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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: HYBRID / BATTERY CONTROL: MOTOR GENERATOR CONTROL SYSTEM (for M20A-FXS): P0BFE62,P1C681F; Drive Motor "B" Phase U-V-W Current Sensor Signal Compare Failure; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DTC	**P0BFE62**	**Drive Motor "B" Phase U-V-W Current Sensor Signal Compare Failure**

DTC	**P1C681F**	**Drive Motor "B" Phase U-V-W Current Sensor Circuit Intermittent**

DTC SUMMARY

MALFUNCTION DESCRIPTION

These DTCs indicate that the current sensor value is abnormal. The cause of this malfunction may be one of the following:

Internal inverter malfunction

- Current sensor malfunction
- Inverter with converter assembly internal circuit malfunction

DESCRIPTION

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0BFE62	Drive Motor "B" Phase U-V-W Current Sensor Signal Compare Failure	Rear motor inverter current sensor characteristic malfunction: The value of the total output of the U, V and W phase current sensors exceeds the threshold.*1 (1 trip detection logic)	• Inverter with converter assembly • HV floor under wire (rear traction motor cable) • Rear traction motor with transaxle assembly • Wire harness or connector	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P0BFE
P1C681F	Drive Motor "B" Phase U-V-W Current	The value of the total output of the U, V and W phase	• Inverter with	Does not	Master Warning:	Motor Generator	A	SAE Code:

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
	Sensor Circuit Intermittent	current sensors exceeds the threshold detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19 or P1C5E19 is stored. (1 trip detection logic)	converter assembly • HV floor under wire (rear traction motor cable) • Rear traction motor with transaxle assembly • Wire harness or connector	come on	Does not come on			P1C68

HINT:

*1: Under normal conditions, the value of the total output of the U, V and W phase current sensors is approximately 0.

MONITOR DESCRIPTION

If the value of the total output of the U, V and W phase current sensors exceeds a threshold, a malfunction will be detected, the motor generator control ECU will illuminate the MIL and store a DTC.

MONITOR STRATEGY

Related DTCs	P0BFE (INF P0BFE62): Signal Compare Failure
Required sensors/components	Rear motor inverter phase U current sensor Rear motor inverter phase V current sensor Rear motor inverter phase W current sensor
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

Motor generator control ECU	DTC P0BFE (INF P0BFE62) 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. Turn the ignition switch to ON (READY). [*1]
4. Move the shift lever to D, and then accelerate until the vehicle speed is 20 km/h (12.5 mph) and the accelerator position is approximately 25%. [*2]

   HINT:

   [*1] to [*2]: 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 / Motor Generator / 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, perform the normal judgment procedure again.

WIRING DIAGRAM

Refer to the wiring diagram for the Rear Motor High-voltage Circuit.

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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 negative (-) auxiliary 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:

P0BFE62 or P1C681F may be output as a result of the malfunctions indicated by the DTCs in table below.

1. The chart above is listed in inspection order of priority.
2. Check DTCs that are output at the same time by following the listed order. (The main cause of the malfunction can be determined without performing unnecessary inspections.)

Table 1

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
Insulation malfunction	Hybrid control system	P1C7C49	Hybrid/EV Battery Voltage System Isolation (A/C Area) Internal Electronic Failure
		P1C7D49	Hybrid/EV Battery Voltage System Isolation (Hybrid/EV Battery Area) Internal Electronic Failure
		P1C7E49	Hybrid/EV Battery Voltage System Isolation (Transaxle Area) Internal Electronic Failure
		P1C7F49	Hybrid/EV Battery Voltage System Isolation (Direct Current Area) Internal Electronic Failure
		P1C8049	Hybrid/EV Battery Voltage System Isolation (Rear Motor Area) Internal Electronic Failure
High voltage system malfunction	Hybrid control system	P0AA649	Hybrid/EV Battery Voltage System Isolation Internal Electronic Failure

Table 2

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
Microcomputer malfunction	Hybrid control system	P0A1B49	Drive Motor "A" Control Module Internal Electronic Failure
	Motor generator control system	P0A1C47	Drive Motor "B" Control Module Watchdog / Safety MCU Failure
		P0A1C49	Drive Motor "B" Control Module Internal Electronic Failure
		P1C2B1C	Drive Motor "A" Control Module A/D Converter Circuit Voltage Out of Range
		P1C2B49	Drive Motor "A" Control Module A/D Converter Circuit Internal Electronic Failure
		P1C2B71	Drive Motor "A" Control Module A/D Converter Circuit Actuator Stuck
		P1C2C1C	Drive Motor "B" Control Module AD Converter Circuit Voltage Out of Range
		P1C2C49	Drive Motor "B" Control Module AD Converter Internal Electronic Failure
		P1C2C71	Drive Motor "B" Control Module A/D Converter Circuit Actuator Stuck
		P310B83	Communication Error from Drive Motor "A" to Drive Motor "B" Value of Signal Protection Calculation Incorrect

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P310B86	Communication Error from Drive Motor "A" to Drive Motor "B" Signal (Some Circuit Quantity, Reported via Serial Data) Invalid
		P310B87	Communication Error from Drive Motor "A" to Drive Motor "B" Missing Message
Power source circuit malfunction	Motor generator control system	P06B01C	Generator Control Module Position Sensor REF Power Source Circuit Voltage Out of Range
		P06B31C	Drive Motor "B" Control Module Position Sensor REF Power Source Circuit Voltage Out of Range
		P06D61C	Generator Control Module Offset Power Circuit Voltage Out of Range
		P19F91C	Drive Motor "B" Control Module Offset Power Circuit Voltage Out of Range
Communication malfunction	Motor generator control system	U11B387	Lost Communication with Hybrid/EV Powertrain Control Module (ch5) Missing Message
System malfunction	Motor generator control system	P0A7973	Drive Motor "B" Inverter Actuator Stuck Closed

PROCEDURE

1.	**CHECK CONNECTOR CONNECTION CONDITION (INVERTER WITH CONVERTER ASSEMBLY CONNECTOR)**

Click here INFO

RESULT	PROCEED TO
OK	A
NG (The connector is not connected securely.)	B
NG (The terminals are not making secure contact or are deformed, or water or foreign matter exists in the connector.)	C

B ▶ **CONNECT SECURELY**

C ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

A ▼

2.	**CHECK REAR MOTOR HIGH-VOLTAGE CIRCUIT**

Click here INFO

HINT:

If the "Rear Motor High-voltage Circuit" inspection results are normal, perform the next step.

NEXT **REPLACE INVERTER WITH CONVERTER ASSEMBLY**