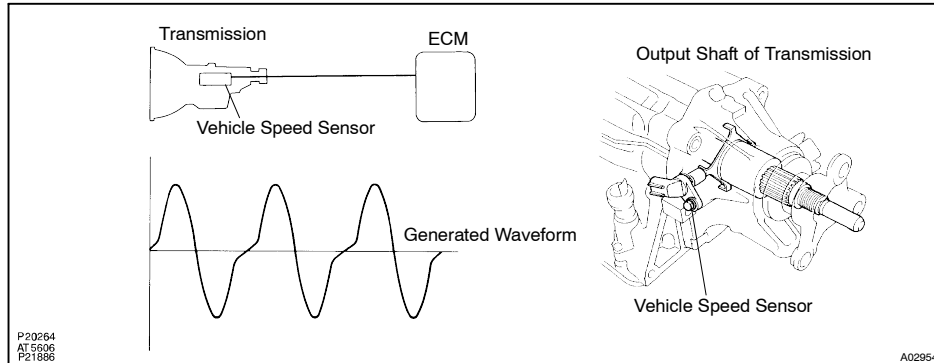


DTC	P0500	VEHICLE SPEED SENSOR "A"
-----	-------	--------------------------

DTC	P0503	VEHICLE SPEED SENSOR "A" INTERMITTENT/ERRATIC/HIGH
-----	-------	---

CIRCUIT DESCRIPTION

The Vehicle speed sensor outputs a 4-pulse signal for every revolution of the rotor shaft, which is rotated by the transmission output shaft via the driven gear. The ECM determines the vehicle speed based on this signal.



DTC No.	DTC Detection Condition	Trouble Area
P0500	ECM does not detect any vehicle speed signal when vehicle is being driven (1 trip detection logic)	<ul style="list-style-type: none"> • Open or short in vehicle speed sensor circuit • Vehicle speed sensor • ECM
P0503		

MONITOR DESCRIPTION

The ECM assumes that the vehicle is being driven when the engine RPM is more than 2,000 rpm and the Park/Neutral Position (PNP) switch was turned OFF (for 30 seconds). If there is no signal from the vehicle speed sensor when the vehicle is being driven, the ECM interprets this as a malfunction in the vehicle speed sensor. The ECM illuminates the Malfunction Indicator Lamp (MIL) and sets a DTC.

MONITOR STRATEGY

Related DTCs	P0500: Vehicle speed sensor circuit
Required Sensors/Components (Main)	Vehicle speed sensor
Required Sensors/Components (Related)	Throttle position sensor, PNP switch, ECT sensor, Crankshaft position sensor, IAT sensor
Frequency of Operation	Continuous
Duration	2 seconds: IAT is 10°C (50°F) or more 8 seconds: IAT is less than -10°C (14°F)
MIL Operation	Immediate
Sequence of Operation	None

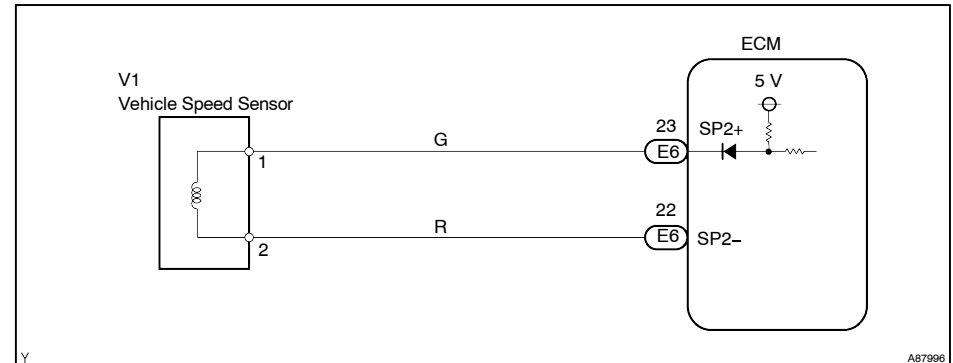
TYPICAL ENABLING CONDITIONS

Monitor will run whenever these DTCs are not present	See page 05-19
Battery voltage	8 V or more
Engine RPM	2,000 rpm or more (varies with throttle position)
Either of following conditions A and B is met	
Condition A:	
Time after PNP switch ON to OFF	10 seconds or more
ECT sensor	ECT is 20°C (68°F) or more and ECT sensor does not malfunction (P0115 or P0116)
Condition B:	
Time after PNP switch ON to OFF	30 seconds or more
ECT sensor	ECT is less than 20° (68°F) or ECT sensor malfunctions (P0115 or P0116)

TYPICAL MALFUNCTION THRESHOLDS

Vehicle speed sensor signal	No pulse input
-----------------------------	----------------

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand-held tester. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air-fuel ratio was LEAN or RICH, and other data from the time the malfunction occurred.

1 READ DATA LIST (VEHICLE SPEED)

- (a) Connect the hand-held tester to the CAN VIM. Then connect the CAN VIM to the DLC3.
- (b) On the hand-held tester, enter the following menus: DIAGNOSIS / ENHANCED OBD II / DATA LIST / PRIMARY / VEHICLE SPD.
- (c) Drive the vehicle at 2,500 rpm or more.

Result:

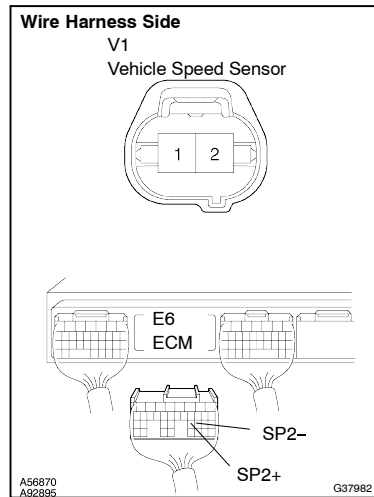
Vehicle Speed	Proceed to
Vehicle speed remains 0 km/h (0 mph)	A
Vehicle speed is lower than actual speed	B
Vehicle speed is same as actual speed	C

B Go to step 3

C CHECK FOR INTERMITTENT PROBLEM (See page 05-12)

A

2 CHECK WIRE HARNESS (VEHICLE SPEED SENSOR - ECM)



- (a) Disconnect the V1 sensor connector.
- (b) Disconnect the E6 ECM connector.
- (c) Measure the resistance of the wire harness side connectors.

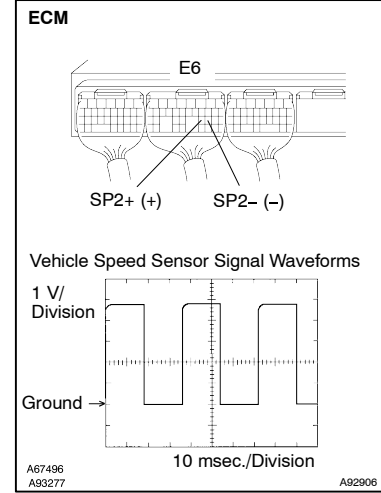
Standard:

Tester Connection	Specified Condition
V1-1 - E6-23 (SP2+)	Below 1 Ω
V1-2 - E6-22 (SP2-)	Below 1 Ω
V1-1 or E6-23 (SP2+) - Body ground	10 kΩ or higher
V1-2 or E6-22 (SP2-) - Body ground	10 kΩ or higher

NG REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

3 CHECK ECM (SP2 SIGNAL)



- (a) Check the waveform of the ECM when the vehicle speed is approximately 60 km/h (37 mph).

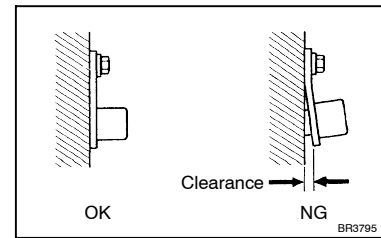
OK:

Tester Connection	Specified Condition
E6-23 (SP2+) - E6-22 (SP2-)	Correct waveforms are as shown

NG REPLACE VEHICLE SPEED SENSOR

OK

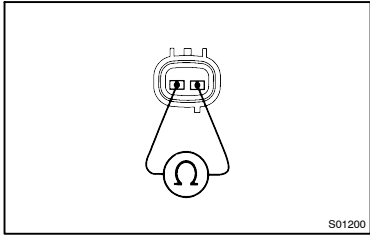
4 CHECK SENSOR INSTALLATION (VEHICLE SPEED SENSOR)



- (a) Check the sensor installation.
OK: Sensor is installed correctly.

NG SECURELY REINSTALL SENSOR

OK

5 INSPECT VEHICLE SPEED SENSOR (RESISTANCE)

- (a) Measure the resistance of the sensor.
Standard: 560 to 680 Ω

NG

REPLACE VEHICLE SPEED SENSOR

OK

6 CHECK DTC

- (a) Connect the hand-held tester to the CAN VIM. Then connect the CAN VIM to the DLC3.
 (b) Drive the vehicle at 3,000 rpm or more for 10 seconds or more.
 (c) Read the DTCs.

Result:

Display (DTC output)	Proceed to
No DTC	A
P0500	B

B

REPLACE ECM (See page 10-20)

A

END