Guideline for rescue and recovery personnel

Information on rescue from vehicles of the Volkswagen and Volkswagen Commercial Vehicles brands that have been involved in accidents

Version dated: 09/2025

Legal notice:
This guide was created exclusively for emergency and recovery personnel who are specially trained in technical assistance after road accidents and can therefore carry out the activities described in it.
Furthermore, the guide contains information about vehicles intended for sale in the European Union.
It does not contain any information about vehicles intended for sale outside the European Union.
Specifications and special equipment in Volkswagen vehicles, and the range of vehicles made by Volkswagen AG, are subject to constant changes.
Volkswagen therefore explicitly reserves the right to modify or change the content of this guide at any time.
The information was up to date at the time it was written.

Please note:
The information contained in this guide is not intended for end customers, and also not for qualified workshops and dealerships.
End customers can find information on the functions of their Volkswagen AG vehicle, as well as important vehicle and passenger safety information, in the vehicle wallet. Workshops and dealerships receive repair information from their accustomed sources.

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List of abbreviations

ABC	Extinguishing powder for fire classes A, B and C
AC	Alternating current
AGM	Absorbent glass mat
BEV	Battery Electric Vehicle
BiFuel	Volkswagen models with liquefied petroleum gas (LPG) drive
CNG	Compressed Natural Gas
CO_2	Carbon dioxide
DC	Direct current
DGUV	German Statutory Accident and Insurance Association
EcoFuel	Volkswagen models with natural gas drive (CNG)
e-Crafter	Volkswagen commercial vehicle model with mild hybrid drive
e-Golf	Volkswagen model with high-voltage drive
eHYBRID	Volkswagen models with plug-in hybrid drive
eTSI	Volkswagen models with mild hybrid drive
e-up!	Volkswagen model with high-voltage drive
EURO NCAP	Association of European transport ministries, automotive clubs and insurance associations
EV	Electric vehicle, powered exclusively by an electric motor
FAQs	Frequently Asked Questions
FBFHB	Fire Service-Assistance–Fire Protection department
FCEV	Fuel Cell Electric Vehicle
GTD	Volkswagen models with combustion engine (diesel)
GTE	Volkswagen models with plug-in hybrid drive
GTI	Volkswagen models with combustion engine (petrol)
GTX	Volkswagen models with high-voltage drive
HEV	Hybrid Electric Vehicle
HOLD	Prevents a vehicle from starting to roll unintentionally
ID. family	Volkswagen models with high-voltage drive
ID.	Volkswagen models with high-voltage drive
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
KESSY	Opening, closing and starting without active use of a key
Li-Ion	Lithium-ion
LKW	Truck
LPG	Liquefied Petroleum Gas
MHEV	Mild Hybrid Electric Vehicle
PHEV	Plug-in Hybrid Electric Vehicle, vehicle with a hybrid drive, whose battery can be charged both via the combustion engine and with a charging connector.

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PKW	Passenger car
R134 a	Refrigerant for air conditioning systems (tetrafluoroethane)
R744	Refrigerant for air conditioning systems (carbon dioxide)
R1234 yf	Refrigerant for air-conditioning systems (tetrafluoropropene)
R	Volkswagen models with special equipment
SRS	Supplemental Restraint System
TGI	Volkswagen models with natural gas drive (CNG)
TÜV	Road Vehicle and Product Certification and Inspection Agency
VDA	German Association of the Automotive Industry
VSG	Laminated safety glass

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Preface

The vehicle and the surroundings are the key factors whose interaction is critical for road safety.
The vehicle has a number of tasks when an accident occurs, including:

- Keeping the passenger compartment as rigid as possible to ensure a space for survival.
- Dissipating the impact energy using intelligent structural concepts and elements.
- Using an optimised restraint system – consisting of airbags and seat belts with belt tensioners and belt force limiters – to effectively protect the occupants.
- Using safety systems to minimise the hazards from service fluids and powertrain components.

Volkswagen vehicles have proven in international tests that they are among the safest. However, accidents and the associated injuries can never be ruled out. This means a short, fast and effective chain of rescue is as essential as ever.
This includes versions and equipment that Volkswagen offers directly. Retrofit solutions and conversions are not taken into account.
This guide was created in accordance with ISO 17840-3 and is intended to help emergency and recovery personnel do their jobs by providing the necessary information on the technology used in Volkswagen vehicles.
Technical innovations such as new materials or new drive technologies require a modified approach when performing a rescue from a vehicle that has been in an accident.
The processes and procedures in the different countries around the world are usually governed by official instructions or guidelines issued by legislators, or the rescue organisation itself. If information about the procedure is provided in this guideline for rescue services, this should be considered as suggestions only for this reason.
The information is intended in particular for the training and development of emergency and recovery personnel. Appropriate rescue cards for Volkswagen vehicles are available for use at the scene of an accident.

The document contains cross-references and hyperlinks to external sources. Links to external sources are provided without guarantee.

Click on the light blue text to follow the cross-references. To return to the last view, press the button ↩ at the top left.

The latest version can be found at www.volkswagen.de.

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0. Rescue card/cards

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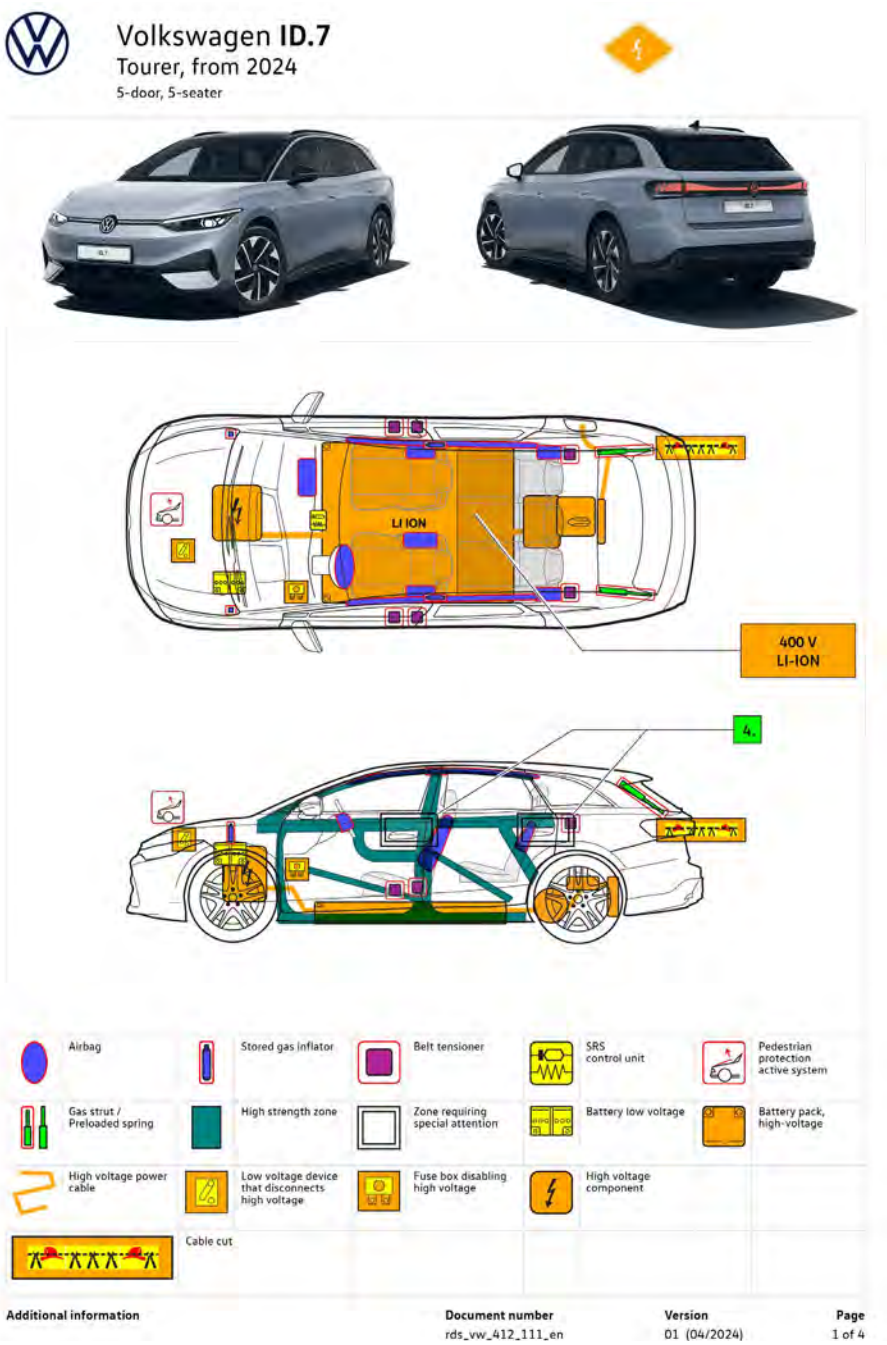
Volkswagen and Volkswagen Commercial Vehicles provide rescue cards for all models and vehicle variants.

The current Volkswagen rescue cards are also available at www.volkswagen.de:

A dynamic search can be used to search for a vehicle model, drive type or language. All European languages are available for vehicles from 2023. Alternatively, an English version can be selected and downloaded.
The illustration shown here includes an example of the first page of the rescue card for the Volkswagen ID.7 in accordance with ISO 17840-1:2022.

The rescue cards for all Volkswagen models since 2020 are compiled in accordance with ISO 17840-1 in the current version in each case and may differ from one another. The rescue cards for vehicles before 2020 feature the manufacturer's layout.

From 2023, all newly created rescue cards are published in 23 European languages.



Area of application

This guide for emergency and recovery personnel is valid for all vehicles made by the Volkswagen and Volkswagen Commercial Vehicles brands.
The range of models is wide, and extends from compact vehicles to light commercial vehicles. The models may be equipped with a petrol, diesel or natural gas drive. Hybrid and electric vehicles are equipped with a high-voltage drive. The range of vehicle models may vary from country to country.

Models made by Volkswagen and Volkswagen Commercial Vehicles are shown as examples on this page and the pages that follow.

The current Volkswagen model range can be found at www.volkswagen.de or on the country-specific websites.

Identification of drive types

 Vehicle on fuel of liquid group 2	 Vehicle on fuel of liquid group 1	 Vehicle on CNG	 Vehicle on LPG
 Hybrid Electric Vehicle on fuel of liquid group 2	 Electric vehicle		

The drive types are described on the model-specific rescue cards.

Volkswagen model range

up! (up to 2023)

Polo

T-Cross

Taigo

T-Roc

T-Roc Cabriolet

ID.3

ID.4

ID.5

Volkswagen model range

ID.7

ID.7 Tourer

Golf

Golf Estate

Tiguan

Tiguan Allspace (up to 2024)

Tayron

Passat (up to 2023)

Passat Estate

Arteon (up to 2023)

Arteon Shooting Brake (up to 2024)

Volkswagen model range

Touran

Sharan (up to 2022)

Touareg

Volkswagen Commercial Vehicles model range

Caddy

Caddy California

Caravelle, Transporter (up to 2024)

California (up to 2024)

Caravelle

Transporter

Volkswagen Commercial Vehicles model range

Multivan

California

ID. Buzz

ID. Buzz Cargo

Crafter

Crafter Grand California

Amarok

Volkswagen Commercial vehicles sold the Caddy, Transporter and Caravelle with electric drives in cooperation with the vehicle tuner ABT from 2019 to 2022.

Volkswagen Commercial Vehicles may exhibit a different body shape to the ones shown here due to individual superstructures and modifications.

Volkswagen model range with natural gas drive (CNG)

Eco-up!	Up to 2023
Polo	Up to 2024
Golf	Up to 2024
Golf Estate	Up to 2024
Touran	Up to 2010
Passat	Up to 2014
Passat Estate	Up to 2014
Caddy (Volkswagen Commercial Vehicles)	Up to 2024

Volkswagen model range with LPG drive

Polo	Up to 2014
Golf	Up to 2009
Sharan	Up to 2010
Caddy (Volkswagen Commercial Vehicles)	Up to 2015

1. Identification / recognition

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Distinguishing features of Volkswagen models

Recognition of the vehicle model and its drive type plays a central role after an accident. Depending on the vehicle model or drive type, specific procedures must be taken into account as part of a rescue and recovery operation.

Along with the Volkswagen logo, the individual models can be identified by the respective body shape, body size and the individual vehicle design.
In addition, the model designation and the technology lettering on the rear of the vehicle can help with identification. This lettering is not present, however, if it was not ordered with the vehicle, or was subsequently removed.
The illustrations on this page show examples of how the logo and the lettering are attached.

Volkswagen logo

Volkswagen logo in the radiator grille

Volkswagen logo on the rear lid

Model designation

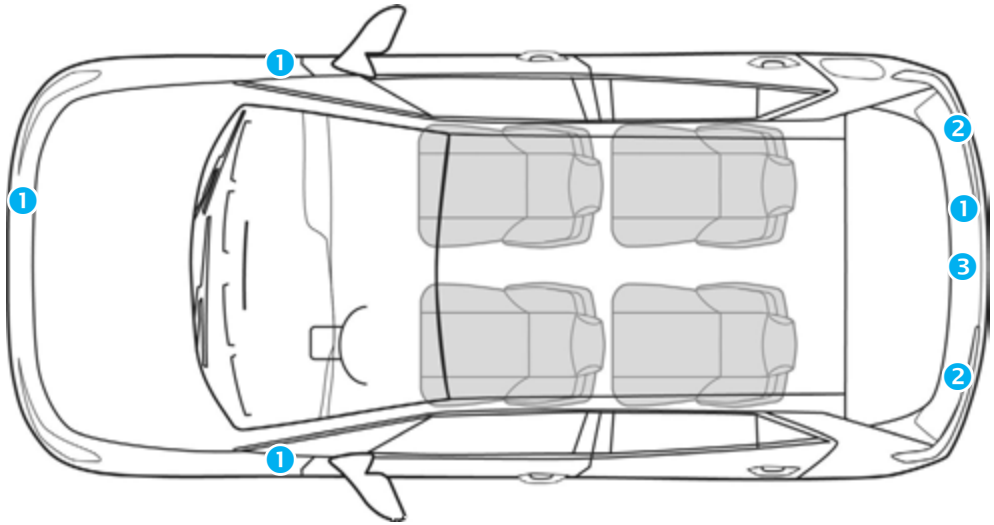
Model designation on the rear of the vehicle

Model designation on boot lid

Distinguishing features of vehicles with combustion engine

Volkswagen models with conventional combustion engines (petrol/diesel) can be identified by the following features.

The model-specific distinguishing features are described in the rescue cards.



Features on the vehicle

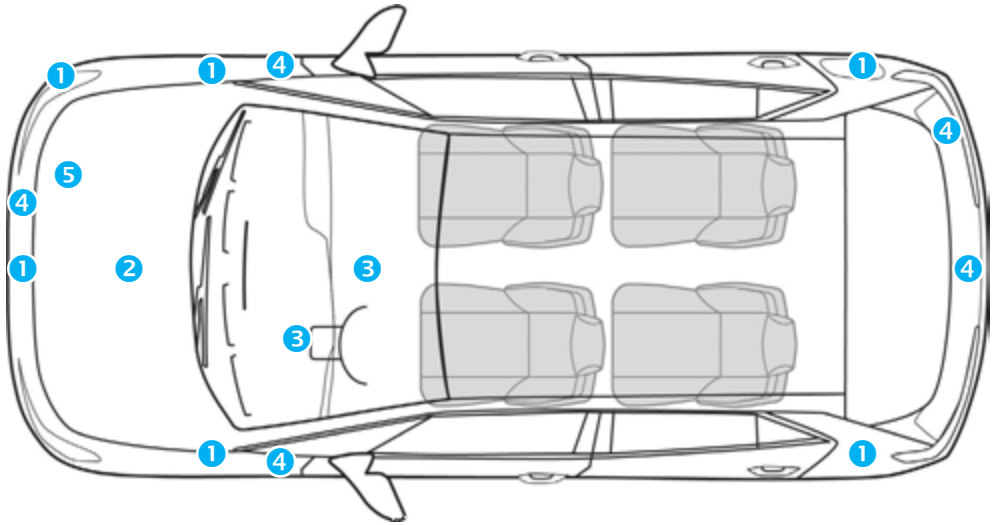
1. Model-specific lettering such as “GTI”, “GTD” or “eTSI”
2. Visible exhaust system
3. Model designation centrally under the Volkswagen badge

Distinguishing features of high-voltage vehicles

Volkswagen models with a high-voltage drive are available with plug-in hybrid drive (PHEV) or a fully electric drive (BEV).

The electric drive motor is silent. The display in the instrument cluster (power meter) provides feedback as to whether the electric drive is switched to OFF, or READY for operation.

The model-specific distinguishing features are described in the rescue cards.



Features on the vehicle

1. Charging sockets in the radiator grille or in the front or rear wings
2. Orange-coloured cables in the vehicle front end
3. E-specific displays on the instrument cluster such as charging displays, power display “READY” for driving readiness, “E-Mode” button in the centre console, Sport program button (GTE)
   Hybrid or GTE lettering, e.g. on the cockpit and/or steering wheel
4. “GTE”, “eHYBRID”, “ID.” or “GTX” lettering on the boot lid or radiator grille as well as at the sides on the wings (lettering may be missing)
5. Warning sticker in the vehicle front end

Classification of the electrification variants

After an accident, electrified vehicles pose different hazards to emergency and recovery services than those presented by conventionally powered vehicles. This makes it crucial to identify these vehicles as soon as possible.

Volkswagen offers various electrification variants, which differ in terms of primary energy source, voltage, type of driving machine and electric range.

A distinction is made between the following variants without external charging socket:

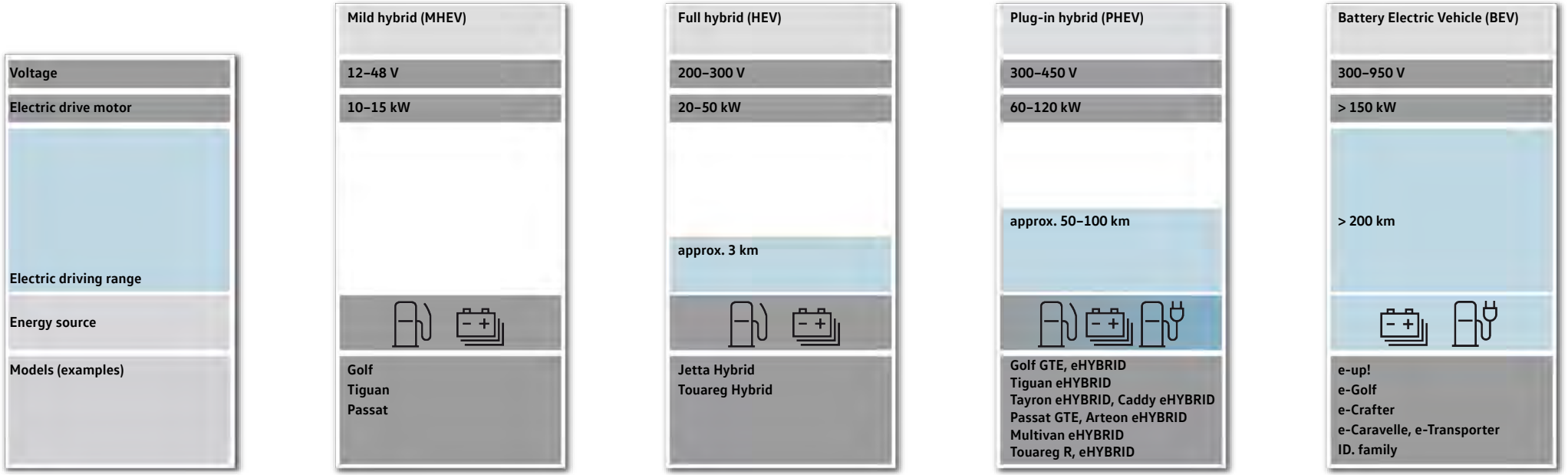
- Mild-Hybrid Electric Vehicle (MHEV)
- Full-Hybrid Electric Vehicle (HEV)

and the following variants with external charging socket:

- Plug-In Hybrid Electric Vehicle (PHEV)
- Battery Electric Vehicle (BEV)

The different electrification concepts are shown in the table. Mild hybrid vehicles (MHEV) with on-board electrical system voltages of up to 48 volts are not high-voltage vehicles. These vehicles also do not differ externally from the conventional Volkswagen vehicles of the respective model.
All other variants listed are high-voltage vehicles.

Key for energy sources	
	Conventional fuels such as petrol and diesel
	Battery operation
	Battery operation with charging option via socket



Volkswagen model range with natural gas drive

A number of points distinguish vehicles with natural gas drive (CNG) from conventional vehicles and vehicles with a liquefied petroleum gas drive. Knowledge of these differences is highly significant for the rescue operations.

Volkswagen currently does not offer any vehicles with a natural gas drive (CNG). Until the beginning of 2024, various vehicle models with petrol/natural gas drive were offered as "TGI" vehicles. Other vehicles with natural gas drive were sold with the designation "EcoFuel".
Vehicles with liquefied petroleum gas (LPG) drive feature the designation "BiFuel".

The natural gas vehicles made by Volkswagen also have a small fuel tank for petrol installed along with various natural gas tanks.

Being able to identify natural gas vehicles immediately is of critical importance for emergency and recovery personnel deployed e.g. to traffic accidents in order to allow them to assess the risks at the scene of deployment and take appropriate measures.

Natural gas (also referred to as CNG – compressed natural gas) must not be mistaken for LPG – liquefied petroleum gas. Liquefied petroleum gas and autogas systems are fundamentally different to natural gas and natural gas systems.

The term "BiFuel" was also used for natural gas vehicles when vehicles with a gas drive were introduced. The term "EcoFuel" has been used for natural gas vehicles and the term "BiFuel" has been used for liquefied petroleum gas vehicles since 2009.
Current vehicles with a natural gas drive are sold under the designation "TGI".

Further information on natural gas vehicles can be found in chapter 3. Disable direct hazards / safety regulations, chapter 5. Stored energy / liquids / gases / solids, chapter 6. In case of fire, chapter 7. In case of submersion and chapter 8. Towing / transportation / storage.

Dealing with natural gas vehicles is different to dealing with conventional vehicles. However, any dangers can be controlled appropriately and to the same extent if the special points to note are known.

Volkswagen models with natural gas drive (CNG, up to 2024)

		
eco-up!	**Polo TGI**	**Golf TGI**
		
Golf Estate TGI	**Caddy Kombi TGI**	**Caddy Cargo TGI**

Distinguishing features of natural gas vehicles

Exterior features of the vehicle

- Lettering on the rear lid
- Separate natural gas connection, integrated behind the tank cap

Exterior features of the vehicle	
	"TGI" lettering on boot lid (lettering may be missing)
	Natural gas connection at the fuel filler neck

Volkswagen model range with LPG drive

A number of points distinguish vehicles with a liquefied petroleum gas drive – also designated as LPG or liquefied gas – from conventional vehicles. Knowledge of these differences is very important for emergency personnel when performing a rescue operation.
Volkswagen currently does not offer any vehicles with a liquefied petroleum gas (LPG) drive. Vehicles with LPG drive were offered up to April 2014.
All vehicles made by Volkswagen with a liquefied petroleum gas drive can be operated using both liquefied petroleum gas and petrol. The BiFuel vehicles feature a bivalent drive system, i.e. the conventional series petrol tank is installed along with the liquefied petroleum gas tank.
Being able to identify liquefied petroleum gas vehicles immediately is of critical importance for emergency and recovery personnel deployed, e.g. to traffic accidents, in order to allow them to assess the risks at the scene of deployment and take appropriate measures.

Liquefied petroleum gas (also designated as LPG or liquefied gas) must not be mistaken for natural gas (also designated as CNG or compressed natural gas). Natural gas and natural gas systems have features that fundamentally distinguish them from liquefied petroleum gas and autogas systems.

Dealing with liquefied petroleum gas vehicles is different to dealing with conventional vehicles. However, any dangers can, so to speak, be appropriately brought under control when knowledge of their special features is available.

Distinguishing features of LPG vehicles

No vehicles with a liquefied petroleum gas drive are currently being sold, however a range of different Volkswagen models can be found on the road.

Exterior features of the vehicle

- "BiFuel" lettering on the boot lid
- Separate LPG connection

Exterior features of the vehicle	
	"BiFuel" lettering on the boot lid
	LPG or liquefied gas tank in the luggage compartment floor
	Liquefied gas connection at tank filler neck

Volkswagen Commercial Vehicles with camping gas equipment

Volkswagen Commercial Vehicles offers a range of models with additional camping gas equipment.

Different types of camping gas cylinders (propane or butane) are installed at different positions in the vehicle in these models.

Being able to identify vehicles with camping gas equipment immediately is of critical importance for emergency and recovery personnel deployed, e.g. to traffic accidents, in order to allow them to assess the risks at the scene of deployment and take appropriate measures.

Propane or butane gas is highly flammable.

Dealing with vehicles with camping gas equipment is different to dealing with conventional vehicles. However, any dangers can, so to speak, be appropriately brought under control when knowledge of their special features is available.

Volkswagen Commercial Vehicles with camping gas equipment

Caddy California
1 × 1.8 kg gas cylinder

California Beach
(up to 2024)
1 × 1.8 kg gas cylinder

California Coast/Ocean
(up to 2024)
1 × 11 kg gas cylinder

California Beach Tour
1 × 1.8 kg gas cylinder

California Beach Camper
1 × 1.8 kg gas cylinder

California Coast/Ocean
1 × 2.5 kg gas cylinder

Grand California 600
2 × 11 kg gas cylinder

Grand California 680
2 × 11 kg gas cylinder

Distinguishing features of camping gas vehicles

Exterior features of the vehicle

- TÜV inspection sticker on boot lid
- Special roof structure (optional)
- Awning on front passenger side (optional)
- “California” lettering (lettering may be missing)

Features in the vehicle interior

- Kitchen with one or two gas hobs
- Basin
- Shower cabin
- Toilet
- Up to four beds

Some of the above equipment is available as an option.

Exterior features of the vehicle

	TÜV inspection sticker (not applicable in many European markets)
	Special roof structure
	Awning on front passenger side

Features in the vehicle interior (examples)

	Pull-out mini kitchen at the rear of the vehicle for the Caddy California and California Beach
	Kitchenette with sink on driver’s side in the California (accessible from outside from model year 2025)
	Kitchenette accessible from outside with sink on the front passenger side in the Grand California (accessible from outside on the driver’s side in the California from model year 2025)

2. Immobilisation / stabilisation / lifting

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Stabilising or securing a vehicle reduces the risks that may result from unwanted movements of the vehicle after an accident.

The modern vehicle systems such as start/stop system or Auto Hold function (HOLD button) or new silent drive systems convey the impression that the vehicle is switched off.
However, depending on the accident situation, these systems could lead to the vehicle starting and rolling away unintentionally.
It is therefore recommended to ensure that the ignition is OFF or the power meter is OFF before starting the rescue operation and to thus deactivate the vehicle's drive system. For more information, see chapter 3. Disable direct hazards / safety regulations.

Depending on the situation, it is also recommended to secure the vehicle against unwanted movements (rolling, tilting, slipping) by means of wheel chocks, suitable supports or the attachment of slings.

In all current Volkswagen vehicles, the drive system is automatically deactivated after detection of an accident in which airbags are triggered.

In high-voltage vehicles, it is recommended to always locate an accessible high-voltage device that disconnects high voltage to de-energise the high-voltage system. Also see chapter 3. Disable direct hazards / safety regulations.

The model-specific rescue cards describe the recommended procedure for deactivating the high-voltage cut-out connections.

When the 12-volt vehicle battery has been disconnected, all functions of the electrical system stop working (this applies in particular to the hazard warning lights, interior lighting and electric seat adjustment).
For further information, see chapter 4. Access to the occupants and chapter 9. Important additional information.

Preventing the vehicle from rolling away

Volkswagen models may be equipped with a manual gearbox or an automatic gearbox.
To prevent the vehicle from rolling away or moving off accidentally, the gear lever must first be placed in the “Neutral” (for a manual gearbox) or “P” position for automatic gearboxes, depending on the accident situation.

1. Select the correct/appropriate gear
2. Locate parking brake
3. Apply the parking brake

If necessary, secure the vehicle with suitable wheel chocks to prevent it from rolling away unintentionally or secure it with belts.

Conventional vehicle with automatic gearbox: apply electronic parking brake or pull handbrake lever.

Apply the electronic parking brake at the right steering column switch.

Vehicle with manual gearbox and manual handbrake.

If further securing methods are necessary, the following vehicle areas can be used for this: vehicle pillars, members, wheels, axles, towing eyes or optionally the ball coupling.

Lifting the vehicle

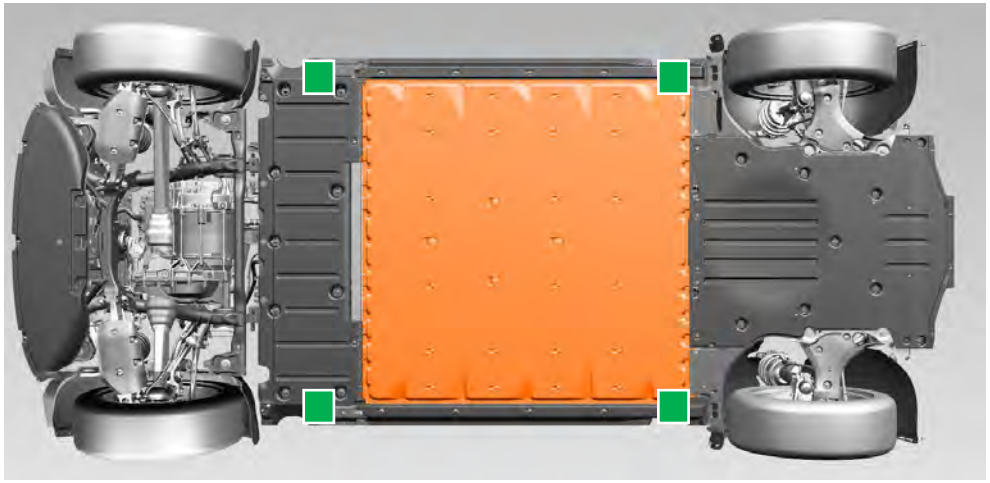
Lifting the vehicle may be necessary to rescue injured persons. Make sure that sensitive parts such as the high-voltage battery, drive train, fuel tank or exhaust system are not damaged if possible.

Use firmly anchored components when lifting or securing vehicles that have been involved in an accident. Do not use high-voltage components or exhaust systems.

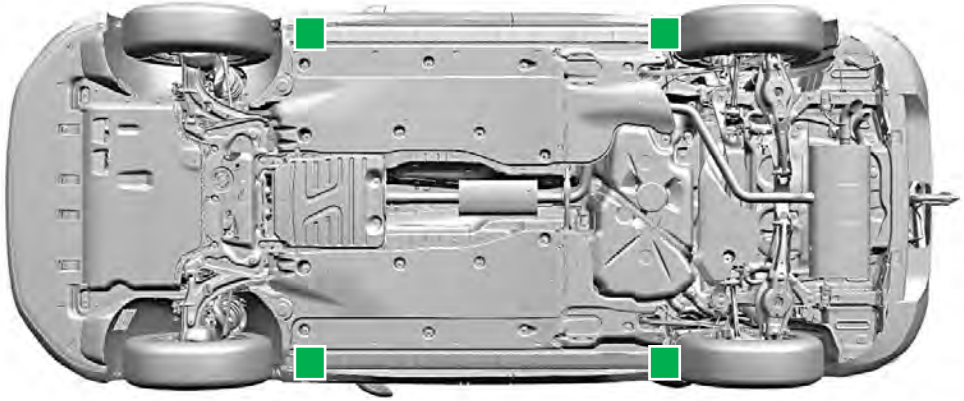
For deformed vehicles, the emergency and recovery personnel on site must decide at which points to lift the vehicle.

The vehicle-specific points for lifting are indicated on the rescue cards.

If possible, lift the vehicle at the indicated lifting points.



Suitable lifting points on vehicles with high-voltage drive, e.g. ID.3



Suitable lifting points on vehicles with combustion-engine drive, e.g. Tiguan

Suitable lifting points

High-voltage battery

3. Disable direct hazards / safety regulations

Recognition and elimination of hazards to life and limb plays a major role in dangerous situations. This chapter describes the appropriate preventive measures that minimise the risks to accident victims and rescue personnel.

Wear appropriate protective clothing as liquids or gases may leak and cause injury or explosion.
Avoid contact with these substances as much as possible during rescue and recovery operations.

In hazard situations, the following procedure is recommended:

1. Warn surroundings about hazards
   (switch on hazard warning lights, are activated automatically after an accident)
2. Immobilise the vehicle, see chapter 2. Immobilisation / stabilisation / lifting
3. Disable direct hazards
   Switching off the ignition
4. De-energise vehicle electrical systems
   Deactivating the high-voltage system
   Disconnecting the 12-volt vehicle battery (depending on situation),
   Disconnecting the 48-volt vehicle battery

In the event of an accident in which airbags are triggered, the high-voltage system and the 48-volt electrical system are automatically deactivated.
The high-voltage system is de-energised approx. 20 seconds after deactivation.

Switching off the ignition

Turn the ignition key to “OFF” and remove it. Many Volkswagen models are equipped with a START-ENGINE-STOP button. This may be located on the steering column, in the centre console or in the dash panel.

The following possibilities, amongst others, must be kept in mind:

- The vehicle may still have a traditional ignition lock or it may have Keyless Access (KESSY), a system where the vehicle key can switch on the vehicle from anywhere inside it (e.g. in the driver’s pocket or a handbag in the vehicle). Some vehicles can also be controlled using an app.
- Use the vehicle key, if there is one, to switch the vehicle to OFF.

If the vehicle features a START-ENGINE-STOP button that can be used to deactivate the vehicle, press this.
Then remove the remote control key, key card or smartphone from the vehicle and keep at a minimum distance of five metres to prevent unintentional switching on.

Vehicle with conventional key.

Vehicle with START-ENGINE-STOP button in the centre console.

Vehicle with START-ENGINE-STOP button on the steering column.

If the START-ENGINE-STOP button is pressed and the brake pedal is simultaneously operated, the vehicle may switch to driving readiness mode.
Observe the information on the rescue cards.

In vehicles with a high-voltage drive, the “power display” in the instrument cluster provides feedback as to whether the electric drive is switched off “OFF” or ready for operation “READY”.

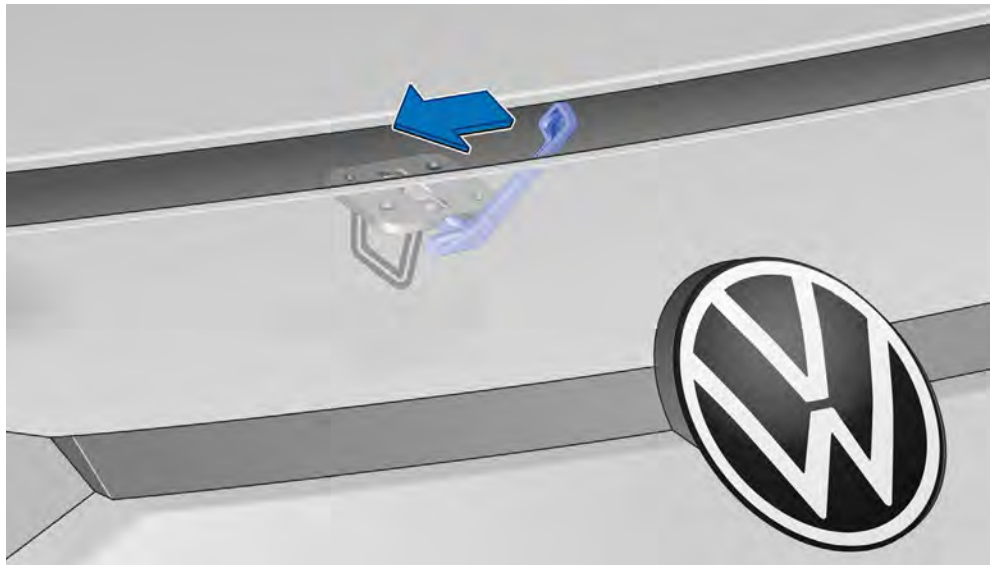
Instead of the ignition key, use of a key card or smartphone app is also possible.
Remove the ignition key, the key card or the smartphone from the vehicle (a minimum distance of five metres should be observed for this).

Opening and closing the bonnet

Depending on the situation, it may be necessary to open and close the bonnet.
The following section describes the standard procedure
(the 2-lock system is not taken into account).

Further information can be found in the model-specific Owner's Manual.

In the footwell on the driver's side: release lever for the bonnet (example ID.4).



On the bonnet: opening lever (example ID.4).

Deactivating the high-voltage system

Volkswagen models with battery-electric drive (BEV) or plug-in drive (PHEV) are equipped with a high-voltage system with a voltage of over 300 volts.

The high-voltage system is disconnected from the high-voltage battery immediately when triggering of the airbags is detected. Activation of the high-voltage system can then only be performed by a suitable qualified workshop. In addition, displays or warnings can be displayed on the dash panel.
High-voltage vehicles from Volkswagen have several emergency cut-out connections. These are located on the fuse box, in the vehicle front end or at the rear of the vehicle. They provide emergency personnel with an easily accessible way of safely deactivating the high-voltage system. Further information is provided on the following pages under Disconnecting the high-voltage system from the vehicle.

	**The electric drive motor is silent in vehicles with a high-voltage drive. The display in the instrument cluster (power meter) indicates whether the electric drive is switched off (OFF) or ready for operation (READY).**
	**The vehicle's drive system can be activated by occupying the driver seat and pressing the brake pedal in vehicles in the ID. family.**

In the event of accidents in which airbags are triggered, the high-voltage system is automatically deactivated. The high-voltage system is de-energised approx. 20 seconds after deactivation.

In all other cases, an emergency cut-out connection can be used to deactivate the high-voltage system.
In particular, using an emergency cut-out connection prevents the system from switching on again unintentionally.

Depending on the circumstances of the accident and the situation at the scene of the accident, the prioritised emergency cut-out connection in the fuse box may not be accessible (e.g. in the event of a car/truck underride accident). If necessary, the alternative emergency cut-out connection in the vehicle front end or at the rear of the vehicle can be used.

These emergency cut-out connections indicated by yellow tags only carry the 12-volt electrical system voltage, which means they can be safely disconnected by the emergency personnel using the procedure described on the tags.

	**Disconnection of a marked emergency cut-out connection only disables the high-voltage system.** **Safety systems such as airbags or belt tensioners are still supplied with voltage by the 12-volt electrical system.**
	**If the airbag has not been triggered, the 12-volt electrical equipment may still be supplied with electrical energy from the high-voltage battery via the DC converter after the electrical system battery has been disconnected!**
	**Even after deactivating the high-voltage system, there is still energy inside the high-voltage battery.** **The high-voltage battery must therefore neither be damaged nor opened during the rescue measures.**

Do not touch damaged high-voltage components, and cover them using suitable means if necessary!
Wear personal protective equipment in accordance with the local standards!

The positions of the emergency cut-out connections and the procedure for disabling the vehicle are shown on the Volkswagen rescue cards.

At the scene of the accident

Depending on the accident situation, restraint systems, e.g. airbags, may have been triggered. The emergency and recovery services at the scene of the accident decide how to proceed with the rescue and recovery.

Rapid or strong smoke development on the accident vehicle may indicate a thermal reaction of the high-voltage battery, see also Fire in high-voltage vehicles.

Minor accident
Initially, no damage is visible and the restraint systems have not been deployed.

1. Warn surroundings of hazards:
   switch on hazard warning lights, set up warning triangle
2. Immobilise vehicles:
   Chapter 2. Immobilisation / stabilisation / lifting
3. Deactivate the high-voltage system:
   by removing the fuse at the fuse carrier or disconnecting alternative emergency cut-out connections

Severe accident
The restraint systems were triggered. There is initially no visible damage to the high-voltage battery.

1. Warn surroundings of hazards:
   switch on hazard warning lights, set up warning triangle
2. Immobilise vehicles:
   Chapter 2. Immobilisation / stabilisation / lifting
3. The high-voltage system was deactivated automatically

Damage or deformation of the high-voltage battery on the accident vehicle may indicate a thermal reaction of the high-voltage battery, see also Fire in high-voltage vehicles.

Depending on the accident situation, it may be necessary to additionally deactivate the high-voltage system manually at an emergency cut-out connection.

Parked or stationary vehicle
If a parked vehicle is damaged by an accident, restraint systems or airbags are generally not triggered. The high-voltage system is not automatically deactivated. When the ignition is switched off, no warnings can be displayed on the dash panel.

1. Deactivate the high-voltage system by removing the fuse at the fuse carrier.

Vehicle at charging station
If a charging vehicle is damaged by an accident, restraint systems or airbags are generally not triggered. The high-voltage system is not deactivated automatically. When the ignition is switched off, no warnings can be displayed on the dash panel.

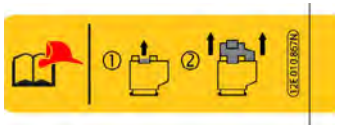
1. Disconnect charging cable as usual (see Owner's Manual of the vehicle).
2. Alternatively Disconnecting from the charging station (manual release)

The high-voltage components are marked with warning signs, see also Warning labels for high-voltage components. High-voltage cables are orange.

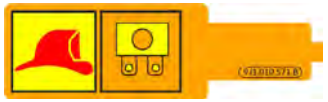
Identification of emergency cut-out connection

The emergency cut-out connections for deactivating the high-voltage system are uniformly marked on the models in the Volkswagen Group. The pictograms on the labels explain the procedure.
Until 2022, the labels were produced according to our own specifications and installed in the models. With the introduction of the ID.7, new labels coordinated with EURO NCAP will be used. These labels will also be used for all models in the Volkswagen Group in the future.

Previous identification

	**Indicates the emergency cut-out connection in the passenger compartment (pulling out the fuse on the fuse carrier)**
	**Indicates the emergency cut-out connection in the vehicle front end (opening the maintenance connector for high-voltage system)**
	**Indicates the emergency cut-out connection in the luggage compartment or rear of the vehicle (cutting through the marked cable)**

New identification as of 2023

	**Indicates the emergency cut-out connection in the passenger compartment (pulling out the fuse on the fuse carrier)**
	**Indicates the emergency cut-out connection in the vehicle front end (opening the maintenance connector for high-voltage system)**
	**Indicates the emergency cut-out connection in the luggage compartment or rear of the vehicle (cutting through the marked cable)**

The emergency cut-out connections in the Caravelle and Transporter models from Volkswagen Commercial Vehicles from 2025 onwards have no markings.

Disconnecting the high-voltage system from the vehicle

The electric drive motor is silent in vehicles with a high-voltage drive. The display in the instrument cluster (power meter) indicates whether the electric drive is switched off (OFF) or ready for operation (READY).
Observe the information on the rescue cards.

The high-voltage cut-out connections in the Transporter and Caravelle models from Volkswagen Commercial Vehicles (from 2025) are not marked.
Observe the special procedure in the vehicle-specific rescue cards.

If the high-voltage system also needs to be disconnected manually, observe the following sequence:

1. First use the Main method: high-voltage cut-out connection on fuse carrier; if this cannot be reached, then use the
2. Alternative method: high voltage cut-out connection in the vehicle front end (maintenance connector) or the
3. Alternative method: high voltage cut-out connection at the rear of the vehicle .

There are at least two cut-out connections in current Volkswagen models. One is in the fuse carrier and another is installed in the vehicle front end. There is an additional third cut-out connection in the rear of the vehicle in some vehicles in the ID. family.

Different procedures may be necessary, depending on the vehicle type and equipment. The way in which the vehicle is disabled depends on the accident situation and the vehicle equipment.

The installation location of the emergency cut-out connections and the required procedures can be found on the Volkswagen rescue cards.

Maximum certainty that the high-voltage system is deactivated can only be provided if an emergency cut-out connection provided by the manufacturer is disconnected and the 12-volt vehicle electrical system battery is disconnected.

Use rescue equipment with caution and consideration near high-voltage components

Regardless of whether the vehicle is a hybrid or electric vehicle, the following points always apply in rescue operations at high-voltage vehicles.

Improper handling of high-voltage components can prove fatal due to high voltage and the associated potential flow of current through the human body.

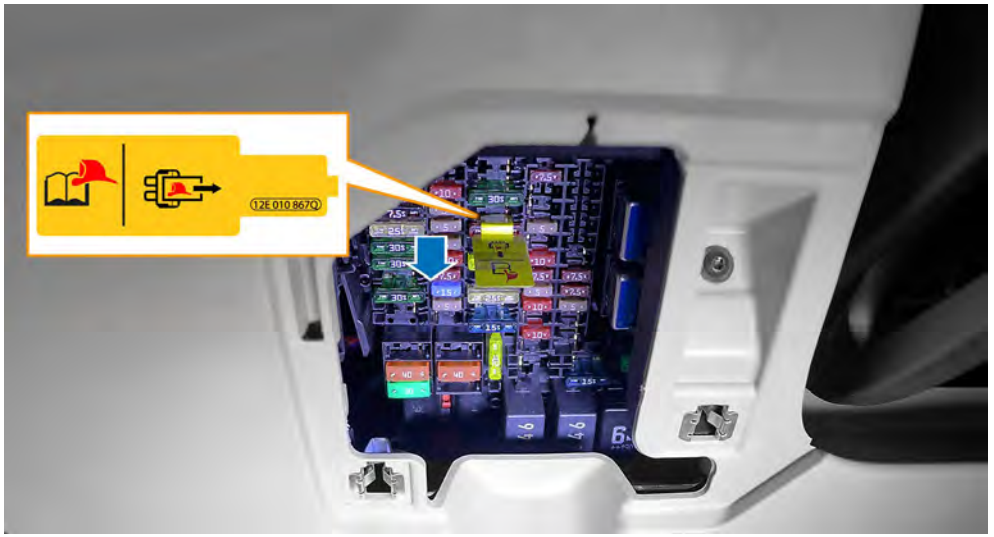
Do not perform any work on badly damaged high-voltage components. One of the accessible emergency cut-out connections should also be opened.
If the airbags have not deployed, the vehicle must be disabled by the emergency and recovery personnel using an emergency cut-out connection. The high-voltage system has been de-energised after approx. 20 seconds.
If the airbags have deployed, the high-voltage system will have already been switched off; this means the emergency and recovery personnel can act immediately.

	**Even after disabling the high-voltage system, there is still electrical energy inside the high-voltage battery. The high-voltage battery must therefore neither be damaged nor opened during the rescue measures.** **If the high-voltage battery has been damaged due to the effects of an accident, avoid any contact with the high-voltage battery or with any liquids and vapours escaping from the high-voltage battery.**
	**Do not touch damaged high-voltage components, and cover them using suitable means if necessary!** **Wear personal protective equipment in accordance with the local standards!**

Main method: high-voltage cut-out connection on fuse carrier

Depending on the vehicle model, the fuse carrier is located in the interior in the area of the dash panel or installed at the rear of the vehicle and marked with a yellow tag. In this case, the high-voltage system is disconnected and deactivated by pulling the appropriately labelled fuse out of its holder.

The connectors in the high-voltage battery open and disconnect it from the rest of the high-voltage system, which is then de-energised after 20 seconds have passed.



Cut-out connection in the passenger compartment, dash panel on the fuse carrier

	**New identification for high-voltage cut-out connection on fuse carrier**
	**Fuse box disabling high voltage**

The positions of the emergency cut-out connections and the procedure for disabling the vehicle are shown on the Volkswagen rescue cards.

Alternative method: high voltage cut-out connection in the vehicle front end

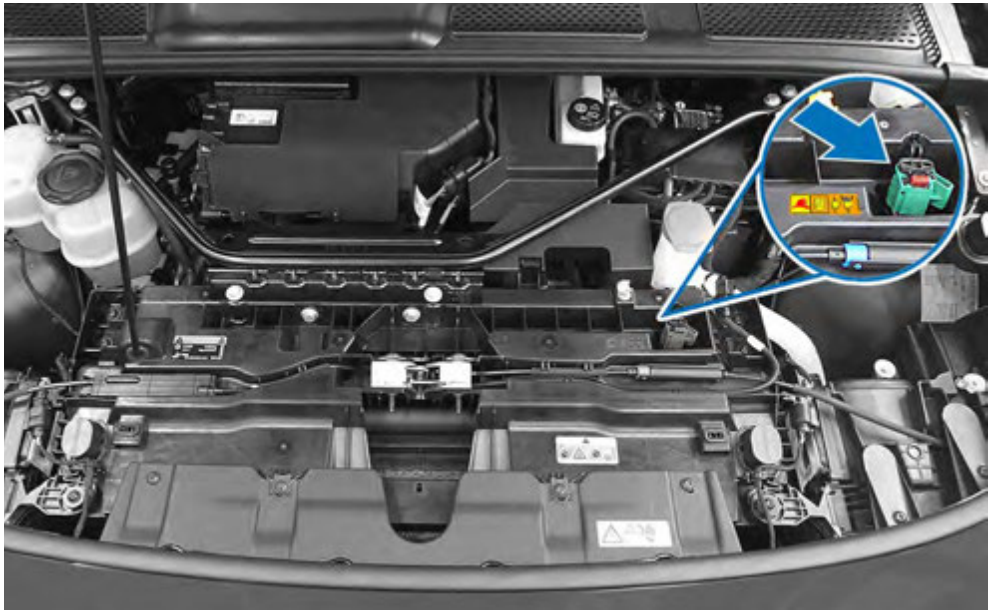
The low-voltage maintenance connector for the high-voltage system in the vehicle front end is used as an emergency cut-out connection for high-voltage systems in plug-in hybrid electric vehicles (PHEV) and electric vehicles (BEV). The connector has a green connector housing and a tab for release. The connector is clearly identified as an emergency cut-out connection by a yellow label on the connection cable. Activation after this can only be carried out by a suitable qualified workshop.
The vehicle front end is usually accessed by pulling the Bowden cable in the left front footwell. This unlocks the bonnet, which can then be raised. Please refer to the Owner' Manual of the vehicle if necessary.

Cut-out connection in the vehicle front end of a hybrid vehicle (example Golf GTE, from 2020 onwards).

New identification for high-voltage cut-out connection in engine compartment

Low voltage device that disconnects high voltage

If the label of the emergency cut-out connection in the vehicle front end is not visible, an additional sticker may be attached nearby.



Cut-out connection in the vehicle front end of an electric vehicle (example ID.4).

Procedure for deactivating the high-voltage system using the emergency cut-out connection:

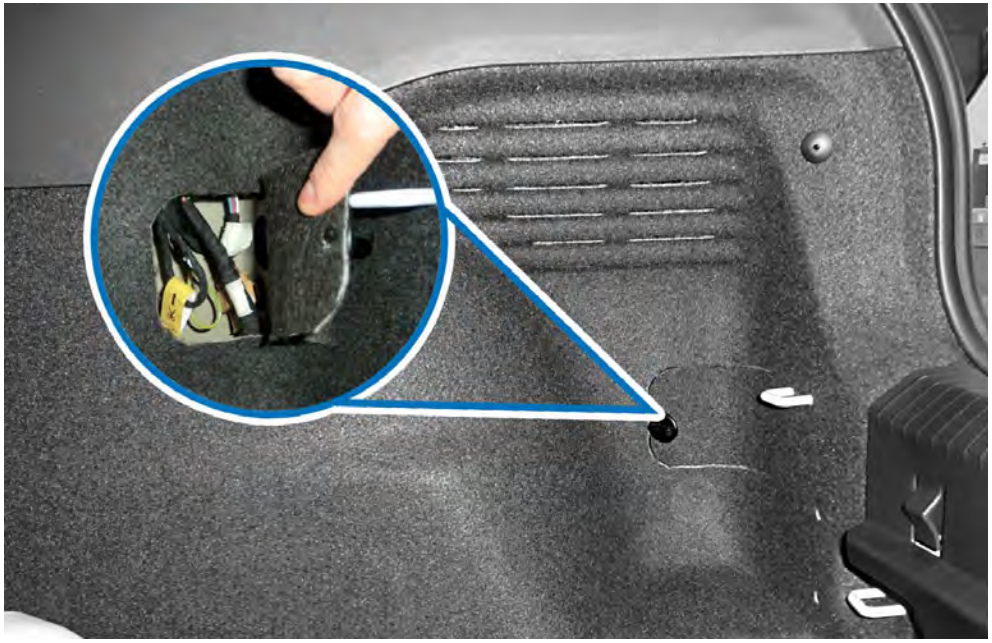
Pull out red tab

Press and hold the red tab and, while doing so, pull out the back connector until it locks in position.

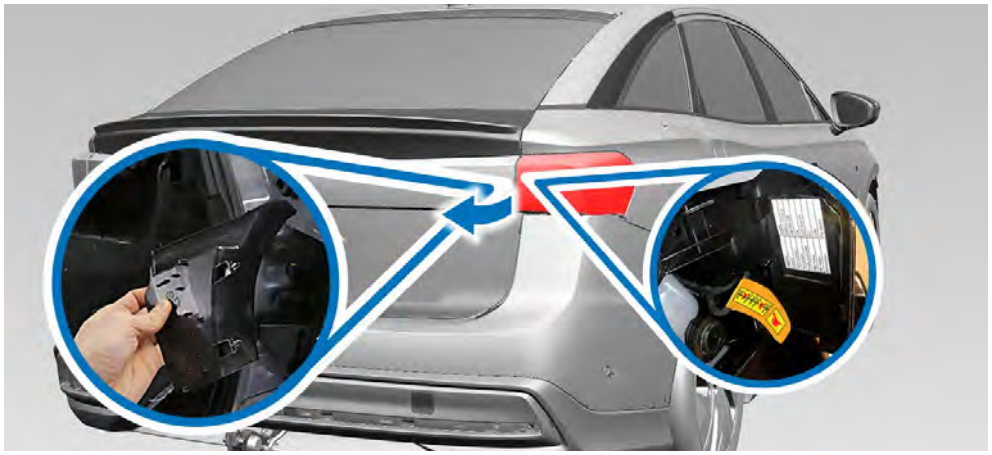
Alternative method: high voltage cut-out connection at the rear of the vehicle

For vehicles in the ID. family, there may be an additional cut-out connection in the rear of the vehicle. In this case, a cable labelled with a yellow tag must be cut.

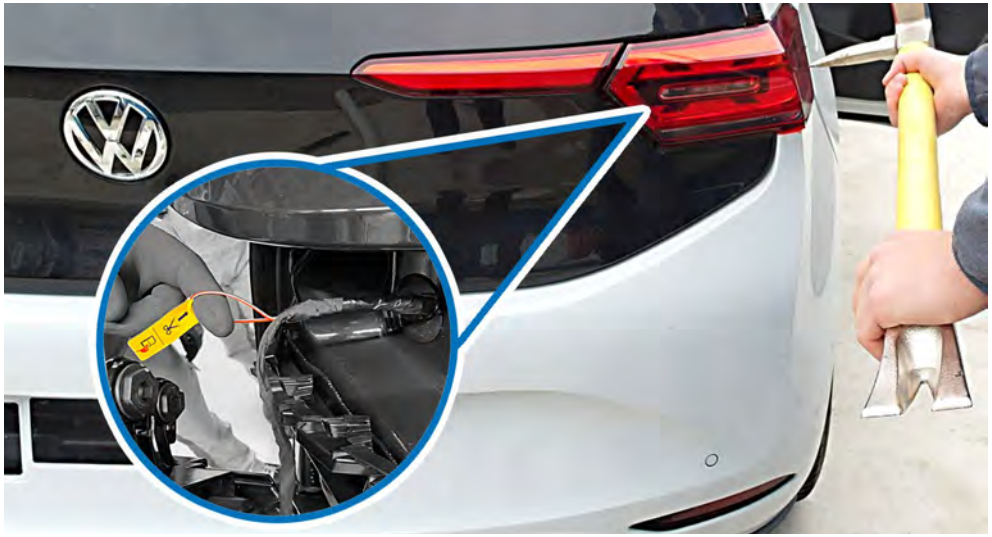
The high voltage device that disconnects high voltage was installed behind the luggage compartment trim up to production date 12/2020; it has been behind the right tail light cluster since 01/2021.



Variant 1: cut-out connection in the luggage compartment (example ID.3) behind the side panel trim until the end of 2020. The yellow tag indicates the cut-out connection.



Variant 2: alternatively, the trim under the tail light can be unclipped and the cut-out connection cut.



Variant 2: cut-out connection in the rear of the vehicle behind the right tail light cluster from the start of 2021 onwards.

Cable cut

Disconnecting from the charging station (manual release)

Vehicles parked at a charging station or wall box for charging can be disconnected from these in an emergency.

If regular disconnection is not possible, the vehicle can be released manually using the action described on the rescue card. The manual release is always located on the rear of the charging socket.

The procedure for operating the manual release mechanism for the charging connector on the vehicle is described on the rescue cards.

Public charging stations may be connected to the public power grid at more than 1,000 volts. If this is the case, the correspondingly larger safety distances must be observed when responding to fires.

Observe existing regional and national contingency plans and safety instructions for emergency and recovery personnel for public charging stations and wall boxes.

The charging connections and the appearance of public and private charging stations differ depending on the manufacturer and country.

Charging stations and wall boxes charge with alternating voltage or direct voltage.
A system that uses direct voltage (DC) supplies the battery directly via the charging socket.
If alternating voltage (AC) is used to charge the high-voltage battery, the battery charger in the vehicle functions as a voltage converter.

Example positions for manual release from the charging station.

Disconnecting the 12-volt vehicle battery

Situations at the scene of an accident may require the 12-volt vehicle electrical system to be deactivated in order to reduce the risks to accident victims or emergency services (e.g. subsequent triggering of airbags).

Depending on the type of vehicle and equipment, one or more 12-volt vehicle batteries may be installed.
Disabling the vehicle electrical system not only reduces the risk of fire caused by short circuits, but also the risk of delayed deployment of airbags, belt tensioners or protective bars.
When deactivating the vehicle electrical system, it must also be ensured that the power supply to any trailers attached is disconnected and any solar elements in the sliding sunroof are covered.

After disconnecting the 12-volt vehicle electrical system voltage, the airbags are deactivated. Unignited airbags can be triggered by heat in the event of a fire!

After disconnecting the 12 V vehicle electrical system voltage, electrically operated towing brackets can no longer be used!
Refer to section Recovering vehicles involved in accidents.

If several vehicle electrical system batteries are installed, all of them must be disconnected so that the vehicle is de-energised.

For vehicles where access to the vehicle electrical system battery is not possible: Volkswagen has installed an accessible ground cable from the battery to the body; disconnect this. Always insulate the ground cable after disconnecting it to reduce the risk of arcing.

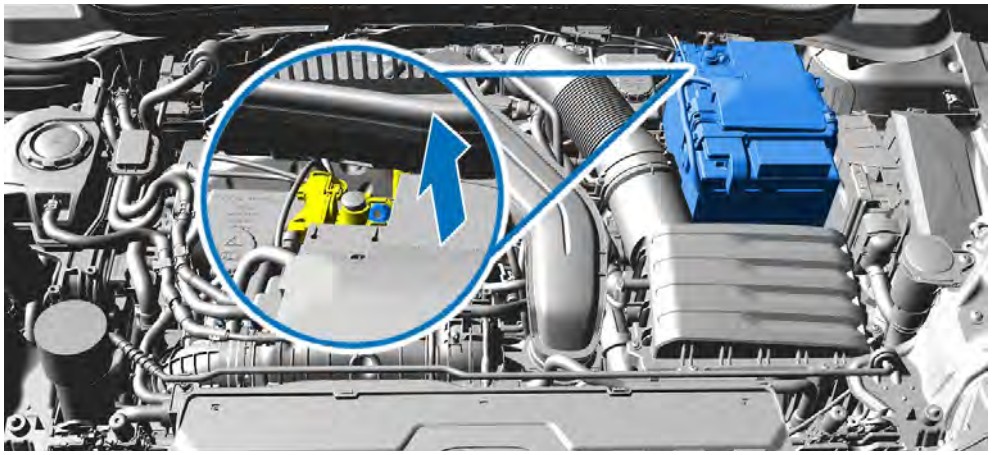
Always disconnect the negative terminal from the battery first and then the positive terminal. To avoid the risk of arcing, the battery terminals should be insulated.

When the 12 V supply has been disconnected, all functions of the electrical system stop working (this applies in particular to the hazard warning lights and electric seat adjustment).
For further information, see chapter 4. Access to the occupants and chapter 9. Important additional information.

The fitting location and procedure necessary for deactivating the 12-volt vehicle electrical system voltage are described in the Volkswagen rescue cards.

Typical fitting locations

Depending on the requirements, the 12-volt vehicle electrical system battery is located in the vehicle front end, in the luggage compartment or in the passenger compartment. A second 12-volt battery may also be installed at a different location in the vehicle. Some Volkswagen Commercial Vehicles models with camping equipment may have additional 12-volt batteries installed.

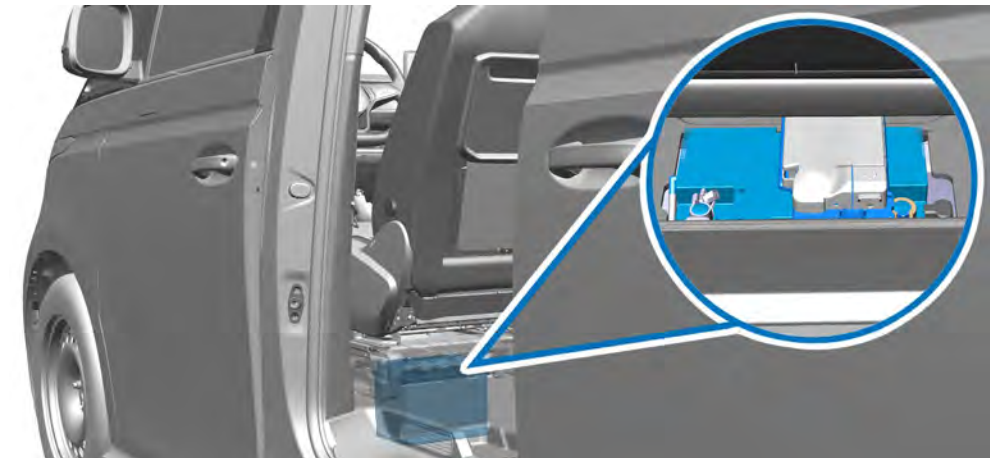


Location in the vehicle front end (example T-Cross 2023).

Location in the luggage compartment (example Golf GTE).

Location in the luggage compartment (example Tiguan).

Location in the passenger compartment (example Touareg 2023).



Location in the passenger compartment under the driver seat (example ID. BUZZ).

Disconnecting the 48-volt vehicle battery

Today's vehicles feature intelligent drive systems and a variety of driver assist systems. A number of them are operated using an additional 48-volt electrical system that is installed.

Volkswagen models with a 48-volt electrical system are also referred to as mild hybrid vehicles (MHEV) and are marketed as eTSI models. These vehicles are not high-voltage vehicles.

A number of examples of use are:
- Rear wheel steering
- Roll stabilisation
- Advanced start/stop mode with help from a belt-driven starter-alternator

In the event of an accident in which airbags are triggered, the 48-volt electrical system is automatically disabled.

The 48-volt vehicle electrical system must be disconnected in order to de-energise the vehicle.

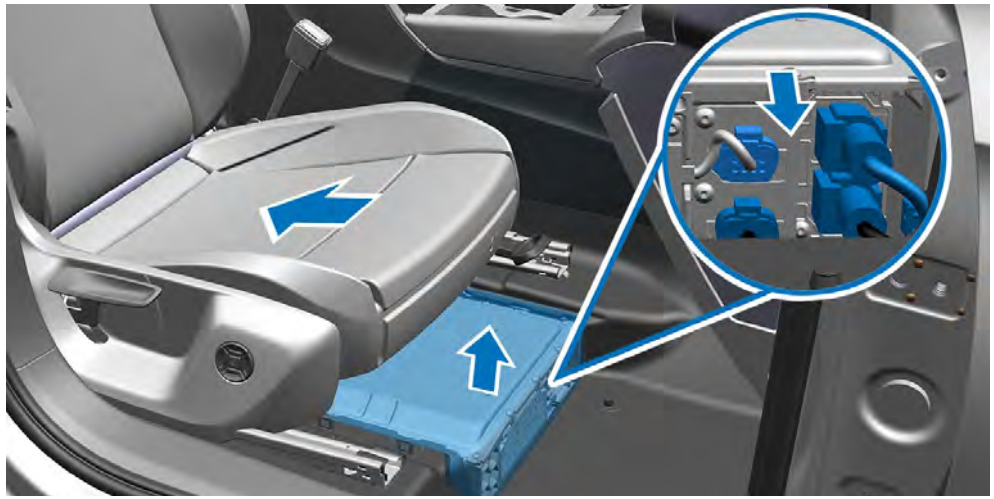
The specific danger associated with the 48-volt voltage level can be controlled appropriately and to the same extent as with conventional 12-volt electrical system batteries if the special points to note are known.

When disconnecting the 48-volt battery, there is a danger of an electric arc! Wear appropriate personal protective equipment!

Lithium-ion batteries can self-ignite either immediately or after a delay when damage occurs or they are not used properly, or re-ignite after fire-fighting measures. Wear appropriate personal protective equipment!

A 48-volt capacitor is installed on the right side of the rear of the vehicle in a number of Touareg models with roll stabilisation. Orange coloured wires lead to the component.

The procedure for disconnecting the 48-V battery is described in the rescue cards.



Disconnecting the 48-volt vehicle electrical system in a Tiguan from 2023 onwards.

Natural gas drive – safety equipment

The entire natural gas system has been installed in a way that provides the best possible protection from damage and the effects of weather. The gas tanks are highly stable and heat resistant. The high-pressure pipes and connecting elements are made of seamless stainless steel and are routed outside the passenger compartment.

In addition to the electromagnetic shut-off valves, the cylinder valves have an integrated thermal fuse and a flow rate limiter that prevents the uncontrolled escape of gas in the event of possible damage to the pipes or allows the escape of gas in a controlled manner in the event of damage to the valves. A non-return valve is also installed in the first cylinder valve. This prevents gas from flowing back out of the cylinder and into the filler line.

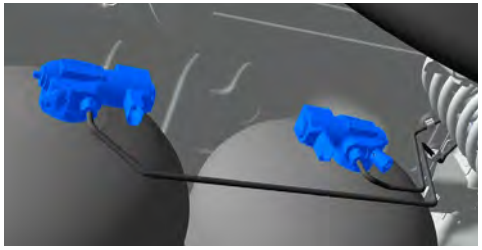
The electromagnetic fuel tank shut-off valves are automatically shut off in the event of an accident in which the restraint systems are triggered.

The procedure required for manual shut-off of the gas tanks is described in the Volkswagen rescue cards.

Fuel tank shut-off valve

Remove the tank covers on the underbody. The tank covers are marked in green in this illustration.

Manually shut off gas tanks



Locate the gas tank shut-off valves.
Turn the shut-off valve clockwise as far as it will go using a 5 mm open-end spanner or pliers or a special tool.

CNG	**Gas tank with gas type indication (CNG)**
CNG	**Manual gas shut-off valve with gas type indication (CNG)**

Liquefied petroleum gas drive – safety equipment

A number of points distinguish vehicles with liquefied petroleum gas drive from conventional vehicles.

Knowledge of these differences is very important for emergency personnel when performing a rescue operation.

Liquefied petroleum gas (also designated as LPG or liquefied gas) must not be mistaken for natural gas (also designated as CNG or compressed natural gas).
Natural gas and natural gas systems have features that fundamentally distinguish them from liquefied petroleum gas and autogas systems.

The entire autogas system has been installed in a way that provides the best possible protection from damage and the effects of weather. The gas tanks are highly stable and heat resistant. All high-pressure pipes and connecting elements are made of copper/stainless steel and are routed outside the passenger compartment.

Along with the electromagnetic shut-off valve, the tank has integrated overpressure protection. Furthermore, a non-return valve is installed in the filler stop valve, which prevents the gas from flowing back from the gas tank and into the filler line.

Fuel tank shut-off valve

The fuel tank shut-off valve is an electromagnetic valve and is opened by the gas control unit during LPG operation.

The valve closes automatically when the system is switched over to petrol mode, when the engine is switched off, in the event of an accident involving triggering of an airbag and/or belt tensioner, or if the voltage supply fails.

Camping gas equipment – safety equipment

The entire camping gas system has been installed in a way that provides the best possible protection from damage and the effects of weather.

The gas lines installed are equipped with a shut-off valve in the vehicle models made by Volkswagen Commercial Vehicles.

Permanently installed shut-off valve for camping gas lines.

Propane or butane gas cylinders are equipped with an additional shut-off valve. The gas cylinders are secured against slippage in the vehicle, and can be removed from the vehicle.

Camping gas cylinders are usually secured against slippage.

Shutting off camping gas cylinders manually

1. Locate the shut-off valves for the gas cylinders and
2. turn clockwise as far as they will go

Volkswagen models with camping gas equipment are delivered without gas cylinders.

4. Access to the occupants

Version dated: 09/2025

Access to the occupants plays a central role in rescue activities following an accident.

Depending on the accident situation, the emergency and recovery forces have various redundant access options to the occupants.

Unlocking the vehicle doors

Locked doors (exterior door handle non-functional) can be unlocked normally as follows:

- Remote control buttons
- Button in the door trim
- Manual vehicle key/optional Keyless
- Optionally via app/Keyless Card

Buttons on the vehicle key's remote control

Button in the door trim

Pull up the lever in the armrest and open the door. (Example T-Roc 2025).

Vehicle or equipment-specific information can be found in the vehicle wallet literature or the model-specific rescue cards.

After an accident with airbag triggering, the vehicle doors and boot lid are automatically unlocked. The doors can be opened by firmly pulling on the exterior door handle.

Electrically assisted door handles

On some Volkswagen models, operation of the door handles on the inside and outside is electrically assisted. The doors can be conveniently unlocked and opened with very little effort.
In the event of a crash, considerably greater force may be required to unlock and open the doors.

In the event of an accident or failure of the 12-volt vehicle electrical system, significantly greater forces are required to open the doors.

In the event of an accident in which airbags are triggered, all doors and lids are automatically unlocked.

After serious accidents, it may also be necessary to use tools.

When possible, the electric convenience systems should be used for the rescue prior to disconnection of the battery.

Exterior door handles

With electrically assisted door handles, all doors can be unlocked and opened with little effort. To open, reach into the handle recess and fold the door handle up slightly. If the electrical assistance is interrupted or has failed, the door handle must be levered further upwards with greater force.

1. **Convenience opening: lift the door handle slightly and open the door.**
2. **Manual opening: lever door handle far upwards with greater force and open door. (Example: door handle of ID.7).**

In special situations, the vehicle can be manually unlocked and opened from the outside as follows using a manual key:

1. Use the vehicle key to prise off the cap in clockwise direction.
2. Insert the key bit into the lock cylinder.
3. To unlock the vehicle, turn the manual key counter-clockwise.
4. To open the door, pull firmly on the driver door handle.

If necessary, the vehicle doors can also be unlocked and opened from the inside by operating the interior door handle.

When the childproof lock is activated, opening the doors of the 2nd seat row not possible from inside. To open the door from the inside, the childproof lock must first be deactivated mechanically or electrically.

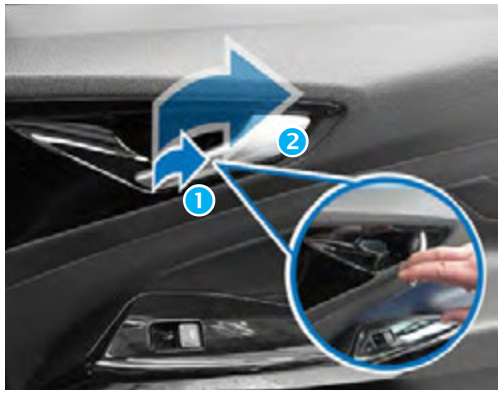
Deactivating the childproof lock mechanically with key at the door

Deactivating the childproof lock electrically in the door trim

Interior door handles

With electrically assisted door handles, the doors can also be conveniently operated from the inside. To do this, fold down the interior door handles slightly and open the doors.
The doors can also be opened by pulling the door handle further if the electrical assistance is interrupted or has failed. Access to the interior door handles is possible:

1. via adjacent door
2. by opening the window using:
   - remote control buttons,
   - buttons in the door trim
3. removed window



1 Convenience opening: fold down the door handle slightly and open the door.

2 Manual opening: lever door handle far to the rear with greater force and open door. (Example: door handle of ID.7).

There is a risk of injury when the vehicle windows are broken. Wear appropriate personal protective equipment!

When the anti-play protection is activated, operation of the windows of the 2nd seat row is not possible. To open the windows, the anti-play protection must be deactivated.

After accidents with triggered airbags, the windows move to a crash position (gap of approx. 5 cm). If necessary, the window can be broken out outwards by gripping it inside.

Access via boot lid

Depending on the equipment variant, the boot lid can be unlocked as follows:

Button on the boot lid

Button on the remote control

Button in the door trim on the driver side

The boot lid is opened by pressing the electric button in the boot lid in unlocked state.
Some models have an optional electric opening function for the boot lid.

In the event of an accident in which airbags are triggered, all doors and lids are automatically unlocked.

If the 12-volt supply is interrupted, it is not possible to open the boot lid in spite of unlocking.

If necessary, the boot lid can be opened manually from the inside. Please observe the notes in the model-specific operating instructions.

Electrically operated sliding doors

Some models of the Volkswagen Commercial Vehicles brand may be equipped with one or more sliding doors that are operated electrically.
Electrically operated sliding doors behave like normal mechanical doors after an accident.

After an accident or in the event of failure of the 12-volt vehicle electrical system, significantly greater forces are required to open the doors.

In the event of an accident in which airbags are triggered, all doors and lids are automatically unlocked.

When the childproof lock is activated, it is not possible to open the doors from inside. To open the door from the inside, the childproof lock must first be deactivated mechanically or electrically.

When possible, the electric convenience systems should be used for the rescue prior to disconnection of the battery.

Body reinforcements

A high level of safety for the vehicle occupants is achieved in particular by a rigidly designed passenger cell.

The reinforcement of the body is achieved by using high-strength and hot-formed steels with larger wall thicknesses in a multi-shell structure.

Body with reinforced passenger compartment

The reinforced areas are indicated on the model-specific rescue cards. High-performance tools must be used in these areas when carrying out rescue activities.

Cutting high-strength or hot-formed steels can result in sharp edges. Wear appropriate personal protective equipment!

Avoid sensitive components such as airbags, fuel tanks, pipes or high-voltage components. Information about the position of reinforcements can be found in the model-specific rescue cards.

High strength zones

The A-pillar

Convertibles in particular have an additionally reinforced body in order to achieve the necessary rigidity even without a roof. For example, tubular reinforcements are installed in the A-pillar to ensure the protected space in the event of vehicle rollovers together with the protective bar. It may also be possible to open the convertible roof (which is usually a fabric roof) by conventional means or by pushing up the roof with a ram.

A-pillar reinforcement in cabriolets

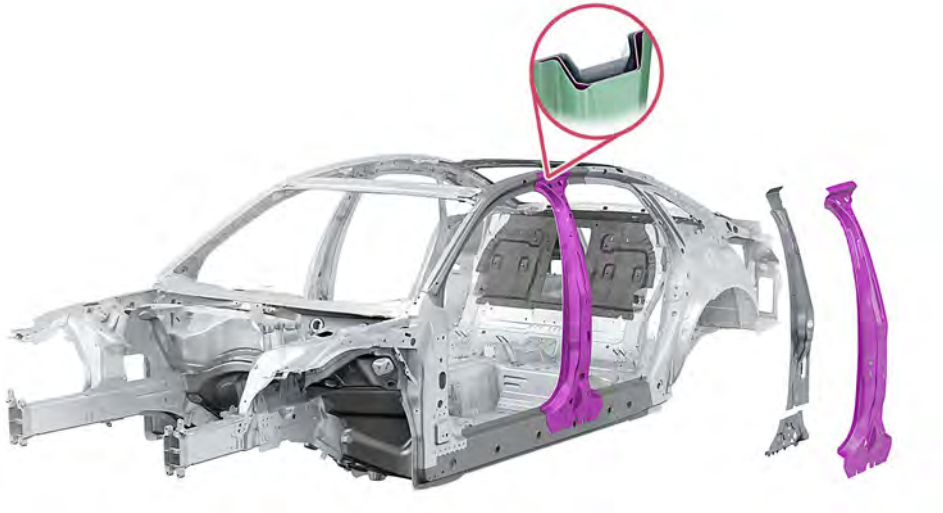
Cutting through the A-pillar near the A-pillar reinforcement is only possible using powerful rescue equipment.

The location of particular reinforcement measures in the individual vehicles can be found on the rescue cards.

The B-pillar

The B-pillar in particular is reinforced using high-strength and hot-formed steels and a multi-shell structure with a large cross-section.

The B-pillar is additionally reinforced around the belt guide, which makes it more difficult to cut through. These areas should therefore be deliberately avoided.



B-pillar with multi-shell structure

The easiest point to cut through vehicle pillars is the area above the belt height adjuster.
The pillar can also be cut through in the lower area. However, note that the cross-section of the pillar is very large and that the belt tensioner is usually located there.

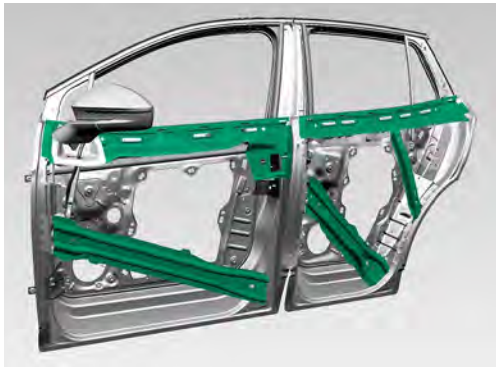
Always observe the rescue cards.

The side members

In modern vehicles, high-strength and multi-shell steels are used to reinforce the side members. These increase safety in the event of side collisions.
The electric vehicles in particular feature reinforced side members to protect the high-voltage battery.

Impact protection in the door area

The impact protection in the door area of Volkswagen Group vehicles is made of steel tubes or steel profiles. The tubes or sections are arranged horizontally or diagonally behind the outer door panels.
The high-strength sections can be cut through with powerful cutting equipment. The steel tube is installed above the door lock and provides the vehicle with support in the event of a head-on collision, while the steel profiles below the door lock are relevant in the case of a side impact.



Side impact protection in the doors

A crash tube may be installed in the front doors to better protect the vehicle occupants in the event of a side impact.

The location of particular reinforcement measures in the individual vehicles can be found on the rescue cards.

High strength zones

Glazing

The windows in Volkswagen Group vehicles are made of toughened or laminated safety glass.

The windscreen is always made of laminated safety glass and the side and rear windows are made of tempered safety glass or laminated safety glass, depending on the equipment. At Volkswagen, panoramic sunroofs are made of tempered safety glass or laminated safety glass.

Tempered safety glass

Tempered safety glass is thermally tempered glass that can withstand high loads. When broken it crumbles into small granular pieces.
Tempered safety glass is used for side windows, rear windows, sliding sunroofs and the panoramic glass roof.

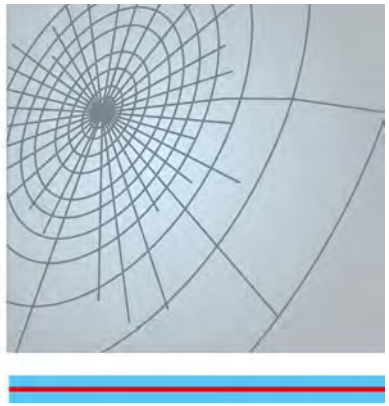
Intact windows can burst suddenly during rescue work at the vehicle. Depending on the accident situation and the scope of emergency work, the windows should be removed first.
Windows can be removed by concentrated impact using an automatic punch or an emergency hammer, for example. The windows should first be secured by masking off.

Laminated safety glass

Laminated safety glass consists of two panes of glass with a layer of film in between. The glass remains largely intact when damaged. It is used for windscreens and sometimes for side windows. The windscreens are bonded to the body with adhesive.

Because laminated windows cannot suddenly burst, they only have to be removed if it is necessary for the rescue work. Laminated windows can be removed using special glass saws or metal cutting claws.

Tempered safety glass



Laminated safety glass

Protect the occupants from glass splinters before removing the glass panes.

Information about the window versions installed is also described in the respective rescue cards for more recent models.

Driver seat and steering wheel adjustment mechanisms

Depending on the situation at the scene of the accident, the emergency and recovery services decide whether it is necessary to adjust the seats or the steering wheel to rescue the occupants.

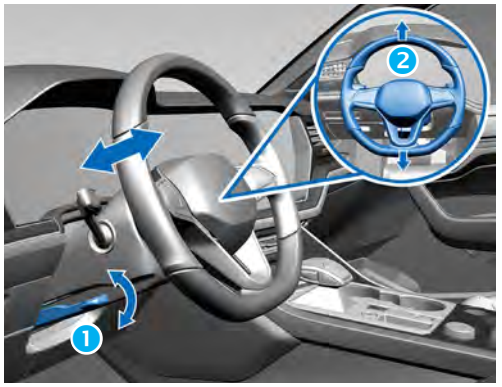
The seat systems and steering columns in Volkswagen vehicle models may be operated mechanically or electrically. The head restraints must also be removed if necessary.
To rescue occupants from the second and third row of seats, it may be necessary to move the front seats forward and fold down the backrests or remove individual seats.

If rescue tools are used in the vehicle interior, ensure that sensitive parts such as the high-voltage battery or pyrotechnical belt tensioners are not damaged.

In the event of an accident in which airbags are triggered, electrically operated doors and lids are unlocked automatically.

Depending on the equipment, electrically operated seats may be equipped with a convenient entry version. This function automatically moves the seat to various positions.

When possible, the electric convenience systems should be used for the rescue prior to disconnection of the battery.



Mechanical steering column adjustment

1. Unlock the steering column
2. Adjust the steering column

Electric steering column adjustment

1. Unlock the steering column
2. Adjust the steering column

Electric seat adjustment

1. Adjust lumbar support
2. Adjust seat frame
3. Adjust backrest frame

Electric convenience systems

Depending on the model series and vehicle equipment, Volkswagen AG vehicles feature a range of electrically operated convenience systems, for example:

- Electric doors
- Electric windows
- Electric sliding sunroof
- Electric CSC roof
- Electric seat adjustment
- Electric steering column adjustment
- Electric unlocking, opening and closing of the luggage compartment

If the vehicle electrical system battery or batteries is/are disconnected, these systems can no longer be operated.

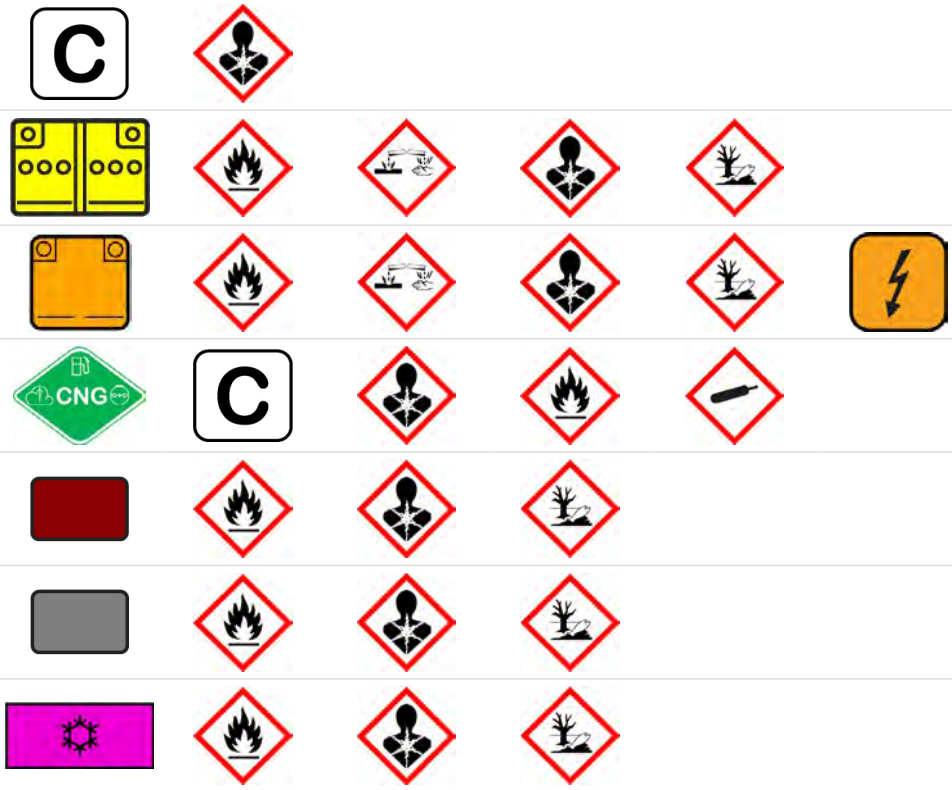
In the event of an accident in which airbags are triggered, electrically operated doors and lids are unlocked automatically.
When possible, the electric convenience systems should be used for the rescue prior to disconnection of the battery.
The battery should only be reconnected to the vehicle electrical system by workshop personnel.

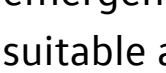
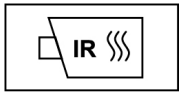
5. Stored energy / liquids / gases / solids

Version dated: 09/2025

Volkswagen models carry a wide range of service fluids. Only if you recognise a hazard during an emergency can you react appropriately and take suitable action to prevent it.

List of possible stored forms of energy/ liquids/gases/solids:



	**In the event of mechanical deformation of the battery system, there is a risk of a thermal reaction in the high voltage battery. Monitor the temperature of the high voltage battery!** 
	**With all energy carried or stored (pyrotechnical belt tensioners, airbags, gas struts, fuels, gases, etc.) there is a risk of expansive discharge after an accident.**
	**Always wear appropriate protective equipment when handling leaking operating fluids.**

The high-voltage vehicle electrical system

Classification as a high-voltage component or high-voltage vehicle electrical system depends on the voltage type “AC” or “DC”.

Alternating voltages (AC) above a supply voltage of 30 volts and direct voltages (DC) above a supply voltage of 60 volts are generally referred to as high-voltage components or as a high-voltage vehicle electrical system.

Definition of terms used in vehicle construction (example Volkswagen)

- Low voltage: of up to 60 volts (usually 12 volts and 48 volts in passenger vehicles and 24 volts for trucks/commercial vehicles)
- High voltage: from 60 volts to approx. 1,000 volts

Even though the terms are based on the voltage, the actual danger from direct contact with electrical energy is the strength of the current that flows through the human body in a closed circuit. This means that, even at low voltage, contact with electrical energy can present a danger to life when the current rating is correspondingly high.

Do not touch, cut or open high-voltage components and high-voltage batteries!
Wear appropriate personal protective equipment!

Only a few electrical components in high-voltage vehicles are operated using high voltage (e.g. high-voltage battery, high-voltage cables, power and control electronics for electric drive, electric drive motor/alternator, air conditioner compressor, external charging socket). All other electrical components, such as lighting, vehicle electronics etc. are supplied with power by the 12-volt vehicle electrical system voltage (passenger vehicle) or 24-volt vehicle electrical system voltage (truck).

In addition to the high-voltage battery, Volkswagen electric vehicles also have at least one 12-V electrical system battery.

High-voltage batteries are rechargeable batteries. Various types of battery are used, depending on the manufacturer and the vehicle. They differ in the chemical components used in the battery cells for the anode, cathode and electrolyte, as well as in the shape of the battery cell (round, prismatic, pouch).
Lithium-ion batteries (Li-ion) are currently used, for example.
The sizes and fitting locations of the high-voltage batteries differ depending on the type of vehicle. A fully electric vehicle requires a larger high-voltage battery than a hybrid vehicle.

The following battery concepts and fitting locations of high-voltage batteries are currently in use:

- Below almost the entire underbody
- Below the underbody in front of the rear axle
- Between the axles

A high-voltage battery consists of many battery modules, which in turn consist of the battery cells themselves.
All high-voltage batteries are structurally protected in order to reduce the risk of electrolyte escaping from damaged battery cells to a minimum, for example after an accident.
In the event of an accident, the high-voltage battery is protected from mechanical influences by a battery housing. This directs most of the impact energy into the vehicle structure.

Warning labels for high-voltage components

This is why extensive warning labelling comprises a part of the safety concept of high-voltage vehicles, for example.

Example of a high-voltage battery for the ID.3

All high-voltage components are labelled with clear warning stickers. An exception to this are the high-voltage cables, which are immediately recognisable by the orange warning colour of their sheathing.

Three types of warning sticker are always used:

- Yellow warning stickers with the warning symbol for electrical voltage,
- Warning stickers with the word “Danger” on a red background,
- Stickers with a special warning for people with pacemakers.

The yellow stickers refer to the high-voltage components that are installed near the sticker or concealed under covers.

The warning stickers with the “Danger” lettering indicate the high-voltage components directly.

Examples of warning stickers in high-voltage vehicles:

The high-voltage components in the Caravelle and Transporter (from 2025) are not marked. Observe the vehicle-specific rescue cards.

The high-voltage battery

High-voltage batteries are rechargeable batteries. Various types of battery are used, depending on the manufacturer and the vehicle. They differ in the chemical components used in the battery cells for the anode, cathode and electrolyte, as well as in the shape of the cell (round, prismatic, pouch).
The high-voltage batteries are lithium-ion batteries. Within the vehicles, the high-voltage battery is located in a stable housing in areas that are protected against deformation in most crash cases. The sizes and fitting locations of the high-voltage batteries differ depending on the type of vehicle. An all-electric vehicle requires a larger high-voltage battery than a hybrid vehicle.
In electric vehicles, the high-voltage battery is usually bolted in the centre under the vehicle as a load-bearing body component. In hybrid vehicles, the high-voltage battery is usually located in the rear vehicle compartment (in front of or behind the rear axle).
In both hybrid and electric vehicles, the high-voltage battery consists of battery cells connected in series and connected together to form modules. Several modules are installed together with the peripherals in a metallic housing. The housing is connected to the vehicle via a potential equalisation line.
All high-voltage batteries are installed in a stable housing to protect the battery cells in the event of an accident and to prevent electrolyte from escaping in the event of defective battery cells.

Depending on the vehicle variant/equipment, the high-voltage battery may consist of several battery packages.

In addition to the high-voltage battery, Volkswagen electric vehicles also have at least one 12-volt electrical system battery.

Because there are so many different battery types with different chemical components and because battery technology is constantly developing, this guide cannot address the specific behaviour and hazards of each type.

If the high-voltage battery is damaged or overheated, exothermic chemical reactions can occur (thermal runaway): these reactions lead to rapid heating of the battery cells. This will cause the battery to catch fire and expose it to toxic fumes.
Important information on this can be found in chapter 6. In case of fire. Information on how to handle the energy stored in the battery can also be found in chapter 8. Towing / transportation / storage.

Lithium-ion battery separated from the vehicle

If the high-voltage energy storage unit and/or parts thereof are disconnected from the vehicle in the event of an accident, it must be assumed that there is an electrical, chemical, mechanical and thermal hazard presented by the high-voltage energy storage unit.
The following points must be observed:

	**In the event of damaged high-voltage energy storage units, high-voltage components or high-voltage lines, e.g. open components or torn off lines, contact with these damaged areas must be avoided as far as possible!**
	**When working with hydraulic rescue equipment, when lifting, securing, towing or pulling the vehicle, the position of the high-voltage components and high-voltage lines must be taken into account (see vehicle-specific rescue card)!**
	**If work in these areas cannot be avoided, damaged parts or high-voltage energy storage units must be covered so that they are electrically insulated. Here, use of a suitable electrically insulating flexible cover is recommended (undamaged plastic foil or another suitable electrically insulating cover, e.g. in accordance with IEC 61112).**

If a high-voltage energy storage unit has been separated from the vehicle, there may still be other parts of the full energy storage system in or on the vehicle.
Separated components of high-voltage energy storage units must only be lifted from the ground with electrically insulating equipment!

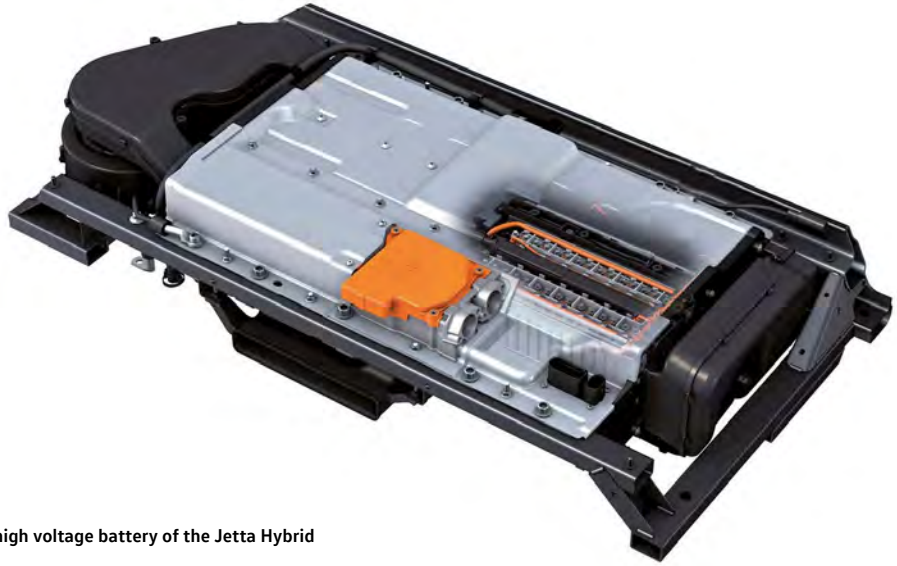
To protect the face, always work with the helmet visor folded down.

Liquids leaking from high-voltage energy storage units are usually coolants. Electrolytes are only present in small quantities (millilitres) in the individual cells.

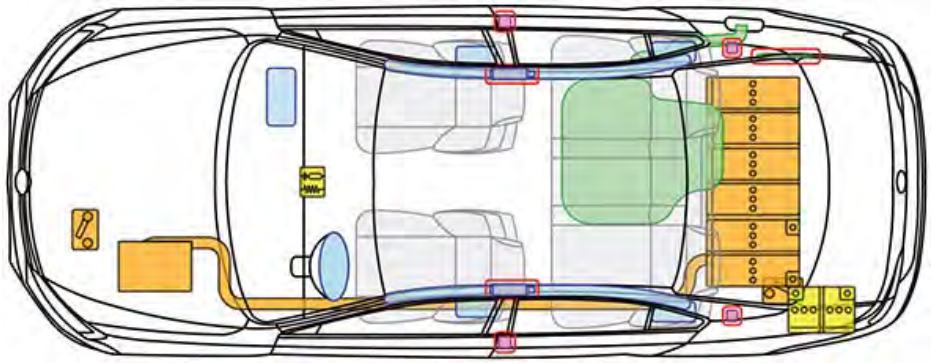
High-voltage battery with vents pointing downwards

Leaking electrolytes from damaged high-voltage energy storage units are irritating, flammable and potentially corrosive. Please wear appropriate personal protective equipment!

Example battery concepts

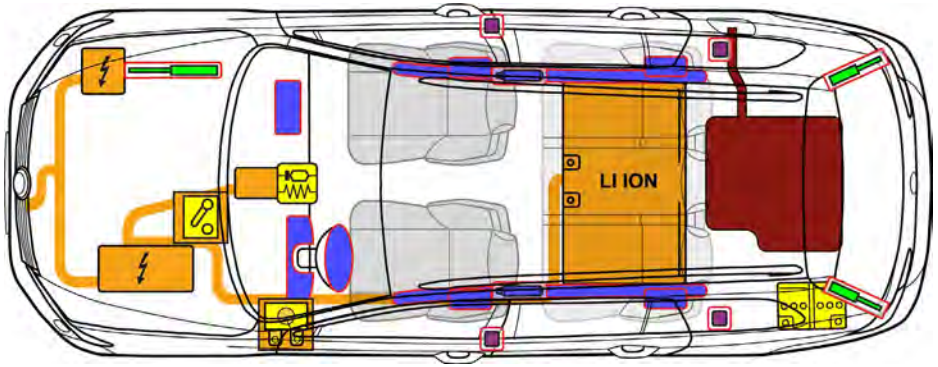


The high voltage battery of the Jetta Hybrid



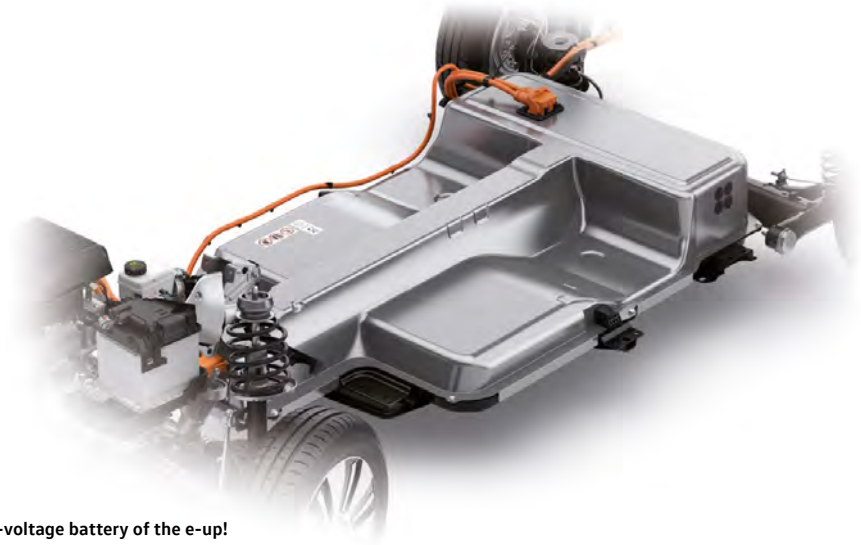
Location of the high-voltage battery in the Jetta Hybrid
(The illustration does not correspond to the current ISO 17840.)

The high-voltage battery of the Passat GTE

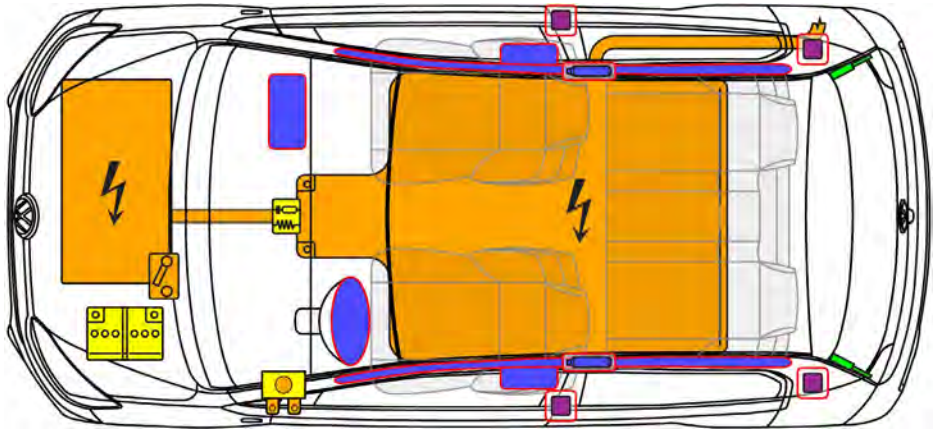


Location of the high-voltage battery in the Passat GTE

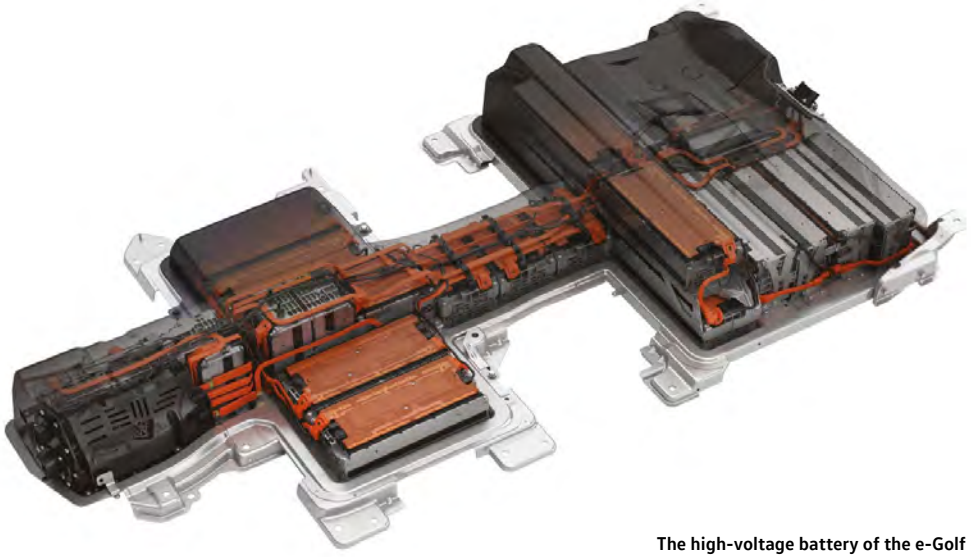
Example battery concepts



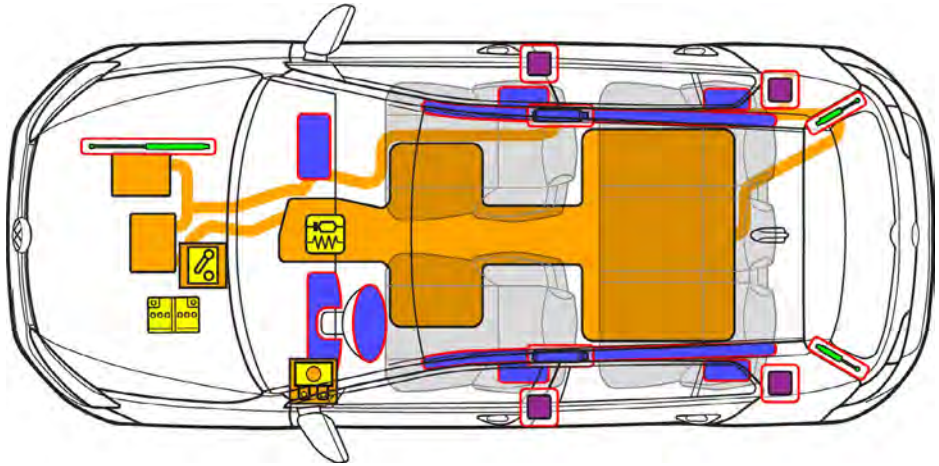
The high-voltage battery of the e-up!



Location of the high-voltage battery in the e-up!

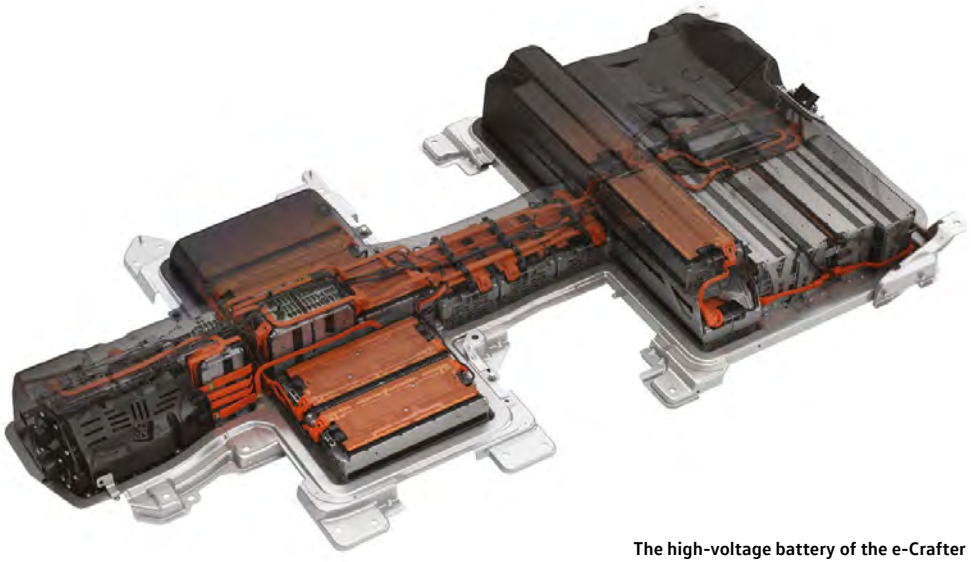


The high-voltage battery of the e-Golf

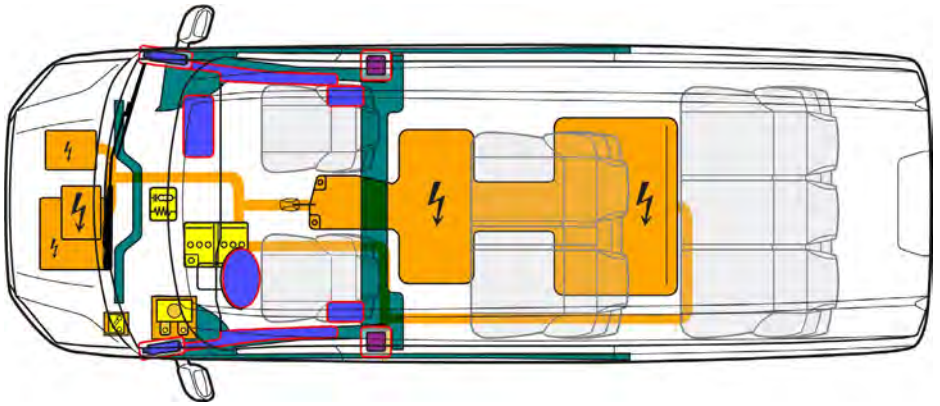


Location of the high-voltage battery in the e-Golf

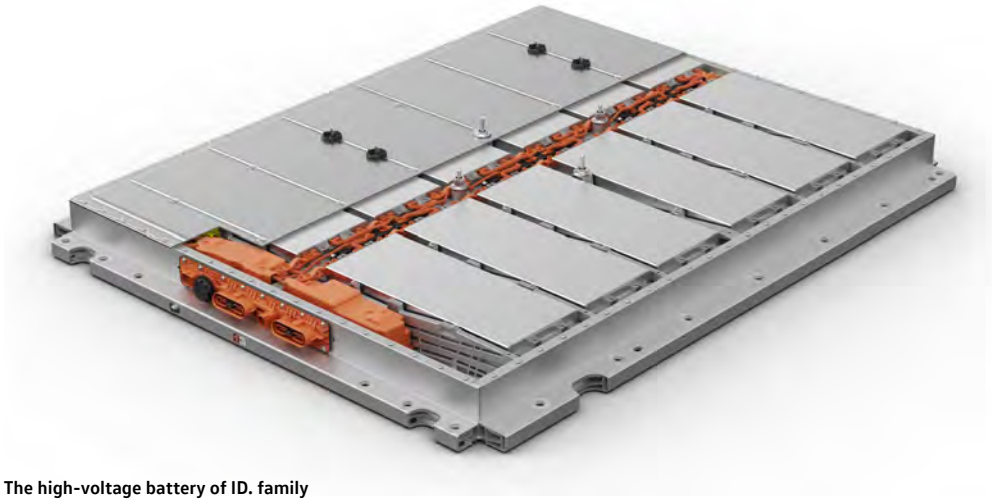
Example battery concepts



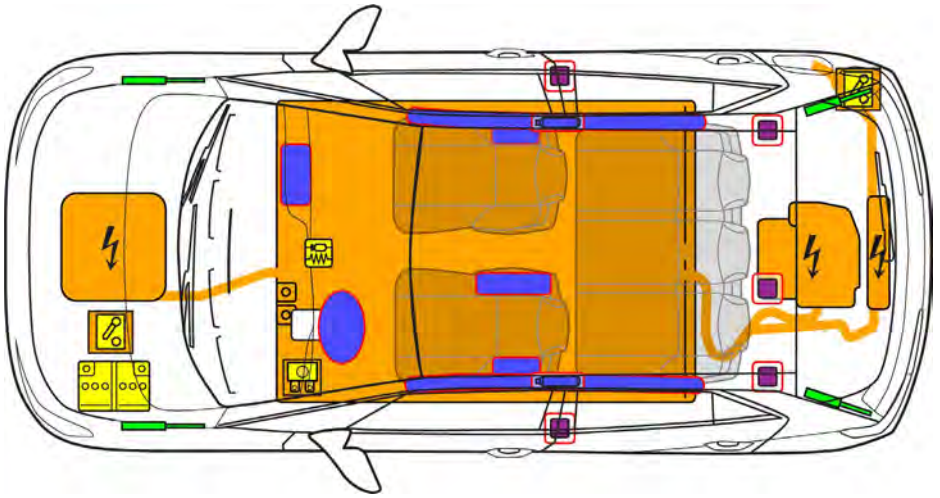
The high-voltage battery of the e-Crafter



Location of the high-voltage battery in the e-Crafter



The high-voltage battery of ID. family



Location of the high-voltage battery in the ID.3

Air conditioning system

The refrigerants R134 a, R1234 yf and R744 (CO_2) are used for the air conditioning systems. More detailed information on the different refrigerants can be found on the following web page:

www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index.jsp

High-voltage battery – cooling system

In normal operating conditions, there is no danger of exposure to the contents of the battery.

If refrigerant escapes from the battery cooling system, there is a risk of a thermal reaction in the high-voltage battery. Monitor the temperature of the high voltage battery!

In the event of outgassing of the high voltage battery, toxic vapours may form.
Wear appropriate personal protective equipment!

Vehicle-specific information is also described in the respective rescue cards.

12-volt electrical system battery

12-volt vehicle batteries in lead-acid technology are primarily used in the Volkswagen Passenger Cars and Volkswagen Commercial Vehicles models. The 12-volt lead-acid batteries differ in terms of a leak-proof technology (completely black box and "AGM" lettering on the label) and a technology that is not leak-proof in the event of damage to the housing (identifiable by the black cover and transparent box). Both technologies use "sulphuric acid" as the electrolyte.

There may be a highly explosive gas mixture in the battery. No flames, sparks, open light and smoking near the battery! Wear appropriate personal protective equipment!

Escaping electrolyte can cause severe burns to skin.

"Explosive" sticker on the battery

Vehicle-specific information is also described in the respective rescue cards.

Batteries with a solid electrolyte

The absorbent glass mat batteries, also known as AGM batteries or recombination batteries, are used in vehicles with a start/stop system and energy recovery. Glass mat batteries are batteries in which the sulphuric acid is sealed in an absorbent glass mat (AGM). This battery type can be identified by the AGM lettering on the battery cover and the completely black battery housing.

Leaking electrolyte is highly flammable.

Vehicle-specific information is also described in the respective rescue cards.

Lithium-ion battery (12 and 48 volts)

Lithium-ion batteries with a voltage of 12 or 48 volts are installed in a number of Volkswagen models (e.g. mild hybrid models with belt-driven starter-alternator).

Lithium-ion batteries can self-ignite or re-ignite after fire-fighting measures!
Wear appropriate personal protective equipment!

Escaping electrolyte can cause severe burns to skin.

In the event of outgassing of the lithium-ion battery, toxic vapours may form. Wear appropriate personal protective equipment!

Vehicle-specific information is also described in the respective rescue cards.

Further information is available from the Battery Association of the Zentralverband Elektrotechnik- und Elektronikindustrie e. V. (German Central Electrical Engineering and Electronics Industry Association).
www.zvei.org/

Compressed air tanks

Some Volkswagen models have accumulators for air suspension or air conditioning systems, for example. Do not damage these accumulators and never open them by force.

Flammable materials

Examples of these include:
- Plastics
- Electrolytes
- Resins
- Magnesium
- Gases or other flammable liquids

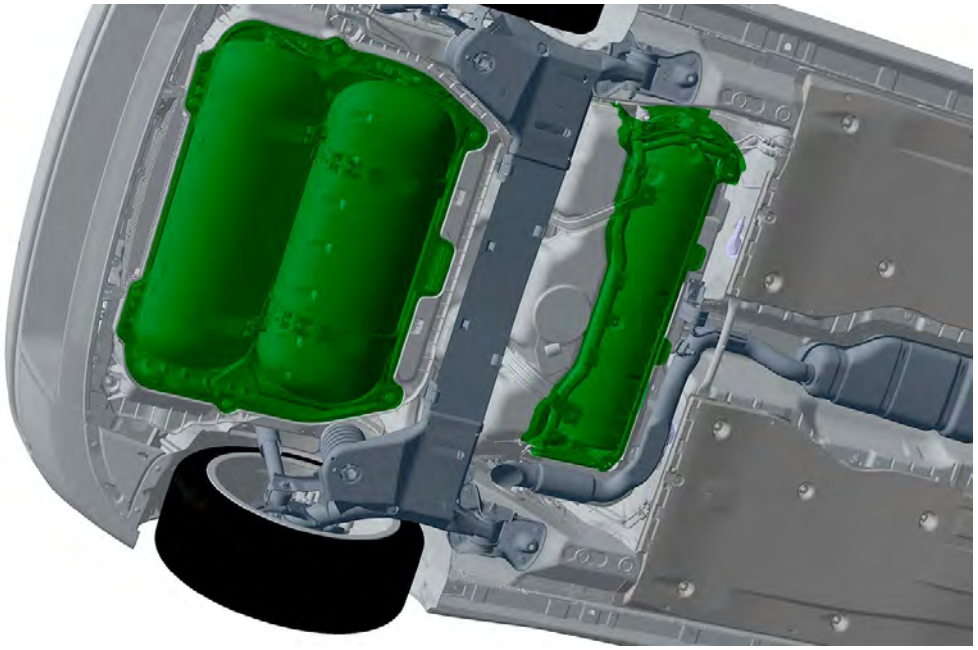
Resins are used for bonding carbon fibres, magnesium components are found in the engine compartment.

Avoid skin contact and inhaling electrolyte vapours, as electrolyte is combustible, corrosive and irritating.
Please wear appropriate personal protective equipment!

Contaminated extinguishing water must be dealt with according to the national procedures for emergency and recovery personnel.

Physical properties of natural gas

Dealing with natural gas vehicles is different to dealing with conventional vehicles. However, any dangers can be controlled appropriately and to the same extent if the special points to note are known.



The gas tanks of Volkswagen models can be made of steel or of carbon fibres.

- Natural gas is mixed with an odourant, for example, for use in a vehicle. This allows any escape of natural gas to be determined before the lower explosion limit is reached.
- Natural gas is lighter than air (density ratio natural gas/air approx. 0.6) and therefore dissipates quickly outdoors!
- Explosion range between 4% by volume and 17% by volume
- Ignition temperature approx. 640°C

Avoid skin contact and inhalation of broken carbon fibres.

Physical properties of liquefied petroleum gas (also referred to as liquefied gas or LPG)

A number of points distinguish vehicles with liquefied petroleum gas drive from conventional vehicles.

Knowledge of these differences is very important for emergency personnel when performing a rescue operation.

- An odorant with an intensive smell is added to liquefied petroleum gas for use in vehicles.
- Gaseous, liquefied petroleum gas is heavier than air (density ratio of LPG/air approx. 1.55) and accumulates in depressions and open shafts (e.g. waste water shafts and channels).
- Liquefied petroleum gas is liquefied at a pressure of 8 bar, whereby its volume decreases considerably (1/260th of its original volume).
- Explosion range between 1.4 and 10.9% by volume
- Ignition temperature approx. 460 °C

Liquefied petroleum gas (also designated as LPG or liquefied gas) must not be mistaken for natural gas (also designated as CNG or compressed natural gas).
Natural gas and natural gas systems have features that fundamentally distinguish them from liquefied petroleum gas and autogas systems.

Safety equipment

The entire autogas system has been installed in a way that provides the best possible protection from damage. The gas tanks are highly stable and heat resistant. All high-pressure pipes and connecting elements are made of copper/stainless steel and most of them are routed outside the passenger compartment.

Along with the electromagnetic shut-off valve, the tank has integrated overpressure protection. Furthermore, a non-return valve is installed in the filler stop valve, which prevents the gas from flowing back from the gas tank and into the filler line.

Fuel tank shut-off valve

The fuel tank shut-off valve is an electromagnetic valve and is opened by the gas control unit during LPG operation.

The valve closes automatically when the system is switched over to petrol mode, when the engine is switched off, in the event of an accident involving triggering of an airbag and/or belt tensioner, or if the voltage supply fails.

Physical properties of camping gas

Dealing with vehicles with camping gas equipment is different to dealing with conventional vehicles. However, any dangers can, so to speak, be appropriately brought under control when knowledge of their special features is available.

Camping gas cylinders are accessories and are normally not included in the equipment that comes with vehicles.

Camping gas (propane or butane gas) exhibits similar properties to liquefied petroleum gas (LPG), is heavier than air and accumulates in depressions and shafts.

Camping gas cylinders (propane or butane) are generally secured to stop them moving in the vehicle.

6. In case of fire

Version dated: 09/2025

General information on vehicle fires

In principle, all country-specific regulations, work instructions and guidelines issued by the respective fire-fighter associations and public authorities on how to proceed in the event of a vehicle fire must be observed. When possible, the fire must be prevented from spreading to the energy storage unit (fuel, gas, battery).

All the usual and familiar extinguishing agents such as water, foam, CO_2 or powder can be used.
Which extinguishing agent is to be used with which extinguishing method can only be decided at the deployment site, and is highly dependent on the actual situation and the equipment available.

If the airbags did not deploy during the accident, they may deploy in the event of a vehicle fire.

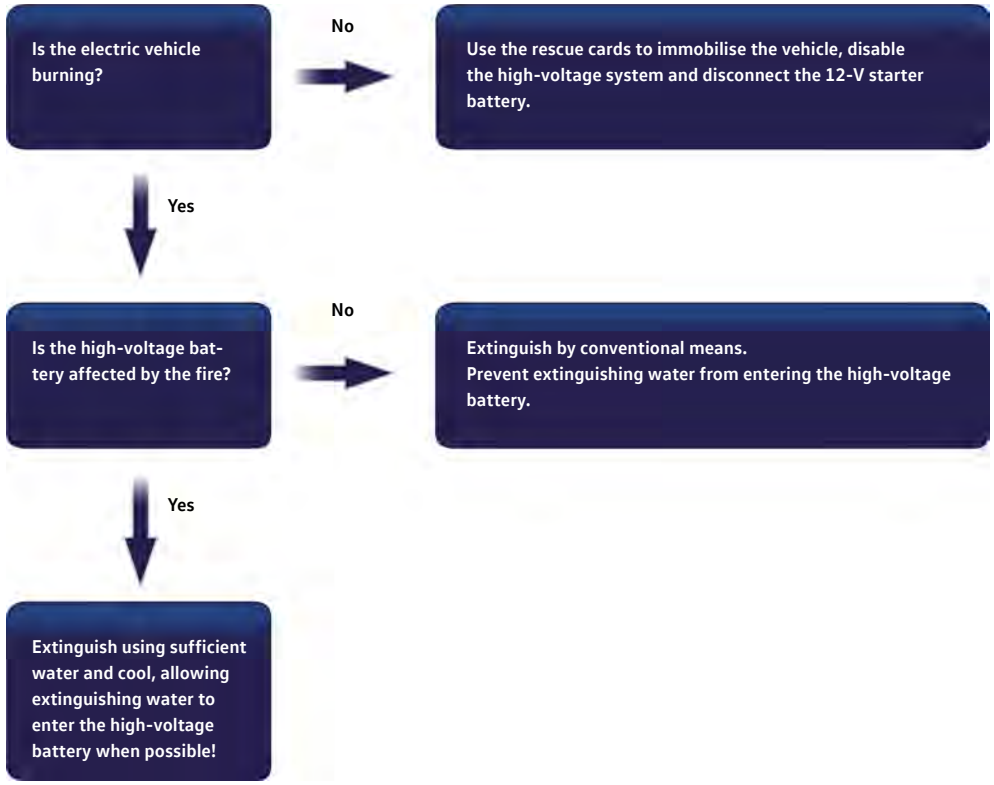
Fire in high-voltage vehicles

Dealing with high-voltage vehicles is usually no more dangerous than dealing with petrol or diesel vehicles, but a number of points do differ. Knowledge of these differences can be important for the rescue operations in the event of accidents involving passenger vehicles.

The following distinction must be made in the event of a vehicle fire with high-voltage vehicles:

- **Vehicle fire without an energy storage unit with a flammable electrolyte catching fire:**
  As is the case for a passenger vehicle with a conventional drive, all conventional and familiar extinguishing agents such as water, foam, CO_2 or powder can be used in case of a "normal" fire in a hybrid or electric vehicle (HEV or BEV, without the high-voltage battery catching fire) depending on requirements and/or availability.
- **Vehicle fire with an energy storage unit with a flammable electrolyte catching fire:**
  Smoke, flying sparks, darting flames from the battery may indicate that the lithium-ion battery is involved in the fire.
  When a high-voltage battery catches fire, it should be extinguished with water whenever possible and then be cooled.
  In this case, it must be ensured that sufficient water is used and, when possible, the extinguishing water enters the high-voltage battery through the openings caused by the fire or collision.
  The jet of water should be aimed as directly as possible at the battery.
  The installation position of the high-voltage battery can be found in the rescue card for the respective model.

The decision about which measures are suitable is made at the deployment site by the fire brigade, and is highly dependent on the actual situation (e.g. progress of the fire and time at which the fire brigade arrives) and the equipment available.



Flow chart for fires in electric vehicles.

Hot, toxic gases may escape due to a thermal reaction in the high-voltage battery.

Use large amounts of water

Lithium-ion batteries can self-ignite either immediately or after a delay when damage occurs or they are not used properly, or re-ignite after fire-fighting measures. Wear appropriate personal protective equipment!

If severe damage occurs (e.g. dented, broken or cracked housing), a lithium-ion battery may react to the effect of water or fire immediately or only after a delay. This is why signs of a reaction (e.g. smoke, heat, noises, sparks etc.) must be observed during activities on a vehicle with a lithium-ion battery which has been in an accident.

In the event of a reaction by the lithium-ion battery, protective measures and countermeasures must be initiated.
Smoke hazardous to the human health is produced from fires in electric or hybrid vehicles, just as it is in vehicles with a conventional drive. This is why the corresponding personal protective equipment is recommended.
In the event of fire, degassing of the high-voltage battery must be expected. The battery has mechanical safety devices (also known as vents) that open, for example, in the event of a fire-related increase in temperature and pressure and thus lead to targeted degassing and pressure relief.

High-voltage battery with vents pointing downwards

Extinguishing a vehicle with a high-voltage battery and extinguishing a burning high-voltage battery is possible. According to the VDA guide on rescue and recovery in accidents, water is the most suitable extinguishing agent and there is no fundamental difference from fighting a fire in a conventionally powered vehicle.

If the high-voltage battery is involved in a fire, large quantities of water are required to cool or extinguish an undamaged high-voltage battery that is reacting.

Following a reaction, the lithium-ion battery must be cooled with water until it has reached a temperature approximately equivalent to ambient temperature. The use of a thermal imaging camera or an IR thermometer is recommended.

After putting out the fire, there may still be dangerous voltages.

When batteries are not completely burnt out, they may ignite again. Extinguished vehicles must be moved to an appropriate storage location (quarantine location); the vehicle may have to be watched.

A sufficient safety distance must be maintained. The corresponding self-contained respiratory protection equipment must be worn!

Evaporations and gases can be suppressed by spraying jets of water.

Defective cells may burst, causing an exothermic reaction.

A fire may break out some time after the accident, as there may be a residual risk of delayed fire. This is particularly the case if the high-voltage energy storage units are damaged (see also chapter 8. Towing / transportation / storage). An electrical hazard may also persist. High-voltage components must not be touched and suitable personal protective equipment must be worn. High-voltage cables may have been damaged by the heat.

Further information can be found in the respective rescue cards.

Fire in natural gas vehicles

Dealing with natural gas vehicles usually is no more dangerous than dealing with petrol or diesel vehicles; however there are also a number of special features in this case that must be observed during rescue operations in the event of accidents involving passenger cars.

In the event of a vehicle fire in which the natural gas fuel tanks are also exposed to heat, the thermal fuses will react at a temperature of approx. 110°C and a defined discharge of the natural gas occurs, which ignites and burns off. When the natural gas fuel tank is full, blowing off the natural gas takes approx. 90 seconds until it is completely empty.

Vehicles may be equipped with one or more gas tanks. The time at which a specific tank blows off/burns off cannot be determined precisely.
As soon as no more natural gas is being blown off, conventional fire fighting can begin. If the natural gas tanks are not affected by the fire (e.g. in the event of a fire in the engine compartment), fire fighting can also be initiated straight away.

When the overpressure protection reacts, gas escapes from the valve. If the vehicle is standing on its wheels, the flow is gas is directed downwards towards the ground. If the vehicle is lying on its side or on its roof, a darting flame may emerge to the side or upwards.
Maintain the safety distance from the vehicle.
Approach it from the front whenever possible.

Personal protective equipment must be worn, including self-contained breathing apparatus!

If the airbags did not deploy during the accident, they may deploy in the event of a vehicle fire.

A sufficient safety distance must be maintained. Corresponding personal protective equipment must be worn!

Further information can be found in the respective rescue cards.

Fire in LPG vehicles

In the event of a vehicle fire in which the liquefied petroleum gas tank is also exposed to heat, the overpressure protection responds at a pressure of 27.5 bar and a pulsating discharge of the liquefied petroleum gas occurs, which ignites and burns off.

If the liquefied petroleum gas tanks are not affected by the fire (e.g. in the event of a fire in the engine compartment), conventional fire fighting can also be initiated straight away.

	**If the vehicle is lying on its side or on its roof, a darting flame may emerge when the overpressure protection responds. If the vehicle is standing on its wheels, the flow of gas is directed out below the gas tank, vertically to the ground. Maintain the safety distance from the vehicle. Approach it from the front whenever possible.**
	**If possible, take cover when cooling the gas tank to prevent heating up before the overpressure protection responds. Continue cooling the tank even when the overpressure protection responds.**
	**Personal protective equipment must be worn, including self-contained breathing apparatus!**
	**If the airbags did not deploy during the accident, they may deploy in the event of a vehicle fire.**
	**A sufficient safety distance must be maintained.**

The loud discharge noise (hissing) indicates that overpressure protection has responded!

Further information can be found in the respective rescue cards.

Fire in vehicles with camping gas equipment

In a vehicle fire in which camping gas cylinders are also exposed to heat, the butane gas may blow off and then ignite and flare off.

If the camping gas cylinders are not affected by the fire (e.g. in the event of a fire in the engine compartment), conventional fire fighting can also be initiated straight away.

	**If possible, cool camping gas cylinders from behind the cover to prevent them from heating up.**
	**Personal protective equipment must be worn, including self-contained breathing apparatus!**
	**If the airbags did not deploy during the accident, they may deploy in the event of a vehicle fire.**
	**A sufficient safety distance must be maintained.**

Further information can be found in the respective rescue cards.

7. In case of submersion

Version dated: 09/2025

Vehicle under water

A vehicle that is immersed in water must be dealt with in the same way as a damaged vehicle that has been in an accident.
The safety and security regulations must be observed, and the procedure to eliminate immediate dangers must be followed, see chapter 3. Disable direct hazards / safety regulations.

High-voltage vehicle under water

- When it is in the water, the high-voltage system does not present an increased risk of electric shock.
- The same instructions apply as in chapter 3. Disable direct hazards / safety regulations.
- The recovery procedure is the same as for conventional vehicles. This also applies to bodies made of carbon fibre reinforced polymers.

Source: Verband der Automobilindustrie (VDA) (German Association of the Automotive Industry), Unfallhilfe & Bergen bei Fahrzeugen mit Hochvolt-Systemen (Accident assistance and recovery of vehicles with high voltage systems), FAQ.

In the event that water enters the high-voltage battery, electrolysis may be triggered and cause a deflagration of oxyhydrogen gas.

The high-voltage system must be deactivated (see chapter 3. Disable direct hazards / safety regulations).
Wear appropriate personal protective equipment!

In the case of heavily soaked vehicles, it is recommended to de-energise the Disconnecting the 12-volt vehicle battery or Disconnecting the 48-volt vehicle battery due to the danger of electrolysis.

Natural gas vehicle under water

- The same instructions apply as described in Disconnecting the 12-volt vehicle battery.
- The recovery procedure is the same as for conventional vehicles.

After recovering the vehicle, allow the water to drain.

If gas escapes, close the shut-off valves of the tanks (see chapter 3. Disable direct hazards / safety regulations).

8. Towing / transportation / storage

Recovering vehicles involved in accidents

When loading, transporting and storing, the instructions in the rescue cards must be observed.

Example illustration (front towing eye)

Example illustration (rear towing eye)

If a towing bracket is installed, no towing eye can be screwed in at the rear of the vehicle. Use the ball head of the towing bracket.
Unhitch trailers connected to the vehicle before transport and transport them separately.
On some Volkswagen models, the towing bracket is unlocked electrically. See also Disconnecting the 12-volt vehicle battery.
The rescue and emergency services on site decide on the respective procedure.

Recovering high-voltage vehicles involved in accidents from a danger area

Vehicles with high-voltage batteries should, in principle, be transported away on flatbed vehicles.

Before transport, the high-voltage system must be deactivated, see chapter 3. Disable direct hazards / safety regulations.

Before transporting the vehicle away (e.g. by a towing company), the condition of the lithium-ion battery should be checked again. The vehicle may only be loaded and transported away if the vehicle does not show any signs of a reaction near the lithium-ion high-voltage battery for an extended period, see the flow chart on the next page.

If vehicles that have been in accidents have a damaged battery or the battery exhibits anomalies, wait until the reaction of the lithium-ion battery has abated before loading, so that no further reaction need be expected on the transport route, see the flow chart on the next page. The shortest and safest route possible must be selected. Travelling through tunnels should be avoided.

If there is any need or doubt, it may be necessary to have the breakdown truck accompanied by a fire engine.
Vehicles with a damaged high-voltage battery should be transported to a safe storage location.

After transport, electric or hybrid vehicles that have been in accidents should not be parked in enclosed buildings, but outdoors at a sufficient distance from other vehicles, buildings and combustible objects or surfaces.

Preference should be given to using designated “quarantine areas” at the storage location. The vehicle that was involved in the accident must be parked outdoors in a suitable location due to the potential which exists, in theory, for the lithium-ion battery to still react. The parking space must be marked accordingly (signs/fencing). A minimum distance of five metres must be maintained to other vehicles, buildings or flammable objects. The distance can be reduced by taking appropriate measures, e.g. fire barriers etc.
The persons responsible at the towing company, the workshops and, if relevant, the scrapyard must be made aware of the special features of and risks presented by the vehicle.

	Lithium-ion batteries can self-ignite or re-ignite after fire-fighting measures!
	In the event that vehicles that have been in accidents have a damaged high-voltage battery or the battery exhibits anomalies: deactivate the high voltage system (see chapter 3. Disable direct hazards / safety regulations). Park the vehicle at a safe distance of at least 5 metres from buildings and other vehicles (quarantine area).
	When loading the vehicle, take care not to damage the high-voltage components. If possible, lift the vehicle at the indicated lifting points.

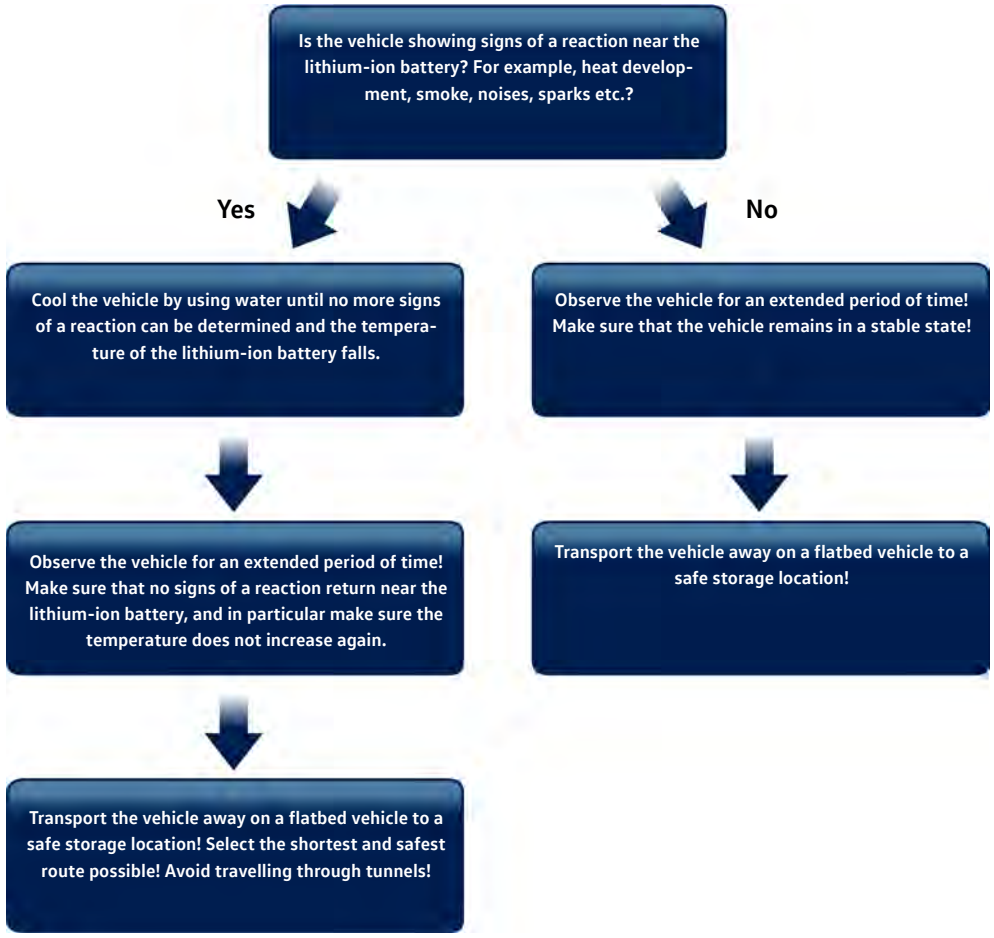
Vibrations during transport may cause high-voltage batteries to self-ignite again.

Recommendations for specific vehicles can be found on their rescue cards.

Whenever possible, monitor any changes in temperature using corresponding devices, e.g. IR camera, for an extended period.

A large metal container, e.g. container, is recommended for transporting away a high-voltage energy storage unit or parts thereof that have been disconnected from the vehicle.
The condition of the high-voltage energy storage unit must be observed (e.g. development of smoke, noises, sparks, development of heat) and flooding of the metal container must be prepared.

Further information can be found in chapter 5. Stored energy / liquids / gases / solids (lithium-ion battery disconnected from the vehicle).



Flow chart for towing electric vehicles

Recovery of natural gas vehicles involved in accidents from a danger area.

When loading, transporting and storing, the instructions in the rescue cards must be observed.
The natural gas tanks must be manually shut off before transport, see chapter 3. Disable direct hazards / safety regulations.

	**A vehicle that has been in an accident must not be towed on its drive axles.**
	**When towing and parking the vehicle, make sure that the gas tanks are not damaged.**
	**If gas escapes, shut off the shut-off valves for the tanks manually (see chapter 3. Disable direct hazards / safety regulations).**

Recommendations for specific vehicles can be found on their rescue cards.

9. Important additional information

Modern vehicles have extensive occupant protection systems which can vary according to the vehicle type and specification package.

Airbag

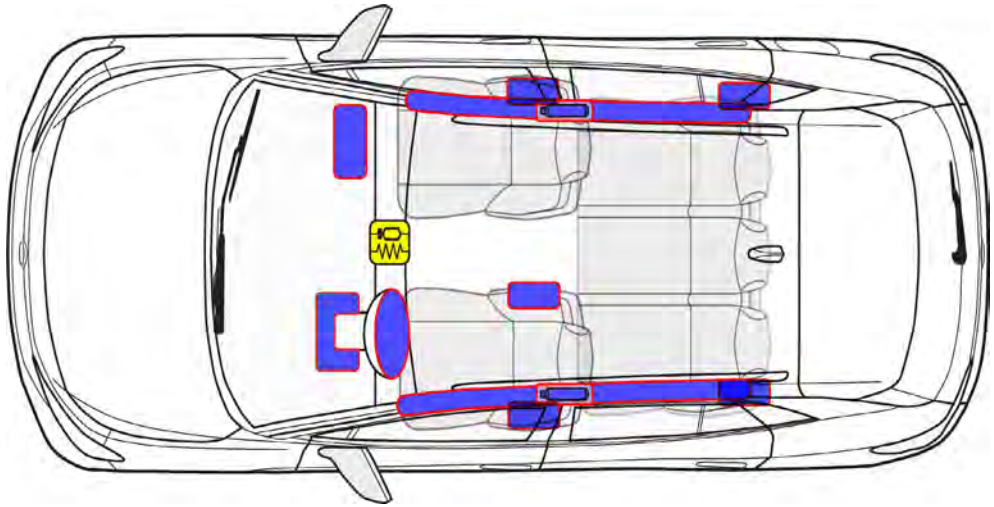
A current vehicle with maximum equipment includes the following main components:

- Airbags
- Airbag control unit
- Sensors
- Belt tensioners
- Components that release the rollover bar in convertibles

Preloaded springs or pyrotechnics are used to trigger it. The job of the electronics integrated in the airbag control unit is to detect vehicle deceleration and acceleration and decide whether to deploy protection systems.
In addition to the sensors in the airbag control unit, sensors e.g. in the front doors are also used to detect vehicle deceleration and acceleration during an accident. Only once they have evaluated the information from all sensors do the electronics in the airbag control unit decide whether and when to activate the safety components. Depending on the nature and severity of the accident, they may only deploy the belt tensioners or the tensioners together with the airbags, for example.

The control unit is indicated as follows on the rescue cards:

Airbag control unit



Airbags in modern vehicle models

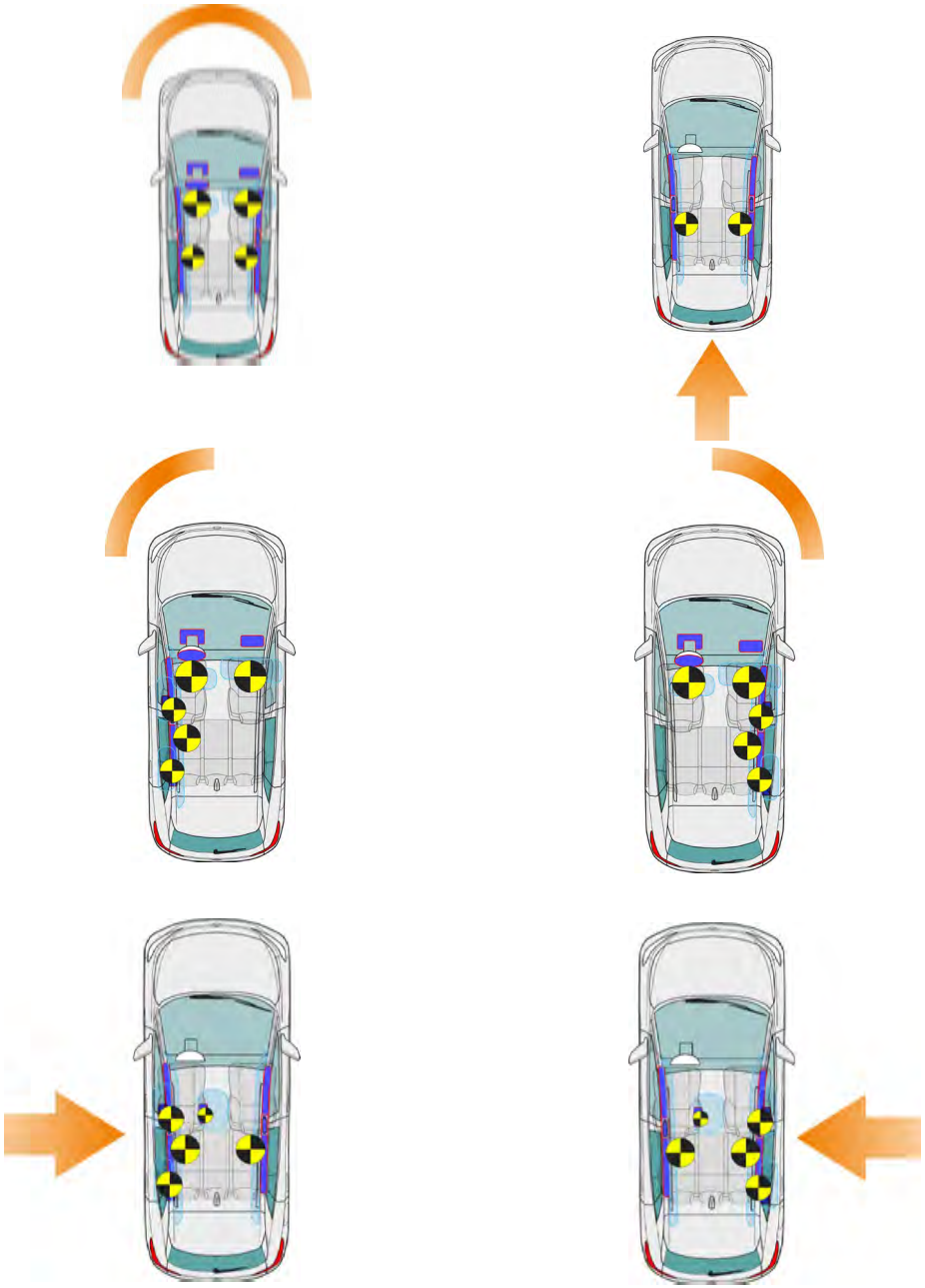
Only those safety systems which afford protection in the specific accident situation are triggered.

In addition to the main function for controlling the airbags, the airbag control unit may also have the following functions:

- Emergency release of the central locking
- Switching on the interior lights
- Switching off the fuel pump
- Switching on the hazard warning lights
- Transmission of a signal to send the eCall
- Opening the windows after an accident
- Switching off the air conditioning

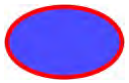
Gas generators produce the quantity of gas required for inflating the airbags, filling the airbags within milliseconds. The inflated airbags protect vehicle occupants who are wearing seatbelts from striking the inner body contours (e.g. the steering wheel, dash panel etc.) in the event of a severe accident.
Depending on the installation location and requirements, stored gas inflators of various designs or modes of action are used.

The safety systems are triggered depending on the type of accident or direction of impact.



The safety systems are triggered depending on the type of accident or direction of impact (ms = milliseconds).

Airbags are indicated in the rescue cards as symbols or outlines as follows:

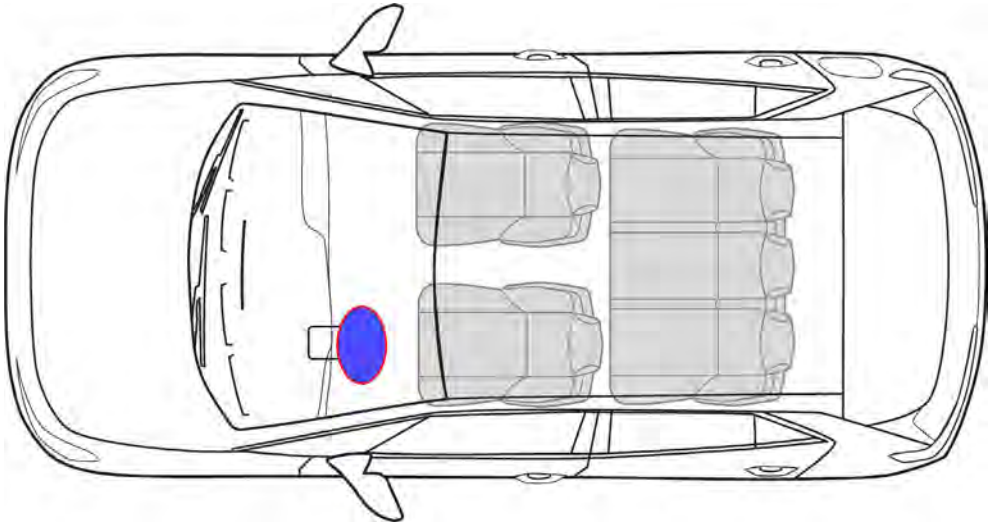


Driver airbag, front passenger airbag, side or centre airbag, knee airbag and curtain airbag

Front airbag

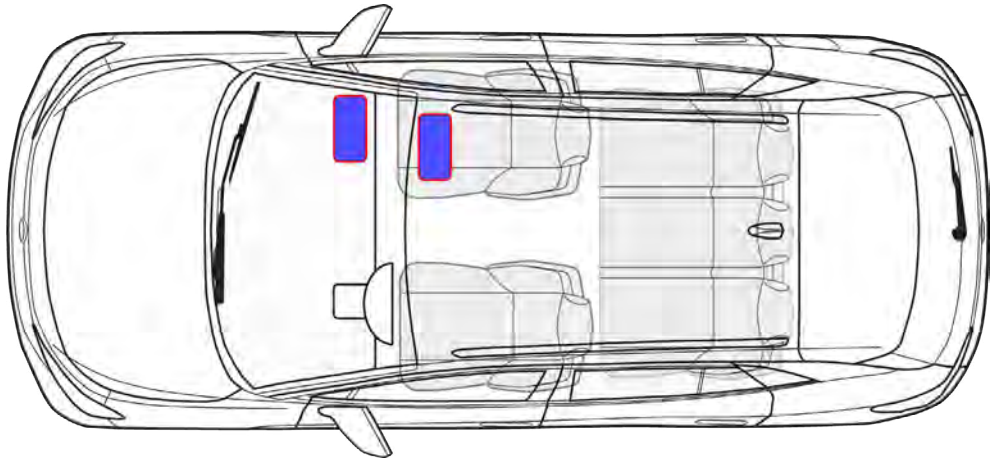
Driver airbag

The driver airbag unit essentially consists of a cap, the airbag and a stored gas inflator. It is fitted in the steering wheel and electrically connected to the airbag control unit via a contact unit.
The airbag is folded up under the cap and its shape and size are designed so that it inflates as protection between the driver and steering wheel.
The driver airbag is inflated by a stored gas inflator. The unfolding airbag breaks the cap on the steering wheel along a special seam and is instantly filled with gas. The entire process from ignition of the stored gas inflator to the fully inflated airbag only takes a few milliseconds.
Vents on the side facing away from the driver reduce the kinetic energy of the upper body impact by allowing the gas to escape at a controlled rate.



Front passenger airbag

The airbag unit for the front passenger is located in the dash panel in front of the passenger seat. In the Caravelle and Transporter (Volkswagen Commercial Vehicles models from 2025), the front passenger airbag is installed in the headliner.
Because the airbag unit is further from the occupant, the front passenger airbag has a much larger volume. The action, function and process sequence of the front passenger airbag are comparable to those of the driver airbag.

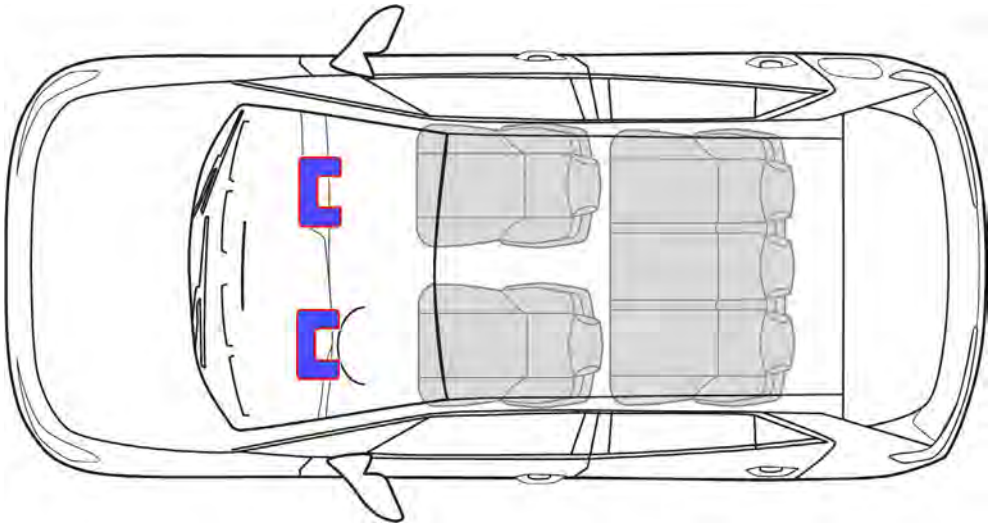


Knee airbag

The design of the knee airbag is similar to that of the front passenger airbag. It is located in the footwell trim below the dash panel.

The knee airbag is always deployed together with the driver airbag. Single-stage stored gas inflators are used to inflate the knee airbags.

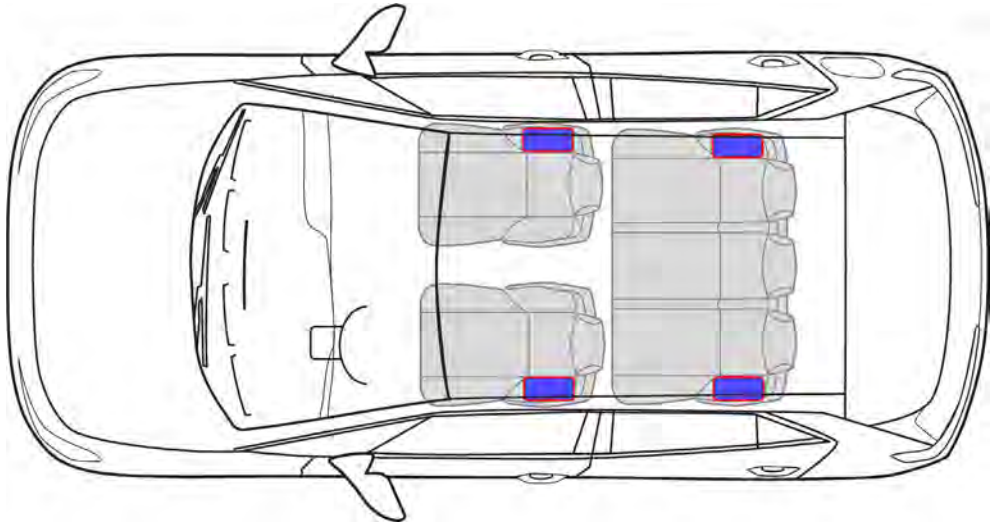
The deployment of the knee airbag reduces the risk of knee and leg injuries for occupants and the occupants are connected to the vehicle's deceleration sooner.



Side airbag

In a lateral collision, side airbags protect the occupant's thorax and pelvis on that side of the vehicle and reduce the impact on the occupant. They inflate at the side between the occupant's upper body and any trims that protrude, and therefore distribute the force of the impact on the occupant more evenly, who is thereby paired with the motion of the intrusion early on.

The side airbags are installed in the backrest of the driver and front passenger seats, and on the outer seats in the 2nd row of seats in a number of Volkswagen models. This guarantees a uniform distance to the vehicle occupants in every seat position.

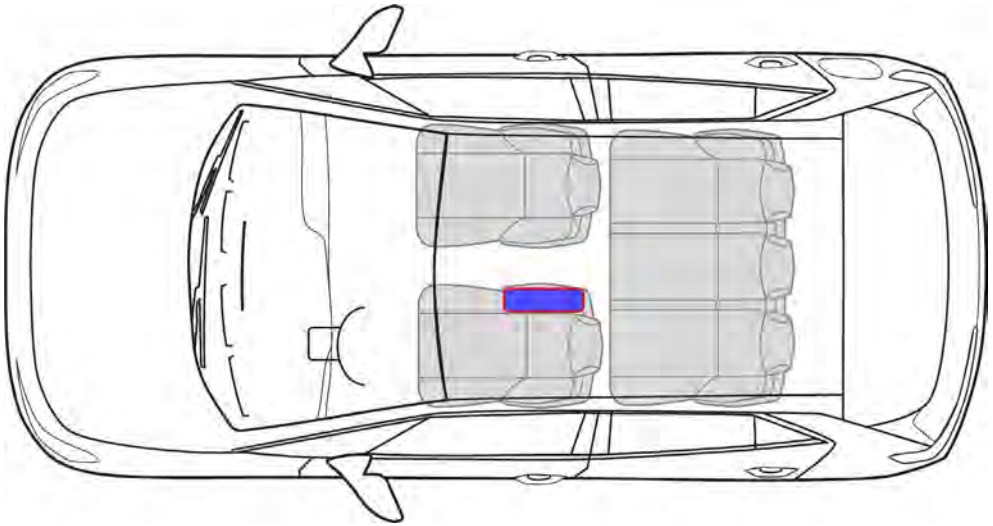


Head/thorax airbag

The head-thorax airbag for the driver and front passenger are integrated into the front seat backrests. The design and function are similar to those of a side airbag. It extends from the occupant's ribcage to the head and is particularly used in convertibles where a curtain airbag is not possible.

Centre airbag

Centre airbags are installed in the driver seat armrest on the tunnel side. They prevent a collision between the heads of the driver and the front passenger, and prevent the driver from being thrown too far to the passenger side if it is unoccupied.

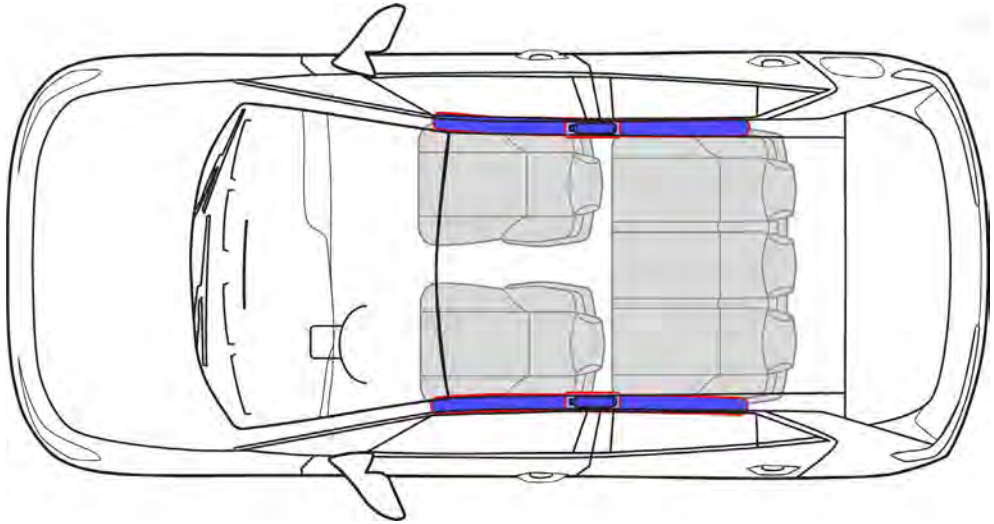


Curtain airbag

Curtain airbags protect the head in the event of a side impact. They consist of a large airbag up in the roof lining which usually extends from the A-pillar to the C-pillar.

Depending on the vehicle model, the stored gas inflators may be installed in the roof near the B-pillar, between the B- and C-pillars, between the C- and D-pillars or even in the rear roof area. The exact installation position is described on the rescue cards. In contrast to front and side airbags, the curtain airbag can retain its internal pressure for some time after being deployed. This is to provide protection if the vehicle subsequently overturns or secondary collisions occur.

Both the side and curtain airbags are deployed by the airbag control unit when a limit configured in it is reached. A side impact is detected by lateral acceleration sensors or pressure sensors in the doors.



Airbag stored gas inflators

Solid propellant generators

The solid propellant stored gas inflators consist of a housing containing a solid propellant charge with an ignition unit. When the solid propellant is ignited, the airbag is filled with non-toxic gas.

Procedure:

- The igniter is activated by the airbag control unit.
- The propellant charge is ignited and quickly combusts.
- The gas thus produced flows through the metal filter into the airbag.

Hybrid stored gas inflators

The hybrid stored gas inflators consist of a housing containing a highly compressed gas, combined with a solid propellant charge and an ignition unit. The design and shape of the generator housing are adapted to the installation conditions. These generators are usually tubular. The main components are the pressure vessel for the airbag inflation gas, and the (solid) propellant charge which is integrated in the pressure vessel or flange-mounted on it. The solid propellant is used in tablet or ring form. The stored and compressed gas is a mixture of inert gases, for example argon and helium. Depending on the stored gas inflator design, it is pressurised to between 200 bar and 800 bar.

When the solid propellant is ignited, it opens the pressure vessel, producing a gas mixture consisting of the solid propellant and the inert gas mixture. The igniter is activated by the airbag control unit and the propellant charge is ignited.

Do not damage the stored gas inflators during rescue work. The compressed gas in the pressure vessel and the pyrotechnic propellants may pose a hazard to the emergency services and the occupants.

Belt tensioners

In the event of a crash, belt tensioners retract the belt in the opposite direction to which it is being pulled – this reduces slack (a gap between the belt and the body). This acts as soon as possible to prevent the occupant from being thrown forward (relative to the motion of the vehicle). A belt tensioner can retract the seat belt by up to 200 mm within 10 milliseconds. The belt tensioners are integrated in the belt system. However, they may be installed in different locations depending on the type of vehicle (for example in the B-pillar, in the side member beside the seat or on the outside of the rear seat) and have different functional principles. In some cases, two belt tensioners may even be used on one seat.

This means belt tensioners should not be damaged with rescue equipment if at all possible. Avoid hammering on this area.

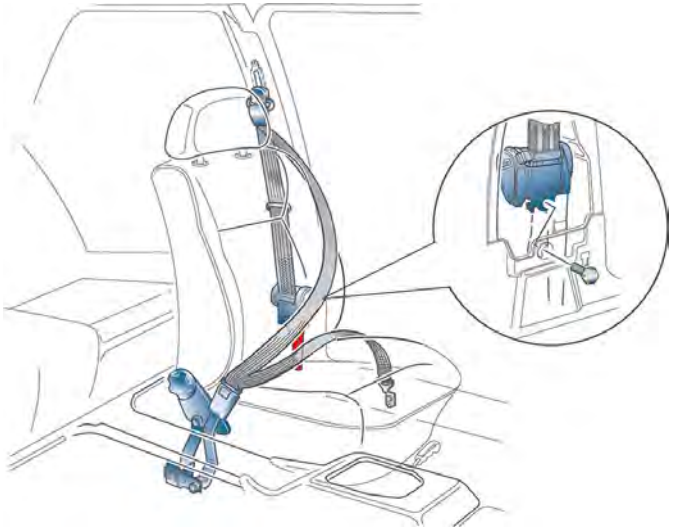
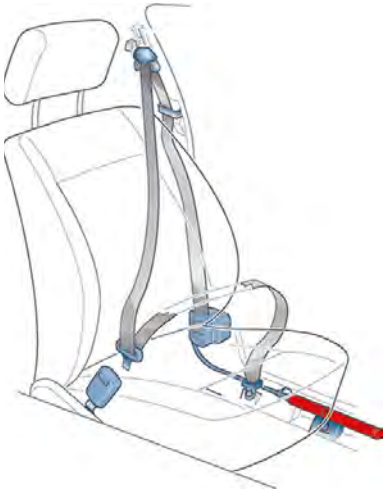
The belt also locks if the vehicle is at a steep angle, has overturned, or possibly if the belt tensioner has been damaged by the accident.

Non-triggered belt tensioners with mechanical activation can still be triggered even after the battery is disconnected.

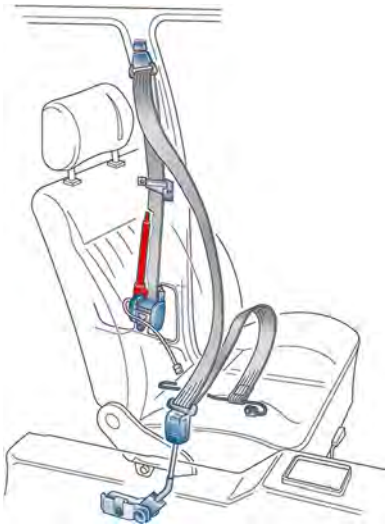
If the situation allows, the seat belt should be taken off or cut off as soon as possible.

Belt tensioner

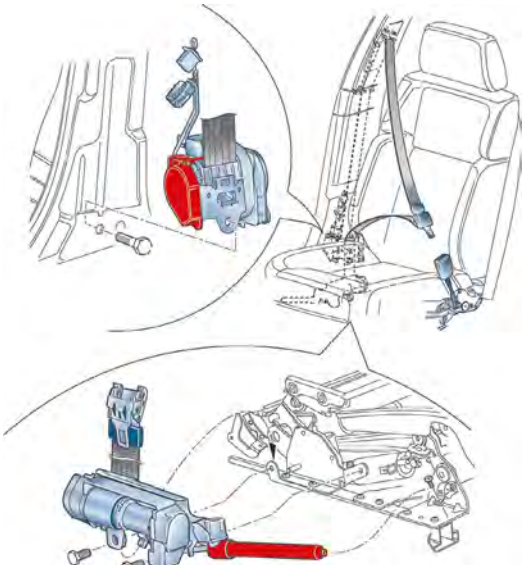
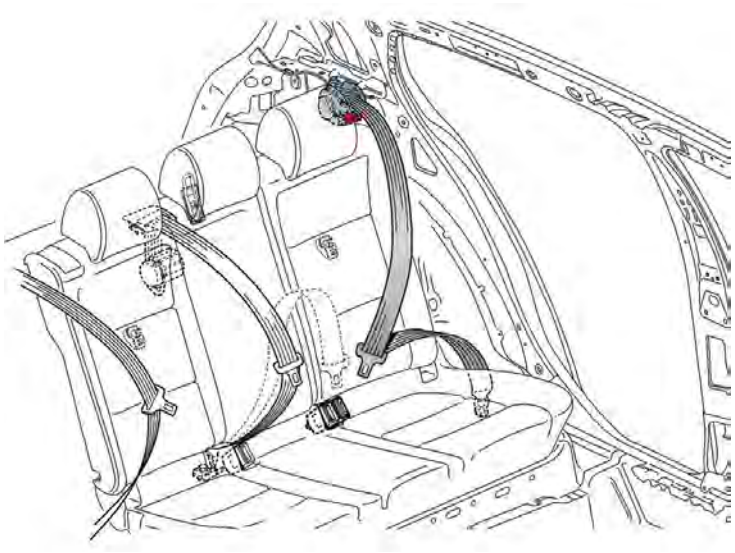
Belt tensioner installation variants

Variant	Installation location
	**Variant 1** The front three-point automatic seat belt with the cylindrical belt tensioner and mechanical or electrical triggering of the ignition form a unit and are installed either: a) In the B-pillar below the automatic belt retractors b) As external components next to the side member c) In the B-pillar above the automatic belt retractor. **Installation variant 1a – Belt tensioner in the B-pillar below the belt retractor**
	**Installation variant 1b – Belt tensioner as external component next to the side member**

Belt tensioner installation variants

Variant	Installation location
	**Installation variant 1c – Belt tensioner in the B-pillar above the belt retractor**
	**Variant 2** In the case of the front compact tensioner, the three-point automatic seat belt and belt tensioner with electric or mechanical ignition trigger form a single unit and are installed in the B-pillar. **Installation variant 2 – Compact belt tensioner in the B-pillar**

Belt tensioner installation variants

Variant	Installation location
	**Variant 3** In the front twin tensioner, the shoulder section of belt with compact tensioner and the lap part of the seat belt with cylindrical tensioner form a functional unit. The electric ignition trigger of the shoulder section is located in the B-pillar and the trigger for the lap belt section is on the seat frame. **Installation variant 3 – Twin belt tensioner in the B-pillar and seat frame**
	**Variant 4** In the rear compact tensioner, the three-point automatic seat belt and belt tensioner with electric or mechanical ignition trigger form a single unit and are installed behind the rear seat backrest. **Installation variant 4 – Compact belt tensioner in the rear shelf**

Belt tensioner installation variants

Variant	Installation location
	**Variant 5** Three-point automatic seat belt and tensioner are arranged independently of each other. The belt tensioner with electric ignition trigger is installed in the wheel housing / C-pillar area. **Installation variant 5 – Rear belt pretensioner in the wheel housing / C-pillar area**
	**Variant 6** Three-point seat belt and lap belt tensioner are installed separately. The lap belt tensioner with electric triggering of the ignition is installed at the side member/B-pillar. **Installation variant 6 – Lap belt tensioner in the side member / B-pillar area**

Protective bar

Convertibles must provide the greatest possible protection for occupants even when the roof is open. This is why a rollover protection system is used, which provides a protective zone for the occupants in combination with reinforced A-pillars. It can be rigid or dynamic.

A dynamic system functions as follows:

- The airbag control unit contains a sensor for detecting if the vehicle is about to roll over.

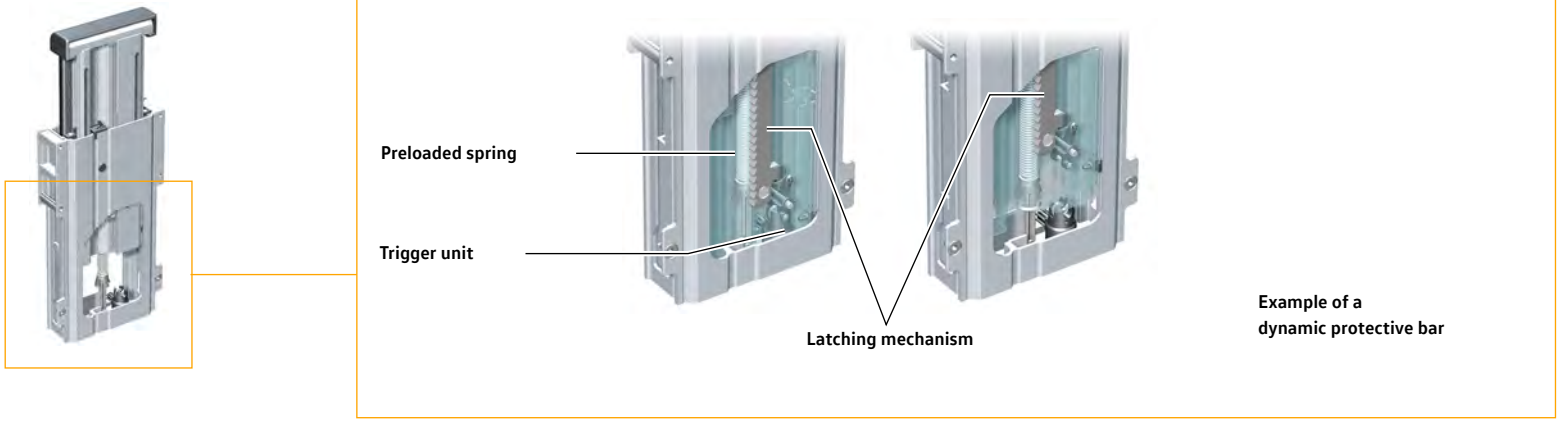
Together with other sensors in the control unit, the severity of the accident is determined and the protective bar and belt tensioners are deployed.

The protective bar is also deployed as a precaution in the event of a severe frontal, lateral or rear impact as soon as a belt tensioner or airbag is triggered.

It is deployed via a protective bar trigger unit. A preloaded spring moves the bar to the protective position within 0.25 seconds, and it is locked in the extended position by a latching mechanism.

If the rear window is still intact when the protective bar is triggered, the protective bar will not break it. If the window is removed as part of the rescue operation, the protective bar is pushed up a further 10 cm. It could hit emergency and recovery personnel and scatter glass shards.

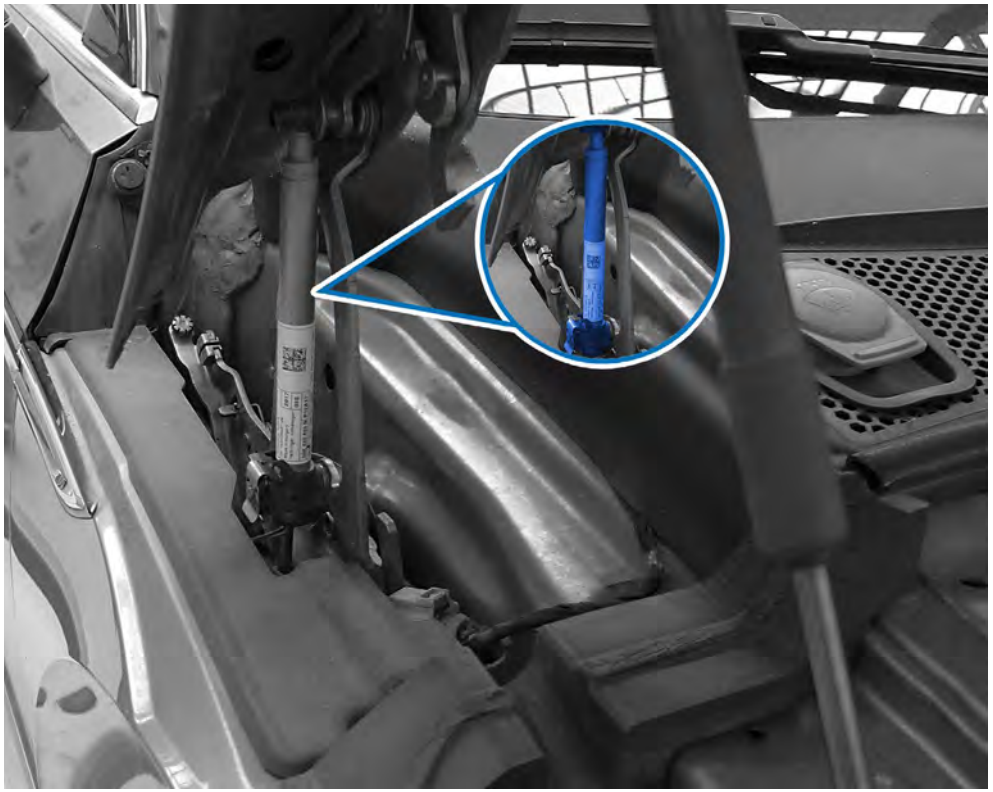
Identification of Automatic Rollover Support System



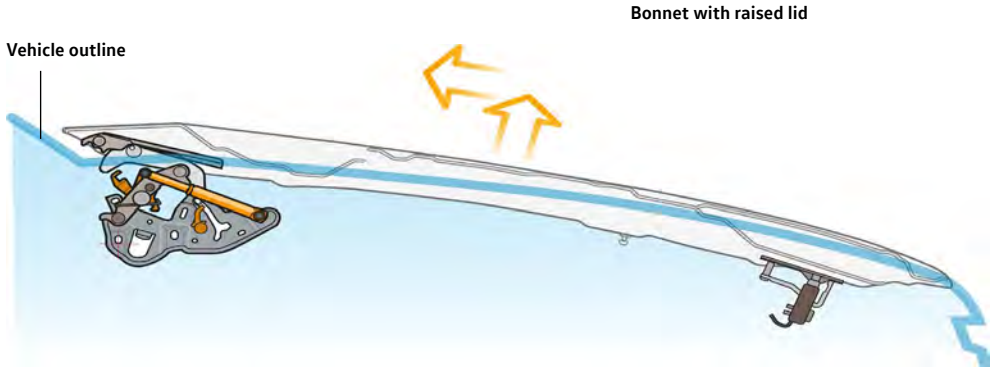
Example of a dynamic protective bar

Re-active bonnet

To ensure optimum protection for pedestrians, some Volkswagen vehicles are equipped with a re-active bonnet.
In the event of a collision with a pedestrian, the front and rear of the active bonnet are raised by preloaded gas struts and pyrotechnic propellants.
This increases the space between the bonnet and engine. The bonnet can absorb more impact energy in this position, thereby reducing the severity of injury caused by the engine.



Example of a re-active bonnet with pyrotechnic actuator



Do not damage the stored gas inflators during rescue work.
The compressed gas in the pressure vessel and the pyrotechnic propellants may pose a hazard to the emergency services and the occupants.

Pedestrian protection active system

Sources, further information

- VDA: Accident assistance and recovery of vehicles with 48 V and high-voltage systems
- DGUV: Hinweise für die Brandbekämpfung von Lithium-Ionen-Akkus bei Fahrzeugbränden (Information for fighting fires in lithium-ion batteries in vehicle fires) (FBFHB 024)

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10. Explanation of pictograms used

Components, functions and measures that have to be taken into account during a rescue operation are indicated by special pictograms.

The pictograms are used:

- To indicate, together with the rescue card illustration, where the respective components/functions are located in the vehicle
  (for details, see ISO 17840-1 and ISO 17840-2)
- To indicate a specific function or danger; they can be used in the sections of the additional pages of the rescue card or the guideline for rescue services
- To show how to identify the type of drive
- To indicate fire extinguishing measures.

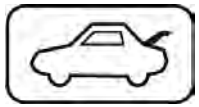
A number of pictograms may be adapted to reflect the actual size and shape.
A combination of simple forms can also be used.

Pictograms for recognising the type of drive

	Vehicle on fuel of liquid group 1; diesel
	Vehicle on fuel of liquid group 2; petrol
	Hybrid Electric Vehicle on fuel of liquid group 2; petrol/electric
	Electric vehicle
	Vehicle with petrol-CNG drive
	Vehicle with petrol-LPG drive

Pictograms concerning access to the components

Bonnet



Boot

Pictograms concerning disabling of the vehicle (excluding high voltage)

Device to shut down power in the vehicle

Remove smart key

Pictograms concerning disabling of the vehicle high voltage (EV, HEV, PHEV, FCEV)

Dangerous voltage

Pictograms concerning disabling of the vehicle high voltage (EV, HEV, PHEV, FCEV)

Fuse box disabling high voltage

Cable cut

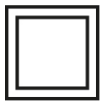
Low voltage device that disconnects high voltage

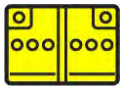
Pictograms concerning access to occupants

Steering wheel, tilt control

Seat height adjustment

Seat adjustment, longitudinal

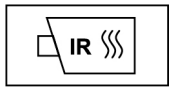
Other vehicle related pictograms	
	Airbag
	Stored gas inflator
	Belt tensioner
	Gas strut, preloaded spring
	Pedestrian protection active system
	Body reinforcement
	Zone requiring special attention
	Carbon structure

Other vehicle related pictograms	
	Battery low voltage
	SRS control unit
	Battery pack, high-voltage
	High voltage component
	High voltage power cable
	Fuel tank, diesel
	Fuel tank petrol/ethanol
	Gas tank (CNG)

Other vehicle related pictograms

	Manual gas shut-off valve (CNG)
	Gas pipe (general)
	Air tank
	Air conditioning system

Pictograms related to fire fighting and safety

	General warning sign
	Warning, Electricity
	Use thermal Infrared camera

Pictograms related to fire fighting and safety

	Use water to extinguish the fire
	Use ABC powder to extinguish the fire

Worldwide standard symbols

	Explosive
	Flammable
	Gases under pressure
	Corrosive/skin irritant
	Danger to health

Worldwide standard symbols

Environmental hazard