

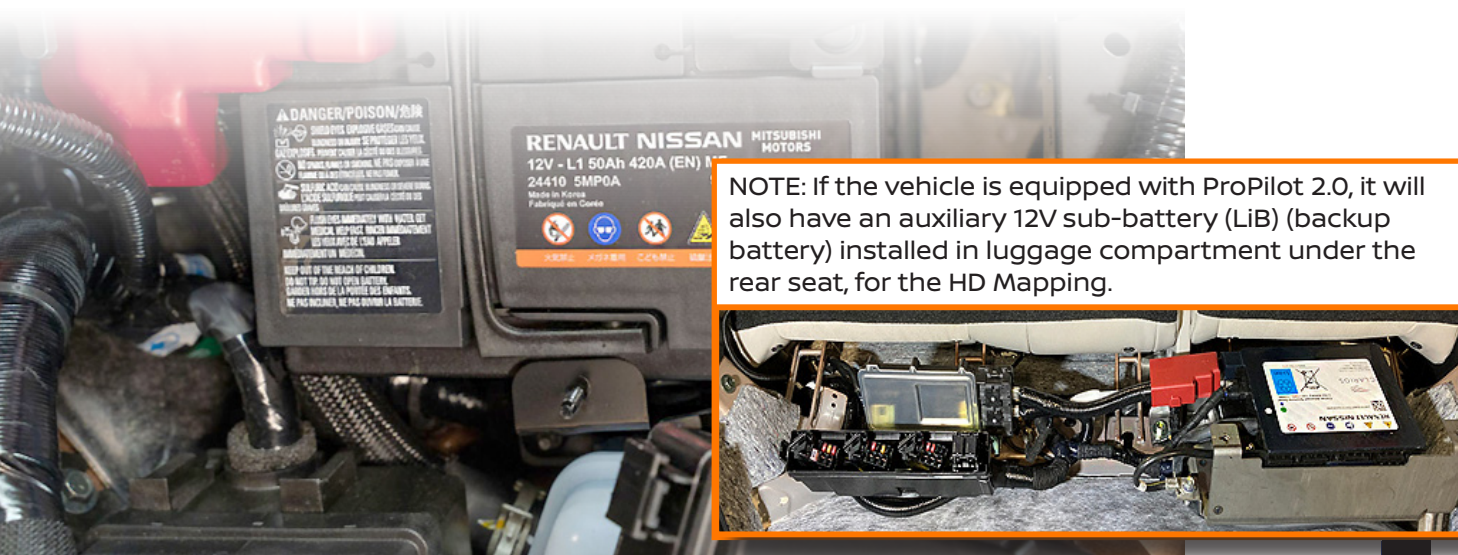


The 2023 Nissan ARIYA

The all-new ARIYA® electric crossover SUV is available in a single (FWD) or dual (e-4ORCE AWD) configuration.

The 2023 Nissan ARIYA

The ARIYA can have two 12V batteries. One is the 12-volt (L1) battery that is located under the hood which is a standard battery. The 12-volt (L1) battery powers the vehicle systems and features such as the audio system, supplemental restraint systems, headlights, and windshield wipers.



The 2023 Nissan ARIYA

The high-voltage (HV) Li-ion battery provides power to the electric motor(s) (traction motor) that moves the vehicle.

The (HV) Li-ion battery also charges the auxiliary 12-volt sub-battery.

Additionally, the vehicle system can extend the driving range by converting driving force into electricity stored in the (HV) Li-ion battery while the vehicle is decelerating or driven downhill, typically referred to as battery regeneration.



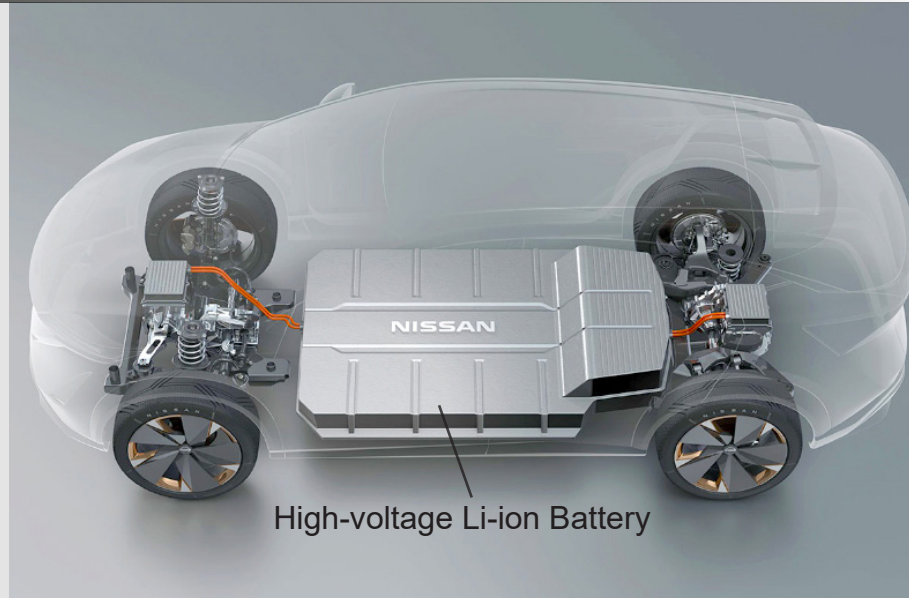
The 2023 Nissan ARIYA

The ARIYA can be equipped with a B6 or a B9 high-voltage (HV) Li-ion battery. The rating for both batteries is approximately 353 volts, but they differ in module structure:

- The B6 battery is rated at 66 kWh
- The B9 battery is rated at 91 kWh

FWD ARIYA models use a single Traction motor and Resolver.

The AWD models include a Traction motor at the front and rear locations.



High-voltage Li-ion Battery

ARIYA's performance, which provides outstanding acceleration and traction, is rated at 214hp - 389hp, depending on its battery capacity and whether it is FWD or e-4ORCE AWD.

The 2023 Nissan ARIYA

The charge port at the front-passenger side quarter panel of the ARIYA provides three charging methods:

- Level 1 and Level 2 charging uses an EVSE cable to connect to a charging dock or electrical outlet. The Level 1 and Level 2 charge ports are the same for ARIYA and LEAF.
- For Level 3 quick charging, ARIYA has a CCS (Combined Charging System) connector, and LEAF has a CHAdeMO (CHARge de MOVE) connector.
- The CCS port utilizes the J1772 port (top) and the DC connection port (bottom) in combination, whereas the CHAdeMO port is a separate port from the J1772 port.

NOTE:

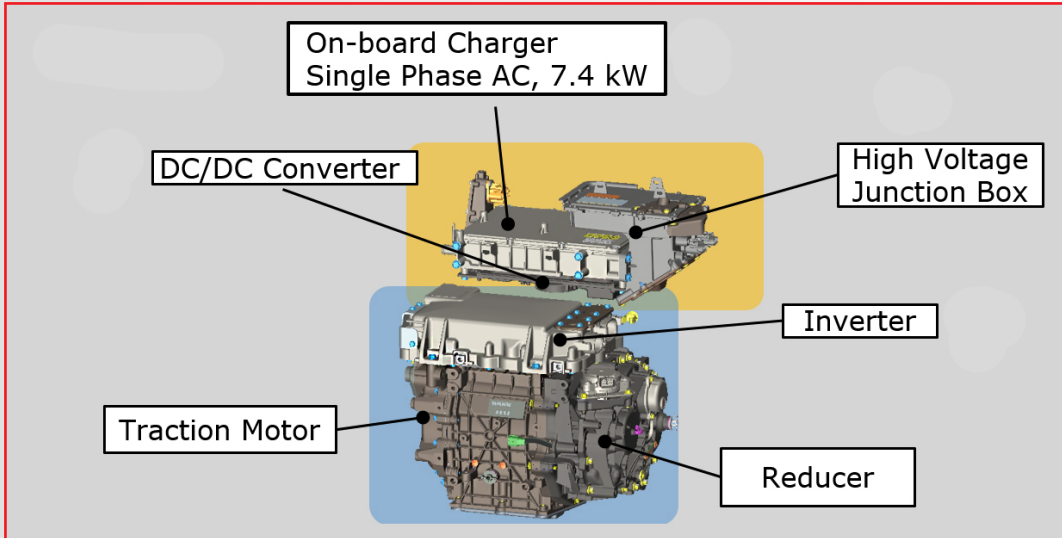
ARIYA is limited to charging at a maximum of 130kW for Level 3 charging by Nissan software. For Level 1 home charging, the customer must use only a 110-120 volt, 15-amp dedicated outlet for charging. Charging capacity and times may vary based on battery temperature.



The ARIYA Powertrain

The main components of the electric powertrain (e-PT) are divided into the upper powertrain and lower powertrain, based on their installed locations under the hood.

ARIYA front-wheel drive and all-wheel drive models will share the upper powertrain components, while the AWD models have additional lower powertrain components to power the rear wheels.

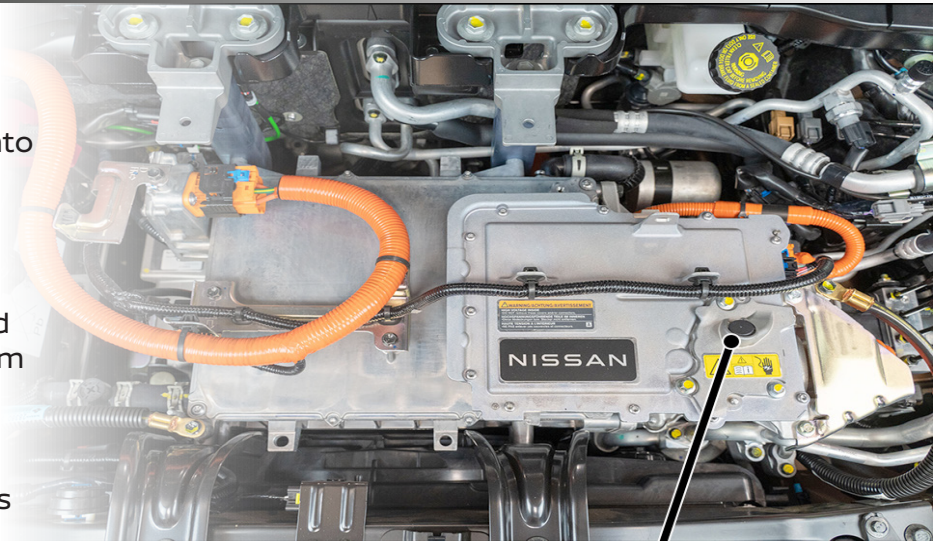


High-voltage Junction Box

The high-voltage HV Junction Box is located at the top of the electric powertrain. Unlike the LEAF that incorporates the HV Junction Box into the Power Delivery Module (PDM), the ARIYA's HV Junction Box is a standalone component.

The HV Junction Box distributes and supplies high-voltage DC power from the (HV) Li-ion battery to the high-voltage system.

It includes a bus bar for connections to the DC/DC Converter and the On-board Charger.

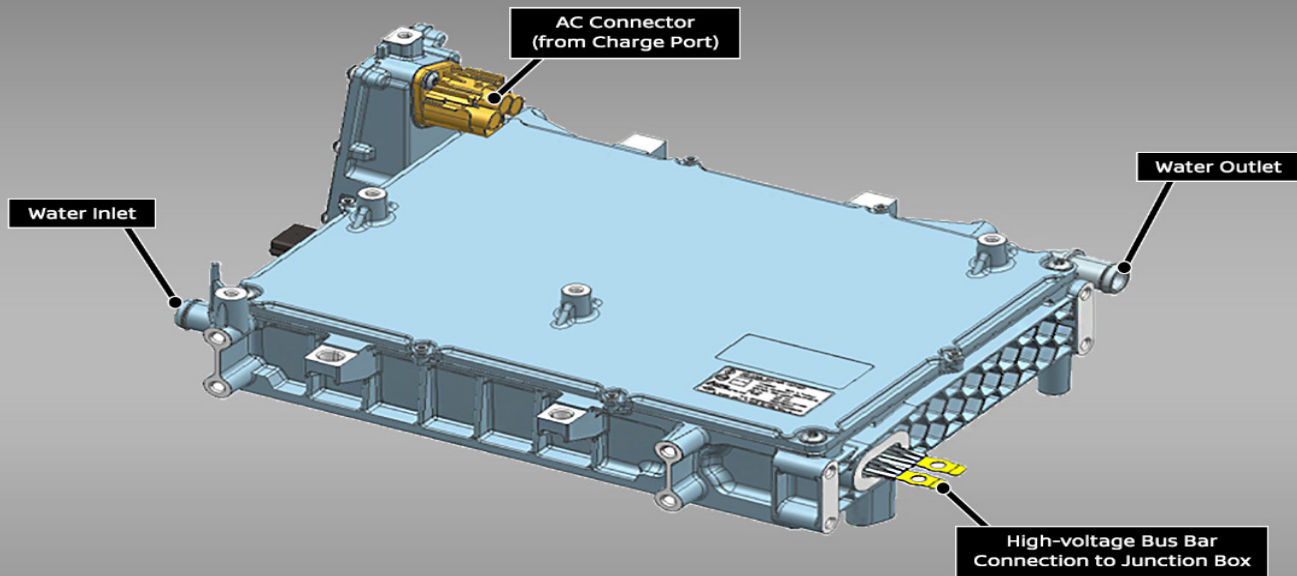


High-voltage Junction Box

HINT:

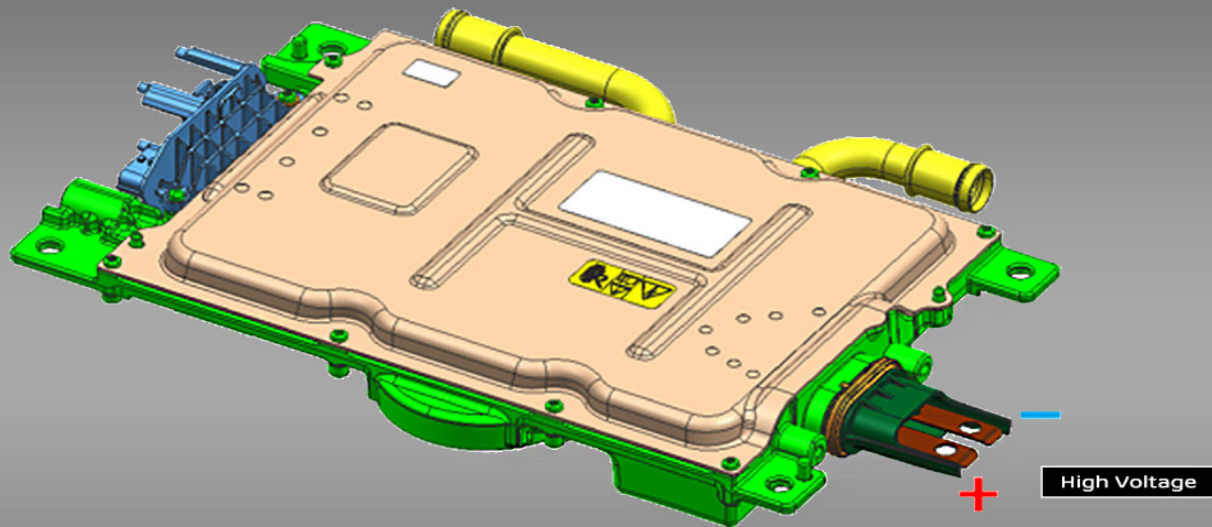
The ARIYA is different from the LEAF, as its On-board Charger, DC/DC Converter, HV Junction Box, and Shift Control Unit (SCU) are all separate components.

On-board Charger



ARIYA's On-board Charger is located near the top of the upper electric powertrain. The On-board Charger converts 110/220 volts AC to 400 volts DC for charging the (HV) Li-ion battery. The On-board Charger is liquid-cooled by the high-voltage cooling system and supplies up to 7.4 kW for charging.

DC/DC Converter



ARIYA's DC/DC Converter is located just below the On-board charger. The DC/DC Converter converts high-voltage DC to low-voltage DC to charge the 12-volt (L1) battery. In addition, on vehicles with ProPILOT Assist 2.0, the DC/DC Converter charges the auxiliary 12-volt sub-battery (LiB). The DC/DC Converter is also liquid cooled by the high-voltage cooling system.

Inverter

ARIYA's Inverter mounts to the top of the Traction motor. During driving, the Inverter provides high-voltage DC from the (HV) Li-ion battery to the Traction motor rotor. In addition, it converts high-voltage DC to 3-phase AC from the (HV) Li-ion battery to the Traction motor stator.

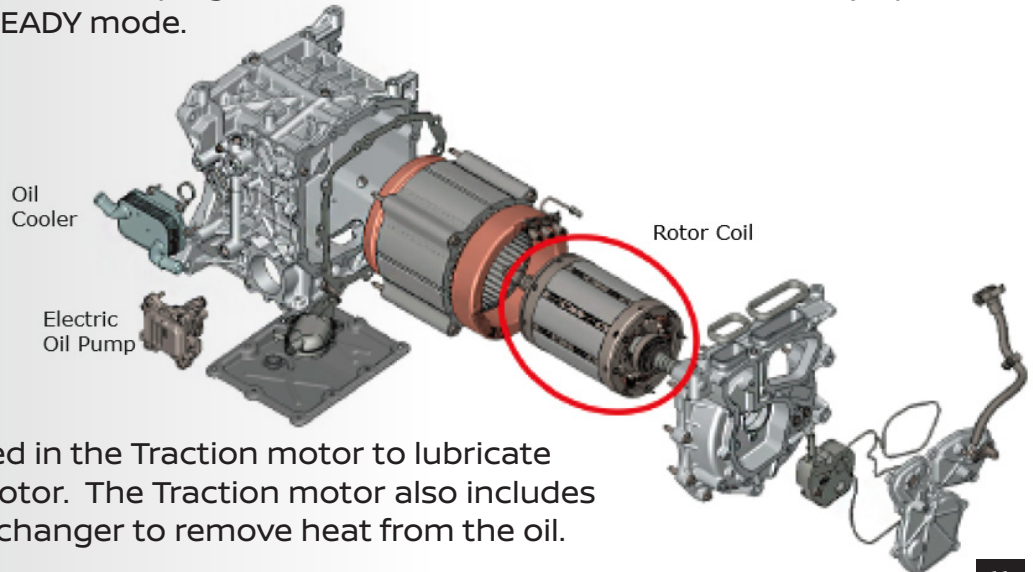


HINT:

During regeneration, the Inverter converts 3-phase AC energy from the stator to high-voltage DC to charge the (HV) Li-ion battery.

Traction Motor

ARIYA's Traction motor is a field winding type rotor instead of a permanent magnet type motor used in LEAF. The eight coils in the rotor are directly supplied with current from the (HV) Li-ion battery to create an electromagnet. This design helps improve efficiency at higher RPM while helping reduce NVH. The Traction motor will only operate when the vehicle is in READY mode.



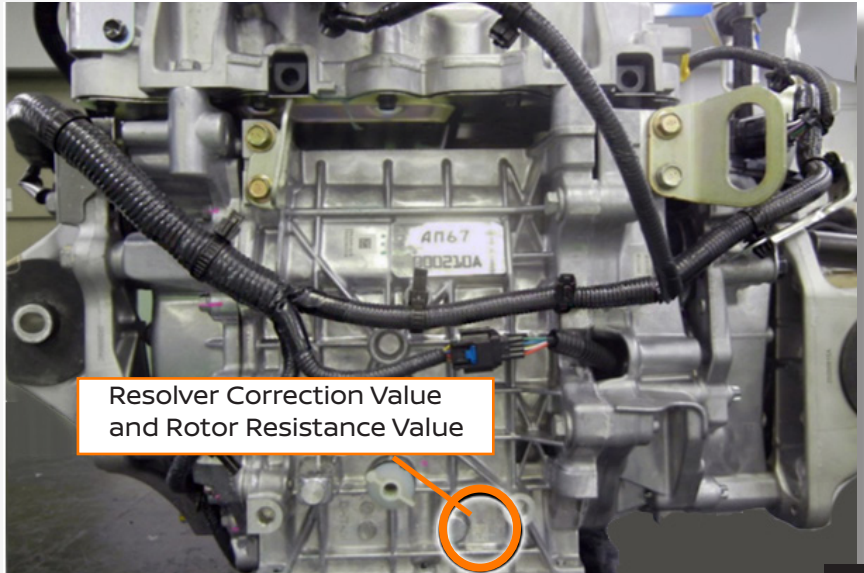
Matic-S fluid is circulated in the Traction motor to lubricate bearings and cool the rotor. The Traction motor also includes an oil-to-water heat exchanger to remove heat from the oil.

Resolver

The Traction motor and Inverter utilize a Resolver to determine Traction motor revolution and position status. Each Traction motor includes a Resolver correction value and Rotor resistance value for calibration. These values are stamped on the lower side of the motor housing.

If the Inverter, Traction motor, or both components are replaced, you'll need to write the Resolver correction value to the inverter with CONSULT 4.

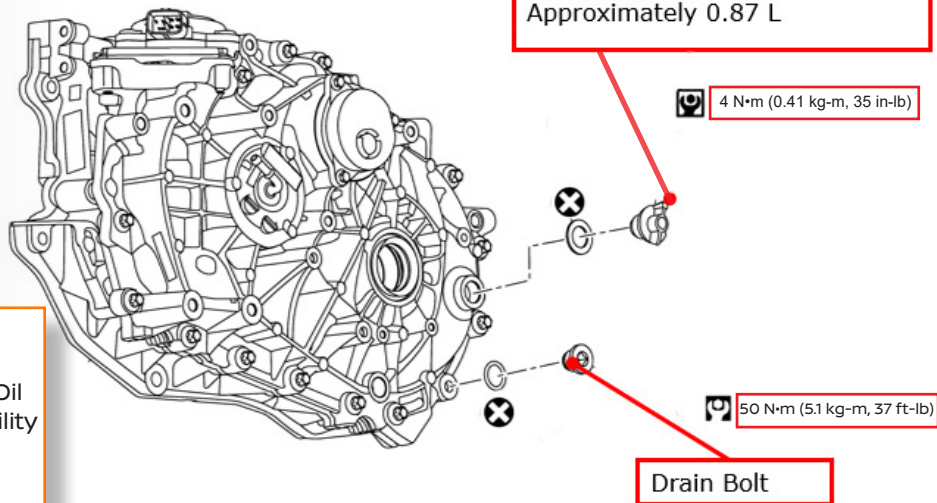
In addition, CONSULT 4 must be used to erase any DTCs for abnormal Resolver offset or Rotor resistance values after replacing the Inverter.



Reducer

Instead of a conventional transmission, the ARIYA utilizes a Reducer that transfers torque from the Traction motor to the drive wheels. FWD ARIYA uses a single Reducer for the front wheels, while AWD ARIYA uses an additional Reducer for the rear Traction motor. These new Reducers are designed specifically for the ARIYA.

The Reducer in the ARIYA uses a new fluid type and capacity that's different than the Reducer in the LEAF. Nissan MT-XZ Gear Oil NFX 75W is required for this Reducer.



⚠ CAUTION

DO NOT use Matic S fluid. Using reduction gear oil other than Genuine NISSAN Gear Oil NFX 75W will cause deterioration in drivability and reduction gear durability, and may damage the reduction gear.

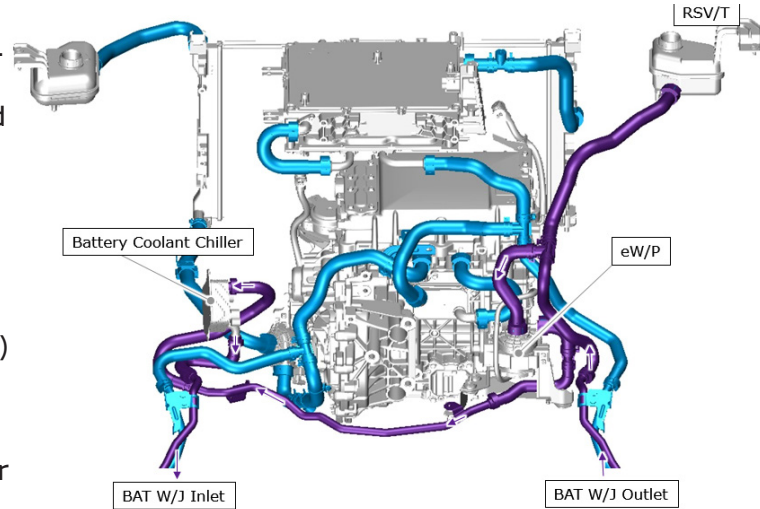
High-voltage System Cooling/Heating

The HV Li-ion battery generates significant heat during high charge and discharge events. Therefore, the ARIYA high-voltage system is equipped with a cooling and heating, designed to dissipate the heat generated in the HV system, and to help stabilize the (HV) Li-ion battery's temperature in all temperature conditions.

The ARIYA's active thermal management system relies on an electric water pump (eW/P) to circulate coolant from the radiator through lines and passages in the battery case.

When temperatures are high, the electric water pump circulates coolant through the battery coolant chiller with refrigerant cooled from the HVAC system.

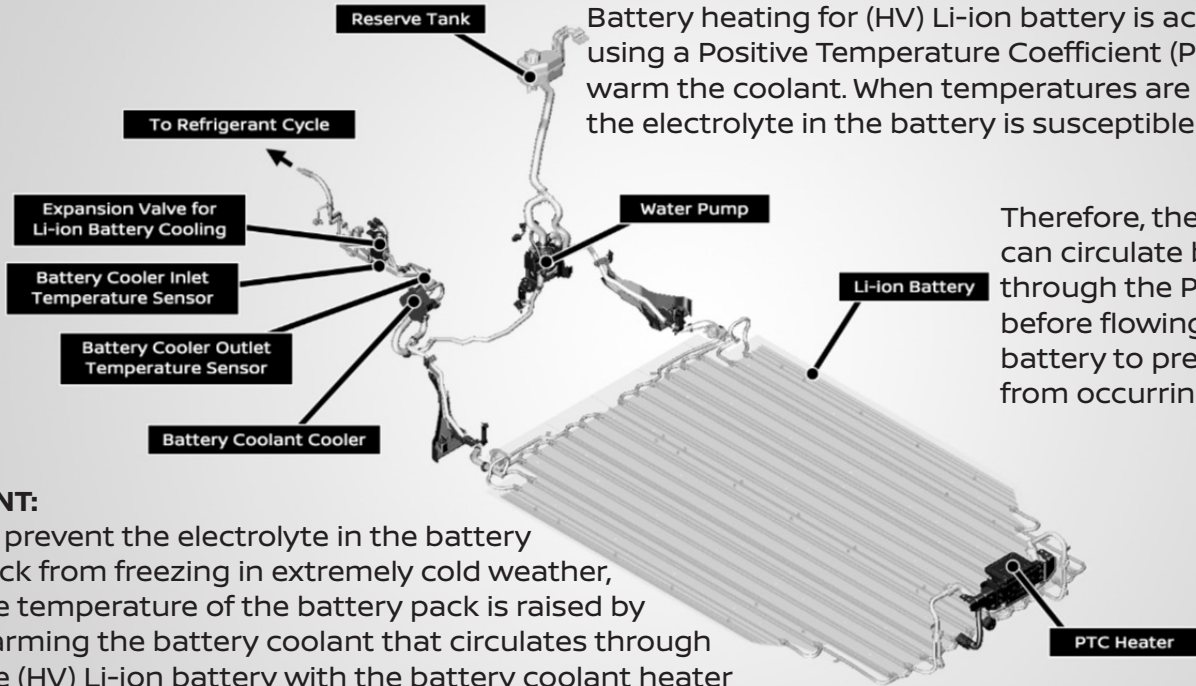
Low pressure, low temperature refrigerant and coolant circulate through separate channels in the battery coolant chiller.



Purple = (HV) Li-ion Battery Cooling Path
Blue = eW/P Cooling Path

The refrigerant removes heat from the coolant, allowing the coolant to reduce the heat load of the (HV) Li-ion battery.

HV Li-ion Battery Cooling/Heating System



Battery heating for (HV) Li-ion battery is achieved by using a Positive Temperature Coefficient (PTC) heater to warm the coolant. When temperatures are extremely low, the electrolyte in the battery is susceptible to freezing.

Therefore, the water pump can circulate battery coolant through the PTC heater, before flowing it through the battery to prevent freezing from occurring.

HINT:

To prevent the electrolyte in the battery pack from freezing in extremely cold weather, the temperature of the battery pack is raised by warming the battery coolant that circulates through the (HV) Li-ion battery with the battery coolant heater (PTC heater).

High-voltage Service Plug

The high-voltage service plug is located below the center portion of the rear seat.

To access the service plug:

- Unzip the lower seat trim flap
- Remove the service plug cover-panel by removing the wing nuts and one bolt

⚠ WARNING

·Always wear all Personal Protective Equipment (PPE), before removing the service plug.

⚠ WARNING

·Remove the service plug and wait a minimum of 10 minutes before continuing with the high-voltage shut-off procedure.



Only certified EV specialists should shut-off the high-voltage system or work on or around high-voltage components. Failure to follow the correct procedures to shut off the high-voltage system may result in personal injury or death.

The 12V Battery

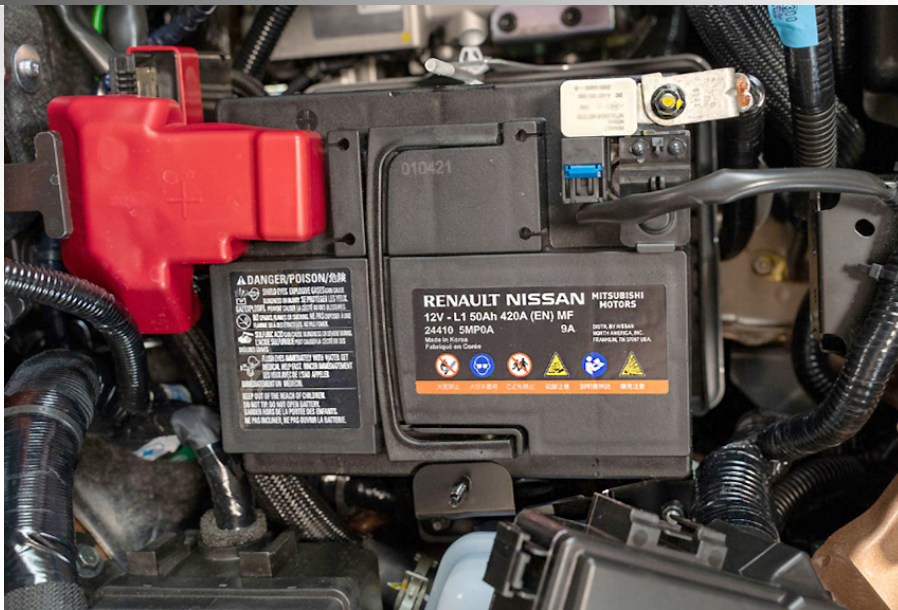
The ARIYA has a 12V battery that is located on the right side of the motor compartment. The battery is an (L1) size, standard maintenance-free battery with 420 Cold Cranking Amps (CCA).

⚠ CAUTION

When the hood is open, the power supply (charge) to the 12V (L1) battery is interrupted, even during the power switch ON state. Therefore, never leave the hood open for an extended period of time with the power switch ON while servicing the vehicle.

HINT:

While servicing the vehicle, to avoid the 12V (L1) battery from losing charge, disconnect the 12V negative terminal or confirm the vehicle is in READY mode. During the READY state, power (charge) is supplied to the 12V (L1) battery even if the hood is opened. If both are not possible, put and leave the vehicle in READY mode for 20 minutes, once the work completed.

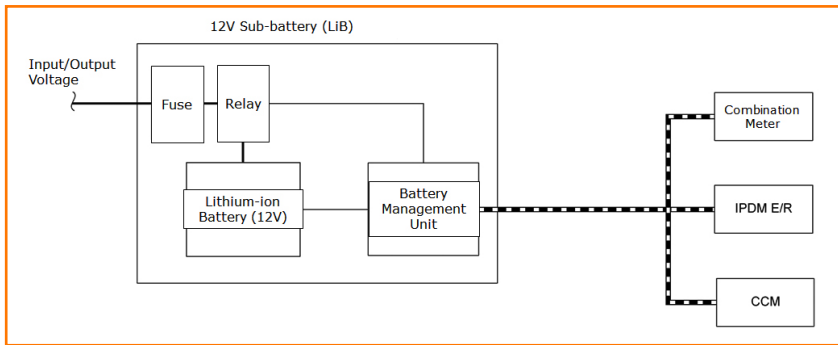


12V Sub-battery (Lithium-ion Battery)

If the ARIYA is equipped with ProPILOT Assist 2.0, it has an auxiliary sub-battery (LiB), used for HD Mapping. The auxiliary sub-battery (LiB) is installed in the luggage compartment behind the second-row seating.



- The 12V auxiliary sub-battery (LiB) has a built-in battery management unit and Power Network Separator Relay.
- The battery management unit communicates with the Chassis Control Module (CCM) by CAN communication, and sends the charge/discharge status and temperature of the 12V sub-battery (LiB), to the IPDM E/R.



e-Step system



When the e-Step system is activated, the regenerative brake is enhanced and the driver can adjust the vehicle speed by only depressing or returning the accelerator pedal.

⚠️ WARNING

e-Step does not bring the vehicle to a complete stop. The e-Step system generates creep force at slow speeds to 4mph. To stop the vehicle, the driver must depress the brake pedal.

Intelligent Brake Control System

The ARIYA is equipped with an Intelligent Brake Control system similar to the Nissan LEAF. This system provides brake boosting, Vehicle Dynamic Control (VDC), and cooperative control for brake regeneration. The control unit, master cylinder, brake booster, and stroke sensor are integrated into one assembly. The brake booster has a built-in motor that generates boosting force according to the amount of brake pedal depression and the amount of regenerative cooperative brake control required.

The system includes:

- An electric control brake master cylinder with integrated actuator
- An integrated stroke sensor to measure the force and speed at which the brake pedal is applied
- A VDC unit
- A backup power supply

NOTE:

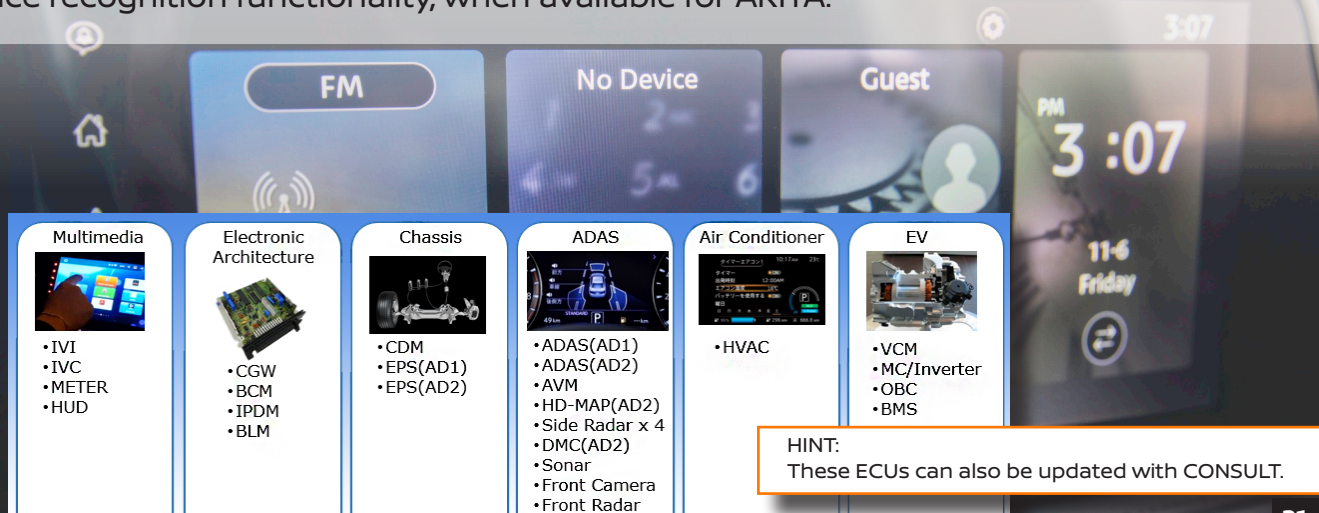
When the regenerative brakes are applied, the driver may hear a sound coming from the regenerative brake system. This is a normal operating characteristic of an EV (Electric vehicle).



Intelligent Integration

The 2023 ARIYA is the first Nissan vehicle to incorporate Firmware Over-the-air (FOTA) software updates. These updates go beyond map and multimedia system updates, and include the ability to update the firmware on up to 31 vehicle control units across 6 vehicle areas whenever a Wi-Fi connection is available.

Updates may also include enhancements to screen graphics and improvements in voice recognition functionality, when available for ARIYA.



Multimedia

- IVI
- IVC
- METER
- HUD

Electronic Architecture

- CGW
- BCM
- IPDM
- BLM

Chassis

- CDM
- EPS(AD1)
- EPS(AD2)

ADAS

- ADAS(AD1)
- ADAS(AD2)
- AVM
- HD-MAP(AD2)
- Side Radar x 4
- DMC(AD2)
- Sonar
- Front Camera
- Front Radar

Air Conditioner

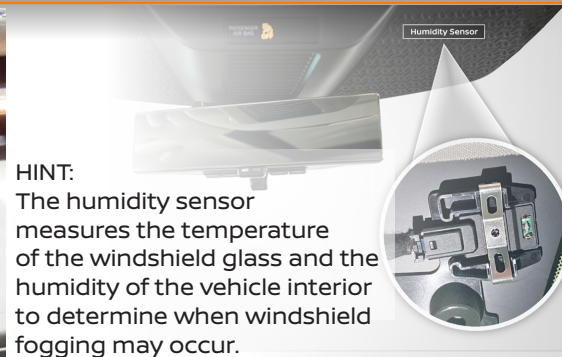
- HVAC

EV

- VCM
- MC/Inverter
- OBC
- BMS

HINT:
These ECUs can also be updated with CONSULT.

ARIYA HVAC System



HINT:
The humidity sensor measures the temperature of the windshield glass and the humidity of the vehicle interior to determine when windshield fogging may occur.

- The ARIYA's HVAC system differences from the LEAF include:
- A high-voltage electric compressor that circulates HFO1234yf refrigerant and uses Poly Olester Oil (POE) lubricant
 - An air-to-air PTC heater for supplemental cabin heating
 - Electronic expansion valves that replace the 2-way valve, 3-way valve, and fixed orifices
 - The addition of a HV lithium-ion battery cooling system that leverages the refrigerant system
 - The addition of a humidity sensor
 - An ion generator to help reduce mold, viruses, allergens, and odors in the cabin

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