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<b>Model Year Start:</b> 2023	<b>Model:</b> Prius Prime	<b>Prod Date Range:</b> [03/2023 - ]
<b>Title:</b> HYBRID / BATTERY CONTROL: HYBRID BATTERY SYSTEM (for PHEV Model): UTILITY; 2023 - 2024 MY Prius Prime [03/2023 - ]		

## UTILITY

### NOTICE:

- "Maintenance Required for Traction Battery at Your Dealer" is displayed, perform "Battery Diagnosis" to diagnose the extent of deterioration of each HV battery cell.
- "Maintenance Required for Traction Battery at Your Dealer" is cleared after "Battery Diagnosis" are performed and "There is no need to replace HV supply battery assembly." is displayed.
- After the "Maintenance Required for Traction Battery at Your Dealer" is displayed, if the traction battery is used continually without performing "Battery Diagnosis" for a few weeks\*, use of the HV battery (input/output voltage) will be limited. If it is used more, the ignition switch ON (READY) operation will be disabled.

\*: Timing may vary depending on vehicle usage.

- If the ignition switch cannot be turned on ON (READY), perform "Temporary Vehicle Start Up", "Battery Diagnosis".

### HINT:

If "Maintenance Required for Traction Battery at Your Dealer" is displayed,  .

### Purpose

UTILITY ITEMS (GTS DISPLAY)	MAIN PURPOSE	CONTROL DESCRIPTION
All Readiness	Check whether or not DTC judgment has been completed.	-
Diagnosis Related Information	Confirm the diagnosis related information.	-
Battery Diagnosis	Discharge the HV battery and diagnose the extent of deterioration of each HV supply stack sub-assembly based on the SOC.	-
Battery Status Info Update	Initialize the HV battery age information.	-
Temporary Vehicle Start Up	Temporarily enable the ignition switch on (Ready) operation which has been disabled due to continual usage of the vehicle without performing battery diagnosis.	-
HV/EV Battery Thermal Keep Control Mode Setting	Prevent HV battery from freezing.	-
High Voltage Fuse Accumulated Load History Reset	Initialize the load history of the high voltage fuse.	

### ALL READINESS

#### HINT:

- With "All Readiness", you can check whether or not the DTC judgment has been completed by using the GTS.
- You should check "All Readiness" after simulating malfunction symptoms or for validation after finishing repairs.

(a) Clear the DTCs even if no DTCs are stored.

(b) Turn the ignition switch off and wait for at least 2 minutes.

(c) Perform the DTC judgment driving pattern to run the DTC judgment.

(d) Enter the following menus: Powertrain / HV Battery / Utility / All Readiness.

### Powertrain > HV Battery > Utility



(e) Input the DTCs to be confirmed.

(f) Check the DTC judgment result.

GTS DISPLAY	DESCRIPTION
NORMAL	<ul style="list-style-type: none"> <li>DTC judgment completed</li> <li>System normal</li> </ul>
ABNORMAL	<ul style="list-style-type: none"> <li>DTC judgment completed</li> <li>System abnormal</li> </ul>
INCOMPLETE	<ul style="list-style-type: none"> <li>DTC judgment not completed</li> <li>Perform the driving pattern</li> </ul>
N/A	<ul style="list-style-type: none"> <li>Unable to perform DTC judgment</li> <li>Number of DTCs which do not fulfill DTC preconditions has reached ECU memory limit</li> </ul>

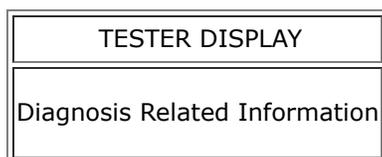
(g) Turn the ignition switch off.

### DIAGNOSIS RELATED INFORMATION

(a) Check for diagnosis related information.

(1) Check the Diagnosis Related Information, and then write them down.

### Powertrain > HV Battery > Utility



(b) Clear diagnosis related information.

#### NOTICE:

Clearing the DTCs will also clear the diagnosis related information.

(1) Clear the DTCs.

(2) Turn the ignition switch off.

### BATTERY DIAGNOSIS

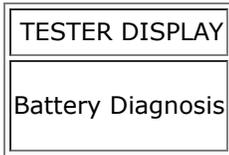
#### NOTICE:

- Do not perform battery diagnosis while the hybrid system light is illuminated.
- Perform battery diagnosis with the HV battery installed correctly.
- Do not perform battery diagnosis while changing from inspection mode to another mode.

- Make sure to turn the ignition switch off after battery diagnosis to prevent the auxiliary battery from being discharged.
- If the SOC (state of charge) learning has not been performed\*1, perform battery diagnosis after plug-in charging the vehicle as specified.  
 \*1: Refer to "Procedure when Battery Diagnosis is Suspended".

- (a) Turn the ignition switch off and wait for 2 minutes or more.
- (b) Turn the ignition switch to ON.
- (c) Enter the following menus: Powertrain / HV Battery / Utility / Battery Diagnosis.

**Powertrain > HV Battery > Utility**



- (d) Check items on the display and press "Next".
- (e) The screen transitions to the next screen and "Now diagnosing" is displayed.

**HINT:**

- "Progress" is displayed as a reference to the estimated time to complete the diagnosis.
- To suspend battery diagnosis, press "Exit" and turn the ignition switch off.

- (f) When battery diagnosis is complete, the result will be displayed.
- (g) Check the diagnosis result.

GTS DISPLAY	DIAGNOSIS RESULT	AFTER PERFORMING DIAGNOSIS
There is no need to replace the battery. Be sure to refer to the repair manual for procedures to take after this.	Normal	Perform "Battery Status Info Update".
Replace the HV supply stack sub-assemblies listed below.	Replace	Replace the listed HV supply stack sub-assemblies.

**HINT:**

- If "Maintenance Required for Traction Battery at Your Dealer" is displayed on the multi-information display, the message will not be cleared even after it is determined that "There is no need to replace battery". It can be cleared only after performing "Battery Status Info Update".
- If the listed HV supply stack sub-assemblies are replaced, perform "Battery Status Info Update" after replacing them.

- (h) Turn the ignition switch off.

**NOTICE:**

Make sure to turn the ignition switch off after battery diagnosis to prevent the auxiliary battery from being discharged.

- (i) When the battery diagnosis is suspended because the diagnosis conditions are not met anymore, the reasons of suspension are displayed on the GTS. Perform "Battery Diagnosis" after checking the causes and troubleshoot the suspected area in accordance with instructions in the "Procedure when battery diagnosis is suspended" table.

**Procedure when battery diagnostic is suspended**

GTS DISPLAY	REASON FOR DIAGNOSIS SUSPENSION (RELATED CONDITION)	PROCEDURE
007	Shift state park (P) is not selected.	Push the P position switch (parking switch) to select park (P).
008	HV battery connection malfunction	Confirm the connection condition of the HV battery.
012	Time-out	If the ignition switch is turned off by the time-out function, perform "Battery Diagnosis" again.
013	Low auxiliary battery voltage	Inspect the auxiliary battery and DC/DC converter function. 
014	HV battery malfunction	<ul style="list-style-type: none"> <li>• Check for HV battery system related DTCs and perform troubleshooting.</li> <li>• After checking that the master warning has turned off, perform "Battery Diagnosis" again.</li> </ul>
016	HV battery stack high voltage circuit connection malfunction	
001 / 006 / 009 / Communication error	The ignition switch was turned off or a GTS communication error occurred.	After checking that the connector of the GTS is not disconnected from the DLC3, perform "battery diagnosis" again.
Other than above	Full charge capacity information is not updated	<ol style="list-style-type: none"> <li>1. Lower the SOC (state of charge) of the HV battery by driving the vehicle in EV mode until the mode changes to HV mode.</li> <li>2. Make a note of the Data List items from "Hybrid/EV Battery Temperature 1" to "Hybrid/EV Battery Temperature 20".</li> <li>3. If the lowest measured battery temperature is 10°C (50°F) or lower, drive the vehicle until the temperature exceeds 15°C (59°F). If "Maintenance Required for Traction Battery at Your Dealer" is displayed on the multi-information display and the hybrid vehicle system cannot be started, perform "Temporary Vehicle Start Up" and drive the vehicle.</li> <li>4. Turn the ignition switch off and wait for 1 hour and 30 minutes or more.</li> <li>5. Perform plug-in charging.  <b>NOTICE:</b> Do not use the charging timer function.</li> <li>6. After plug-in charging, wait for 35 minutes or more, then turn the ignition switch to ON or ON (READY). (Do not turn the ignition switch to ON or ON (READY) for at least 35 minutes after plug-in charging. If the vehicle is not fully charged, perform the procedure from step 1 again.)</li> <li>7. Leave the vehicle with the ignition switch ON or ON (READY) for 10 minutes or more, turn the ignition switch off, and then perform battery diagnosis.</li> </ol>

## BATTERY STATUS INFO UPDATE

### HINT:

If the HV supply battery assembly or an HV supply stack sub-assembly has been replaced, make sure to perform "Battery Status Info Update" to initialize the HV battery age information stored in the battery ECU assembly and turn off the light on the combination meter assembly.

- (a) Turn the ignition switch off and wait for 2 minutes or more.
- (b) Turn the ignition switch to ON.
- (c) Enter the following menus: Powertrain / HV Battery / Utility / Battery Status Info Update.

### Powertrain > HV Battery > Utility



- (d) Turn the ignition switch off.

## TEMPORARY VEHICLE START UP

### NOTICE:

- Do not perform temporary vehicle start up while the master warning is illuminated.
- Perform only when "Vehicle Start Disabled Until Traction Battery Inspected" is displayed on the multi-information display and the vehicle cannot be started.
- "Vehicle Start Disabled Until Traction Battery Inspected" is not cleared even after "Temporary Vehicle Start Up" is performed.

- (a) Enter the following menus: Powertrain / HV Battery / Utility / Temporary Vehicle Start Up

### Powertrain > HV Battery > Utility



### NOTICE:

If once the ignition switch is turned to ON (READY) while depressing the brake pedal, "Temporary Vehicle Start Up" is not possible. Retry after turning the ignition switch off.

- (b) Check items on the display and press "Next".
- (c) The screen transitions to the next screen and "Please wait" is displayed.
- (d) The screen transitions to the next screen and "Now the vehicle is ready to start." is displayed.

### HINT:

- If the ignition switch is turned off after "Temporary Vehicle Start Up", the vehicle will not be able to start again.
  - The GTS can be disconnected after turning the ignition switch to ON (READY).
- (e) Turn the ignition switch to ON (READY).
  - (f) When the condition to perform "Temporary Vehicle Start Up" is not met, the reasons for suspension are displayed on the GTS. Perform "Temporary Vehicle Start Up" again after checking the causes and troubleshooting the suspected area in accordance with instructions in the "Procedure when "Temporary Vehicle Start Up" is suspended" table.

### Procedure when "Temporary Vehicle Start Up" is suspended

GTS DISPLAY	REASON FOR TEMPORARY VEHICLE START UP SUSPENSION (RELATED CONDITION)	PROCEDURE
Temporary Vehicle Start Up has failed. Confirm the following condition.	GTS communication error	After checking that the connector of the GTS is not disconnected and the ignition switch is ON, perform "Temporary Vehicle Start Up" again.

**HV/EV Battery Thermal Keep Control Mode Setting**

**HINT:**

HV battery may be frozen in Canada, Alaska and Greenland. As a result, the HV battery may become excessively weak and the engine may not be able to be started. By setting "HV/EV Battery Thermal Keep Control Mode", it is possible to warm the HV battery and maintain its current temperature in order to prevent it from becoming excessively weak.

When this mode is set to ON, the timer charging timer settings are canceled at temperatures of -10°C (14°F) or lower, and charging will begin immediately when the charging cable is connected to the vehicle. Therefore, never set this mode to ON in any region other than the above.

**HV/EV Battery Thermal Keep Control Mode Setting**

PURPOSE	CONDITION	OPERATION
Prevent HV battery from freezing	<ul style="list-style-type: none"> <li>Ambient temperature is -10°C (14°F) or lower</li> <li>Charging cable is connected to vehicle</li> </ul>	Begins to warm the HV battery to maintain its current temperature when the ambient temperature drops to -10°C (14°F) or lower when the charging cable is connected to the vehicle. To prevent the HV battery from freezing when a charging start time is set, when HV/EV Battery Thermal Keep Mode is enabled, the charging timer will be disabled and charging will begin immediately when the charging cable is connected to the vehicle.

In extremely cold areas, before delivering a new vehicle or after replacing the battery ECU assembly, it is necessary to enable Hybrid Battery Thermal Keep Control Mode using the GTS.

**NOTICE:**

When not in an extremely cold area, as the temperature is not likely to drop low enough to cause the HV battery to become excessively weak and the engine to not be able to be started, do not enable Hybrid Battery Thermal Keep Control Mode.

- (a) Enter the following menus: Powertrain / HV Battery / Utility / HV/EV Battery Thermal Keep Control Mode Setting.

**Powertrain > HV Battery > Utility**

TESTER DISPLAY
HV/EV Battery Thermal Keep Control Mode Setting

- (b) Check items on the display and press "Next".
- (c) Check that "Select HV/EV Battery Thermal Keep Control Mode." is displayed.
- (d) Select "ON", and then press "Next".
- (e) Check that "HV/EV Battery Thermal Keep Control Mode is complete." is displayed.

