



TECHNICAL SERVICE BULLETIN

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12 VOLT BATTERY CHARGING LOGIC SERVICE INFORMATION

APPLIED VEHICLES: 2023 ARIYA (FE0)

SERVICE INFORMATION

12 volt Lead Acid Battery (12 volt LAB) charging logic and best practices to ensure 12 volt condition is maintained.

The ARIYA has many advanced electronic systems that are heavily dependent on the 12 volt LAB. Under certain conditions, the 12 volt LAB may or may not receive charging by the High Voltage battery (HV battery), through the DC/DC converter. Not understanding these conditions can lead to a discharged 12 volt LAB.

The ARIYA has several key functions to ensure that the 12 volt LAB is properly tended, and kept at a high State of Charge (SOC). Table 1 on page 2 shows multiple scenarios where the DC/DC converter is providing a charge. Some of these key functions must be understood in order to ensure the vehicle is able to maintain the 12 volt LAB.

The Extra Feeding function is an event where the DC/DC converter charges the 12 volt LAB for 10 minutes. This event occurs every 24 hours, regardless of the 12 volt LAB's SOC, from the last ignition cycle and is intended to maintain the vehicle 12 volt LAB during storage.

The Rescue Charging function is an event where the DC/DC converter will output a current load, continuously for 2 hours, in order to recover the 12 volt LAB. During vehicle sleep, the IPDM will wake up every 4 hours to check the 12 volt LAB's voltage, and then go back to sleep. If during one of these technical wake ups, the IPDM detects that the 12 volt LAB has fallen below 11.2 volts it will initiate "Rescue Charging".

IMPORTANT:

During PDI: Ensure that the vehicle is in Ready Mode. Because of how the DC/DC convertor operates, it is important to keep the vehicle in Ready Mode, so that while completing the PDI the 12 volt LAB does not discharge and cause the vehicle to become inoperable.

Vehicle Lot Storage: Ensure that when vehicles are being stored, the HV Battery percentage is kept at a minimum of 30%. This ensures that the Extra Feeding function will occur and retain positive 12 volt LAB's SOC.

Showroom Storage: Ensure the hood is kept closed while the vehicle is being displayed on the showroom floor. As noted in **Table 1**, when the hood switch is in the open position the DC/DC converter will not charge the 12 volt LAB.

Bulletins are intended for use by qualified technicians, not 'do-it-yourselfers'. Qualified technicians are properly trained individuals who have the equipment, tools, safety instruction, and know-how to do a job properly and safely. **NOTE:** If you believe that a described condition may apply to a particular vehicle, DO NOT assume that it does. See your Nissan dealer to determine if this applies to your vehicle.

Table 1

Key position	Vehicle status	Vehicle condition	HV battery SOC	Hood/Back door condition	DC/DC converter LAB charge					
Ready	Ready	-	-	Hood close	ON					
				Hood open	ON					
				Back door close	ON					
				Back door open	ON					
IGN ON	IGN ON	A/C ON	-	Hood close	ON					
				Hood open	OFF					
				Back door close	ON					
				Back door open	ON					
		A/C OFF	-	Not related	OFF					
OFF	Auto ACC (before ready)	-	-	Hood close	OFF					
				Hood open	OFF					
				Back door close	OFF					
				Back door open	OFF					
	Auto ACC (after ready)	-		Over 15%	Hood close	ON				
					Hood open	OFF				
				Under 15%	Back door close	ON				
					Back door open	ON				
					-	OFF				
	During OTA (except HV components)		Over 15%	-	Hood close	ON				
					Hood open	OFF				
					Back door close	ON				
					Back door open	ON				
			Under 15%	-	OFF					
				-	OFF					
			During OTA (HV components)		-	-	OFF			
			During HV battery charging			-	Hood close	ON		
							Hood open	OFF		
							Back door close	ON		
	Back door open	ON								
	During remote A/C						Over 15%	-	Hood close	ON
									Hood open	OFF
							Under 15%		Back door close	ON
									Back door open	ON
Extra Feeding (LHD: 10min / 24h RHD: 7 / 24h)		Over 12%					-	Hood close	ON	
								Hood open	OFF	
			Back door close	ON						
		Under 12%	Back door open	ON						
			-	OFF						
Technical wake up (every 4h)		-	-	OFF						

AMENDMENT HISTORY

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