Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM1000000028ZY4
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: HYBRID / BATTERY CONTROL: MOTOR GENERATOR CONTROL SYSTEM (for M20A-FXS): P0E3116,P0E3117,P0E311F; DC/DC Converter Voltage Sensor "A"(VL) Circuit Voltage Below Threshold; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DTC	**P0E3116**	**DC/DC Converter Voltage Sensor "A"(VL) Circuit Voltage Below Threshold**

DTC	**P0E3117**	**DC/DC Converter Voltage Sensor "A"(VL) Circuit Voltage Above Threshold**

DTC	**P0E311F**	**DC/DC Converter Voltage Sensor "A"(VL) Circuit Intermittent**

DESCRIPTION

The motor generator control ECU, which is built into the inverter with converter assembly, detects pre-boosting high voltage (VL) using the voltage sensor in the boost converter to control boosting. The motor generator control ECU also monitors the boost converter voltage sensor signal line and detects malfunctions.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0E3116	DC/DC Converter Voltage Sensor "A"(VL) Circuit Voltage Below Threshold	Boost converter voltage (VL) signal is stuck (Low) (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P0E33
P0E3117	DC/DC Converter Voltage Sensor "A"(VL) Circuit Voltage Above Threshold	Boost converter voltage (VL) signal is stuck (High) (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P0E34
P0E311F	DC/DC Converter Voltage Sensor "A"(VL) Circuit Intermittent	Boost converter voltage (VL) signal is stuck (Low) or (High) detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19 or P1C5E19 is stored. (1 trip detection logic)	Inverter with converter assembly	Does not come on	Master Warning: Does not come on	Motor Generator	A	SAE Code: P0E35

MONITOR DESCRIPTION

The motor generator control ECU monitors the boost converter voltage (VL) sensor circuit. If the motor generator control ECU detects an open or short circuit malfunction of the VL sensor circuit, the ECU will illuminate the MIL and store a DTC.

MONITOR STRATEGY

Related DTCs	P0E33 (INF P0E3116): DC/DC Converter Voltage Sensor "A" Range check (Low voltage) P0E34 (INF P0E3117): DC/DC Converter Voltage Sensor "A" Range check (High voltage)
Required sensors/components	DC/DC converter voltage sensor
Frequency of operation	Continuous
Duration	TMC's intellectual property
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not stored	TMC's intellectual property
Other conditions belong to TMC's intellectual property	-

TYPICAL MALFUNCTION THRESHOLDS

TMC's intellectual property	-

COMPONENT OPERATING RANGE

Motor generator control ECU	DTC P0E33 (INF P0E3116) is not detected DTC P0E34 (INF P0E3117) is not detected

CONFIRMATION DRIVING PATTERN

HINT:

- After repair has been completed, clear the DTC and then check that the vehicle has returned to normal by performing the following All Readiness check procedure.

  Click here INFO
- When clearing the permanent DTCs, refer to the "CLEAR PERMANENT DTC" procedure.

  Click here INFO

1. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
2. Turn the ignition switch off and wait for 2 minutes or more.
3. Turn the ignition switch to ON (READY) and wait for 5 seconds or more. [*1]

HINT:

[*1]: Normal judgment procedure.

The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.

4. Enter the following menus: Powertrain / Motor Generator / Utility / All Readiness.
5. Check the DTC judgment result.

HINT:

- If the judgment result shows NORMAL, the system is normal.
- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows INCOMPLETE, perform the normal judgment procedure again.

CAUTION / NOTICE / HINT

HINT:

P0E3116, P0E3117 or P0E311F may be stored due to a malfunction which also causes the DTCs in the table below to be stored. In this case, first troubleshoot the output DTCs in the table below. Then, perform a test to attempt to reproduce the problems, and check that no DTCs are output.

SYSTEM	RELEVANT DTC	
Hybrid control system	P0AD915	Hybrid/EV Battery Positive Contactor Circuit Short to Auxiliary Battery or Open
	P0ADD15	Hybrid/EV Battery Negative Contactor Circuit Short to Auxiliary Battery or Open
	P1C8449	High Voltage Power Resource Circuit Short during Ready ON

PROCEDURE

1.	**CHECK DTC OUTPUT**

Pre-procedure1

(a) None

Procedure1

(b) Check for DTCs.

Powertrain > Hybrid Control > Trouble Codes

Powertrain > Motor Generator > Trouble Codes

RESULT	PROCEED TO
None of the following DTCs are output.	A
DTCs of hybrid control system in the tables below are output.	B
DTCs of motor generator control system in the tables below are output.	C

Post-procedure1

(c) Turn the ignition switch off.

A ▶ REPLACE INVERTER WITH CONVERTER ASSEMBLY

B	▶	**GO TO DTC CHART (HYBRID CONTROL SYSTEM)**
C	▶	**GO TO DTC CHART (MOTOR GENERATOR CONTROL SYSTEM)**