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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: HYBRID CONTROL SYSTEM (for PHEV Model): P0E311C; Boosting Converter Voltage Sensor "A" Voltage Out of Range; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P0E311C**	**Boosting Converter Voltage Sensor "A" Voltage Out of Range**

DTC SUMMARY

MALFUNCTION DESCRIPTION

The hybrid vehicle control ECU detects a VL sensor malfunction.

The cause of this malfunction may be one of the following:

Inverter voltage (VL) sensor internal circuit malfunction

- Voltage sensor malfunction
- Motor generator control ECU (MG ECU) malfunction
- Communication (wire harness) malfunction

High voltage system malfunction

Inverter with converter assembly malfunction

DESCRIPTION

Refer to the description for DTC P0E3116.

Click here INFO

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0E311C	Boosting Converter Voltage Sensor "A" Voltage Out of Range	Boost converter voltage (VL) sensor performance malfunction: When not boosting, difference between "VL-Voltage before Boosting" and "Hybrid/EV Battery Voltage" is large and difference between "VL-Voltage before Boosting" and "VH-Voltage after Boosting" is large. (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Hybrid Control	A	SAE Code: P0E32

MONITOR DESCRIPTION

The hybrid vehicle control ECU monitors the boost converter voltage sensor signal. If the hybrid vehicle control ECU detects an abnormality in the sensor signal, the hybrid vehicle control ECU will illuminate the MIL and store a DTC.

MONITOR STRATEGY

Related DTCs	P0E32 (INF P0E311C): DC/DC Converter Voltage Sensor "A" Range/Performance
Required sensors/components	Boost converter
Frequency of operation	-
Duration	-
MIL operation	1 driving cycle
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

Hybrid vehicle control ECU	DTC P0E32 (INF P0E311C) 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). [*1]
4. With the shift lever in D, depress both the accelerator pedal and brake pedal at the same time to raise the "Hybrid/EV Battery SOC" to a sufficient level. [*2]
5. Move the shift lever to P, check that the engine is stopped and move the shift lever to N. [*3]
6. Set the A/C for maximum cooling. [*4]
7. Leave the vehicle for a few minutes. [*5]

HINT:

- When the accelerator pedal is not depressed with the ignition switch ON (READY) and shift lever in P, if "VL-Voltage before Boosting" and the "Hybrid/EV Battery Voltage" is approximately the same after repair, the condition is judged as normal.
- [*1] to [*5] : Normal judgment procedure.

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

8. Enter the following menus: Powertrain / Hybrid Control / Utility / All Readiness.
9. 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:

- P0E311C may be output as a result of the malfunction indicated by the DTCs in table below.

  a. The chart above is listed in inspection order of priority.
  b. Check DTCs that are output at the same time by following the listed order. (The main cause of the malfunction can be determined without performing unnecessary inspections.)

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
Microcomputer malfunction	Hybrid Control System	P0A1B49	Drive Motor "A" Control Module Internal Electronic Failure
		P060647	Hybrid/EV Powertrain Control Module Processor Watchdog / Safety MCU Failure
		P060B49	Hybrid/EV Powertrain Control Module A/D Processing Internal Electronic Failure
		P060687	Hybrid/EV Powertrain Control Module Processor to Monitoring Processor Missing Message
		P060A47	Hybrid/EV Powertrain Control Module Monitoring Processor Watchdog / Safety MCU Failure
		P060A87	Hybrid/EV Powertrain Control Module Processor from Monitoring Processor Missing Message
	Motor Generator Control System	P0A1B1F	Generator Control Module Circuit Intermittent
		P0A1A47	Generator Control Module Watchdog / Safety µC Failure
		P0A1A49	Generator Control Module Internal Electronic Failure
		P1C2A1C	Generator A/D Converter Circuit Circuit Voltage Out of Range
		P1C2A49	Generator A/D Converter Circuit Internal Electronic Failure
		P313383	Communication Error from Generator to Drive Motor "A" Value of Signal Protection Calculation Incorrect
		P313386	Communication Error from Generator to Drive Motor "A" Signal Invalid
	Hybrid Battery System	P060B49	Hybrid/EV Battery Energy Control Module A/D Processing Internal Electronic Failure
		P060687	Hybrid/EV Battery Energy Control Module Processor to Monitoring Processor Missing Message

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P060A47	Hybrid/EV Battery Energy Control Module Monitoring Processor Watchdog / Safety MCU Failure
		P060A87	Hybrid/EV Battery Energy Control Module Processor from Monitoring Processor Missing Message
		P0E2D00	Hybrid/EV Battery Energy Control Module Hybrid/EV Battery Monitor Performance
Power source circuit malfunction	Motor Generator Control System	P06D61C	Generator Control Module Offset Power Circuit Voltage Out of Range
Communication system malfunction	Hybrid Control System	U011187	Lost Communication with Hybrid/EV Battery Energy Control Module "A" Missing Message
	Motor Generator Control System	P313387	Communication Error from Generator to Drive Motor "A" Missing Message
Sensor and actuator circuit malfunction	Hybrid Battery System	P301A1C	Hybrid Battery Stack 1 Cell Voltage Detection Voltage Out of Range
		P1A001C	Hybrid Battery Stack 2 Cell Voltage Detection Voltage Out of Range
		P1AFD1C	Flying Capacitor/Internal Control Module Hybrid/EV Battery Monitor Voltage Out of Range
System malfunction	Motor Generator Control System	P0D2D16	Drive Motor "A" Inverter Voltage Sensor (VH) Circuit Voltage Below Threshold
		P0D2D17	Drive Motor "A" Inverter Voltage Sensor (VH) Circuit Voltage Above Threshold
		P0E3116	DC/DC Converter Voltage Sensor "A" (VL) Circuit Voltage Below Threshold
		P0E3117	DC/DC Converter Voltage Sensor "A" (VL) Circuit Voltage Above Threshold

PROCEDURE

1.	**CHECK DTC OUTPUT (HYBRID CONTROL, MOTOR GENERATOR, HV BATTERY)**

Pre-procedure1

(a) None.

Procedure1

(b) Check for DTCs.

Powertrain > Hybrid Control > Trouble Codes
Powertrain > Motor Generator > Trouble Codes
Powertrain > HV Battery > Trouble Codes

RESULT	PROCEED TO
DTC P0E311C is output.	A
DTCs except P0E311C are output.	B

Post-procedure1

(c) Turn the ignition switch off.

A ▶ **REPLACE INVERTER WITH CONVERTER ASSEMBLY**

B ▶ **GO TO DTC CHART**