Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BHWO
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: HYBRID BATTERY SYSTEM (for PHEV Model): P2BE41C; Hybrid/EV Battery Pack Current Sensor "C" Circuit Range/Performance Circuit Voltage Out of Range; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P2BE41C**	**Hybrid/EV Battery Pack Current Sensor "C" Circuit Range/Performance Circuit Voltage Out of Range**

DESCRIPTION

Refer to the description for DTC P0ABF11.

Click here INFO

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P2BE41C	Hybrid/EV Battery Pack Current Sensor "C" Circuit Range/Performance Circuit Voltage Out of Range	A battery current sensor is malfunctioning.*1 (1 trip detection logic)	• No. 1 traction battery device box assembly • Battery ECU assembly • Wire harness or connector	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P2BE5

*1: The difference in output of the main and low battery current sensors is large.

MONITOR DESCRIPTION

If the battery ECU assembly detects a malfunction in the battery current sensor, the battery ECU assembly illuminates the MIL and stores a DTC.

MONITOR STRATEGY

Related DTCs	P2BE5 (INF P2BE41C): Hybrid/EV Battery Pack Current sensor malfunction (offset)
Required sensors/components	Battery current sensor
Frequency of operation	Continuous
Duration	TMC's intellectual property
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

Battery ECU assembly	DTC P2BE5 (INF P2BE41C) 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. Drive the vehicle on urban roads for approximately 10 minutes.[*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 / HV Battery / 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 or N/A, perform the normal judgment procedure again.

WIRING DIAGRAM

Refer to the wiring diagram for P0ABF11.

Click here INFO

CAUTION / NOTICE / HINT

CAUTION:

Refer to the precautions before inspecting high voltage circuit.

Click here INFO

NOTICE:

- After the ignition switch is turned off, there may be a waiting time before disconnecting the auxiliary negative (-) battery terminal.

  Click here INFO

- When disconnecting and reconnecting the auxiliary battery.

  HINT:

  When disconnecting and reconnecting the auxiliary battery, there is an automatic learning function that completes learning when the respective system is used.

  Click here INFO

PROCEDURE

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

Pre-procedure1

(a) None

Procedure1

(b) Check for DTCs.

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

RESULT	PROCEED TO
"P2BE41C" only is output, or DTCs except the ones in the table below are also output.	A
DTCs of hybrid battery system in the table below are output.	B
DTCs of hybrid control system in the table below are output.	C

SYSTEM	RELEVANT DTC	
Hybrid battery system	P060A47	Hybrid/EV Battery Energy Control Module Monitoring Processor Watchdog / Safety MCU Failure
	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
Hybrid control system	P0A1F94	Hybrid/EV Battery Energy Control Module Unexpected Operation

Post-procedure1

(c) Turn the ignition switch off.

B ▶ GO TO DTC CHART (HYBRID BATTERY SYSTEM)

C GO TO DTC CHART (HYBRID CONTROL SYSTEM)

A

2.	**CHECK HARNESS AND CONNECTOR (BATTERY ECU ASSEMBLY - NO. 1 TRACTION BATTERY DEVICE BOX ASSEMBLY)**

CAUTION:

Be sure to wear insulated gloves and protective goggles.

Pre-procedure1

(a) Check that the service plug grip is not installed.

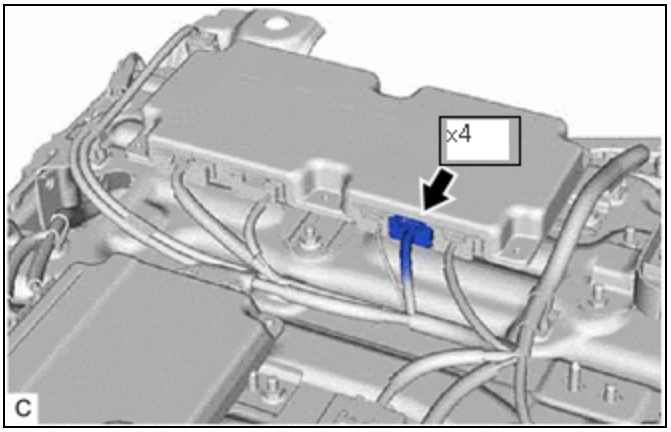
NOTICE:

After removing the service plug grip, do not turn the ignition switch to ON (READY), unless instructed by the repair manual because this may cause a malfunction.

(b) Disconnect the battery ECU assembly connector.

NOTICE:

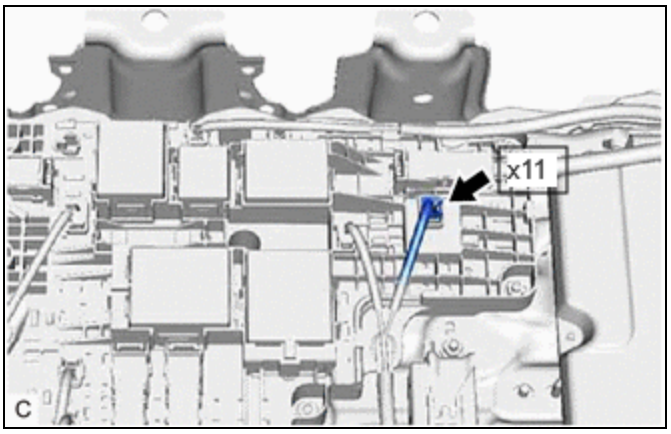
Before disconnecting the connector, check that it is not loose or disconnected.



(c) Disconnect the battery current sensor connector from the No. 1 traction battery device box assembly.

NOTICE:

Before disconnecting the connector, check that it is not loose or disconnected.



Procedure1

(d) Measure the resistance according to the value(s) in the tables below.

Standard Resistance (Check for Open):

EWD INFO

Click Location & Routing(x11,x4)
Click Connector(x11)
Click Connector(x4)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
x11-1 (IBL) - x4-15 (IBL)	Ignition switch off	Below 1 Ω
x11-5 (IB1) - x4-17 (IB1)	Ignition switch off	Below 1 Ω
x11-4 (GIB) - x4-14 (GIB)	Ignition switch off	Below 1 Ω
x11-3 (IB0) - x4-16 (IB0)	Ignition switch off	Below 1 Ω
x11-2 (VIB) - x4-4 (VIB)	Ignition switch off	Below 1 Ω

Standard Resistance (Check for Short):

EWD INFO

Click Location & Routing(x11,x4)
Click Connector(x11)
Click Connector(x4)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
x11-1 (IBL) or x4-15 (IBL) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
x11-5 (IB1) or x4-17 (IB1) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
x11-4 (GIB) or x4-14 (GIB) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
x11-3 (IB0) or x4-16 (IB0) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
x11-2 (VIB) or x4-4 (VIB) - Body ground and other terminals	Ignition switch off	10 kΩ or higher

Post-procedure1

(e) Reconnect the battery current sensor connector to the No. 1 traction battery device box assembly.

(f) Reconnect the battery ECU assembly connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

3.	**REPLACE NO. 1 TRACTION BATTERY DEVICE BOX ASSEMBLY**

HINT:

Click here INFO

NEXT

4.	**CLEAR DTC (HV BATTERY)**

Pre-procedure1

(a) None

Procedure1

(b) Clear the DTCs and freeze frame data.

Powertrain > HV Battery > Clear DTCs

Post-procedure1

(c) Perform a road test.

NEXT

5.	**CHECK DTC OUTPUT (HV BATTERY)**

(a) Check for DTCs.

Powertrain > HV Battery > Trouble Codes

RESULT	PROCEED TO
DTCs are not output.	A
P2BE41C is also output.	B

A ▶ **END**

B ▶ **REPLACE BATTERY ECU ASSEMBLY**