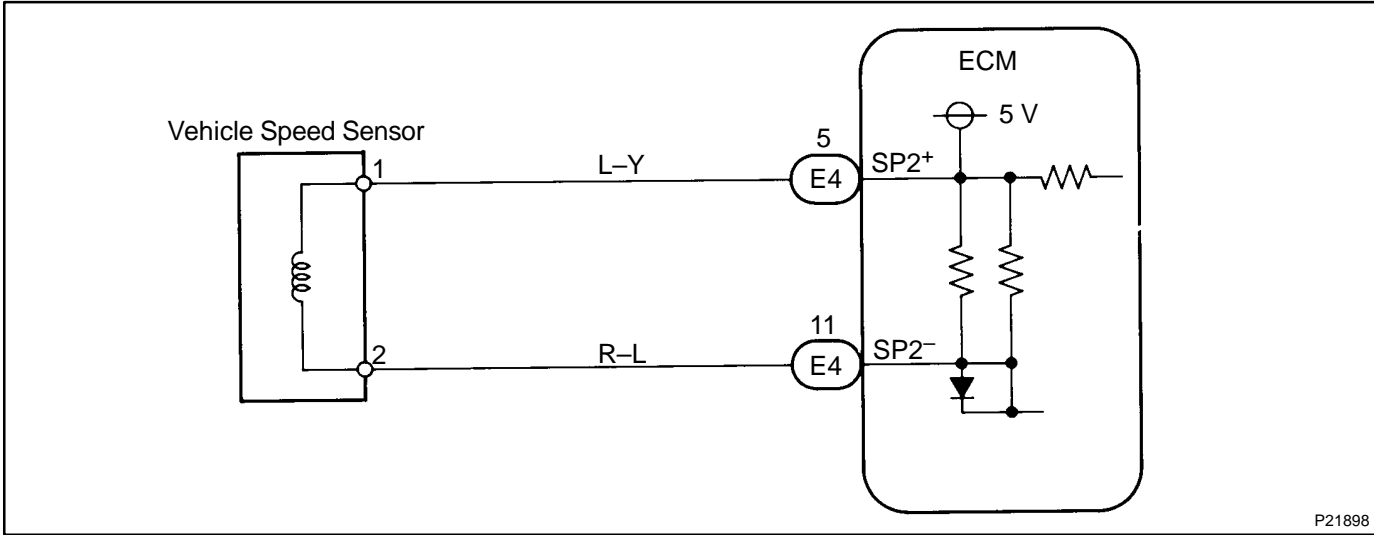
## CIRCUIT DESCRIPTION

The vehicle speed sensor 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 vehicle speed sensor coil as the rotor mounted on the output shaft rotates, and this voltage is sent to the ECM.



| DTC No. | DTC Detecting Condition   | Trouble Area  |
|---------|---|---|
| P0500   | No vehicle speed sensor signal to ECM under conditions 1. and 2.:<br>2. Neutral start switch is OFF<br>3. Vehicle is being driven | <ul style="list-style-type: none"> <li>• Open or short in vehicle speed sensor circuit</li> <li>• Vehicle speed sensor</li> <li>• ECM</li> <li>• Automatic transmission assembly</li> </ul> |
|         | Clutch or brake slips or gear broken  |   |

## WIRING DIAGRAM



## INSPECTION PROCEDURE

### HINT:

Read freeze frame data using LEXUS hand-held tester. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

|   |   |
|---|---|
| 1 | Connect LEXUS hand-held tester and read value of vehicle speed value. |
|---|---|

### PREPARATION:

- (a) Connect the LEXUS hand-held tester to the DLC3.
- (b) Start the engine and the LEXUS hand-held tester main switch ON.

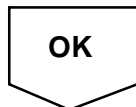
### CHECK:

Drive the vehicle and read vehicle speed value.

### OK:

Vehicle speed matches tester speed value

|    |  |
|----|--|
| NG | Check and replace ECM (See page <a href="#">IN-32</a> ). |
|----|--|

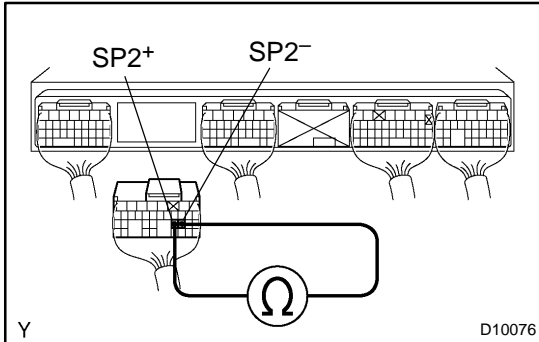


|   |  |
|---|--|
| 2 | Check speedometer circuit (See page <a href="#">BE-83</a> ). |
|---|--|

|    |  |
|----|--|
| NG | Repair or replace speedometer circuit. |
|----|--|



### 3 Check resistance between terminals SP2+ and SP2- of ECM connector.



#### PREPARATION:

- (a) Remove the instrument panel under cover.
- (b) Disconnect the connector of the ECM.

#### CHECK:

Check resistance between terminals SP2+ and SP2- of the ECM connector.

#### OK:

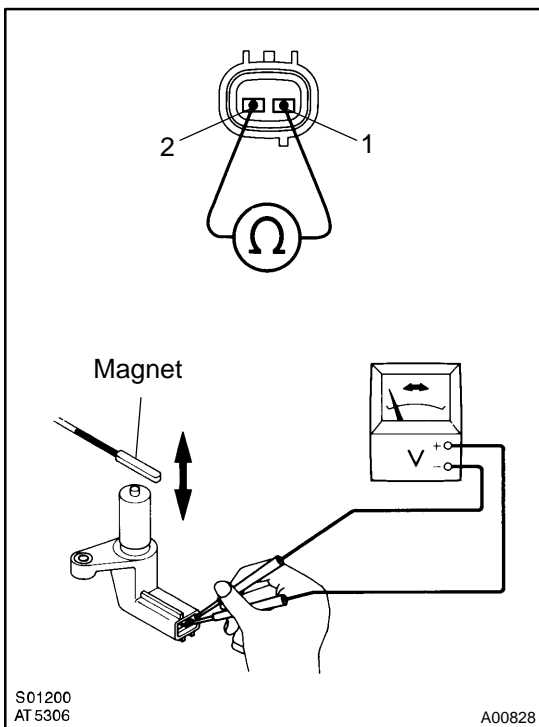
**Resistance: 560 – 680 Ω at 20 °C (68 °F)**

**OK**

**Check and replace ECM (See page [IN-32](#)).**

**NG**

### 4 Check vehicle speed sensor.



#### PREPARATION:

Remove the vehicle speed sensor from the transmission.

#### CHECK:

Measure resistance between terminals 1 and 2 of the speed sensor.

#### OK:

**Resistance: 560 – 680 Ω at 20 °C (68 °F)**

#### Reference:

#### Check vehicle speed sensor's function

#### CHECK:

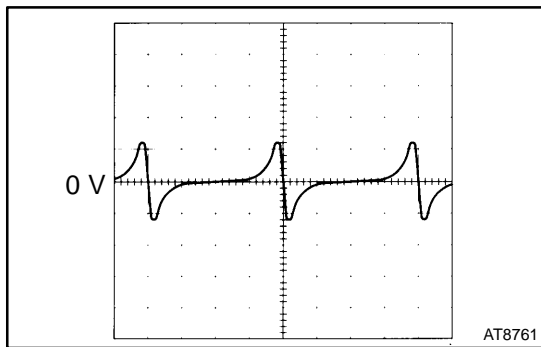
Check voltage between terminals 1 and 2 of the vehicle speed sensor when a magnet is put close to front end of the vehicle speed sensor then taken away quickly.

#### OK:

**Voltage is generated intermittently**

#### HINT:

The generated voltage is extremely low.

**Reference: INSPECTION USING OSCILLOSCOPE**

Refer to the chart for wave form between terminals SP2<sup>+</sup> and SP2<sup>-</sup> When the vehicle speed is approx. 60 km/h (37 mph).

**NG****Replace vehicle speed sensor.****OK****5**

**Check and repair harness and connector between ECM and vehicle speed sensor (See page [IN-32](#)).**

**NG****Replace or repair wire harness or connector.****OK**

**Check and repair the transmission (clutch, brake or gear etc.).**