

Electric Vehicle System Overview

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ELECTRIC VEHICLE

Electric Vehicles (EVs)

Battery electric vehicles (BEVs or EVs) are driven using a battery and an electric motor. While general vehicles use an internal combustion engine and gasoline as fuel, electric vehicles use electrical energy that is charged inside the high voltage battery. As a result, electric vehicles are eco-friendly in that they do not require fuel and do not emit exhaust gases.

Characteristics of Electric Vehicles (EVs)

1. EVs are using the electrical energy that is charged inside the high voltage battery. In terms of air pollution and greenhouse gas emissions, EVs are cleaner than conventional vehicles.
2. A 150 kW electric drive motor mated to a reduction gearbox comprises the vehicle drivetrain. This electric-only powertrain significantly reduces engine room noise and vibration while driving.
3. When decelerating or driving downhill, regenerative braking is utilized to charge the high voltage battery. This helps to minimize energy loss and increases vehicle range.
4. When the state of charge (SOC) of the battery is low, the EV battery can be recharged through several different charging methods. Refer to "Charging Information" later in this section.

Information

What does regenerative braking do?

Regenerative braking uses the electric motor when decelerating or braking which converts vehicle motion (kinetic energy) to electrical energy to charge the high voltage battery.

Battery Information

- The vehicle is composed of a high voltage battery that drives the motor and air-conditioner, and an auxiliary battery (12 V) that drives the lamps, wipers, and audio system.
- The auxiliary battery is automatically charged when the vehicle is in the ready () mode or the high voltage battery is being charged.

MAIN COMPONENTS OF YOUR VEHICLE

Main Components

- **On-Board Charger (OBC) :**

A device that charges the high voltage battery by converting AC power from a charging station to DC power.

- **Inverter :** A device that transforms direct current (DC) from the high voltage battery into alternating current (AC) to supply power to the electric motor and transforms AC back into DC when available to charge the high voltage battery.

- **LDC :** An LDC is a Low Voltage DC-to-DC converter that transforms power from the high voltage battery to the low voltage battery (12V) in order to supply electrical power to the vehicle to operate the lights, wipers, multimedia, etc.

- **Electric Motor :** A device that converts electrical energy from the high voltage battery into mechanical energy which is then transferred as rotational torque to the wheels in order to drive the vehicle.
- **Reduction gear :** Delivers rotational force of the motor to the tires at appropriate speeds and torque.
- **EV Battery (Lithium-ion) :** On board high voltage storage device with a capacity up to 64 kWh

※ OBC : On-Board Charger

※ LDC : Low Voltage DC-DC Converter

WARNING

- **Do not remove or disassemble high voltage components and high voltage battery connectors and wires. Also, be careful not to damage high voltage components and the high voltage battery. It may cause serious injury and significantly impact the performance and durability of the vehicle.**
- **When inspection and maintenance is required for high voltage components, contact an authorized HYUNDAI dealer.**

High Voltage Battery (lithium-ion polymer)

- The charge amount of the high voltage battery may gradually decrease when the vehicle is not driving.
- The battery capacity of the high voltage battery may decrease when the vehicle is stored in high/low temperatures.
- Electric range may vary depending on the driving conditions, even if the charge amount is the same. The high voltage battery may expend more energy when driving at high speed or uphill. These actions may reduce the vehicle electric range.
- The high voltage battery is used when using the air-conditioner / heater. This may reduce the vehicle range. Make sure to set moderate temperatures when using the air-conditioner/heater.
- Natural degradation may occur with the high voltage battery depending on the number of years the vehicle is used. This may reduce the vehicle range.
- If over time the maximum charge capacity and the maximum electric range begin to degrade, contact an authorized HYUNDAI dealer for inspection and maintenance.
- If the vehicle will not be used for an extended amount of time, it is recommended to fully charge the vehicle to 100% before storing, and then charge the vehicle periodically (approximately every 3 months) to prevent the EV battery from discharging completely.
- AC charge is recommended to keep the high voltage battery in optimal condition.

Avoid storing the vehicle with a low battery SOC % (e.g. below 20%). Storing the vehicle with the EV battery capacity at a low SOC may damage the battery over time.

MAIN COMPONENTS OF YOUR VEHICLE (CONT.)



CAUTION

- **Make sure to use a designated charger when charging the high voltage battery. Using different types of chargers may have a serious impact on vehicle durability.**
- **Make sure that the high voltage battery charger gauge does not reach "L (Low)". If the vehicle is kept at "L (Low)" for a long period, it may damage the high voltage battery and the high voltage battery may have to be replaced depending on the level of degradation.**
- **If the vehicle is in a collision, contact an authorized HYUNDAI dealer to inspect the condition of the EV battery and related fuses.**

EV Battery Coolant Heater (if equipped)

When charging your vehicle, the EV battery coolant heater may be turned on to increase battery temperature when the battery temperature is low (i.e. in cold weather conditions). This allows the EV battery to charge at nominal temperatures and helps to improve battery life.

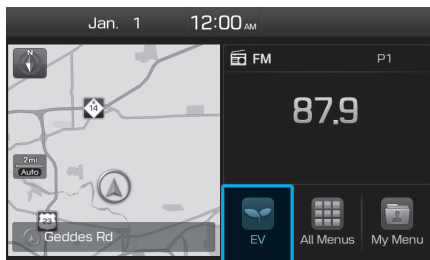
Note that when the vehicle is being charged some of the electrical current coming from the charger is being used to operate the EV battery coolant heater. Electrical power consumption for charging may be slightly higher than normal.



CAUTION

The EV battery coolant heater operates when the charging connector is connected to the vehicle. However, the EV battery coolant heater may not operate when battery temperature drops below -31°F (-35°C).

EV MODE



If you select the "EV" menu at the home screen you can enter EV mode.

For details on EV Mode, refer to the Multimedia manual that is provided separately.



The EV mode has a total of 5 menus, Nearby station, Energy information, Charge management, ECO driving and EV settings.

✳ EV mode menu may vary depending on which functions are applicable to your vehicle.

Nearby Stations



Select 'EV → Map → Nearby Stations' on the screen. Stations around the current location are searched. Select the desired station on the screen to see more detailed information.

EV MODE (CONT.)

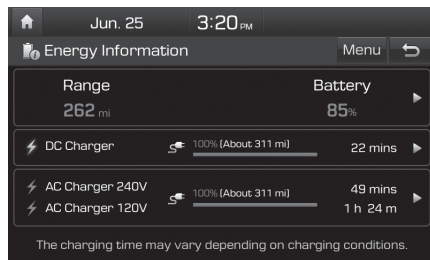
Energy Information



Select 'EV → Energy Information' on the screen.

You can check battery information and energy consumption.

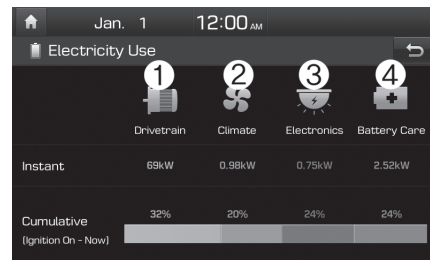
Battery information



You can check the vehicle expected range, total battery power remaining, and expected charging time for each charge type.

- The displayed range is calculated based on the real time energy efficiency while driving. The displayed range may change as the driving pattern or conditions change.
- Note that the range may be different from a given state of charge (SOC%) depending on drive mode, drive conditions, and driving patterns.

Energy consumption



You can check the current energy consumption for each system of the vehicle.

- ① 'Driving' shows the total power and energy consumption of the electric motor kW usage when driving and kW storage when regenerative braking is applied.
- ② 'Climate' shows the power and energy consumption which are used by the heater or air conditioner.
- ③ 'Electronics' shows the power and energy consumption which are used by the vehicle systems including the cluster, infotainment system, headlamp, vehicle control unit, etc.

④ 'Battery care' shows the momentary power and energy consumption which are used when:

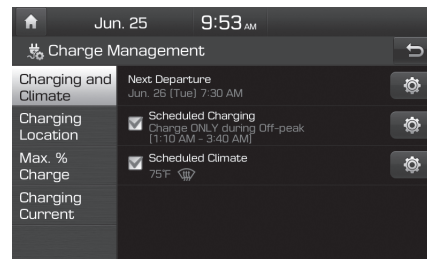
- Operating the winter mode to increase the battery temperature during winter to improve the driving performance.
- Cooling down the battery temperature during summer to prevent over temperature of the battery.

Charge Management



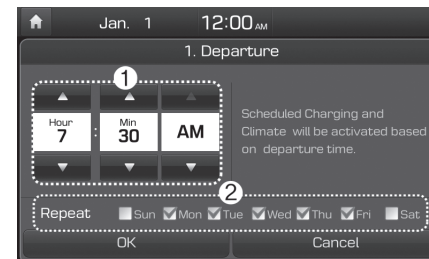
Select 'EV → Charge Management' on the screen. You can set the date and time of when to charge the battery, climate control temperature, location-based charging options and other various functions.

Charging and climate



You can set the date and time of when to charge the battery and the climate control temperature. Also, you may select the time to start charging using the off-peak hours setting.

Departure time



1. Set the anticipated departure time for scheduled charging and target temperature.
2. Select the day of the week to activate scheduled charging and target temperature for departure time.

EV MODE (CONT.)

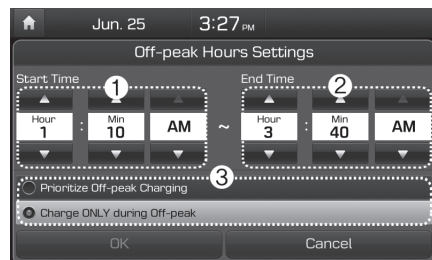


Scheduled climate settings

1. Set target temperature.

Pre-schedule heating

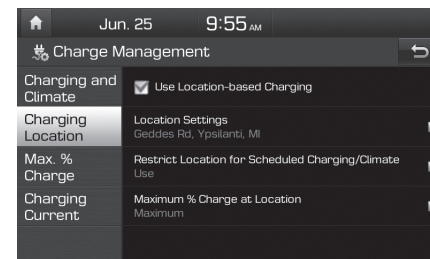
If the target temperature (1) is set with the cable connected, the cabin temperature will be adjusted to the target temperature at departure time (without loss of high-voltage battery charging level). In cold weather, pre-schedule heating helps enhance electric vehicle performance by heating the vehicle in advance.



Off-peak hours settings

1. If selected, the vehicle will begin charging only during the designated off-peak time.
If de-selected, the vehicle will begin charging on the scheduled start time.
2. Set the most inexpensive time to complete charging
3. • Prioritize off-peak charging:
If selected, starts charging at off-peak time (may keep on charging pass off-peak time to charge 100%)
• Charge ONLY during off-peak:
If selected, charges only within off-peak time (may not charge 100%)

Charging location



If location-based charging is selected, scheduled charging and target temperature will be activated at the location the driver has set. Also, the charging current can be selected when charged with AC charger.

* Scheduled charging function must be turned on to activate when location-based charging is selected.

Charging limit



- The maximum charging limit can be selected for either DC fast charging (DC charger) or Level 1 / Level 2 charging (AC charger). Charging will stop when the vehicle reaches the designated battery charge level.
- The maximum charging limit can be adjusted in 10% increments.

- Note that if the battery charge level (SOC%) is above the designated maximum charging limit, the vehicle will not be charged.

Charging current



- For Level 1 or Level 2 charging, you can also adjust the charging current. Select the appropriate charging current based on the type of charger and current capacity.
- If the charging process does not start or abruptly stops in the middle, re-select another proper current and re-try charging the vehicle.
- Charging time varies depending on which charging current is selected.

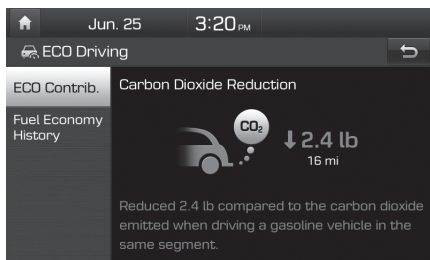
ECO Driving



Select 'EV → ECO Driving' on the screen. You can check the CO2 reduction and ECO driving history.

EV MODE (CONT.)

CO2 reduction



The CO2 reduction display allows you to monitor the benefits of reduced greenhouse gas emissions of your EV relative to a conventional gasoline vehicle. While driving your vehicle, the display estimates the amount of reduced CO2 that would have been emitted from tailpipe emissions of a conventional vehicle.

Driving history

 Jun. 25 3:21 PM

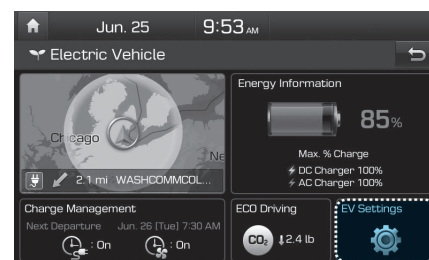
 ECO Driving

Menu 

ECO Contrib.	06-22-2018	24 mi	9.3mi/kWh
Fuel Economy History	 06-20-2018	9 mi	9.6mi/kWh
	06-19-2018	18 mi	9.1mi/kWh
	06-18-2018	13 mi	8.5mi/kWh

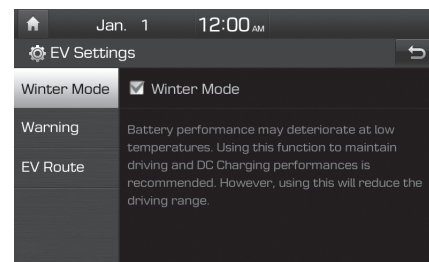
The driving history displays information from the last several driving cycles including date, distance traveled and energy efficiency rate. A star icon indicates the driving cycle with the most efficient energy consumption rate.

EV Settings



Select 'EV → ECO Settings' on the screen. You can set the Winter mode, Warning and EV route functions.

Winter mode for the EV Battery



In cold climates and during winter months, electric vehicle range may reduce and charging times may increase.

This is primarily due to reduced performance of the EV battery when exposed to cold temperatures.

Some vehicles may come equipped with Winter mode selectable option. The Winter mode feature can be selected in the EV Settings menu.

When selected, Winter mode enables the use of the EV battery coolant heater. This mode is recommended to improve EV battery performance in cold climate conditions.

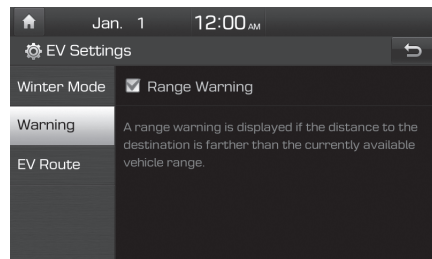
Note that EV range may reduce when Winter mode is enabled, as electrical energy is used to maintain the EV battery temperature.

Winter mode enables operation of the EV battery coolant heater. While driving your vehicle, if the battery temperature is low or the A/C and/or heater is turned ON, the EV battery coolant heater will be used.

Note that the EV battery coolant heater will not be used when the EV battery SOC is low.

✱ This mode is available for the vehicles equipped with the battery heater.

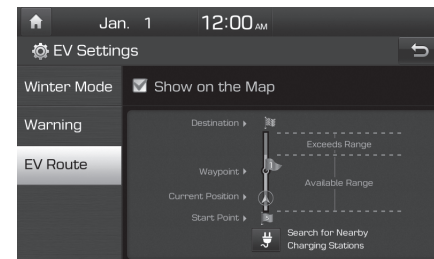
Warning



You can select or deselect the Range Warning.

- **Range Warning** : If the destination set in the navigation cannot be reached with the remaining EV battery charge level, a warning message is displayed.

EV route



If EV route is selected, EV related information will show on the route. You can check the distance the vehicle can be driven with the current EV battery charge level % along the route.

An icon is also indicated so the driver is able to search for nearby charging stations.

CHARGING INFORMATION

Charging Information

- **Level 2 AC Charging :**

You can charge your vehicle using a 240-volt AC electrical EV charger in your home or at a public Level 2 charging station.

- **DC Fast Charging :**

You can charge your vehicle using a DC fast charger with a compatible charge cable at a public EV charging station. Make sure that the station has a compatible connector for your vehicle.

Note that prolonged and continuous use of DC fast charging may reduce the long term life of the EV battery. Usage of a DC fast charger should be minimized when possible in order to help prolong the life of the EV battery.

- **Level 1 AC Charging :**

The Electric vehicle can be charged by using household electricity. The electrical outlet in your home must comply with regulations and can safely accommodate the Voltage / Current (Amps) / Power (Watts) ratings specified on the portable charge.

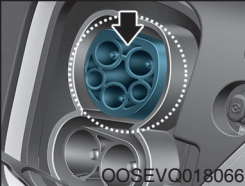
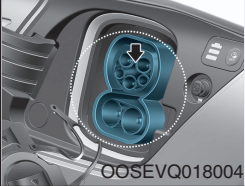
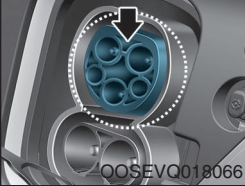
Charging Time Information

Level 2 AC Charging		Takes approx. 9 hours 35 minutes at room temperature when charged to 100%.
DC Fast Charging	100 kW charger	Takes about 54 minutes at room temperature when charged to 80%. Can be charged to 100%.
	50 kW charger	Takes about 75 minutes at room temperature when charged to 80%. Can be charged to 100%.
Level 1 AC Charging		Takes approx. 59 hours at room temperature when charged to 100% (voltage at 120V).

Information

Depending on the condition and durability of the high voltage battery, charger specifications, and ambient temperature, the time required for charging the high voltage battery may vary.

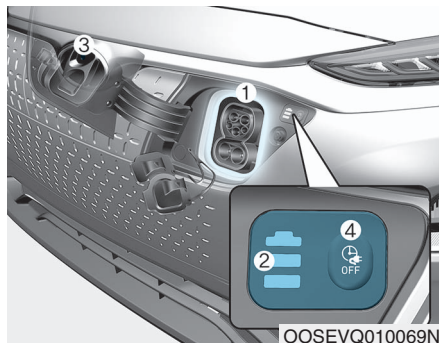
Charging Types

Category	Charging Port (Vehicle)	Charging Connector	Charging Outlet	How to Charge
Level 2 AC Charging				Use 240-volt AC charging station installed at a home or a public charging station
DC Fast Charging				Use a DC fast charger at a public charging station
Level 1 AC Charging				Use a standard household 110-volt outlet and the Hyundai charging cord that is equipped with your vehicle

- Depending on the condition and durability of the high voltage battery, charger specifications, and ambient temperature, the time required for charging the high voltage battery may vary.
- Actual charger image and charging method may vary in accordance with the charger manufacturer.

ELECTRIC VEHICLE CHARGING INDICATOR LAMP

Charging Status



When charging the high voltage battery, the charge level can be checked from outside the vehicle.

① Charging status

Lamp status	Details
 white ON	Charging door open (charging standby)
 green ON	Charging
 green blink	Scheduled charging set
 red blink	Charging error (charging system malfunction)
 yellow ON	Charging 12 V auxiliary battery or scheduled air conditioner/heater is operating

② Charging level

Lamp status		Details
Before charging (steady ON)	While charging (blinking ON/OFF)	
 yellow	 yellow	High voltage battery level very low
 green	 green	High voltage battery level low
 green	 green	High voltage battery level middle
 green	 green	High voltage battery level high

③ EV Battery Charging Indicator

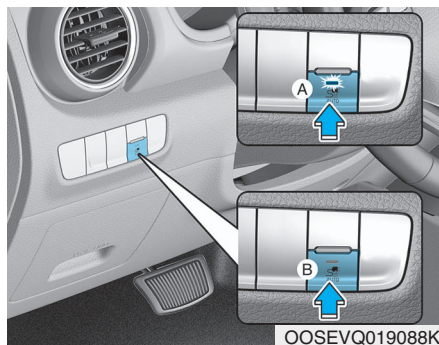
Lamp status	Details
	An LED in the front of the vehicle near the inner portion of the H-emblem indicates when the EV battery is being used while the vehicle is stationary. The EV battery may be in use to charge the 12V auxiliary battery or when charge management is set to control the climate setting and the heater or air conditioner is turned on.

④ Immediate charging

Lamp status	Details
	To override any charge scheduling that has previously been set, you can press the scheduled charging deactivation button. Scheduled charging will be deactivated allowing you to charge immediately.

CHARGING PORT CONNECTOR LOCK

Charging Connector AUTO / LOCK Mode



[A] : Auto mode, [B] : Lock mode

You can change the setting that locks the charging connector to the charging port on the vehicle. Change the mode using the Charging AUTO / LOCK button located on the left of the driver side dash panel. Press the  button to change between AUTO mode and LOCK mode.

Information

The charging port is locked when using a DC fast charger while charging. After charging is complete, the charging port is unlocked.

When the Charging Connector is Locked

	LOCK	AUTO
Before charging	O	X
While charging	O	O
Finished charging	O	X

• LOCK mode (button indicator off) :

The connector locks when the charging connector is plugged into the charging port. The connector is locked until all doors are unlocked by the driver. This mode can be used to prevent charging cable theft.

- If the charge connector is not disconnected within 15 seconds after unlocking all doors, the connector will be automatically locked again.
- The charge connector will automatically relock when all the doors of the vehicle are locked.

• AUTO mode (button indicator on) :

The connector locks when charging starts. The connector unlocks when charging is complete. This mode can be used when charging in a public charging station.

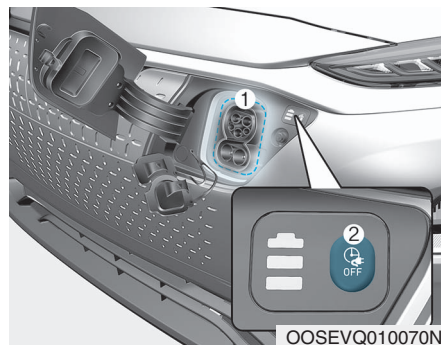
SCHEDULED CHARGING

Scheduled Charging

- You can set-up a charging schedule for your vehicle using the Audio or Navigation screen or BlueLink application.

Refer to the Multimedia manual or the BlueLink manual for detailed information about setting scheduled charging.

- Scheduled charging can only be done when using a Level 2 AC charging station or the Level 1 AC charger with the Hyundai-supplied charging power cord.



- When scheduled charging has been set and the charging cable is connected, the indicator lamp blinks green (1) for 3 minutes, indicating that scheduled charging is enabled.
- If immediate charging is required, use the audio/infotainment screen menus to deactivate the scheduled charge setting, or press the scheduled charging deactivation button (2) for 3 seconds.

ELECTRIC VEHICLE CHARGING PRECAUTIONS

Charging Precautions

■ AC Charger



OLFP0Q4057N

■ DC Charger



OAEEQ016023

Actual charger image and charging method may vary in accordance with the charger manufacturer.

⚠ WARNING

- Electromagnetic waves that are generated from the charger can seriously impact medical electric devices such as an implantable cardiac pacemaker.

When using medical electric devices such as an implantable cardiac pacemaker, make sure to ask the medical team and manufacturer whether charging your electric vehicle will impact the operation of the medical electric devices such as an implantable cardiac pacemaker.

- Inspect the charging cable connector for any signs of water or excess dust or dirt. Connecting the cable when there is water or dirt on the connector may initiate a short circuit and cause a fire or electric shock.

⚠ WARNING

- Use caution not to touch the charging connector or the charging port when connecting the cable from the charger to the charging port on the vehicle.
- Comply with the following in order to prevent electrical shock when charging:
 - Use caution when connecting the charger to the charging port when it is raining or snowing.
 - Use caution when there are adverse weather conditions such as lightning.
 - Use caution when the charging connector or the charging plug is wet.

WARNING

- Immediately stop charging when you find abnormal symptoms (odor, smoke).
- Replace the charging cable if the cable coating is damaged to prevent electrical shock.
- When connecting or removing the charging cable, make sure to hold the charging connector handle and charging plug. If you pull the cable itself (without using the handle), the internal wires may disconnect or get damaged. This may lead to electric shock or fire.

CAUTION

- Always keep the charging connector and charging plug in clean and dry condition. Be sure to keep the charging cable in a condition where there is no water or moisture.
- Before charging the battery, turn the vehicle OFF.
- When the vehicle is switched OFF while charging, the cooling fan inside the motor compartment may automatically operate. Do not touch the cooling fan while charging.
- Be careful not to drop the charging connector. The charging connector can be damaged.

ELECTRIC VEHICLE CHARGING

Level 2 AC Charging (240V)

■ AC Charger



Actual charger image and charging method may vary in accordance with the charging station manufacturer.

How to Connect AC Charger

1. Depress the brake pedal and apply the electronic parking brake.
2. Shift to P (Park) and turn OFF the vehicle using the POWER button.

i Information

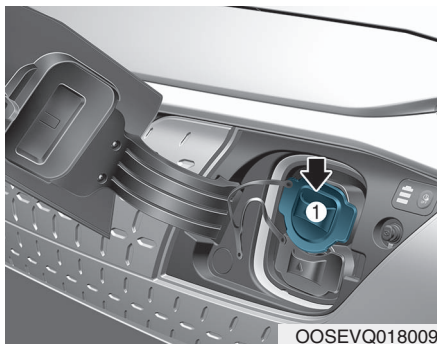
If charging is initiated without the gear in P (Park), charging will start only after the gear is automatically shifted to P (Park).



3. Unlock the vehicle before opening the charging door. From the outside the vehicle, push on the charging door in the area indicated by the arrow to open the door.

i Information

If you cannot open the charging door due to freezing weather, tap lightly or remove any ice near the charging door. Do not try to forcibly open the charging door.



OOSEVQ018009

4. Remove the charging port dust cover (1).
5. Inspect the charging port to make sure it is free from any dust or debris.
6. Hold the charging connector handle firmly and insert the connector into the charging port all the way. If the connector is not completely inserted into the charging port, arcing may occur. This may cause a fire.

i Information

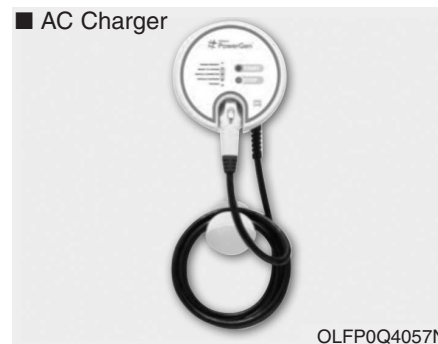
Charging connector AUTO/LOCK mode

The charging connector will be locked in the vehicle charge port depending on the AUTO / LOCK mode setting.

- **LOCK mode** : The connector locks when the charging connector is plugged into the charging port.
- **AUTO mode** : The connector locks when charging starts.

For more details, refer to "Charging Connector AUTO/LOCK Mode" in this chapter.

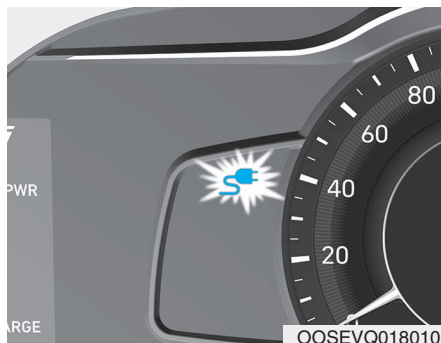
■ AC Charger



OLFP0Q4057N

7. Once the vehicle is connected, confirm that charging has initiated from the EV charging station display screen.

ELECTRIC VEHICLE CHARGING (CONT.)



8. Check to see that the charging indicator light in the instrument cluster is illuminated. Charging has not been initiated if the charging indicator light is OFF.

If the charging indicator light is OFF, it may be necessary to disconnect the charging connector from the vehicle and repeat the connection process. Refer to the charging station display screen for more information.

i Information

- Radio reception may have interference when the vehicle is charging.
- Note that the vehicle cannot be shifted out of P (Park) when the vehicle is charging.

When scheduled charging is set, the estimated charging time is displayed as "--".

i Information

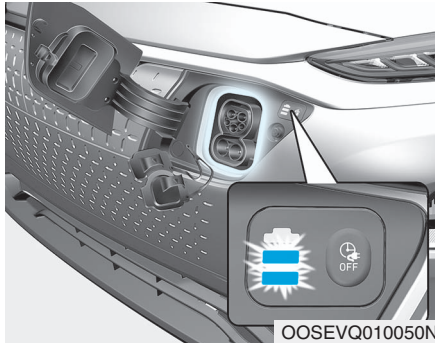
Depending on the condition and durability of the high voltage battery, charger specifications, and ambient temperature, the time required for charging the battery may vary.



9. After charging has started, the estimated charging time is displayed on the instrument cluster for about 1 minute.

If you open the driver seat door while charging, the estimated charging time is also displayed on the instrument cluster for about 1 minute.

Checking Charging Status



When charging the high voltage battery, the charge level can be checked from outside the vehicle.

Lamp status		Details
Before charging (steady ON)	While charging (blinking ON/OFF)	
		High voltage battery level very low
yellow	yellow	
		High voltage battery level low
green	green	
		High voltage battery level middle
green	green	
		High voltage battery level high
green	green	

ELECTRIC VEHICLE CHARGING (CONT.)

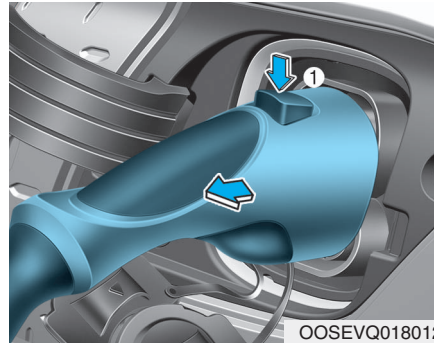
How to Disconnect AC Charger

■ AC Charger



OLFP0Q4057N

1. Confirm that charging has stopped on the EV charging station display screen.



OOSEVQ018012

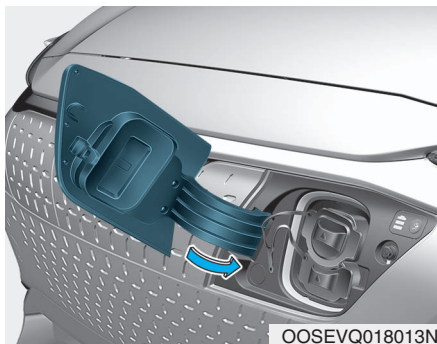
2. Hold the charging connector handle and pull it while pressing the release button (1).

i Information

To prevent charging cable theft, the charging connector cannot be disconnected from the charging port when the doors are locked. Unlock all doors to disconnect the charging connector from the charging port.

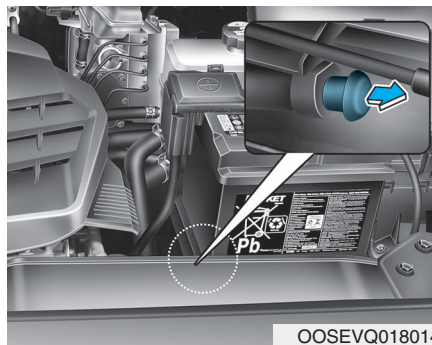
However, if the vehicle is in the charging connector AUTO mode, the charging connector automatically unlocks from the charging port when charging is completed.

For more details, refer to "Charging Connector AUTO/LOCK Mode" in this chapter.



3. Make sure to re-install the charging port dust cover(s) before closing the charging door.
4. The charging door must be fully closed before driving the vehicle.

Charging Connector Manual Release



If for some reason the charging connector fails to disconnect normally, the connector may be released manually using the Charging Connector Manual Release. Open the hood and slightly pull the manual release shown in the figure. The charging connector can then be disconnected.

ELECTRIC VEHICLE CHARGING (CONT.)

DC Fast Charging

■ DC Charger



OAEEQ016023

DC fast charging (also known as Level 3 charging) provides high power DC current directly to the EV battery. DC charging stations are capable of charging the EV battery to 80% in less than 75 minutes under normal conditions.

While DC charging is very fast compared to AC charging, prolonged and continuous use of DC fast charging may reduce the long term life of the EV battery. Usage of a DC fast charger should be minimized when possible in order to help prolong the life of the EV battery.

Actual charger image and charging method may vary in accordance with the charging station manufacturer.

i Information

If you use a DC charger when the vehicle is already fully charged, some DC chargers will send out an error message. When the vehicle is fully charged, do not charge the vehicle.

How to Connect DC Charger

1. Depress the brake pedal and apply the electronic parking brake.
2. Shift to P (Park) and turn OFF the vehicle using the POWER button.

i Information

If charging is initiated without the gear in P (Park), charging will start only after the gear is automatically shifted to P (Park).

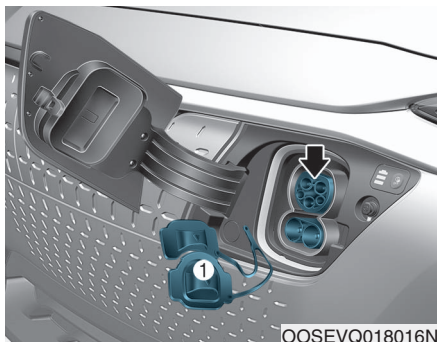


OOSEVQ018008N

3. Unlock the vehicle before opening the charging door. From the outside the vehicle, push on the charging door in the area indicated by the arrow to open the door.

i Information

If you cannot open the charging door due to freezing weather tap lightly or remove any ice near the charging door. Do not try to forcibly open the charging door.



4. Remove the charging port dust cover (1).
5. Inspect the charging port to make sure it is free from any dust or debris.
6. Hold the charging connector handle firmly and insert the connector into the charging port all the way. If the connector is not completely inserted into the charging port, arcing may occur. This may cause a fire.



7. Check to see that the charging indicator light in the instrument cluster is illuminated. Charging has not been initiated if the charging indicator light is OFF.

If the charging indicator light is OFF, it may be necessary to disconnect the charging connector from the vehicle and repeat the connection process. Refer to the charging station display screen for more information.

During cold weather, DC charging may not be available to prevent high voltage battery degradation.

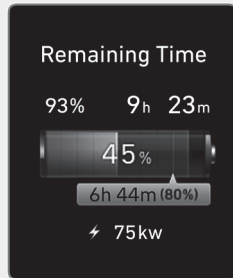
NOTICE

In high ambient temperature conditions like during summer months, the A/C system may be operating during EV battery charging. You may hear additional noises generated from the operation of the A/C compressor and cooling fan. This is a normal condition.

Information

Note that the vehicle cannot be shifted out of P (Park) when the vehicle is charging.

ELECTRIC VEHICLE CHARGING (CONT.)



OOSEV048198N

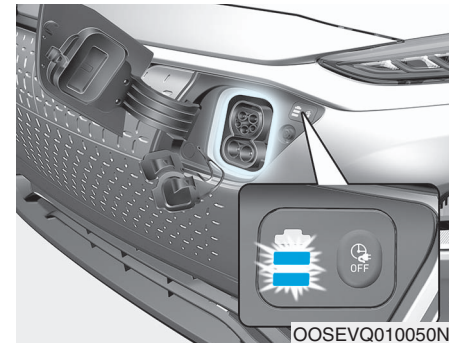
8. After charging has started, the estimated charging time is displayed on the instrument cluster for about 1 minute.

If you open the driver seat door while charging, the estimated charging time is also displayed on the instrument cluster for about 1 minute.

i Information

Depending on the condition and durability of the high voltage battery, charger specifications, and ambient temperature, the time required for charging the battery may vary.

Checking Charging Status

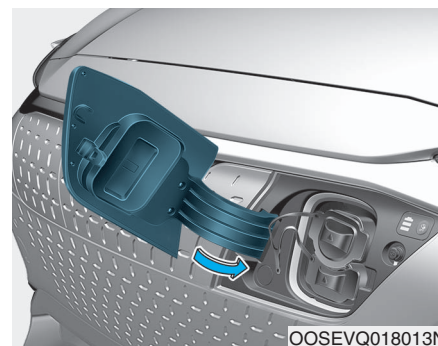


When charging the high voltage battery, the charge level can be checked from outside the vehicle.

Lamp status		Details
Before charging (steady ON)	While charging (blinking ON/OFF)	
		High voltage battery level very low
yellow	yellow	
		High voltage battery level low
green	green	
		High voltage battery level middle
green	green	
		High voltage battery level high
green	green	

How to Disconnect DC Charger

1. Refer to the instructions on the on-screen display of the DC charging station before disconnecting the charging connector from the vehicle. Once charging is stopped, remove the charging connector.

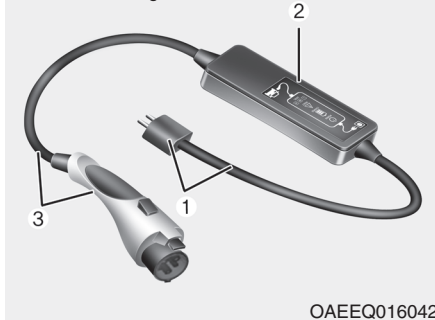


2. Make sure to re-install the charging port dust cover(s) before closing the charging door.
3. The charging door must be fully closed before driving the vehicle.

EV CHARGING USING THE PORTABLE CHARGER

Level 1 AC Charging (120V)

■ Portable Charger

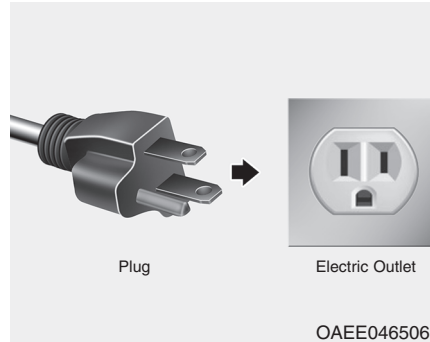


- (1) Power cord and plug
- (2) Controller and LED display
- (3) Charging Cable and Connector

A portable charger that is used for Level 1 charging on a standard wall outlet is stored in the vehicle rear cargo area.

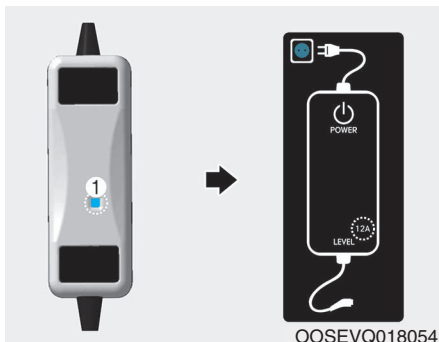
Level 1 charging can be used when Level 2 AC charging or Level 3 DC fast charging is not available.

How to set the charging rate of the portable charger



Charging an electric vehicle at home can stress the household electrical system more than a typical household appliance. Most modern residential electrical circuits are rated at 15 or 20 amps. The EV portable charger is rated to supply a 12A continuous load. To avoid tripping a fuse or breaker in the household, the portable charger charging rate can be reduced. Follow the steps below to set the charging rate of the portable charger.

1. Check the current output of the electrical outlet prior to connecting the portable charger in order to determine the permissible charging rate.
2. Connect the plug to a household electric outlet.
3. Check the LED display on the portable charger controller. The indicator "H", "M" or "L" will be displayed.



4. The charging rate (amps) can be adjusted on the portable charger controller. Press the button (1) on the back of the controller.
5. The charging rate (12A, 10A, 8A) on the LED display changes each time you press the button. Refer to the table to adjust the charging rate based on the electrical outlet current output.
6. When the charging rate is set, follow the procedure in the next section to connect your vehicle.

* Portable Charger Charging Rate

The example is only for reference and may vary according to the surrounding environment.

Outlet current	Charge rate	LED display
14-16A	12A	OOSEVQ018055
13-12A	10A	
11-10A	8A	

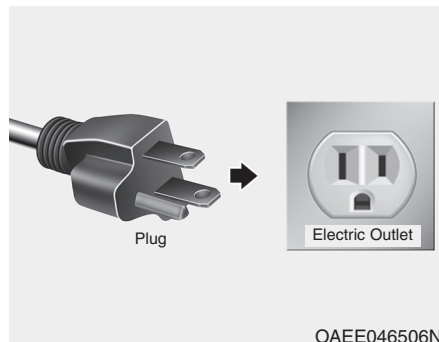


CAUTION

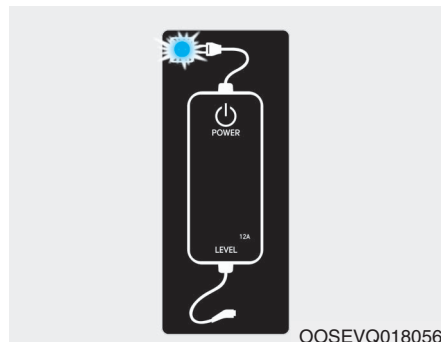
Please make sure that charge level selection matches the capacity of your circuit breaker to avoid blown fuse.

EV CHARGING USING THE PORTABLE CHARGER (CONT.)

Connecting the Portable Charger



1. Connect the plug to a household electric outlet.



2. Check if the power lamp (green) illuminates on the controller.
3. Depress the brake pedal and apply the electronic parking brake.
4. Shift to P (Park) and turn OFF the vehicle using the POWER button.

i Information

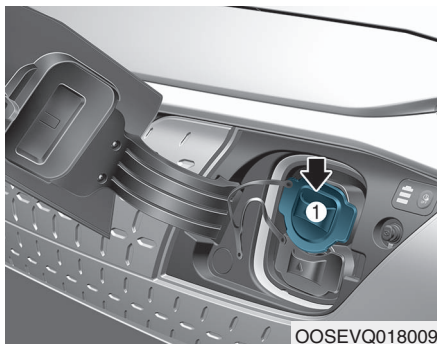
If charging is initiated without the gear in P (Park), charging will start only after the gear is automatically shifted to P (Park).



5. Unlock the vehicle before opening the charging door. Push on the charging door in the area indicated by the arrow to open the door.

i Information

If you cannot open the charging door due to freezing weather tap lightly or remove any ice near the charging door. Do not try to forcibly open the charging door.



OOSEVQ018009

6. Remove the charging port dust cover (1).
7. Inspect the charging port to make sure it is free from any dust or debris.
8. Hold the charging connector handle firmly and insert the connector into the charging port all the way.
If the connector is not completely inserted into the charging port, arcing may occur. This may cause a fire.

i Information

Charging connector AUTO/LOCK mode

The charging connector will be locked in the vehicle charge port depending on the AUTO / LOCK mode setting.

- **LOCK mode** : The connector locks when the charging connector is plugged into the charging port.
- **AUTO mode** : The connector locks when charging starts.

For more details, refer to "Charging Connector AUTO/LOCK Mode" in this chapter.



OOSEVQ018057

9. Charging starts automatically (charging lamp blinks).

EV CHARGING USING THE PORTABLE CHARGER (CONT.)

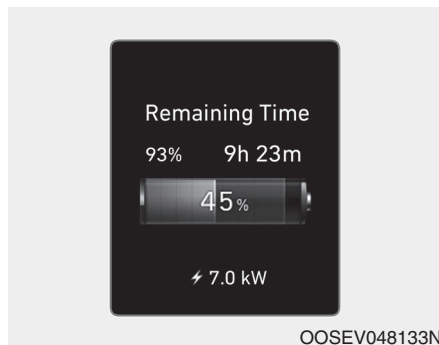


10. Check to see that the charging indicator light in the instrument cluster is illuminated. Charging has not been initiated if the charging indicator light is OFF.

If the charging indicator light is OFF, it may be necessary to disconnect the charging connector from the vehicle and repeat the connection process.

i Information

Note that the vehicle cannot be shifted out of Park (P) when the vehicle is charging.



11. After charging has started, the estimated charging time is displayed on the instrument cluster for about 1 minute.

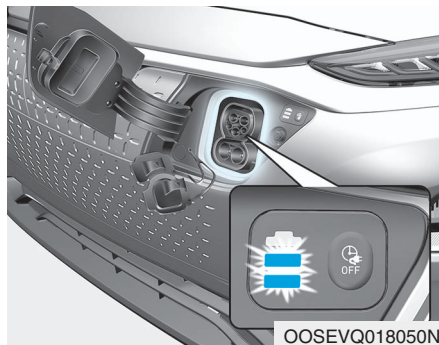
If you open the driver seat door while charging, the estimated charging time is also displayed on the instrument cluster for about 1 minute.

When scheduled charging is set, the estimated charging time is displayed as "--".

i Information

Depending on the condition and durability of the high voltage battery, charger specifications, and ambient temperature, the time required for charging the battery may vary.

Checking Charging Status



When charging the high voltage battery, the charge level can be checked from outside the vehicle.

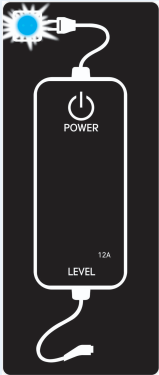
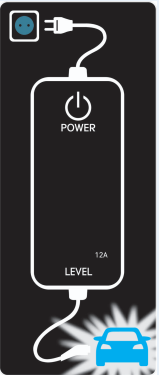
Lamp status		Details
Before charging (steady ON)	While charging (blinking ON/OFF)	
		High voltage battery level very low
yellow	yellow	
		High voltage battery level low
green	green	
		High voltage battery level middle
green	green	
		High voltage battery level high
green	green	

EV CHARGING USING THE PORTABLE CHARGER (CONT.)

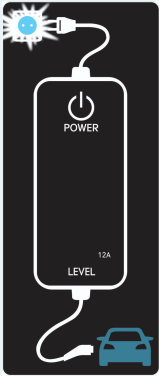
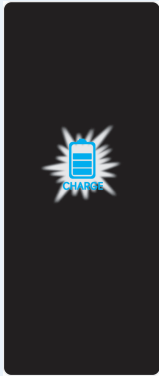
Charging Status Indicator Lamp for Portable Charger

Control Box	Indicator		Details		
	PLUG	 (Green)	On : Power on Blink : Plug temperature sensor failure		
		 (Red)	On : Plug high temperature protection Blink : Plug high temperature warning		
	POWER	 POWER	On : Power on		
	CHARGE	 CHARGE	Blink : Charging In power saving mode, only the CHARGE indicator is illuminated.		
	FAULT	 FAULT	Blink : Charging interrupted		
	CHARGE LEVEL	 12A	Charging current 12 A	The charging current changes (3 level) whenever the button (1) is pressed for 1 sec with the charger plugged into an electrical outlet but not the vehicle.	
		 10A	Charging current 10 A		
		 8A	Charging current 8 A		
	VEHICLE	 (Green)	Charging connector plugged		
 (Blue)		Charging			
 (Red)		Blink : Charging impossible			

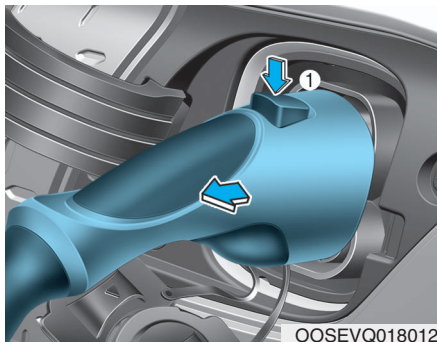
Charging Status Indicator Lamp for Portable Charger

NO	Control Box	Status / Diagnosis / Countermeasure	NO	Control Box	Status / Diagnosis / Countermeasure
1		• Charging connector plugged into vehicle (Green ON) • Plug temperature sensor failure (Green blink) • Plug high temperature protection (Red blink) • Plug high temperature warning (Red ON) Contact an authorized HYUNDAI dealer.	2		- Charging connector plugged into vehicle (Green ON)
3		- While charging • Charge indicator (Green blink) • Vehicle indicator (Blue ON)	4		- Before plugging charging connector into vehicle (Red blink) • Abnormal temperature • ICCB (In-Cable Control Box) failure Contact an authorized HYUNDAI dealer.

EV CHARGING USING THE PORTABLE CHARGER (CONT.)

NO	Control Box	Status / Diagnosis / Countermeasure	NO	Control Box	Status / Diagnosis / Countermeasure
5		- Plugged into vehicle (Red blink) • Diagnostic device failure • Current leakage • Abnormal temperature Contact an authorized HYUNDAI dealer.	6		- After plugging charging connector into vehicle (Red blink) • Communication failure Contact an authorized HYUNDAI dealer.
7		• Plug temperature sensor failure (Green blink) • Plug high temperature protection (Red blink) • Plug high temperature warning (Red ON) Contact an authorized HYUNDAI dealer.	8		- Power saving mode • 3 minutes after charging starts (Green blink)

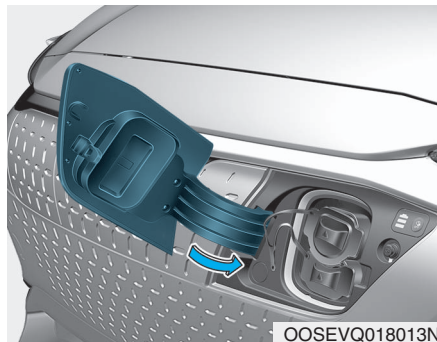
How to Disconnect Portable Charger



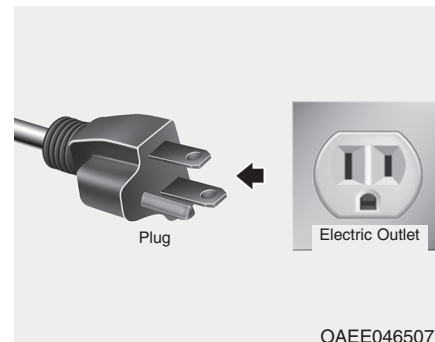
1. Hold the charging connector handle and pull it while pressing the release button (1).

i Information

To prevent charging cable theft, the charging connector cannot be disconnected from the charging port when the doors are locked. Unlock all doors to disconnect the charging connector from the charging port. However, if the vehicle is in the charging connector AUTO mode, the charging connector automatically unlocks from the charging port when charging is completed. For more details, refer to "Charging Connector AUTO/LOCK Mode" in this chapter.



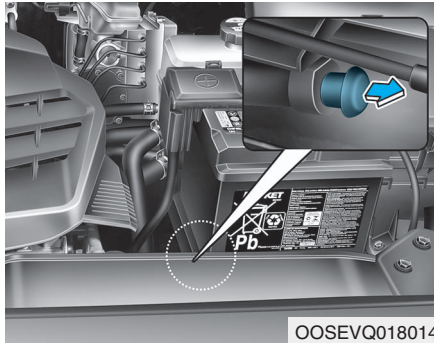
2. Make sure to re-install the charging port dust cover(s) before closing the charging door.
3. The charging door must be fully closed before driving the vehicle.



4. Disconnect the plug from the household electric outlet. Do not pull the cable when disconnecting the plug.
5. Re-apply the protective dust cover for the charging connector so that foreign material cannot get into the terminal.
6. Carefully wrap the cord and store the portable charger inside the carrying case when you are finished charging.

EV CHARGING USING THE PORTABLE CHARGER (CONT.)

Charging Connector Manual Release



If for some reason the charging connector fails to disconnect normally, the connector may be released manually using the Charging Connector Manual Release. Open the hood and slightly pull the manual release shown in the figure. The charging connector can then be disconnected.

Precautions When Using the Portable Charger

- Use the portable charger that is certified by HYUNDAI.
- Do not try to repair, disassemble, or adjust the portable charger.
- Do not use an extension cord or adapter.
- Stop using immediately when failure occurs.
- Do not touch the plug and charging connector with wet hands.
- Do not touch the terminal part of the AC charging connector and the AC charging port on the vehicle.
- Do not connect the charging connector to voltage that does not comply with regulations.
- Do not use the portable charger if it is worn, if any of the wiring is exposed, or if there are any signs of damage to the cable or connector.
- Do not let children operate or touch the portable charger.
- Do not let the controller to be in contact with water.
- Keep the normal charging connector or plug terminal free of foreign substances.
- Do not step on the cable or cord. Do not pull the cable or cord and do not twist or bend it.
- Do not attempt to charge the vehicle outside during inclement weather when there is the possibility of lightning.
- Do not drop the controller or place heavy objects on the equipment.
- Do not place an object that can generate high temperatures near the charger when charging.
- Before plugging into any electrical outlet, have a qualified electrician inspect and verify the household electrical system for heavy duty service at a 12 amp continuous load.
- Stop using the portable charger immediately if the household electric outlet or any components becomes overheated or has a burning smell.

EV CHARGING – TROUBLESHOOTING

EV Charging Troubleshooting - Steps to Consider

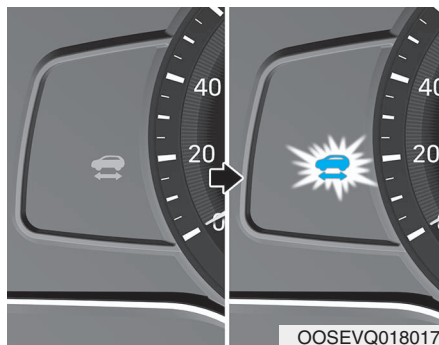
If the vehicle fails to charge after being plugged in to a charging station or if plugged in when using the portable charger, check the following:

1. Verify the charge mode is set to immediate. (i.e. confirm that scheduled charging is turned OFF)
2. Check the operation status of the charging station or the portable charger.
3. Check to see if there are any warning messages in the LCD cluster. Refer to "LCD Display Messages" in this section.
4. If there is an error message on the charging station display screen, there may be a problem with the charging station. Try to charge the vehicle with a different charging station.
5. If the vehicle fails to charge with different charging station equipment, there may be a problem with the vehicle. Contact an authorized HYUNDAI dealer for inspection.

DRIVING AND OPERATING INFORMATION

How to Start the Vehicle

1. Holding the smart key, sit in the driver's seat.
2. Fasten the seat belt before starting the vehicle.
3. Make sure to engage the parking brake.
4. Turn OFF all electrical devices.
5. Make sure to depress and hold the brake pedal.
6. While depressing the brake pedal, shift to P (Park).
7. Depress and hold the brake pedal while pressing the POWER button.



OOSEVQ018017

8. When the "P" indicator is ON, you can drive the vehicle. When the "P" indicator is OFF, you cannot drive the vehicle. Start the vehicle again.
9. Depress and hold the brake pedal and shift to the desired position.

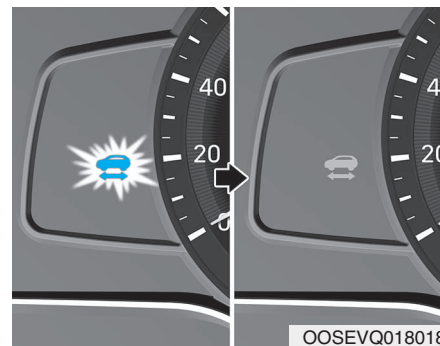
i Information

While the charging cable is connected, the gear cannot be shifted from P (Park) to any other gear for safety reasons.

10. Release the parking brake and slowly release the brake pedal. Check if the vehicle slowly moves forward, then depress the accelerator pedal.

How to Stop the Vehicle

1. Hold down the brake pedal while the vehicle is parked.
2. While depressing the brake pedal, shift to P (Park).
3. While depressing the brake pedal, engage the parking brake.
4. While depressing the brake pedal, press the POWER button and turn off the vehicle.



OOSEVQ018018

5. Check if the "P" indicator is turned OFF on the instrument cluster.

When the "🚗" indicator is ON and the gear is in a position other than P (Park), the driver can accidentally depress the accelerator pedal, causing the vehicle to move unexpectedly.

Virtual Engine Sound System

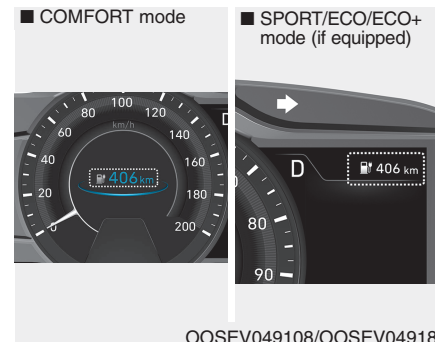
The Virtual Engine Sound System generates an audible sound for nearby pedestrians when the vehicle is in ready (🚗) mode and the vehicle is in gear ("D" or "R"). The sound changes if the vehicle is speeding up or slowing down.

- If the vehicle is in the ready (🚗) mode and the gear is not in P (Park), the VESS will be operated.
- When the gear is shifted to R (Reverse), an additional warning sound will be heard.

⚠ CAUTION

- **For safety reasons, do not turn off the VESS system. If you are in a situation that the system needs to be turned off, check whether there are pedestrians around the vehicle.**
- **The vehicle is much quieter while driving than a conventional gasoline-powered vehicle. Be aware of your surroundings and always drive safely.**
- **After you park the vehicle or while you are waiting at a traffic light, check whether there are children or obstacles around the vehicle.**
- **Check if there is something behind the vehicle when driving in reverse. Pedestrians may not hear the sound of the vehicle.**

Distance to Empty



The location of where the vehicle range is displayed is different depending on which drive mode is active.

For more details, refer to "Drive Mode System" in chapter 5.

DRIVING AND OPERATING INFORMATION (CONT.)

When destination is not set

- On average, a vehicle can drive about 400 km (250 miles). Under certain circumstances where the air conditioner/heater is ON, the range is affected, resulting in a possible distance range from 335~500 km (210~310 miles). When using the heater during cold weather or driving at high speed, the high voltage battery consumes a lot more electricity. This may reduce the range significantly.
- After "---" has been displayed, the vehicle can drive an additional 3~8 km (2~5 miles) depending on driving speed, heater/air conditioner, weather, driving style, and other factors.
- The range that is displayed on the instrument cluster after completing a recharge may vary significantly depending on previous driving patterns.

When the previous driving patterns include aggressive or high speed driving (e.g. predominantly highway miles, etc.), the estimated range on the next full charge will be lower than normal.

When the previous driving patterns are predominantly mild or economical (e.g. city driving), the estimated range on the next full charge will be increased.

- Calculated range may depend on many factors such as the charge amount of the high voltage battery, weather, temperature, durability of the battery, geographical features, and driving style.
- Natural degradation may occur with the high voltage battery depending on the number of years the vehicle is used. This may reduce the vehicle range.

Navigation - When a Destination is Set

When a destination is set using the vehicle navigation system (if equipped), the vehicle range may change. The vehicle range is recalculated using the destination route information. While driving, the range may vary based on traffic conditions, driving pattern and vehicle settings, etc.

Tips for Improving Range When Using the Climate Control System

- Operating the climate control system consumes electrical energy from the EV battery. Continuous use may reduce the vehicle range.

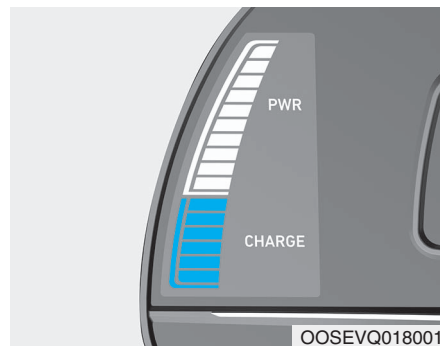
When using the climate control system, it is recommended to set the control to 22°C (72°F) AUTO. The climate control system has been optimized to operate at this setting for maximum comfort and efficiency.

- When possible, use the DRIVER ONLY feature on the climate control system. This will discontinue airflow to the passenger side and reduces climate control power consumption.

Tips for Improving Range While Driving

- Depress and hold the accelerator pedal to maintain speed and drive economically.
- Gradually depress and release the accelerator pedal when accelerating or decelerating.
- Always maintain specified tire pressures.
- Do not use unnecessary electrical components while driving.
- Do not load unnecessary items in the vehicle.
- Do not mount parts that may increase air resistance.

Power/Charge Gauge



The Power/Charge gauge shows the energy consumption rate of the vehicle and the charge/discharge status of the regenerative brakes.

• POWER :

This portion of the gauge indicates the amount of electrical power supplied to the EV motor while driving.

• CHARGE :

This portion of the gauge indicates the amount of charging to the EV battery when regenerative braking is applied.

State of Charge (SOC) Gauge for High Voltage Battery



- The SOC gauge shows the charging status of the high voltage battery.

"L (Low)" position on the indicator indicates that there is not enough energy in the high voltage battery. "H (High)" position indicates that the driving battery is fully charged.

- When driving your vehicle for long distances on the highway or in rural areas, make sure to check that the State of Charge (SOC) is sufficient to get to your destination and make sure to map out useable charging locations along your route.

DRIVING AND OPERATING INFORMATION (CONT.)



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When there are only 2 bars remaining on the gauge, the SOC level is low. The warning lamp turns ON to alert you that the battery must be charged soon.

When the warning lamp turns ON, the vehicle can drive an additional 20~30 km (12~18 miles) depending on the driving speed, heater/air conditioner, weather, driving style, and other factors. Charging is required.

NOTICE

When there are 1-2 gauge bars left for the high voltage battery, the vehicle speed is limited and then eventually the vehicle will turn OFF. Charge the vehicle immediately.

Warning and Indicator Lights

Ready Indicator



This indicator illuminates :

When the vehicle is ready to be driven.

- ON : Normal driving is possible.
- OFF : Normal driving is not possible, or a problem has occurred.
- Blinking : Emergency driving.

When the ready indicator goes OFF or blinks, there is a problem with the system. In this case, have your vehicle inspected by an authorized HYUNDAI dealer.

Service Warning Light



This warning light illuminates :

- When the POWER button is in the ON position.
 - It illuminates for approximately 3 seconds and then goes off.
- When there is a problem with related parts of the electric vehicle control system, such as sensors, etc.

When the warning light illuminates while driving, or does not go OFF after starting the vehicle, have your vehicle inspected by an authorized HYUNDAI dealer.

Power Down Warning Light



This warning light illuminates :

When the power output from the vehicle is limited. The vehicle is in fail-safe mode.

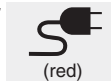
Power from the vehicle is limited due to one of the following reasons:

- The state of charge (SOC) of the high voltage battery is very low. Typically the Power Down Warning Light will turn ON when the SOC is below 3%.
- The temperature of the EV drive motor or the high voltage battery is either too high (overheating) or too low (freezing)
- There is a problem with either the cooling system or a vehicle system warning has occurred that may interrupt normal driving

NOTICE

- Do not accelerate or start the vehicle suddenly when the power down warning light is ON.
- When the high voltage battery level is low, the power down warning illuminates and the power output from the vehicle is limited. Charge the battery immediately since your vehicle may not drive uphill or skid on a slope with the warning light ON.

Charging Indicator Light



This warning light illuminates :

- When charging the high voltage battery.

High Voltage Battery Level Warning Light



This warning light illuminates :

When the high voltage battery level is low.

When the warning light turns ON, charge the battery immediately.

Regenerative Brake Warning Light



This warning light illuminates :

When the regenerative brake does not operate and the brake does not perform well. This causes the Brake Warning light (red) and Regenerative Brake Warning Light (yellow) to illuminate simultaneously.

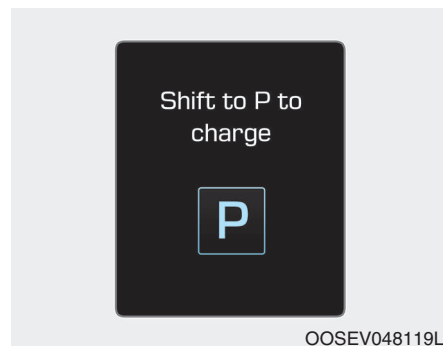
In this case, drive safely and have your vehicle inspected by an authorized HYUNDAI dealer.

The operation of the brake pedal may be more difficult than normal and the braking distance may increase.

DRIVING AND OPERATING INFORMATION (CONT.)

LCD Display Messages

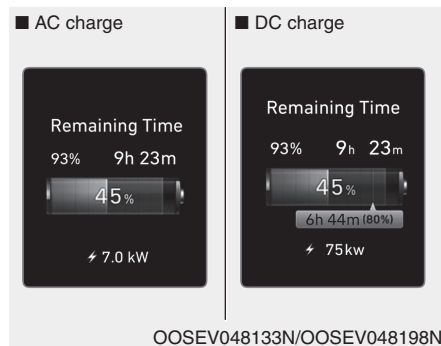
Shift to P to charge



This message is displayed if you connect the charging cable without the gear in the P (Park) position.

Shift to P (Park) before connecting the charging cable.

Remaining Time



This message is displayed to notify the remaining time to charge the battery to the selected target battery charge level.

Unplug vehicle to start



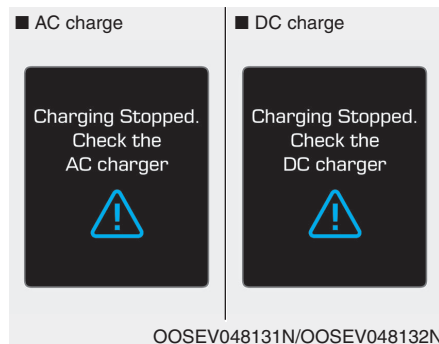
This message is displayed when you start the vehicle without unplugging the charging cable. Unplug the charging cable, and then turn on the vehicle.

Charging Door Open



This message is displayed when you attempt to shift the vehicle out of P (Park) with the charging door open. You must close the charging door before driving the vehicle.

Charging Stopped. Check the AC/DC charger



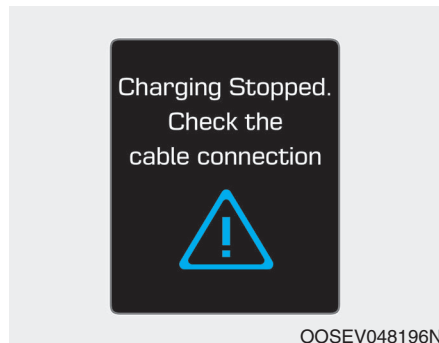
- This warning message is displayed when charging is stopped, possibly due to one of the following reasons:
 - There is a problem with the external AC charger or DC charger
 - The external AC charger stopped charging
 - The charging cable is damaged

If this warning message appears, check if there is a problem with the charging cable or connector, or if there is an error message on the charging station display screen.

If the same problem occurs when charging the vehicle with a normally operating AC charger or genuine HYUNDAI portable charger, have your vehicle inspected by an authorized HYUNDAI dealer.

DRIVING AND OPERATING INFORMATION (CONT.)

Charging Stopped. Check the cable connection



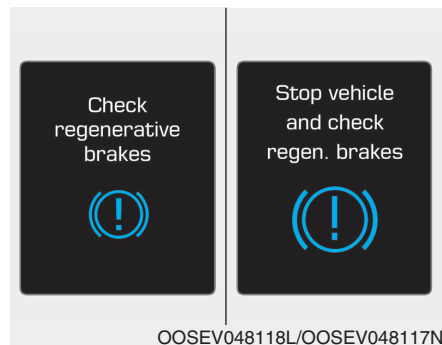
This warning message is displayed when charging is stopped because the charging connector is not correctly connected to the vehicle charging port.

If this message is displayed, disconnect the charging cable from the vehicle charging port and reconnect it. Before reconnecting, check to make sure there is no foreign debris or damage to the connector or charging port on the vehicle.

If the same problem occurs when charging the vehicle with a replaced charging cable or genuine HYUNDAI

portable charger, we recommend that you have your vehicle inspected by an authorized HYUNDAI dealer.

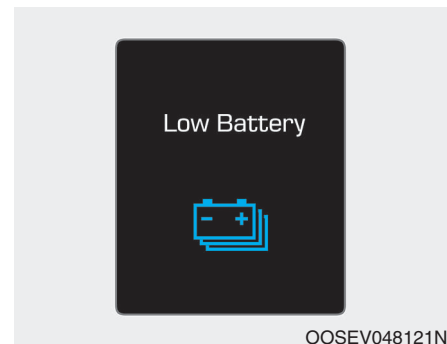
Check regenerative brakes/ Stop vehicle and check regenerative brakes



This warning message is displayed when the regenerative brake system does not work properly.

If this warning message is displayed, have the vehicle inspected by an authorized HYUNDAI dealer.

Low Battery

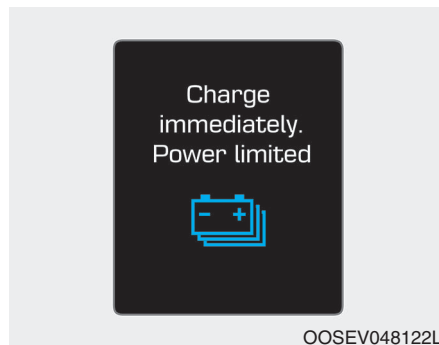


When the high voltage battery level reaches below 8%, this warning message is displayed.

The warning light on the instrument cluster (🔋) will turn ON simultaneously.

Charge the high voltage battery immediately.

**Charge immediately.
Power limited**

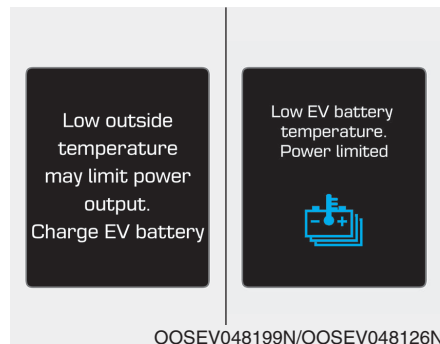


When the high voltage battery level reaches below 3%, this warning message is displayed.

The warning light on the instrument cluster (⚡) and the power down warning light (⊖) will turn on simultaneously.

The vehicle's power will be reduced to minimize the energy consumption of the high voltage battery. Charge the battery immediately.

**Low outside temperature may
limit power output. Charge EV
battery/Low EV battery temperature.
Power limited**



[A] : Displays when turning off vehicle.

[B] : Displays when turning on vehicle.

Both warning messages are displayed to protect electric vehicle system when the outside ambient temperature is low. If the high voltage battery charging level is low and parked outside in low temperature for a long time, vehicle power could be limited.

Charging the battery before driving helps increase power.

NOTICE

If this warning message is still displayed even after the ambient temperature has increased, have the vehicle inspected by an authorized HYUNDAI dealer.

DRIVING AND OPERATING INFORMATION (CONT.)

EV Battery Overheated! Stop vehicle



This warning message is displayed to protect battery and electric vehicle system when the high voltage battery temperature is too high.

Turn off the POWER button and stop the vehicle so that the battery temperature decreases.

Power limited



In the following cases, this warning message is displayed when the vehicle's power is limited for safety.

- When the high voltage battery is below a certain level, or voltage is decreasing.
- When the temperature of the motor or high voltage battery is very high.
- When there is a problem with the cooling system or a failure that may interrupt normal driving.

NOTICE

- When this warning message is displayed, do not accelerate or start the vehicle suddenly.
- When the high voltage battery level is low, the power down warning illuminates and the power output from the vehicle is limited. Charge the battery immediately since your vehicle may not drive uphill or skid on a slope with the warning light ON.

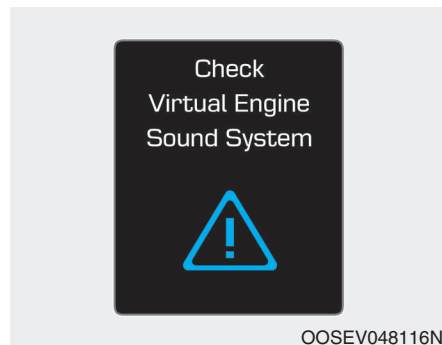
Stop vehicle and check power supply



This warning message is displayed when a failure occurs in the power supply system.

If this warning message is displayed, park your vehicle in a safe location and have your vehicle towed to the nearest authorized HYUNDAI dealer and have the vehicle inspected.

Check Virtual Engine Sound System



This message is displayed when there is a problem with the Virtual Engine Sound System (VESS).

If this warning message is displayed, have your vehicle inspected by an authorized HYUNDAI dealer.

Check electric vehicle system



This warning message is displayed when there is a problem with the electric vehicle control system.

Refrain from driving when the warning message is displayed.

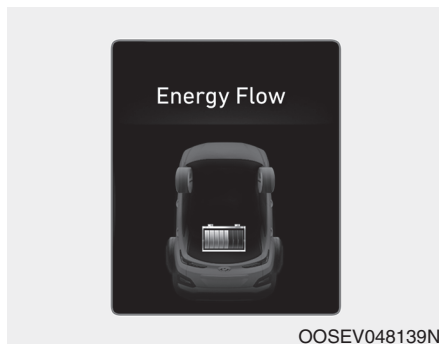
If this warning message is displayed, have your vehicle inspected by an authorized HYUNDAI dealer.

DRIVING AND OPERATING INFORMATION (CONT.)

Energy Flow

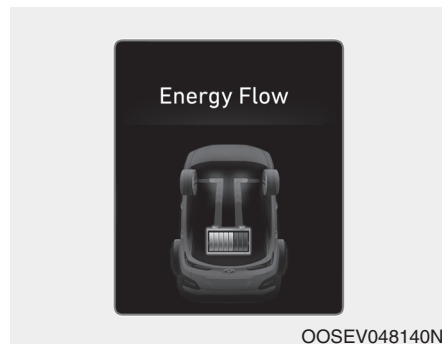
The electric vehicle system informs the drivers its energy flow in various operating modes. While driving, the current energy flow is specified in 3 modes.

Vehicle Stop



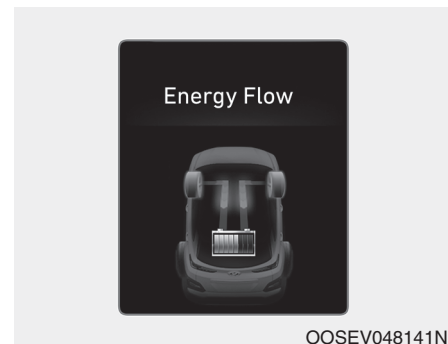
The vehicle is stopped.
(No energy flow)

EV Propulsion



Only the motor power is used to drive the vehicle.
(Battery → Wheel)

Regeneration



The high-voltage battery is charged up by the regenerative brake system.
(Wheel → Battery)

Aux. Battery Saver+

The Aux. Battery Saver+ is a function that monitors the charging status of the 12 V auxiliary battery.

If the auxiliary battery level is low, the main high voltage battery charges the auxiliary battery.

Information

The Aux. Battery Saver+ function will be ON when the vehicle is delivered. If the function is not needed, you may turn it off in the Users Settings mode on the cluster. For more information, refer to the following page.

Mode

- Cycle Mode :

When the POWER button is in the OFF position with all doors, hood and tailgate closed, the Aux. Battery Saver+ activates according to the auxiliary battery status.

- Automatic Mode :

When the POWER button is in the ON position with the charging connector plugged in, the function activates according to the auxiliary battery status to prevent overdischarge of the auxiliary battery.

Information

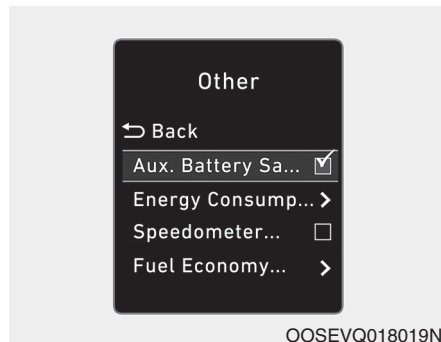
- The Aux. Battery Saver+ activates for a maximum of 20 minutes. If the Aux Battery Saver+ function activates for more than 10 times consecutively in automatic mode, the function will be disabled. (Note: There may be a problem with the 12V auxiliary battery.)

If the vehicle is driven normally and 12V battery is able to charge normally, the Aux. Battery Saver+ function will be enabled again.

- The Aux. Battery Saver+ function cannot prevent battery discharge if the auxiliary battery is damaged, worn out, used as a power supply or unauthorized electronic devices are used.
- If the Aux. Battery Saver+ function was activated, the high voltage battery level may have decreased.

DRIVING AND OPERATING INFORMATION (CONT.)

System Setting

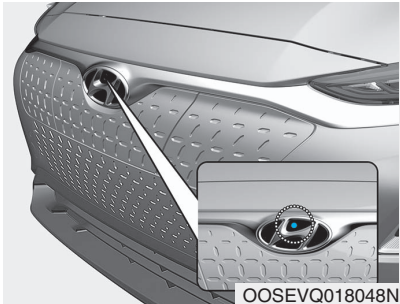


The driver can activate the Aux. Battery Saver+ function by placing the POWER button to the ON position and by selecting:

'User Settings → Other → Aux. Battery Saver+'

The Aux. Battery Saver+ function deactivates, when the driver cancels the system setting.

 **WARNING**



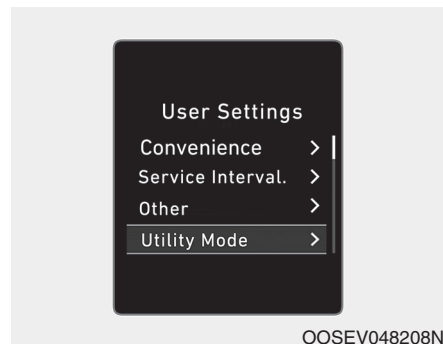
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When the function is activating the indicator lamp will illuminate and high voltage electricity will be flowing in the vehicle. Do not touch the high voltage electric wire (orange), connector, and all electric components and devices. This may cause electric shock and lead to injuries. Also, do not modify your vehicle in any way. This may affect your vehicle performance and lead to an accident.

Utility Mode

The high voltage battery is used instead of the 12V auxiliary battery for operating the convenient features of the vehicle. When driving is not necessary such as while camping or when stopping the vehicle for a long time, it is possible to use the electrical devices (audio, lights, etc.) for long hours.

System Setting and Activation



System setting

The driver can activate the Utility Mode function when the following conditions are satisfied.

- The vehicle is in the ready () mode and the gear is shifted to P (Park).
- The EPB (Electronic Parking Brake) is applied.
- 'User Settings → Utility Mode' is selected in the cluster.

System Activation

When the system is activated:

- The  indicator will turn off and the **UTIL** indicator will illuminate on the cluster.
- All electric devices are usable but the vehicle cannot be driven.
- The EPB can be cancelled by pressing the EBP switch.
- Note that the vehicle cannot be shifted out of P (Park). If a shift attempt is made, a message "Shifting conditions not met" will be displayed on the cluster.

System Deactivation

The Utility Mode can be deactivated by pressing the POWER button to the OFF position. The function cannot be deactivated from the User Settings mode.

ELECTRIC VEHICLE SAFETY PRECAUTIONS

If an Accident Occurs

WARNING

- When a vehicle accident occurs, move the vehicle to a safe place, turn OFF the vehicle and disconnect the auxiliary battery (12 V) terminal to prevent high voltage electricity from flowing.
- If any electrical wires are exposed from inside or outside the vehicle, do not touch the wires.

Also, do not touch the high voltage electrical wire (orange), connector, and all electric components and devices. This may cause electric shock and lead to injuries.

WARNING

- When a vehicle accident occurs and the high voltage battery is damaged, harmful gas and electrolytes may leak. Be careful not to touch the leaked liquid.

If you suspect leakage of any fluid or harmful gases, open the windows and evacuate to a safe place. If any leaked fluid comes in contact with your eyes or skin, immediately clean the affected area thoroughly with tap water or saline solution and have doctors inspect it as soon as possible.

WARNING

- If a small scale fire occurs, use a fire extinguisher (ABC, BC) that is meant for electrical fires. If it is impossible to extinguish the fire in the early stage, remain a safe distance from the vehicle and immediately call the fire department. Also, advise them that an electric vehicle is involved.

If the fire spreads to the high voltage battery, a large amount of water is needed to put out the fire. Using small amount of water or fire extinguishers not meant for electrical fires could cause serious injury or death from electrical shock.

WARNING

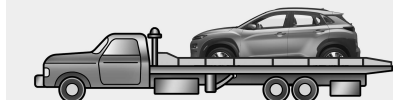
If you cannot put out the fire immediately, the high voltage battery may explode. Evacuate to a safe place and do not let other people approach the site.

Contact the fire department and notify them of an electric vehicle fire.

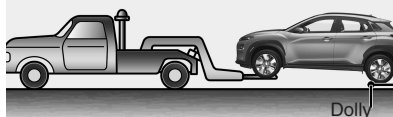
- If the vehicle is flooded with water, immediately turn OFF the vehicle and evacuate to a safe place. Contact the fire department or an authorized HYUNDAI dealer.

WARNING

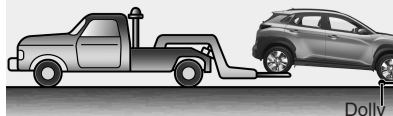
- Flatbed Towing



- Tires Locked Towing



- Tires Locked Towing



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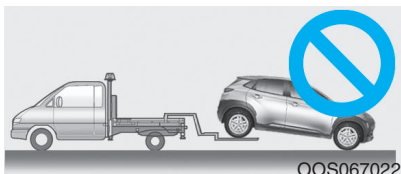
- If towing is required, lift all four wheels off the ground and tow the vehicle. If you must tow the vehicle using only two wheels, lift the front wheels off the ground and tow the vehicle.

If necessary to roll the vehicle so that it can be rolled onto a flatbed tow truck perform the following:

- First, depress the brake pedal and release the parking brake.
- While depressing the brake pedal shift to the N (Neutral) position and press the POWER button to turn the vehicle off.
- Wait 3 minutes or more before opening the driver door and the vehicle will remain in ACC mode and in Neutral.
- If the driver door is opened within the 3 minute period, the vehicle will automatically shift to P (Park), the vehicle will turn OFF and the front wheels will be remained locked.

ELECTRIC VEHICLE SAFETY PRECAUTIONS (CONT.)

⚠ WARNING



- If you tow the vehicle while the front wheels are touching the ground, the vehicle motor may generate electricity and the motor components may be damaged or a fire may occur.
- When a vehicle fire occurs due to the battery, there is a risk of a second fire. Contact the fire department when towing the vehicle.

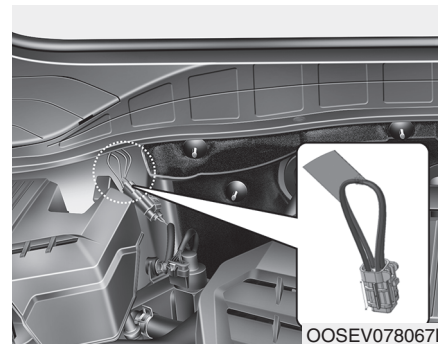
Additional Precautions

- When you paint or apply heat treatment to the vehicle as a result of an accident, the performance of the high voltage battery can be reduced.

If heat treatment is required, contact an authorized HYUNDAI dealer.

- When you clean the motor compartment, do not use high pressure water to wash. This may cause an electric shock due to a discharge in high voltage electricity, or damage the vehicle's electric system.
- Do not use, remodel, or install non-genuine parts. This may damage the electric power system.

Service Interlock Connector



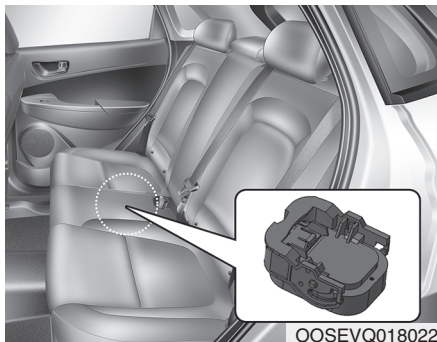
In case of emergency, cut the service interlock connector cable to isolate the high voltage of the battery.

⚠ WARNING

Never disconnect the service interlock connector or cut the wire except in an emergency situation.

Serious problems may occur, such as the vehicle will not start.

Service Plug



DANGER

Never touch the service plug under the rear seat.

The service plug is attached to the high voltage battery system.

Touching the service plug will result in death or serious injury.

Service personnel should follow procedures in the service manual.