LaFerrari aperta

EMERGENCY RESPONSE GUIDE

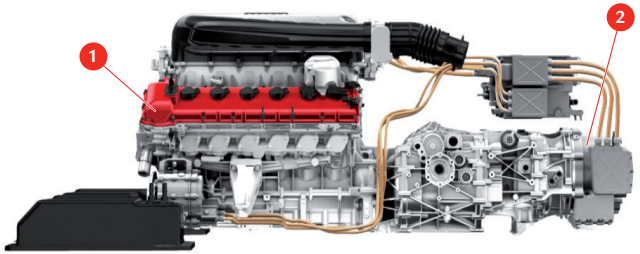
Introduction

The LaFerrari Aperta is a hybrid vehicle: traction is provided by an internal combustion engine and an electric motor powered by a high voltage battery located under the passenger compartment.

More specifically, the LaFerrari Aperta has a parallel hybrid system called Hy-Kers: the internal combustion engine (1) and the electric traction motor (2) are both connected directly to the transmission.

The system combines use of the internal combustion engine with the electric traction motor resulting in an improvement in performance and a reduction in fuel consumption and emissions.

In certain driving conditions, the electric motor also acts as a generator by capturing the kinetic energy that would normally be lost as heat energy and transforming it into electricity to recharge the high voltage battery.



Some components which are normally driven by a combustion engine in a conventional vehicle (for example, the power steering pump) are powered by electricity supplied by the 12V electrical system. The high voltage battery, on the other hand, powers the air conditioning and heating system compressor. There is also a second electric motor that serves as an alternator, a component that is not therefore needed on this vehicle.

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 LaFerrari Aperta 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 herein 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 correctly 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

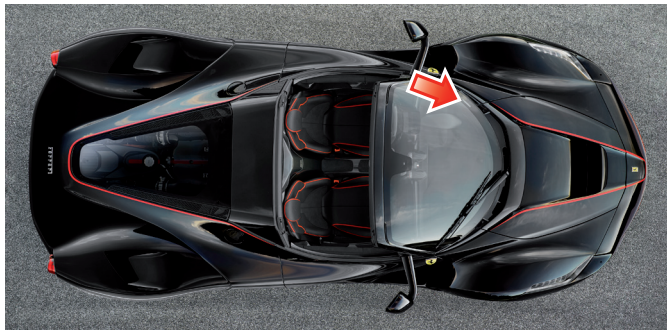
The LaFerrari Aperta is equipped with numerous safety systems designed to protect you from injury. These systems and features make it possible to access the vehicle safely in special conditions.

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.

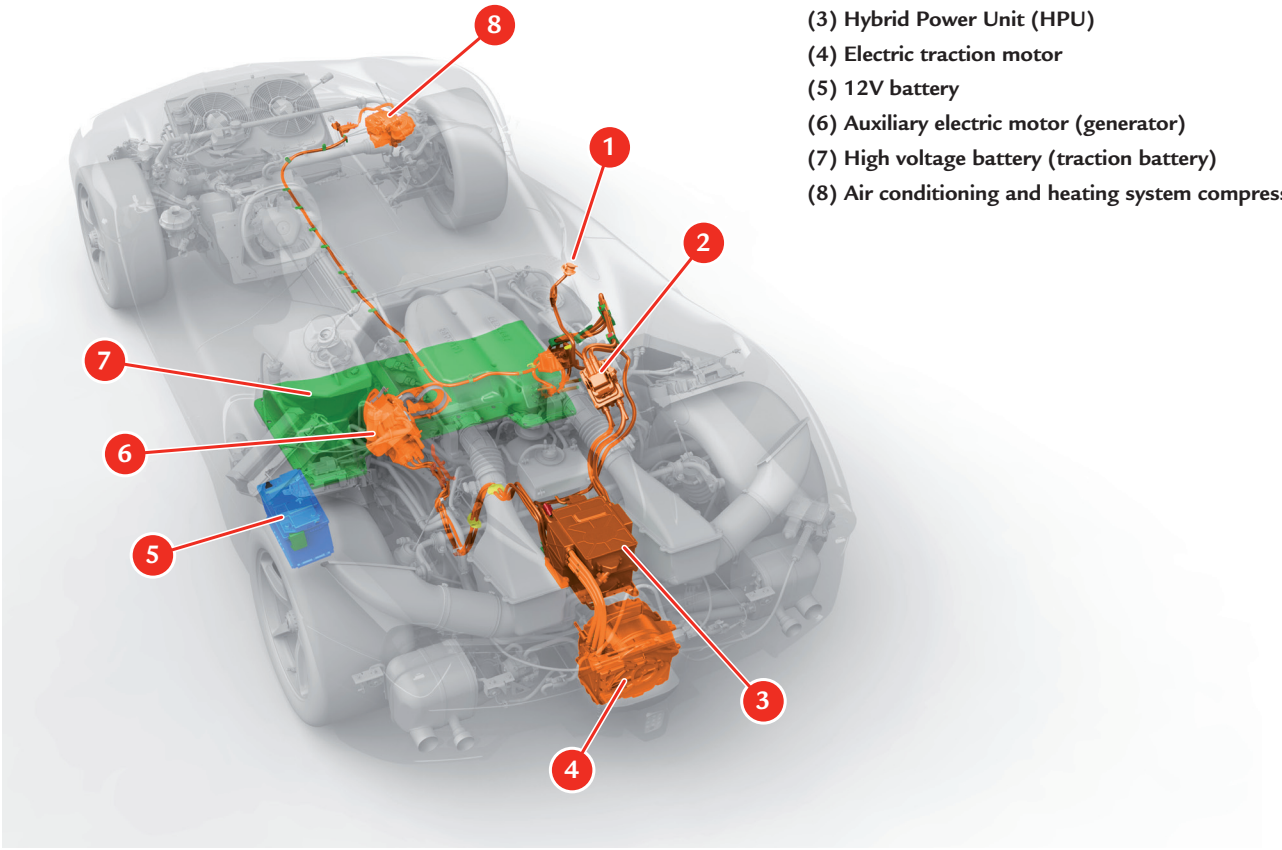
How to identify the "LaFerrari Aperta"

The distinctive aerodynamic forms of the LaFerrari Aperta make 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 windscreen indicates that the vehicle is equipped with a high voltage hybrid system.

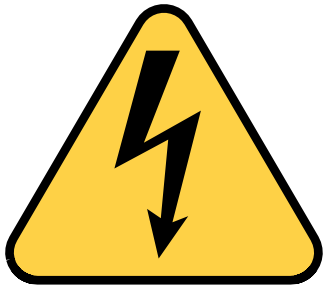


Hybrid system components



(1) Battery conditioner socket
(2) Hy-Kers battery branch socket
(3) Hybrid Power Unit (HPU)
(4) Electric traction motor
(5) 12V battery
(6) Auxiliary electric motor (generator)
(7) High voltage battery (traction battery)
(8) Air conditioning and heating system compressor

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 energised when the ignition key is in position **II** (key-on).

Important note

The high voltage electrical system is not energised when:

- the ignition key is in position **0** (key-off);
- the inertia switch has been activated.

Warning

In addition to a conventional 12V electrical system, the vehicle also has a 480 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 special label indicating a potential risk of electric shock whereas the cables in the high voltage system have an orange covering.

Warning

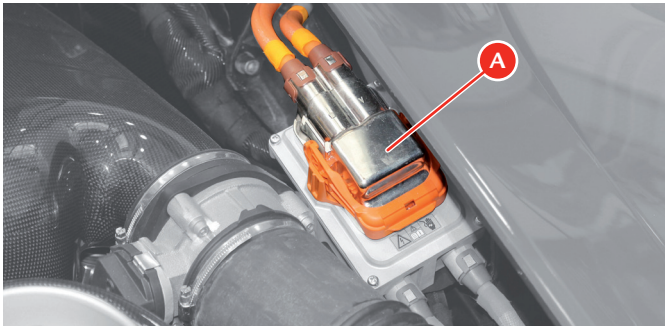
Risk of serious burns or electric shock resulting in injuries that can be fatal.

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

Never use or tamper with branch socket **A** located on the right side of the engine compartment.

Branch socket **A** can only be used by qualified Ferrari Service Network technicians who have the necessary experience, documentation and equipment to work in complete safety.

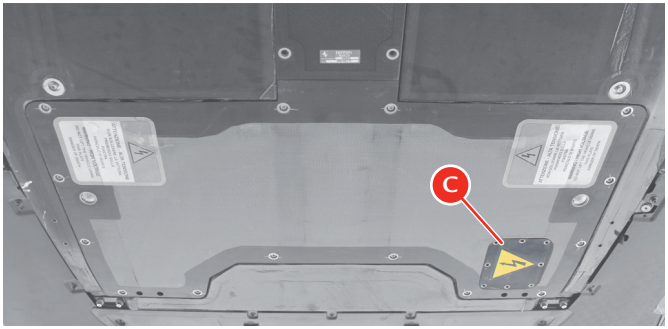


Warning

On the undertray on the left-hand side of the high voltage battery protected by cover **C**, there is an MSD (Manual Service Disconnect) switch, designed to allow specialised Ferrari Service Network technicians to deactivate the high voltage battery.

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

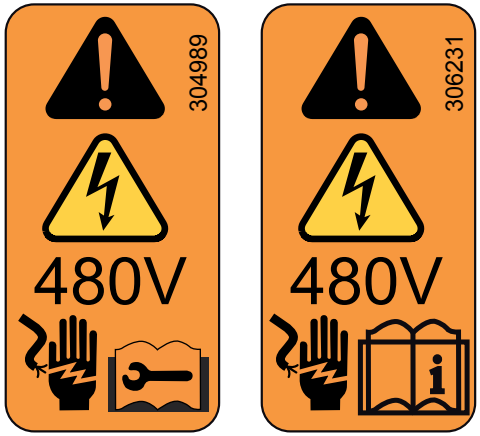
The MSD switch can only be used by qualified Ferrari Service Network technicians who have the necessary experience, documentation and equipment to work in complete safety.



High voltage caution labels

The vehicle has two types of label which are useful for identifying the elements that may put your safety at risk: label (**1**) indicates a potential risk of electric shock if the hybrid system is activated. These labels can be found on each component in the high voltage system with the exception of the traction battery which has labels (**2**) which indicate the constant presence of high voltage.

1



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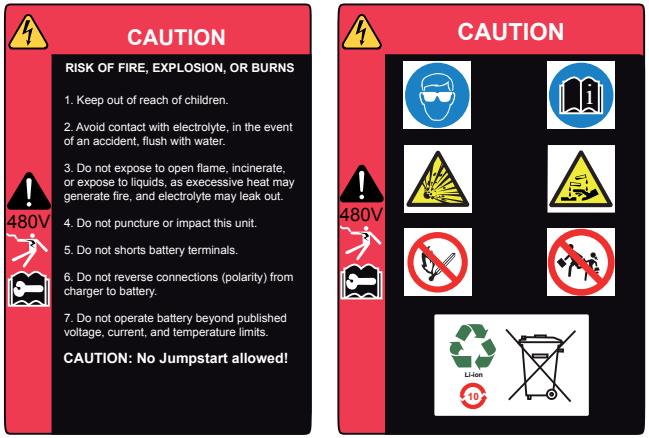

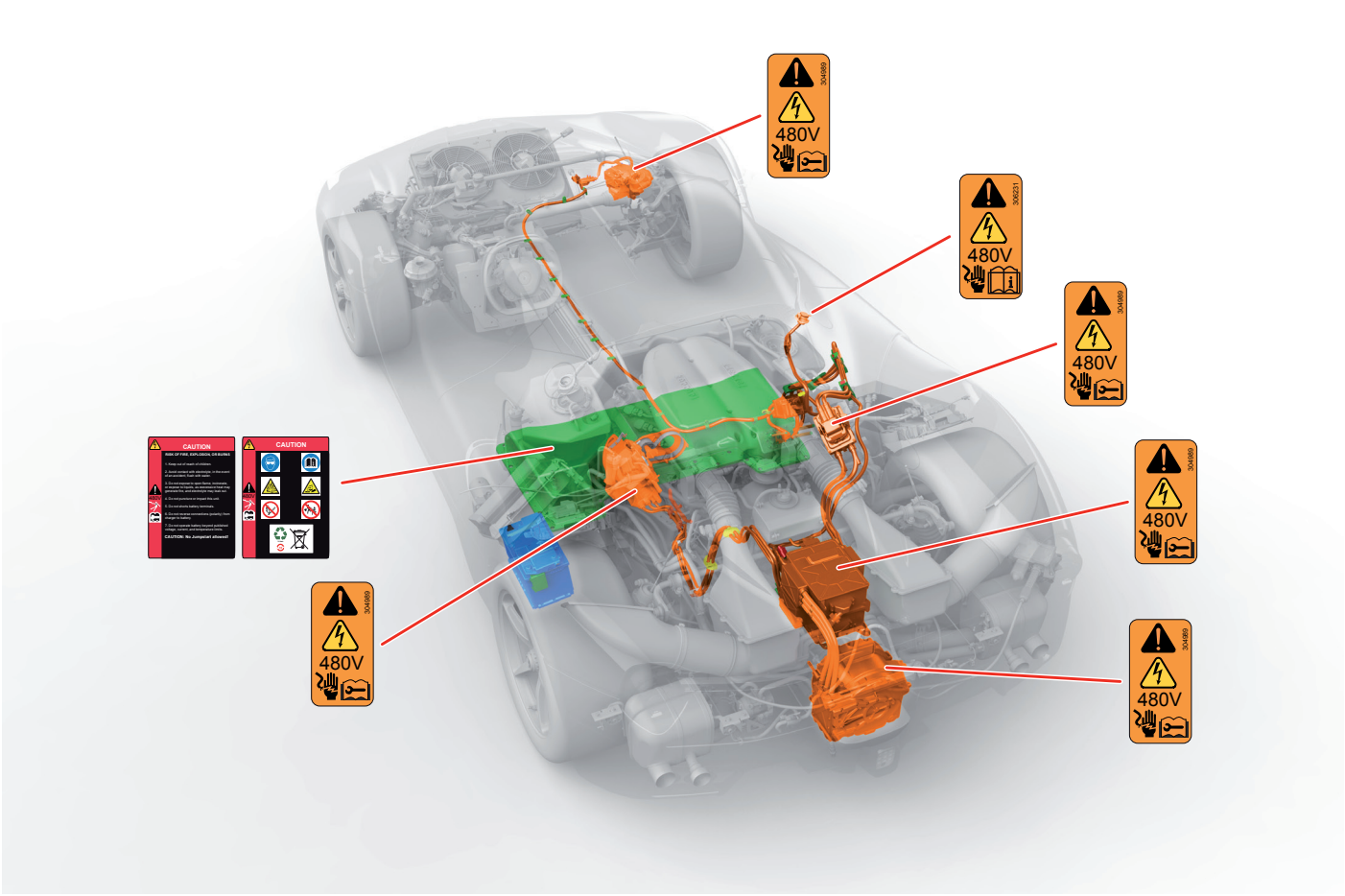
304869
480V
30021
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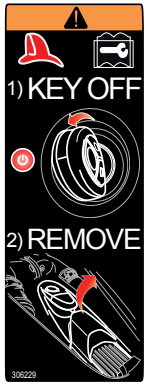
480V
CAUTION
CAUTION

Labels relative to procedures for deactivating high voltage system

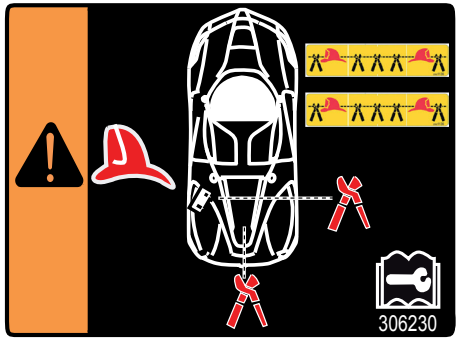
The labels (1) and (2) situated inside the engine compartment indicate the operations necessary for deactivating the high voltage system in an emergency.

For further information, see page 14.

1



2



Emergency cut point labels on 12V battery cables

The yellow labels applied to the positive and negative cables of the 12V battery in the engine compartment allow rescue personnel to identify the correct points for cutting the cables and deactivating the high voltage system in an emergency.

For further information, see pages 15 and 16.

Warning

In the event of an accident, to ensure that the contactor switches of the high voltage battery are not kept closed by the 12V system, always cut the 12V battery cables before attempting any extrication procedures.

Warning

Cut the cables in the positions indicated by both yellow labels, as indicated in the image below, to remove a whole section of cable and prevent the risk of accidental contact between the two cut ends.

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 commencing 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 with bare hands.

Warning

Always wear appropriate personal protection devices should it be necessary to touch 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 jewellery (watches, necklaces, ear rings, etc.). Metal objects conduct electricity.

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

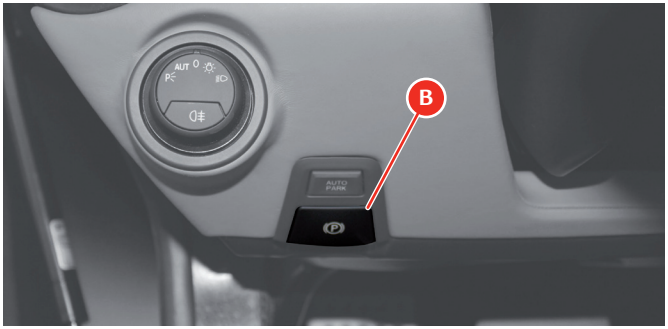
- Have the following equipment at hand: powder extinguisher suitable for extinguishing class A, B and C fires and a non-conductive object approximately 1.5 metres in length for moving away persons who have accidentally come into contact with the high voltage system of the vehicle.

Stabilising the vehicle

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

Warning

NEVER place supporting measures (e.g. wooden blocks) under the high voltage battery to stabilise the vehicle.



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 stabilising 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 suitable for class A, B and C fires caused by electric wiring and components or oil may be used.

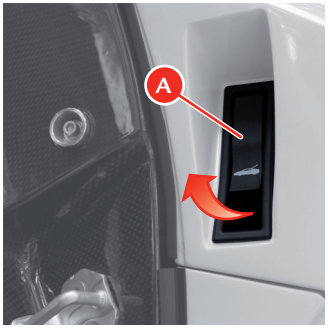
Procedure for deactivating the high voltage system

Warning

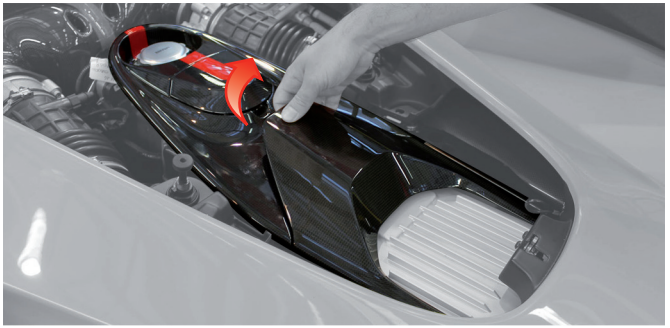
The high voltage system does not discharged immediately after deactivation. Wait at least 30 seconds before working on the vehicle. Do not touch or cut any cable, connector or component of the high voltage system: (risk of severe or fatal injury).

Deactivate the high voltage system as follows:

- Open the driver side door.
- Turn the ignition switch to **0** (off).
- Open the engine compartment lid by pulling the lever **A**, under the rear driver side door jamb.



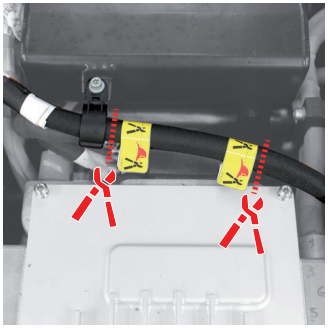
- Access the engine compartment, then remove the carbon cosmetic cover. To remove, simply grip the handhold and pull firmly, as shown in the photo below.



- Once the cosmetic cover has been removed, the cut points of the 12V battery positive cable, situated near the Hybrid Power Unit, are accessible. Cut the 12V battery positive cable in the two positions indicated by the yellow labels and remove the cut section of cable.

Warning ⚠

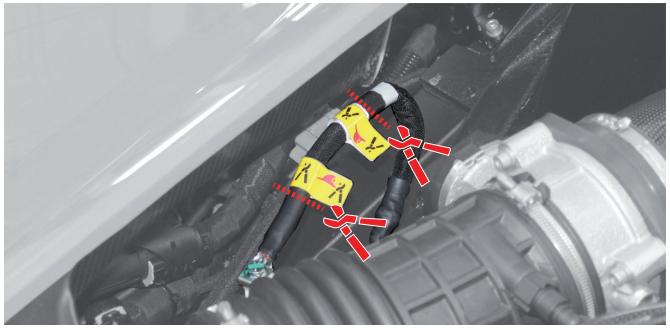
Cut the cable in the positions indicated by both yellow labels, as indicated in the image below, to remove a whole section of cable and prevent the risk of accidental contact between the two cut ends.



- Cut the 12V battery negative cable, situated on the left hand side of the engine compartment, in the two positions indicated by the labels and remove the cut section of cable.

Warning

Cut the cable in the positions indicated by both yellow labels, as indicated in the image below, to remove a whole section of cable and prevent the risk of accidental contact between the two cut ends.



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 (see page 14 for deactivation procedure), rescue personnel may cut parts of the vehicle except for areas in the vicinity of cables, connectors and components of the high voltage system.

Moving the vehicle

Warning

Never lift the vehicle using the bottom of the high voltage battery as a support point. There is a risk of serious and even fatal injury.

Warning

Towing the vehicle is not allowed. Towing can cause serious damage to the vehicle and the high voltage hybrid system.

High voltage system components

High voltage cables

High voltage battery

Manual Service Disconnect connector and high voltage battery cable branch connector socket

Hybrid Power Unit (power stage electronics)

12V battery cut points

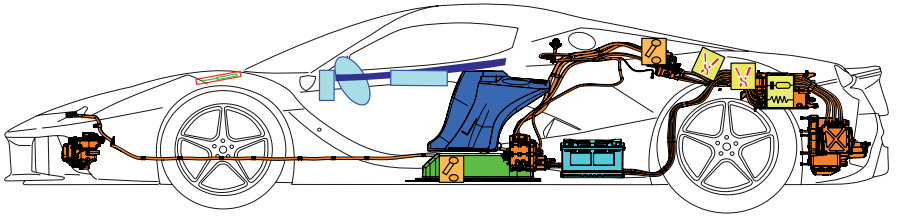
12V battery

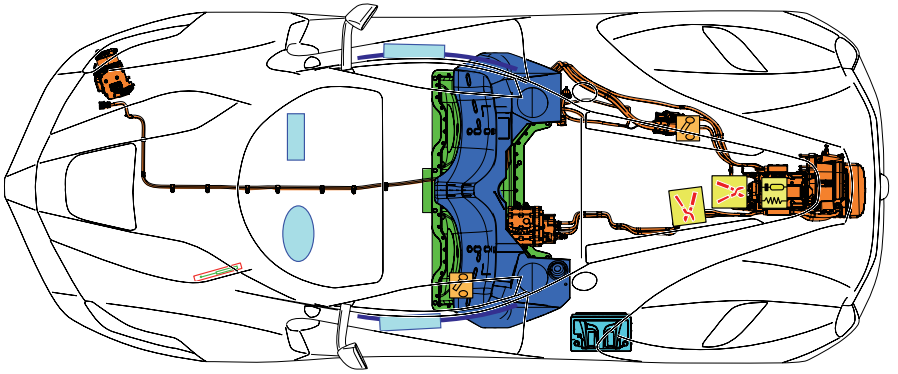
Fuel tank

Airbag

Reinforcement bars

Gas struts





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