SF90 XX STRADALE



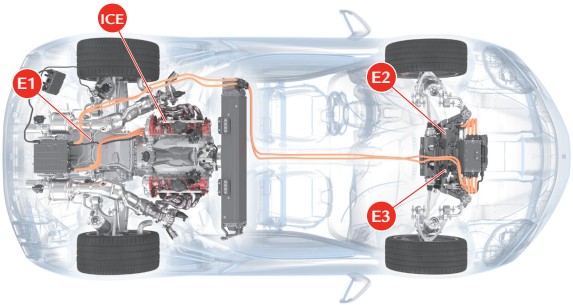
EMERGENCY RESPONSE GUIDE

Introduction

The SF90XX 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 SF90XX 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 required to act as safely as possible if this vehicle is involved in an emergency situation. The emergency procedures for the SF90XX 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 for deactivating the high voltage system in an emergency.

Warning

A failure to observe the procedures outlined here during an emergency response can result in severe burns or electric shocks which can also be fatal. Please read this manual carefully to fully understand the characteristics of this vehicle and act properly if it is involved in an accident.

By closely following the procedures indicated here, you will contribute to the success of any emergency response operations.

Warning

The SF90XX Stradale is equipped with numerous safety systems designed to help protect your safety. These features help to ensure safe access to the vehicle under various conditions.

However, whenever you have to intervene on a damaged hybrid vehicle which has been involved in an accident or fire or in rescue or recovery situations, always assume that the vehicle's high voltage system is powered up.

How to identify the "SF90XX Stradale"

The distinctive aerodynamic design of the SF90XX Stradale makes it easily identifiable. However, a collision may damage the vehicle and make identification difficult. In these circumstances, the emergency response personnel must visually inspect the vehicle to ascertain whether high voltage components are present.

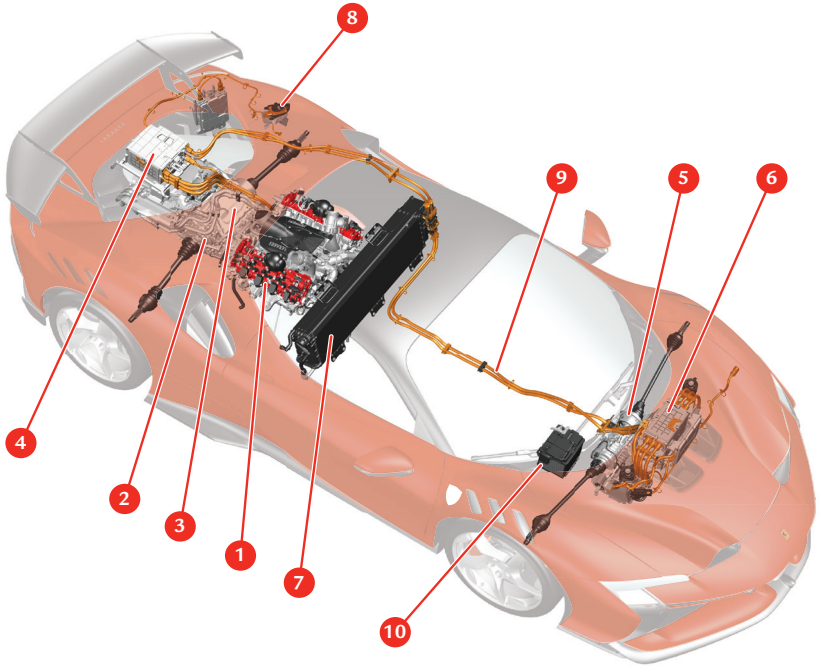
The wording "HYBRID VEHICLE" under the chassis number on the left hand side of the windshield indicates that the vehicle is equipped with a high voltage hybrid system.



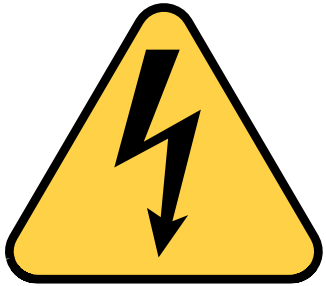


Hybrid system components

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 fuel 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.

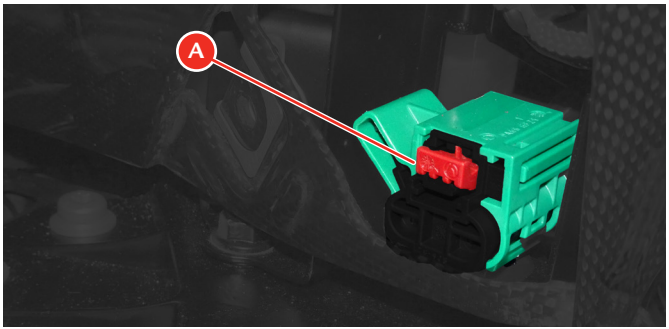
The high voltage electrical system and high voltage battery are dangerous and may cause burns, other serious injuries or death. Never attempt to remove or tamper with the high voltage cables (with orange covering), the high voltage battery, connectors or any other component in the high voltage electrical 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 an Authorized Ferrari Dealer to deactivate the high voltage system.

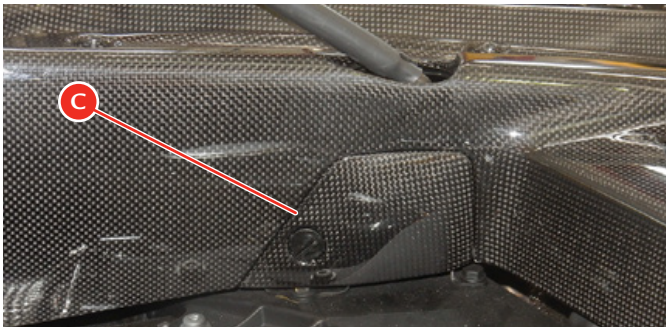
Do not open cover C under any circumstances.

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.



High voltage caution labels

The vehicle has several types of labels (two examples can be seen below) which are useful for identifying the elements that may put your safety at risk.

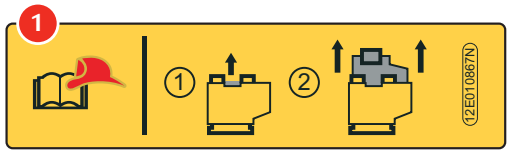
These labels can be found on all the high voltage system components.





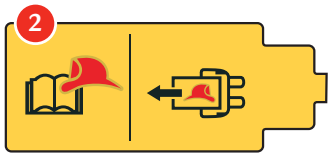
Labels relative to procedures for deactivating high voltage system

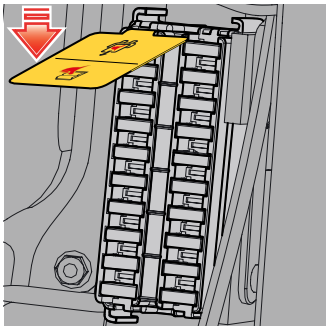
The label (1) located in the engine compartment illustrates the procedure necessary to deactivate the high voltage system in an emergency using the HV Service Connector.



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 assume that the vehicle system is deactivated simply because it does not make a noise.

Warning

A failure to deactivate the high voltage system before performing normal emergency response procedures can result in serious burns or electric shocks which can also be fatal.

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

Warning

Before touching any high voltage system cable, connector or component, always wear suitable Personal Protective Equipment.

How to approach a damaged hybrid vehicle

Precautions that must be taken in any emergency situation involving a hybrid vehicle equipped with a high voltage system are listed below:

- Remove all jewelery (watches, necklaces, earrings, etc.). Metal objects conduct electricity.

- Wear appropriate Personal Protective Equipment (insulating gloves, insulating hard hat/helmet, insulating boots, protective overcoat).

- Have the following equipment on hand: a powder-based fire extinguisher appropriate for extinguishing class A, B, C fires and a non-conductive object, approximately 5 ft. (1.5 m) long, to safely push someone away from the vehicle who may have accidentally come into contact with the vehicle high voltage system.

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

If the vehicle is immersed completely or partially in water, do not touch any high voltage system cables, connectors or components.

Normally, contact with the bodywork of a hybrid vehicle submerged in water does not pose a high voltage risk and normal extrication procedures can therefore be performed and the vehicle safely moved by following these recommendations:

- remove the vehicle from the water;

- if possible, let the water drain out of the vehicle;

- follow the procedures for stabilizing the vehicle and deactivating the high voltage system.

In the event of fire

Warning

DO NOT extinguish a fire using small amounts of water.

Small amounts of water may cause toxic gas to be emitted due to a chemical reaction with the lithium-ion electrolyte of the high voltage battery.

Warning

If the fire is limited in size, a powder-based fire extinguisher appropriate for extinguishing class A, B, C fires caused by electrical cables, components or oil may be used.

Procedure for deactivating the high voltage system

Warning

After deactivation, the high voltage system does not discharge immediately. Wait at least 30 seconds before working on the vehicle. Never touch or cut any of the high voltage components, cables or connectors: failure to observe this precaution may result in severe injury or death.

To deactivate the high voltage system, do the following:

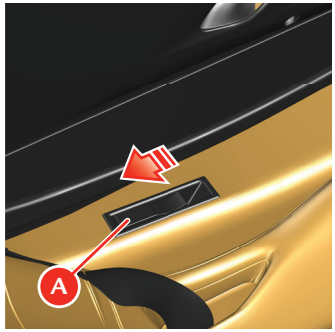
- Open the door on the driver side.
- Turn off the engine and deactivate the vehicle system (KEY-OFF).

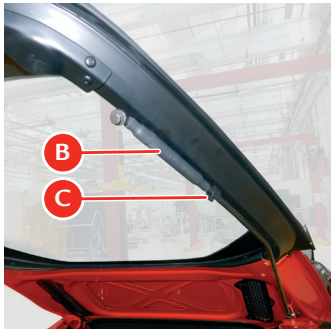
Warning

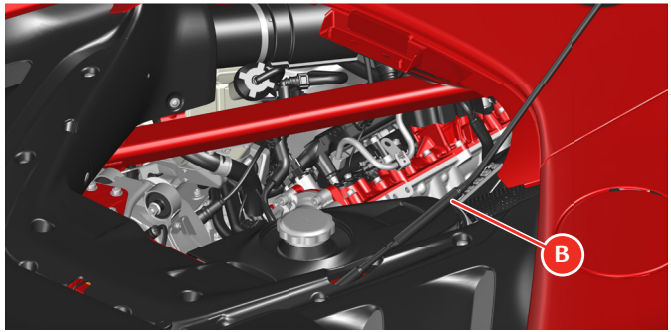
The vehicle can only be considered to be in KEY-OFF state if the engine is off and the message eD “READY” does NOT appear on the instrument panel.



- Open the engine compartment 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 appropriate seat on the chassis, indicated in the picture.



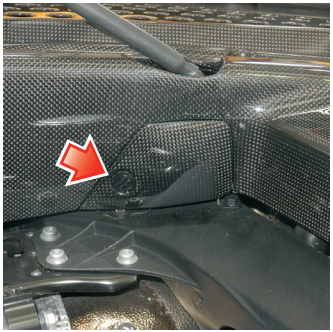


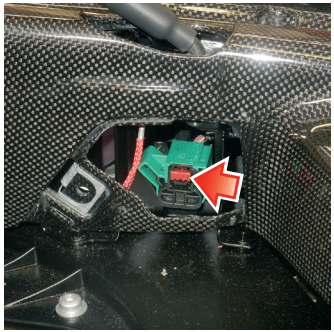


- Open the cosmetic shield cover on the right hand side of the engine compartment by turning the indicated fastener 1/4 turn counterclockwise.

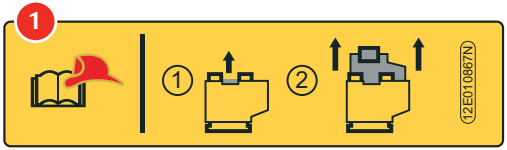
Warning

The high voltage system can only be deactivated using the HV service connector by qualified Authorized Ferrari Delaer technicians who have the necessary experience, documentation and equipment to work in complete safety.





- Go to the HV service connector and remove the release device shown in the picture, as indicated on label 1 affixed to the trim panel.



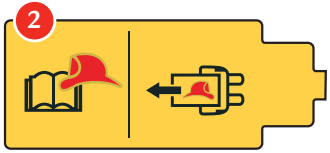
If the HV service connector is not accessible, follow the procedure described below:

Warning

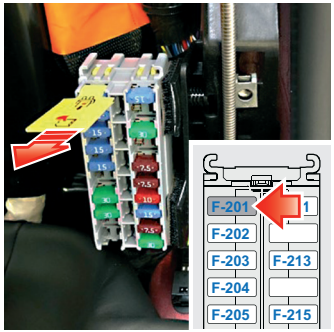
The high voltage fuse can only be removed by qualified AUTHORIZED FERRARI DEALER technicians who have the necessary experience, documentation and equipment to work in complete safety.

Only follow this procedure if you cannot access the HV service connector in the engine compartment.

- 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 the high voltage hybrid system areas: failure to observe this precaution may result in severe injury or death.

Warning

Do not cut the hybrid system high voltage battery: failure to observe this precaution may result in severe injury or death.

Warning

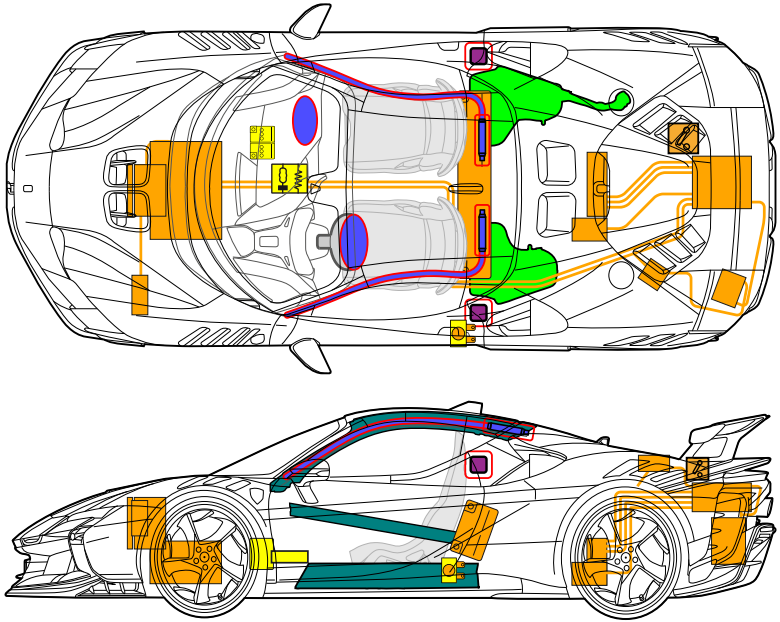
If vehicle components have to be removed, DO NOT touch any of the high voltage system components or the high voltage cables. Failure to observe this precaution may result in severe injury or death.

Warning

Emergency response personnel can cut the vehicle when at least 30 seconds have elapsed after deactivation of the high voltage system with the exception of the areas where the high voltage system cables, connectors and components and the high voltage battery are located.

Guide for extrication layout

	Airbag		Pyrotechnic gas inflation device		Seat belt pretensioner		SRS control unit		Active pedestrian protection system
	Automatic rollover safety system		Gas/pre-compressed spring piston		High strength zone		Zone requiring particular attention		
	Battery, low voltage		Supercapacitor, low voltage		Fuel tank		Gas tank		Safety valve
	High voltage battery pack		High voltage electrical cable/ component		High voltage disconnector		High voltage cut-off fuse box		Supercapacitor, high voltage



Lifting the vehicle

Warning

Due to the special shape of the undertray, access to the support points for lifting is not easy: to lift the vehicle, contact your AUTHORIZED FERRARI DEALER which has suitable equipment to perform the necessary work.

If the vehicle has to be lifted following an accident or in order to perform emergency repair work, we recommend providing the following information to the people who will be performing the work:

- Never lift the vehicle by pressing on the bottom of the high voltage battery. Failure to observe this precaution may result in severe injury or death.

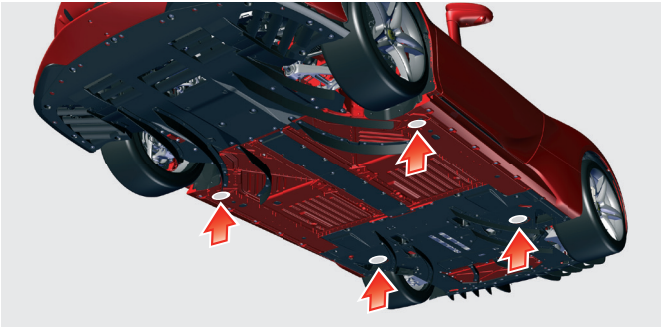
- To lift the vehicle, use only the support points indicated below.

Failure to comply with the above may cause serious injury.

Warning

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

To lift the vehicle, use only the points shown 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 supplied with the vehicle may only be used in an emergency to load the vehicle onto a flatbed truck or trailer.





To tow the vehicle, do the following:

- remove the tow hook from the tool kit in the left front compartment;
- 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;
- if it is not engaged before KEY-OFF, release the parking brake (EPB) using the lever on the dashboard and pressing the brake pedal.
- deactivate the system (KEY-OFF) and load the vehicle onto a flatbed truck or trailer.

Important note

To tow the vehicle onto a flatbed truck or trailer, avoid using anchor points that are not designed for this purpose. Only use the tow hook inserted in the housing on the front bumper.

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.

Only if strictly necessary and if the electrical system is still working correctly, keep the instrument panel on (KEY-ON) to allow the external lights to be used. When towing the vehicle, do NOT try and start the engine.

Warning

While transporting the vehicle, you must observe with 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.

Code no. **993492**
Catalogue no. **8203/23**

Edition

1st Edition **January 2024**

Editing

STAR7 S.p.A.
Alessandria - Italy

Printing

STAR7 S.p.A.
Alessandria - Italy

COPYRIGHT © 2024 Ferrari S.p.A. - All rights reserved

Technical Service Department
Via Abetone Inferiore, 4
41053 Maranello
Modena - Italy

Ferrari.com