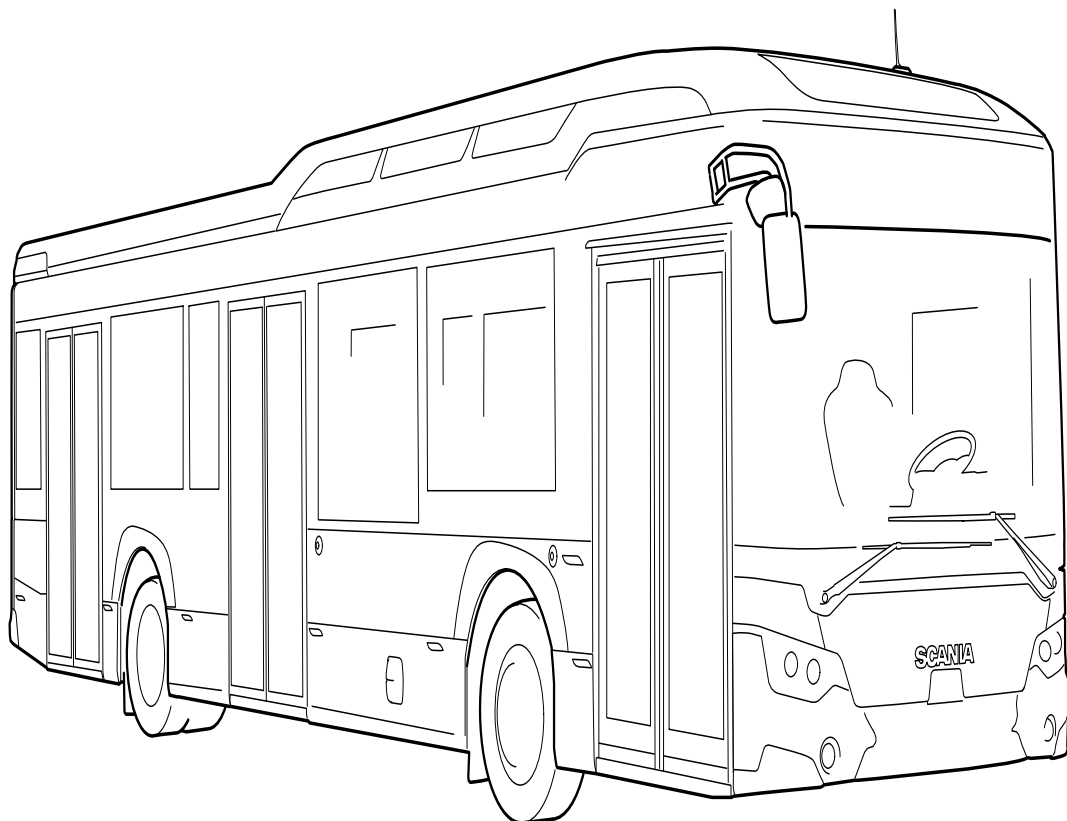


Product information for the emergency services

00:01-09

Bus

C and K series



424 641



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Before starting to read



WARNING!

Check that this is the latest issue of Scania's product information for the rescue services.



NOTE:

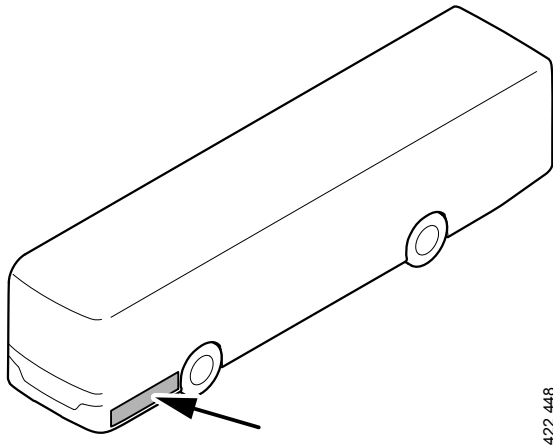
The information in Scania's product information for emergency services applies to vehicles in the C and K series that have been ordered in the ordinary order system.



Electrical system

Battery (24 V)

The location of the battery box varies depending on the vehicle equipment. The illustration shows a normal location. If the vehicle does not have a battery master switch then the battery must be disconnected to switch off the voltage.



422 448

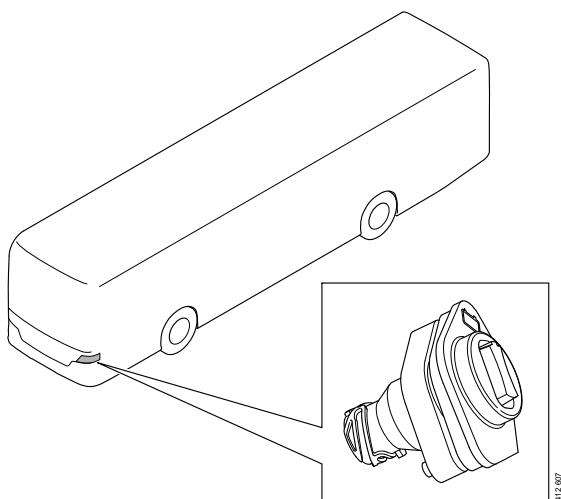
The vehicle may be fitted with a battery master switch. In most vehicles only the tachograph and the vehicle alarm are supplied with voltage when the battery master switch is activated.

Depending on how the vehicle bodywork is connected, the bodywork may be supplied with voltage even when the battery master switch is activated.

Depending on the vehicle equipment, the battery master switch can be activated in different ways. The battery master switch can be activated with the battery master switch handle, an external switch or a switch in the instrument panel.

Battery master switch handle

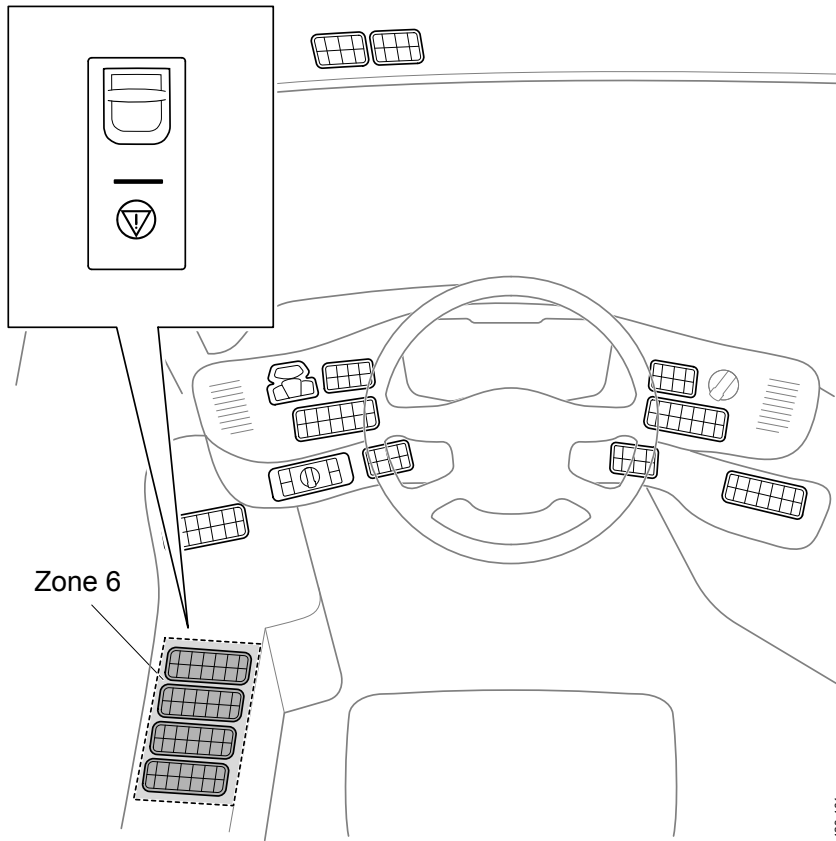
The battery master switch handle is located behind the hatch above the right-hand headlamp.





Switch for battery master switch in the instrument panel

Some vehicles are also fitted with switches for the battery master switch in the instrument panel. This applies, for example, to the ADR adapted vehicle.





Getting into the vehicle

Doors

Door variants

- Single sliding door
- Double sliding door
- In-swing glider double door

Emergency opening

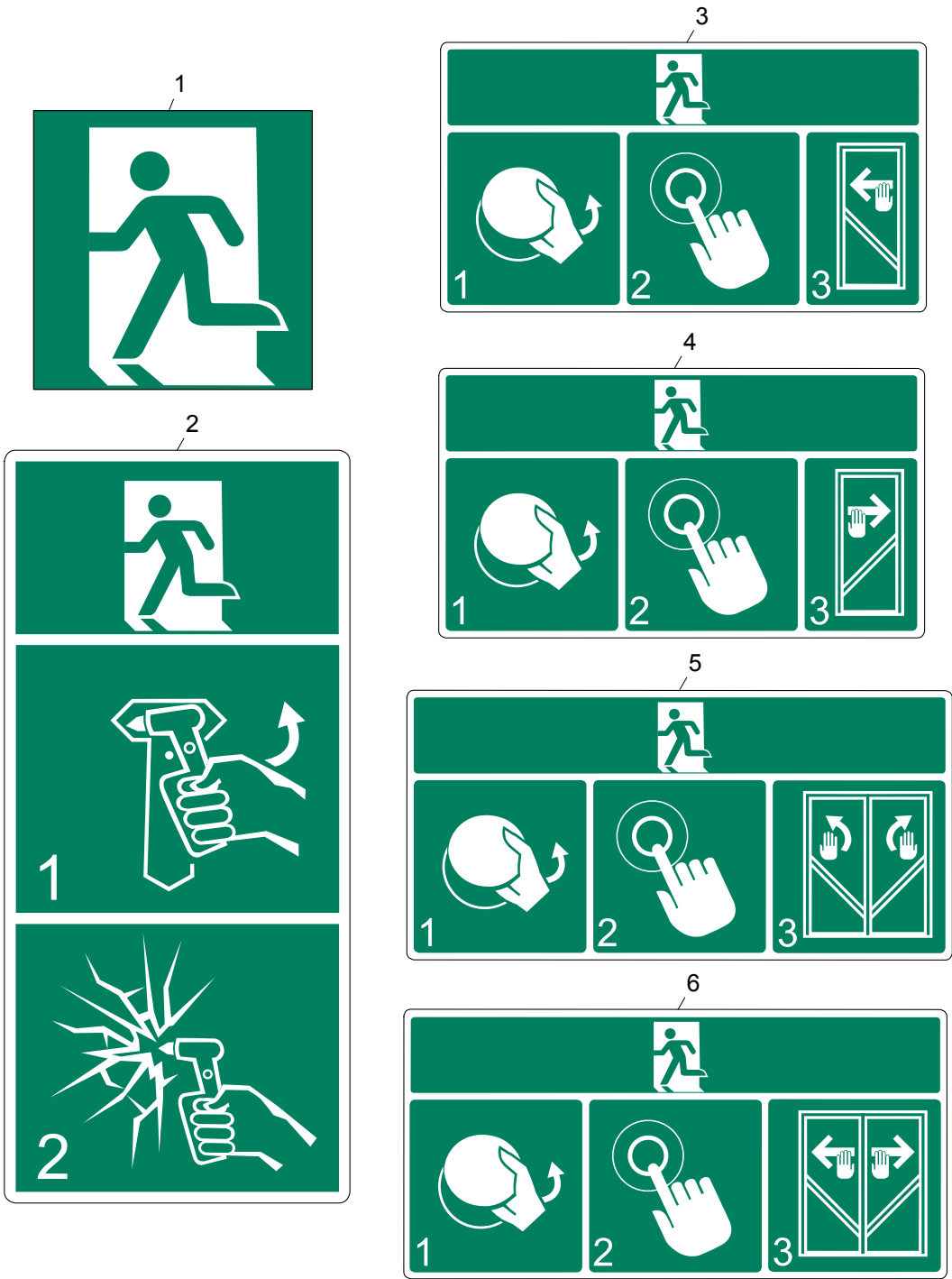
Emergency opening takes place pneumatically.

When the emergency opening switch is pressed (located at each door), the air pressure on the relay valve disappears and the system is depressurised.

At the same time, the voltage to the electric motor for the doors is cut. The doors are then free and can be opened by hand.

This creates space to get your hands in between the door leaves on a double door and on a single door between the door leaf and door frame.

On double inward-opening doors, the door leaves are pushed inwards by hand.



437 183



Windscreen and windows

The windscreen is laminated and glued to the cab structure. Use a tiger saw, for example, to saw through the windscreen.

The door window may consist of single or laminated glass. Use an emergency hammer or tiger saw, for example, to smash the door window.



Vehicle safety equipment

Airbag

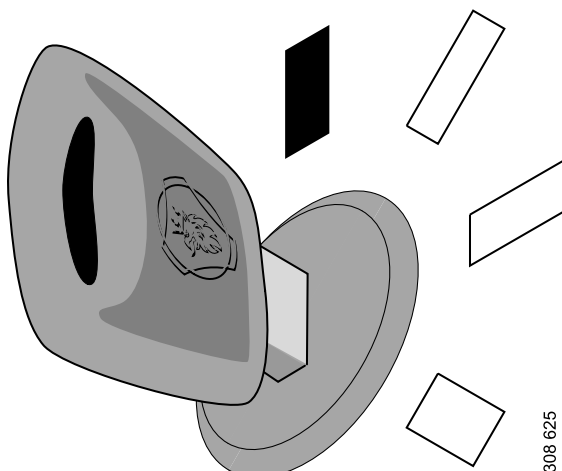
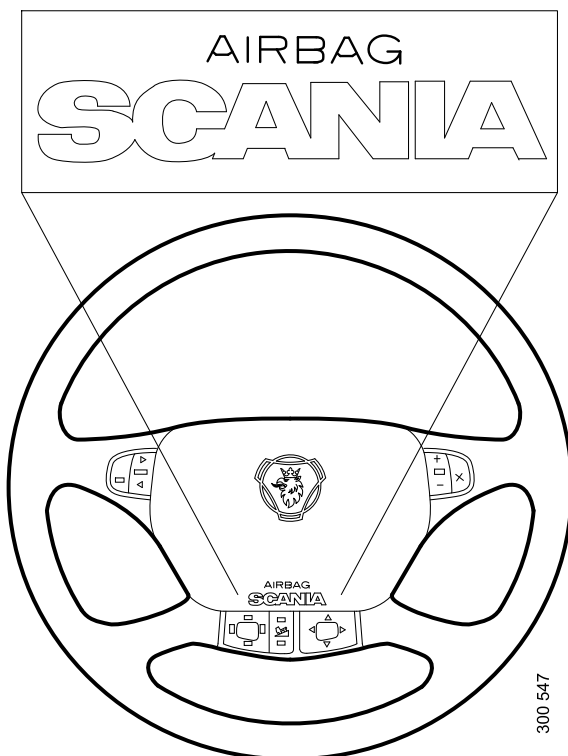


WARNING!

The airbag contains explosive substances!

If the vehicle is fitted with an airbag on the driver's side this is indicated by the text AIRBAG on the steering wheel.

When the vehicle starter key is in the lock position, or there is no vehicle power, then the airbag is deactivated.





Belt pretensioner



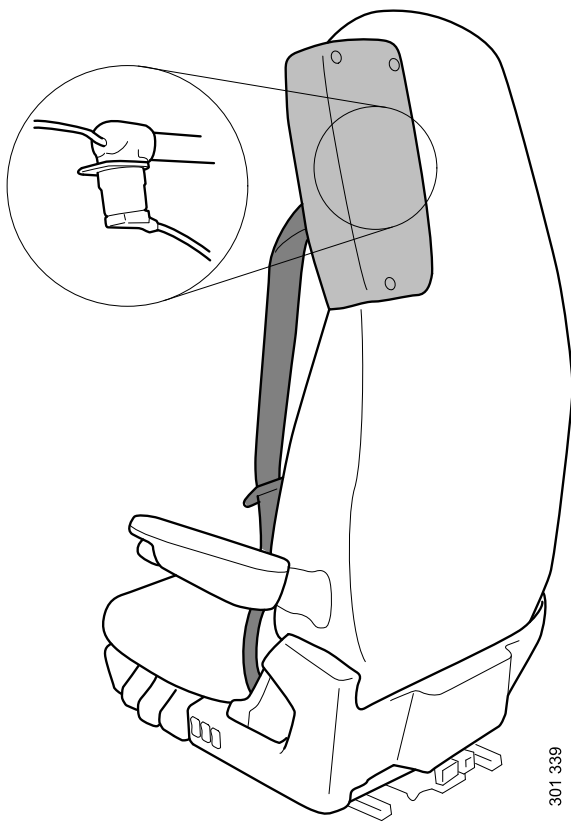
WARNING!

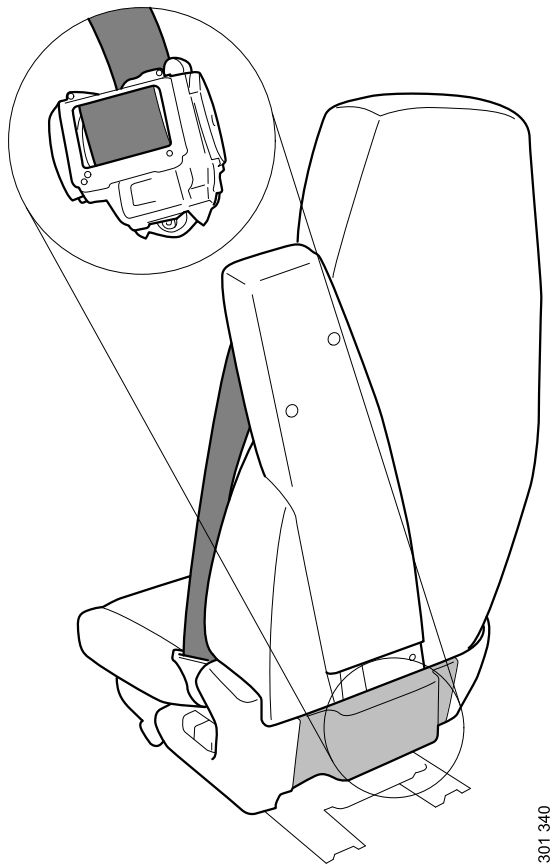
The belt pretensioner contains explosive substances!

The belt pretensioner can be found on the driver's seat. If the vehicle is fitted with an airbag there is always a belt pretensioner on the driver's seat.

When the vehicle starter key is in the lock position, or there is no vehicle power, then the belt pretensioner is deactivated.

The belt pretensioner is positioned as illustrated on the 2-seat models that are fitted with a belt pretensioner.

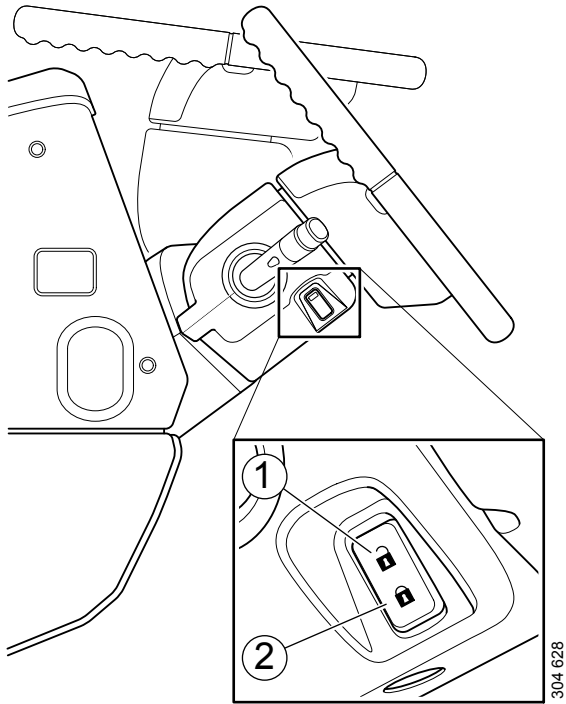






Adjusting steering wheel

Adjusting with button



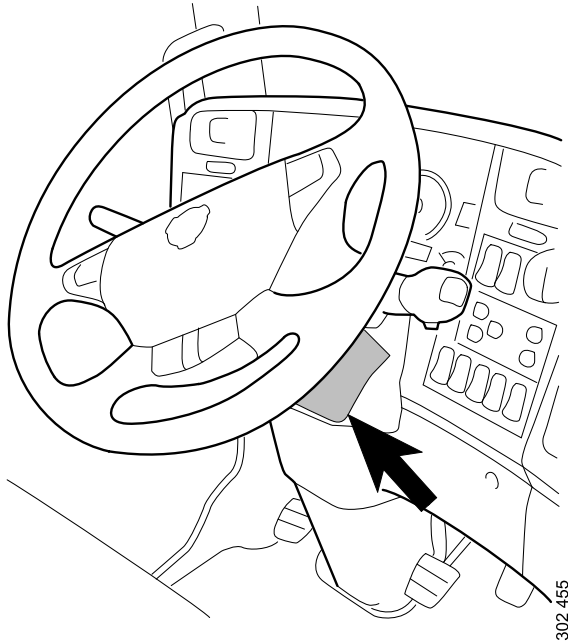
Proceed as follows to adjust the height and angle:

Press button (1). You can then adjust the height and angle for a few seconds. Press button (2) into the locked position to lock the setting. The settings are also locked automatically after a few seconds.

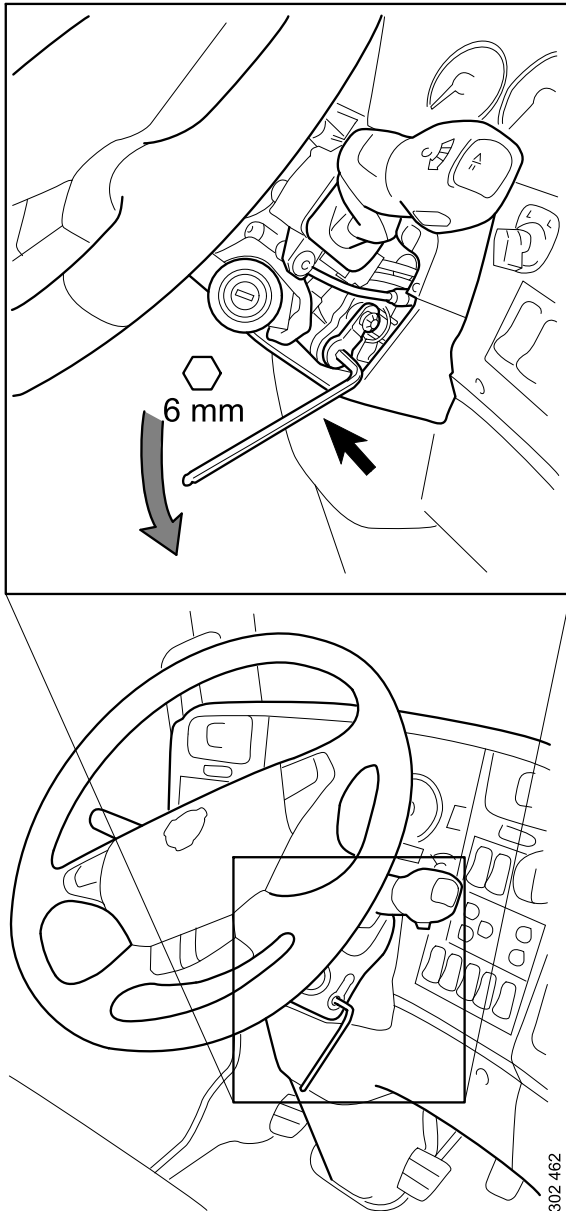


Adjusting with tool

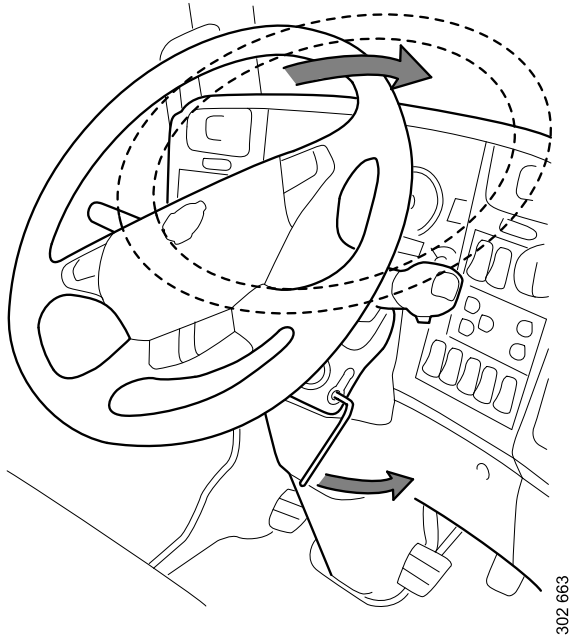
If the adjustment of the steering wheel with the button does not work then the steering wheel can be adjusted with a tool.



- Remove the plastic covers from under the steering wheel.



- Fit and turn the internal hexagon key as illustrated.

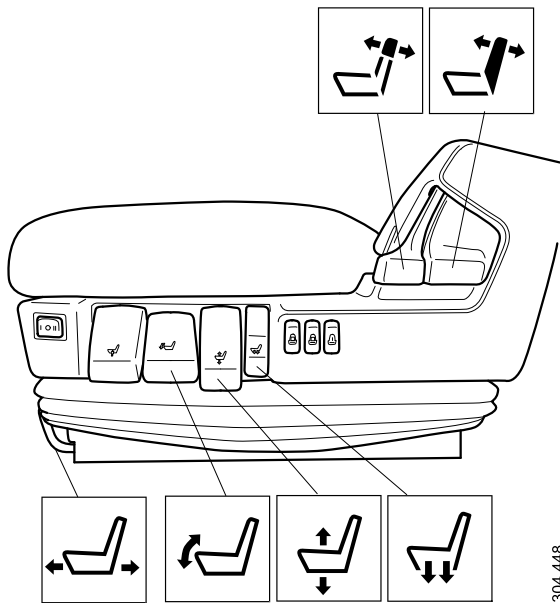


- Hold the internal hexagon key in the turned position and adjust the steering wheel to the desired position.



Adjusting the seat

Adjusting the seat



The option to adjust the seat depends on the seat type. The illustration shows an example.



Control for quick lowering of the seat.



WARNING!

The control for quick lowering of the seat lowers the seat quickly and empties the system of air. This may mean that the seat cannot be adjusted after the control has been used.



WARNING!

Risk of hearing impairment! A loud noise occurs when the air flows out of the cut or disconnected hose.

Quick lowering of the seat and emptying of air from the system can also occur if the air hose at the rear of the seat is loosened or cut.



Gas vehicles

Vehicle gas

The vehicle gas used in Scania gas vehicles is biogas, natural gas, or a mixture of these.

Vehicle gas is primarily made up of methane and has a methane content of 75-97%. Methane is a highly flammable gas and has explosive limits at 5-16% mixture in air. The gas self-ignites at a temperature of 595°C.

Vehicle gas is essentially colourless and odourless. Pressurised vehicle gas, CNG, is often mixed with odorants to enable leakages to be detected. Liquid vehicle gas, LNG, has no added odour, but major leakages are visible as a mist as the water in the air condenses when it is cooled down by the throttle.

Methane is lighter than air and therefore rises in the event of leakage. This should be taken into account when leakages occur, for example indoors or in a tunnel. The gas can cause suffocation in confined spaces. Liquid and cold methane gas is heavier than air and can run into low points in the event of leakage. Therefore, ensure good ventilation.

Plate

Gas vehicles are marked at several points with a diamond-shaped symbol with the text CNG or LNG.



441 429



441 430

Pressurised vehicle gas, CNG



441 429

CNG stands for Compressed Natural Gas. The gas tank packages consist of a number of gas tanks which are positioned together. A truck with a full tank can hold up to 150 kg of fuel. A bus with a full tank can hold up to 290 kg of fuel.

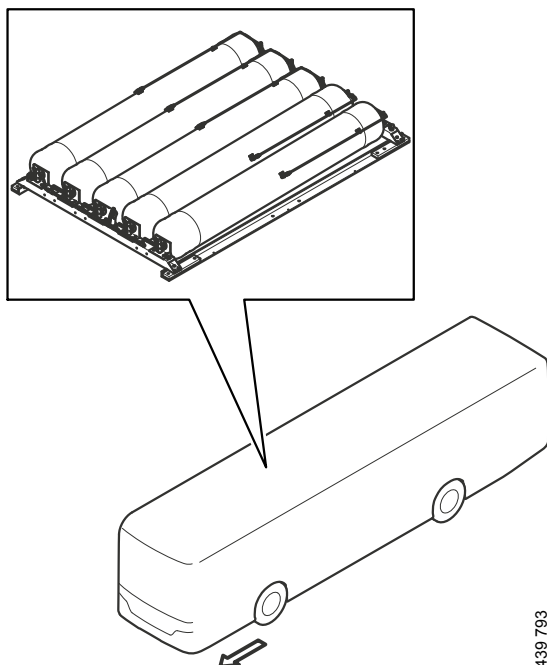
The pressure in the gas tank and the fuel system can exceed 230 bar when refuelling.

The design of the gas tanks and valves varies depending on the manufacturer.

Gas tank package

The gas tank package is usually located on the roof. The gas tank package can be integrated into the body in double-decker buses.

There are 2 versions of the gas tanks: steel or composite.



439 793

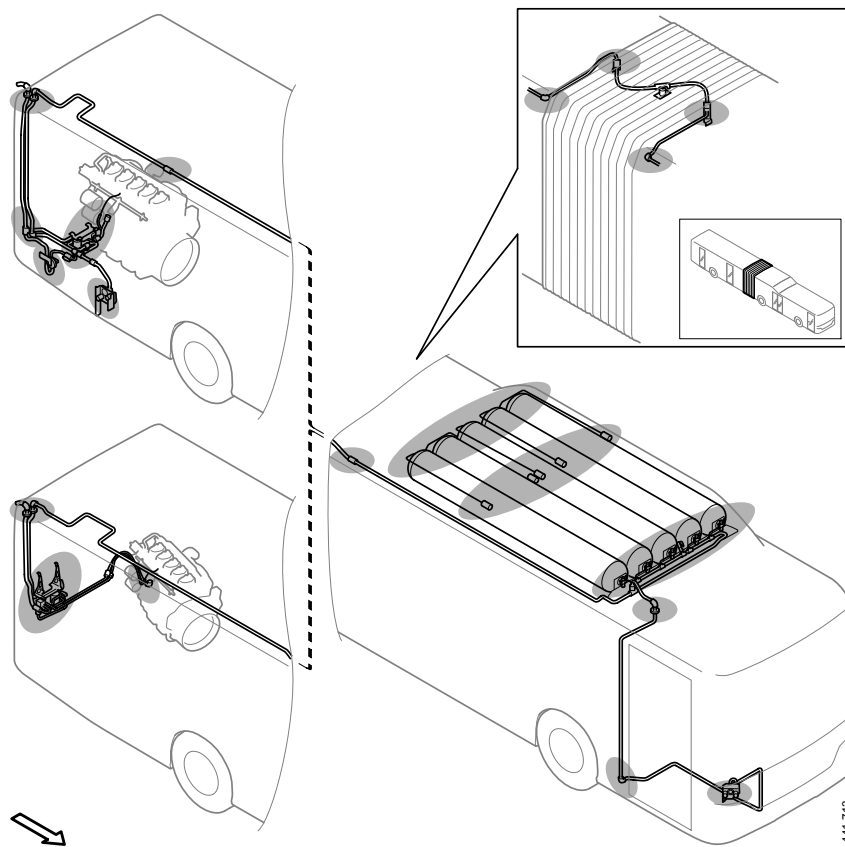


WARNING!

If the outer casing of composite tanks is damaged, the structure is weakened, which over time can cause the gas tank to crack.

Gas lines

The gas lines are routed in the body from the roof to the engine compartment and filler nipples

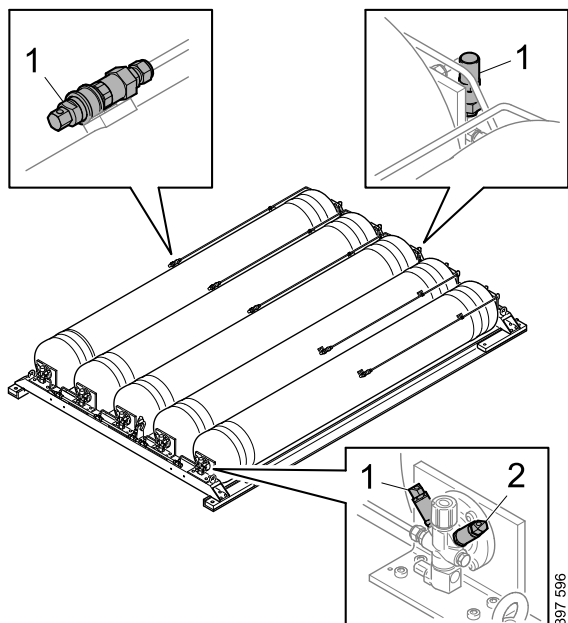


Safety valves



WARNING!

The solenoid valves are only open when the engine is running.



1. Temperature fuse
2. Overpressure fuse

The gas tanks are fitted with one or more safety valves.

The **temperature and pressure-activated safety valves** are directly connected to the gas tank. If the pressure in a gas tank exceeds 340 bar, the pressure activated safety valve opens and releases the gas in order to prevent an explosion. If the temperature exceeds 110°C, the temperature activated safety valve opens. **Therefore, do not cool the safety valves in the event of a fire.** The safety valves cannot be reset if they have been triggered.

The **pipe break valve** is located in the part of the valve unit inside the gas tank. If the pressure drops at the pipe rupture valve outlet compared to the inlet, e.g. if there is a leakage in the high pressure line, the pipe break valve is activated and limits the flow from the gas tank to the fuel pipe.

If the pressure exceeds 12 bar on the low pressure side, a safety valve in the gas regulator is also opened.



Liquid vehicle gas, LNG



441 430

LNG stands for Liquefied Natural Gas. The fuel is cooled to -130 degrees and consists then of liquid and gaseous methane. Leaking LNG boils and expands to 600 times the liquid volume at normal pressure. A vehicle with a full tank can hold up to 180 kg of fuel.

The fuel is kept pressurised in the tanks to 10 bar (g). The pressure in the tanks and gas lines can vary, up to a maximum of 16 bar, provided that the safety valves are intact.

The design of the gas tanks and valves varies depending on the manufacturer.

Gas tanks

The gas tanks are located in the cargo area.

The gas tanks are made of steel.

The pressure in the tank can be read on a manometer located on the side of the tank.

The gas tanks are fitted with a solenoid valve, shut-off valve, pipe break valve, and pressure-activated safety valves.

Gas lines

The gas lines are routed along the frame and between the tanks and the engine.

Safety valves



WARNING!

The solenoid valves are only open when the engine is running.

Each tank is fitted with two overpressure valves at the rear. These are triggered at 16 bar and 24 bar. The safety valves are angled inwards and rearwards under the vehicle.

There is no manual shut-off valve on the gas panel, but there is a manual tap on each tank. There is a pipe break valve which restricts the flow from the tank in the event of major leakage from a line. If the pressure exceeds 12 bar on the low pressure side, a safety valve in the pressure regulator is also opened.



Risk management for gas vehicles

The area must always be evacuated in the event of fire, leakage, or a vehicle with a damaged gas tank.

Due to a risk of explosion and suffocation, gas vehicles must be declared to be free of gas before they are taken indoors. If a gas leakage occurs, the gas will be confined, contributing to an unsafe environment.

Explosion

CNG

The risk of explosion is very small. Temperature fuses are automatically triggered at 110°C in order to prevent explosion. If the vehicle is equipped with a pressure fuse, this triggers at 340 bar. Explosive pressure is 450 bar for steel tanks and 470 bar for composite tanks.

LNG

The risk of explosion is very small. Pressure valves are triggered at 16 bar and 24 bar.

Damaged gas tank

Always evacuate the area around a vehicle with a damaged gas tank.

Vehicle gas expands with the temperature and it is therefore important to lower the pressure in a damaged gas tank. A damaged gas tank can withstand pressure temporarily, but if the pressure is raised, e.g. by heat from the sun, the gas tank may break. Therefore, try to reduce the pressure in a damaged gas tank in a safe way by making holes in the tank from a safe distance.



WARNING!

Actions must be carried out by an authorised person with the correct training.



WARNING!

The pressure displayed on a manometer is the pressure in the pipe system. The gas tanks have solenoid valves, which are closed when power is cut. Therefore, always treat the tank as if it is filled with gas, even if the pressure gauge shows 0 bar.



Leakage



WARNING!

Remove all ignition sources in the vicinity of a gas leakage during evacuation.



WARNING!

The gas can cause suffocation in confined spaces.



WARNING!

Liquid vehicle gas, LNG, is extremely cold. Leakages can lead to personal injury.

If a high-frequency high whining noise is heard, this indicates that the gas system has a leak.

Gas leakage from CNG pressurised vehicle gas can also be identified by an acrid odour if the gas has had an odour added.

Major LNG liquid vehicle gas leakages can be seen as a mist since the cold gas makes the water in the air condense.

If a gas leakage has been identified, evacuate the area until no sound can be heard, no mist can be seen and no odour detected.

Pressurised vehicle gas, CNG, is lighter than air and therefore rises in the event of leakage. Take this into account if leakages occur, for example indoors or in a tunnel.

Liquid vehicle gas, LNG, is initially heavier than air because it is cooled. It rises as the temperature increases.



Fire

If a fire occurs: If possible, cut off the gas supply by switching off the engine. The area around the vehicle must then be evacuated. Cordon off an area of a radius of at least 300 m around the vehicle. Only then can fire extinguishing activities be carried out, if they can be performed in a safe way. Otherwise, wait until the gas has burnt up.

Water or carbon dioxide must never be used to extinguish LNG vehicles. This can lead to a powerful fire sequence and at worst an explosion. Use a powder fire extinguisher instead.

Do not cool down the temperature-sensitive fuses on CNG tanks, as this can cause the safety valves to close or cease to open. This can lead to a powerful fire sequence and at worst an explosion.



WARNING!

Avoid cooling the tanks or spraying water on the fire. This will result in a more powerful fire.



WARNING!

The safety valve is triggered at abnormally high temperatures or pressure, in order to prevent an explosion. This produces a burst of flame tens of metres long. Evacuate the area in the direction of the safety valve.



WARNING!

Use a powder fire extinguisher.



Hybrid vehicle



WARNING!

Wear eye protection and rubber gloves classified for 1,000 V when carrying out work with a risk of coming into contact with voltage class B.

The hybrid system is driven by voltage class B (650 V), see definition below.

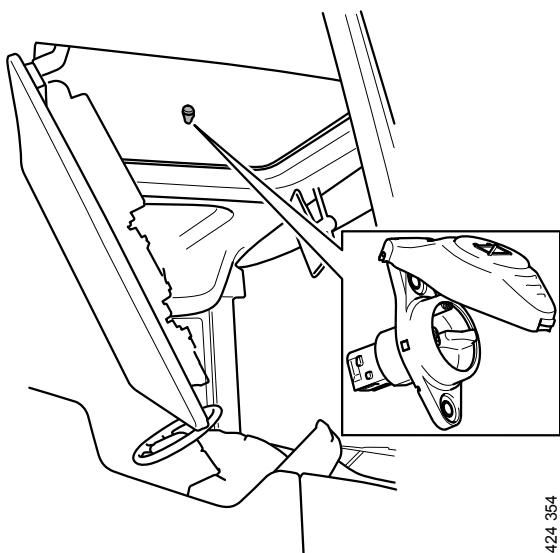
Voltage class A	Voltage class B
0 V-60 V DC	60 V-1,500 V DC
0 V-30 V AC	30 V-1,000 V AC



Built-in safety devices

The hybrid system has the following built-in safety devices:

- The hybrid system cable harness for voltage class B (650 V) is orange. The cable harness for voltage class B (650 V) is insulated from chassis earth. This means that there has to be contact with both conductors before there is a risk of personal injury.
- The hybrid system components which involve a risk of electrical hazards are equipped with warning plates warning about voltage class B (650 V).
- The hybrid system monitors the battery temperature, voltage, current intensity and electrical insulation level. The hybrid system disconnects the battery and isolates the power to the cable harness if the results deviate.
- The hybrid system voltage is normally cut off when the 24 V system is cut off.
- The hybrid system is shut off using the control switch located by the central electric unit in the roof panel.



424 354



Procedure for extinguishing a fire

In the event of a battery fire

If there is a visible fire in the battery, use large amounts of water to cool the battery.

For other vehicle fires, not battery fire

In the event of a vehicle fire where the battery box is intact and not on fire, we recommend using normal procedures for extinguishing a fire.

The battery must be protected and cooled down with large amounts of water.

If the battery box is significantly damaged, large amounts of water must be used to cool the battery. It is important for the temperature of the battery to be reduced by only using water, to prevent risk of fire and to fight any fire.



Cut all power to the vehicle



WARNING!

Wear eye protection and rubber gloves classified for 1,000 V when carrying out work with a risk of coming into contact with voltage class B (650 V).



WARNING!

Avoid cutting the voltage class B (650 V) cable harness at the same time as voltage is on. There is a risk of personal injury.

Wear eye protection and rubber gloves classified for 1,000 V.



WARNING!

The electric machine always produces power if the combustion engine is in operation, or if it for some other reason starts rotating, even if the hybrid system is otherwise disconnected.

If the vehicle must be towed, detach the propeller shaft to ensure that the electric motor is disconnected.

- Turn off the ignition.
- Cut off the 24 V system by disconnecting the battery terminals on the 24 V batteries. The 24 V battery is located under the driver area and is accessible from outside the vehicle.

Normally, this means that the propulsion battery is disconnected and that starting the combustion engine is prevented. This in turn, prevents voltage from the electric machine.

In order to be sure that there is no residual voltage remaining in the system, wait for 15 minutes.

- If the cable harness for voltage class B must be cut or if it is damaged, and if the 24 V system is not accessible, disconnect the connectors on the propulsion battery. This guarantees that the hybrid system is disconnected.

The propulsion battery is located on the roof.



Recovery and shunting



IMPORTANT!

Information and instructions must be followed during recovery and shunting to prevent personal injury and vehicle damage.



IMPORTANT!

Recovery of heavy vehicles should always be entrusted to an authorised recovery company.

Preparatory work

- In the event of recovery from a ditch: unload the vehicle and clear the ditch of stones etc. that may damage or get caught in the vehicle during recovery.
- Check that no damage has occurred to the vehicle that may cause a short circuit in the electrical system. If this is the case, disconnect the batteries to prevent fire.
- When carrying out a recovery on a road, the vehicle should always be lifted without a load. Alternatively, the front axle weight can be reduced as much as possible.
- If it is not possible to start the engine, the brake system must be filled with air using an alternative method. Recovery vehicles usually have air outlets that can supply the towed/recovered vehicle with air.



Recovery

The information about recovery and shunting that follows only applies when:

- There is no visible damage to the vehicle that has occurred due to a collision or other incident.
- The risk of fire is considered low.
- The risk of exposure to high voltage is considered low.
- No warnings about electrical hazards are displayed on the instrument cluster (ICL).

If the vehicle is blocking traffic or in any other way constitutes a potential risk, towing with a mounted propeller shaft can be carried out to move the vehicle to a safer place.

Before towing is carried out:

- The vehicle's 15 voltage is cut off with the starter key on the instrument cluster.
- The vehicle's voltage class A (VCA) is switched off using the red control switch.
- The electric drive system's voltage class B (VCB) is switched off using the yellow control switch.

When towing with a mounted propeller shaft:

- The vehicle must not be towed for more than 500 metres.
- The vehicle speed must not exceed 10 km/h.



WARNING!

When towing with a mounted propeller shaft, there is a risk of damage to the vehicle's propulsion unit, propulsion batteries and other parts of the electrical system.



WARNING!

It is common for several of the vehicle functions to be disengaged or out of order during recovery and towing.



WARNING!

Do not lift on the towing brackets.



NOTE:

Vehicles fitted with alarms can react at speed and lock themselves even during recovery. Avoid leaving the starter key in drive mode during recovery or towing.



Chemical information on propulsion batteries

Under normal conditions, the chemicals are enclosed in 'cells' located within the propulsion battery and cannot leak out into the environment. The cells usually contain a combination of a liquid and some solid materials, the liquid being firmly retained by the materials.

The risk of contact occurs when the content changes to a gas. This can happen in the event of external damage to one or more of the cells, too high a temperature or overloading.

The liquid within the cells is flammable and can be corrosive if it comes into contact with moisture. Damage and steam or mist from the battery may cause irritation of mucous membranes, air ways, eyes and skin. Exposure can also cause dizziness, nausea and headache.

The cells in the battery can handle up to 80°C. If the temperature in the cells is greater than 80 degrees Celsius the electrolyte in the cell starts to change to a gas. This may cause the pressure relief valve in the cells to break, and flammable and corrosive gas is released via the battery pack ventilation duct.



Electric vehicles

Electric vehicles



WARNING!

Wear eye protection and rubber gloves classified for 1,000 V when carrying out work with a risk of coming into contact with voltage class B.

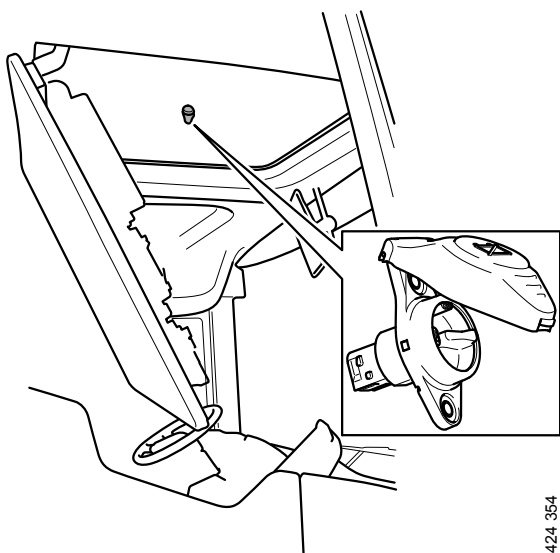
The electric drive system is driven by voltage class B (650 V), see definition below.

Voltage class A	Voltage class B
0 V-60 V DC	60 V-1,500 V DC
0 V-30 V AC	30 V-1,000 V AC

Built-in safety devices

The electric drive system has the following built in safety devices:

- The electric drive system cable harness for voltage class B (650 V) is orange. The cable harness for voltage class B (650 V) is insulated from chassis earth. This means that there has to be contact with both conductors before there is a risk of personal injury.
- The electric drive system components that pose a fire hazard are fitted with warning plates warning about voltage class B (650 V).
- The electric drive system monitors the battery temperature, voltage, current and electrical insulation level. The electric drive system disconnects the battery and cuts the power to the cable harness if any results deviate.
- Voltage for the electric drive system is normally cut off when the 24 V system is cut off.
- The electric drive system is switched off using the control switch located by the central electric unit in the roof panel.





Procedure for extinguishing a fire

In the event of a battery fire

If there is a visible fire in the battery, use large amounts of water to cool the battery.

For other vehicle fires, not battery fire

In the event of a vehicle fire where the battery box is intact and not on fire, we recommend using normal procedures for extinguishing a fire.

The battery must be protected and cooled down with large amounts of water.

If the battery box is significantly damaged, large amounts of water must be used to cool the battery. It is important for the temperature of the battery to be reduced by only using water, to prevent risk of fire and to fight any fire.



Cut all power to the vehicle



WARNING!

Wear eye protection and rubber gloves classified for 1,000 V when carrying out work with a risk of coming into contact with voltage class B (650 V).



WARNING!

Avoid cutting the voltage class B (650 V) cable harness at the same time as voltage is on. There is a risk of personal injury.

Wear eye protection and rubber gloves classified for 1,000 V.



WARNING!

The electric machine always produces power if it starts rotating for any reason, even if the electric drive system is otherwise disconnected.

- Cut off the 24 V system by disconnecting the battery terminals on the 24 V batteries. The 24 V battery is located under the driver area and is accessible from outside the vehicle.

This normally results in the propulsion battery being disconnected. This action prevents voltage from the electric machine.

In order to be sure that there is no residual voltage remaining in the system, wait for 15 minutes.

- If the cable harness for voltage class B must be cut or becomes damaged, and if the 24 V system is not accessible, disconnect the connectors on the propulsion battery. This guarantees that the electric drive system is disconnected.

The propulsion batteries are located on the roof and at the rear of the bus.



Recovery and shunting



IMPORTANT!

Information and instructions must be followed during recovery and shunting to prevent personal injury and vehicle damage.



IMPORTANT!

Recovery of heavy vehicles should always be entrusted to an authorised recovery company.

Preparatory work

- In the event of recovery from a ditch: unload the vehicle and clear the ditch of stones etc. that may damage or get caught in the vehicle during recovery.
- Check that no damage has occurred to the vehicle that may cause a short circuit in the electrical system. If this is the case, disconnect the batteries to prevent fire.
- When carrying out a recovery on a road, the vehicle should always be lifted without a load. Alternatively, the front axle weight can be reduced as much as possible.
- If it is not possible to start the engine, the brake system must be filled with air using an alternative method. Recovery vehicles usually have air outlets that can supply the towed/recovered vehicle with air.



Recovery

The information about recovery and shunting that follows only applies when:

- There is no visible damage to the vehicle that has occurred due to a collision or other incident.
- The risk of fire is considered low.
- The risk of exposure to high voltage is considered low.
- No warnings about electrical hazards are displayed on the instrument cluster (ICL).

If the vehicle is blocking traffic or in any other way constitutes a potential risk, towing with a mounted propeller shaft can be carried out to move the vehicle to a safer place.

Before towing is carried out:

- The vehicle's 15 voltage is cut off with the starter key on the instrument cluster.
- The vehicle's voltage class A (VCA) is switched off using the red control switch.
- The electric drive system's voltage class B (VCB) is switched off using the yellow control switch.

When towing with a mounted propeller shaft:

- The vehicle must not be towed for more than 500 metres.
- The vehicle speed must not exceed 10 km/h.



WARNING!

When towing with a mounted propeller shaft, there is a risk of damage to the vehicle's propulsion unit, propulsion batteries and other parts of the electrical system.



WARNING!

It is common for several of the vehicle functions to be disengaged or out of order during recovery and towing.



WARNING!

Do not lift on the towing brackets.



NOTE:

Vehicles fitted with alarms can react at speed and lock themselves even during recovery. Avoid leaving the starter key in drive mode during recovery or towing.



Chemical information on propulsion batteries

Under normal conditions, the chemicals are enclosed in 'cells' located within the propulsion battery and cannot leak out into the environment. The cells usually contain a combination of a liquid and some solid materials, the liquid being firmly retained by the materials.

The risk of contact occurs when the content changes to a gas. This can happen in the event of external damage to one or more of the cells, too high a temperature or overloading.

The liquid within the cells is flammable and can be corrosive if it comes into contact with moisture. Damage and steam or mist from the battery may cause irritation of mucous membranes, air ways, eyes and skin. Exposure can also cause dizziness, nausea and headache.

The cells in the battery can handle up to 80°C. If the temperature in the cells is greater than 80 degrees Celsius the electrolyte in the cell starts to change to a gas. This may cause the pressure relief valve in the cells to break, and flammable and corrosive gas is released via the battery pack ventilation duct.