Emergency Response Guide

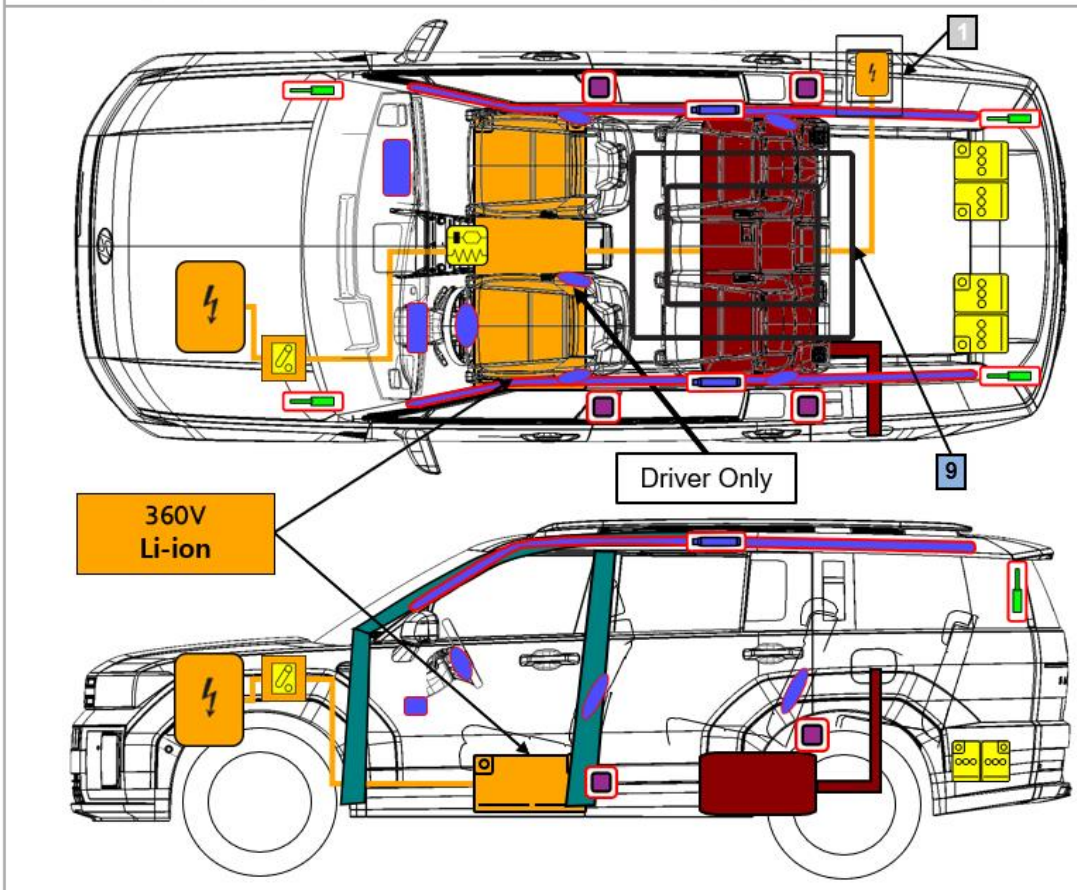
HYUNDAI

SANTA FE

HYUNDAI

Hyundai SANTA FE Plug-In

SUV, 5 door (5-/ 6-/ 7-seater)
Since 2024



	Airbag		Stored gas inflator		Seat belt pre-tensioner		SRS control unit		Zone requiring special attention
	Battery low-voltage		Gas strut / Preloaded spring		High strength zone		Fuel tank		
	Battery pack high-voltage		High voltage power cable		High voltage component		Low voltage device that disconnects high voltage		

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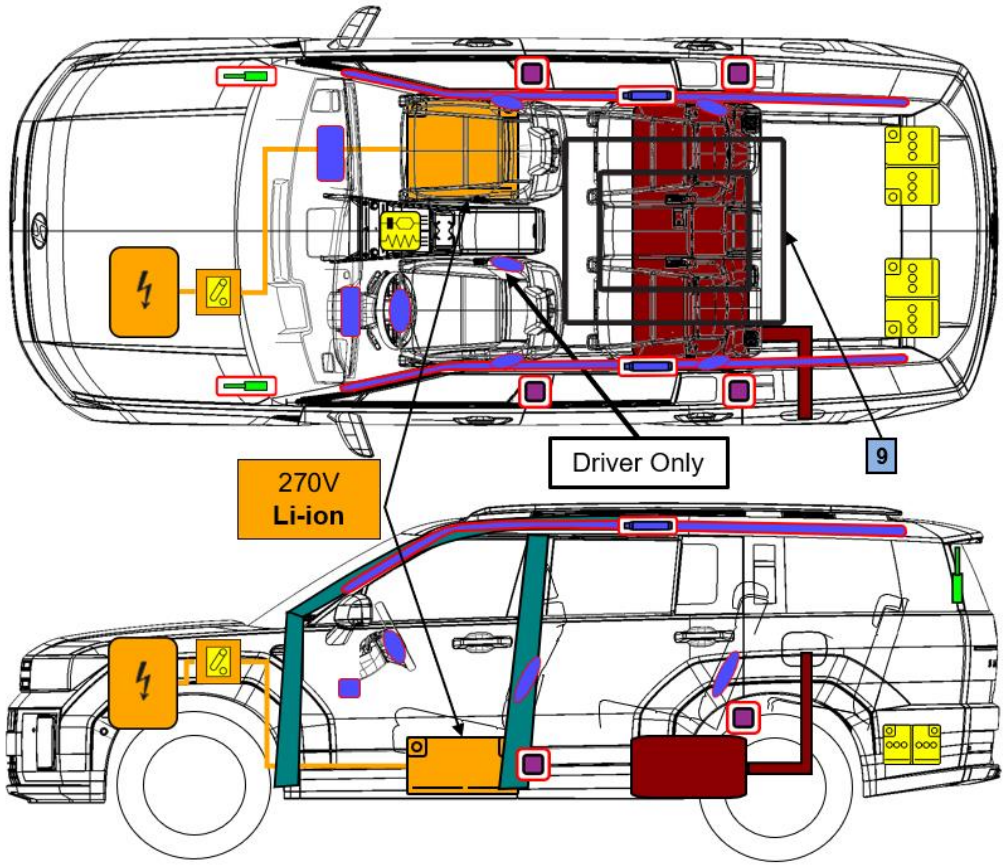
hybrid

Hyundai SANTA FE

SUV, 5 door (5-/ 6-/ 7-seater)
Since 2024



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Contents

Warning

Failure to follow any of these instructions may result in serious injury, death or damage

1. Identification / Recognition

Initial Response: Identify, Immobilize and Disable

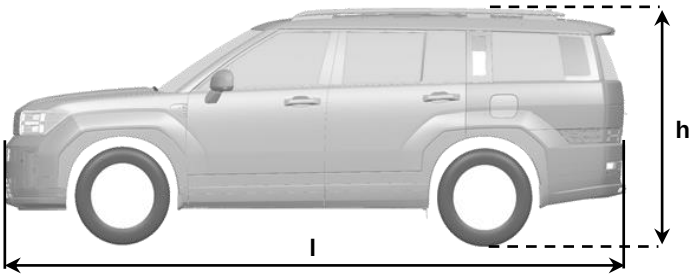
The following procedures should be used whenever you are dealing with a SANTA FE at an emergency scene. However, all operations should be consistent with your department's standard operating procedures, guidelines, and any applicable laws. When SANTA FE is damaged in a crash, the high voltage safety systems may have been compromised and present a potential high voltage electrical shock hazard. Exercise caution and wear appropriate personal protective equipment (PPE), including high voltage safety gloves and boots. Remove all metallic jewelry, including watches and rings.

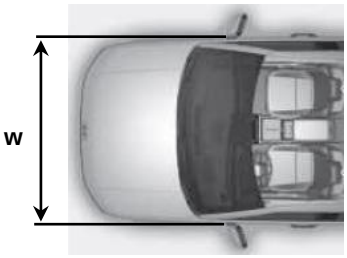
This document handle with the two propulision variants of SANTA FE. Hybrid (HEV) and Plug-In Hybrid (PHEV) . If something is special for one varinant you will find the emblem at this topic:

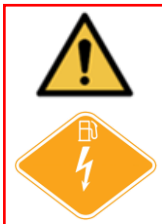
hybrid → Hybrid (HEV) plug-in → Plug-In Hybrid (PHEV)

Dimensions:

	Items	mm
l	Overall length	4830
w	Overall width	1900
h	Overall height	1770







Identify

The SANTA FE is a hybrid electric vehicle. Emergency responders should respond to emergency scenarios involving the SANTA FE accordingly, exercising extreme care and caution to avoid contact with the high voltage system within the vehicle.

Identify

Due to a lack of engine sounds, the “SANTA FE” can move silently using the electric motor, when the "READY" mode light is illuminated on the Instrument Panel
(see page 8)

Identify

LACK OF ENGINE NOISE DOES NOT MEAN VEHICLE IS OFF: SILENT MOVEMENT OR INSTANT RESTART CAPABILITY EXISTS UNTIL VEHICLE IS FULLY SHUT DOWN. WEAR APPROPRIATE PPE

1. Identification / Recognition

Identifying a Hyundai SANTA FE

Front and rear view of Hyundai SANTA FE

The Brand Logo placed on the hood and on the tailgate

Model name on Tailgate “SANTA FE”

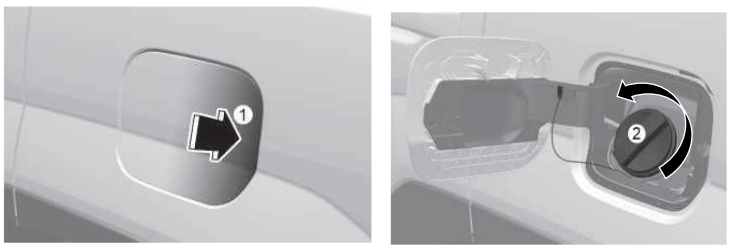
The model name “SANTA FE” is placed in the middle of the tailgate.
The font of the trim emblem is Silver.

Propulsion Logo on Tailgate

The two version of SANTA FE can be easily identified by the different logo attached on the tailgate. The logo may be missing or hidden after a crash due to damage to the vehicle. Always be sure to utilize additional methods of identification before determining that the vehicle is not a hybrid car.

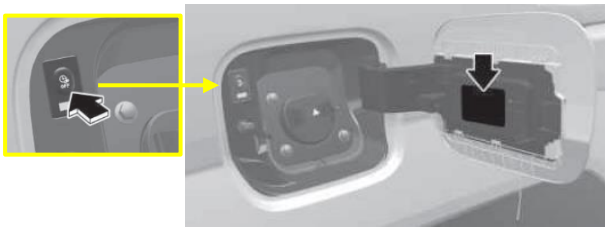
Fuel filler door

The SANTA FE has a fuel filler door on the rear right side.



Charging door plug-in

The SANTA FE Plug-In Hybrid has additional charging door located on the rear left side, which include the state of charge (SOC).

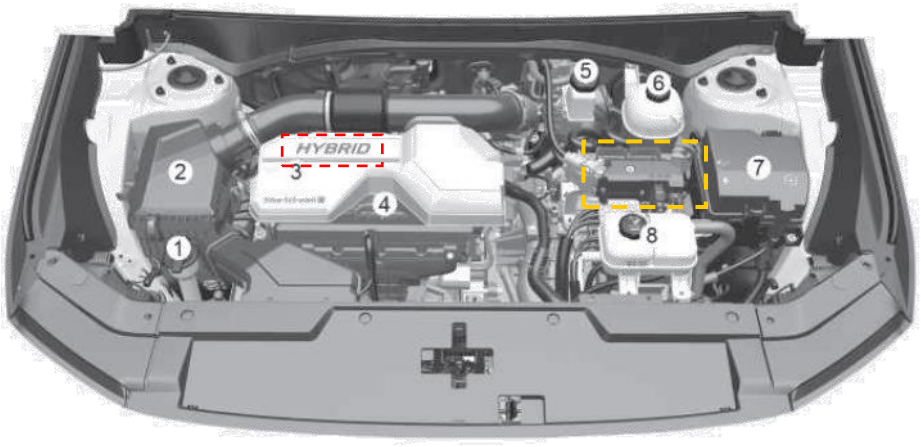


1. Identification / Recognition

Engine room

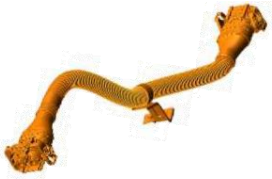
In both variants of Hyundai SANTA FE the „HYBRID“ Logo **[red]** is placed on the engine block. Additional you will find the Hybrid Power Control Unit HPCU **[orange]** on the left side of the engine compartment.

1	Windshield washer fluid reservoir
2	Air cleaner
3	Engine oil filler cap
4	Engine oil dipstick
5	Brake fluid reservoir
6	Engine coolant reservoir
7	Fuse Box
8	Battery system coolant reservoir



High Voltage Cable (Orange color)

When opening the hood, the orange color cable identifies a HV-System, which is using in both hybrid varinats of the SANTA FE.
Additional the orange color cables run under the floor if the vehicle.



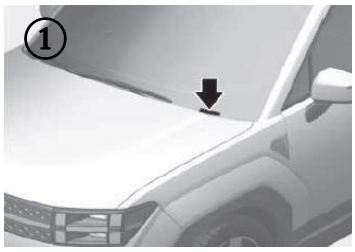
Vehicle Identification Number (VIN) Label

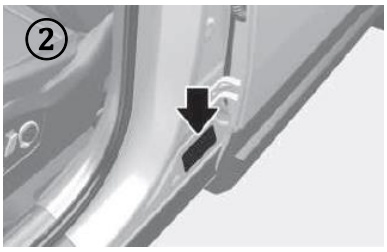
The VIN Number is specified in the SANTA FE and distinguish the engine type on the 8th digit.

8th digit : Engine type
1= G 1.6 DOHC T-GDI-II
+ HEV(270V,5.5Ah+47.7kW)
2= G 1.6 DOHC T-GDI-II
+ PHEV(360V,49.9Ah+72kW)

Location of VIN in the SANTA FE

1. VIN Plate can be seen through the windshield from outside **(1)**
2. On the vehicel certification lable attached to the driver‘s side center pillar **(2)**

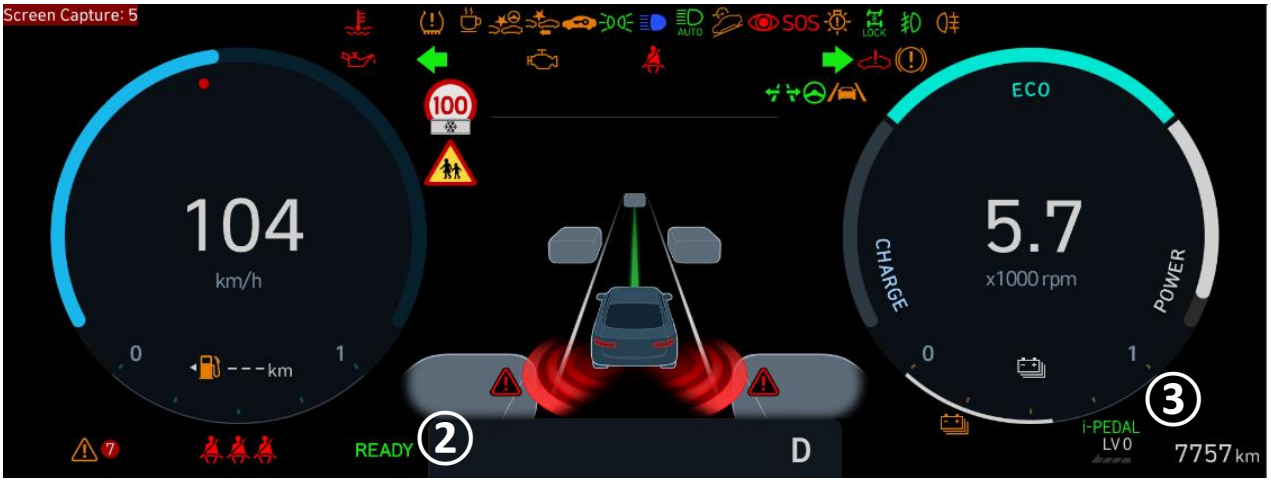




1. Identification / Recognition

Instrument Cluster

The instrument cluster of SANTA FE display some specific features for using high voltage battery. The cluster in the vehicle can be change individual and may be differ from the illustration.



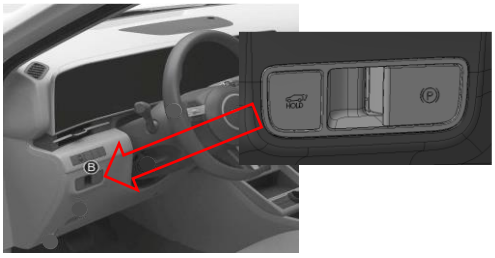
1	EV	Indicator illuminate when vehicle is driven by electric motor
2	READY	Indicator permanent illuminate when normal driving is possible.
3	**SOC (State of Charge)**	The SOC gauge indicates the remaining hybrid battery power
4		When the charging connector is connected to the vehicle, the green light illuminates for about 1 minute

2. Immobilization / Stabilization / Lifting

Immobilization

The next step is to immobilize the vehicle to prevent any accidental movement that can endanger response personnel or civilians. Responders should approach the vehicle from the sides and stay away from the front or rear as they are potential paths for vehicle movement. Be sure to immobilize the vehicle in the following manner.

Chock the wheels

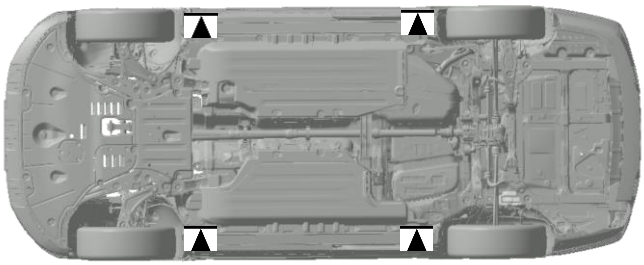


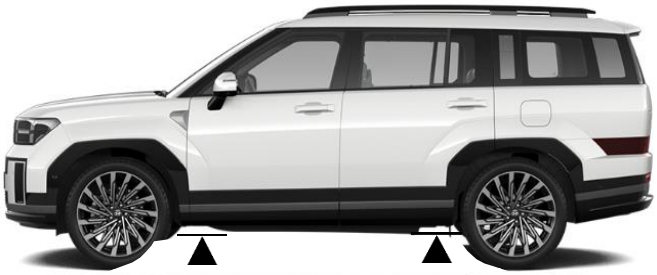
Set the Electronic Parking Brake (EPB)

Put the vehicle in P (Park) position by pressing the 'P' button on the rotary shifter

Stabilization

Use standard stabilization (lift) points, as shown beside. Always be sure to connect to a structural component of the vehicle and avoid placing cribbing under high voltage cables, and other areas not normally considered acceptable.





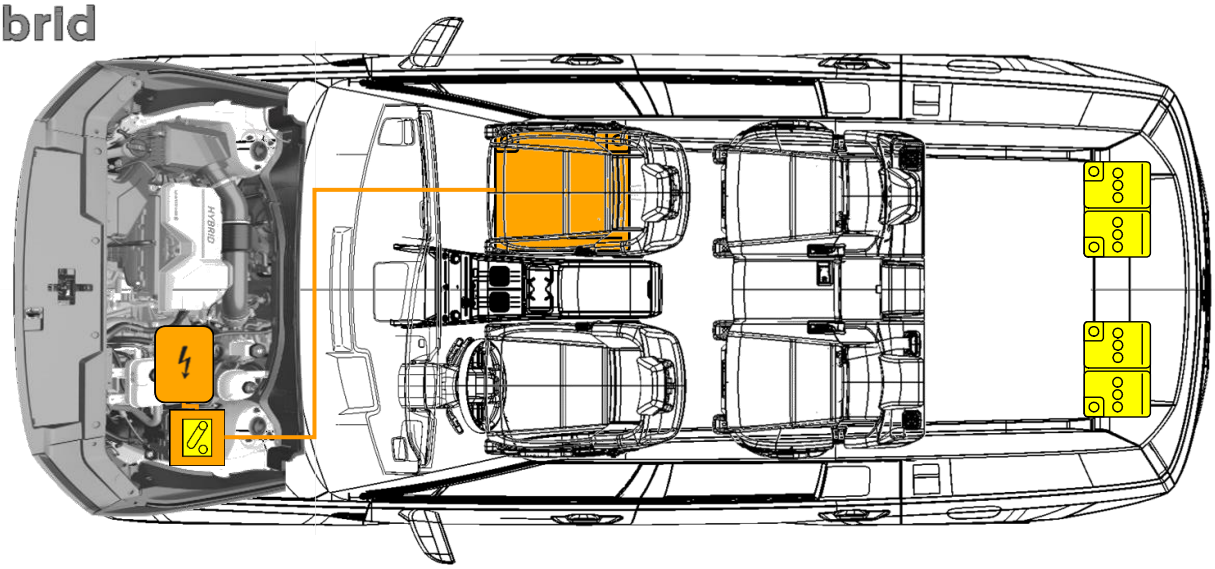
Lifting

- *When installing a block or jack, avoid high voltage cable, battery and fuel system.*
- *If high voltage components or cables are exposed, do not place any support on them.*

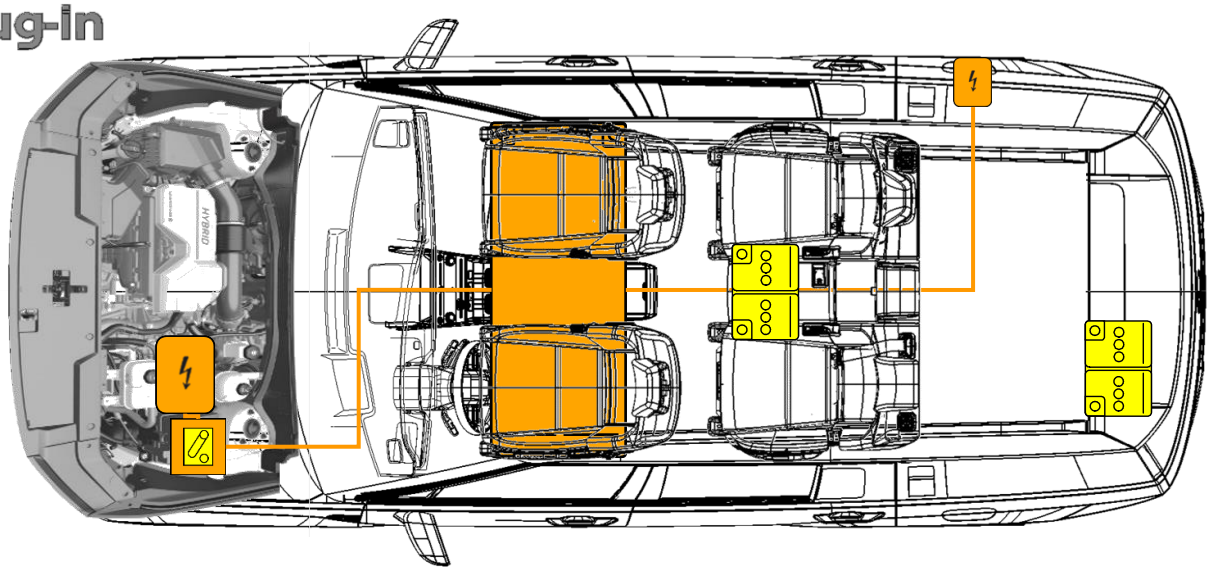
3. Disable Direct Hazards / Safety Regulations

The final step in the initial response process, conducted after immobilizing the vehicle, is to disable the vehicle, its SRS components and the high voltage electrical system. To prevent current flow through the system, use one of the following procedures to disable the vehicle.

hybrid



plug-in

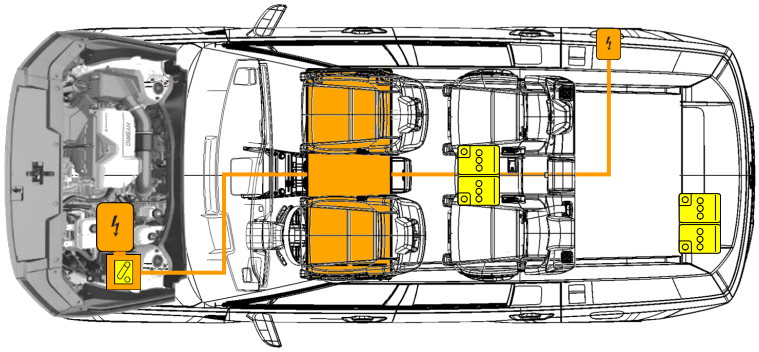


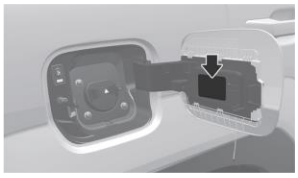
High Voltage Cables

- *Never cut or disconnect the high voltage orange cabling and connectors without first disabling the HV system. (refer to chapter 3).*
- *Exposed cables or wires may be visible inside or outside the vehicle. Never touch the metal chassis wires, cables, connectors, or any electric components before disabling the system.*

3. Disable Direct Hazards / Safety Regulations

plug-in

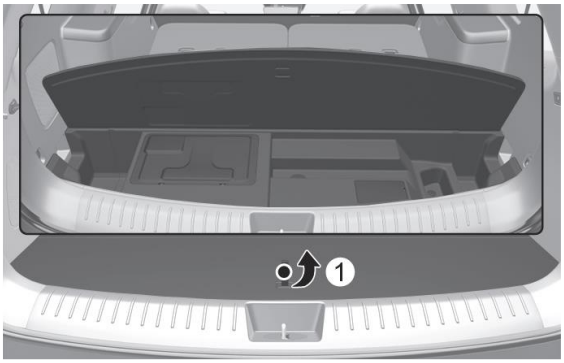
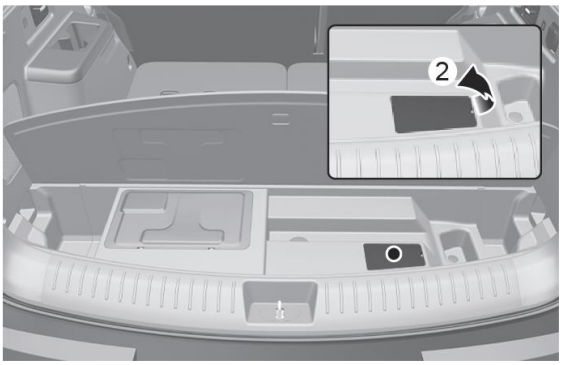




No	Name
1	Warning for high voltage
2	Warning/ Caution symbol
3	Rated voltage and maximum charging current

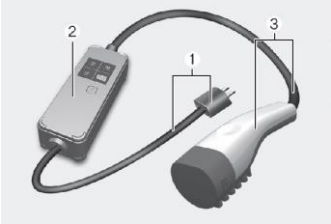
Disconnecting the charging connector in an emergency

If the charging connector does not disconnect from the charging inlet due to battery being fully discharged or a wiring failure, open the tailgate and pull the emergency cable following the instructions:

Description	Picture
Lift the cargo tray cover by the handle (1)	
Open the emergency cable cover located in the cargo tray with a small blade tool (e.g. screwdriver or similar) (2) and pull the emergency cable	

Charging cable

- *AC charging cable (left)*
- *Portable charger (ICCB) In-Cable Control Box*

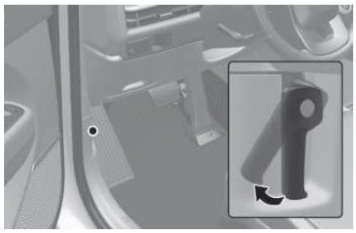


3. Disable Direct Hazards / Safety Regulations

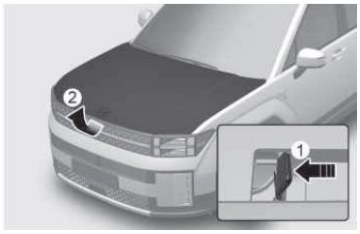
Disabling of high voltage electrical system

Via Service Interlock

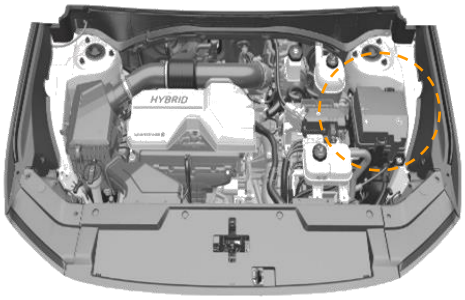
To disable the HV-system use the service interlock device located in the fuse box in the engine compartment. The “Service Interlock” is not completely removable take care not to reconnect the HV-System. For longer work on the vehicle the 12V – Battery System in the luggage should be additional disconnect by following the procedure on the next page.



Pull the hood release lever to unlatch the hood.



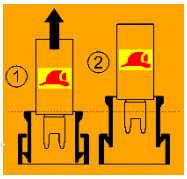
Go to the front of the vehicle, raise the hood slightly, push up the secondary hood release lever (1) inside of the hood center and lift the hood (2).



From the point of view the fusebox is located on the right side

Open the cover of the box and find the “Service Interlock”

Pull up the “Service Interlock”



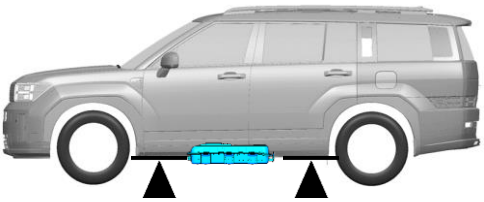
①HV connected
②HV disconnected

“Service Interlock” is not completely removable.

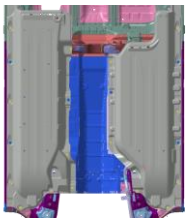
There is the capacitor inside the HPCU. Wait 5+ minutes for the capacitor to discharge after removing the service plug.

Via HV – Connector

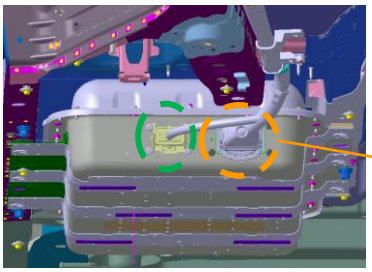
To disable the HV-System with the HV-Connector you need to lift up the car. To disconnect the system follow the procedure as describe below. After disconnection seal the battery HV connector with insulation material to prevent electrocution.



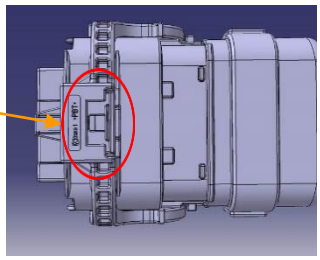
1. Lift the car to approach under floor where battery located



2. Remove the right side under cover



3. Disconnect the **high voltage HV** and **low voltage LV** connector.



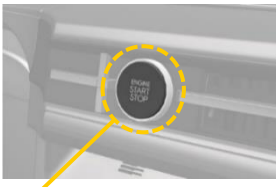
Use a tool, like flat-head screwdriver, unlocking CPA, then you can move connector lever and remove connector completely.

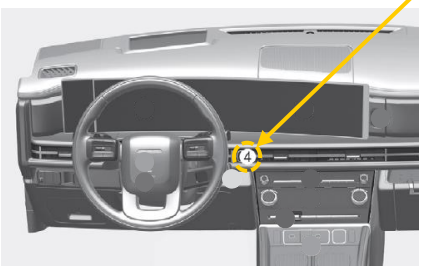
3. Disable Direct Hazards / Safety Regulations

Disabling the 12V battery system

Via „Engine Start/Stop“ Button

It is possible to disable the 12V battery system from SANTA FE by using the „Engine Start/ Stop“ button. The different modi with and without depressing the brake pedal are explained below.





Without depressing the brake pedal	
Pressing „Start/Stop“	**Vehicle condition**
One time	Electrical accessories are operational
Two times	The warning lights can be checked before the vehicle is started
Three times	Off

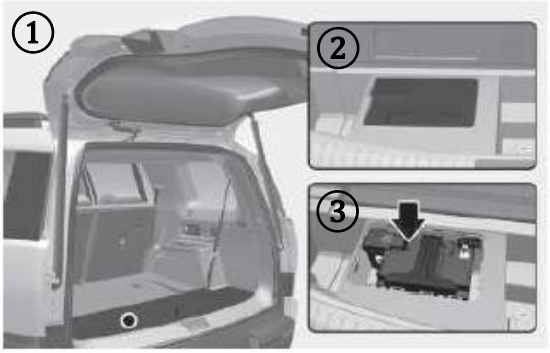
While depressing the brake pedal	
Pressing „Start/Stop“	**Vehicle condition**
One time	Ready

Via disconnect the terminals or connectors

To disable the 12V battery system it has to be sure that the vehicle engine is off. Is the “READY” light, on the instrument panel, illuminated, the vehicle is “ON”. In this case turn “OFF” the system by press the “P” button on the shifter and press the “Engine Start/Stop” button. If it is necessary, lower the windows, unlock the doors and open the tailgate as required, before disconnecting the 12V battery. Once the 12V battery is disconnected, power controls will not operate.

Before disconnecting the 12V battery, remove the smart key at least 2 meters away from the vehicle to prevent accidental restart.

To disconnect the terminals or connectors follow procedure is prefer:



1. Turn the ignition switch off
2. Open the luggage **(1)**
3. Remove the 12V battery service cover **(2)**
4. First disconnect the negative (-) terminal **(3)**
5. In second step disconnect the positive (+) terminal **(3)**

Electrocution Risk

- *Before engaging in any emergency response procedures, ensure the vehicle is disabled and wait 5 minutes to allow the capacitor in the high voltage system to discharge to avoid electrocution.*
- *Exposed cables or wires may be visible inside or outside the vehicle. Never touch the metal chassis wires, cables, connectors, or any electric components before disabling the system.*

3. Disable Direct Hazards / Safety Regulations

Via IG (Ignition) Fuse Removal

To disable the 12V battery system it has to be sure that the vehicle engine is off. Is the “READY” light, on the instrument panel, illuminated, the vehicle is “ON”. In this case turn “OFF” the system by press the “P” button on the shifter and press the “Engine Start/Stop” button.
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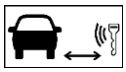
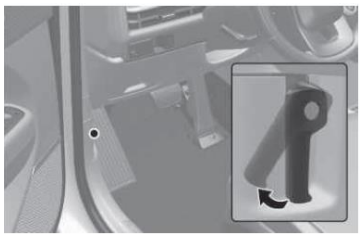
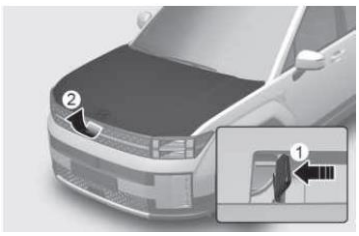


Before disconnecting the 12V battery, remove the smart key at least 2 meters away from the vehicle to prevent accidental restart.

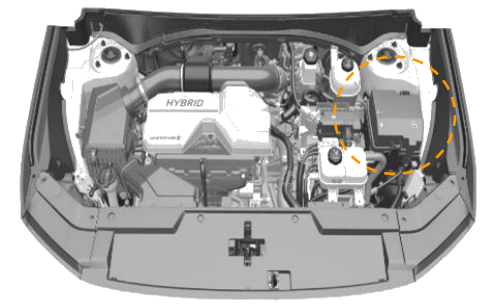
To remove the IG Fuse follow procedure is prefer:



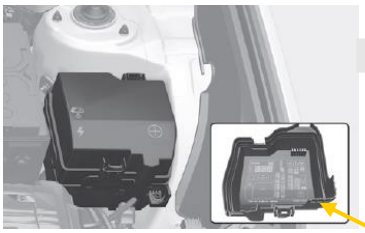
Pull the hood release lever to unlatch the hood.



Go to the front of the vehicle, raise the hood slightly, push up the secondary hood release lever (1) inside of the hood center and lift the hood (2).

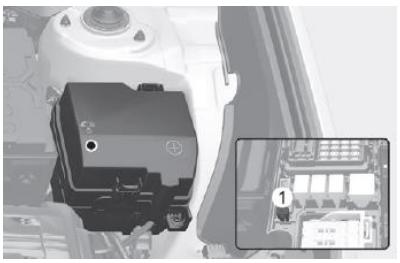


From the point of view the fusebox is located on the right side



Remove the engine room fuse box cover. In the cover you can find the label describing fuse names and ratings.

Refer to the label on the inside of the fuse cover to locate the fuse location of **“IG1”** and **“IG2”**



Pull both the **“IG1”** and **“IG2”** fuse straight out from the engine room fuse box.
Use the removal tool **(1)** provided in the engine compartment fuses panel cover.

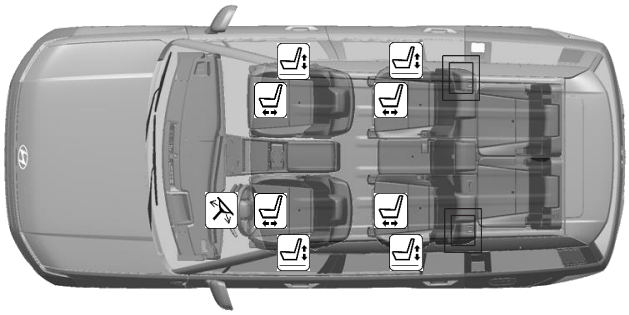
Safety Risk

If mentioned methods of disabling the vehicle’s system are unsuccessful, any emergency procedures involving the electric vehicle may cause the accidental deployment of undeployed airbags and electric shock from high-voltage components.

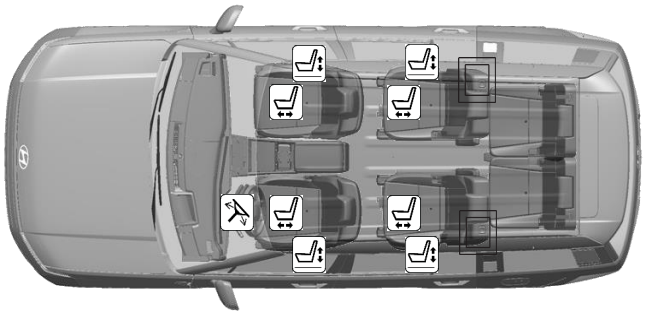
4. Access to the Occupants

Extraction Operations

The SANTA FE is a hybrid electric vehicle. Because of the high voltage components contained therein, first responders should pay special attention when they extract occupants in the car. Before performing any extraction operations, the first responders should "Identify, Immobilize and Disable" the vehicle as discussed in sections on emergency procedures. When the first responders cut the vehicle, they should always pay special attention to the airbag system, orange colored high voltage cables and other high voltage components so that the parts are not damaged and to prevent a risk of explosion or electrocution. The SANTA FE has 3 different seat variants (5- /6- /7-seater).



5/7 seater variant



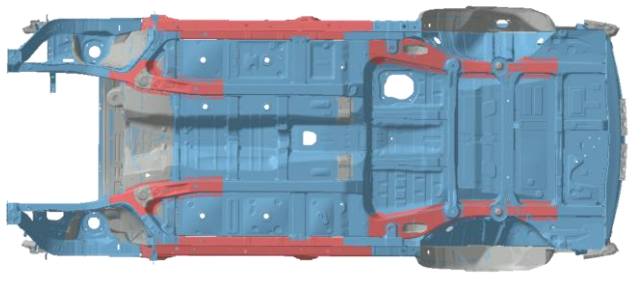
6 seater variant

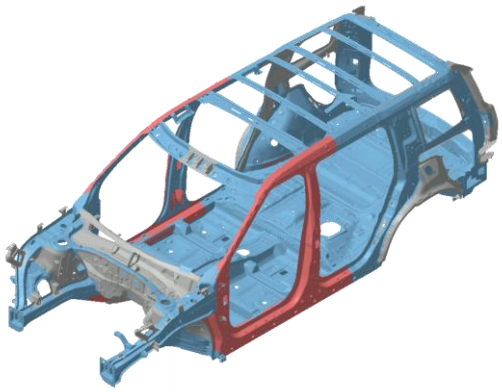
Extraction Tools and Procedure

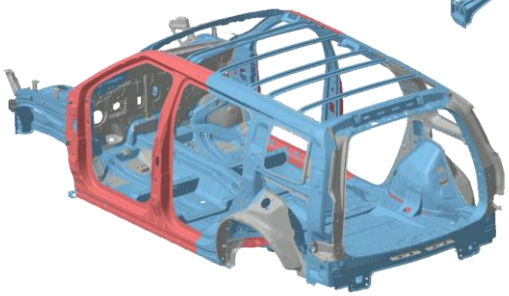
When responding to an incident involving a SANTA FE Hybrid, we recommend that the first responders follow their organization’s standard operating procedures for dealing with vehicle emergencies.

Location of Ultra-high Strength Steel

In these images, high strength steel is used in the areas colored in blue and ultra-high strength steel is used in the red colored areas. Depending on the tools used, ultra-high strength steel can be challenging or impossible to cut. If necessary, use a workaround technique.





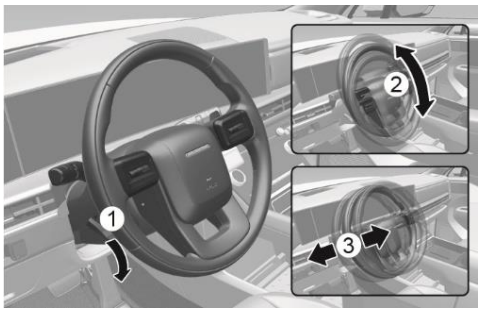


Color	Steel type
	Mild
	High-strength
	Ultra-high-strength

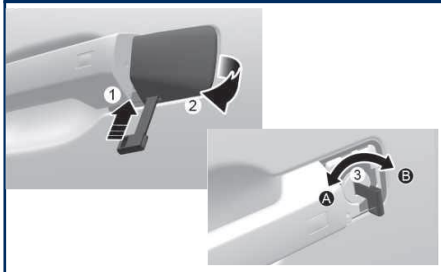
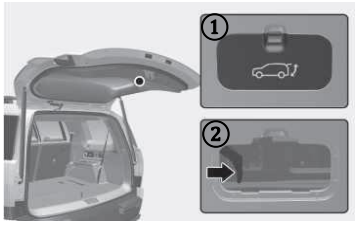
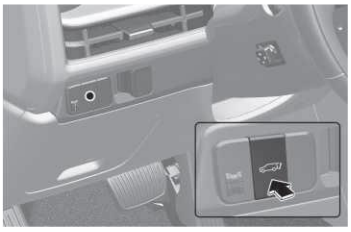
4. Access to the Occupants

Steering wheel adjustment

The Hyundai SANTA FE is equipped with manual or automatic steering wheel adjustment. For better access to the occupant after acident, the steering wheel can be moved as follow.

Manual adjustment	Automatic adjustment
	
Pull down the lock-release lever (1).	Push the switch (1) up and down to adjust the angle (2).
Adjust the steering wheel angle (2) and distance forward/back (3).	Push the switch forward or rearward to adjust the height (3).
Pull up the lock-release lever up to lock the steering wheel in place	

Door and tailgate unlocking

Mechanical unlock	Inside the vehicle	Central door lock
		
Pull the door handle and press the release button **(1)** located inside the cover with a mechanical key	If the inner **"Driver"** door handle is pulled, the door is unlocked and opened.	Pressing button **(2)** on the switch, all vehicle doors are unlocked
Pull out the cover **(2)** while continuing to press the release button to remove the cover and expose the key cylinder.	All other inner doors handles needs to pulled once to unlocked. A second pull will open the door	
	Tailgate	
Insert the mechanical key into the key cylinder and rotate **(3)** clockwise to unlock the vehicle. Once the doors are unlocked, they can be opened by pulling the door handle.		
	Remove the cover at the bottom of the tailgate **(1)**. Slide the latch in the direction of the arrow to unlock the tailgate **(2)**. Push the tailgate to open.	Press the power tailgate open/close button for 1 second.

4. Access to the Occupants

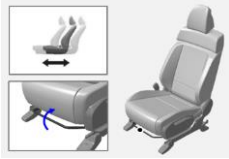
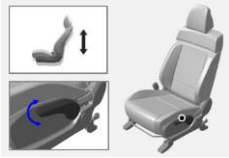
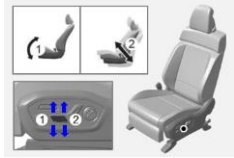
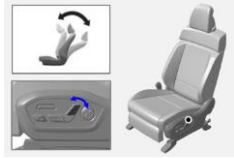
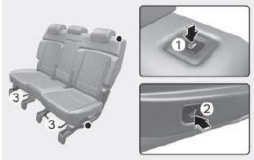
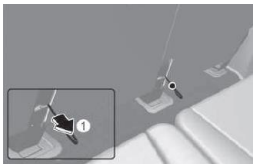
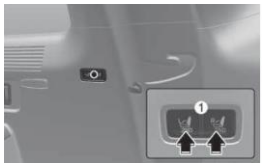
Windows and Glass

The SANTA FE is equipped with power windows. Each door has his own switch to control the door's window. The driver door has central power window lock button which can block and unblock all operation of the rear passenger windows. The power windows operate for about 3 minutes after the Engine Start/Stop button is in the ACC or OFF position. The SANTA FE can optional with sunroof window.

	Glasstype
1	Laminated
2	Tempered (OPT: Laminated)
3	Tempered (OPT: Laminated)
4	Tempered
5	Tempered

Seat adjustment

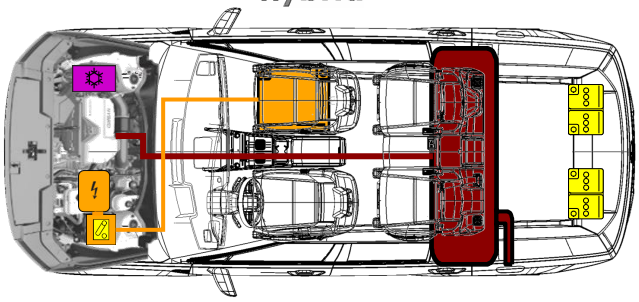
SANTA FE is equipped with manual or powered seats in the 1st and 2nd row. Main functions are following:

Item	Manual	Power
Forward and rearward	Pull up the slide adjustment lever and hold it. You can slide the seat forward And rearward. Release the lever to lock. 	Push the control switch forward or rearward. 
Seat cushion high	Push down the lever several times, to lower the seat cushion. Pull up the lever several times, to raise the seat cushion 	Push the front portion up to raise or down to lower the front part of the seat cushion. Push the rear portion up to raise or down to lower the height of the seat cushion 
Seatback angle	Lean forward slightly and lift up the seatback lever. Carefully lean back on the seat and adjust the seatback. Release the lever to lock. 	Push the control switch forward or rearward 
Walk-in switch for 3rd row	Press either the 3rd row seat walk-in switch **(1)** located at the top of the 2nd row seatback or the 3rd row seat walk-in switch **(2)** on the outer side of the 2nd row seat. Then the seatback will fold and the seat will move forward slightly. 	If the walk-in switch does not work, pull the strap **(1)** located on the lower left side of the seat. Then you can move the 2nd row seat forward 
Seatback remote folding 2nd and 3rd row	**2nd row** Press the seatback folding switch **(1)** located on the right side of the tailgate. 	**3rd row** Pull the seatback angle adjustment strap to completely fold the seatback forward. Make sure the seatback is securely locked in place. 

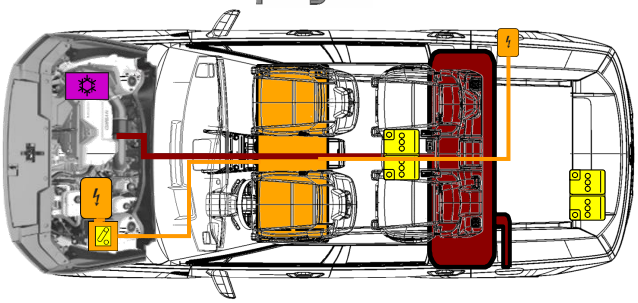
5. Stored Energy / Liquid / Gases / Solids

Both Hybrid versions of SANTA FE are equipped with electric and combust engine. Therefore additional to the HV-battery normal gasonline tank is installed in the rear of the SANTA FE.

hybrid



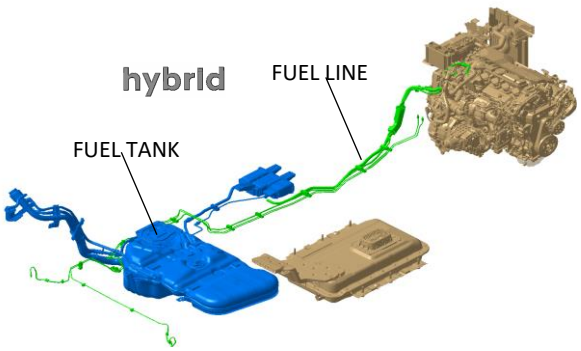
plug-in

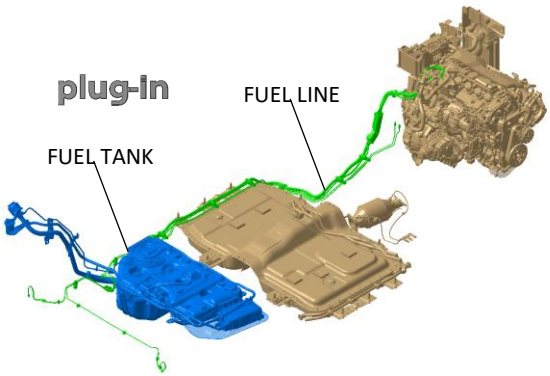


Type		Advisory pictogram	hybrid	plug-in
	Gasoline		max. 67L	max. 47L
	LI-ION		270V	360V
	LI-ION		12V	12V
	Lead-acid		12V	12V
	R1234yf		570g	570g

Combust Engine

SANTA FE HEV has a 1.6L 4-cylinder engine. The fuel type is gasoline that is stored in the fuel tank and delivered through the fuel line. When dealing with an emergency situation, be careful not to cut the fuel line and tank.





5. Stored Energy / Liquid / Gases / Solids

High Voltage System

HPCU

HPCU (Hybrid Power Control Unit) is a device that combines Inverter, LDC, and HCU in one package. Inverter converts the High Voltage DC power of the battery into AC power to control the speed of the motor. LDC (Low voltage DC-DC converter) converts the High Voltage DC power into a Low Voltage (12V) to supply power to the vehicle electronic system.
HCU (hybrid control unit) is a control tower that oversees the operation of a hybrid vehicle.

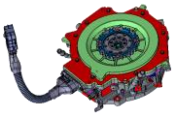
Capacitor in HPCU

There is the capacitor inside the HPCU. Wait 5+ minutes for the capacitor to discharge after removing the service plug.

HSG

The HSG is short for hybrid starter generator. It acts as a starter motor when a SANTA FE HEV starts and also acts as a alternator as well.

Motor

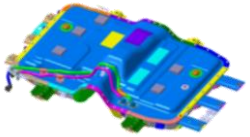


The electric motor of the HEV converts electrical energy into motive force with a Max. power of 43.2Hp (32kW) and Max. torque of 125lb-ft (170Nm).

High Voltage Battery

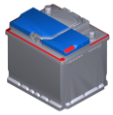
The HV lithium-ion battery supplies and stores electric energy from the traction motor, and is located under the SANTA FE HEV floor Body, outside of the vehicle.

High Voltage Battery



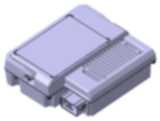
The HV lithium-ion battery supplies and stores electric energy from the traction motor, and is located under the SANTA FE PHEV center floor.

12V Auxiliary Battery1



The 12V auxiliary battery1 is located under the luggage, and powers all of the vehicle's standard electronics like radio, lights, door locks, power windows, etc. Also, it powers the HPCU (Hybrid Power Control Unit) which controls the high voltage current to main electronic systems like the motor and high voltage junction box.

12V Auxiliary Battery2



The 12V auxiliary battery2 is located under the luggage, and If you are doing OTA or the voltage of the 12V battery1 is low, supplementary power supply is provided.

Specification HV-System		hybrid	plug-in
Motor	Type	Permanent magnet synchronous motor	Permanent magnet synchronous motor
	Max. Output (kW)	47.7 kW	72.0 kW
	Max Torque (Nm)	264 Nm	304 Nm
HSG	Max. Output (kW)	13.0 kW	13.0 kW
	Max Torque (Nm)	43.2 Nm	43.2 Nm
High Voltage Battery	Type	Lithium-ion	Lithium-ion
	Rated Voltage (V)	270 V	360 V
	Energy (kWh)	1.49 kWh	13.8 kWh
	Quantity for Pack (Cell / Module)	8 Cells X 9 Modules	24 Cells X 4 Modules

6. In case of Fire

Firefighting Operations

Strict precautions must be taken while conducting firefighting operations due to following reasons:

- Lithium-ion batteries contain gel electrolyte that can vent, ignite, and produce sparks when subjected to temperatures above 149°C.
- Vehicle may burn rapidly with a flare-burning effect.
- Even after the high/low voltage battery fire appears to have been extinguished, renewed or delayed fire can occur.
    - Use a thermal imaging camera to ensure the high/low voltage battery is completely cooled before leaving the incident.
    - Always advise second responders that there is a risk of the battery re-igniting.
    - In a fire, submersion or a collision that has compromised the high/low voltage battery, always store it in an open area with no exposures within 15 meters.
- A burning battery could release hydrogen fluoride, carbon monoxide, and carbon dioxide gasses. Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear. Even if the high/low voltage battery pack is not directly involved in a vehicle fire, approach the vehicle very carefully.

Extinguishers

Small fires that do not involve the high/low voltage battery should be extinguished using an ABC fire extinguisher. (ex. Fire caused by wiring harnesses, electrical components, etc.)
Do not attempt to extinguish fires that involve the high/low voltage battery with small amounts of water as this can result in electrocution. Fires that involve the high/low voltage battery should be extinguished using large amounts of water (Max 10,000 liter) to cool the high/low voltage battery. Fire fighters should not hesitate to pour larger amounts of water on the vehicle in such scenarios. Make sure the battery is fully cooled to avoid fire re-ignition.

How to Deal with the Situation

Fire	Extinguish the fire with a large amount of water. Don't use seawater or salt water. Use of such water can generate toxic vapors or cause re-ignition.	
Damaged battery or Fluid leak*	Follow the procedures from chapter 3. to disable the HV-Battery. Neutralize the battery by applying a large volume of water. (Process will not discharge the battery.)	**Battery discharging**

*To be used if electrolyte solution leakage or damage to the high/low voltage battery casing is observed.

Electrolyte Irritation

The high/low *voltage battery contains electrolyte solution. To avoid exposure to electrolyte solution and serious personal injury, always wear appropriate solvent resistant PPE (Personal Protective Equipment) and SCBA (Self-Contained Breathing Apparatus).*

- *Electrolyte solution is an eye irritant. In the event of contact with eyes, rinse with plenty of water for 15 minutes.*
- *Electrolyte solution is a skin irritant. Therefore, in the event of contact with skin, wash off with soap.*
- *Electrolyte liquid or fumes coming into contact with water will create vapors in the air from oxidization. These vapors may irritate skin and eyes. In the event of contact with vapors, rinse with plenty of water and consult a doctor immediately.*
- *Electrolyte fumes (when inhaled) can cause respiratory irritation and acute intoxication. Inhale fresh air and wash mouth with water. Consult a doctor immediately.*

6. In case of Fire

Vehicle Fire

- Use a large volume of water (max. 10,000 liter). Water must cool down the battery.
- If water is applied directly onto the high/low voltage battery module inside the casing, it will better cool the battery. (But, never attempt to penetrate the HV battery or its casing to apply water.)
- Putting water into the high/low voltage battery can be difficult due to the battery case.
- Put water through the hole that might be made due to the accident or fire.

High/Low Voltage Battery Damage and Fluid Leaks

If electrolyte solution leakage or any damage to the Lithium ion battery casing is observed, the first responders should attempt to neutralize the battery by applying a large volume of water to the battery pack while wearing appropriate Personal Protective Equipment (PPE). The neutralization process helps stabilize the thermal condition of the battery pack but does not discharge the battery.

- Do not put any smoke, spark, flame around the vehicle.
- Do not touch or step on the spilled electrolyte.
- If electrolyte leak occurs, wear appropriate solvent resistant PPE and use soil, sand, or a dry cloth to clean up the spilled electrolyte.

Be sure to adequately ventilate the area.

High/Low Voltage Battery Re-ignition by Stranded Energy

Damaged cells in the high/low voltage battery can experience thermal runaway* and re-ignition.

Use Infrared Camera (IR-Cam) to observe thermal runaway. Focus the battery with the IR-Cam the whole time. Increase of the temperature could indicate a thermal runaway.

To prevent re-ignition, the first responder and second responder need to be aware of the risk of stranded energy* which remains in the damaged cells and can lead to re-ignition. Therefore disconnect the 12V battery (-) terminal to depower the battery management system (BMS). After that shut off the HV-System explained in chapter 3 and discharge the HV-Battery refer in chapter 8.

*Thermal Runaway

The originating cause of thermal runaway is generally short-circuiting inside a battery cell and a resulting increase in the cell's internal temperature.
Battery produces heat with thermal runaway and it can spread from one battery cell to many cells, in a domino effect.

*Stranded energy

Energy remains inside any undamaged battery cells after the accident. Stranded energy can cause a high/low voltage battery to reignite multiple times after a fire has been extinguished.

7. In Case of Submersion

Submerged or Partially Submerged Vehicles

Some emergency responses can involve a submerged vehicle. The SANTA FE does not have high voltage components on the vehicle's body or framework. It is safe to touch the vehicle's body or framework if there is no severe damage to the vehicle, whether it is in water or on land.
In the event that the vehicle is submerged or partially submerged, remove the vehicle from the water before attempting to disable the vehicle. Drain the water from the vehicle. Use the methods described in chapter 3. to disable the vehicle. Then, discharge the battery by referring to chapter 8.

Safety Risk

If severe damage causes high/low voltage components to become exposed, responders should take appropriate precautions and wear appropriate insulated personal protective equipment.
Do not attempt to remove a high voltage cable while the vehicle is in water.

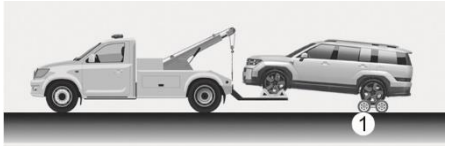
8. Towing / Transportation / Storage

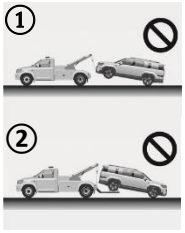
Towing service

If towing the SANTA FE is necessary, it is recommend to having it done by an authorized HYUNDAI dealer or a commercial tow-truck service. To prevent damage to the vehicle, proper lifting and towing procedures are necessary. 4WD vehicles must be towed with a wheel lift and dollies (1) or flatbed with all the wheels off the ground. The use of wheel dollies (1) or flatbed is recommended. If any of the loaded wheels or suspension components are damaged or the vehicle is towed with the front wheels on the ground, use a towing dolly (1) under the front wheels

When the vehicle is being towed, take care that the engine is OFF or in ACC position, to prevent accidental deployment of undeployed airbags.

In the event of an accident, the high voltage system must be disabled. (refer to chapter 3.)





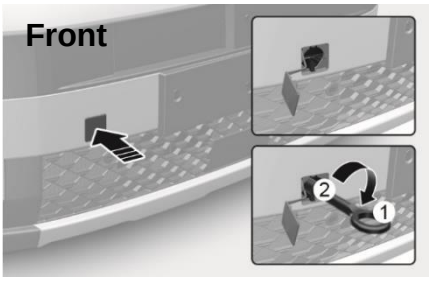
Do NOT

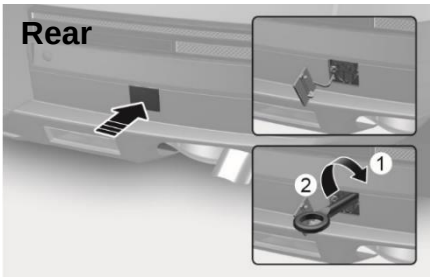
- *Do not lift using the trailer hitch or body and chassis parts.*
- *Do not tow with sling-type equipment. Use wheel lift or flatbed equipment.* ***(1)***
- *Do not tow the vehicle with the front wheels on the ground (forward or backward), as this may cause fire or damage to the motor.* ***(2)***

Removable towing hook

If emergency towing is necessary, it is recommend that you contact an authorized HYUNDAI dealer or a commercial tow-truck service. If tow-truck service is not available in an emergency, your vehicle can be temporarily towed using a cable or chain secured to the removable towing hook at the front (or rear) of the vehicle. Perform emergency towing using cables or chains on hard-surfaced roads for a short distance and at low speeds. The wheels, axles, powertrain, steering, and brakes must all be in good working condition. In that case use the removable towing hook from the vehicle by following the installation instructions.

- Open the tailgate and remove the towing hook from the tool case.
- Remove the hole cover pressing the lower part of the cover on the bumper.
- Install the towing hook by turning it clockwise into the hole until it is fully secured.
- Remove the towing hook and install the cover after use.





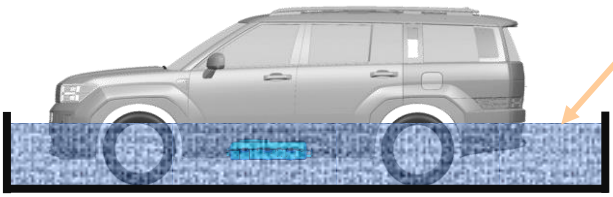
For emergency towing place the Engine Start/ Stop button into the ACC position to unlock the steering wheel and shift the gear in N (neutral) position.

8. Towing / Transportation / Storage

Storage of damaged vehicle with the damaged battery

- Drain fluids and water, then disconnect the negative (-) terminal of the 12 V battery before storing a damaged vehicle.
- In addition, remove the water inside the battery or vehicle, then remove the service plug from the high voltage battery before storing a damaged vehicle.
- Place the vehicle in an open space away from any structure, vehicle, or building.
- Then, keep on eye on the vehicle until the discharging procedures are completed.
- If the battery can be removed from the vehicle by moving the vehicle on the lift, remove and discharge the battery.
- If the battery can't be removed, set the water pool and pouring water until the entire battery is submerged.

Battery discharging in water pool



Water pool condition

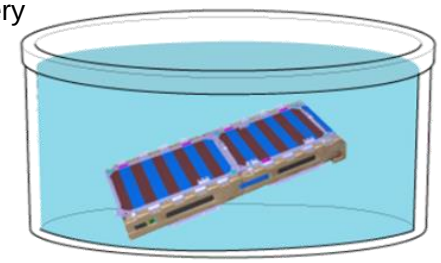
- Tap water or pond water that does not contain salt
- Maintain this water level for at least 90 hours.
- Then, put salt into the water pool to make 3.5 % salt water.
- Wait for additional 48 hours in salt water.
- Drain the water and dry it.

Battery discharging

- *DO NOT USE SALT WATER for the first step.*
- *A large volume of flammable hydrogen gas can be generated in salt water due to electrolysis.*
- *After submerging the vehicle in pure water for at least 90 hours, put salt in the water pool.*

Damaged Battery Storage

- To store the damaged battery safely, the battery must be discharged.
- If the battery can be removed from the vehicle, discharge the battery to prevent re-ignition.
- Prepare water that does not contain salt such as tap water or pond water.
- Leave the battery in water for at least 90 hours.
- Then, put salt in water to make 3.5% salt water.
- Wait for additional 48 hours in salt water.
- Take out the battery from the container and dry it.



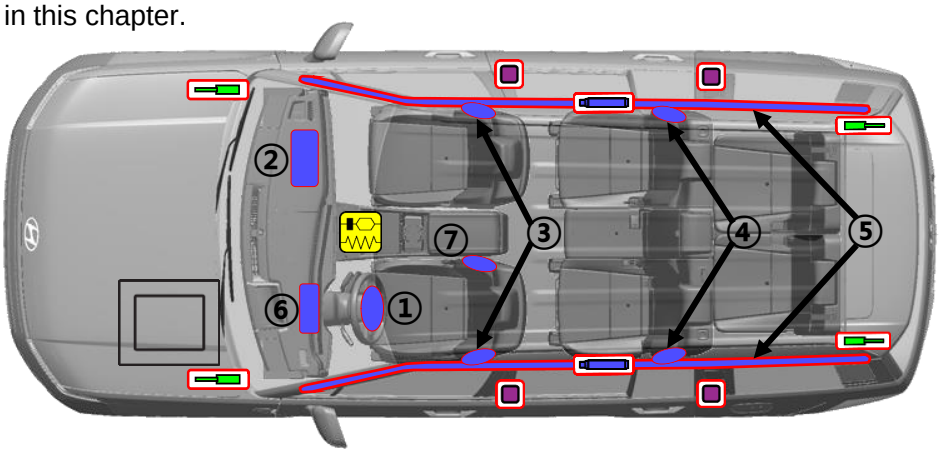
Safety Risk

- *Extinguish all smoke, spark, flame around the vehicle.*
- *Electrolyte solution is a skin irritant.*
- *Do not touch or step on the spilled electrolyte.*
- *If electrolyte leak occurs, wear appropriate solvent resistant PPE and use soil, sand, or a dry cloth to clean up the spilled electrolyte. Be sure to adequately ventilate the area.*

9. Important Additional Information

The SANTA FE comes standard with airbags, seatbelt pre-tensioners and gas struts, see picture below. Some of teh futures are explain in this chapter.

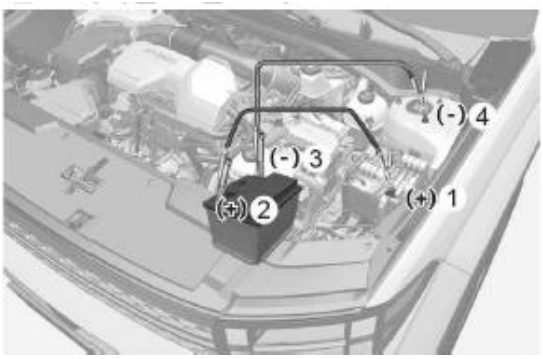
Safety Equippment	
	Airbags
	Gas Inflator
	Pre-tensioner
	Gas strut
	SRS control unit



Emergency Starting

Jump Starting

Do not attempt to jump start the high voltage battery, as it cannot be jump started. In case of full discharge of the high voltage battery, the vehicle must be towed as mentioned on the previous page.
In case the 12V auxiliary battery is discharged, connect a starting device to the jump terminal in the engine room as you would any 12V battery (see image). Refer to the “Emergency Starting” section of the Owner’s Manual for additional information. Connect jumper cables in the order shown in the image and disconnect in reverse order.



Jump Starting Procedure

1. Make sure the booster battery is 12-Volt and that its negative terminal is grounded.
2. If the booster battery is in another vehicle, do not allow the vehicles to come in contact.
3. Turn off all unnecessary electrical loads.
4. Connect the jumper cables in the exact sequence shown in the illustration.

First connect one end of a jumper cable to the positive terminal of the discharged battery (1), then connect the other end to the positive terminal on the booster battery (2). Proceed to connect one end of the other jumper cable to the negative terminal of the booster battery (3), then the other end to a solid, stationary, metallic point away from the fuse box (4).

Risk

Do not attempt to jump start the SANTA FE HEV high voltage battery.
Failure to follow these instructions will lead to serious bodily injury or death by electrical shock.

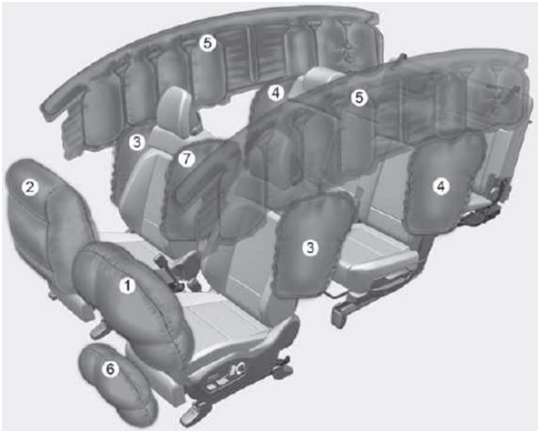
9. Important Additional Information

Airbag system (SRS: Supplemental Restraint System)

Airbag

10 airbags are installed in the SANTA FE, located in the areas shown in the image below. Before performing any emergency procedure, make sure the vehicle ignition switch is turned off and disconnect the negative connector from the 12V auxiliary battery (located in the left side motor compartment) to prevent accidental deployment of undeployed airbags.

	Type
1	Driver's front air bag
2	Passenger's front air bag
3	Side air bag 1st row (left/ right)
4	Side air bag 2nd row (left/ right)
5	Curtain air bag (left/ right)
6	Driver's knee airbag
7	Front center side air bag only driver seat



❊ The actual air bags and seats in the vehicle may differ from the illustration.

Seat Belt Pre-tensioner

In the SANTA FE HEV, the driver's, front passenger's and rear(except center seating position) seat belts are equipped with pre-tensioners. When the seat belt pre-tensioners are activated in a collision, a loud noise may be heard and fine dust, which may appear to be smoke, may be visible in the passenger compartment. These are normal operating conditions and are not hazardous. The seat belt pre-tensioner assembly mechanisms may become hot during activation, and may need several minutes to cool down after they have been activated.

Front

Rear

Undeployed Airbags

- *Do not cut the red colored part shown in the image above.*
- *Make sure the vehicle ignition switch is turned off, disconnect the negative cable from the 12V auxiliary battery (located in the left side of motor room) and wait 3 minutes or longer to allow the system to deactivate.*

10. Explanation of pictograms used

Tabel of used pictograms in this document.

	Gasoline vehicle		Fuel tank content gasoline/ ethanol		Bonnet
	General warning sign		Air-conditioning component		Boot
	Corrosives		Hazardous to the human health		Flammable
	Explosives		Acute toxicity		Environmental hazard
	Infrared Camera		Use water to extinguish the fire		Warning, Electricity
	Steering wheel, tilt control		Seat adjustment longitudinal		Seat height adjustment
	Battery pack, high-voltage		Battery pack, low-voltage		Use ABC powder to extinguish the fire
	High-voltage component		SRS control unit		LV-device disconnects high voltage
	Remove smart key		Zone requiring special attention		
	Hybrid Electric Vehicle on fuel of liquid group 2				