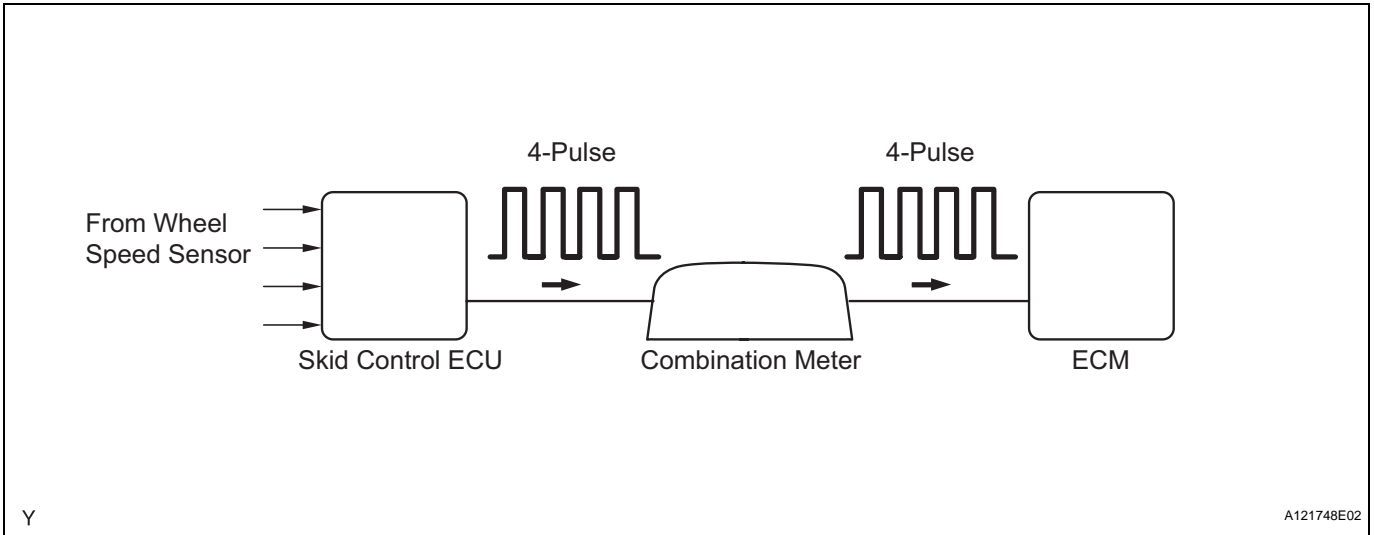


DTC	P0500	Vehicle Speed Sensor "A"
DTC	P0503	Vehicle Speed Sensor "A" Intermittent / Erratic / High

DESCRIPTION

Automatic Transaxle Models:

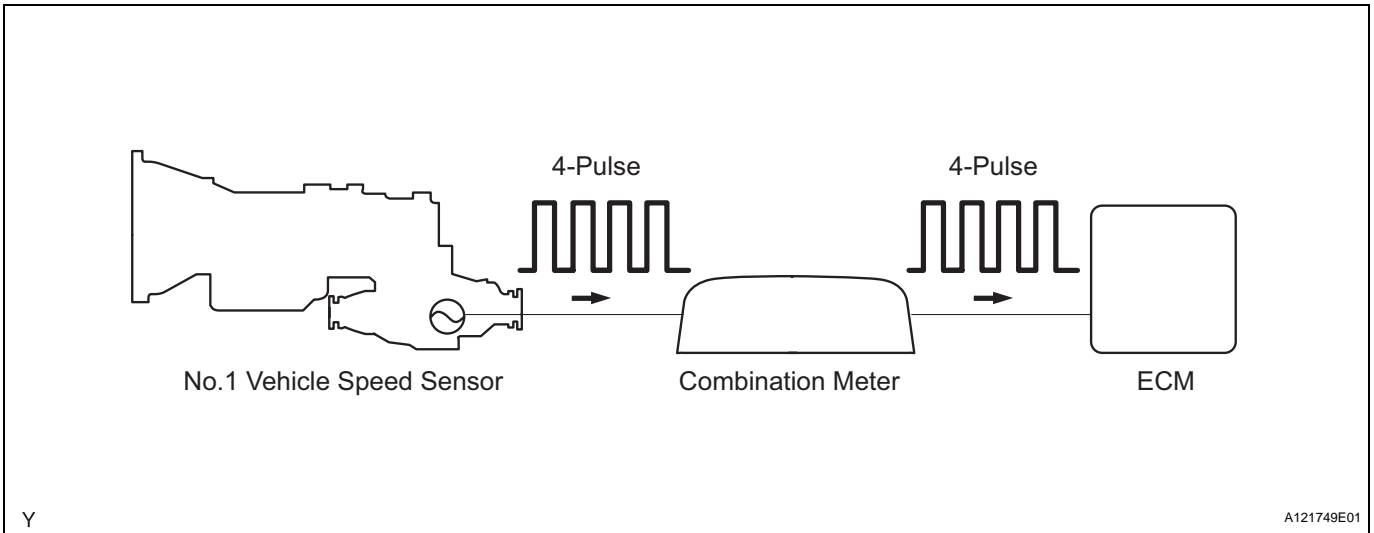
Vehicles, which are equipped with ABS (Anti-lock Brake System), detect the vehicle speed using the skid control ECU and wheel speed sensor. The wheel speed sensor monitors the wheel rotation speed and sends a signal to the skid control ECU. The skid control ECU converts the wheel speed signal into a 4-pulse signal and transmits it to the ECM via the combination meter. The ECM determines the vehicle speed based on the frequency of the pulse signal.



ES

Manual Transaxle Models:

Vehicles, which are equipped with manual transaxle, detect the vehicle speed using the No. 1 vehicle speed sensor. The No. 1 vehicle speed sensor transmits a 4-pulse signal for every revolution of the rotor shaft, which is rotated by the transaxle or transfer output shaft via the driven gear. The 4-pulse signal is converted into a more precise rectangular waveform by the waveform shaping circuit inside the combination meter. The signal is then transmitted to the ECM. The ECM determines the vehicle speed based on the frequency of the pulse signal.



DTC No.	DTC Detection Conditions	Trouble Areas
P0500	Automatic transmission: ECM detects following conditions simultaneously 500 times (1 trip detection logic) <ul style="list-style-type: none"> No speed sensor signal while ECM detects No. 2 speed sensor signal Vehicle speed 6 mph (9 km/h) or more for 4 seconds Park/Neutral position switch OFF (shift lever other than P and N positions) Manual transmission: ECM detects following conditions simultaneously for 8 seconds or more (2 trip detection logic) <ul style="list-style-type: none"> No speed sensor signal input Engine speed 2,000 rpm or more ECM detects high engine load Transfer lever in other than N position (4WD) 	<ul style="list-style-type: none"> Open or short in speed signal circuit Combination meter ECM Skid control ECU
P0503	Momentary interruption and noise are detected when a rapid change of vehicle speed occurs	<ul style="list-style-type: none"> Open or short in speed signal circuit Combination meter ECM Skid control ECU

MONITOR DESCRIPTION

Automatic Transaxle Models:

The ECM assumes that the vehicle is being driven, while the vehicle speed sensor signal is being transmitted by the combination meter. If there is no signal from the combination meter, despite the ECM detecting the speed signal from the No. 2 speed sensor, the ECM interprets this as a malfunction in the speed signal circuit. The ECM then illuminates the MIL and sets the DTC.

Manual Transaxle Models:

The ECM assumes that the vehicle is being driven, when the indicated engine speed is more than 2,000 rpm and the engine load calculated by the ECM is more than certain level. If there is no signal from the vehicle speed sensor, despite these conditions being met, the ECM interprets this as a malfunction in the speed signal circuit. The ECM then illuminates the MIL and sets the DTC.

MONITOR STRATEGY

Related DTCs	P0500: Vehicle speed sensor "A" pulse input error
Required Sensors/Components (Main)	Vehicle Speed Sensor (VSS), Combination meter and Skid control ECU
Required Sensors/Components (Related)	Park/neutral Position (PNP) switch, Engine Coolant Temperature (ECT) sensor, Crankshaft Position (CKP) sensor and Mass Air Flow (MAF) meter
Frequency of Operation	Continuous
Duration	8 seconds: Manual transmission Conditions met 500 times: Automatic transmission
MIL Operation	2 driving cycles: Manual transmission 1 driving cycle: Automatic transmission
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Monitor runs whenever following DTCs not present	None
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With Manual Transmission:

Engine coolant temperature	70°C (158°F) or more
Engine speed	2,000 rpm or more
Engine load	100 % when engine speed 2,000 rpm (threshold varies with engine speed)
Fuel cut at high engine speed	Not executing

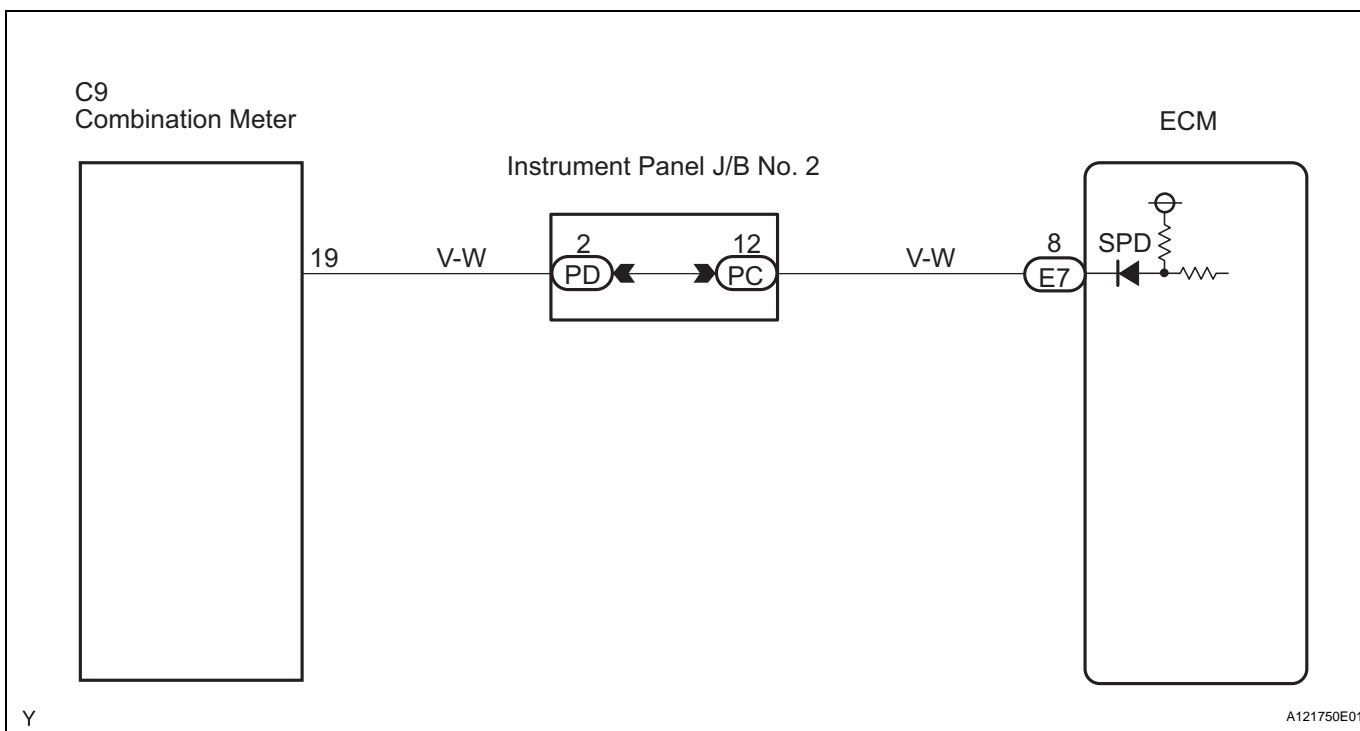
With Automatic Transmission:

Vehicle speed sensor output	48 pulses or more
Time after following conditions met:	4 seconds or more
Ignition switch	ON
Park/neutral position switch	OFF
Vehicle speed	5.59 mph (9 km/h)
Time after ignition switch turned to ON	0.5 seconds or more

TYPICAL MALFUNCTION THRESHOLDS

Vehicle speed sensor signal	No pulse input
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WIRING DIAGRAM



ES

HINT:

Read freeze frame data using an intelligent tester. Freeze frame data record the engine condition when malfunctions are detected. When troubleshooting, freeze frame data can help determine if the vehicle was moving or stationary, 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.

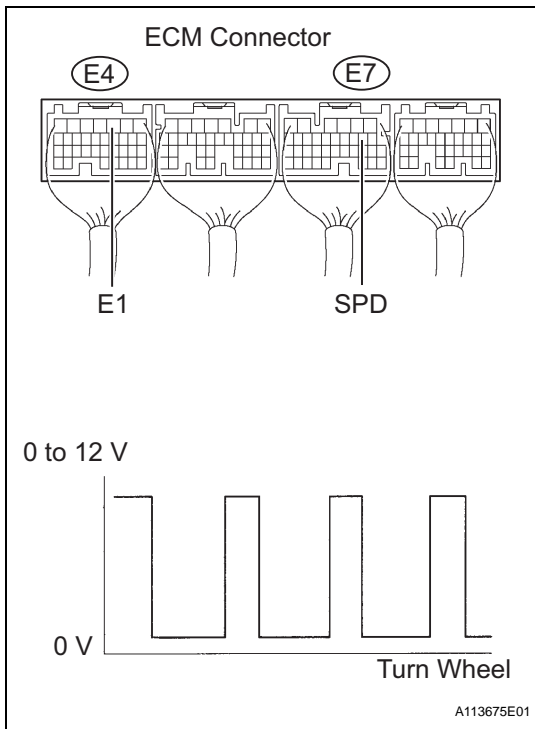
1 CHECK OPERATION OF SPEEDOMETER

- (a) Drive the vehicle and check if the operation of the speedometer in the combination meter is normal.
HINT:
 The vehicle speed sensor is operating normally if the speedometer reading is normal.

NG **CHECK SPEEDOMETER CIRCUIT**

OK

2 INSPECT ECM (SPD VOLTAGE)



- (a) Shift the transmission gear selector lever to the neutral position.
- (b) Jack up the vehicle.
- (c) Turn the ignition switch to ON.
- (d) Check the voltage between the terminals of the ECM connectors as the wheel is turned slowly.

Standard Voltage

Tester Connections	Specified Conditions
SPD (E7-8) - E1 (E4-3)	Voltage generated intermittently

HINT:

The output voltage should fluctuate up and down similarly to the diagram on the left when the wheel is turned slowly.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM

ES