SF90 STRADALE



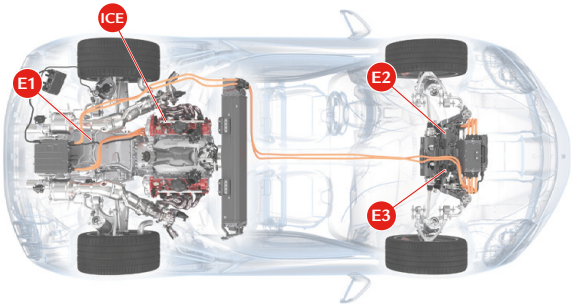
EMERGENCY RESPONSE GUIDE

Introduction

The SF90 STRADALE is a hybrid vehicle: power is delivered to the wheels by an internal combustion engine (**ICE**) and by three electric motors (**E1**, **E2**, **E3**), which use energy stored in a high voltage battery located in the chassis behind the seats.

Specifically, the SF90 STRADALE features a PHEV (Plug-in Hybrid Electric Vehicle) hybrid system: the internal combustion engine is supplemented by three electric motors - with two independent motors on the front axle (RAC-E system) and a motor at the rear of the vehicle (MGUK) between the internal combustion engine and the gearbox.

In certain driving conditions, the electric motors also act as generators, capturing the kinetic energy that would normally be lost as heat energy and transforming it into electricity to recharge the high voltage battery.



This guide provides the information necessary to work as safely as possible in the event of an emergency involving this vehicle. The emergency procedures for the SF90 STRADALE are similar to those for conventional vehicles, with the addition of a number of specific provisions regarding components powered by high voltage electricity.

This guide also describes the procedure to deactivate the high voltage system in the event of an emergency.

Warning

Failure to observe the procedures indicated during emergency rescue procedures, may result in severe or fatal burns or electric shock. Please read this manual thoroughly in order to fully understand the characteristics of this vehicle and be able to act properly in the event of this vehicle being involved in an accident.

Carefully observing the procedures indicated in this manual will contribute to the success of a rescue operation.

Warning

The SF90 STRADALE is equipped with numerous safety systems designed to help protect occupants from injury. These systems and features make it possible to access the vehicle safely in certain conditions.

However, when approaching a hybrid vehicle that is damaged or has been involved in an accident or fire, or in the event or rescue or recovery involving a hybrid vehicle, always assume that the high voltage system of the vehicle is live.

How to identify the "SF90 STRADALE"

The distinctive aerodynamic design of the SF90 STRADALE makes it easily identifiable. However, in certain cases, collision damage may make the vehicle difficult to identify. In these situations, emergency response personnel must visually inspect the vehicle to ascertain whether it is equipped with high voltage components.

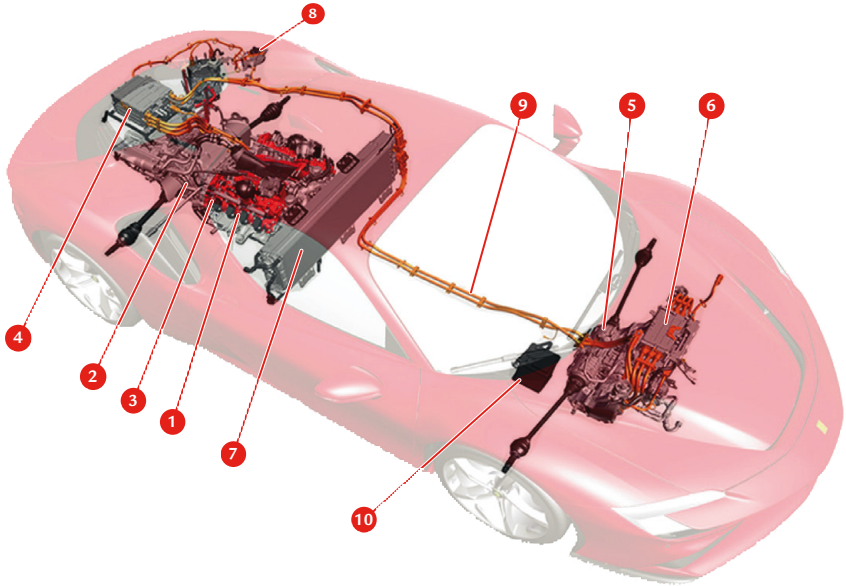
The wording "HYBRID VEHICLE" under the chassis number on the left hand side of the windshield indicates that the vehicle is equipped with a high voltage hybrid system.



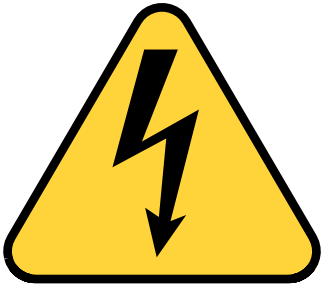


Hybrid system components

1. Internal combustion engine (ICE)
2. Gearbox with electronic differential (E-Diff)
3. Rear electric motor (MGUK)
4. Rear power electronics (inverter)
5. Electric front axle (RAC-E)
6. Front power electronics (inverter)
7. High voltage battery (HVB)
8. Socket for charging high voltage battery
9. High voltage connector cables
10. 12V battery



Hybrid system precautions



The symbol shown above identifies the vehicle high voltage electrical parts that may put your safety at risk.

Important note

The high voltage system is energized when the instrument panel is activated (KEY-ON).

Important note

The high voltage electrical system is not energized when:

- the instrument panel is deactivated (KEY-OFF)
- the inertia switch has been activated

Warning

In addition to a conventional 12V electrical system, the vehicle also has a 400 volt high voltage system.

High voltage is extremely dangerous and may cause serious burns and electric shocks which can result in serious or fatal injury.

Warning

Each component in the high voltage system is identified by a label indicating a potential risk of electric shock. Cables in the high voltage system can be identified by an orange covering.

Warning

Risk of serious burns or electric shock can result in death or severe injuries.

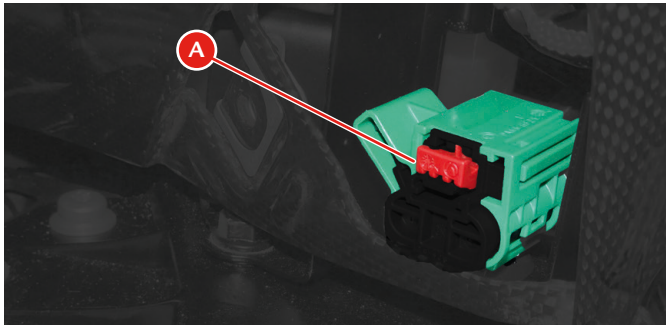
The high voltage electrical system and high voltage battery are dangerous and may cause burns, other serious injuries or death. Never attempt to remove or tamper with the high voltage cables (with orange covering), the high voltage battery, connectors or any other component in the high voltage electrical system, especially if it appears to be damaged.

Warning

The HV Service Connector **A** is located behind the cover **C** on the right hand side of the engine compartment. This HV Service Connector is intended for use by the Authorized Ferrari Dealer to deactivate the high voltage system.

Do not open cover **C** under any circumstances.

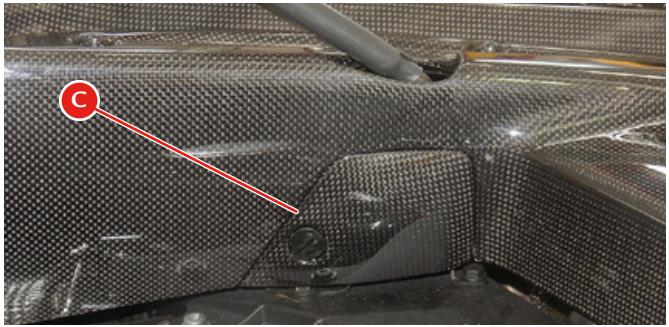
The HV Service Connector **A** may only be used by qualified Authorized Ferrari Dealer technicians, who have the necessary experience, documentation and equipment to work in complete safety.



Warning

Never touch or tamper with the HV Service Connector located on the right side of the engine compartment.

The HV Service Connector **A** may only be used by qualified Authorized Ferrari Dealer technicians, who have the necessary experience, documentation and equipment to work in complete safety.



High voltage caution labels

A number of different labels (two examples are given below) are installed on the vehicle to identify parts and systems which may put your safety at risk.

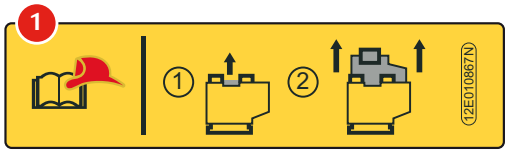
These labels are installed onto each component of the high voltage system.





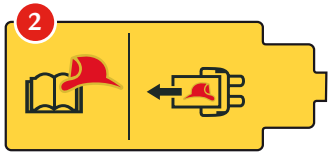
Labels relative to procedures for deactivating high voltage system

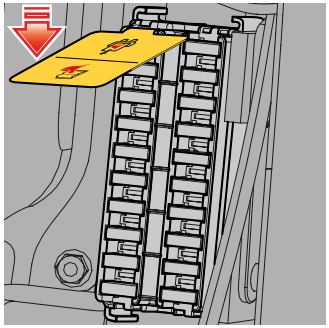
The label (1) located in the engine compartment illustrates the procedure necessary to deactivate the high voltage system in an emergency using the HV Service Connector.



The label (2) on the high voltage system fuse in the fuse box located under the driver side A-pillar illustrates the alternative emergency procedure, in which the high voltage system is deactivated by disconnecting the fuse.

For further information, see page 12.





Emergency response guide

Warning

NEVER presume that the vehicle is off simply because it is quiet.

Warning

Failure to deactivate the high voltage system before beginning rescue or recovery procedures may result in severe or fatal burns or electric shock.

To avoid the risk of severe injury, NEVER touch cables, connectors or components of the high voltage system.

Warning

Always wear appropriate personal protection devices before touching any cable, connector or component of the high voltage system.

How to approach a damaged hybrid vehicle

The following are a number of precautions necessary in any emergency involving a hybrid vehicle equipped with a high voltage system:

- Remove all jewelry (watches, necklaces, ear rings, etc.). Metal objects conduct electricity.

- Wear appropriate personal protection equipment (insulating gloves, insulating hard hat/helmet, insulating calf-length boots, protective waterproof overcoat).

- Have the following equipment at hand: powder extinguisher appropriate for extinguishing class A, B and C fires and a non-conductive object approximately 5 ft. (1.5 m) in length for moving away persons who have accidentally come into contact with the high voltage system of the vehicle.

Stabilizing the vehicle

If possible, stabilize the vehicle by applying the electric parking brake before deactivating the 12V electrical system: press the brake pedal firmly and pull the EPB lever on the dashboard to the left of the steering wheel.



Vehicle submerged in water

Warning

Do not touch any cable, connector or component of the high voltage system if the vehicle is completely or partially submerged in water.

Usually, contact with the bodywork of a hybrid vehicle submerged in water poses no risk of high voltage electric shock, and it is safe to perform normal extrication procedures and move the vehicle, proceeding as follows:

- remove the vehicle from the water;
- if possible, allow the water to drain from the vehicle;
- follow the procedures for stabilizing the vehicle and deactivating the high voltage system.

In the event of fire

Warning

NEVER attempt to extinguish a fire with small quantities of water.

If small quantities of water are used, toxic fumes may be released as a result of a chemical reaction between the water itself and the electrolyte of the high voltage lithium ion battery.

Warning

In the case of a minor fire, a powder extinguisher appropriate for class A, B and C fires caused by electric wiring and components or oil may be used.

Procedure for deactivating the high voltage system

Warning ⚠

The high voltage system does not discharge immediately after deactivation. Wait at least 30 seconds before working on the vehicle. Do not touch or cut any cable, connector or component of the high voltage system: (risk of severe or fatal injury).

Deactivate the high voltage system as follows:

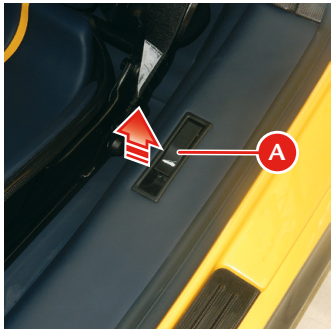
- Open the driver side door.
- Turn off the engine and deactivate the vehicle system (KEY-OFF).

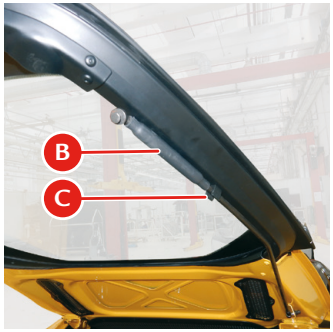
Warning ⚠

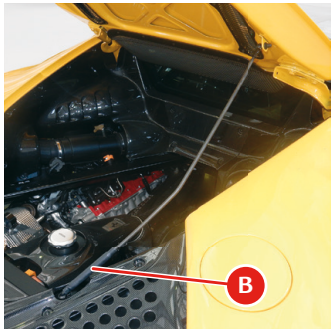
The vehicle may only be considered to be in KEY-OFF state if the engine is off and the message eD "READY" does NOT appear on the instrument panel.

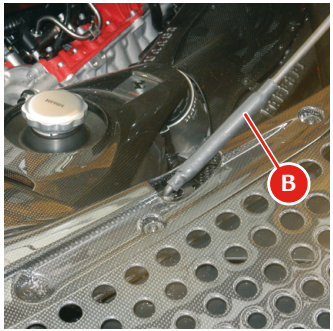


- Open the engine comparment lid by pulling the lever **A**, on the driver side door sill.
- Detach the end of the lid prop **B** from the clip **C** on the right hand side of the lid.
- Fold the lid prop down and engage the end in the approriate seat on the chassis, indicated in the picture.





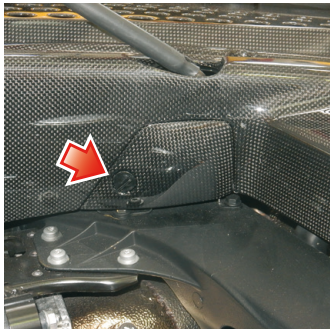


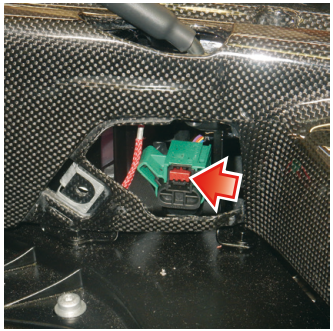


- Open the cosmetic shield cover on the right hand side of the engine compartment by turning the indicated fastener 1/4 turn counterclockwise.

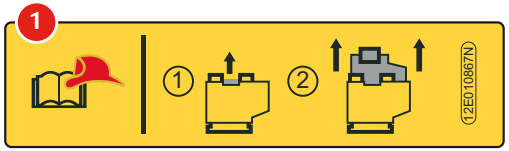
Warning

The procedure for deactivating the high voltage system using the HV Service Connector may only be performed by qualified Authorized Ferrari Dealer technicians, who have the necessary experience, documentation and equipment to work in complete safety.





- Pull the disconnector tab of the HV Service Connector (shown in the picture) outward as indicated by the label (**1**) installed onto the cosmetic shield.

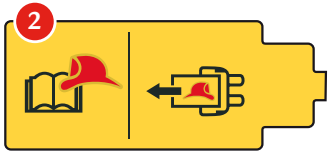


If the HV Service Connector is not accessible, proceed as follows:

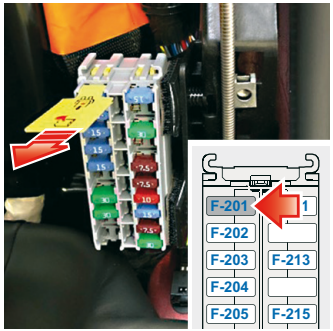
Warning

The procedure to remove the high voltage system fuse may only be performed by qualified Authorized Ferrari Dealer technicians, who have the necessary experience, documentation and equipment to work in complete safety.
Only use this procedure if the HV Service Connector in the engine compartment cannot be reached.

- Remove the protective cover on the left hand rear flank panel, indicated in the picture.
- Remove the fuse with the tab (2), indicated in the picture.







Guide for extrication

Warning

Do not cut parts of the high voltage hybrid system: (risk of severe or fatal injury).

Warning

Do not cut the hybrid system high voltage battery: (risk of severe or fatal injury).

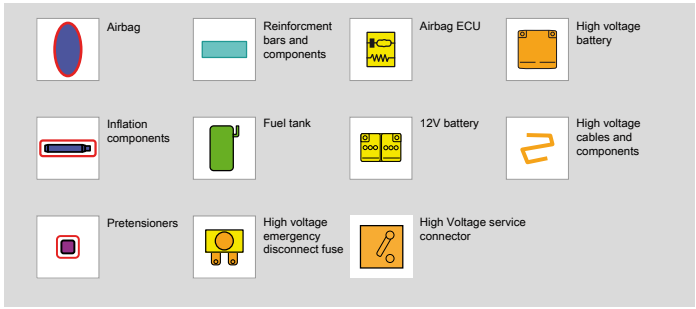
Warning

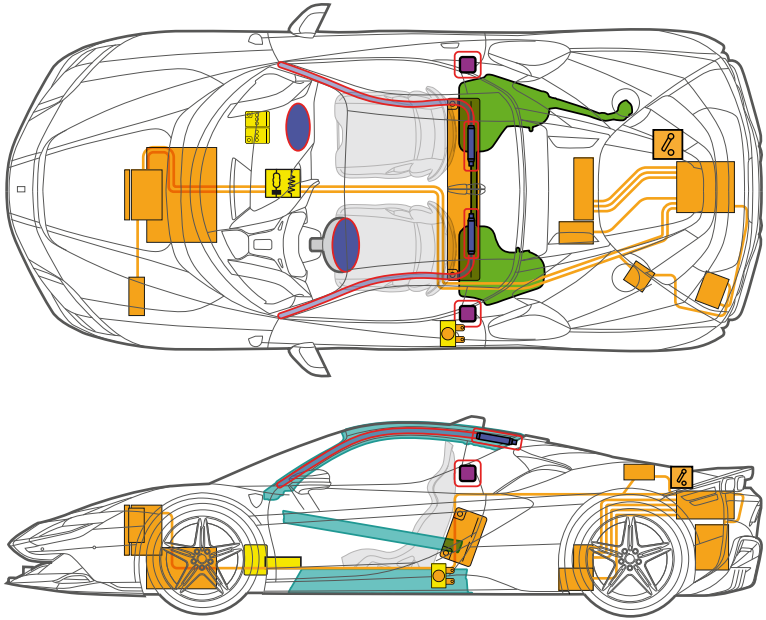
Should it be necessary to remove components of the vehicle, DO NOT touch any components of the high voltage system or any high voltage cables (risk of severe or fatal injury).

Warning

After waiting at least 30 seconds after deactivating the high voltage system, emergency response personnel may cut any part of the vehicle with the exception of parts in the vicinity of cables, connectors and other components of the high voltage system and of the high voltage battery.

Guide for extrication layout





Lifting the vehicle

Warning

Due to the specific configuration of the vehicle undertray, the lift points are not easily accessible: if it is necessary to lift the vehicle, we recommend contacting your Authorized Ferrari Dealer, which has the specific equipment necessary to perform the necessary work.

If it is necessary to lift the vehicle after an accident or in order to carry out other emergency activities, make sure that the roadside recovery personnel understand the following rules:

- Never lift the vehicle by applying force under the base of the high voltage battery. Risk of severe serious injury or death.
- Use only the lift points identified below to lift the vehicle.

Failure to follow this instruction may result in severe injury.

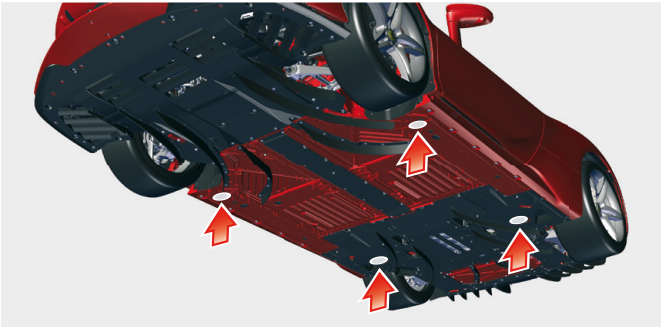
Warning

When lifting the vehicle, pay particular attention to avoid damaging the components in the proximity of the lift points.

Warning

Do not tow this vehicle behind another vehicle. Towing in this manner can cause serious damage to the vehicle and the high voltage hybrid system. Use only a flatbed truck or trailer.

Only lift the vehicle using the points identified in the picture.



Transporting the vehicle

Warning

Do not tow this vehicle behind another vehicle. Towing in this manner can cause serious damage to the vehicle and the high voltage hybrid system. Use only a flatbed truck or trailer.

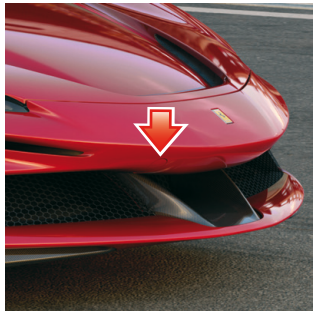
Warning

The emergency tow hook included with the vehicle may only be used in case of emergency to load the vehicle onto a flatbed truck or trailer.

To load and transport the vehicle:

- take the tow hook out of the tool bag;
- tighten the threaded end of the tow hook fully into the seat on the right hand side of the front bumper, which is accessed by removing the protective outer cap indicated;





- disengage the parking brake (EPB) using the control on the dashboard while pressing the brake pedal;
- deactivate the system (KEY-OFF) and load the vehicle onto a flatbed truck or trailer.

Important note

Do not use any points other than the provided emergency tow hook, installed properly in the approriate location on the front bumper, to load and secure the vehicle onto a flatbed truck or trailer.

Warning

Never use suspension arms or wheels as attachment points. Use only the provided emergency tow hook, installed properly in the appropriate location.

Warning

If the electrical system is not working, perform the manual release procedures for the electrical parking brake (EPB) and the Park Lock, as indicated in the respective chapters of the Owner's Manual.

Warning

While transporting the vehicle, you must observe Road Regulations.

Important note



Keep in mind that the power brake system does not work when the vehicle system is deactivated (KEY-OFF). The brake pedal will require additional effort to stop the vehicle.

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