Information for first and second responders
Emergency response guide for vehicle

XC90 Twin Engine Recharge Plug-in Hybrid

400V
Lithium-ion
Battery

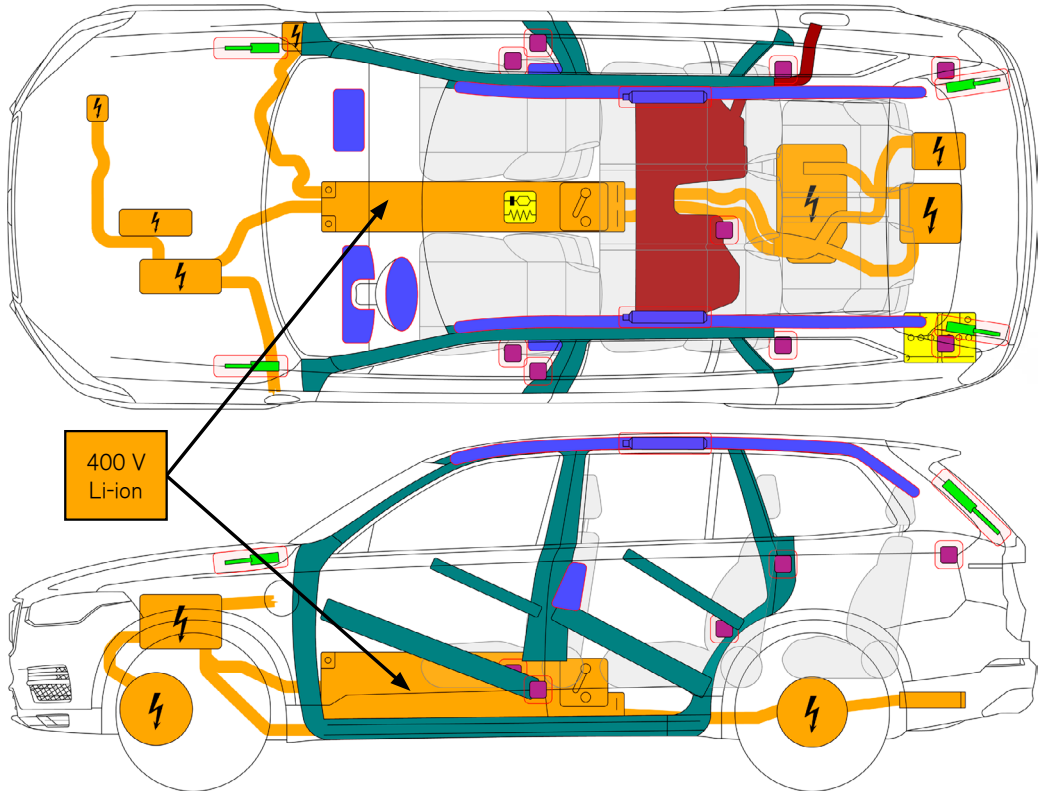


VOLVO

00 - RESCUE SHEET

VOLVO	Volvo XC90 Twin Engine/ Recharge Plug-in Hybrid 5dr SUV (2015-)		





Airbag

Stored gas inflator

Seat belt pretensioner

SRS controlunit

Pedestrian protection active system

Battery low voltage

Gas strut/preloaded spring

High strength zone

Fuel tank content gasoline/ethanol

High voltage device that disconnects high voltage

Battery pack, high-voltage

High voltage power cable

Volvo XC90 Twin Engine/Recharge Plug-in Hybrid 5dr SUV (2015-) Additional Pages

1. Identification / recognition

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

Brand name front



Model name rear



Charge port

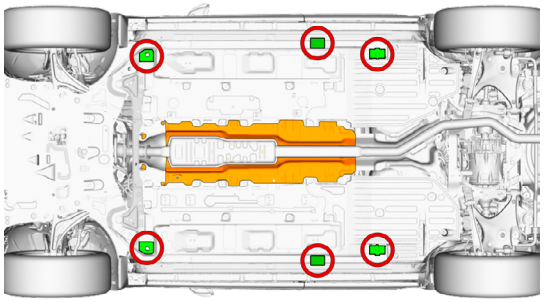


2. Immobilization / stabilization / lifting

Immobilize vehicle:

1. Block wheels and set parking brake
2. Push the P (park) button to select the P (park) position





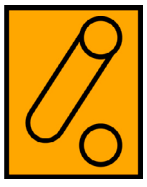
Lifting points:

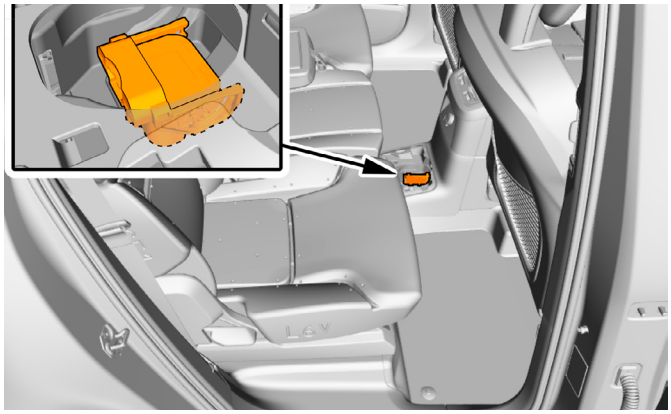
- Appropriate lifting points
- High voltage battery

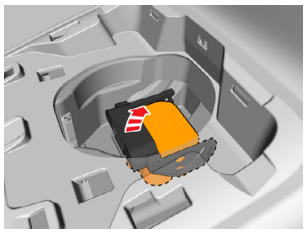
3. Disable direct hazards / Safety regulations

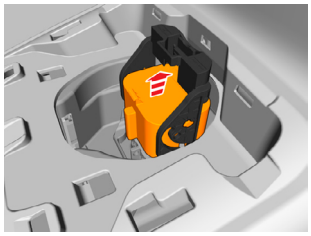
The propulsion system is disabled when the 'Safety mode See Manual' indicator in the instrument cluster is illuminated.

Deactivation of propulsion system, if 'Safety mode See Manual' indicator is not illuminated:



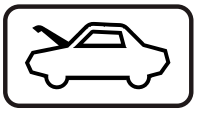


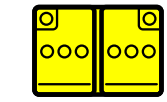




Volvo XC90 Twin Engine/Recharge Plug-in Hybrid 5dr SUV (2015-) Additional Pages

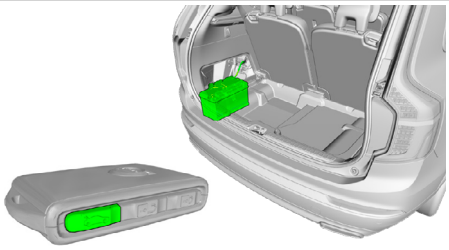
Disconnect 12 Volt battery











Safety instructions

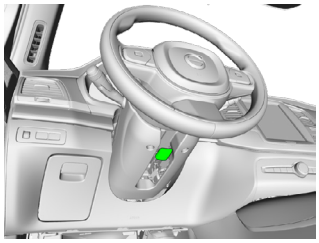
Always assume the vehicle is powered, even if it is silent!

Make sure that the vehicle is immobilized and the propulsion system is deactivated;

Never touch, cut, or open any orange high voltage power cable or high voltage component; In case of a collision with seat belt pretensioner activation / airbag deployment, the high voltage system will be disabled automatically. The restraint systems are still active.

4. Acces to the occupants

Steering column adjustment

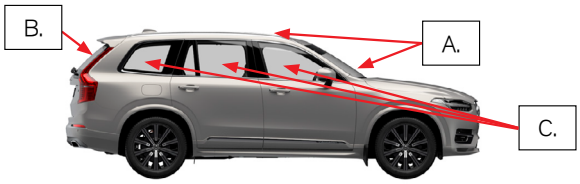


Glass types

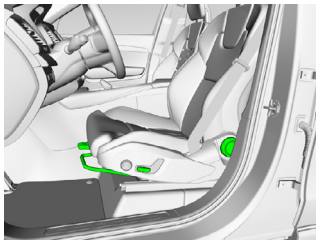
A. Laminated glass

B. Tempered glass

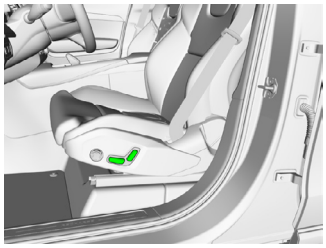
B. Tempered glass with optional laminated glass



Manual seat adjustment



Electrical seat adjustment



5. Stored energy / Liquids / Gases / Solids

Li-ion	400V	
	12V	
	R-134a 700 g - 1050 g R-1234yf 600 g - 975 g	

When conventional coolant leaks (check reservoir) from the high voltage (HV) battery cooling system, HV-battery can become unstable with risk of thermal runaway. An increasing HV-battery temperature might be an indicator of thermal runaway.

IR

Volvo XC90 Twin Engine/Recharge Plug-in Hybrid 5dr SUV (2015-) Additional Pages

6. In case of fire

Extinguishing method for the high voltage (HV) battery:

LARGE AMOUNTS OF PURE WATER

POTENTIAL RISK OF HV-BATTERY FIRE RE-IGNITION / DELAYED FIRE!

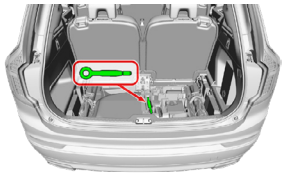
IR

7. In case of submersion

- There is no increased risk of electric shock in water resulting from the high voltage system
- If possible, remove the vehicle from the water and continue with the deactivation procedure for this vehicle (see chapter 3)

8. Towing / transportation / storage

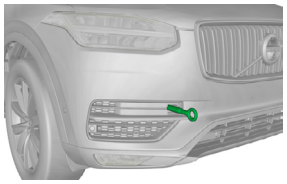
Recovery hook storage



Location rear hook



Location front hook



STORE VEHICLE IN AN OPEN-AIR PARKING AT A SAFE DISTANCE ≥ 5M FROM OTHER OBJECTS OR VEHICLES!

POTENTIAL RISK OF HV-BATTERY FIRE RE-IGNITION / DELAYED FIRE!

IR



10. Explanation of pictograms used

	Remove smart key		Hybrid Electric Vehicle on fuel of liquid group 2
	Warning high voltage		Flammable
	Caution		Hazardous to the human health
	Warning; low temperature		Acute toxicity
	Air-conditioning component		Corrosives
	Use water to extinguish the fire		Bonnet
IR	Use thermal infrared camera		Boot

Introduction Electrical Vehicle Emergency Response Guide

This publication is intended for rescue personnel specially trained for rescue operations at vehicle accidents. The folder shows Volvo XC90 Twin Engine/Recharge Plug-in Hybrid equipped with all optional and accessory equipment.

For information about the vehicle's features, embedded systems and safety systems we refer to the owner's manual which is digitally available in the center display of the vehicle.

This guide is intended to be used by trained first responders and rescuers and assumes that the reader has professional level skills in safely responding to emergencies and rescue situations described in this guide, including those involving damaged vehicles. This guide is not intended for retailers, end consumers or any other reader that is not described in the preceding sentence. This guide may be updated by Volvo Cars at any time. This guide applies to the Volvo XC90 Twin Engine/Recharge Plug-in Hybrid vehicle only and includes information about the specific vehicle's structure and components, including location and description of high voltage components. While failure to follow this guide may result in serious injury or death, each emergency situation is unique and this guide may not address every scenario and even if this guide is followed, serious injury or death may occur.

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Special texts

WARNING

Warning texts appear if there is risk of injury.

IMPORTANT

Important texts appear if there is risk of damage.

NOTE

Note texts give advice or tips that facilitate the use of e.g. features and functions.

Option/accessory

We continuously work to develop and improve our products. Modifications can mean that information, descriptions and illustrations in this publication differ from the equipment in the vehicle. We reserve the right to make changes without prior notice.

Vehicles may be equipped differently depending on market requirements and national or local laws and regulations. In addition to standard equipment, the vehicle can also have been modified with optional equipment (factory-installed equipment) and certain accessories (extra retrofitted equipment).

At the time of publication, all known options and accessories are marked with an asterisk (*).

Contents

01.	Identification / Recognition	6
1.1	Electric vehicle recognition	6
1.2	Basic parameters of the vehicle	8
1.3	High voltage components	9
02.	Immobilisation / Stabilisation / Lifting	11
2.1	Vehicle stopping operations	11
2.2	Lifting	13
03.	Disable direct hazards / Safety regulation	14
3.1	Disconnection of high voltage	14
3.2	Ending the charging of the traction battery	17
3.3	Charging cable emergency release	18
04.	Access to the occupants	19
4.1	Access to the occupants	19
4.2	Body framework	20
4.3	Adjusting the seats and steering wheel	22
4.4	Airbags and seat belt pretensioners	24

Contents

05.	Stored energy / Liquids / Gases / Solids	25
5.1	Component overview	25
5.2	First Aid Measures	27
06.	In case of fire	28
5.1	Emergency rescue in case of fire	28
07.	In case of submersion	30
7.1	Emergency rescue in the case of submersion	30
08.	Towing / transportation / storage	31
8.1	Hauling of the vehicle from the scene after an accident	31
09.	Important additional information	34
10.	Explanation of pictograms used	35

Electric vehicle recognition

The Volvo XC90 Twin Engine/Recharge Plug-in Hybrid can be identified as an electric vehicle in a number of places.



1. Traction battery
2. Driver display
3. Lettering/badges
4. Charging lid

Charging lid



The charging lid is placed on the driver's/left side of vehicle.

Driver display



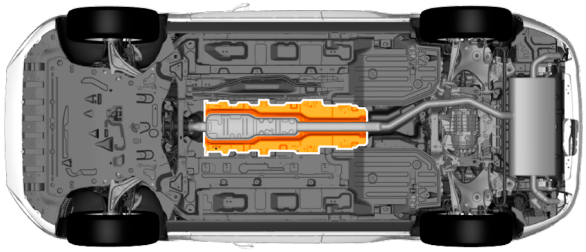
Battery symbol in the driver display shows that the vehicle is a hybrid or a battery electric vehicle (BEV).

Lettering/badges



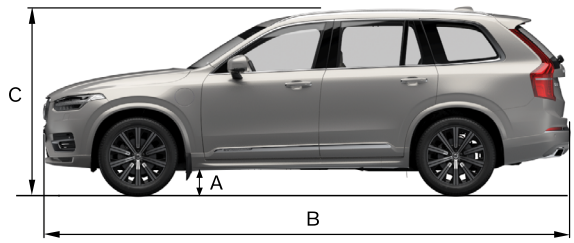
Recharge rank mark on the tailgate.

Traction battery

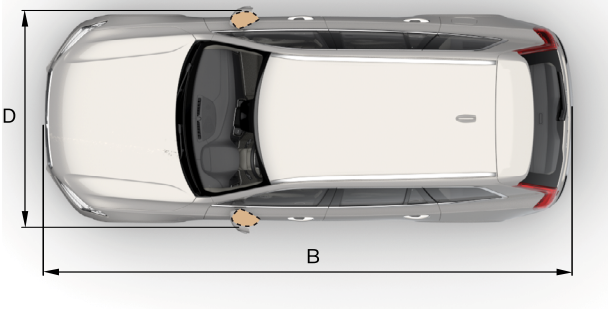


The traction battery is placed under the vehicle.

Basic parameters of the vehicle[1]







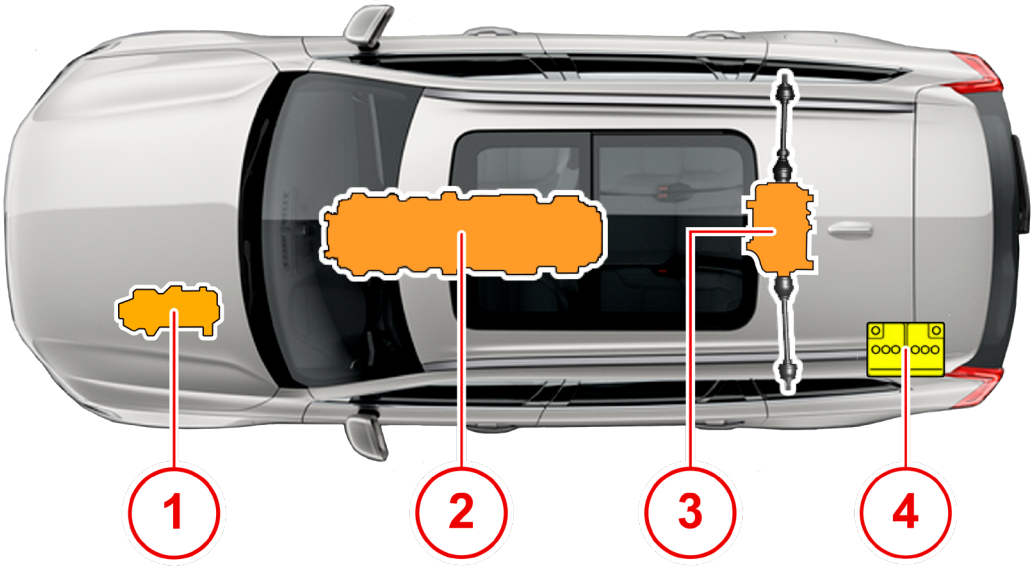


	Dimensions	mm	Inches
A	Ground clearance	217	8.5
B	Length	4953	195
C	Height	1776	69.9
D	Width including folded-in door mirrors	2008	79.1

Vehicle category:	SUV
Authorized passenger number:	The standard is 7, but it depends on the amount of seat belts in the vehicle.
Max. authorised total weight (kg):	3010
Weight distribution	Front 52% Back 48%

1. These numbers are the standard and may vary depending on the equipment of the vehicle. Look at the information decal for more information.

High voltage components



① Voltage converter

② Traction battery

③ Electric motors

④ 12 V battery

Traction battery specifications

The traction battery consists of a number of modules in series which gives a nominal voltage of 397 V depending of the battery's state of charge.

Cell type	Lithium-ion
Stored Energy	9.2 kWh - 18.8 kWh
Weight	113 kg - 134 kg (249 lbs - 295 lbs)
Dimensions	1585 x 402 x 446 mm (62.4 x 15.8 x17.6 in) length x width x height

Warning marking information

High voltage cables are colored in orange. Do not cut through high voltage cables.



Warning symbol for high voltage component.

An example of a label located on a high voltage component is shown below.



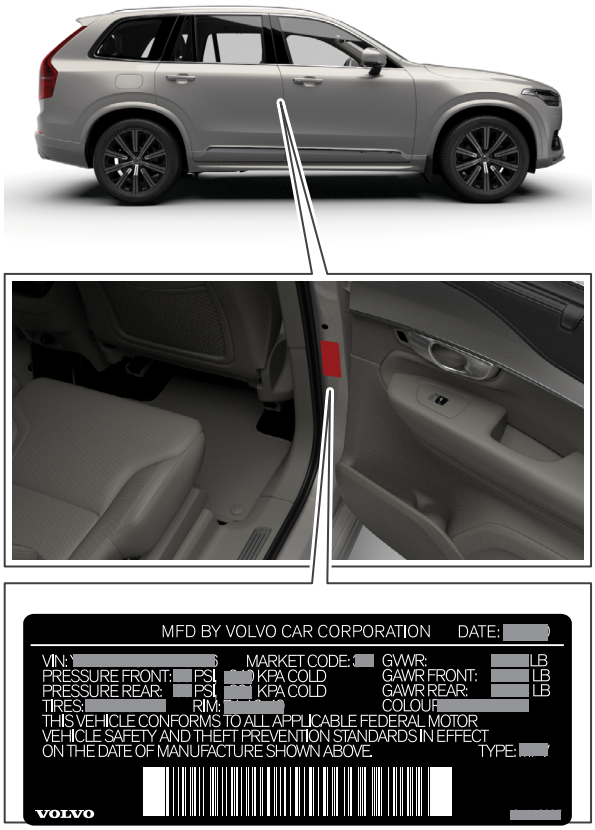
Windshield VIN code

The VIN code can be identified in the windshield.



Right door post information decal

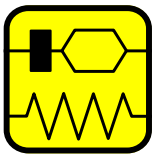
The vehicle is equipped with information decals. The certification label on the right side B-pillar (the structural member at the side of the vehicle, at the front of the rear door opening) shows information for the vehicle, such as VIN code etc.



Vehicle stopping operations

For information of how to disconnect the traction battery, please see section 03 DISABLE DIRECT HAZARDS / SAFETY REGULATION.

Crash



In the event of a collision, the Supplemental Restraint System (SRS) module sends a signal to the Central Electronic Module (CEM), stating that a collision has occurred. In this stage the vehicle assumes Crash mode. For safety reasons, the vehicle has limited functionality.

Among other things, the contactors in the traction battery are controlled to open and shut down the high voltage outside the traction battery. The passenger protection system, such as belt pretensioners and airbags are activated.

Automatic activation of the parking brake

The parking brake is activated automatically:

- If the car has entered Crash mode.
- When the car is switched off and the parking brake's automatic activation setting is selected in the centre display.
- When gear position P is selected on a steep hill.
- If the Auto hold (Automatic brake when stationary) function is activated and

  - the car has been stationary for a long time (5-10 minutes)
  - the car is switched off
  - the driver leaves the car.

> **NOTE**
>
> If the battery voltage is too low, the electrical parking brake can neither be released nor used.
>
> When possible, always apply the parking brake when the vehicle is standing in a slope. Only putting the gear in P-position is not sufficient to stop the car. Turn off and stabilize vehicle

Shifting the gear position to parking gear – P-mode

To shift the gear to P-mode, push the P-button located next to the gear selector on the armrest console. The vehicle must be at a standstill when selecting the parking gear.



Switching off the car

To switch off the car:



Turn the start knob clockwise and release it to switch off the car. The control automatically returns to its starting position.

If the gear selector for cars with an automatic gearbox is not in position P or if the car rolls:

Turn the knob clockwise and hold it until the car is switched off.

WARNING

Shutting off power to an electrical vehicle does not de-energize the traction battery and a shock hazard may still be present.

Even though the vehicle is set to a state that is not the Drive mode, the vehicle can still be in an active state.

Remote control key range

IMPORTANT

Make sure that the key is removed from the vehicle to avoid unintentional activation. Keep the key at a safe distance from the vehicle.

The key works within a certain distance from the vehicle:

Usage	Range
Manual use (by pushing the buttons on the key)	Approx. **20 metres** (**65 feet**) from the vehicle
Keyless use (with a remote control key or button-less key)	A semicircular area with a radius of approx. **1.5 metres** (**5 feet**) on both long sides and approx. **1 metre** (**3 feet**) from the tailgate.

Stabilizing the vehicle with stop chocks

Stabilize the vehicle with stop chocks under the wheels. Stop chocks are to be placed in front of or behind the wheels.



WARNING

Never stabilize the vehicle under the traction battery.

If the stop chocks are placed in contact with the battery it can be damaged, which can be dangerous.

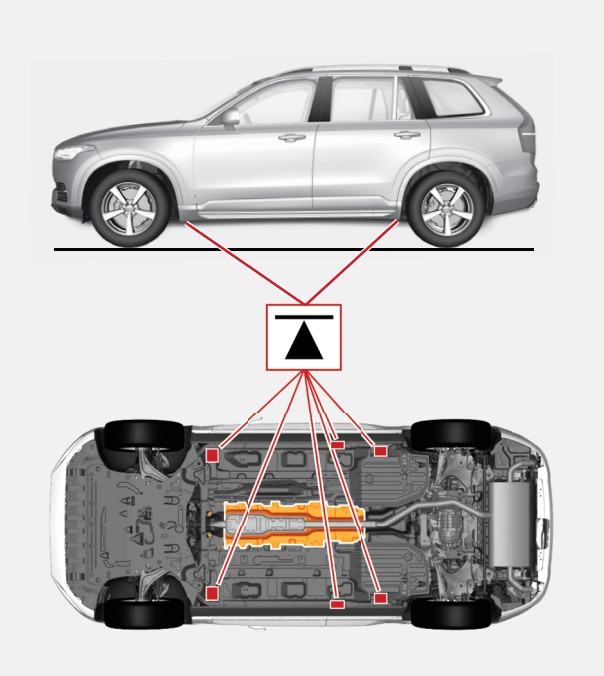
If the battery gets damaged it poses a threat, which can result in personal injury or death.

Lifting

The traction battery is located under the vehicle. Use the lift areas shown in the image below. A section of the undercarriage houses the traction battery. When lifting or stabilizing the vehicle, only use the designated lift areas, as shown in the following images.

WARNING

When lifting the vehicle, do not lift under the traction battery!



Disconnection of high voltage

Automatic disconnection

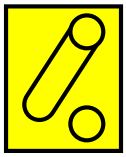
If a serious accident has occurred that has either triggered an airbag to deploy or the seat belt pretensioner to activate, the traction battery pack is automatically disconnected from the rest of the high voltage system.

Make sure the traction battery is disconnected before starting any rescue procedures. Please see the section "High voltage Manual service disconnect" in this chapter.

WARNING

Residual voltage can remain in the system outside the traction battery for approximately 10 seconds after the accident.

Make sure that the vehicle is stabilized and turned off

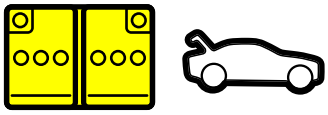


When possible, always make sure that the vehicle is turned off and stabilized. See chapter 02. IMMOBILISATION/ STABILISATION/LIFTING for more information.

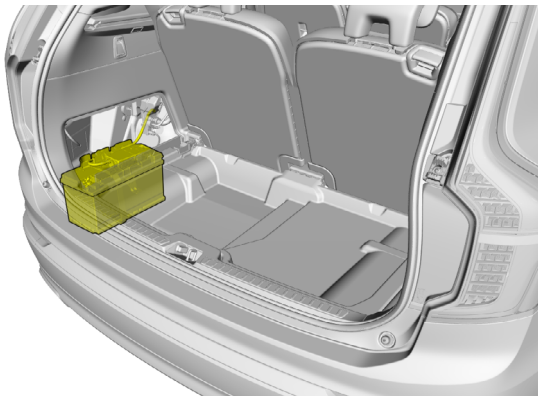
Disconnection of the 12 V battery

IMPORTANT

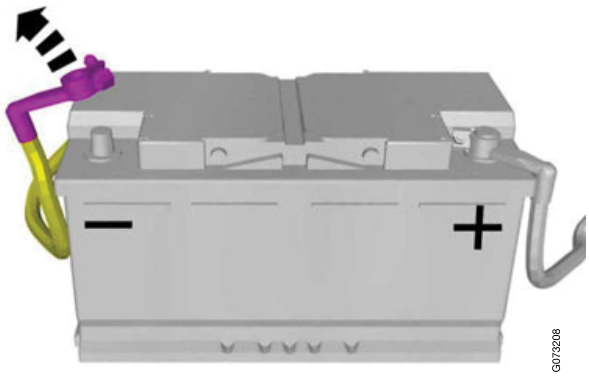
If the power front seats need to be adjusted, this must be done before the 12 V battery is disconnected. Please see the section "Adjusting the seats and steering wheel" in chapter 04. ACCESS TO THE OCCUPANTS.



1. Open the tailgate.



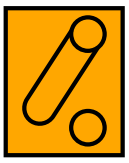
2. Identify the 12 V battery.



3. Locate the 12 V battery's charging points and disconnect the 12 V negative cable.

If the 12 V battery is to be disconnected completely, the ground/minus pole must be disconnected, otherwise there is a risk of short circuits. The negative pole must be protected against renewed contact (insulation, tying away, bending away). If the battery is disconnected, it should be checked whether the vehicle is actually voltage-free. The voltage-free status will be signified by a lack of power to the hazard warning lights or interior lighting.

High voltage manual service disconnect



The Volvo XC90 Twin Engine/ Recharge Plug-in Hybrid has a manual high voltage service disconnect plug.

The high voltage service disconnect plug is located behind the center console under a flap that must be opened. The orange rubber protective cap underneath the flap must be removed. Please see the location below.

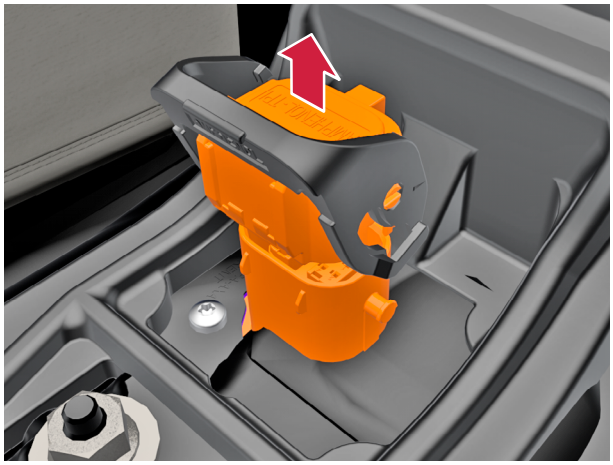


Disconnect the high voltage service plug

This operation also disconnects the traction battery from the rest of the system.



1. Pull the lever up.

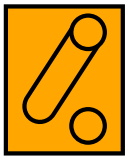


2. Remove the plug upwards.

WARNING

- Shutting off power to an electrical vehicle does not de-energize the battery and a shock hazard may still be present.
- Unless absolutely necessary, do not touch any of the high voltage harnesses and/or components. Touching high voltage components, wires or harnesses might result in personal injury or death.
- If the situation requires operations on any of the high voltage components and/or harnesses, always wear the appropriate Personal Protective Equipment (PPE) to avoid electrical shock. Failure to do so can result in serious injury or death.
- NEVER assume that the electrical vehicle is turned OFF because it is silent. The electrical motor is silent and may still be running. When possible, always take appropriate actions to turn the vehicle completely off and disconnect the high voltage system before performing rescue operations.
- Regardless of which procedure is used to disable the high voltage system, always assume that high voltage components are energized. Take proper actions to avoid unnecessary risks.

Discharge of residual voltages



In case of an accident with airbag and/or belt pretensioner activation or after an unexpected malfunction, the discharge circuit ensures that the high voltage system is free from voltage after approximately 10 seconds.

After switch-off/deactivation of the vehicle, the high voltage system is also de-energized after approx. 10 seconds!

Personal protection clothing and emergency equipment

Use appropriate clothing intended for the purpose and the work to be performed, such as gloves and shoes as well as a safety shield specified to be able to withstand up to 1000 V.

Use insulated tools when working on the vehicle and its components. Use solvent resistant protection gloves and shoes in the event of a traction battery electrolytic solution leakage.

Ending the charging of the traction battery

IMPORTANT

Before the charging cable is removed from the vehicle's charging socket, the vehicle must be unlocked using the unlock button on the key. This must be done even if the vehicle's doors are already unlocked. If the vehicle is not unlocked using the unlock button, the charging cable or system may be damaged.



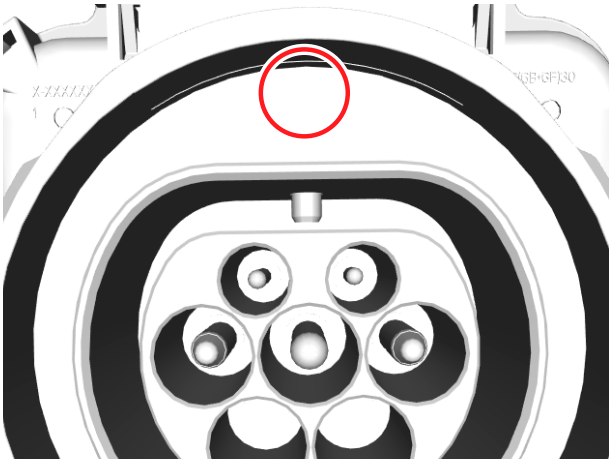
The charging cable is locked automatically

If the charging cable cannot be removed from the charging socket, it will automatically lock into place again after unlocking to maximize charging and range, and to enable preconditioning before driving. The charging cable can be removed again if the vehicle is unlocked using the key. For vehicles with Passive Entry, the handle can be used to lock and unlock.

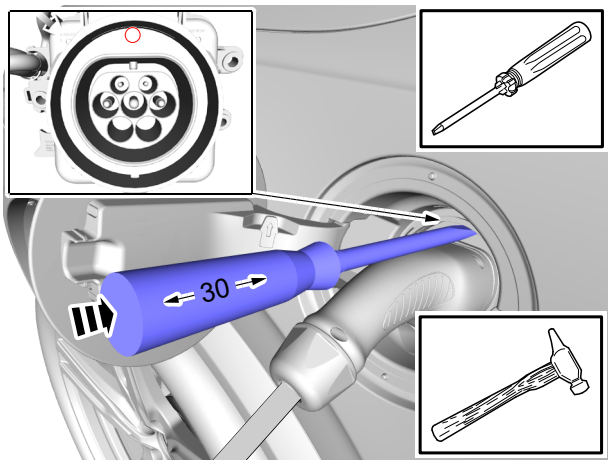
Charging cable emergency release

WARNING

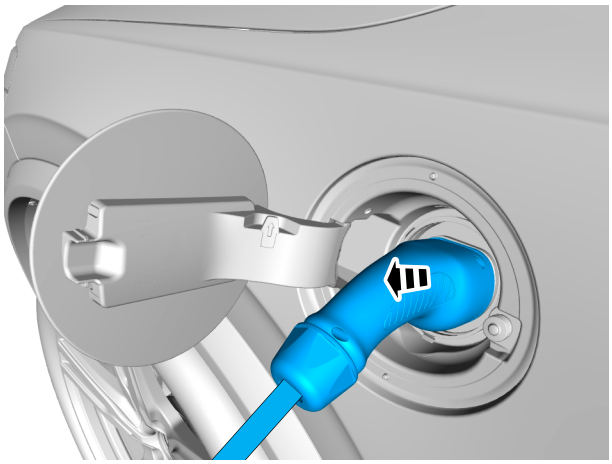
- Unless absolutely necessary, do not perform the emergency release of the charging cable.
- Use appropriate clothing such as gloves and shoes as well as a safety shield specified to be able to withstand up to 1000 V. Failure to do so can result in serious injury or death.



1. Place a flat screwdriver in the marked location.



2. Use a hammer to tap the screwdriver into the charging socket at a depth of 30 mm.



3. Remove the charging cable from the charging socket.

Access to the occupants

Before attempting to access occupants, inspect the level of damage of the electrical vehicle using caution.

Look for indicators that the high voltage system has been damaged, such as:

- High voltage component casings are damaged
- The harnesses are damaged or cut
- Arching or sparking
- Smoke
- Offensive odor

Proceed according to the following scenarios:

If the high voltage system is intact and occupants CAN be accessed without using extrication tools

1. Turn off the vehicle and stabilize it. See 02. IMMOBILISATION / STABILISATION / LIFTING
2. Make sure the high voltage system is disconnected. See 03. DISABLE DIRECT HAZARDS/SAFETY REGULATIONS

After the high voltage system is shut down, no wait period is needed and occupant assistance can start immediately.

If the high voltage system is intact and occupants CANNOT be accessed without using extrication tools

1. Turn off the vehicle and stabilize it. See 02. IMMOBILISATION / STABILISATION / LIFTING
2. Make sure the high voltage system is disconnected. See 03. DISABLE DIRECT HAZARDS/SAFETY REGULATIONS

After the high voltage system is shut down, occupant assistance operations using extrication tools can start immediately. However, be very careful for the following ten (10) seconds and do not cut through or damage any of the harnesses, components or battery of the high voltage system. Look at the schematics in section Component overview in chapter 03. DISABLE DIRECT HAZARDS/SAFETY REGULATIONS to locate the high voltage components.

If the high voltage system is damaged

1. Approach the vehicle with extreme caution.
2. Use appropriate Personal Protective Equipment (PPE).
3. Shut down the high voltage system, see 03. DISABLE DIRECT HAZARDS/SAFETY REGULATIONS, or assist the occupants.

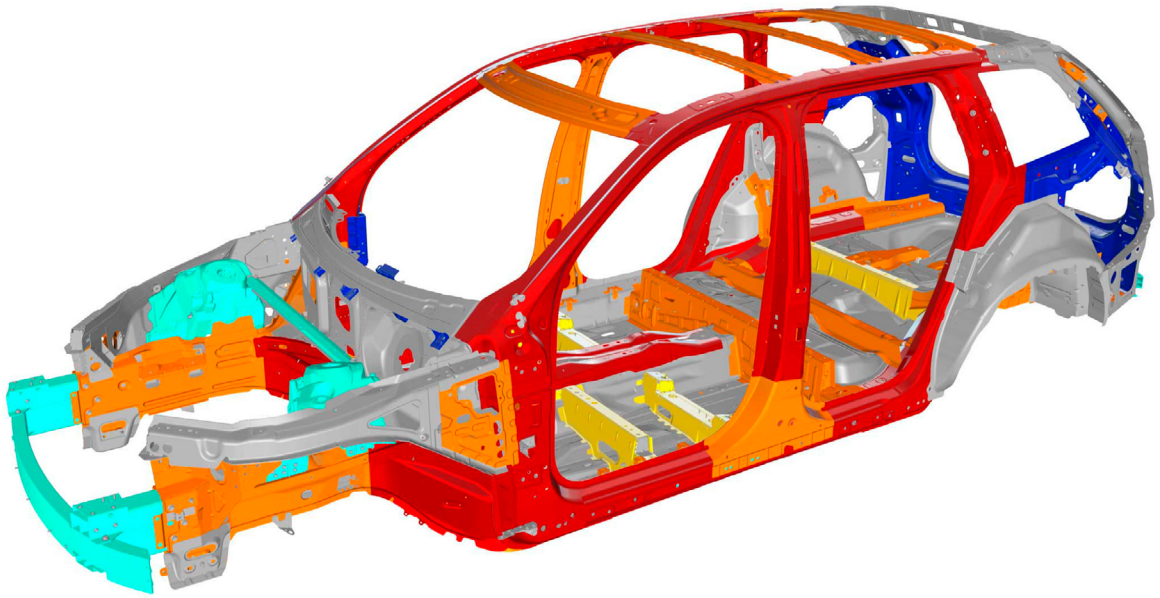
It takes at least ten (10) seconds for the system to be de-energized after high voltage shut down, so the wait time of ten (10) seconds must be observed before any work on the high voltage system can be performed.

WARNING

Operating on the vehicle when the high voltage system is damaged can pose a serious risk of personal injury or death. Take extreme care and use caution when performing rescue operations.

Body framework

The body consists of five different grades of steel (steel alloys). Please see the differences in the below overview image.



- Mild steel
- High strength steel
- Very high strength steel
- Extra high strength steel
- Ultra high strength steel
- Aluminium

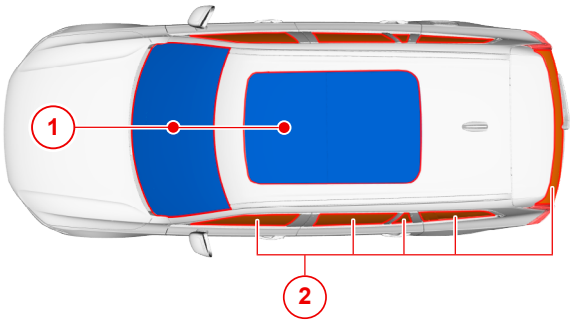
Glass types

The vehicle is equipped with several different types of windows, glass and mirrors. Some of the windows in the car are laminated.

The windshield and the panoramic roof have laminated glass. Laminated glass is also available as an option for some other glass surfaces.



This symbol shows the windows containing laminated glass[2].



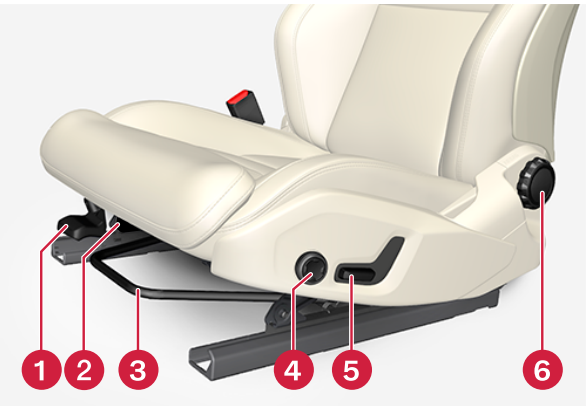
1 Laminated glass

2 Tempered glass/Optional laminated glass

2 Does not apply to windshield and panoramic roof, which are always laminated and therefore do not have this symbol.

Adjusting the seats and steering wheel

Adjusting the manual front seat



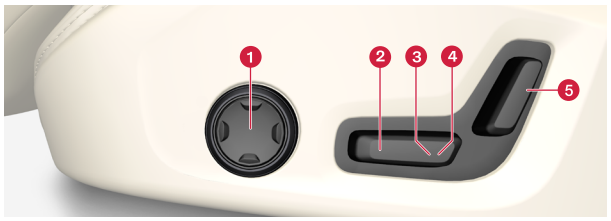


1. Raise / lower the front edge of the seat cushion by pumping up / down.
2. Change the length of the seat cushion by pulling up the lever and moving the cushion forwards / backwards with your hand.
3. Adjust the seat forwards / backwards by lifting the handle and setting the correct distance to the steering wheel and pedals. Check that the seat is locked when the setting has been changed.
4. Change the lumbar support by pressing the up / down / forward / backward button.
5. Raise / lower the seat by adjusting the slider up / down.
6. Change the inclination of the backrest by turning the wheel.

Adjusting the power* front seat

For vehicles with power front seats, the front seats are adjusted using the control on the front seat's seating section.

> **IMPORTANT**
>
> If the power front seats need to be adjusted, this must be done before the 12 V battery is disconnected.

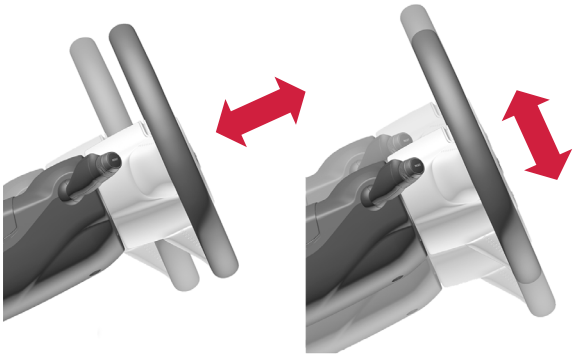


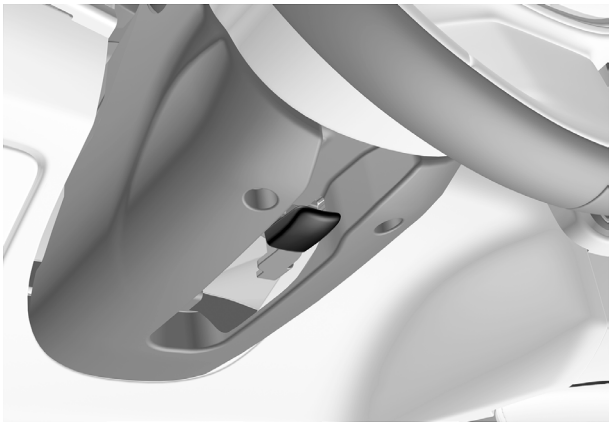
1. In cars with four-way lumbar support, turn the multifunction knob up / down to set the various comfort functions. In cars with two-way lumbar support, use the round button to adjust the lumbar support forwards / backwards.
2. Raise / lower the front edge of the seat cushion by adjusting the slider up / down.
3. Raise / lower the seat by adjusting the slider up / down.
4. Move the seat forwards / backwards by adjusting the slider forwards / backwards.
5. Change the inclination of the backrest by adjusting the slider forwards / backwards.

Adjusting the steering wheel



The steering wheel can be adjusted to different positions.

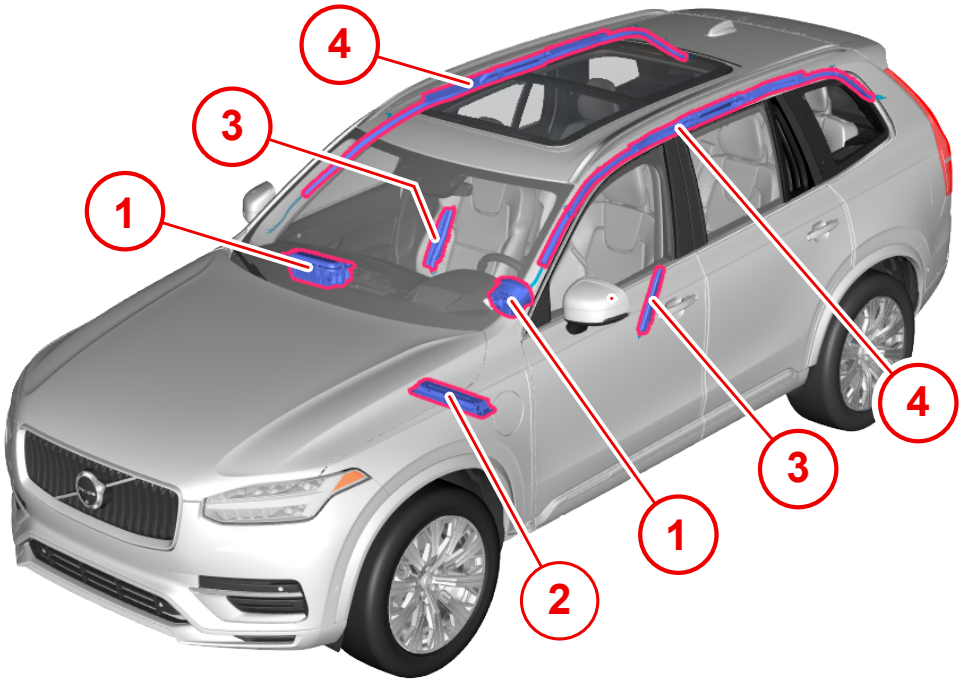




1. Push the lever forwards to release the steering wheel.
2. Adjust the steering wheel to the desired position.
3. Pull the lever back to fix the steering wheel in place. If the lever is stiff, press or raise the steering wheel slightly at the same time as you move the lever back.

Airbags and seat belt pretensioners

The vehicle is equipped with a number of different airbags in order to protect the driver and passengers.



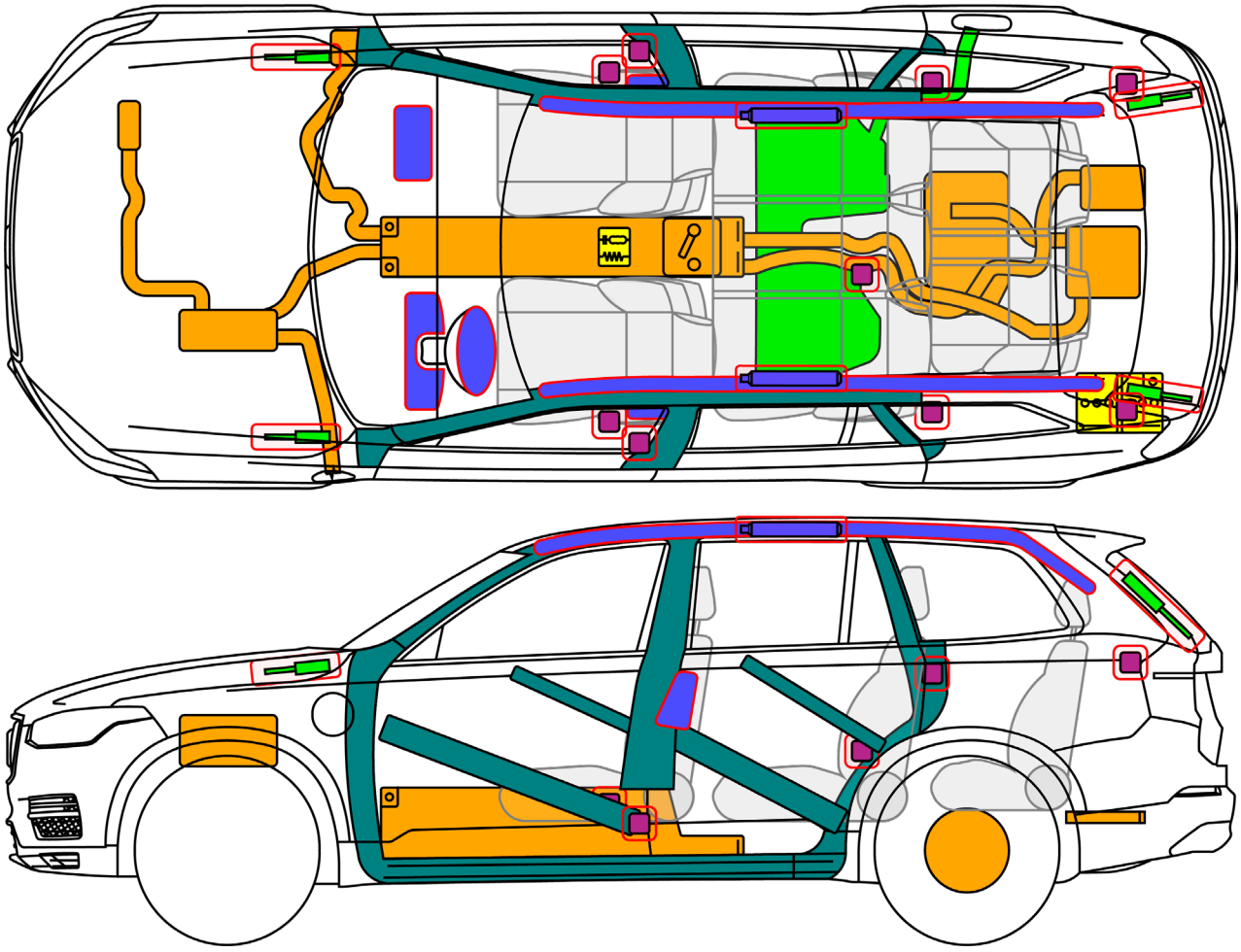
1. Front airbags
2. Knee airbag
3. Side airbags
4. Inflatable curtains

In addition to the airbags, the seat belts help reduce injury to occupants of the vehicle. Seat belt pretensioners are placed in connection to the seat belts. Please see the section "Component overview" in chapter 05. STORED ENERGY / LIQUIDS GASES /SOLIDS for an overview of the placement of the seat belt pretensioners.

WARNING

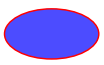
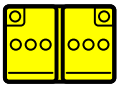
The airbag system's control module is located in the center console. If the center console is drenched with water or another liquid, disconnect the cables to the 12 V battery. Do not attempt to turn on the ignition since the airbags may deploy. When recovering the vehicle, Volvo recommends that it is transported to an authorised Volvo workshop.

Component overview



WARNING

The battery assembly cover should never be breached or removed under any circumstances, including fire. Doing so might result in severe electrical burns, shocks, or electrocution.

Figure	Meaning
	Airbag/side air curtain
	Battery, low voltage

05. STORED ENERGY / LIQUIDS / GASES / SOLIDS

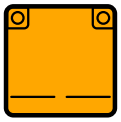
Figure	Meaning
	Traction battery, high voltage
	Airbag inflator
	Gas strut/Preloaded spring
	High voltage power cable
	Seat belt pretensioner

Figure	Meaning
	Reinforced structure of vehicle body
	High voltage emergency disconnect
	SRS Control unit
	Brake fluid container
	Coolant system (std glycol)

First Aid Measures

Under normal conditions of use, there is no risk of exposure to the contents of the traction battery and the high voltage system.

Please see the section "High voltage Manual service disconnect" in chapter 03. DISABLE DIRECT HAZARDS/SAFETY REGULATIONS.

For handling in workshop, please see Vida.

Electric Shock/Electrocution



Seek immediate medical assistance if an electrical shock or electrocution has occurred (or is suspected).

Inhalation of Electrolyte Vapors



If inhalation of electrolyte vapors occurs, move the person into fresh air. If they are not breathing, give artificial respiration and seek immediate medical assistance.

Vent Gas Inhalation



The constituent battery cells are sealed and venting of cells should not occur during normal use. If inhalation of vent gases occurs, move the person into fresh air. If they are not breathing, give artificial respiration. Seek immediate medical assistance.

Treatment of waste water



According to normal procedure.

Emergency rescue in case of fire

In case of fire not involving the traction battery



If there is a fire that has not spread or affects the traction battery, it can be extinguished using typical vehicle fire fighting procedures.

WARNING

Do not make contact with any high voltage components.

WARNING

While performing operations on the vehicle when a fire has been involved, always consider the vehicle to still be energized. Do not touch any part of the vehicle. Use appropriate personal protective equipment, including Self Contained Breathing Apparatus (SCBA).

In case of fire involving the traction battery



Apply water to the floor of the vehicle and underneath it to cool down the battery.



If the traction battery catches fire or is venting or gives off odor, always use large amounts of water to cool the battery. Use pure water to cool down the area around the battery. It may be prudent to have a sufficiently large water supply and/or the possibility to obtain/request additional water supplies when responding to a vehicle accident that involves fire.

NOTE

The fire fighting procedure will take time and will require a lot of water.

IMPORTANT

- Battery fires can take a long time to fully extinguish. This means that the battery might start burning again even after a fire has seemingly been extinguished.
- 

Never assume that the battery has cooled down or that it no longer poses a threat of a new fire emerging. Always take proper actions to make sure that the battery is cooled down completely, i.e. by use of a heat camera or some other (equally suitable) tool to determine the status of the battery heat level.
- Smoke and/or steam, among other irregularities, may indicate that the battery is still heating somewhere.
- Turning, tipping or lifting the vehicle can cause a re-ignition of the traction battery. Always inform the next responder of the risk of the battery re-igniting and what to do in such event.

The traction battery needs to be monitored until it has been determined to be completely cooled before leaving an accident and/or releasing the vehicle to second line responders, such as law enforcement and/or towing personnel.

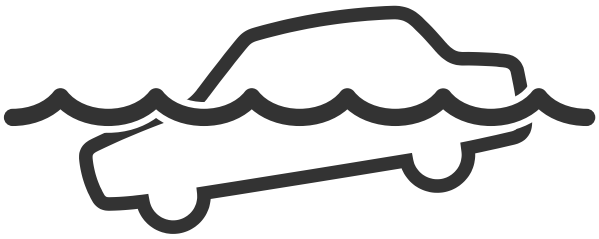
WARNING

When the vehicle has been the subject of a fire, submersion or collision that in any way has compromised the integrity of the traction battery, the vehicle should be stored in an area safe from any exposure.

Always follow local regulations regarding storage and quarantine zones.

Emergency rescue in the case of submersion

Handle a submerged vehicle while wearing appropriate Personal Protective Equipment (PPE). Remove the vehicle from the water and continue with normal high voltage disabling.



WARNING

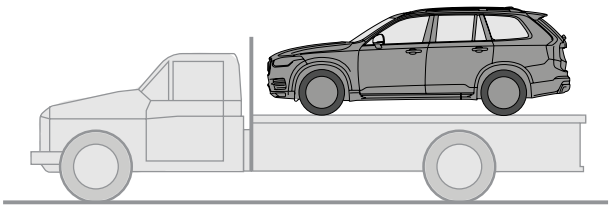
Always wear Personal Protective Equipment (PPE) while handling a submerged vehicle, otherwise it can result in serious injury or death from electrical shock.

WARNING

Do not touch the high voltage components or harnesses when the vehicle is in the water.

Hauling of the vehicle from the scene after an accident

If the vehicle cannot start after an accident, it needs to be hauled from the scene of the accident.



When hauling an electrical vehicle, it should either be lifted off from the ground or towed up onto a recovery vehicle's platform.

When lifted, all four wheels must be lifted off the ground.

It is only permitted to tow the vehicle up onto a recovery vehicle's platform. It is not permitted to haul the vehicle with any of its wheels rolling on the ground.

While hauling, no person is allowed to be inside the vehicle being hauled.

WARNING



After a reaction from a damaged traction battery, it must be secured until it has reached approximately ambient temperature. The use of a thermal imaging camera or an IR thermometer is recommended. Before transporting the vehicle (e.g. by a towing company), the condition of the lithium-ion battery must be re-checked.

Prerequisites for hauling

1. Activate emergency warning lamps.
2. Make sure that all doors are closed and that the mechanical locks are latched up. If possible, activate Towing mode (see below).
3. Make sure the vehicle is shifted to OFF. See the section "Vehicle stopping operations" in chapter 02. IMMOBILISATION / STABILISATION / LIFTING.

Cars with level control

If the car is equipped with air suspension, this must be switched off before the car is lifted. Switch off the function via the center display.

1. Tap **Settings** in the top view.
2. Press **My Car > Parking Brake and Suspension**.
3. Select **Disable Leveling Control**.

The car's position and ground clearance determine whether it is possible to pull the car up onto a flatbed. If the slope of the tow truck's ramp is too steep or if the ground clearance under the car is insufficient, the car can be damaged if you try to pull it up. In that case, the car should be lifted with the tow truck's lifting device.

IMPORTANT

- If it is impossible to utilize platform-type goods vehicle to perform vehicle hauling, rigid attachment means may be used to remove the vehicle to a temporary safe zone awaiting rescue.
- For the method of rigid hauling, long distance hauling shall be avoided and the hauling vehicle shall not exceed a speed of 5 km/h.
- The vehicle may not be hauled away from the scene if the vehicles poses a safety risk in any way.

WARNING

A damaged traction battery can react either immediately or with a delay due to severe damage (e.g. crushed, broken or cracked housing) or exposure to water or fire. Therefore, watch out for any signs (e.g. smoke, heating, noise, sparks, etc.) while working on a vehicle with a lithium-ion battery which has been damaged in a very severe accident. If the lithium-ion battery reacts, protective measures must be taken.

WARNING

The vehicle may only be loaded and transported if the reaction has ended to such an extent that it can be assumed that no further reaction is to be expected on the transport route. The shortest and safest route must be chosen. Passages through tunnels should be avoided. In some cases it may be appropriate for the towing vehicle to be accompanied by a fire-fighting vehicle.

WARNING

The responsible persons of the towing company, the workshops and, if applicable, the disposal companies must be informed of the special features and risks of the vehicle!

Storage recommendations

A damaged traction battery can react either immediately or with a delay due to severe damage (e.g. crushed, broken or cracked housing) or exposure to water or fire. Therefore the vehicle involved in the accident must be parked in a suitable place outside unless it is analyzed as safe, because the traction battery still has the theoretical potential to react until the system is secured. Please see chapter 03. DISABLE DIRECT HAZARDS / SAFETY REGULATION.

The parking space must be marked accordingly (signage/delimitation). A distance of at least 5 meters (15 feet) from other vehicles, buildings or combustible objects must be maintained.

WARNING

If a vehicle has been damaged (battery enclosure has been dented or compromised), it is possible that heating is occurring that may eventually lead to a fire.

Damaged or opened cells/batteries can result in rapid heating (due to exothermic reaction of constituent materials), the release of flammable vapours, and propagation of self-heating and thermal runaway reactions to neighbouring cells.

Smoke may be an indication that a thermal reaction is in progress. If no smoke, flame, sign of coolant leakage, or signs of heat have been observed, the vehicle may be disconnected and moved to a safe location. To obtain specific instructions for evaluating, disconnecting, and preparing a damaged vehicle for transport, please contact the Volvo team. A damaged vehicle should be monitored during storage for evidence of smoke, flame, sign of coolant leakage, or signs of heat.

If full-time monitoring of the vehicle is not possible (for example, during extended storage), the vehicle should be moved to a safe storage location. A safe storage location for a damaged battery will be free of flammable materials, accessible only by trained professionals, and 15 meters (50 feet) away from occupied structures. For example, a fenced, open yard may be an appropriate safe location. It is possible that a damaged battery may sustain further damage during transportation and may lead to a fire. To further reduce this risk, handle the damaged battery with extreme caution until analyzed.

09. IMPORTANT ADDITIONAL INFORMATION

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10. EXPLANATION OF PICTOGRAMS USED

Figure	Meaning
	Hybrid vehicle
	Warning/Caution
	High voltage component
	SRS Control unit
	Power shut down
	Smart key distance
	Lifting point
	Disconnection of high voltage
	Fuse box disabling high voltage
	Opening tailgate
	Seat adjustment, longitudinal
	Seat height adjustment
	Steering wheel tilt
	Airbag
	Battery, low voltage

Figure	Meaning
	Traction battery pack, high voltage
	Airbag inflator
	Gas strut/Preloaded spring
	Ultra capacitor, low voltage
	High voltage power cable
	Seat belt pretensioner
	High strength zone
	Dangerous voltage
	Flammable
	Hazardous to human health
	Environmental hazard
	Use water to extinguish
	Use wet foam to extinguish
	Use dry foam to extinguish
	Use IR Camera

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