Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BHV3
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: HYBRID BATTERY SYSTEM (for PHEV Model): P33E01B-P33E21B; Hybrid/EV Battery Stack 1 Circuit Resistance Above Threshold; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P33E01B**	**Hybrid/EV Battery Stack 1 Circuit Resistance Above Threshold**

DTC	**P33E11B**	**Hybrid/EV Battery Stack 2 Circuit Resistance Above Threshold**

DTC	**P33E21B**	**Hybrid/EV Battery Stack 3 Circuit Resistance Above Threshold**

DESCRIPTION

The HV battery is composed of 72 cells (3.7 V each) in series. The battery ECU assembly monitors the internal resistance of each HV battery cell to detect malfunctions of the HV battery.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P33E01B	Hybrid/EV Battery Stack 1 Circuit Resistance Above Threshold	The internal resistance of any cell of the No. 1 HV supply stack sub-assembly exceeds the threshold. (1 trip detection logic)	• No. 1 HV supply stack sub-assembly • Service plug grip	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P33E0
P33E11B	Hybrid/EV Battery Stack 2 Circuit Resistance Above Threshold	The internal resistance of any cell of the No. 2 HV supply stack sub-assembly exceeds the threshold. (1 trip detection logic)	• No. 2 HV supply stack sub-assembly • Service plug grip	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P33E1

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P33E21B	Hybrid/EV Battery Stack 3 Circuit Resistance Above Threshold	The internal resistance of any cell of the No. 3 HV supply stack sub-assembly exceeds the threshold. (1 trip detection logic)	• No. 3 HV supply stack sub-assembly • Service plug grip	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P33E2

HINT:

These DTCs can be stored after clearing DTCs and driving the vehicle for approximately 10 minutes.

MONITOR DESCRIPTION

If there is an abnormal internal resistance in the battery cells, the battery ECU assembly determines that a malfunction has occurred. When the malfunction detection condition is satisfied, the battery ECU assembly will illuminate the MIL and store a DTC.

MONITOR STRATEGY

Related DTCs	P33E0 (INF P33E01B), P33E1 (INF P33E11B), P33E2 (INF P33E21B): Battery cell malfunction
Required sensors/components	HV Battery
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 P33E0 (INF P33E01B) is not detected DTC P33E1 (INF P33E11B) is not detected DTC P33E2 (INF P33E21B) 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.
- This DTC may not be stored if the vehicle is stopped or being driven at a constant speed.

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.

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
"P33E01B, P33E11B or P33E21B" 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 DTC**

(a) Check the DTCs that were output when the vehicle was brought to the workshop.

RESULT	PROCEED TO
"P33E01B" is also output.	A
"P33E11B" is also output.	B

RESULT	PROCEED TO
"P33E21B" is also output.	C

B ▶ **GO TO STEP 5**

C ▶ **GO TO STEP 7**

A

▼

3.	**CHECK TOTAL DISTANCE DRIVEN**

(a) Read the odometer to check the total distance the vehicle has been driven.

RESULT		PROCEED TO
Total distance driven is less than 200000 km (124280 mile)		A
Total distance driven is 200000 km (124280 mile) or more	Current total distance driven - total distance driven when service plug grip replaced = less than 200000 km (124280 mile) *1	A
	Other than above	B

HINT:

*1: If the service plug grip has been replaced, use the total distance driven since it was replaced.

A ▶ **REPLACE NO. 1 HV SUPPLY STACK SUB-ASSEMBLY**

B

▼

4.	**REPLACE NO. 1 HV SUPPLY STACK SUB-ASSEMBLY**

HINT:

Click here INFO

NEXT ▶ **REPLACE SERVICE PLUG GRIP**

5.	**CHECK TOTAL DISTANCE DRIVEN**

(a) Read the odometer to check the total distance the vehicle has been driven.

RESULT		PROCEED TO
Total distance driven is less than 200000 km (124280 mile)		A
Total distance driven is 200000 km (124280 mile) or more	Current total distance driven - total distance driven when service plug grip replaced = less than 200000 km (124280 mile) *1	A
	Other than above	B

HINT:

*1: If the service plug grip has been replaced, use the total distance driven since it was replaced.

A ▶ **REPLACE NO. 2 HV SUPPLY STACK SUB-ASSEMBLY**

B ▼

6.	**REPLACE NO. 2 HV SUPPLY STACK SUB-ASSEMBLY**

HINT:

Click here INFO

NEXT ▶ **REPLACE SERVICE PLUG GRIP**

7.	**CHECK TOTAL DISTANCE DRIVEN**

(a) Read the odometer to check the total distance the vehicle has been driven.

RESULT		PROCEED TO
Total distance driven is less than 200000 km (124280 mile)		A
Total distance driven is 200000 km (124280 mile) or more	Current total distance driven - total distance driven when service plug grip replaced = less than 200000 km (124280 mile) *1	A
	Other than above	B

HINT:

*1: If the service plug grip has been replaced, use the total distance driven since it was replaced.

A ▶ **REPLACE NO. 3 HV SUPPLY STACK SUB-ASSEMBLY**

B

8.	**REPLACE NO. 3 HV SUPPLY STACK SUB-ASSEMBLY**

HINT:

Click here INFO

NEXT **REPLACE SERVICE PLUG GRIP**