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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): P1B4011,P1B4015,P1B4511,P1B4515; Hybrid/EV Battery Heater 1 Temperature Sensor Circuit Short to Ground; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	P1B4011	Hybrid/EV Battery Heater 1 Temperature Sensor Circuit Short to Ground
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DTC	P1B4015	Hybrid/EV Battery Heater 1 Temperature Sensor Circuit Short to Auxiliary Battery or Open
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DTC	P1B4511	Hybrid/EV Battery Heater 2 Temperature Sensor Circuit Short to Ground
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DTC	P1B4515	Hybrid/EV Battery Heater 2 Temperature Sensor Circuit Short to Auxiliary Battery or Open
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DESCRIPTION

Refer to the description for DTC P1B4A62.

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DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P1B4011	Hybrid/EV Battery Heater 1 Temperature Sensor Circuit Short to Ground	The HV battery heater temperature sensor 0 output voltage is lower than the specified value (short circuit) and the detected temperature is higher than the specified value. (1 trip detection logic)	<ul style="list-style-type: none"> No. 1 traction battery heater Wire harness or connector Battery ECU assembly 	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P1B42
P1B4015	Hybrid/EV Battery Heater 1 Temperature Sensor Circuit	The HV battery heater temperature sensor 0 output	<ul style="list-style-type: none"> No. 1 traction battery heater 	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P1B43

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
	Short to Auxiliary Battery or Open	voltage is higher than the standard value (short to +B or open) and the detected temperature is lower than the specified value. (1 trip detection logic)	<ul style="list-style-type: none"> Wire harness or connector Battery ECU assembly 					
P1B4511	Hybrid/EV Battery Heater 2 Temperature Sensor Circuit Short to Ground	The HV battery heater temperature sensor 1 output voltage is lower than the specified value (short circuit) and the detected temperature is higher than the specified value. (1 trip detection logic)	<ul style="list-style-type: none"> No. 1 traction battery heater Wire harness or connector Battery ECU assembly 	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P1B47
P1B4515	Hybrid/EV Battery Heater 2 Temperature Sensor Circuit Short to Auxiliary Battery or Open	The HV battery heater temperature sensor 1 output voltage is higher than the standard value (short to +B or open) and the detected temperature is lower than the specified value. (1 trip detection logic)	<ul style="list-style-type: none"> No. 1 traction battery heater Wire harness or connector Battery ECU assembly 	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P1B48

MONITOR DESCRIPTION

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

MONITOR STRATEGY

Related DTCs	P1B42 (INF P1B4011), P1B43 (INF P1B4015): Hybrid Battery Heater Temperature Sensor "A" P1B47 (INF P1B4511), P1B48 (INF P1B4515): Hybrid Battery Heater Temperature Sensor "B"
Required sensors/components	HV battery heater temperature sensor
Frequency of operation	Continuous
Duration	TMC's intellectual property
MIL operation	Immediately
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

The monitor will run whenever the following DTCs are not stored	TMC's intellectual property
Other conditions belong to TMC's intellectual property	-

COMPONENT OPERATING RANGE

Battery ECU assembly	DTC P1B42 (INF P1B4011) is not detected DTC P1B43 (INF P1B4015) is not detected DTC P1B47 (INF P1B4511) is not detected DTC P1B48 (INF P1B4515) is not detected
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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.

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- When clearing the permanent DTCs, refer to the "CLEAR PERMANENT DTC" procedure.

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- Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
- Turn the ignition switch off and wait for 2 minutes or more.
- Turn the ignition switch to ON and wait for 5 seconds or more.[*1]

HINT:

- Perform this step in a location where the ambient temperature is -10°C (14°F) or higher.
- [*1]: Normal judgment procedure.

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

- 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 DTC P1B4A62.

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CAUTION / NOTICE / HINT

CAUTION:

Refer to the precautions before inspecting high voltage circuit.

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NOTICE:

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

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- 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.

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PROCEDURE

1.	CHECK DTC OUTPUT (HV BATTERY, HYBRID CONTROL)
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Pre-procedure1

(a) None

Procedure1

(b) Check for DTCs.

Powertrain > HV Battery > Trouble Codes

Powertrain > Hybrid Control > Trouble Codes

RESULT	PROCEED TO
"P1B4011, P1B4015, P1B4511 or P1B4515" 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

RESULT	PROCEED TO
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 CONNECTOR CONNECTION CONDITION (BATTERY ECU ASSEMBLY)
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Click here 

NG  **CONNECT SECURELY**

OK



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

RESULT	PROCEED TO
"P1B4011 or P1B4015" is also output.	A

RESULT	PROCEED TO
"P1B4511 or P1B4515" is also output.	B

B ► **GO TO STEP 6**

A
▼

4.	CHECK NO. 1 TRACTION BATTERY HEATER (HV BATTERY HEATER TEMPERATURE SENSOR 0)
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Click here [INFO](#)

OK ► **REPLACE BATTERY ECU ASSEMBLY**

NG
▼

5.	CHECK HARNESS AND CONNECTOR (BATTERY ECU ASSEMBLY - NO. 1 TRACTION BATTERY HEATER (HV BATTERY HEATER TEMPERATURE SENSOR 0))
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OK ► **REPLACE NO. 1 TRACTION BATTERY HEATER**

NG ► **REPAIR OR REPLACE HARNESS OR CONNECTOR**

6.	CHECK NO. 1 TRACTION BATTERY HEATER (HV BATTERY HEATER TEMPERATURE SENSOR 1)
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OK ► **REPLACE BATTERY ECU ASSEMBLY**

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7.	CHECK HARNESS AND CONNECTOR (BATTERY ECU ASSEMBLY - NO. 1 TRACTION BATTERY HEATER (HV BATTERY HEATER TEMPERATURE SENSOR 1))
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Click here 

OK  **REPLACE NO. 1 TRACTION BATTERY HEATER**

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

