Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BI19
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: HYBRID CONTROL SYSTEM (for PHEV Model): P1CE213,P1CE292; PCU Interlock Circuit Open; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P1CE213**	**PCU Interlock Circuit Open**

DTC	**P1CE292**	**PCU Interlock Performance or Incorrect Operation**

DTC SUMMARY

MALFUNCTION DESCRIPTION

The hybrid vehicle control ECU detects that a safety device (interlock) is operated or that there is an open circuit in the detection circuit. (Even if an open circuit occurs while the vehicle is stopped, the system determines that the safety device was operated.)

The cause of this malfunction may be one of the following:

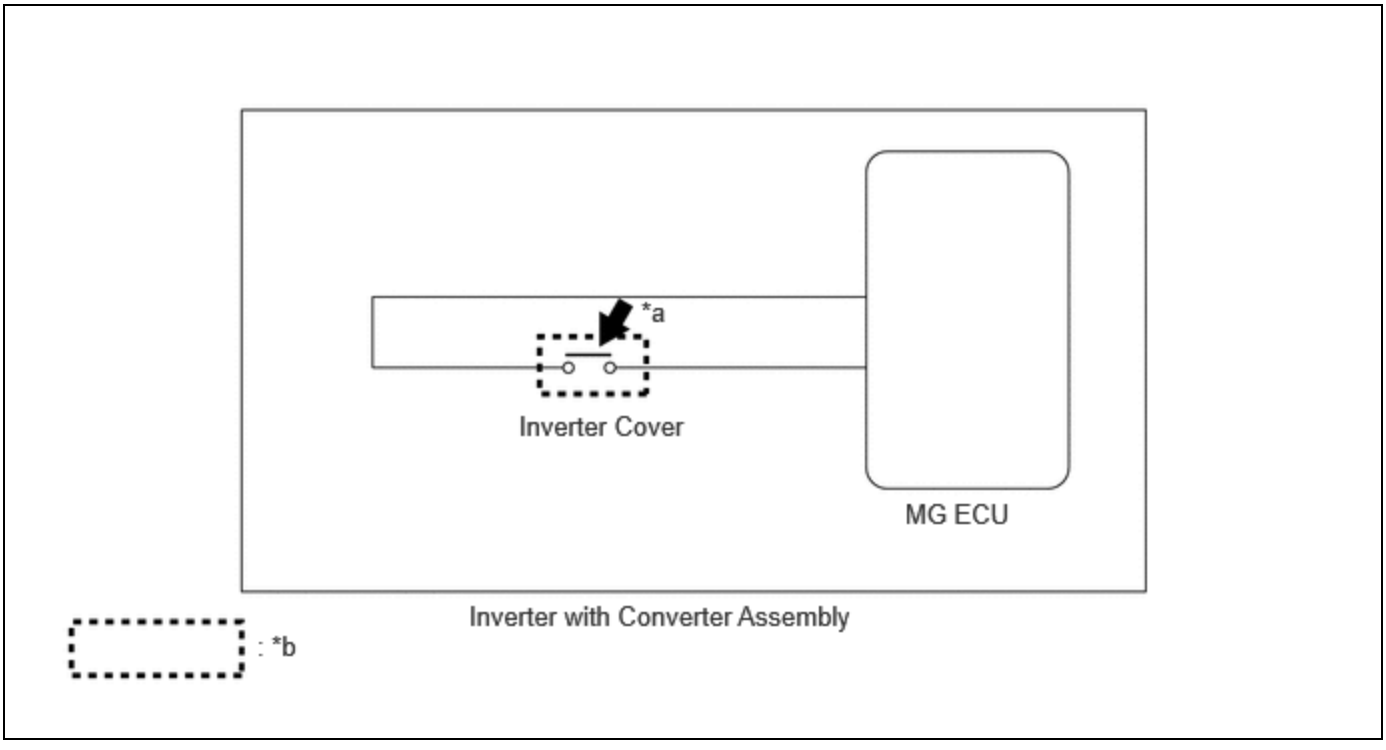
Detection switch system malfunction

- Inverter with converter assembly malfunction

Low-voltage system malfunction

- MG ECU malfunction
- Inverter with converter assembly malfunction
- CAN communication error between the MG ECU and hybrid vehicle control ECU

INSPECTION DESCRIPTION



SYSTEM DIAGRAM LOCATION	INSPECTION CONTENT	REASON
*a	Check whether the safety device (interlock) is connected securely and installed properly (inverter cover).	DTC output due to improper connection or forgetting to install parts.
*b	Inspect the detection circuit.	DTC output due to an open circuit or improper connection (dirt, foreign matter, etc.).

DESCRIPTION

Refer to the description for DTC P0A0A13.

Click here INFO

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P1CE213	PCU Interlock Circuit Open	Interlock signal line opens while the vehicle is being driven (at 5 km/h (3 mph) or more) (1 trip detection logic)	• Inverter cover • Inverter with converter assembly	Does not come on	Master Warning: Comes on	Hybrid Control	A	SAE Code: P0A0D
P1CE292	PCU Interlock Performance or Incorrect Operation	Either of the following conditions is met: • With the vehicle stopped, the inverter cover with a safety device was removed. • With the vehicle stopped, the interlock signal line became open. (1 trip detection logic)	• Inverter cover • Inverter with converter assembly	Does not come on	Master Warning: Comes on	Hybrid Control	A	SAE Code: P0A0D

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.

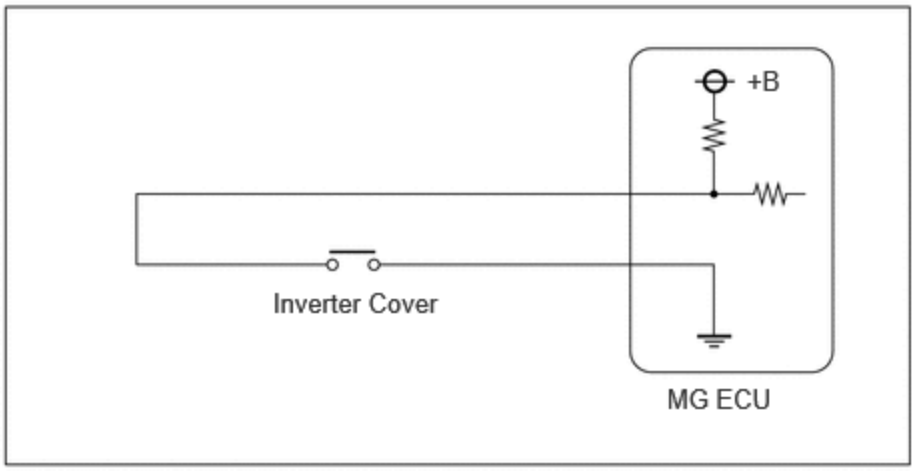
Click here INFO

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. With ignition switch ON and wait for 5 seconds or more.
4. Enter the following menus: Powertrain / Hybrid Control / 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, perform driving pattern again.

WIRING DIAGRAM



Inverter with Converter Assembly

CAUTION / NOTICE / HINT

CAUTION:

Refer to the precautions before inspecting high voltage circuit.

Click here INFO

NOTICE:

- After removing the service plug grip, do not turn the ignition switch to ON (READY), unless instructed by the repair manual because this may cause a malfunction.
- As interlock circuit DTCs or other DTCs may be stored when the ignition switch is turned to ON in the following procedure, make sure to clear the DTCs after inspection.
- 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:

- P1CE213 or P1CE292 may be output as a result of the malfunction indicated by the DTCs in table below.

a. The chart above is listed in inspection order of priority.
b. 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.)

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
Microcomputer malfunction	Hybrid Control System	P060647	Hybrid/EV Powertrain Control Module Processor Watchdog / Safety MCU Failure
		P060687	Hybrid/EV Powertrain Control Module Processor to Monitoring Processor Missing Message
		P060A47	Hybrid/EV Powertrain Control Module Monitoring Processor Watchdog / Safety MCU Failure
		P060A87	Hybrid/EV Powertrain Control Module Processor from Monitoring Processor Missing Message
		P060B49	Hybrid/EV Powertrain Control Module A/D Processing Internal Electronic Failure
		P060B71	Hybrid/EV Powertrain Control Module A/D Processing Actuator Stuck
		P060B1C	Hybrid/EV Powertrain Control Module A/D Processing Voltage Out of Range
		P1C9E9F	Hybrid/EV System Reset Stuck Off
		P1CE349	Hybrid/EV Powertrain Control Module Monitoring Processor A/D Processing Internal Electronic Failure
		P1CE371	Hybrid/EV Powertrain Control Module Monitoring Processor A/D Processing Actuator Stuck
		P1CE31C	Hybrid/EV Powertrain Control Module Monitoring Processor A/D Processing Voltage Out of Range
		P060A45	Hybrid/EV Powertrain Control Module Monitoring Processor Program Memory Failure
		P060A44	Hybrid/EV Powertrain Control Module Monitoring Processor Data Memory Failure
		P060A29	Hybrid/EV Powertrain Control Module Monitoring Processor Signal Invalid
		P060A49	Hybrid/EV Powertrain Control Module Monitoring Processor Internal Electronic Failure
		P0A1B49	Drive Motor "A" Control Module Internal Electronic Failure

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
	Motor Generator Control System	P0A1B1F	Generator Control Module Circuit Intermittent
Power source circuit malfunction	Hybrid Control System	P06881F	ECM/PCM Power Relay Sense Circuit Intermittent
Communication system malfunction	Hybrid Control System	U117E87	Lost Communication with Drive Motor Control Module "A" (ch4) Missing Message

PROCEDURE

1.	**CLEAR DTC**

Click here INFO

NEXT

2.	**CHECK DTC OUTPUT (HYBRID CONTROL)**

Pre-procedure1

(a) None.

Procedure1

(b) Check if DTCs are output.

Powertrain > Hybrid Control > Trouble Codes

RESULT	PROCEED TO
P1CE213 or P1CE292 is output	A
P1CE213 or P1CE292 is not output	B

HINT:

Check if the same DTC is output.

Post-procedure1

(c) Turn the ignition switch off.

B **GO TO STEP 3**

A

3.	**CHECK INVERTER COVER**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

(a) Check that the service plug grip is not installed.

NOTICE:

After removing the service plug grip, do not turn the ignition switch to ON (READY), unless instructed by the repair manual because this may cause a malfunction.

Procedure1

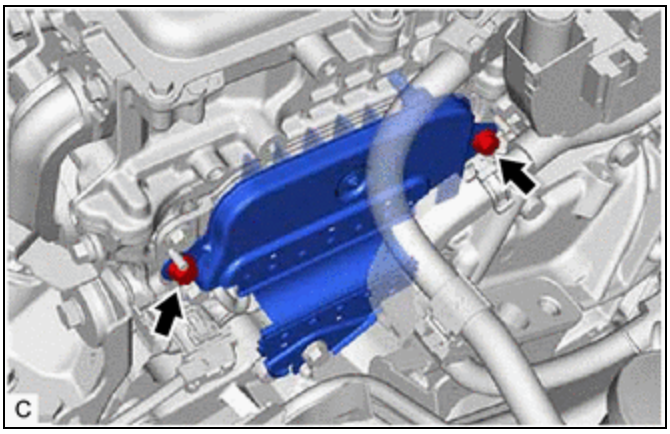
(b) Check if the inverter cover of the inverter with converter assembly is installed correctly.

OK:

The inverter cover is installed correctly.

Result:

PROCEED TO
OK
NG



Post-procedure1

(c) None.

NG ▶ **INSTALL PARTS CORRECTLY**

OK

4.	**CHECK INVERTER COVER**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

(a) Check that the service plug grip is not installed.

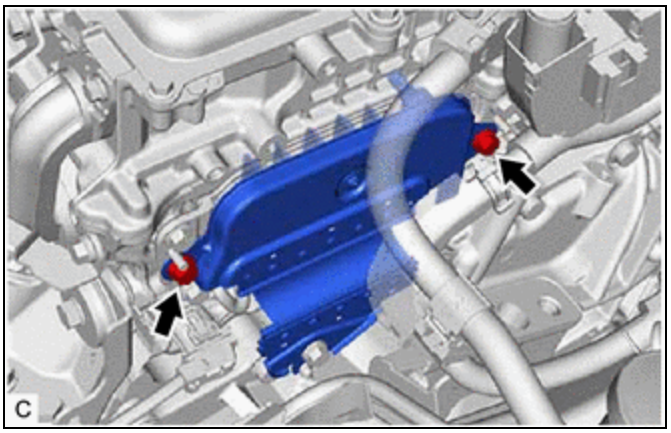
NOTICE:

After removing the service plug grip, do not turn the ignition switch to ON (READY), unless instructed by the repair manual because this may cause a malfunction.

(b) Remove the inverter cover from the inverter with converter assembly.

HINT:

Click here INFO



Procedure1

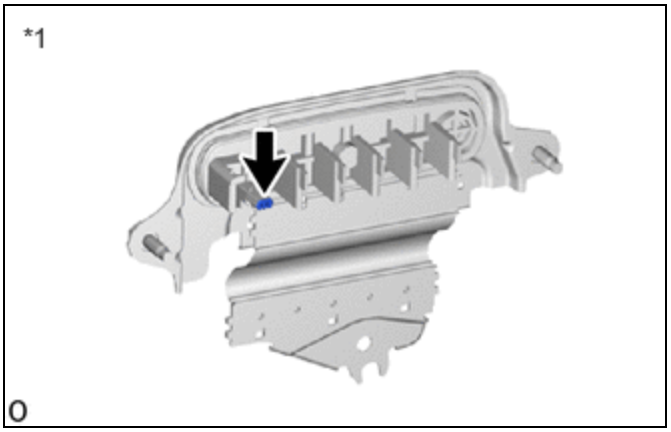
(c) Check the condition of the inverter cover interlock.

OK:

Dirt or foreign matter has not entered the connectors and there is no evidence of contamination.

Result:

PROCEED TO
OK
NG



*1	Inverter Cover

Post-procedure1

(d) Install the inverter cover.

OK ▶ **REPLACE INVERTER WITH CONVERTER ASSEMBLY**

NG ▶ **REPLACE INVERTER COVER**