

Maintenance for HV and Auxiliary Batteries

Service Category General

Section Pre-Delivery Service

Market USA

Toyota Supports
ASE Certification 

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2023	ES300H, LC500H, LS500H, NX350H, NX450H+, RX450H, RZ450E, UX250H	

REVISION NOTICE

March 06, 2023 Rev1:

- **Applicability has been updated to include 2023 model year RZ 450e vehicles.**
- **The Introduction, Required Tools & Equipment, Before Delivery, and Periodical Battery Charging (Not Applicable to BEV Models) sections have been updated.**

Any previous printed versions of this bulletin should be discarded.

Introduction

Hybrid and battery electric vehicles are equipped with two types of batteries:

- Hybrid Vehicle (HV) battery
- Auxiliary (12V) battery

If the hybrid vehicle or battery electric vehicle is placed into storage, the State-Of-Charge (SOC) of its HV battery and auxiliary battery will gradually decrease. To prevent the auxiliary battery from becoming discharged during storage, proper maintenance is necessary.

Perform the following maintenance service for the HV battery and auxiliary battery.

NOTE

- **BEFORE** disconnecting the auxiliary battery, confirm the shift lever is in the “P” position. The shift lever **CANNOT** be shifted from the “P” position with the auxiliary battery disconnected.
- Do **NOT** apply the parking brake. Ensure vehicles with electronic parking brakes do **NOT** engage and the Auto function has been **DISABLED** (refer to the Owner’s Manual for details).
- If the negative (–) terminal of the auxiliary battery is reconnected, even if the vehicle is powered **ON** (Ready **ON**), the hybrid system may **NOT** start. In this case, depress the brake pedal and press the Power button to start the hybrid system (the Ready light is **ON**). If the hybrid system still does **NOT** start (the Ready light is **OFF**), refer to the applicable model and model year Repair Manual.

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Maintenance Items

CONDITION*	MAINTENANCE OPERATION
Before Delivery	Fully charge the auxiliary battery. Fast charge is NOT recommended on the 12V battery in order to prevent battery damage. Deliver the vehicle to the customer AFTER it has fully charged to 12.6V or more.
To Store for 30 Days or More	Disconnect the negative (-) terminal of the auxiliary battery to prevent the SOC from decreasing during storage due to parasitic current.
Periodical Battery Charging: <ul style="list-style-type: none"> • Within 45 days AFTER loading on ship and then every 2 months.** • Upon arrival at the dealership and then every 2 months.*** 	Keep the hybrid system ON for 30 minutes with the transmission in the "P" position (in order to charge the HV battery and the auxiliary battery).

*The condition also corresponds with the section titles within this bulletin.

**BEFORE arrival at the dealership.

***AFTER arrival at the dealership.

Warranty Information

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
N/A	Not Applicable to Warranty	-	-	-	-

Required Tools & Equipment

SPECIAL SERVICE TOOLS (SST)	PART NUMBER	QTY
Battery Diagnostic Tool*	DCA-8000P T	1
Battery Diagnostic Tool	DSS-5000P T	1

*Essential SST.

NOTE

- The DCA-8000 battery diagnostic tool (P/N DCA-8000P T) supersedes the GR8 battery diagnostic station (P/N 00002-MCGR8).
- Additional SSTs may be ordered by calling 1-800-933-8335.

Before Delivery

1. BEFORE charging the auxiliary battery, turn OFF ALL lights, accessories, and the hybrid system.

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Before Delivery (continued)

2. Check the battery SOC.
 - If the battery voltage is LESS THAN 12.6V, continue to step 3.
 - If the battery voltage is 12.6V or MORE, replace the positive (+) terminal cover, install the battery cover (if applicable), and close the luggage compartment/hood.

NOTE

- If measuring the voltage with the negative (–) terminal connected, turn OFF the Power button and turn ON the high beams for 20 – 30 seconds. This will remove the surface charge from the battery.
- If the engine has been running before measuring the voltage, wait 20 minutes or more after the engine stops. This removes the surface charge.
- For details on how to use the battery diagnostic station, refer to the [DSS-5000 Instruction Manual](#) and [DCA-8000 Instruction Manual](#) located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics*.

3. Test the auxiliary battery using the DSS-5000 battery diagnostic tool Advanced Battery Test mode.
If charging is required, the DCA-8000 battery diagnostic tool will automatically start to charge.
 - A. Connect the red charger clamp to the positive (+) terminal and the black charger clamp to the negative (–) terminal.
 - B. Plug the charger into a grounded 110V outlet and press the power button.
 - C. Once the DCA-8000 battery diagnostic tool is properly turned ON, perform an Advanced Battery Test. The DCA-8000 battery diagnostic tool will indicate results when complete. If the battery tests bad “Replace Battery,” replace the auxiliary battery.

Figure 1. DCA-8000 Battery Diagnostic Tool



CAUTION

- Charge in a well-ventilated area.
- Do NOT allow sparks OR fire near the auxiliary battery.

NOTE

If the auxiliary battery was stored at 32°F (0°C) or below, charge the auxiliary battery in a room above 32°F (0°C).

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Before Delivery (continued)

4. If the DCA-8000 battery diagnostic tool is NOT available, you may charge the auxiliary battery by cycling the vehicle to Ready ON.
 - Run time will vary depending on the battery SOC.
 - If this method is used, you MUST confirm that the battery is charged to 12.8V using a DVOM.

To Store for 30 Days or More

Disconnect the Negative (–) Terminal

1. Turn OFF ALL lights, accessories, and the hybrid system.
2. Disconnect the negative (–) terminal.

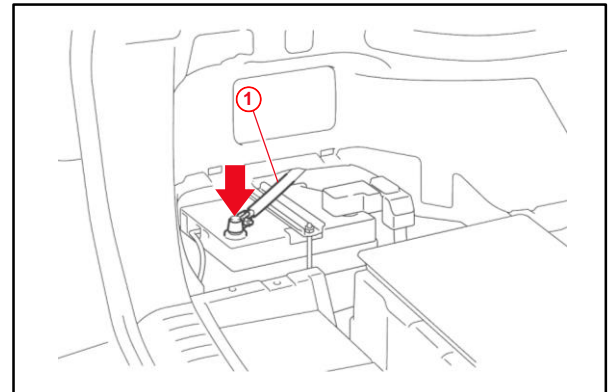
NOTE
When it is necessary to move the vehicle, reconnect the negative (–) terminal.

3. When removing the vehicle from storage, connect the negative (–) terminal.
Please refer to applicable Repair Manual for torque specifications.

NOTE
AFTER recharging the auxiliary battery, the hybrid system may NOT start. Follow the procedure below to initialize the system.

1. Put the shift lever in the “P” position.
2. Open and close ANY of the doors.
3. Restart the hybrid system.

Figure 2.



1	Negative (–) Terminal
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Periodical Battery Charging (Not Applicable to BEV Models)

Cycle the Vehicle to Ready ON

NOTE

- When the remaining capacity of the HV battery is low, the gasoline engine automatically starts and the HV battery is charged. The auxiliary battery is also charged by the HV battery regardless of the gasoline engine operation.
- Be sure to reconnect the negative (–) terminal of the auxiliary battery BEFORE performing this procedure.

1. Park the vehicle in open air or connect the exhaust extraction hose to the exhaust pipe.
2. Apply the parking brake.

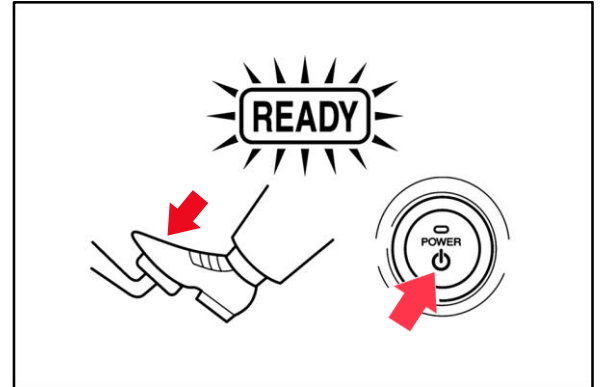
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Periodical Battery Charging (Not Applicable to BEV Models) (continued)

Cycle the Vehicle to Ready ON (continued)

3. With the brake pedal depressed, push the Power button and check that the Ready light in the meter illuminates when the hybrid system starts (the Ready light is ON).

Figure 3.



4. Turn OFF ALL lights and accessories.
5. Check that the shift lever is in the “P” position.
6. Keep the Ready light ON and charge the HV battery for 30 minutes.

NOTE

- If the amount of charging energy is small, the display may NOT indicate the energy flow.
- Ensure there is a sufficient amount of fuel for the vehicle to run for 30 minutes.