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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: HYBRID BATTERY SYSTEM (for PHEV Model): P300016; Hybrid/EV Battery Control System Circuit Voltage Below Threshold; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P300016**	**Hybrid/EV Battery Control System Circuit Voltage Below Threshold**

DESCRIPTION

The battery ECU assembly alerts the driver and performs fail-safe control based on malfunction signals.

If the HV battery is discharged excessively or the hybrid battery system is malfunctioning, this DTC will be stored.

HINT:

If the HV battery voltage has dropped due to a malfunction in other components, such as the inverter with converter assembly or the hybrid vehicle transaxle assembly, recharging the HV battery will be able to restore the voltage. If the HV battery voltage has dropped excessively after the vehicle was left for a long time, the HV battery will need to be replaced.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P300016	Hybrid/EV Battery Control System Circuit Voltage Below Threshold	A malfunction signal is received from the battery ECU assembly. The voltage of any HV battery cell has decreased excessively. (1 trip detection logic)	• SFI system • Engine • Hybrid vehicle transaxle assembly • HV battery	Does not come on	Master Warning: Comes on	HV Battery	A	SAE Code: P3000

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

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) with park (P) selected.
4. Wait until the engine starts and then stops.
5. Enter the following menus: Powertrain / HV Battery / Utility / All Readiness.
6. 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 driving pattern again.

CAUTION / NOTICE / HINT

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

HINT:

- Thoroughly interview the customer as DTC P300016 may be stored if the SOC drops due to the vehicle being left with the shift lever in N for a long time, running out of fuel, or the use of incorrect or low-quality fuel.
- When the engine cannot be started, DTC P300016 may be stored because the HV battery cannot be charged.
- If differences among SOCs of HV battery exceed the specifications, the hybrid system warning light may illuminate when "Battery Diagnosis" is complete. In this case, check for hybrid system related DTCs. If DTC P300016 is output, leave the vehicle with the ignition switch ON (READY) for 10 minutes or more allowing the vehicle to charge the HV battery. Then clear the DTCs.

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
"P300000 or P300016" only is output.	A
DTCs except "P300000 or P300016" of hybrid battery system are output.	B
DTCs except "P300000 or P300016" of hybrid control system are output.	C

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 OUTPUT (ENGINE)**

Pre-procedure1

(a) None

Procedure1

(b) Check for DTCs.

Powertrain > Engine > Trouble Codes

RESULT	PROCEED TO
DTCs are not output	A
DTCs are output	B

Post-procedure1

(c) Turn the ignition switch off.

B GO TO DTC CHART (SFI SYSTEM)

A

3.	**CHECK ENGINE START**

Pre-procedure1

(a) Turn the ignition switch to ON (READY).

Procedure1

(b) Check if the engine starts.

NOTICE:

Do not turn the ignition switch to ON (READY) repeatedly after duplicating the problem symptom indicated by DTC P300016 and clearing the DTCs. This may cause another problem to occur.

HINT:

Depressing the accelerator pedal with park (P) selected will cause the engine to start.

Post-procedure1

(c) Turn the ignition switch off.

The engine starts.	**LEAVE VEHICLE WITH PARK (P) SELECTED, AND CHARGE HV BATTERY BY IDLING UNTIL IDLING STOPS**

The engine does not start.

4.	**CHECK CRANKSHAFT PULLEY REVOLUTION (P POSITION)**

Pre-procedure1

(a) Push the P position switch (parking switch) to select park (P).

(b) Lift up the vehicle.

Procedure1

(c) Manually turn the crankshaft pulley clockwise to check if the crankshaft rotates smoothly.

CAUTION:

Do not turn the ignition switch to ON (READY) while performing this inspection. Be sure to turn the ignition switch off before performing this inspection, to prevent the engine from starting.

NOTICE:

Engine compression causes resistance when turning the crankshaft pulley. Check if the crankshaft rotates smoothly (or if it is locked) by manually applying sufficient torque to turn the crankshaft pulley. The torque required to turn the crankshaft pulley should be the same as for a known good vehicle of the same type.

Post-procedure1

(d) Lower the vehicle.

The crankshaft does not rotate smoothly.	**GO TO STEP 7**

The crankshaft rotates smoothly.

5.	CHARGE OR REPLACE AUXILIARY BATTERY

NEXT

6.	CHARGE HV BATTERY

HINT:

As the HV battery is not malfunctioning, it is not necessary to replace it. Perform plug-in charging to recover the SOC of the HV battery.

Pre-procedure1

(a) Turn the ignition switch off.

(b) Disconnect the cable from the negative (-) auxiliary battery terminal and wait for 60 seconds or more.

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

(c) Connect the cable to the negative (-) auxiliary battery terminal.

Procedure1

(d) Plug-in charge the vehicle using the electric vehicle charger cable assembly.

Post-procedure1

(e) None

NEXT **END**

7.	CHECK CRANKSHAFT PULLEY REVOLUTION (N POSITION)

Pre-procedure1

(a) Turn the ignition switch to ON.

(b) Move the shift lever to N.

(c) Lift up the vehicle.

Procedure1

(d) Turn the crankshaft pulley using hand tools to check if the crankshaft can rotate smoothly.

CAUTION:

Do not turn the ignition switch to ON (READY) while performing this inspection. Be sure to turn the ignition switch to ON before performing this inspection, to prevent the engine from starting.

NOTICE:

Engine compression causes resistance when turning the crankshaft pulley. Check if the crankshaft rotates smoothly (or if it is locked) by manually applying sufficient torque to turn the crankshaft pulley. The torque required to turn the crankshaft pulley should be the same as for a known good vehicle of the same type.

Post-procedure1

(e) Lower the vehicle.

(f) Turn the ignition switch off.

The crankshaft does not rotate smoothly.	**GO TO STEP 12**

The crankshaft rotates smoothly.

8.	**REPLACE HYBRID VEHICLE TRANSAXLE ASSEMBLY**

HINT:

Click here INFO

NEXT

9.	**CHECK ENGINE START**

Pre-procedure1

(a) Turn the ignition switch to ON (READY).

Procedure1

(b) Check if the engine starts.

NOTICE:

Do not turn the ignition switch to ON (READY) repeatedly after duplicating the problem symptom indicated by DTC P300016 and clearing the DTCs. This may cause another problem to occur.

HINT:

Depressing the accelerator pedal with park (P) selected will cause the engine to start.

Post-procedure1

(c) Turn the ignition switch off.

The engine starts. ▶ **LEAVE VEHICLE WITH PARK (P) SELECTED, AND CHARGE HV BATTERY BY IDLING UNTIL IDLING STOPS**

The engine does not start. ▼

10.	**CHARGE OR REPLACE AUXILIARY BATTERY**

NEXT ▼

11.	**CHARGE HV BATTERY**

HINT:

As the HV battery is not malfunctioning, it is not necessary to replace it. Perform plug-in charging to recover the SOC of the HV battery.

Pre-procedure1

(a) Turn the ignition switch off.

(b) Disconnect the cable from the negative (-) auxiliary battery terminal and wait for 60 seconds or more.

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

(c) Connect the cable to the negative (-) auxiliary battery terminal.

Procedure1

(d) Plug-in charge the vehicle using the electric vehicle charger cable assembly.

Post-procedure1

(e) None

NEXT ▶ **END**

12.	**REPAIR OR REPLACE ENGINE**

NEXT ▼

13.	**CHECK ENGINE START**

Pre-procedure1

(a) Turn the ignition switch to ON (READY).

Procedure1

(b) Check if the engine starts.

NOTICE:

Do not turn the ignition switch to ON (READY) repeatedly after duplicating the problem symptom indicated by DTC P300016 and clearing the DTCs. This may cause another problem to occur.

HINT:

Depressing the accelerator pedal with park (P) selected will cause the engine to start.

Post-procedure1

(c) Turn the ignition switch off.

The engine starts. ▶ **LEAVE VEHICLE WITH PARK (P) SELECTED, AND CHARGE HV BATTERY BY IDLING UNTIL IDLING STOPS**

The engine does not start. ▼

14.	**CHARGE OR REPLACE AUXILIARY BATTERY**

NEXT

15.	**CHARGE HV BATTERY**

HINT:

As the HV battery is not malfunctioning, it is not necessary to replace it. Perform plug-in charging to recover the SOC of the HV battery.

Pre-procedure1

(a) Turn the ignition switch off.

(b) Disconnect the cable from the negative (-) auxiliary battery terminal and wait for 60 seconds or more.

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

(c) Connect the cable to the negative (-) auxiliary battery terminal.

Procedure1

(d) Plug-in charge the vehicle using the electric vehicle charger cable assembly.

Post-procedure1

(e) None

NEXT **END**