VOLVO

Volvo Car USA LLC: EV Battery & Vehicle Handling Post Collision

Volvo Electric Vehicle (EV) repairs should only be performed by trained technicians at approved locations. A signed Permit to Work is required.

The car's primary electrical system operates with 12V and powers the car's primary electrical system, which includes most of the electrical equipment such as Driver assistance and safety systems, Navigation system, Instruments and Infotainment screen, Onboard computers, and Interior lighting. However, the high voltage battery is used when the car runs the electric motor. The battery is dimensioned to power the electrical system and functions specific to the car model. Under normal conditions, it is kept charged by the more prominent high-voltage battery. In addition to the primary electrical system, the car has a high-voltage system for electrical propulsion. Only authorized workshop personnel are allowed to handle high-voltage battery parts. The vehicle cannot be driven if the high-voltage battery is discharged. To charge the battery, the car's smaller 12V battery needs to be sufficiently charged to have the capacity to power the car's electrical system and start charging.

The high-voltage battery (complete) consists of:

- **A tray**
- **Multiple liquid-cooled cell modules**
- **Thermal insulation**
- **Electrical hardware**
- **A lid**

See the instructions for the removal, replacement, and installation section in VIDA. When the high-voltage battery (complete) is mounted to the vehicle, it constitutes a large portion of the vehicle undercarriage.
The electrical hardware in the high-voltage battery (complete) includes but is not limited to:

- **The Battery Energy Control Module (BECM).**
- **The Cell Voltage- and Temperature units (CVTN).**
- **The Battery Disconnecting Unit (BDU) has contactors and fuses for high-voltage input and output.**
- **The Manual Service Disconnector (MSD) disconnects the high-voltage battery once the socket, Manual Service Disconnector (MSD), is removed.**
- **The high-voltage battery coolant temperature sensor, inlet, and the high-voltage battery coolant temperature sensor, outlet.**

Diagnostic information

The high-voltage battery (complete) does not have any diagnostics by itself. The internal control module, Battery Energy Control Module (BECM), handles all diagnostics. The BECM continuously monitors the high-voltage battery (complete), sets DTCs, and has readable parameters.

Mild hybrid 12V system

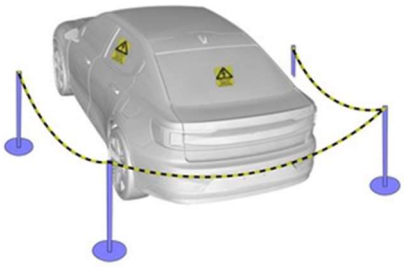
The mild hybrid 12V system uses the main battery to power components. The Central Electronic Module (CEM) regulates the battery charge. A belt charges the battery, which creates power and sends it to the Integrated Starter Generator Module (ISGM). The ISGM transforms the power to 48V DC for charging the 48V battery (MVBM) and sends power to the Mid-Voltage Converter Module (MVCM) to convert to 12V for charging the main battery.

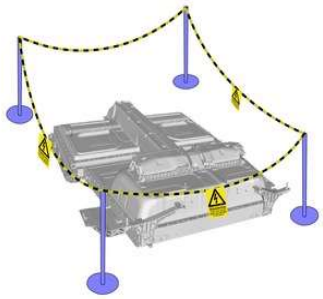
Warning!

Do not switch on the ignition post collision until electrical systems are inspected for damage!

Warning!

If the repair work cannot be started immediately, the vehicle should be positioned in a fire-protected area outdoors. A safety distance of 15 meters (17 yards) should be created between the vehicle and any combustible items. Cordon vehicle, 5 meters by 2.5 meters, and place warning sign. Cover vehicle with nonflammable weather resistant cover to keep out moisture.





Warning!

Do not open the lid of the coolant tank, and do not top up any fluid. Doing this may result in damage that is not covered by the warranty.

The coolant must only be topped up by a workshop. An authorized Volvo workshop is recommended.

Warning!

Replacing the high voltage battery must only be performed by an authorized Volvo workshop.

Warning!
Several components in the car work with high-voltage current that could be dangerous in the event of incorrect intervention. Do not touch anything that is not clearly described in VIDA.

Warning!
Always assume the HV system and components are energized until their status can be verified by following the HV battery disconnecting and connecting procedure in VIDA.

Warning!
A HV battery and all HV components pose a significant risk of electrocution if the enclosure or any of the components have experienced damage during a collision. An authorized Volvo workshop is required for any HV component or system repair.

Warning!
Severe damage to the HV battery may result in a delayed release of toxic and/or flammable gases or fire which could result in bodily injury or death.

Warning!

Ensure that local rules and regulations regarding electrical work are followed.

Warning!

All vehicle electrical components to be considered as highly dangerous.

Warning!

If the work requires disconnection of the high voltage battery the vehicle/work area must be cordoned off with plastic links and posts for the entire repair.

Warning!

In principle, all batteries can cause serious injury if they are short-circuited by, for example, jewelry or metal tools.

Warning!

It is prohibited to charge the vehicle during work or repairs.

Warning!

No High Voltage-related components may be disassembled by anyone other than a Volvo retailer.

Warning!

Make sure that tools used in safety related tests of with the High Voltage system are fully functional, maintained, and do not show any visible damage.

Caution!

All work must be preceded by a risk assessment / risk analysis.

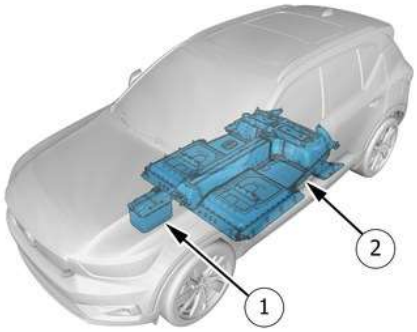
Caution!

All persons working on electric vehicles should complete CPR training.

Battery Damage Inspection

Prior to allowing the vehicle to enter the repair area, perform a visual inspection following the guidelines below. Make sure there is adequate ventilation and maintain access to the vehicle for proper observation and access to emergency response, if needed.

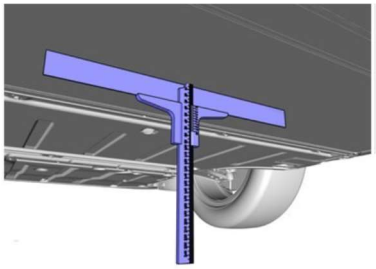
Inspection Point



1. Battery
2. High Voltage Battery

Inspection Point After Severe Damage

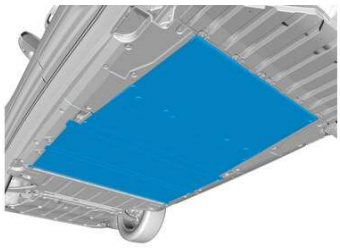
Battery Enclosure – Inspect for any external leaks, signs of moisture accumulation, corrosion, deformations, tears and cracks, signs of an electrical arc, and damaged connectors if found contact your local Volvo Service Team. If any electrical odors, fumes, smoke, sparks, flames, bubbling/gurgling are observed during the inspection call emergency services.



Caution!

Maximum 8 mm deep cavity measured over a length of 500 mm.

Use: Straight-edge ruler
Use: Depth gauge



Caution!

No holes may occur in the outer layer of the plate.

Use of aftermarket, damaged, or deformed hardware in a repair cannot be guaranteed and therefore should never be used. All collision repair guides have been designed around the use of genuine Volvo Car Replacement Parts. Volvo Cars cannot ensure a safe repair utilizing anything other than Genuine Volvo Car Replacement Parts.

Third party or non-Volvo components may lead to system or component errors which can have an adverse effect on collision avoidance systems and occupant safety.

Using only genuine Volvo parts will help ensure vehicle safety, performance and residual value.

Volvo genuine parts are designed and manufactured to exacting specifications to help maximize safety, performance and reliability.

All Volvo exterior paneling, glass, unibody components, drivetrain, electronics, suspension SRS and steering components are essential to safe control of the vehicle. These parts are designed to work with other vehicle components to help keep occupants safe in an accident.

In the event of a collision, Volvo Cars recommends that all repairs are performed by a Volvo Certified Technician through a Volvo Certified Collision Center using only genuine Volvo Cars parts.

Always refer to Volvo Information and Diagnostics for Aftersales (VIDA) for the latest information.