

Emergency Response Guide

LF Electric



DAF

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INTRODUCTION

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1. INTRODUCTION

1.1 INTRODUCTION

This manual has been created to assist the first responders in identifying and responding to vehicles equipped with a DAF electrical drive line.

The DAF electrical vehicle uses High-Voltage AC to power an electric motor. High-Voltage battery packs stores energy until it is required to power the vehicle.

The DAF electrical drive line has been designed with many features for user protection, to ensure safe access to and from the vehicle under various conditions. It is important to read and understand the 'Emergency High-Voltage shutdown procedures'.



WARNING! Always assume the vehicle is powered up.

INTRODUCTION

Introduction

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VEHICLE IDENTIFICATION

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1. IDENTIFICATION

1.1 IDENTIFICATION

Vehicle

The (Battery) Electric Vehicle is identified by a badge, 'Electric', on the outside of the vehicle.



VEHICLE IDENTIFICATION

Identification

High-Voltage components

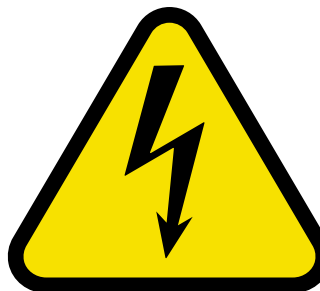
All High-Voltage components are labelled with the 'High-Voltage' symbol.

High-Voltage cables can be identified by the colour orange.



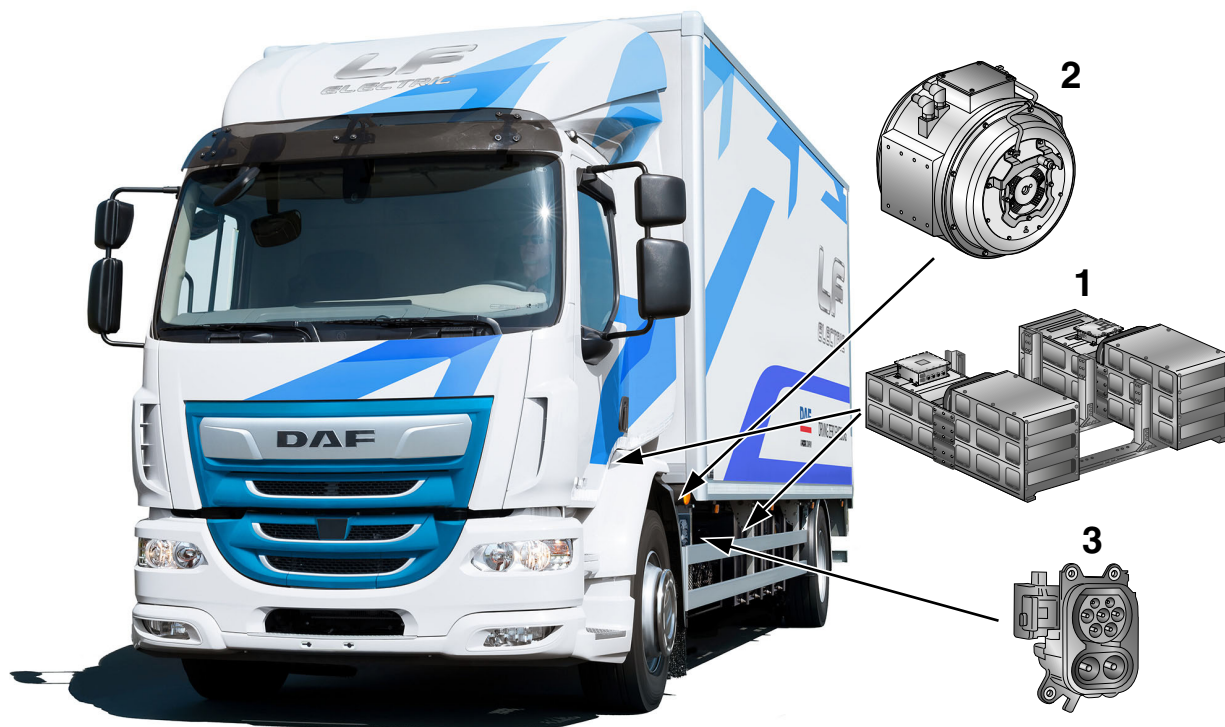
WARNING! The Electric Vehicle is equipped with High-Voltage components and wiring. Not following these instructions can result in severe personal injury or death.

- Only work on an electric vehicle when the High-Voltage system is shut down. See procedure 'Shutting down High-Voltage system'.
- Avoid contact with the High-Voltage components and the orange cables with their connectors until the High-Voltage system has been shut down.



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2



- 1
- 2
- 3

High-Voltage components
Electric motor
Charge plug

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NOTE: The High-Voltage box is located under the cabin and the High-Voltage batteries on either side of the vehicle.

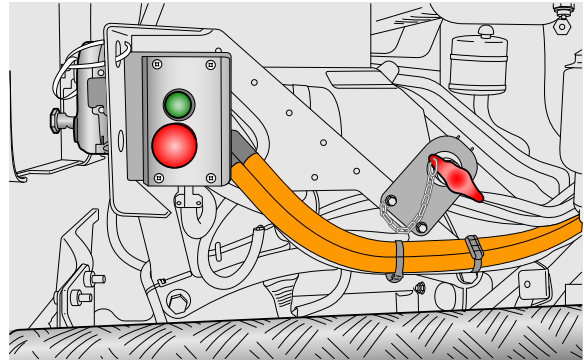
High-Voltage wiring

- The vehicle has orange High-Voltage cables, which are connected to the High-Voltage components.



WARNING! *The Electric Vehicle is equipped with High-Voltage components and wiring. Not following these instructions can result in severe personal injury or death.*

- *Only work on an electric vehicle when the High-Voltage system is shut down. See procedure 'Shutting down High-Voltage system'.*
- *Avoid contact with the High-Voltage components and the orange cables with their connectors until the High-Voltage circuit has been shut down.*



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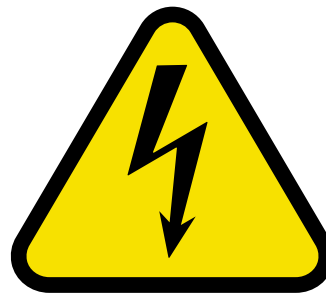
2

High-Voltage battery



WARNING! *This vehicle is equipped with High-Voltage batteries which are always energised with High-Voltage. Exposure to high voltage can result in serious personal injury or death.*

- *Never open the High-Voltage battery box.*
- *Only work on an electric vehicle when the High-Voltage system is shut down. See procedure 'Shutting down High-Voltage system'.*
- *Never remove or touch any of the orange High-Voltage cables or their connectors until the High-Voltage system has been shut down.*



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VEHICLE IDENTIFICATION

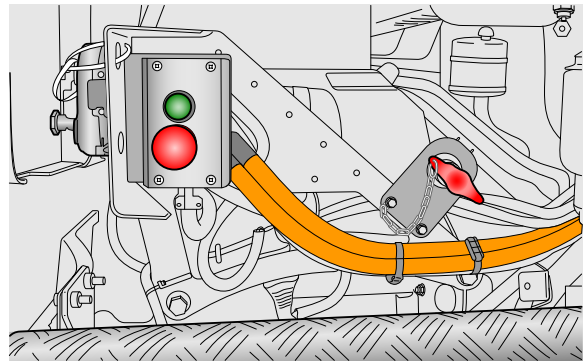
Identification

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2. BUILT-IN SAFETY FEATURES

2.1 BUILT-IN SAFETY FEATURES

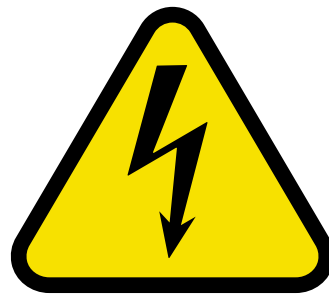
All High-Voltage cables which are connected to the High-Voltage components are covered in orange insulation.



2

The High-Voltage components are labelled with a High-Voltage warning label (sticker).

All positive and negative High-Voltage cables and connectors are isolated from the metal chassis. If a isolation malfunction is detected the High-Voltage system automatically shuts down.



VEHICLE IDENTIFICATION

Built-In Safety Features

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SECURING THE VEHICLE

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1. EMERGENCY SITUATIONS

1.1 EMERGENCY SITUATIONS

General warnings



WARNING! The electric vehicle is equipped with High-Voltage components and wiring. Not following these instructions can result in severe personal injury or death.

- Always observe the safety instructions in this manual and do not ignore them.
- Only work on an electric vehicle when the High-Voltage circuit is shut down. See 'Emergency shutdown procedure'.
- Avoid touching the High-Voltage components, identifiable by a warning sticker.
- Avoid touching the orange High-Voltage wiring and connectors.



WARNING! The battery cells inside the High-Voltage batteries contain electrolyte. Electrolyte is a toxic fluid, physical contact can lead to serious health problems.

- Avoid physical contact with electrolyte leaking from the batteries.
- If there is contact with the eyes: rinse with plenty of water for at least 15 minutes and consult a doctor.
- Avoid skin contact. If there is skin contact: rinse the skin with plenty water and consult a doctor.



WARNING! Stay clear from the smoke emitted by a damaged or burning High-Voltage battery. Always wear adequate personal protective gear for example face protection and breathing apparatus.

SECURING THE VEHICLE

Emergency Situations

In case of an incident or breakdown

Do's

- Always wear appropriate protective gear.
- Always assume the High-Voltage is active when you approach the vehicle.
- Always perform the 'Emergency shutdown procedure' and allow the vehicle to set for ten minutes before work on the electric vehicle.



NOTE: These ten minutes are needed to avoid contact with possible residual high voltage.

- Always be aware of a chemical reaction resulting in a fire of the High-Voltage batteries when they are damaged and/or leaking.

In these cases, wear adequate personal protective gear for example face protection and breathing apparatus.



NOTE: Damage to the High-Voltage batteries can be recognised from the following criteria:

- *Deformation and/or leaks of the High-Voltage battery housing.*
- *The High-Voltage battery becomes excessively warm.*
- *The presence of smoke, noises or sparks.*

Don'ts

- Never work on the vehicle if you haven't performed the "Emergency shutdown procedure" and allowed the vehicle to set for ten minutes.
- If at all possible, never cut or remove the orange High-Voltage cables.
- If at all possible, never cut into or open the inverter, electric motor, the battery packs or any of the other High-Voltage components.

In case of a fire

Do's

- Always wear appropriate protective gear.
- Always assume the vehicle is powered up when you approach the electric vehicle.
- Always perform the 'Emergency shutdown procedure' and allow the vehicle to set for ten minutes before work on the electric vehicle.
- Always be aware of a chemical reaction resulting in a fire of the High-Voltage batteries when they are damaged and/or leaking.



NOTE: Once ignited a High-Voltage battery burns with great intensity and high temperatures. As a result of the materials used and the high temperature, a burning High-Voltage battery is difficult to extinguish. As long as the temperature is high the High-Voltage battery tends to re-ignite. To extinguish a High-Voltage battery fire extreme amounts of water or special fire extinguish equipment are needed. This to get down the temperature and prevent the High-Voltage battery from re-igniting.

Don'ts

- Never work on the vehicle if you haven't performed the "Emergency shutdown procedure" and allowed the vehicle to set for ten minutes.
- If at all possible, never cut or remove the orange High-Voltage cables.
- If at all possible, never cut into or open the Inverter, electric motor, battery packs or any of the other High-Voltage components.

In case of a submerged vehicle

Pull the vehicle out of the water. If the High-Voltage installation is damaged or disconnected, there is risk of electric shock from touching the body or chassis in or out of the water.

SECURING THE VEHICLE

Emergency Situations

Do's

- Always wear appropriate protective gear.
- Always assume the vehicle is powered up when you approach the electric vehicle.
- Always perform the 'Emergency shutdown procedure' and allow the vehicle to set for ten minutes before work on the electric vehicle.
- Always be aware of a chemical reaction resulting in a fire of the High-Voltage batteries when they are damaged and/or leaking.

Don'ts

- Never work on the vehicle if you haven't performed the "Emergency shutdown procedure" and allowed the vehicle to set for ten minutes.
- If at all possible, never cut or remove the orange High-Voltage cables.
- If at all possible, never cut into or open the Inverter, electric motor or the battery packs or any of the other High-Voltage components.

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2. HIGH-VOLTAGE SHUT DOWN PROCEDURE

2.1 HIGH-VOLTAGE SHUT DOWN PROCEDURE

Introduction

If an incident occurs, the High-Voltage power supply of the High-Voltage system must be shut down. **It takes up to ten minutes before the high voltage has dropped to a harmless level** after an emergency High-Voltage shutdown procedure has been carried out.



WARNING!*The High-Voltage batteries will always carry high voltage even after completing the emergency High-Voltage shut down procedure.*



WARNING!*After completing the emergency High-Voltage shut down procedure. It takes up to ten min before the high voltage has dropped to a safe level.*



WARNING!*Read the warning instructions described in the driver's manual, see chapter 'Warnings and safety regulations'.*



WARNING!*The electric vehicle is equipped with High-Voltage components and wiring. Not following these instructions can result in severe personal injury or death.*

After completing this procedure the High-Voltage box, High-Voltage batteries and corresponding High-Voltage cables are still connected to the High-Voltage.

- *See procedure 'Shutting down High-Voltage system'.*
- *Avoid the High-Voltage components, identifiable by a warning sticker.*
- *Avoid the High-Voltage cables, identifiable by their orange colour.*

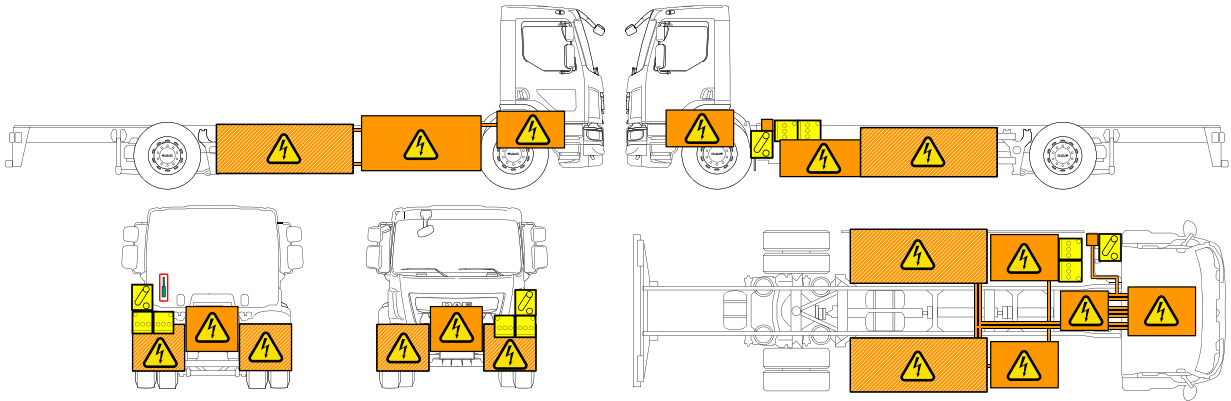


NOTE:*For towing the vehicle see the corresponding chapter in the driver's manual or the 'Emergency response guide'.*






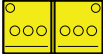

SECURING THE VEHICLE

High-Voltage shut down procedure

Overview

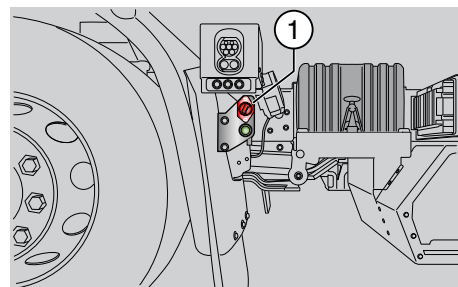


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	High-Voltage cables (600 VDC or 400 VAC)		High-Voltage warning
	High-Voltage component		Hydraulic tilting cylinder for cabin
	High-Voltage batteries (four, 2 at the left side and 2 on the right side of the vehicle). Battery type: Lithium batteries with LFP/ LiFePO4 technology.		24 V batteries
	Main switch for 24 V batteries		

Emergency High-Voltage shut down procedure

1. Park the vehicle in a safe place.
2. Apply the park brake.
3. Turn the drive mode switch to 'N' (neutral).
4. Switch the ignition OFF.
5. Exit the cabin.
6. Use the main switch (1) to turn OFF the 24 V circuit.
7. Place the necessary and / or mandatory warnings and wait on a safe distance from the vehicle.



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NOTE: In case it's not possible to enter the cabin perform step 6 and 7 of the emergency High-Voltage shut down procedure.

3. 24 V BATTERIES

3.1 24 V BATTERIES

Location of the 24 V batteries

The 24 V batteries (2) are located on the left side.

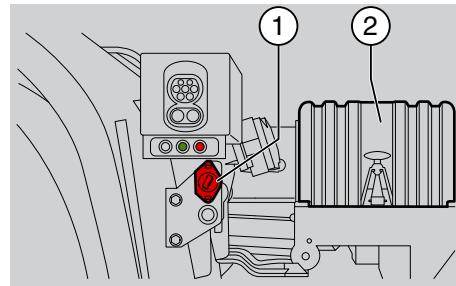
Disconnecting the 24 V batteries

1. Switch the ignition OFF.
2. Switch OFF the main switch (1).



NOTE: The main switch (1) isolates the 24 V power supply of the batteries from the vehicle.

3. Remove the battery cover.
4. Disconnect the battery clamp from the negative pole.
5. Disconnect the battery clamp from the positive pole.
6. Secure the cables; make sure that they cannot come into contact with the terminals.



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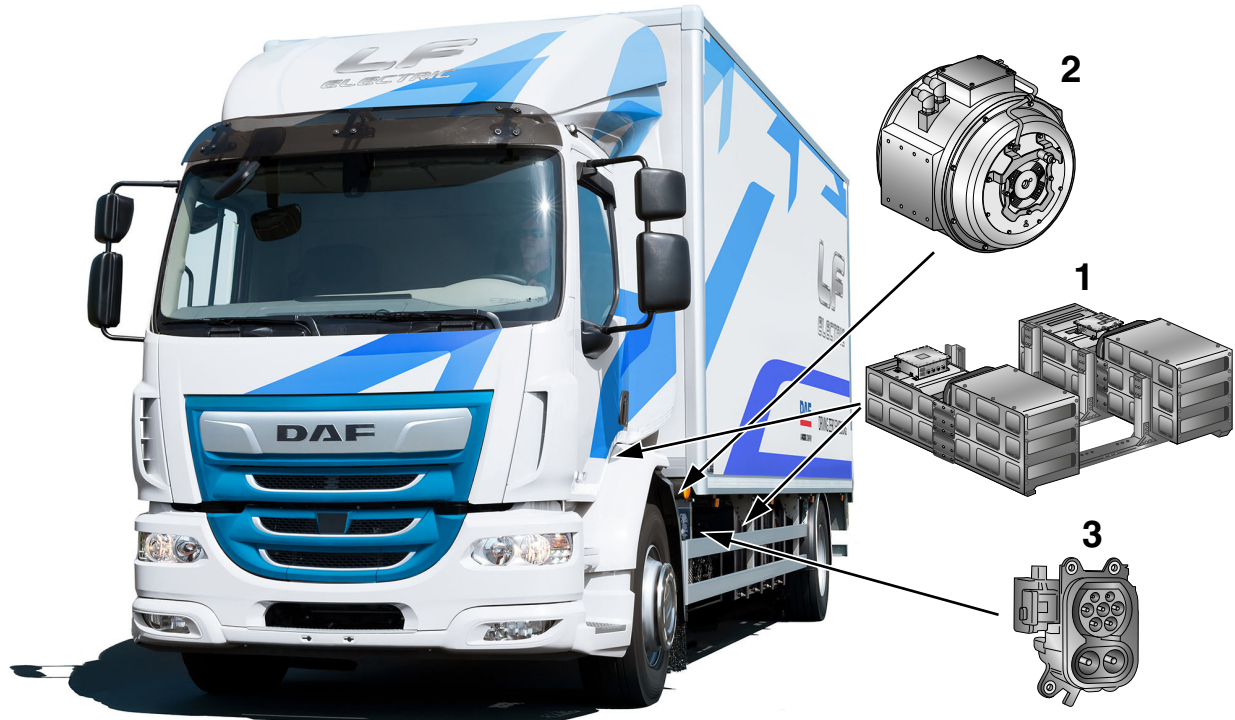
SECURING THE VEHICLE

24 V batteries

3

4. HIGH-VOLTAGE BATTERIES

4.1 HIGH-VOLTAGE BATTERIES



3

- 1
- 2
- 3

High-Voltage components
 Electric motor
 Charge plug

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The electric vehicle is equipped with two battery strings also referred to as High-Voltage batteries. One fitted on each side of the chassis behind the side skirts. Each battery string contains two, in series connected, High-Voltage batteries. Each of the battery string is equipped with a so called MSD (Manual Service Disconnect) disconnecting the High-Voltage circuit between two High-Voltage batteries. The MSD is a safety protection device (Fuse) for the High-Voltage circuit. This plug must be removed during the safety lock-out procedure.

Both the upper and lower batteries are filled with silicone fluid, used as a medium for temperature exchange within the batteries.

On its turn, the coolant of the vehicles heating and cooling system controls the temperature of this silicon fluid.

The High-Voltage batteries can be charged externally by using a plug-in charger.

SECURING THE VEHICLE

High-Voltage batteries



WARNING! *The High-Voltage batteries will always carry high voltage even after completing the emergency High-Voltage shut down procedure. It takes up to ten minutes before the high voltage has dropped to a harmless level.*



WARNING! *This vehicle is also equipped with four High-Voltage battery strings, containing High-Voltage components. Exposure to high voltage can result in serious personal injury or death.*

- *Never open the High-Voltage battery box.*
- *Never remove or touch any of the orange High-Voltage cables unless the High-Voltage circuit is shut down.*



WARNING! *The battery cells inside the High-Voltage battery packs contain electrolyte. Although the change of leakage is small, electrolyte is a toxic fluid. Physical contact can lead to serious health problems.*

- *If exposed, avoid physical contact with electrolyte.*
- *If there is contact with the eyes: rinse with plenty of water for at least 15 minutes and consult a doctor.*
- *Avoid skin contact. If there is skin contact: wash the skin with water and soap.*

5. AIRBAG

5.1 AIRBAG



WARNING! Airbag modules and safety belt tensioners are pyrotechnic systems and contain an explosive charge.



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Vehicles equipped with an airbag and safety belt tensioner system can be identified by a sticker with the airbag symbol on the windscreen. In addition, there is an identification 'AIRBAG' visible on the steering wheel. A vehicle equipped with an airbag also has an automatic safety belt tensioner.



SECURING THE VEHICLE

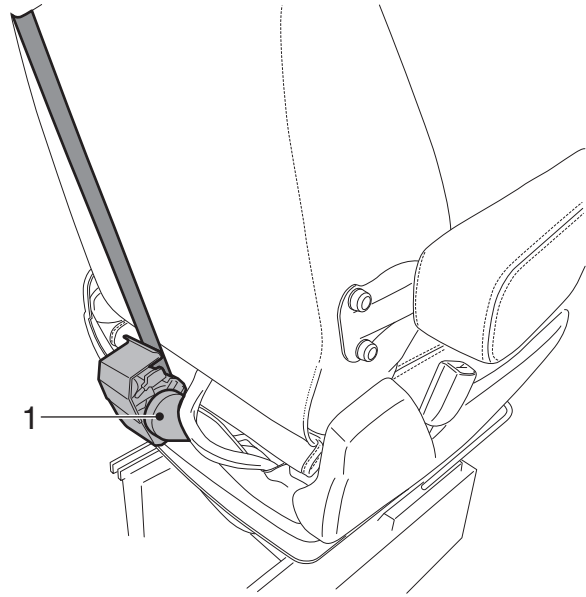
Airbag

1 Safety belt tensioner

The automatic safety belt tensioner is fitted on the rear side of the driver's and co-driver's seat.

Safety instructions

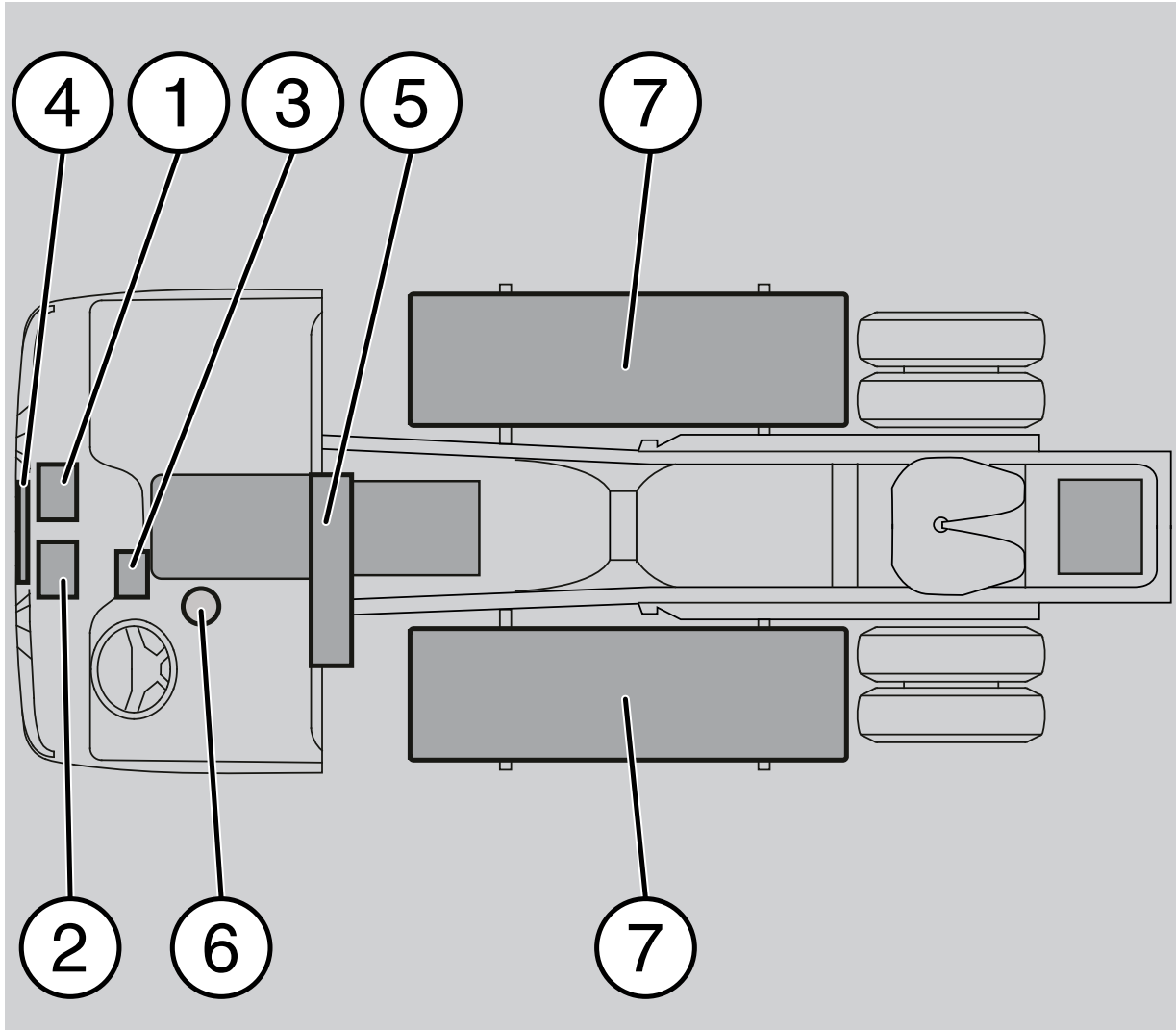
- Do not place any objects near undeployed airbags
- Before any work is carried out on an airbag system:
 1. the ignition must be switched off.
 2. the main switch must be turned off.
 3. the battery clamp must be removed from the negative pole.
 4. wait at least 30 seconds.
- Never disconnect an electrical connector in the airbag or safety belt tensioner circuits if the electronic control unit is energised.



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6. HAZARDOUS SUBSTANCES

6.1 HAZARDOUS SUBSTANCES



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- 1 Coolant High-Voltage components: 16.9 litres
- 2 Coolant vehicle heating and ventilation system: 6.5 litres
- 3 Battery cooler: 32 litres
- 4 Air conditioning (R134A): 900 grams
- 5 Battery cooler (R134a): 590 grams

SECURING THE VEHICLE

Hazardous substances

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1. SEAT ADJUSTMENT

1.1 SEAT ADJUSTMENT



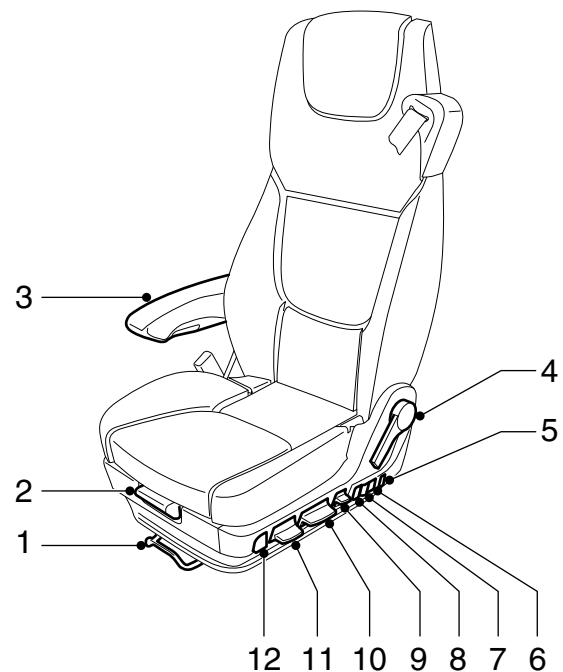
NOTE: Before removing the seat, be aware of the safety instructions if the vehicle is equipped with an airbag and therefore an automatic safety belt tensioner.



NOTE: The seat can be adjusted if the vehicle air pressure is at least 7 bar.

Seat settings

- 1 Seat length adjustment.
- 2 Seat cushion length adjustment.
- 3 Armrest (optional).
- 4 Backrest angle adjustment.
- 5 Seat cushion heating (only on driver seat version).
- 6 Upper lumbar support adjustment (only on comfort seat).
- 7 Lower lumbar support adjustment (only on comfort seat).
- 8 Lateral support adjustment (only on comfort seat).
- 9 Vertical seat damper.
- 10 Seat height adjustment.
- 11 Seat tilt adjustment.
- 12 Quick down.



10. Seat height adjustment



11. Seat tilt adjustment



12. Quick down
 Knob down (seat in driving position): the seat drops to its lowest position.
 Knob up (with lowered seat): the seat rises to the last height adjustment.

STABILISING THE VEHICLE

Seat adjustment

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2. AIR SUSPENSION CHASSIS

2.1 AIR SUSPENSION CHASSIS

General

On vehicles equipped with air suspension, a remote control unit is used to operate the vehicle height.

The remote control unit is located against the console of the driver's seat.



NOTE: This control unit can only be operated when the ignition is switched on.



NOTE: Unless stated otherwise, the keys need only be pressed once briefly.

Remote control A



rear of truck selected



automatic setting of normal driving height



lifting of chassis to pre-set height



as M1, but for a different chassis height

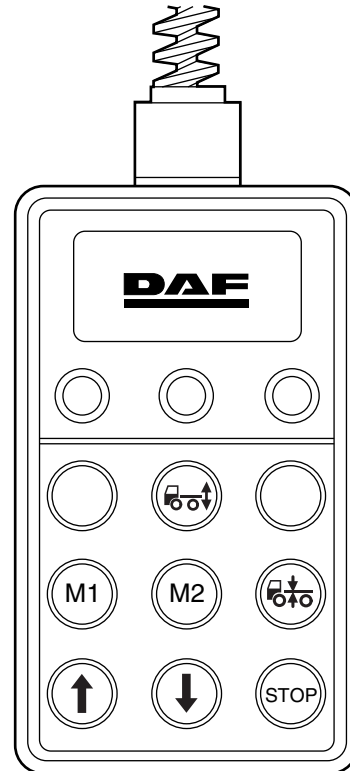


lifting of selected chassis ends when the key is released



lowering of selected chassis ends when the key is released

all adjustments are stopped



C900268

STABILISING THE VEHICLE

Air suspension chassis

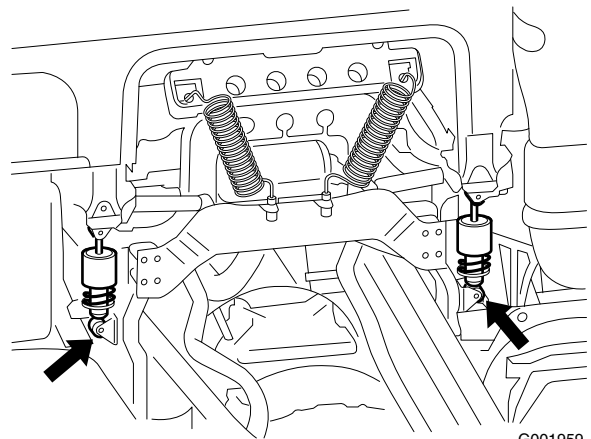
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3. CABIN SUSPENSION

3.1 CABIN SUSPENSION

The cabin is equipped with mechanical suspension.

Rear cabin mechanical suspension



G001959

Front cabin mechanical suspension

At the front the cabin can have rubber blocks or springs. They can be reached by removing the lower grille, and if necessary, the headlight panels.

STABILISING THE VEHICLE

Cabin suspension

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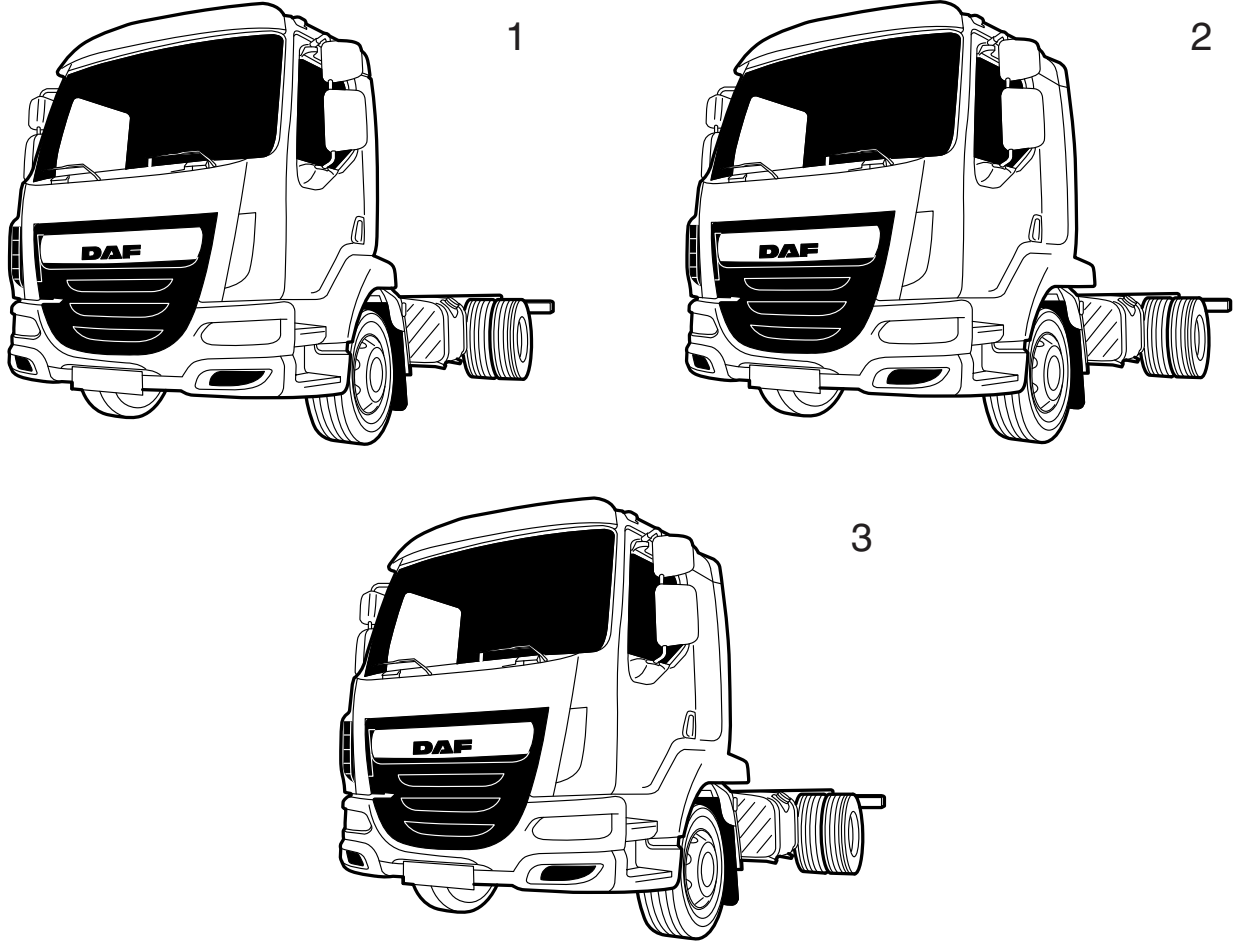
RELEASING A TRAPPED DRIVER

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1. CABIN TYPES

1.1 CABIN TYPES



- 1 Day Cab
- 2 Extended Day Cab
- 3 Sleeper Cab

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NOTE: The **optional kerb view door** is only available at the co-driver site. Vehicles with the kerb view door have a sliding window which is electrically operated.

RELEASING A TRAPPED DRIVER

Cabin types

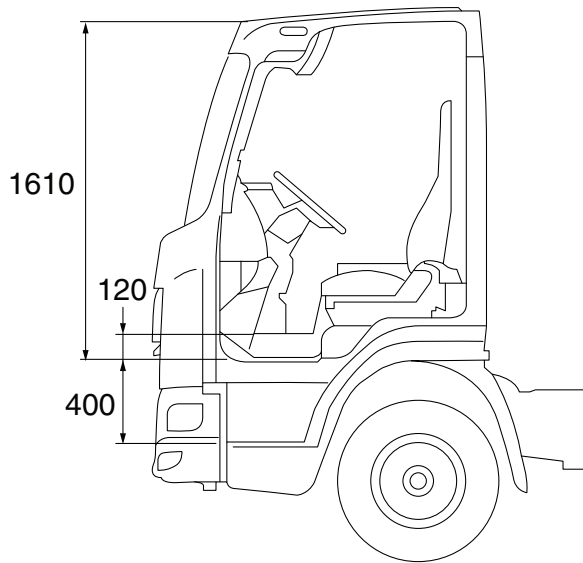
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2. CABIN DIMENSIONS

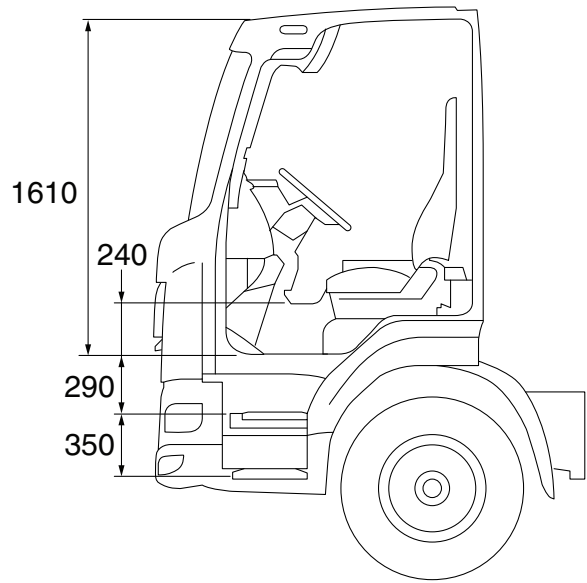
2.1 CABIN DIMENSIONS

The external dimensions from the ground vary depending on the tyre size, choice of suspension, load and settings.

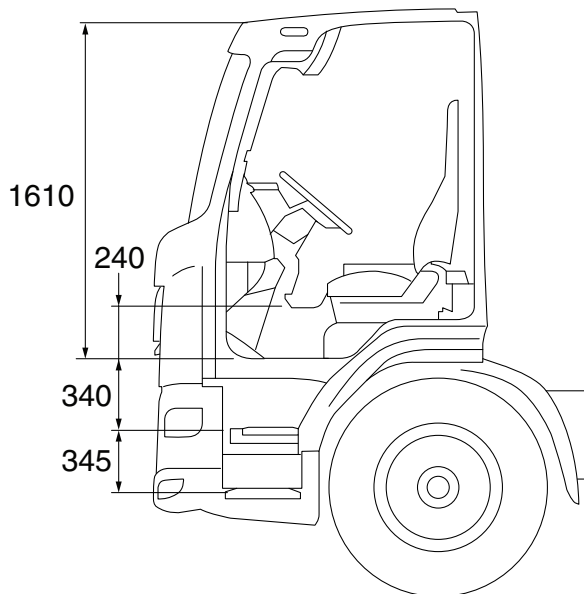
Day Cab



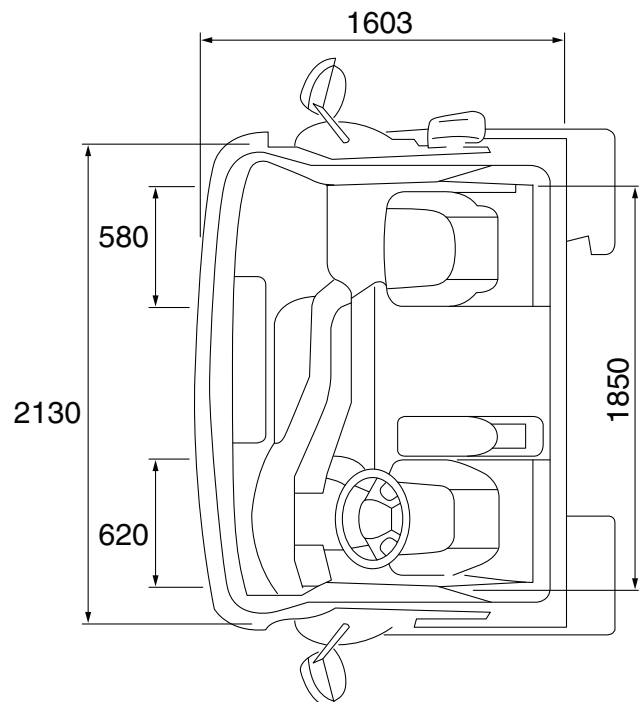
8-12t



14-16t



19t

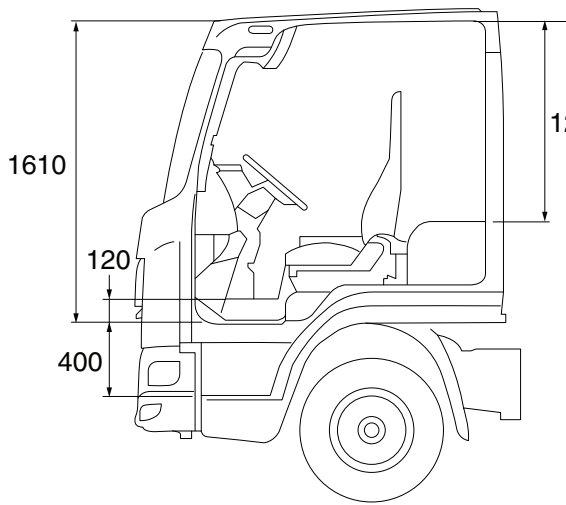


8-12t

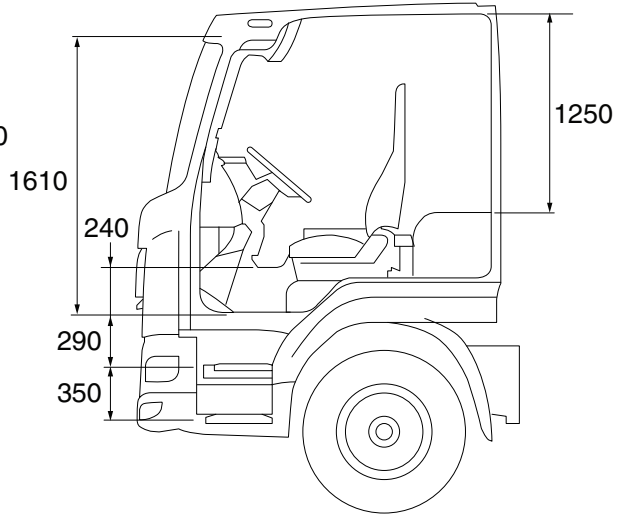
RELEASING A TRAPPED DRIVER

Cabin dimensions

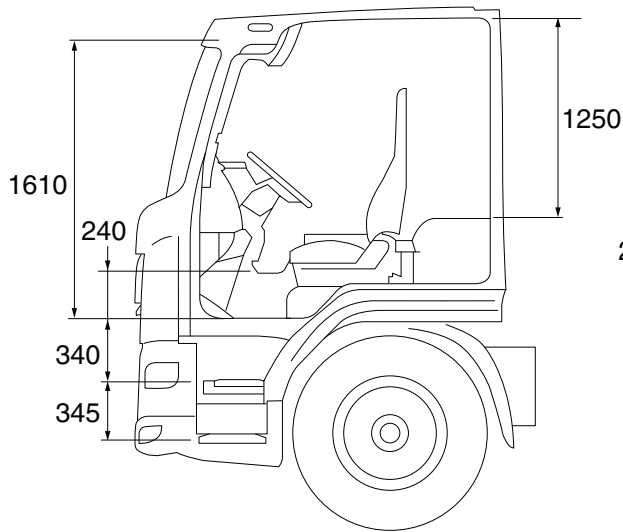
Extended Day Cab



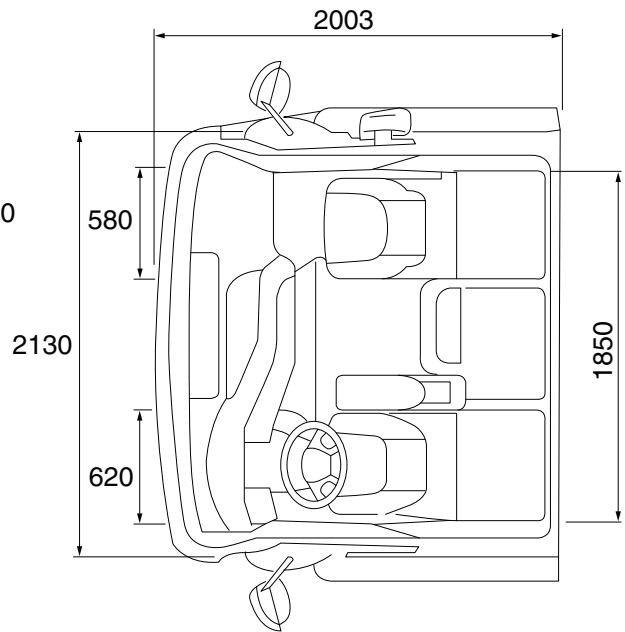
8-12t



14-16t



19t



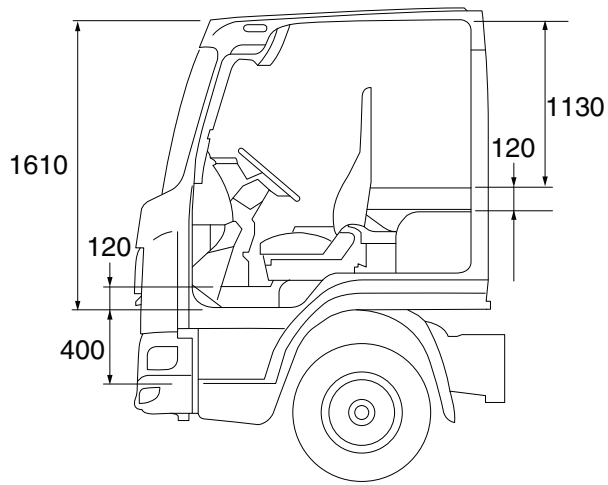
14-16t

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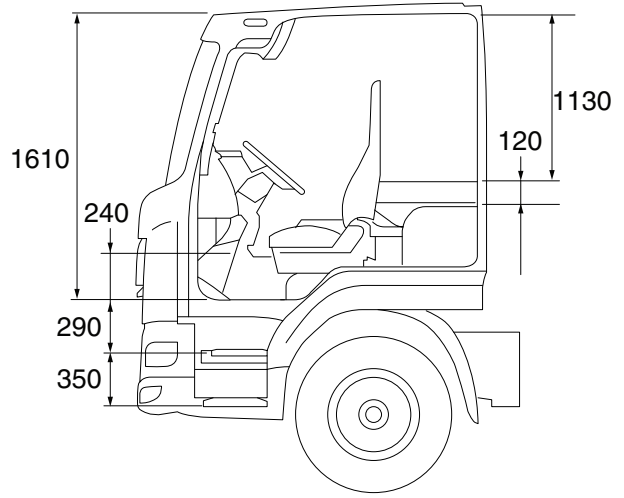
RELEASING A TRAPPED DRIVER

Cabin dimensions

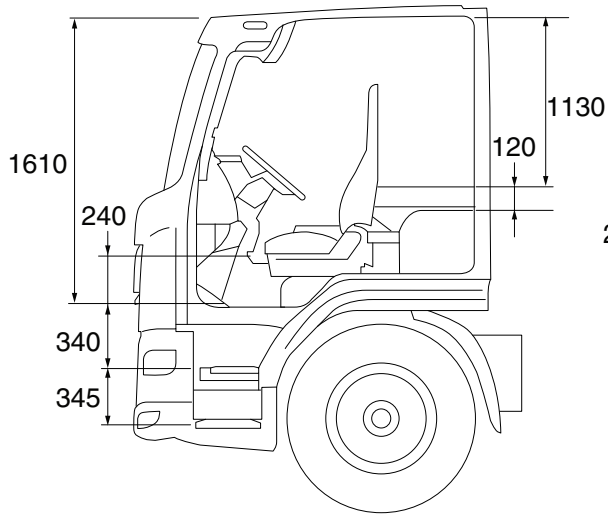
Sleeper Cab



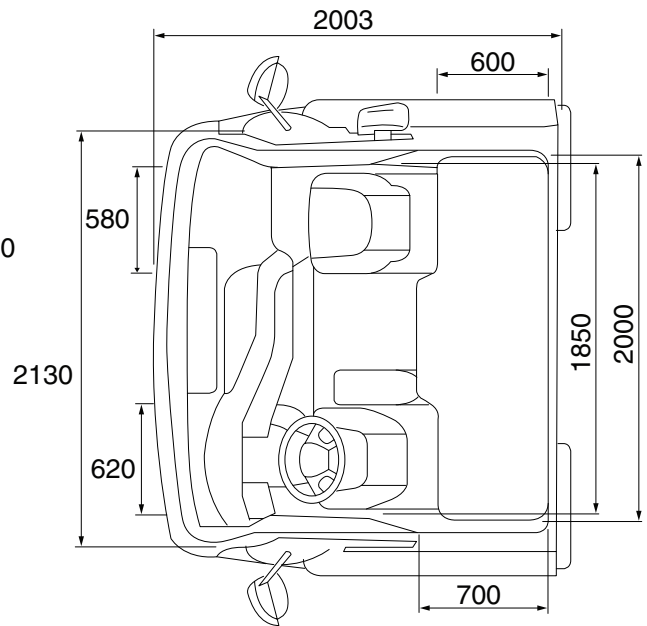
8-12t



14-16t



19t



19t

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RELEASING A TRAPPED DRIVER

Cabin dimensions

5

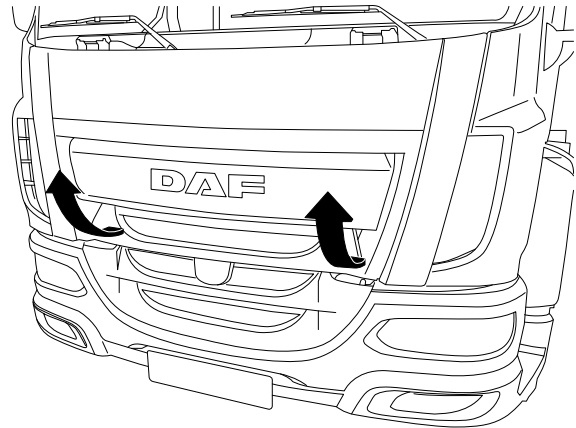
3. OPENING THE GRILLE

3.1 OPENING THE GRILLE

1. Open the front panel by gripping it at the bottom and lifting it up.



NOTE: The front panel tilts upwards and is held in position by two gas struts.



G002349-2

RELEASING A TRAPPED DRIVER

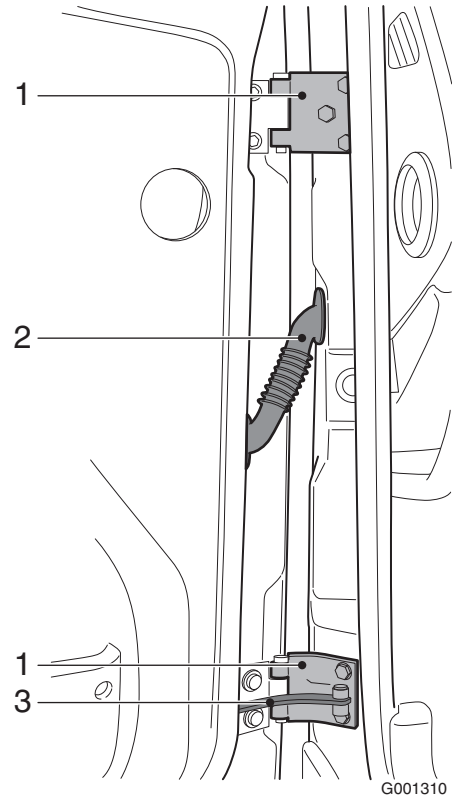
Opening the grille

5

4. DOORS

4.1 DOORS

- 1 Hinge
- 2 Wiring harness
- 3 Door check



RELEASING A TRAPPED DRIVER

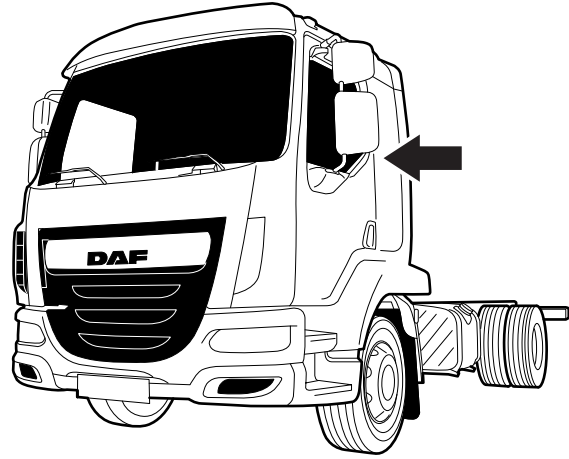
Doors

5

5. DOOR LOCK

5.1 DOOR LOCK

The door lock is installed higher than the door handle. The position is indicated in the image.



G002350

RELEASING A TRAPPED DRIVER

Door lock

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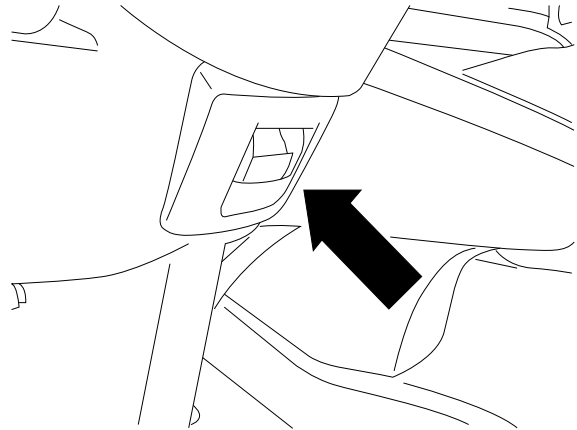
RELEASING A TRAPPED DRIVER

Mechanical steering wheel adjustment

6. MECHANICAL STEERING WHEEL ADJUSTMENT

6.1 MECHANICAL STEERING WHEEL ADJUSTMENT

To adjust, pull the handle towards you and simultaneously move the steering column to the desired position. The steering column is locked by releasing the handle.



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RELEASING A TRAPPED DRIVER

Mechanical steering wheel adjustment

5

7. STEERING WHEEL ADJUSTMENT

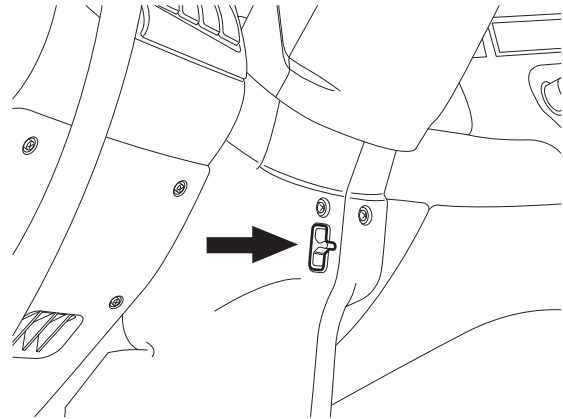
7.1 STEERING WHEEL ADJUSTMENT



NOTE: The steering wheel can be adjusted if the vehicle air pressure (circuit 4) is at least 7 bar.



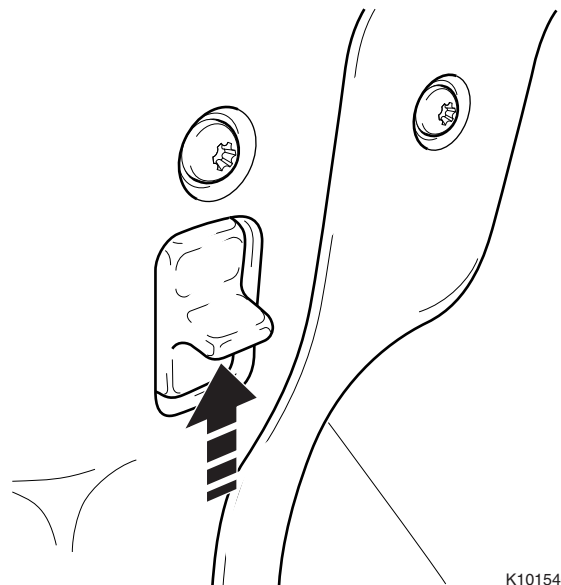
WARNING! *When the air hoses for the cabin suspension are cut, the air supply for steering wheel adjustment is also taken away.*



G001293

Adjusting

Push up the two-position switch. The steering column is temporarily unlocked. The height and angle of the steering wheel can now be adjusted.



K101546

Locking

Push down the two-position switch. The steering column is locked.



NOTE: A slight hissing noise, caused by the two-position switch, is audible while the steering wheel is being adjusted. If the steering column has not been locked, this switch locks it automatically after 20 - 30 seconds.

RELEASING A TRAPPED DRIVER

Steering wheel adjustment

5

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TOWING INFORMATION

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6

1. REMOVING THE PROP SHAFT

1.1 REMOVING THE PROP SHAFT

- Make sure that the park brake is engaged.
- Loosen the prop shaft bolts at the rear axle side, do not remove them.



NOTE: If by accident the prop shaft drops to the floor during towing it is dragged a long. In the other situation dropping of the prop shaft seriously damages both vehicle, road and possibly surroundings.

- If the prop shaft has a bearing then:
 - Loosen the bearing from chassis.
- Hold the shaft while removing the bolts.
- Fix the bearings to the shaft.
- Fasten the bearing to the chassis.
- Cover the prop shaft joint with a plastic bag.

TOWING INFORMATION

Removing the prop shaft

6

2. RELEASING THE PARK BRAKE

2.1 RELEASING THE PARK BRAKE



WARNING!

- **Never release the park brake on an incline without precautionary measures.**

Releasing the park brake on an incline causes the vehicle to move unintentionally.

This can lead to serious injury and damage to the vehicle.

1. Make sure that the driveline is in 'N' neutral.
2. Place wheel chocks in front of and behind the wheels.



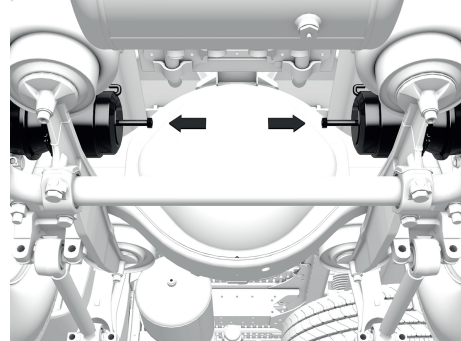
NOTE: It is **not** permitted to use an Impact wrench to loosen the releasing bolt.

3. Turn the releasing bolt (see the arrows) anti-clockwise as far as the stop using a ring spanner or socket wrench.
4. Carry out this operation for each spring brake cylinder.



NOTE: Place a no brakes warning label on the steering wheel.

5. Bring the park brake back in operating order by turning the releasing bolts clockwise as far as possible.
Tighten them to a torque of 45 Nm (75 Nm for the releasing bolt with control pin).
The pressure in the spring brake cylinder circuit must be at least 6.5 bar.



D001641

TOWING INFORMATION

Releasing the park brake

6

3. TOWING

3.1 TOWING



WARNING! Switch off AEBS while towing or while being towed. Engaging of this system during towing actions can result in unwanted and unexpected vehicle behaviour.



WARNING!

- Do not tow the vehicle when fully loaded or with a trailer attached.

Towing a fully loaded vehicle or a vehicle with trailer attached can result in unstable vehicle behaviour during critical driving situations. This applies to both the towing and/or towed vehicle. This can lead to very dangerous situations. High forces and tensions in the chassis and driveline of the vehicles can also lead to damage to the vehicles.

Towing another vehicle

It is **not** allowed to tow another vehicle with a the LF Electric.

Towing by another vehicle

It is possible to tow the Electric Vehicle. Always use a towing bar when towing. Deviation from this rule is only allowed in emergencies.

When towing, error messages may be shown on the master display when the ignition is switched on.

- For short distance, only moving to safety (only a few metres and at a very low speed): the vehicle may be towed by another vehicle.
- For long-distance towing: tow the vehicle using a recovery vehicle and take the necessary measure as stated below.



NOTE: The maximum permissible vehicle speed, weight and distance vary by country.

TOWING INFORMATION

Towing



WARNING!

- Towing may not take place at an angle of more than 20° relative to the vehicle centre line.

The towed vehicle may be located asymmetrically (left or right) behind the tractor. Towing at an angle of more than 20° relative to the vehicle centre line can result in unstable vehicle behaviour. This can lead to very dangerous situations. High forces and tensions in the chassis and driveline of the vehicles can also lead to damage to the vehicles.



WARNING! *When the High-Voltage system is not in operating mode and no additional measures are taken, there is no power steering and eventually insufficient air pressure for the brake system. This results in difficult steering and ultimately leads to automatic engagement of the park brake. This can lead to very dangerous situations.*

- *Release the park brake and adapt the driving style of the towing combination.*

- Turn the ignition key so that the steering wheel is released (unless the vehicle is in a hoist).
- If there is insufficient pressure in the air reservoirs, release the park brake. See section 'Releasing the park brake'.
- To prevent damage to the electric driveline, always **disconnect the prop shaft** from the differential.



WARNING! *If the electric motor remains connected during towing, the High-Voltage components can be damaged and the high voltage generated by the electric motor can result in personal injury or death.*

- *Always disconnect the prop shaft before towing the vehicle when the rear axle (drive wheels) is still in contact with the road surface.*



NOTE: *If the differential is damaged:*

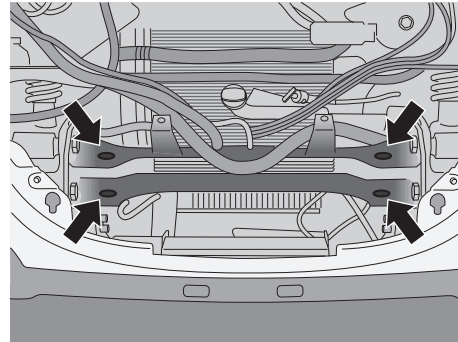
- *Hoist the vehicle at the rear and lock the steering wheel in the straight-ahead position.*

Installing the towing eye

1. Remove the lower grille.
2. Screw in the towing eye fully so the entire thread is used.
3. Then turn the towing eye anti-clockwise (maximum 90 degrees) so the towing bar can be attached to the towing eye.



NOTE: To lift the vehicle two towing eyes must be used and both pins must be perpendicular to the lifting cable or chain. Turn the towing eyes anti-clockwise (maximum 180 degrees) to achieve this position.



D002056

Towing by a recovery vehicle

If the vehicle is being towed by a recovery vehicle, the vehicle can only be hoisted under its rear axle. Lock the steering wheel in the straight-ahead position.



WARNING! If the electric motor remains connected during towing, the High-Voltage components can be damaged and the high voltage generated by the electric motor can result in personal injury or death.

- Always disconnect the prop shaft before towing the vehicle when the rear axle (drive wheels) is still in contact with the road surface.

Tow starting

It is not possible to tow start an Electric Vehicle.

TOWING INFORMATION

Towing

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4. JUMP-STARTING

4.1 JUMP-STARTING



CAUTION: Starting the vehicle using a starting aid with too high a voltage can damage the electrical components, and can cause the loss of warranty.

- Never jump-start the engine with a fast charger.
- Never jump-start the vehicle with a voltage higher than 29 V.



CAUTION:

- Do not disconnect the battery cables while the engine is running.

Disconnecting the battery cables while the engine is running can damage the electrical components.

Battery systems

The vehicle is equipped with a regular battery system with a set of two 12 Volt batteries.

The engine may be started with the aid of starter cables that use power from:

- separate auxiliary batteries (approximately 24 V), or
- another vehicle with a running engine (approximately 29 V).

When this starting procedure is followed, the battery cables must not be disconnected.

The battery box can be placed in various positions: beside the chassis or on the chassis behind the cabin or between the side members at the rear of the chassis.

On some of these positions extra terminals are fitted to facilitate connecting the starter cables.

TOWING INFORMATION

Jump-starting

Battery box without extra terminals

Remove the battery box cover and connect the starter cable to the positive pole (+) first. Then connect the starter cable to the negative pole (-). To disconnect, release the negative pole (-) first, then the positive pole (+) and install the cover. When the batteries are **fully** discharged and the engine is running, it is important that the starter cables are **not immediately** disconnected. The engine must run for at least 2 to 3 minutes before the starter cables are disconnected to prevent damage to the electrical system (peak voltage!).

Proceed as follows as soon as the engine starts running:

- Switch on as many power consumers as possible (for example: headlights, fog lamps, heater fan, and so on).
- Remove the starter cables after the engine has run for 2 to 3 minutes.
- Switch off the consumers.

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LIFTING INFORMATION

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1. LIFTING AT THE FRONT OR BACK

1.1 LIFTING AT THE FRONT OR BACK

The truck can be lifted under the axles, frame structure or wheel stations.

LIFTING INFORMATION

Lifting at the front or back

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2. JACKING UP MECHANICALLY SPRUNG FRONT AXLES

2.1 JACKING UP MECHANICALLY SPRUNG FRONT AXLES

Place the jack under the special shock absorber bracket.



CAUTION: Do not jack up under the protection bar at the front of the vehicle. This is a protection bar made of sheet metal. If you jack up the vehicle under the protection bar it collapses.

LIFTING INFORMATION

Jacking up mechanically sprung front axles

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3. JACK UP AT THE BACK

3.1 JACK UP AT THE BACK

Place the jack under the jacking point at the bottom of the spring bracket.

LIFTING INFORMATION

Jack up at the back

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