

SERVICE INFORMATION

Volvo Truck Corporation



Volvo Trucks' product information for emergency services

FH



Foreword

The descriptions and service procedures contained in this manual are based on designs and methods studies carried out up to October 2014.

The products are under continuous development. Vehicles and components produced after the above date may therefore have different specifications and repair methods. When this is judged to have a significant bearing on this manual, an updated version of this manual will be issued to cover the changes.

The following levels of observations, cautions and warnings are used in this Service Documentation:

Note: Indicates a procedure, practice, or condition that must be followed in order to have the vehicle or component function in the manner intended.

Caution: Indicates an unsafe practice where damage to the product could occur.

Warning: Indicates an unsafe practice where personal injury or severe damage to the product could occur.

Danger: Indicates an unsafe practice where serious personal injury or death could occur.

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Product information - FH

Product information on Volvo Trucks for emergency services personnel

Introduction

The purpose of this document is to give technical product information that can be used to develop routines and methods for rescue work in traffic accidents involving Volvo trucks.

It is intended for the local rescue services that carry out work at the site of an accident and includes the following information:

- Electrical system
- Roof hatch and windows
- Driver's cab
- Driver's seat and steering wheel adjustment
- SRS/ Airbag system
- SCR System

Electrical system

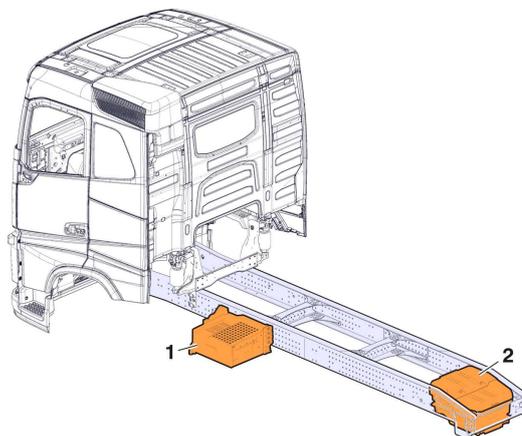
How is the electrical supply cut off?

- **Break the battery circuit by disconnecting/cutting the cables from the battery terminals.** This is the safest method of cutting the power. All power is cut, also to the tachograph.
- **Turn off the main switch.** All power in the vehicle will not be cut. A number of circuits will still be live. Not all cabs have a main switch.
- **Note that the vehicle is still live if only the key is removed.**

The SRS control unit will retain energy for about three seconds after the battery power has been disconnected. This is sufficient to activate the airbag and belt pretensioner for up to three seconds after the power has been cut.

The figure shows the normal location of the battery.

- 1 The battery box is fitted on the left-hand longitudinal side member
- 2 Battery box fitted inside the rear cross member



T3072574

Different ways of cutting off the electrical supply:

D. Remote switch.

Not found on all vehicles. Pressing the left-hand button twice within five seconds will turn off the main switch. Some circuits are still live.

C. ADR circuit breaker.

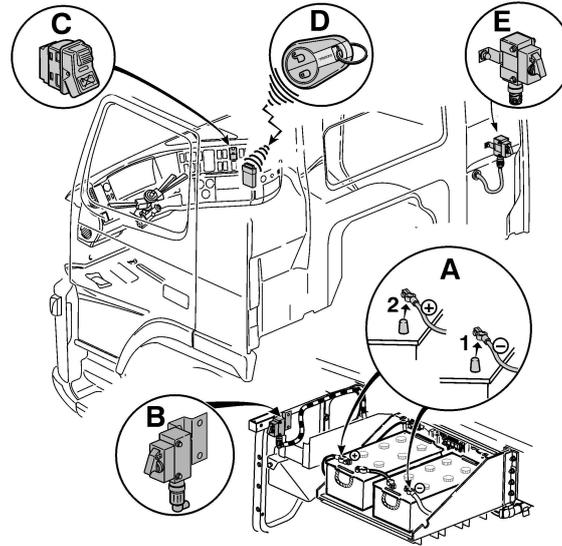
Only on vehicles for transporting hazardous goods.

Cuts ALL power except to the tachograph.

B. Main switch/ battery switch.

Not on all vehicles.

Certain circuits still provided with power.



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E. Outer switch, ADR option.

This main switch is available as an option on vehicles used for transporting hazardous goods.

Cuts ALL power except to the tachograph.

A. Battery.

Remove the key from the starter switch and press the warning blinker button. Press and hold in the warning blinker button for minimally 5 seconds. Wait minimally 30 seconds before removing the cable from the battery minus terminal.

If it is necessary to cut off the cable, do this as close to the battery as possible to reduce the risk of there being a branch cable between the cut and the battery.

Note: Not all components in the above figure are found on all vehicles!

Central locking

The central locking system is designed so that the door lock function is turned off in the following circumstances:

- When the vehicle's power circuit is cut at the battery.
- When one of the vehicle's ADR switches is turned off.
- In the event of a collision, the SRS system will send a signal to the central locking system. The central locking system will not function for around two minutes after unlocking in this way.
- Locked doors can be opened from inside with the door handles and from the outside with a key.

General recommendations:

- A main switch can cut power only when the engine has been turned off. The power supply to tachograph, central locking system, alarm and parking heater is NOT cut. The exception is ADR trucks for transporting hazardous goods, where the main switch cuts all the power irrespective of whether the engine is running.

Only disconnecting the battery or the ADR main switch will cut ALL the power.

-



CAUTION

In cases where the ADR main switch is used to cut the power while the ignition is on, the SCR system will remain pressurised and still contain AdBlue!

Wait two minutes after turning off the engine before using the main switch to ensure the system is completely drained of AdBlue.

- Appearance and function vary between different main switches; some vehicle models are not equipped with main switch at all.
- Energy is stored in the SRS system a few seconds after cutting the battery power, which is sufficient to activate the airbag and belt pretensioner. To be sure the system has been deactivated; wait for about three seconds after cutting the battery power.
- **Before cutting power: Consider the need of opening doors and adjusting the driver's seat!**

Driver seats that are electrically adjustable cannot be adjusted once the power has been cut since the seat does not have manual adjustment.

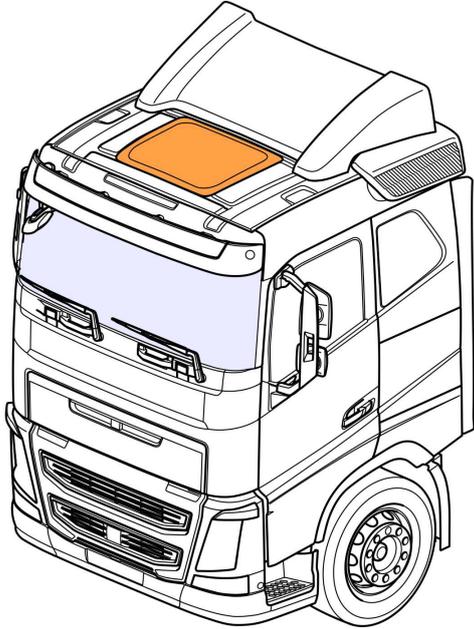
Roof hatch and windows

Roof hatch

The roof hatch is used as an emergency exit if the doors cannot be used. The glass in the roof hatch is easy to break with an emergency hammer.

Windows

The windscreen is laminated and glued to the cab structure. Side windows comprise hardened or laminated glass.



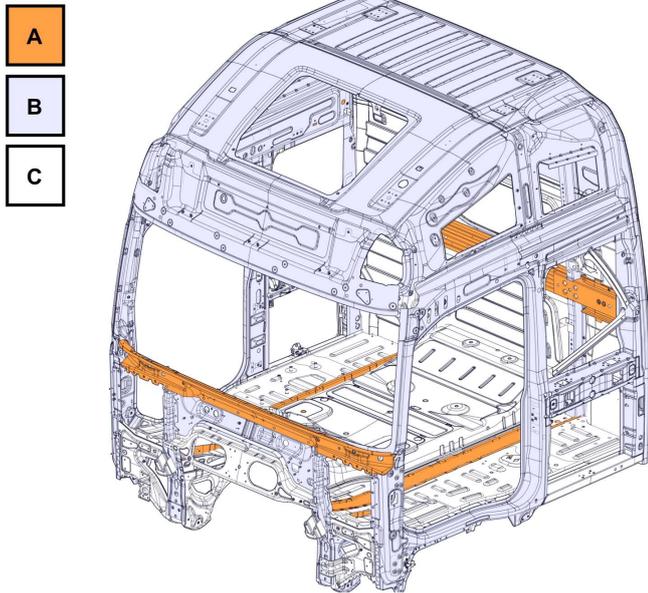
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Driver's cab

Older cabs are made of softer sheet steel that is welded together, while newer cabs are fabricated in high-strength steel.

Areas with high-strength steel are marked in yellow (A), reinforced areas in blue (B) and areas with less reinforcement in white (C), as shown in the figure below.

Cab reinforcement



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Driver's position

Seat design

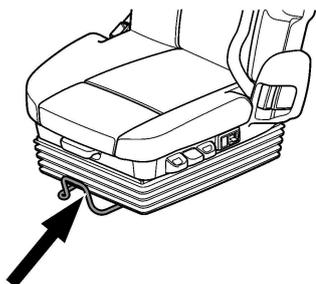
There are a number of different seat models available for the various models of vehicle.

Back-and-forth seat position adjustment is in some cases mechanical, but the most advanced models have electrical adjustment.

Manually adjusted seats are adjusted using a bar located under the front of the seat cushion and the electrically adjusted seats with a button by the side of the seat cushion.

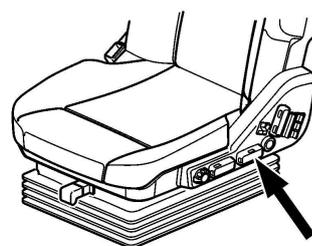
Note that electrically adjusted seats do not have manual adjustment and cannot be adjusted after the power has been turned off.

Back-and-forth seat adjustment



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Adjustment via the handle.



T8010449

Electrical adjustment.

Steering wheel adjustment

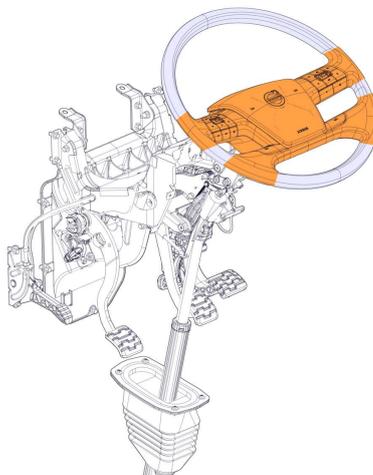
The steering wheel position is adjusted via a foot pedal. The steering wheel adjustment is used to adjust the steering wheel's position height/lengthwise and towards the driver.

If it is necessary to cut the steering wheel, this is easiest in areas where there is less reinforcement (B) as shown in the figure below. Other parts are reinforced (A).

Reinforcement in the steering wheel and adjuster

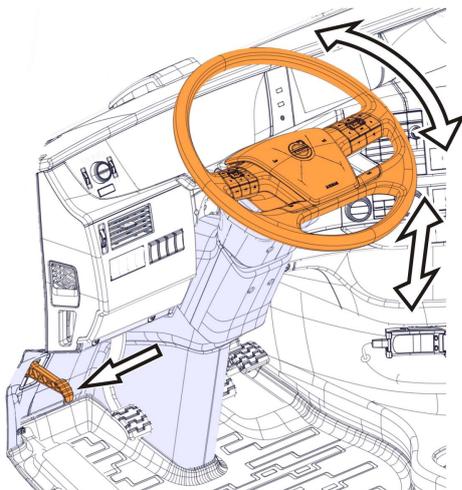


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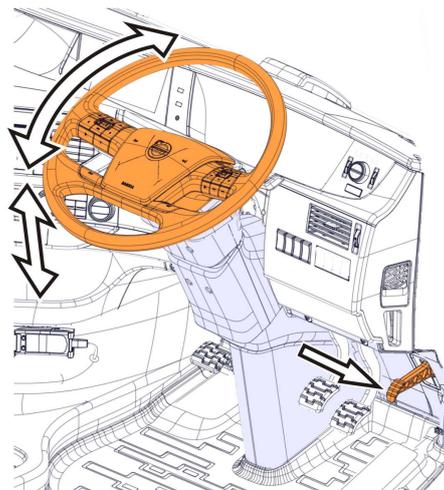
T0071124

Reinforcement profile, steering wheel.



T0071126

Steering wheel adjustment, left-hand drive.



T0073542

Steering wheel adjustment, right-hand drive

Supplemental restraint system (SRS)

The SRS system

SRS/airbag is not standard; it is only in some models.

SRS is a complementary collision protection system to the seat belts and consists of an airbag and belt tensioner.

In more recent models, if a collision occurs, the SRS system sends a signal to the central locking unit, which unlocks the doors and activates the warning blinkers.

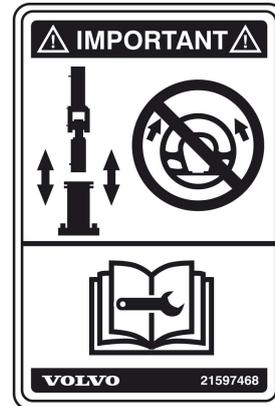
There are labels in the cabs of vehicles with SRS airbag informing of this:

On the windscreen



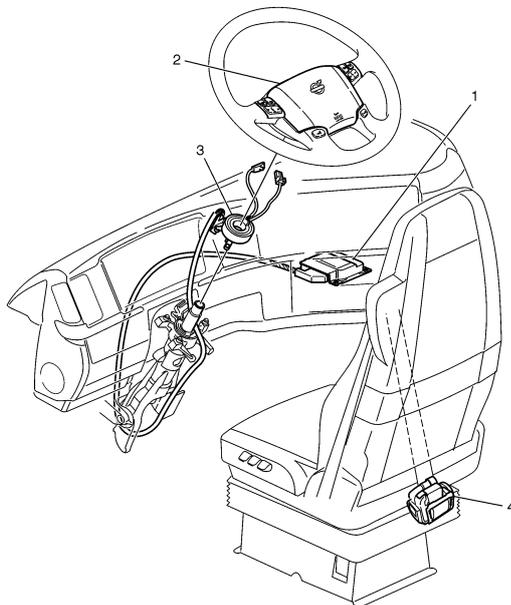
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At bottom of steering shaft



T1069789

Overview of the SRS system and its components:



T8008552

1. Control unit.

In a collision the control unit sends an impulse which simultaneously activates the seatbelt tensioner and the airbag.

2. Airbag module.

If there is an airbag in the vehicle, the airbag module is located in the centre of the steering wheel. The airbag module is comprised of an electrical primer, a gas generator and an inflatable cushion.

3. Friction roller.

4. Seat belt tensioner.

A seat belt tensioner is optional equipment and is only found in some vehicles with airbag and seat belt.

Consists of an electrical primer and a powder charge which is activated.

The seat belt tensioner is activated at the same time as the airbag.

The SRS airbag is designed to be activated in a frontal collision at high speed.

The SRS airbag has not been designed to activate with:

- A collision against the side of the vehicle.
- A collision against the back of the vehicle.
- Tipping or rolling of the vehicle.
- Head-on crashes at "low" speeds or against soft objects such as bushes or snow drifts.

Control unit

In order for the control unit to activate the airbag and tensioner, a high and continuous retardation must occur. In

practice, such a high retardation can only be provided by a serious frontal collision.

Both a large G-force and lasting deceleration (braking) are required for the control unit to activate the system. Consequently, it would not be activated in the event of, e.g. a hammer blow, which would cause high G force but for a short duration.

If the collision is hard enough, the control unit activates the gas generator, inflating the airbag and activating the seat belt tensioner.

Note that the control unit includes a function for reserve energy that enables activation even when the battery power is cut.

The airbags can be triggered for up to three seconds after the battery power has been cut, i.e. wait for about three seconds to ensure the system has been turned off.

General recommendations:

- Make sure that the battery is disconnected!
- The airbag module must never be disassembled.
- Use no current carrying instruments on the airbag or seat belt tensioner.



DANGER

Some parts of the SRS contain explosive material. Explosives can cause personal injury or death if handled incorrectly.



DANGER

Open fire can cause an airbag or seat belt tensioner to activate.

SCR System

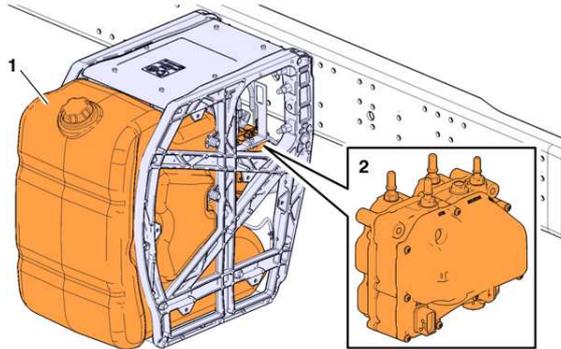
SCR system

The AdBlue system is part of the exhaust treatment system that is installed on certain new engines to fulfil current emission requirements.

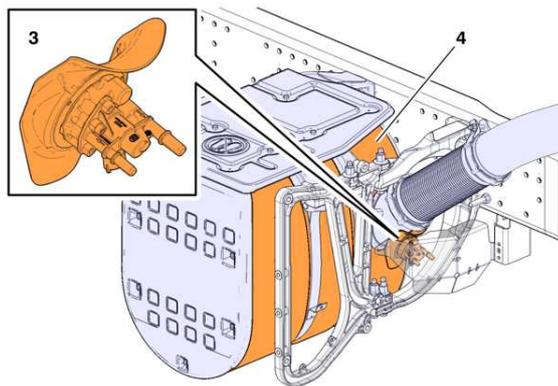
An AdBlue solution is sprayed into the exhaust gases before they pass through the catalytic converter to reduce the emission of nitrogen oxide.

The main components of the SCR system include a tank for AdBlue, a pump unit, a dosage valve and a silencer with integrated SCR catalytic converter.

Overview of the SCR-system and main components:



T2071041



T2071042

1. AdBlue tank
2. Pump unit
3. Dosage valve
4. Silencer

AdBlue

AdBlue comprises distilled water and 32.5% AdBlue, and is a colourless liquid with a faint smell of ammonia.

The solution can be aggressive to certain materials and should be handled with care.

The solution is not flammable.

At higher temperatures, AdBlue decomposes into ammonia and carbon dioxide, and can freeze at temperatures below -11°C .

AdBlue is highly corrosive to metals, in particular copper and aluminium.

Handling AdBlue:

Skin contact:	Rinse thoroughly with luke-warm water and remove contaminated clothing
Eye contact:	Rinse thoroughly with water for several minutes and contact a doctor as required
With inhalation:	Breathe in fresh air and contact a doctor as required
With ingestion:	Drink water

General recommendations:

- Once the engine has been turned off, AdBlue is pumped back to the tank to empty the SCR system. This procedure takes about two minutes. If the ADR main switch is used to cut the power before this process has finished, the system may still be under pressure and contain AdBlue!



CAUTION

If the ADR main switch is used to cut the power while the ignition is on, the SCR system will remain pressurised and still contain AdBlue!
Wait two minutes after turning off the engine before using the main switch to ensure the system is completely drained of AdBlue.

- AdBlue is extremely corrosive and can damage connectors. Disassemble connectors that have been in contact with AdBlue must be replaced immediately. Cleaning them will not help as the solution spreads rapidly in the cable and will oxidise the metal.



CAUTION

AdBlue spill on hot components can cause fast vapourisation. Turn your face away!



CAUTION

Note that the area around the silencer and exhaust pipe of a vehicle equipped with an SCR-system retains a high temperature considerably longer than a conventional vehicle.

Feedback

One of our objectives is that workshop personnel should have access to correct and appropriate service manuals where it concerns fault tracing, repairs and maintenance of Volvo vehicles.

In order to maintain the high standards of our service information, your opinions and experiences when using this information would be greatly appreciated.

If you have any comments or suggestions, use "Argus dealer" or send them to us using the email address below.

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