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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: PLUG-IN CHARGE CONTROL SYSTEM (for PHEV Model): AC Charging Time is Too Long; 2023 - 2024 MY Prius Prime [03/2023 -]		

AC Charging Time is Too Long

PROCEDURE

1.	**CHECK DTC OUTPUT (HEALTH CHECK)**

(a) Enter the following menus: Health Check.

(b) Check DTCs.

RESULT	PROCEED TO
No DTCs are output	A
DTCs are output	B

(c) Turn the ignition switch off.

B ▶ **GO TO DTC CHART**

A ▼

2.	**CHECK FOR VEHICLE CONTROL HISTORY**

(a) Enter the following menus.

Powertrain > Plug-in Control > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

(b) Enter the following menus.

Powertrain > Hybrid Control > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

(c) Check for Vehicle Control History (RoB) except AC Charging History (X10F0).

HINT:

Vehicle Control History (RoB) items AC Charging History (X10F0) is stored each time plug-in charging is performed, and is also stored when plug-in charging completes without error from start to finish.

For this reason, the fact that they are output does not directly indicate any malfunction or problem.

RESULT	PROCEED TO
Vehicle Control History (RoB) not stored	A
Vehicle Control History (RoB) stored	B

(d) Turn the ignition switch off.

B **GO TO VEHICLE CONTROL HISTORY**

- PLUG-IN CHARGE CONTROL SYSTEM

  Click here INFO
- HYBRID CONTROL SYSTEM

  Click here INFO

A

3.	CHECK PLUG-IN CHARGE STATE (USING A KNOWN GOOD AC POWER SOURCE)

NOTICE:

- On the customer's vehicle, perform AC charging using a known good electric vehicle charger cable assembly and a known good AC power source.
- Use the same voltage that the customer used to plug-in charge the vehicle.

(a) Enter the following menus: Health Check.

(b) Clear DTCs.

(c) Enter the following menus.

Powertrain > Plug-in Control > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

(d) Clear all Vehicle Control History (RoB) items.

(e) Enter the following menus.

Powertrain > Hybrid Control > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

(f) Clear all Vehicle Control History (RoB) items.

(g) Turn the Charge Now on.

HINT:

- If no charge schedule has been registered, the above step is not necessary.
- "Charge Now" setting method:

Click here INFO

(h) On the customer's vehicle, perform AC charging using a known good charging cable and a known good AC power source until the HV battery is fully charged.

(i) Enter the following menus: Health Check.

(j) Check DTCs.

(k) Enter the following menus.

Powertrain > Plug-in Control > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

(l) Check for Vehicle Control History (RoB) except AC Charging History (X10F0).

HINT:

Vehicle Control History (RoB) items AC Charging History (X10F0) is stored each time plug-in charging is performed, and is also stored when plug-in charging completes without error from start to finish.

For this reason, the fact that they are output does not directly indicate any malfunction or problem.

(m) Enter the following menus.

Powertrain > Hybrid Control > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

(n) Check for Vehicle Control History (RoB).

(o) Turn the ignition switch off.

(p) Disconnect the electric vehicle charger cable assembly.

RESULT	PROCEED TO
DTCs output	A
Vehicle Control History stored	B
DTCs and Vehicle Control History not stored and plug-in charging time is too long.	C
DTCs and Vehicle Control History not stored and plug-in charging time is not longer than normal	D

A **GO TO DTC CHART**

B **GO TO VEHICLE CONTROL HISTORY**

- PLUG-IN CHARGE CONTROL SYSTEM

  Click here INFO
- HYBRID CONTROL SYSTEM

  Click here INFO

C

(a) Analyze the cause according to the following table.

Vehicle Related Cause

POSSIBLE CAUSE	ACTION TO BE TAKEN
Discharged auxiliary battery	Inspect auxiliary battery CAUSE ANALYSIS (VEHICLE RELATED CAUSE)
Accuracy of charging time remaining display	Explain to the customer that the charging time remaining display should be used as a reference only and that discrepancies may occur due to factors such as the temperature of the HV supply battery assembly during plug-in charging.
Battery warming function being activated while AC charging	Explain to the customer that if the battery warming function being activated while AC charging, AC charging time may become longer.
Battery cooling function being activated while AC charging	Explain to the customer that if the battery cooling function being activated while AC charging, AC charging time may become longer.

(b) Take appropriate action in accordance with the result of the cause analysis.

D

4.	**CHECK PLUG-IN CHARGE STATE (USING THE CHARGING CABLE (ELECTRIC VEHICLE CHARGER CABLE ASSEMBLY) PROVIDED WITH THE VEHICLE)**

NOTICE:

- On a known good vehicle, perform AC charging using the customer's charging cable (electric vehicle charger cable assembly) and a known good AC power source.
- Use the same voltage that the customer used to plug-in charge the vehicle.
- Check that power supply plug is securely and fully inserted into electrical outlet.

(a) On a known good vehicle, perform AC charging using the customer's charging cable (electric vehicle charger cable assembly) and a known good AC power source.

(b) Enter the following menus.

Powertrain > Plug-in Control > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

(c) Check for Vehicle Control History (RoB) except AC Charging History (X10F0).

HINT:

Vehicle Control History (RoB) items AC Charging History (X10F0) is stored each time plug-in charging is performed, and is also stored when plug-in charging completes without error from start to finish.

For this reason, the fact that they are output does not directly indicate any malfunction or problem.

(d) Enter the following menus.

Powertrain > Hybrid Control > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

(e) Check for Vehicle Control History (RoB).

(f) Turn the ignition switch off.

(g) Disconnect the charging cable (electric vehicle charger cable assembly).

RESULT	PROCEED TO
Vehicle Control History stored	A

RESULT	PROCEED TO
Vehicle Control History not stored and AC charging suspended	B
Vehicle Control History not stored and AC charging not suspended	C

A **GO TO VEHICLE CONTROL HISTORY**

- PLUG-IN CHARGE CONTROL SYSTEM

  Click here INFO
- HYBRID CONTROL SYSTEM

  Click here INFO

B **CAUSE ANALYSIS (CHARGING CABLE RELATED CAUSE)**

(a) Analyze the cause according to the following table.

Charging Cable Related Cause

POSSIBLE CAUSE	ACTION TO BE TAKEN
Power supply plug overheating protection function operated	Inspect electric vehicle charger cable assembly INFO INFO Check that power supply plug is securely and fully inserted into electrical outlet.

(b) Take appropriate action in accordance with the result of the cause analysis.

C **CAUSE ANALYSIS (USER / ENVIRONMENT / EXTERNAL POWER SOURCE/CHARGING STAND RELATED CAUSE)**

(a) Perform cause analysis in the order of "User Related Cause", "Environment Related Cause" and "External Power Source/Charging Stand Related Cause" categories as specified in the following tables below.

User Related Cause

POSSIBLE CAUSE	ACTION TO BE TAKEN
Power supply plug was not securely and fully inserted into electrical outlet	Explain to the customer that if the electrical contact between the power supply plug and the electrical outlet is unstable, the electric vehicle charger cable assembly may restrict

POSSIBLE CAUSE	ACTION TO BE TAKEN
	the charging current and cause charging time to become longer.
Charging current was changed	Explain to the customer that if the charging current is changed to 8 A through the customize setting on the multi-information display, the charging time will increase. INFO
Auxiliary power consumption was high due to headlights being left on, use of accessories, etc.	Explain to the customer that if the auxiliary power consumption is high, plug-in charging will take longer than normal.
My Room mode was used	Explain to the customer that normal charging may take longer than usual if My Room mode is used during normal charging.

Environment Related Cause

POSSIBLE CAUSE	ACTION TO BE TAKEN
Charging power drops or estimated charging completion time changes due to ambient temperature or HV battery temperature	Explain to the customer that if the temperature of the HV supply battery assembly is changing, plug-in charging will take longer than normal. When the outside temperature is low, plug-in charging may take longer than normal due to the HV battery heater operation in order to ensure the EV driving distance.

External Power Source/Charging Stand Related Cause

POSSIBLE CAUSE	ACTION TO BE TAKEN
Supplied power was low due to charging station AC voltage drop	Interview customer and check the charging station. INFO • Explain to the customer that plug-in charging may take longer than normal if the supplied AC voltage is low.

POSSIBLE CAUSE	ACTION TO BE TAKEN
	• Explain to the customer that estimated charging completion time may be different from actual plug-in charging time.
Supplied power was low due charging station control	Interview customer and check the charging station. INFO Plug-in charging may take longer than normal if the charging station has an electrical power management function. Refer to the user's manual for the charging station.
Plug-in charging was suspended due to power outage	Explain to the customer that plug-in charging is suspended when a power outage occurs and will resume when the power returns to normal.
Charge control power drops due to abnormal electrical outlet voltage	Interview customer and check the electrical outlet. INFO An abnormality in the voltage of the electrical outlet or the ground wire connection may cause the electric vehicle charger cable assembly to restrict the charging current and thus cause charging time to increase. In this situation, the electrical outlet should be checked by a qualified electrician.
Power supply plug overheating protection function operated	Interview customer and check the electrical outlet. INFO Check that power supply plug is securely and fully inserted into electrical outlet.

(b) Take appropriate action in accordance with the result of the cause analysis.