KIA The Power to Surprise

# SOUL EV

## Customer Response Guide

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# Vehicle Overview (9 Items)



## Q01

***How far can a Soul EV go on a single charge?***

**A01**

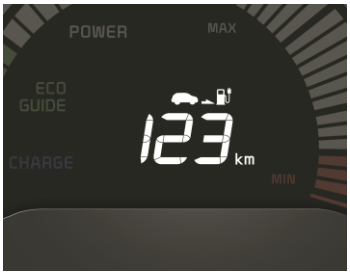
The Soul EV can run an average of 148 kilometers on a single charge. The range can be different based on weather conditions, battery lifespan, road conditions, driver's habit, A/C or heater operation. The driving distance under various conditions could range between 100 - 230 kilometers.

## Q02

***How is Distance to Empty (DTE) or Driving Range calculated?***

**A02**

The DTE is calculated based on the past driving pattern. It is calculated by using the average distance of past 20 cycles considering the operation of A/C and heater or the road condition classified by navigation.




**DTE : Distance To Empty*

If the driving pattern is changed, an estimation error may occur.
e.g. Driving on the highway (High-speed) on the weekend after you have driven on the city (Slow-speed) during weekdays.

## Q03

***Will the use of accessories (i.e., audio, heater, A/C, etc.) affect the driving range of the Soul EV?***

**A03**

The A/C and heater consumes energy from the high voltage battery, causing the range to decrease. It is recommended to set HVAC to 23℃ auto for optimal energy consumption. Also, if the use of the A/C or Heater is not needed, please turn off to help manage the high voltage battery and increase your driving range.

## Q04

***If I turn off the Active ECO system for better acceleration, will the EV system remember this setting the next time I drive the vehicle?***

## A04

No. The ECO system is always ON (ECO Default). If you want better acceleration, you should turn off the ECO function manually.

**The driving distance could be decreased in the ECO OFF mode.*

## Q05

***If water flows into the modules related in the high voltage system, due to heavy rain, will it have any effect on the vehicle?***

## A05

No. The high voltage components in the motor room are designed to be waterproof, so accidental electric shock or system failure is unlikely.

For reference, as the result of completing a water pressure test while charging a vehicle and in EV Ready status, no problem was found with the high voltage system or vehicle operation.

## Q06

***Can driving on the speed bumps damage the high voltage battery which is installed under the vehicle?***

## A06

During vehicle development multiple safety tests for collision were performed. The high voltage battery is safe and has no danger of damage when driving over speed bumps or in case of collision. However, it is still recommended that you drive carefully over speed bumps for your safety.

## Q07

***Is there a possibility that extremely cold weather can affect the vehicle performance?***

**A07**

At temperatures below -20 ℃, it is normal for the soul EV to have performance reduction because of high voltage battery output reduction.

## Q08

***Why is there a sound at low speeds, even though there is no engine?***

**A08**

A pedestrian may not recognize the Soul EV moving as there is no engine sound. The Soul EV has an integrated Virtual Engine Sound System (VESS) that generates a virtual engine sound for pedestrian's safety when the vehicle is driven below 20km/h; this alerts the pedestrian of the approaching vehicle.

**The Virtual Engine Sound System does not operate when the vehicle is not moving. The VESS operates in the range of 1 - 20km/h.*

## Q09

***Why do I hear a fan noise in the trunk area of my Soul EV?***

**A09**

The Soul EV comes with high voltage battery cooling fan that is mounted in the trunk area next to the tire mobility kit. You may hear a noise generated by the fan operation which is considered normal. The cooling fan operates to maintain the optimal temperature of the high voltage battery ; Below 60 ℃.

Cooling fan in the trunk

## Q10

***When washing the car, is there a possibility that electric shock or system failure can happen?***

**A10** No. The high voltage components are designed to be waterproof. You can wash your car without any risk.

## Q11

***Can I wash my Soul EV with pressurized water like a conventional vehicle? What if water flows into the high voltage battery or motor room?***

**A11** The high voltage components are designed to be waterproof. When the Soul EV was tested using pressurized water, no problems found with the high voltage components. For your safety, we do not recommend to pressure wash the high voltage components.

## Q12

***Can I wash the under-body of the vehicle? Is there any problem for the battery?***

**A12** You can wash the under-body of the vehicle without any risk. There is no risk to the high voltage battery while washing the vehicle because the high voltage battery and connectors are designed to be waterproof.

## Q13

***What parts must I not touch with hands for safety?***

**A13** Be careful not to touch the high-voltage cable (orange color) and parts with a high voltage warning labels for preventing the electrical accidents.

## Q14

***Can the EV be jump started? If need, how can I jump start the vehicle?***

## A14

Yes. If the auxiliary battery (12V) is discharged, you cannot start the vehicle (READY). When discharged, the auxiliary battery will need to be jump started in the same method as standard vehicles.

Connect your Soul EV with the other vehicle's battery using a set of jump cables.

**Jump start can be risky so if you are unsure of how to proceed, please contact a professional for help.*


1. Make sure that the rated voltage of the auxiliary battery is 12V.
2. If you do jump start using another vehicle's battery , make sure that the two vehicles are at a reasonable distance from each other.
3. Turn off "ALL" electric systems.
4. Connect the jump terminal (+) of the discharged battery in the EV with the battery terminal (+) of the assisting vehicle.
5. Connect the battery terminal (-) of the assisting vehicle in the metallic parts around the battery of EV.

   **Connecting the jumper cables to the battery directly, could result in fire hazard or explosion*
6. Turn on the ignition of the assisting vehicle, and wait for a few minutes.
7. Turn on the ignition of the EV.
8. Once you are able to startup the motor, disconnect the (-) terminal and then disconnect the (+) terminal.

## Q15

***Are there any precautions when I park the vehicle for a long period?***

**A15**

The vehicle performance is not affected by the length of parking period. The State of Charge (SOC) must be checked at least once every six months and if the SOC warning lamp turns on, charge the high voltage battery.


*※SOC (State Of Charge) : The status of high voltage battery charging*

## Q16

***Should only authorized Kia EV dealers perform routine maintenance such as refrigerant or coolant replacement?***

**A16**

For safety, all EV warranty repairs must be completed by EV trained service technicians at authorized Kia EV dealers. In addition, we recommend that all maintenance services are also performed at authorized Kia EV dealers.

## Q17

***What items should the driver check regularly?***

**A17**

The following items should be checked regularly as in standard vehicle; coolant, brake fluid, climate control air filter, tire, 12V auxiliary battery etc.
For detailed information on regular maintenance items and intervals, please see the “Maintenance” section of Owner’s Manual.

## Q18

***Does my EV require any special type of tire or tires? Will conventional tires work on my EV?***

**A18**

The Soul EV is equipped with 205/60R16 Super Low Rolling Resistance (SLRR) tires, different from the regular gas engine Soul tires. Conventional tires may be installed but driving range may be affected.

## Q19

***Does the EV use different coolant from a standard vehicle?***

## A19

The Soul EV uses same coolant with the standard vehicle.

**Recommend using an ethylene glycol-based coolant*

Coolant Reservoir Tank

## Q20

***How far can I drive after the high voltage battery warning lamp turns on ?***

**A20** Depending on the driving speed, A/C or heater, weather, driver's habit etc., usually you can drive about 12 - 25 miles after the warning lamp is on.

## Q21

***What should I do when the power down lamp turns on?***

**A21** The power down lamp turns on when the high voltage battery SOC drops below 7% or the cooling system has failed. Do not accelerate excessively or abruptly. If the SOC is too low, charge the high voltage battery. If the power down lamp does not turn off, contact your local authorized Kia dealer for service.

## Q22

***What should I do when the service lamp turns on?***


**A22** If the service lamp turns on when starting the car and turns off within 3 seconds, it is normal. If the service lamp does not turn off or turns on while driving, contact your local authorized Kia dealer for service, as there are problems with the Soul EV control system.

## Q23

***What is the regenerative braking system?***

**A23**

It charges the high voltage battery by converting the kinetic energy to electric energy during deceleration. This is achieved by using the electric motor as a generator, increasing the energy efficiency of electric vehicle that has limited energy.

## Q24

***How much energy efficiency does the regenerative braking system help to improve?***

**A24**

The energy gain factor of regenerative braking system ($\frac{Regenerative\ energy}{Driving\ energy}$) is about 30% based on the city driving.
It means that the energy efficiency is improved by about 30% based on the city driving from regenerative braking system.

## Q25

***What's the difference between the reduction gearbox installed on the Soul EV and a transmission installed on a conventional vehicle?***

**A25**

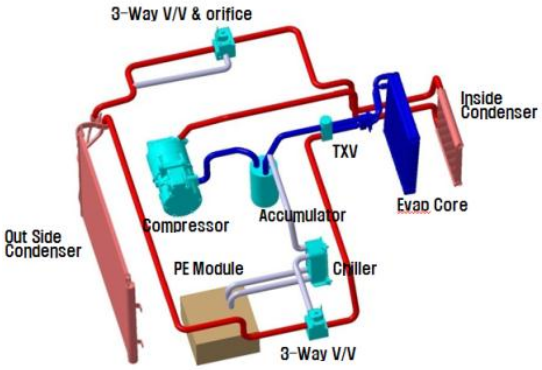
The transmission transfers the power by changing the gear ratio as the vehicle is driven. The reduction gear is designed to transfer the power by reducing the electric motor RPM. The motor is always connected to the drive wheels and reverse is obtained by changing the direction of the motor rotation.

## Q26

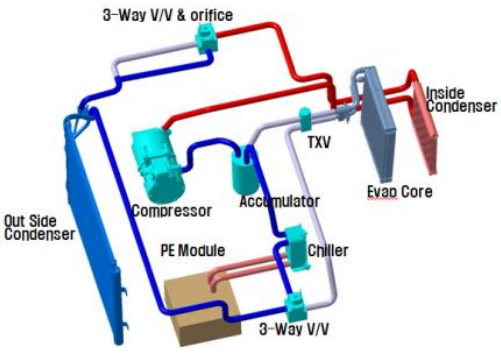
***What is the heat pump system?***

## A26

The Heat pump is the system that provides heating as well as cooling by changing the refrigerant-cycle. When in Heating mode, the inside condenser is heated. As air passes over the inside condenser, it warms, increasing the air temperature in the cabin area. The driving distance is increased by minimizing the energy consumption of the high voltage PTC heater.




A/C Mode




Heating Mode

## Q27

***Is there a great difference in the driving distance when I'm not using the heat pump?***

## A27

The driving distance of electric vehicle is decreased when the heater is on. Conventional vehicles use engine heat as the heater source but there is no heat source in the electric vehicle. The Soul EV uses high voltage battery to heat (PTC heater). If the heat pump system is equipped on your car, the driving distance range is affected.

Compared to using PTC heater, using the heat pump in winter may save energy consumption by about 50%, hence increasing the driving distance by about 10%.

**The Soul EV is equipped with a world-class level heat pump system.*

# High Voltage Battery (4 Items)

## Q28

***What's the useable high voltage battery life?***

**A28**

The high voltage battery design life is 10 years / 250,000 kilometers.
The warranty period is 7 years / 150,000 kilometers.

## Q29

***Is the recharge performance of the high voltage battery reduced depending on its duration of use?***

**A29**

The charging time is affected by the charger output. The more charger outputs, the faster charging time. If you use the high voltage battery for long periods, the charging time may be reduced by the battery degradation resulting in slightly shorter drive distance range.

## Q30

***Can I check the high voltage battery life?***

**A30**

There is no way to check the high voltage battery lifespan visually. If you notice your driving distance is recently shortened, please visit an authorized KIA dealer to check the high voltage battery.

## Q31

***How is the end-of-life high voltage battery handled?***

**A31**

The end-of-life high voltage battery will be replaced with a new. Also, Kia is working with battery recyclers to properly dispose of failed high voltage batteries.

## Q32

***How long does a full charge of high voltage battery take?***

**A32**

In-car Cable charge (AC 2kW): 10 - 14 hours (full charge available).
Normal charge (AC 3 - 7kW) : 4 - 9 hours depending on power (full charge available).
Rapid charge (DC 50kW) : About 20 minutes from 20 to 84% (DC 20kW: less than 1h)


**The battery is charged up to 84% at rapid charge. If you reconnect the cable, you can charge up to 94%. But, additional charge can be unavailable with cold weather to prevent high voltage battery degradation.*

## Q33

***How can I know the charging status through charge lamp?***

**A33**

- Normal Charge : Status indicated by cluster or charge lamp
  - No.1 lamp blinking : 0 ~ 33% SOC
  - No.1 lamp ON and No.2 lamp blinking : 34 ~ 66% SOC
  - No.1/2 lamp ON and No.3 lamp blinking : 67 ~ 99% SOC
  - No.1/2/3 lamp ON : 100% SOC

- Rapid Charge : Status indicated by cluster

**Charge lamp is only for normal charge.*


Charge Lamp


Cluster

## Q34

***If I use the rapid/DC charging frequently, will it damage the high voltage battery?***

**A34**

No. It doesn't matter how many times you use the rapid charge. The frequent use of rapid charge does not affect the high voltage battery lifespan or the performance.

## Q35

***Is the charge connector different by country? Can I charge the vehicle in other countries?***

## A35

The Soul EV is equipped with a Type 1 socket for normal AC charging and a CHAdeMO socket for rapid DC charging.
There are two main types of connectors for normal charge, type 1 (5 pins) for North America and type 2 (7 pins) for Europe. In order to charge Soul EV on a charger with Type 2 socket an adapter cable is needed, available as an accessory.
There are also several types of connectors for rapid charge, CHAdeMO, SAE-Combo and Combo Type 2. Currently, CHAdeMO is common globally, whereas Combo systems are starting to be introduced. In Europe, public stations will be equipped with both Types.

<table>
<tr><td colspan="3">Soul EV  </td><td>SAE Combo (North America)<br>  </td></tr>
<tr><td colspan="2">Normal / AC</td><td>Rapid / DC</td><td rowspan="2"></td></tr>
<tr><td>Type 1</td><td>Type 2 + Adapter Cable</td><td>CHAdeMO</td></tr>
<tr><td>  </td><td>  </td><td>  </td><td>Combo Type 2 (Europe)<br>  </td></tr>
</table>

## Q36

***Do I need special equipment to charge at home?***

## A36

You can charge the Soul EV at home by using In Cable Control Box (ICCB) that comes standard with your Soul EV. By connecting it to normal charge port, it takes about 24 hours to full charge, because the charging capacity is very low compared to other charging methods.

Home based Level 2 chargers are available. Contact your local authorized Kia dealer for assistance

## Q37

***Are there any precautions for charging the high voltage battery?***

**A37**

1. Do not touch the charger with wet hands.
2. If a charger port is moist, be sure to remove moisture before charging.
3. Connect the connector properly and be sure to check the locking status.
4. Do not touch the connector/cable/charger while charging the battery.
5. Do not remove the charger connector while charging the battery.
6. Be careful so that the moisture does not get into the charging device.

## Q38

***Why is a full charge unavailable on a rapid charge/DC charger?***
***Why does charging stop at 84% of SOC? How can I charge more?***

**A38**

The high voltage battery is unable to be 100% charged using a level 3 rapid charge/DC charger as to prevent overcharge. During rapid charge, the voltage rises quickly due to 160A of current allowing the charge to reach 84% SOC within 25 minutes. Charging stops at 84% SOC.
Reconnecting the charge connector may increase the charge up to 94% SOC.

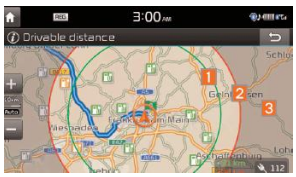
*※SOC (State Of Charge.) : The status of high voltage battery charging.*

## Q39

***How can I find the charging stations?***

**A39**

You can locate charging stations within driving range by using the EV mode on the AVN system.




## Q40

***Is it safe to plug in the charger when parking the EV for a long period?***

**A40**

Yes. It's safe. Once charging is completed, the charge cycle is automatically disengaged. It is safe to leave the charger connected to the Soul EV for an extended period of time. If at a public charging station, this practice would not be courteous to other users.

# Set Charging / Climate Time (2 Items)



## Q41

***Is it possible to set the charging schedule using an AVN?***

## A41

You can set the charging schedule through the AVN. If you select the '*set charging times*' on the AVN, you can set the *time to charge*, *charging ratio (80% / 100%)* and the *repeat days*.



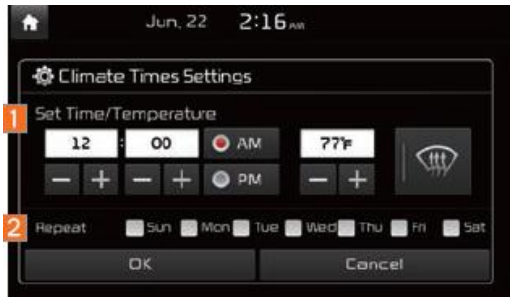
**This function is available only when the charging cable is securely plugged in.*

## Q42

***Is it possible to set the climate time using an AVN before I get on the Soul EV?***

## A42

You can turn on the climate control inside the Soul EV before you drive. If you select the '*set climate times*' on the AVN, you can set the *time to start driving*, *desired temperature* and the *repeat days*. The climate control turns on 30 minutes prior to departure and the inside temperature will reach the desired temperature at the time you drive.





**This function is available only when the charging cable is securely plugged in.*

# Vehicle Accidents / Towing (5 Items)

## Q43

***Is there a risk of electric shock from the high-voltage parts in the event of a collision or accident?***

**A43**

The high voltage battery is insulated and the insulation status is checked by the Battery Management System (BMS) allowing the vehicle to be safe in case of collision or accident. If there is a problem on the high voltage line or insulation, the high voltage current is shut off by relay operation. In the event of a collision or accident, recommend turning off the vehicle and evacuating to a safe location away from the vehicle. Contact local rescue authorities for assistance.

## Q44

***What should I do if the vehicle is submerged in water?***

**A44**

Evacuate to a safe place. If possible, turn off the vehicle before leaving the vehicle. And then contact local fire department or rescue authorities.

**The risk of electric shock is unlikely when treating the submerged car. Because Battery Management System (BMS) is always checking the high voltage system and if there is a problem on the high voltage line or insulation resistance, the high voltage is shut off by relay operation (BMS checks the insulation resistance and wire status to turn off the relay if there is a problem). Be sure to wear the personal protective equipment before working on the Soul EV.*

## Q45

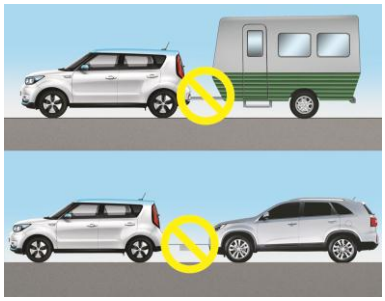
***If the high voltage battery is penetrated, is there any problem?***

**A45**

The high voltage battery of Soul EV helps to ensure penetration stability by incorporating a ceramic coating membrane. Each cell of high voltage battery is coated in ceramic. If an object or road debris was to penetrate the high voltage battery, the ceramic will protect the battery. This ceramic membrane inserted into the high voltage battery separates each cell and protects them from short circuits.

## Q46

***Can the Soul EV tow other cars in emergency?***

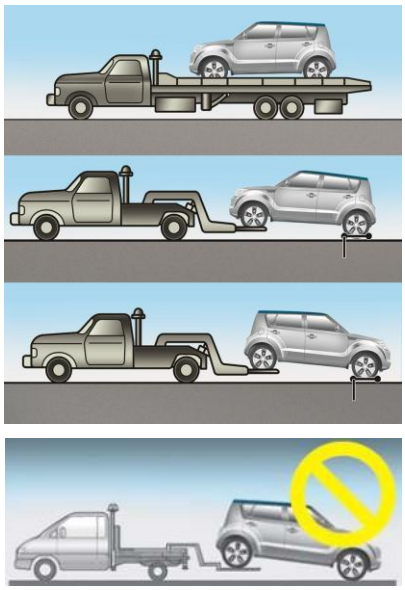


### A46

The motor can be overloaded and damaged if it is used as a tow vehicle. We do not recommend towing other cars or trailers using the Soul EV.

## Q47

***How should the EV be towed? Is there any caution to take?***



### A47

The Soul EV can be towed in the same method with standard vehicles. If you need emergency towing, we recommend that you contact your local authorized KIA dealer.

When towing the car, use a flatbed or wheel dolly for safety. The EV is equipped with a front wheel drive motor and EPB. If the front wheels touch the road surface while being towed, they will rotate and this can cause the motor to generate electricity. And if the rear wheels touch the road surface even though the EPB is locked, it can cause unwanted failure of the EV.

## Q48

***What should I do if the EV catches fire?***

**A48**

If the vehicle catches on fire, the preferred method to extinguish the fire is by using a fire extinguisher. If you cannot extinguish the fire immediately, evacuate to a safe area because the high voltage battery can explode when heated. Contact your local fire department. Do not get close to your car until the fire department has fully extinguished the fire.

**Powder, CO2 or Halon fire extinguishers are available to extinguish the fire.*

## Q49

***In case of fire, can I use water to extinguish the fire?***

**A49**

You may use large amounts of water to extinguish the fire if you do not have a fire extinguisher. Trying to extinguish the fire with a small amount of water may cause electric shock accident. So we recommend using a fire extinguisher instead of water for your safety.

## Q50

***Can the high voltage battery explode by overheats in very hot weather?***

**A50**

The storable temperature range of high voltage battery is -40 - 70℃ and the driving temperature range is -35 - 60℃.
The cooling system is designed so that the high voltage battery temperature is maintained below 60℃. Testing has verified the high voltage battery operation in Death Valley, CA. high heat regions.