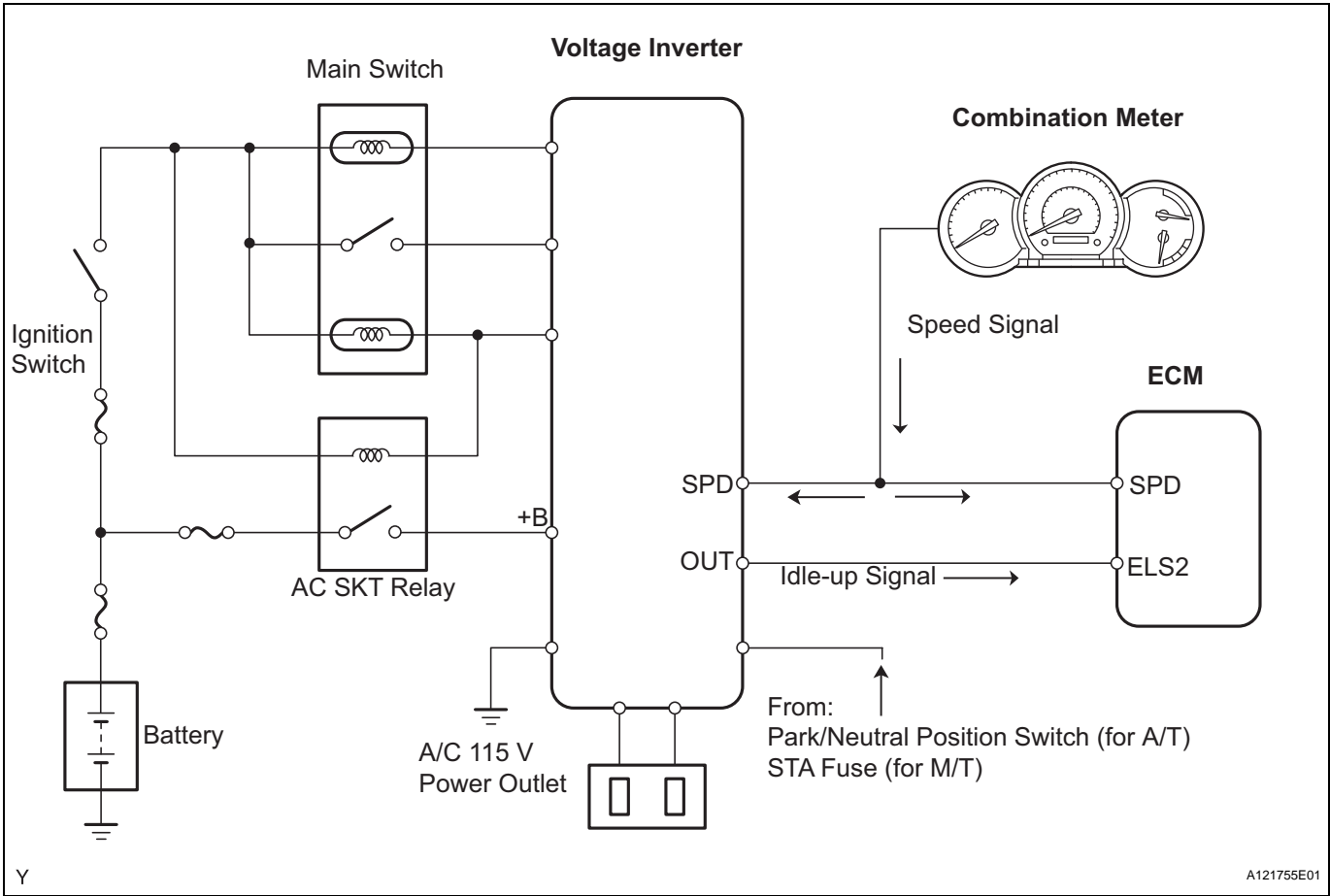


<b>DTC</b>	<b>P1500</b>	<b>AC Inverter Malfunction</b>
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**DESCRIPTION**

This vehicle is equipped with a voltage inverter, which supplies power to various electrical appliances. When the main switch of the voltage inverter is turned ON, the inverter relay turns ON, and the inverter then converts the 12 V Direct Current (DC) of the battery into an 115 V Alternating Current (AC). The voltage inverter can output a maximum of 400W from an outlet.

When the AC 115 V is output, a load is applied to the engine. The ECM controls the engine idling speed according to the vehicle speed and engine load. A speed signal is input to the inverter and an idle-up signal is transmitted to the ECM.



DTC No.	DTC Detection Conditions	Trouble Areas
P1500	While vehicle running, idling-up signal input into ECM for 10 seconds	<ul style="list-style-type: none"> <li>• Open in speed signal circuit</li> <li>• Short between idle-up signal and +B circuits</li> <li>• Voltage inverter</li> <li>• ECM</li> </ul>

**MONITOR DESCRIPTION**

While the engine is idling, the ECM performs idle up according to the power supply of the inverter to stabilize the engine idling speed.

When the vehicle is stationary and the inverter input exceeds 8.3 A, the inverter sends an idle-up signal from the OUT terminal of the inverter to the ELS2 terminal of the ECM.

If the idle-up signal is input into the ECM for 10 seconds while the vehicle is running, the ECM interprets this as a malfunction in the inverter circuit and sets the DTC.

### MONITOR STRATEGY

Related DTCs	P1500: Voltage inverter performance
Required Sensors/Components (Main)	Voltage inverter
Required Sensors/Components (Related)	-
Frequency of Operation	Continuous
Duration	10 seconds
MIL Operation	2 driving cycles
Sequence of Operation	None

### TYPICAL ENABLING CONDITIONS

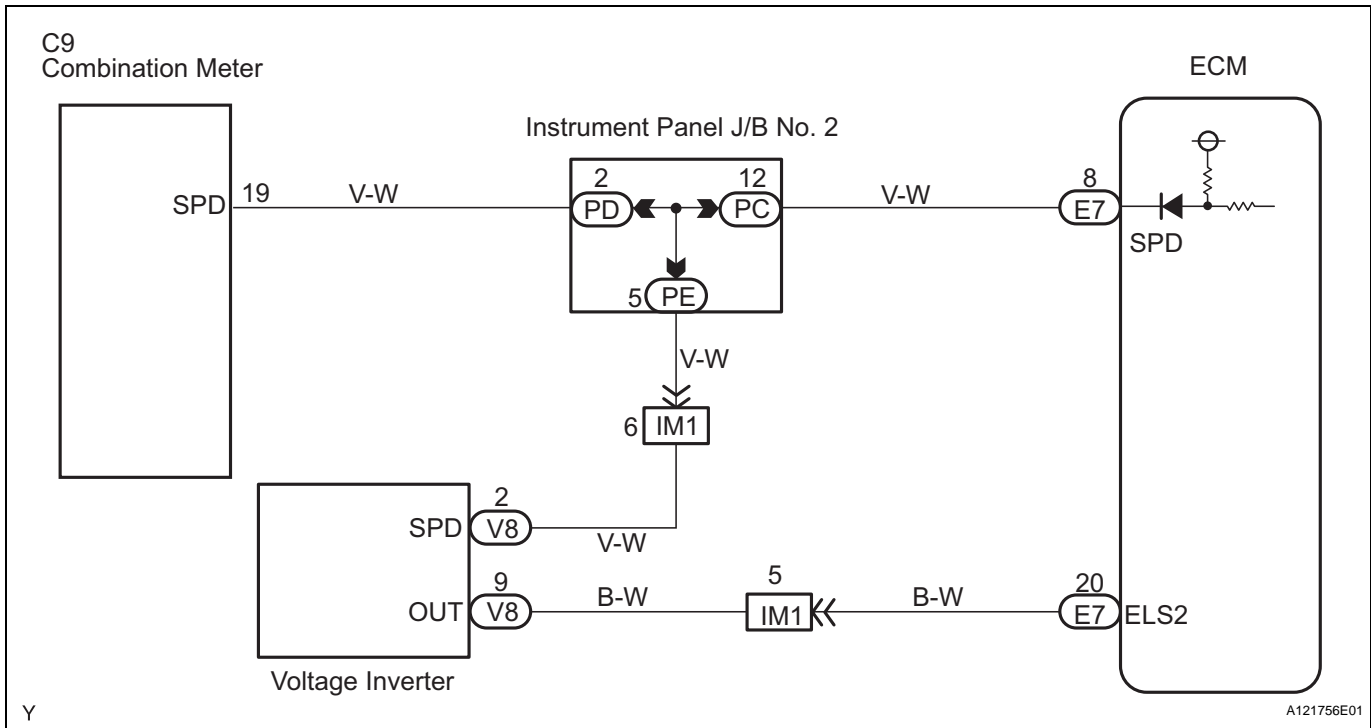
Monitor runs whenever following DTCs not present	None
Vehicle speed	3.11 mph (5 km/h) or more
Battery voltage	8 V or more
Ignition switch	ON
Starter	OFF

ES

### TYPICAL MALFUNCTION THRESHOLDS

Electric load signal 2	ON
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### WIRING DIAGRAM



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 ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P1500)**

- (a) Connect an intelligent tester to the DLC3.
- (b) Turn the ignition switch to ON and turn the tester ON.
- (c) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.
- (d) Read DTCs.

**Result**

Display (DTC output)	Proceed To
P1500	A
P1500 and other DTCs.	B

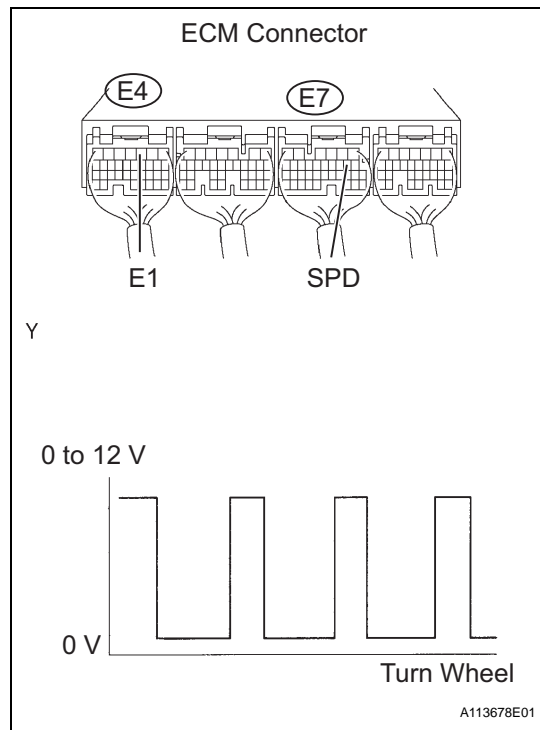
If any DTCs other than P1500 are output, troubleshoot those DTCs first.

**ES**

**B** **GO TO DTC CHART**

**A**

**2 INSPECT VOLTAGE INVERTER ASSEMBLY (SPD SIGNAL)**



- (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

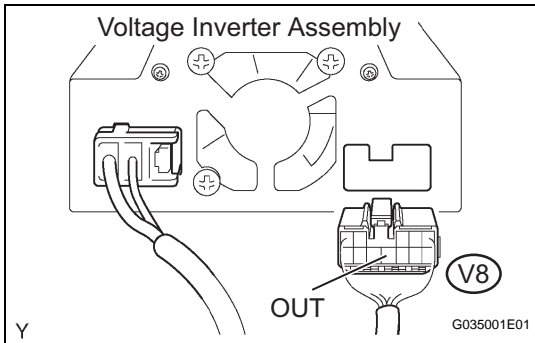
**HINT:**

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**

**3 INSPECT ECM (ELS VOLTAGE)**



- (a) Disconnect the V8 inverter connector.
- (b) Start the engine.
- (c) Measure the voltage between the OUT terminal of inverter and the body ground.

**Standard Voltage**

Tester Connections	Specified Conditions
OUT (V8-9) - Body ground	1 V or less

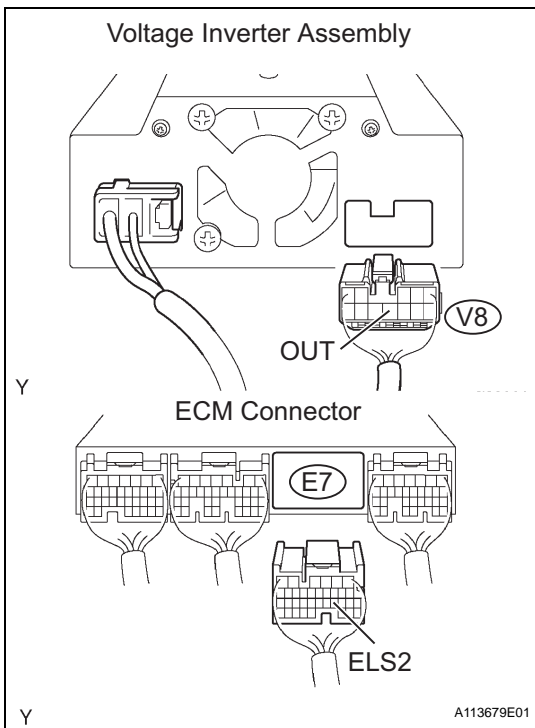
- (d) Reconnect the inverter connector.

**OK** → **REPLACE VOLTAGE INVERTER ASSEMBLY**

**NG**

**ES**

**4 CHECK HARNESS AND CONNECTOR (ECM - INVERTER, INVERTER - POWER SOURCE)**



- (a) Disconnect the V8 inverter connector.
- (b) Disconnect the E7 ECM connector.
- (c) Turn the ignition to ON.
- (d) Measure the voltage between the terminals of the wire harness and body ground.

**Standard Voltage (Check for short in idling up signal circuit)**

Tester Connections	Specified Conditions
OUT (V8-9) or ELS2 (E7-20) - Body ground	1 V or less

- (e) Reconnect the inverter connector and the ECM connector.

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**REPLACE ECM**