STAR ONLINE PUBLICATION

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Symptom/Vehicle Issue: High Voltage Battery Has Lower SOC After Overnight Sleep Cycle

Models Affected:

2021-2025 Jeep Wrangler 4xe (JL)	2022-2025 Jeep Grand Cherokee 4xe (WL)

Discussion: The customer may find that the High Voltage (HV) battery loses State of Charge (SOC) after an overnight sleep cycle when the HV charger is not connected. In some instances, this may be normal operation from battery and cabin conditioning. However, it may also be due to an aging 12v, a vehicle IOD concern, or a result of the 12 volt Silent Charging strategy. To make this determination, follow the diagnostics steps below.

Diagnosis: Before beginning the diagnosis, understand that the HV system utilizes a Silent Charging strategy. To prevent a scenario where the 12v battery becomes depleted, the HV system will always provide supplemental power to the 12v system, even when the ignition is OFF. Additionally, Battery or Cabin Conditioning can decrease the SOC of the HV system below 100% and should be considered normal.

1. Disable any Cabin Conditioning schedule set up by the customer. If possible, keep the vehicle indoors or in environment with stable ambient temperatures to minimize the possibility of Battery Conditioning.

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Contact STAR Center, or your Technical Assistance Center Via TechConnect, eCONTACT or Service Library entry if no solution is found.

2. Confirm via standard Ignition Off Draw (IOD) testing that the vehicle is not experiencing a 12v battery drain during sleep cycles. If a standard IOD is present, it must be diagnosed and repaired before any additional diagnostics steps are carried out.

3. If there is no traditional IOD. Charge the HV battery to 100%. Perform an 8-hour sleep cycle.

   HV SOC Drops <10%: Return the vehicle to the customer and explain the silent charging strategy, battery/cabin conditioning and its intended function to the customer. A <10% drop in SOC is considered normal operation. If the customer requires or expects 100% SOC for maximum electric range after a sleep cycle, the vehicle must remain connected to the HV charger overnight. This is outlined in the 4xe Hybrid Supplemental Owner's manual.

   HV SOC Drops >10%: A common reason for a drop >10% is an aging 12v battery. Perform a 12v battery test with approved Mopar Battery Tester. If test fails, replace the 12v battery. After, charge the HV battery to 100%. Perform an 8-hour sleep cycle. Through field testing it is expected that the HV battery will now lose <10% SOC which is considered normal at this time.

4. If the 12v battery tests good or was replaced and the HV battery continues to lose HV SOC after an 8-hour sleep cycle. It may be due to a known software issue with the silent charging strategy. Updated software is being developed to improve the efficiency of the silent charging strategy and should be released near the end of 2026.

   In the interim, if the customer requires or expects 100% SOC for maximum electric range after a sleep cycle, the vehicle must remain connected to the HV charger overnight. This is outline in the 4xe Hybrid Supplemental Owner's manual.

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Note: If there is a significant overnight drop in HV SOC, much greater than 10% (e.g. 40-50%). The issue is likely attributed to a standard IOD draining the 12v, forcing the HV system to continuously provide supplemental 12v power which in turn can decrease the HV SOC substantially.

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