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|---|---|---|
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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): P1B831C; Hybrid/EV Battery Pack Refrigerant Pressure Sensor "A" Circuit Range/Performance Circuit Voltage Out of Range; 2023 - 2024 MY Prius Prime [03/2023 - ] | | |

| | | |
|---|---|---|
| **DTC** | **P1B831C** | **Hybrid/EV Battery Pack Refrigerant Pressure Sensor "A" Circuit Range/Performance Circuit Voltage Out of Range** |

# DTC SUMMARY

### MALFUNCTION DESCRIPTION

Determines that there is a deviation in characteristics for the HV battery outlet pressure sensor installed in the HV battery refrigerant cooling system to prevent the HV battery temperature from rising excessively.

# DESCRIPTION

| DTC NO. | DETECTION ITEM | DTC DETECTION CONDITION | TROUBLE AREA | MIL | WARNING INDICATE | DTC OUTPUT FROM | PRIORITY | NOTE |
|---|---|---|---|---|---|---|---|---|
| P1B831C | Hybrid/EV Battery Pack Refrigerant Pressure Sensor "A" Circuit Range/Performance Circuit Voltage Out of Range | While HV battery refrigerant is cooling, the difference between the values of the HV battery refrigerant inlet temperature converted to pressure and the HV battery refrigerant pressure sensor is the specified value or higher<br><br>(2 trip detection logic) | • Air conditioning pressure sensor (No. 2 traction battery cooler tube)<br>• No. 1 traction battery cooler tube (duct inlet 1)<br>• No. 1 traction battery cooler conductor (duct outlet 1)<br>• Battery ECU assembly<br>• Wire harness or connector<br>• A/C cooler pipe<br>• HV battery cooler pipe | Comes on | Master Warning:<br><br>Comes on | HV Battery | A | SAE Code:<br><br>P1B84 |

## MONITOR DESCRIPTION

While battery refrigerant is cooling, if the difference between the values of the battery refrigerant inlet temperature converted to pressure and the battery refrigerant pressure sensor is the specified value or higher, the battery ECU assembly illuminates the MIL and stores a DTC.

## MONITOR STRATEGY

| | |
|---|---|
| Related DTCs | P1B84 (INF P1B831C): Hybrid/EV Battery Pack Refrigerant Pressure Sensor "A" Circuit Range/Performance |
| Required sensors/components | Air conditioning pressure sensor, Air Conditioning Thermistor |
| Frequency of operation | Continuous |
| Duration | TMC's intellectual property |
| MIL operation | 2 driving cycles |
| 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 P1B84 (INF P1B831C) 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. Enter the following menus: Powertrain / HV Battery / Active Test / Hybrid/EV Battery Refrigerant Cooling Control.
4. Perform the "Hybrid/EV Battery Refrigerant Cooling Control" Active Test for 14 minutes.[*1]

   **HINT:**

   - In order to perform "Hybrid/EV Battery Refrigerant Cooling Control", the HV battery minimum temperature must be 11°C (52°F) and the refrigerant temperature inside the HV battery must be 0°C (32°F) or higher.

     If the above conditions are not established, perform the "Hybrid/EV Battery Heater Relay" Active Test in an environment with an ambient temperature of 5°C (41°F) or higher and increase the HV battery temperature.

     In consideration of the temperature drop after the heater stops, increase the value of Data List item "Hybrid/EV Battery Temperature 1 to 15" to a minimum of 12°C (54°F) or more, and the value of Data List item "Hybrid/EV Battery Refrigerant Temperature (Duct Inlet 1)" and "Hybrid/EV Battery Refrigerant Temperature (Duct Outlet 1)" to 1°C (34°F) or more.

     (At an ambient temperature of 5°C (41°F), "Hybrid/EV Battery Heater Relay" will need to be performed for approximately 5 hours.)
   - Perform this step with the A/C blower switch off.
   - [*1]: Normal judgment procedure.

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

## WIRING DIAGRAM

Refer to the wiring diagram for DTC P1B8312.

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## 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, AIR CONDITIONER)** |

Pre-procedure1

(a) None

Procedure1

(b) Check for DTCs.

**Powertrain > HV Battery > Trouble Codes**
**Powertrain > Hybrid Control > Trouble Codes**
**Body Electrical > Air Conditioner > Trouble Codes**

| RESULT | PROCEED TO |
|---|---|
| "P1B831C" 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 |
| DTCs of air conditioning system in the table below are output. | D |

| MALFUNCTION CONTENT | SYSTEM | RELEVANT DTC | |
|---|---|---|---|
| Air conditioner malfunction | Air conditioning system | B138571 | A/C Cooling Electric Expansion Valve Actuator Stuck |
| | | B149887 | A/C Inverter Local Missing Message |
| | | B3A0A71 | A/C Heating Electric Expansion Valve Actuator Stuck |
| | | P0EC971 | A/C Low Pressure Magnetic Valve Actuator Stuck |
| | | P2D4496 | A/C Compressor Component Internal Failure |
| Microcomputer malfunction | 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 |
| Sensor and actuator circuit malfunction | Hybrid battery system | P0CDF73 | Hybrid/EV Battery Pack Coolant Control Valve "A" Stuck On Actuator Stuck Closed |
| | | P0D1A71 | Hybrid/EV Battery Pack Coolant Control Valve "B" Performance/Stuck Off Actuator Stuck |
| | | P0DE871 | Hybrid/EV Battery Pack Coolant Control Valve "C" Performance/Stuck Off Actuator Stuck |

Post-procedure1

(c) Turn the ignition switch off.

**B** ▶ **GO TO DTC CHART (HYBRID BATTERY SYSTEM)**

**C** ▶ **GO TO DTC CHART (HYBRID CONTROL SYSTEM)**

**D** ▶ **GO TO DTC CHART (AIR CONDITIONING SYSTEM)**

**A**

| | |
|---|---|
| **2.** | **REFRIGERANT SHORTAGE CHECK USING GTS** |

**HINT:**

Click here INFO

**NG** ▶ **GO TO STEP 5**

**OK**

| | |
|---|---|
| **3.** | **CHECK HARNESS AND CONNECTOR (AIR CONDITIONING PRESSURE SENSOR POWER SOURCE CIRCUIT)** |

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**OK** ▶ **REPLACE AIR CONDITIONING PRESSURE SENSOR (NO. 2 TRACTION BATTERY COOLER TUBE)**

**NG**

| | |
|---|---|
| **4.** | **CHECK HARNESS AND CONNECTOR (AIR CONDITIONING PRESSURE SENSOR (NO. 2 TRACTION BATTERY COOLER TUBE) - BATTERY ECU ASSEMBLY)** |

Click here INFO

**OK** ▶ **REPLACE BATTERY ECU ASSEMBLY**

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

| | |
|---|---|
| **5.** | **INSPECT FOR REFRIGERANT LEAK (AIR CONDITIONING SYSTEM)** |

Click here INFO

**NG** ▶ **GO TO PROBLEM SYMPTOMS TABLE (AIR CONDITIONING SYSTEM)**

**OK**

| | |
|---|---|
| **6.** | **INSPECT FOR REFRIGERANT LEAK (INLET SIDE OF HV SUPPLY BATTERY ASSEMBLY)** |

Click here INFO

**OK** ▶ **CHECK AND REPLACE REFRIGERANT LEAK (HV SUPPLY BATTERY ASSEMBLY)**

**NG** ▶ **GO TO PROBLEM SYMPTOMS TABLE (AIR CONDITIONING SYSTEM)**