Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BIXE
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: PLUG-IN CHARGE CONTROL SYSTEM (for PHEV Model): P1CE996; Charger Cooling Fan Revolution Sensor Component Internal Failure; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P1CE996**	**Charger Cooling Fan Revolution Sensor Component Internal Failure**

DTC SUMMARY

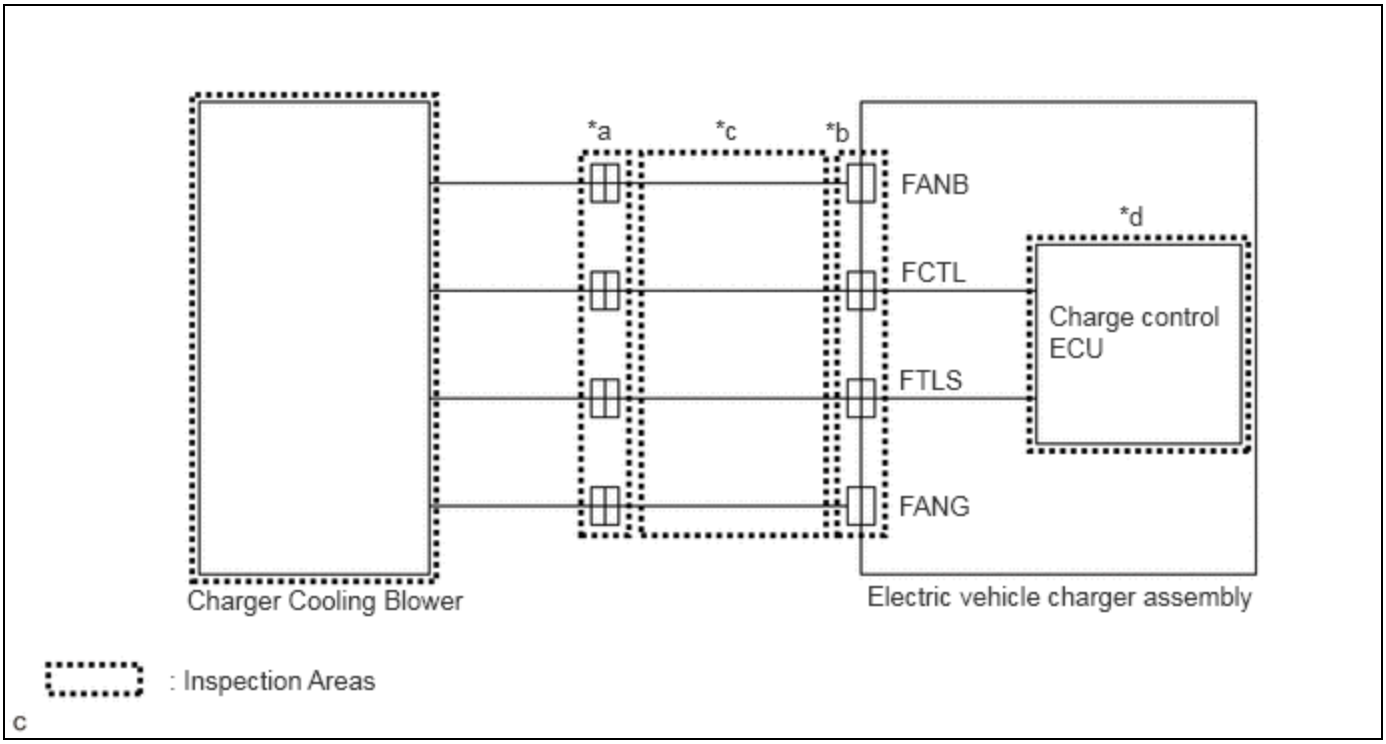
MALFUNCTION DESCRIPTION

The charge control ECU built into the electric vehicle charger assembly monitors the charger cooling blower speed and stores DTCs if the charger cooling blower speed becomes abnormal.

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

Charger cooling blower circuit malfunction

- Electric vehicle charger assembly (charge control ECU) internal malfunction
- Charger cooling blower malfunction (open circuit/temporary interruption, foreign matter, charger cooling blower speed sensor malfunction, etc.)
- Charger cooling blower operation command circuit malfunction (between the electric vehicle charger assembly and charger cooling blower)



c

INSPECTION DESCRIPTION

SYSTEM DIAGRAM RANGE	INSPECTION CONTENT	REASON
*a	Check whether the charger cooling blower connector is connected.	Improperly connected charger cooling blower connector.

SYSTEM DIAGRAM RANGE	INSPECTION CONTENT	REASON
*b	Check whether the electric vehicle charger assembly connector is connected.	Improperly connected electric vehicle charger assembly connector.
*c	Check for an open or short in the wire harness.	Open circuit or short circuit in the wire harness.
*d	Replace electric vehicle charger assembly	Electric vehicle charger assembly internal malfunction

DESCRIPTION

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P1CE996	Charger Cooling Fan Revolution Sensor Component Internal Failure	When charging or supplying power, the cooling fan rotation speed is outside of the threshold range (1 trip detection logic)	• Charger cooling blower • Electric vehicle charger assembly • Wire harness or connector	Comes on	Master Warning: Comes on	Plug-in Control	B	SAE Code: P1CEA

MONITOR DESCRIPTION

The charge control ECU built into the electric vehicle charger assembly monitors the revolution of cooling fan. If it detects a cooling fan malfunction, it illuminates the MIL and stores a DTC.

MONITOR STRATEGY

Related DTCs	P1CEA: Battery Charger Cooling Fan Speed Sensor Circuit Range/Performance
Required sensors/components	Electric vehicle charger assembly
Frequency of operation	Continuous
Duration	TMC's intellectual property
MIL operation	1 charging cycle 1 discharging 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

Electric vehicle charger assembly	DTC P1CE996 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. Enter the following menus: Powertrain / Hybrid Control / Data List.
3. Check that "Hybrid/EV Battery SOC" shows 70% or less.
4. Turn the ignition switch off and wait for 2 minutes or more.
5. Connect the electric vehicle charger cable assembly, plug-in charge the vehicle for 60 seconds or more. [*1]
6. Disconnect the electric vehicle charger cable assembly and wait for 10 seconds or more. [*2]

HINT:

[*1] to [*2]: Normal judgment procedure.

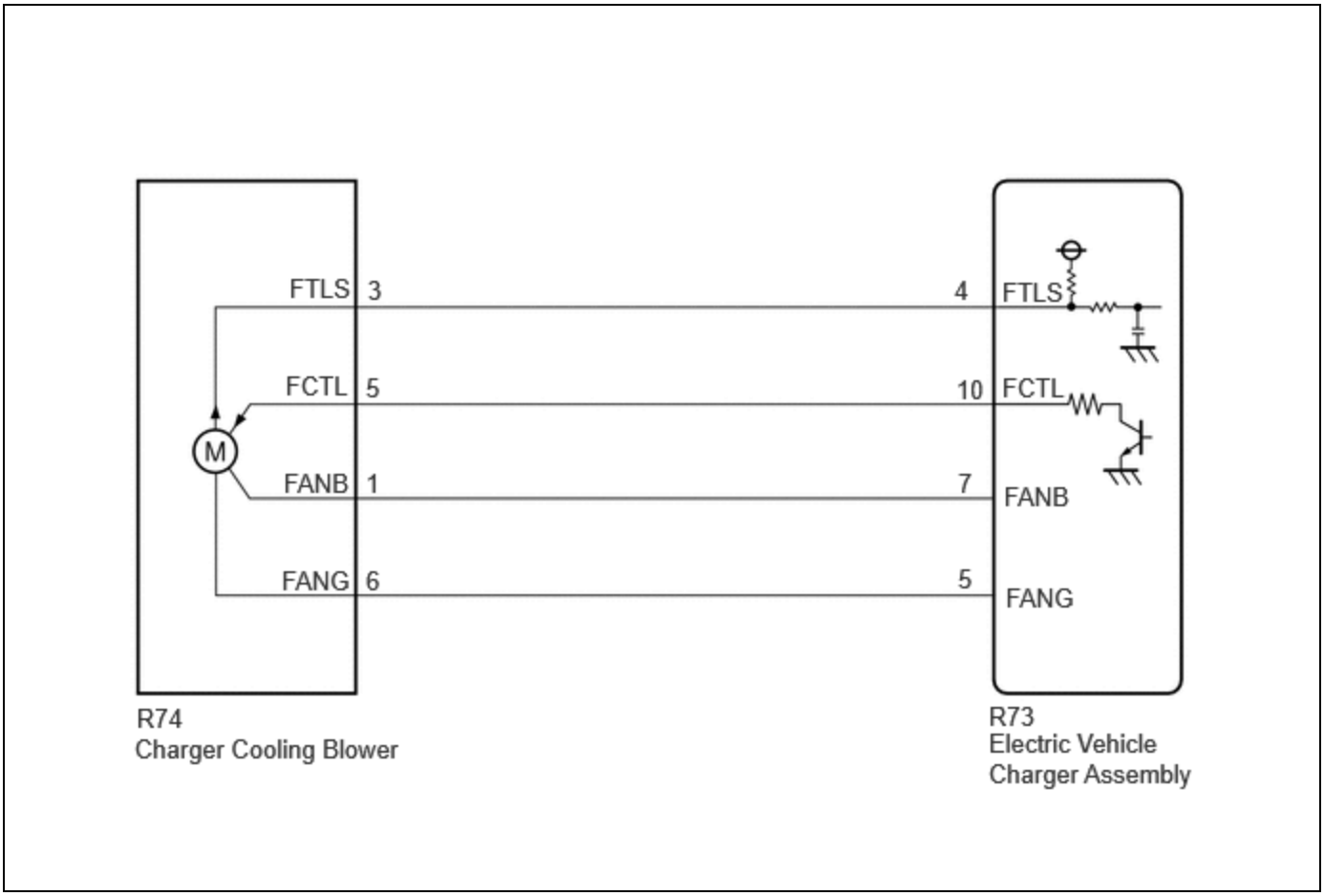
The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.

7. Enter the following menus: Powertrain / Plug-in Control / Utility / All Readiness.
8. 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



CAUTION / NOTICE / HINT

CAUTION:

Refer to the precautions before inspecting high voltage circuit.

Click here INFO

NOTICE:

- If the DTCs are cleared or the cable is disconnected from and reconnected to the negative (-) auxiliary battery terminal before performing repairs, connecting the electric vehicle charger cable assembly connector may cause a malfunction. Do not connect the electric vehicle charger cable assembly connector.
- 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

PROCEDURE

1.	**CHECK DTC OUTPUT (PLUG-IN CONTROL)**

Pre-procedure1

(a) None

Procedure1

(b) Check for DTCs.

Powertrain > Plug-in Control > Trouble Codes

RESULT	PROCEED TO
P1CE996 only is output, or DTCs except the ones in the table below are also output	A
DTCs of plug-in charge control system in the tables below are output	B

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
Microcomputer malfunction	Plug-in charge control system	P168749	AC Onboard Charger Module A/D Processing Internal Electronic Failure
Communication system malfunction		P0E5E87	Plug-in Control Module Processor from Hybrid/EV Battery Charger Control Module Processor Missing Message

HINT:

- P1CE996 may be output as a result of the malfunction indicated by the DTCs above.

  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.)

Post-procedure1

(c) Turn the ignition switch off.

B ▶ **GO TO DTC CHART (PLUG-IN CHARGE CONTROL SYSTEM)**

A ▼

2.	**PERFORM UTILITY USING GTS (CHARGER COOLING FAN (CHG WAKE UP))**

Pre-procedure1

(a) Perform Utility item "Charger Cooling Fan (CHG Wake Up)".

Powertrain > Plug-in Control > Utility

TESTER DISPLAY
Charger Cooling Fan (CHG Wake Up)

NOTICE:

If the ignition switch is turned off, the connector between the GTS and vehicle is disconnected, or a communication error occurs when "Charger Cooling Fan (CHG Wake Up)" is being performed, perform "Charger Cooling Fan (CHG Wake Up)" again and make sure to terminate it normally.

Procedure1

(b) Check that the charger cooling blower operates, air is sucked into the inlet duct and the operation sound is normal.

The charger cooling blower operates.

Post-procedure1

(c) Turn the ignition switch off.

NG ▶ **GO TO STEP 4**

OK ▼

3.	**CHECK VEHICLE OPERATION HISTORY**

(a) Check if the vehicle was jump-started due to a depleted auxiliary battery, etc., immediately before the failure.

RESULT	PROCEED TO
Jump started in the past	A
Other than above	B

A ▶ **END (NO MALFUNCTION IN VEHICLE)**

B ▶ **GO TO STEP 4**

4.	**CHECK CONNECTOR CONNECTION CONDITION (CHARGER COOLING BLOWER CONNECTOR)**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

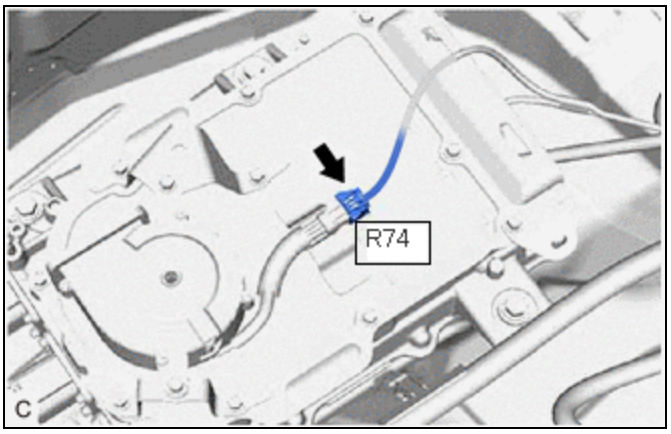
(a) Check that the service plug grip is not installed.

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 the connector connection for the charger cooling blower connector.



(c) Disconnect the charger cooling blower connector.

(d) Check the contact pressure of each terminal of the charger cooling blower connector and check for foreign matter or arc marks on the terminals.

Click here INFO

RESULT		PROCEED TO
The terminals are connected securely and there are no contact problems	There is neither foreign matter nor arc marks	A
The terminals are not connected securely and there is a contact problem	There is any of foreign matter or arc marks	B
The terminals are not connected securely and there is a contact problem	There is neither foreign matter nor arc marks	C
The terminals are connected securely and there are no contact problems	There is any of foreign matter or arc marks	B

Post-procedure1

(e) Reconnect the charger cooling blower connector.

B ▶ **REPLACE MALFUNCTIONING PARTS**

C ▶ **CONNECT SECURELY**

A ▼

5.	**CHECK CONNECTOR CONNECTION CONDITION (ELECTRIC VEHICLE CHARGER ASSEMBLY CONNECTOR)**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

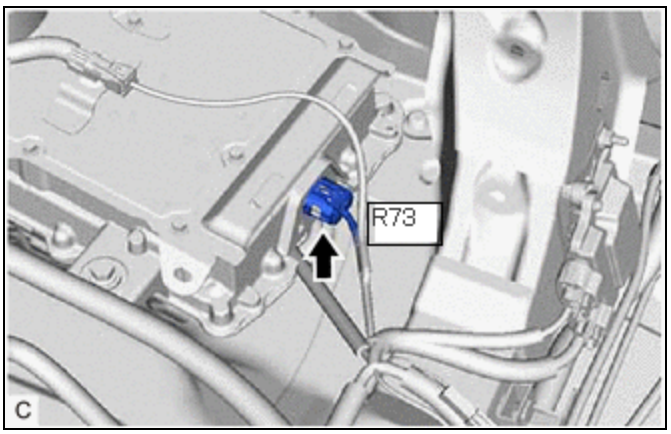
(a) Check that the service plug grip is not installed.

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 the connector connection for the electric vehicle charger assembly connector.



(c) Disconnect the electric vehicle charger assembly connector.

(d) Check the contact pressure of each terminal of the electric vehicle charger assembly connector and check for foreign matter or arc marks on the terminals.

Click here INFO

RESULT		PROCEED TO
The terminals are connected securely and there are no contact problems	There is neither foreign matter nor arc marks	A
The terminals are not connected securely and there is a contact problem	There is any of foreign matter or arc marks	B
The terminals are not connected securely and there is a contact problem	There is neither foreign matter nor arc marks	C
The terminals are connected securely and there are no contact problems	There is any of foreign matter or arc marks	B

Post-procedure1

(e) Reconnect the electric vehicle charger assembly connector.

B ▶ **REPLACE MALFUNCTIONING PARTS**

C ▶ **CONNECT SECURELY**

A

▼

6.	**CHECK CHARGER COOLING BLOWER (VISUALLY CHECK)**

Pre-procedure1

(a) Remove the charger cooling blower.

Click here INFO

Procedure1

(b) Check the fan rotating part of the charger cooling blower for foreign matter.

There is no foreign matter or the charger cooling blower is not clogged with foreign matter.

Post-procedure1

(c) Install the charger cooling blower.

NG ▶ **REPLACE CHARGER COOLING BLOWER**

OK

▼

7.	**CHECK HARNESS AND CONNECTOR (CHARGER COOLING BLOWER - ELECTRIC VEHICLE CHARGER ASSEMBLY)**

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) Disconnect the charger cooling blower connector.

(c) Disconnect the electric vehicle charger assembly connector.

Procedure1

(d) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

Click Location & Routing(R74,R73)
Click Connector(R74)
Click Connector(R73)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R74-3 (FTLS) - R73-4 (FTLS)	Ignition switch off	Below 1 Ω
R74-5 (FCTL) - R73-10 (FCTL)	Ignition switch off	Below 1 Ω
R74-1 (FANB) - R73-7 (FANB)	Ignition switch off	Below 1 Ω
R74-6 (FANG) - R73-5 (FANG)	Ignition switch off	Below 1 Ω
R74-3 (FTLS) or R73-4 (FTLS) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
R74-5 (FCTL) or R73-10 (FCTL) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
R74-1 (FANB) or R73-7 (FANB) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
R74-6 (FANG) or R73-5 (FANG) - Body ground and other terminals	Ignition switch off	10 kΩ or higher

Post-procedure1

(e) Reconnect the electric vehicle charger assembly connector.

(f) Reconnect the charger cooling blower connector.

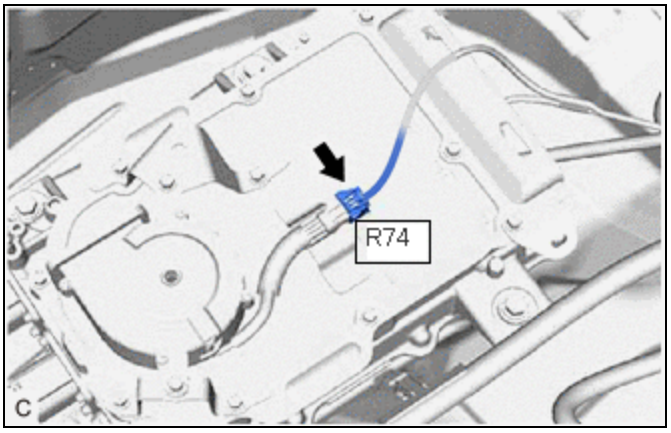
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

8.	**INSPECT ELECTRIC VEHICLE CHARGER ASSEMBLY**

Pre-procedure1

(a) Disconnect the R74 charger cooling blower connector.



Procedure1

(b) According to the display on the GTS, perform the Utility item and, measure the voltage according to the value(s) in the table below.

Powertrain > Plug-in Control > Utility

TESTER DISPLAY
Charger Cooling Fan (CHG Wake Up)

NOTICE:

If the ignition switch is turned off, the connector between the GTS and vehicle is disconnected, or a communication error occurs when "Charger Cooling Fan (CHG Wake Up)" is being performed, perform "Charger Cooling Fan (CHG Wake Up)" again and make sure to terminate it normally.

Standard Voltage:

TESTER DISPLAY	CONDITION	SPECIFIED CONDITION
R74-1 (FANB) - R74-6 (FANG)	Utility "Charger Cooling Fan (CHG Wake Up)" is being performed	10.5 to 14 V

Post-procedure1

(c) Turn the ignition switch off.

(d) Reconnect the charger cooling blower connector.

OK ▶ **REPLACE CHARGER COOLING BLOWER**

NG ▶ **REPLACE ELECTRIC VEHICLE CHARGER ASSEMBLY**