Rescue Guide

Truck

Engineering the Future - since 1758.

MAN Truck & Bus

1 Printer’s imprint

if you have questions or suggestions regarding these recovery guidelines, please contact the Technical Documentation department on the following address:

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3.1 Preface

These rescue guidelines are a manufacturer-specific technical document; they are not a maintenance or repair manual. The concept is exclusively intended for rescue personnel in their specific field of work at the accident site.

These rescue guidelines apply to left-hand drive vehicles only.

The rescue guidelines contain information from after-sales documentation, and the descriptions provided are applicable to a vehicle functioning in perfect technical condition. External circumstances and the accident itself mean that the specific conditions and thus the risks cannot be foreseen by MAN; for this reason, they are not described explicitly. The descriptions of the technical measures on MAN vehicles are in line with the current state of the art.

Equally, the safety instructions and accident prevention regulations must be complied with in accordance with the rescue personnel's working regulations. These are not described in these rescue guidelines.

The procedures and rescue measures shown in this documentation have been carried out in cooperation with rescue personnel, and only represent one possible way of carrying them out. MAN does not accept any liability for their use. These measures are in accordance with the techniques and knowledge applied at the time of publication; they may have to be updated based on new experience as a result of new technologies and incidents.

All safety instructions are grouped together in a separate chapter in order to make it easier to read the descriptions. This is intended to make it possible to access the specific technical information efficiently when this is important. The other applicable safety instructions precede the instructions, and must be complied with depending on the particular task in hand.

MAN expressly distances itself from claims arising from the use of information in these rescue guidelines. In an accident, it is never possible to predict what damage will be incurred by vehicle components or electrical and electronic systems; consequently, it is not possible to predict the effects of accidents in a defined way. The measures derived from this description are thus always carried out under the responsibility of the operational commander in question.

MAN Truck & Bus AG

Technische Dokumentation SAWD

3 Preface and safety instructions

3.2 Safety instructions

The must important principle for rescue operations is safety as well as protection against additional dangers for occupants and rescue personnel. As a result, the following safety instructions must be read attentively and followed.

3.2.1 General notes on safety

Beware of burns!

- Do not touch an engine with your bare hands when it is at operating temperature – Danger of burns!
- Do not get close to the exhaust system when the engine is hot, since the exhaust becomes hot during operation and represents a danger of burns
- Hot coolant can emerge if there are leaks on the cooling circuit! Keep at a safe distance and switch off the engine if necessary, otherwise there is a risk of burns. Eye and hand injuries could be caused. Wear suitable protective clothing (protective glasses, protective gloves).

Danger of accidents and injury!
If the vehicle is not secured to prevent it from rolling away, it may start to move. People could become trapped. The vehicle must be secured to prevent it from rolling away.
Danger of accident and injury when working at height. Make sure that steps, mobile ramps, etc. are securely positioned. Secure them to prevent falling.

Danger of accidents and injury!
Only press the emergency off switch when stationary. The vehicle is not ready for use when the engine is stopped with the power steering, ABS, gearbox, etc. deactivated.
The parking brake must be applied, otherwise the vehicle could roll away. People could fall and become trapped. Risk of trapping body parts.

Danger of accidents!
The ECAS (electronically controlled air suspension) system continues to control the vehicle height for up to approx. 10 minutes after the ignition has been switched off. Deactivate the ECAS system before lifting the vehicle.
Do not switch on the ignition of a vehicle that is lifted. The ECAS system would attempt to regulate the height level.
This could cause the vehicle to slide off the jack or support blocks, etc., leading to injury to personnel and damage to the vehicle.

3.2.2 Handling batteries

Danger of injury!

- Keep away sources of fire, sparks and naked flames when handling batteries! Do not smoke!
- Take particular care after long journeys or after charging the batteries with a battery charger. This creates highly explosive oxyhydrogen gas – ensure good ventilation.
- Take care not to generate any sparks when connecting and disconnecting electrical consumers or measuring devices directly on the battery terminals.
- Batteries contain corrosive acid! Wear suitable protective clothing, protective glasses as well as acid-resistant rubber gloves.
- Do not tilt batteries. – Acid can leak out of ventilation holes.
- Always wear eye protection when working with batteries.
- Switch off all loads before connecting and disconnecting batteries. Switch off the battery isolator switch.
- Disconnect the earth connection (–) first.
- Avoid short circuits which might be caused by reversed polarity and establishing contact via tools.
- Do not remove terminal covers unless really necessary.
- When connecting batteries, connect the earth connection (–) last.

3.2.3 Exhaust systems

Engine exhaust system

Fire risk!
Operating the vehicle gives rise to high exhaust temperatures, and the exhaust system gets hot. Flammable materials can catch fire.

- Never stop or park the vehicle in the area of flammable materials, e.g. areas covered with grass or other vegetation, if the vehicle has been operating and the exhaust system is hot.
- Never operate the vehicle in the area of flammable materials, e.g. areas covered with grass or other vegetation, not even with the engine idling.

Auxiliary heater exhaust system

Fire risk!
High exhaust temperatures and the hot exhaust system of the auxiliary heater can cause flammable materials to catch fire.

- Never stop or park the vehicle in the area of flammable materials, e.g. areas covered with grass or other vegetation, if the auxiliary heater is in operation, was operating recently beforehand, or if you intend to operate the auxiliary heater.
- Make sure that the auxiliary heater will never be taken into operation by programmed start times if the vehicle is stopped or parked in the area of flammable materials, e.g. areas covered with grass or other vegetation.

3.2.4 Rescue measures

Danger of injury!
Cutting though parts of the bodywork produces sharp cutting edges.
Danger of injury to occupants and helpers.

- Use suitable protective covers or pillar protection to cover sharp-edged cutting points.
- For the helpers' own safety, they must always wear suitable protective equipment such as protective clothing, protective glasses and gloves.

Danger of accidents and injury!
Danger of accident and injury when working at height, e.g. on the cab roof.

- Make sure that ladders, rescue platforms, etc. are securely positioned.
- Secure them to prevent falling.

3.2.5 Vehicle windows

Danger of injury!
Cutting/smashing vehicle windows can lead to tiny, sharp-edged glass particles being created which can cause injury to the occupants and helpers.

- Cover vehicle occupants with a bright transparent foil (antistatic).
- Use shard protection.
- For the helpers' own safety, they must always wear suitable protective equipment such as protective clothing, protective glasses, gloves and mouth protection.
- Danger of slipping on glass particles lying on the floor. Remove glass particles from the work area immediately, e.g. using a brush.

Danger of injury!
Vehicle windows can burst open spontaneously when adjacent components are being cut or bent using rescue equipment. This can lead to tiny, sharp-edged glass particles being created which can cause injury to the occupants and helpers.

- Remove windows.
- Cover vehicle occupants with a bright transparent foil (antistatic).
- Use shard protection.
- For the helpers' own safety, they must always wear suitable protective equipment such as protective clothing, protective glasses and gloves.

LSG - laminated safety glass

Laminated safety glass is a composite of two or more panes of glass placed on top of one another. and separated by a tear-resistant, elastic foil. If the glass breaks, the foil binds the shards together and makes it more difficult for objects to penetrate.

ESG - toughened safety glass

Toughened safety glass consists of a single pane which has been specially heat treated. When exposed to high loading, it shatters or breaks up into small particles without sharp edges.

4 Technical rescue

4.1 Initial situation assessment

4.1.1 Arriving at the accident location

Immediately on arrival at the accident location, carry out the initial situation assessment in parallel to securing the accident location. This involves a making an initial visual assessment of the people and vehicles involved in the accident, in order to decide which specific measures can be taken.

This is done with regard to the following criteria:

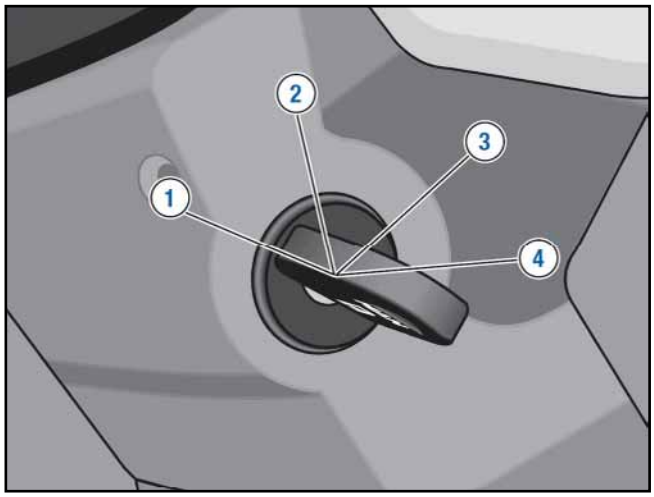
- General condition of the people who have been involved in the accident:
  Is the person conscious? Can he or she communicate?
  Is the person trapped or shut in?
- Assessment of the severity of injuries:
  Has anyone sustained life-threatening injuries?
- Possibilities for initial access to the patient:
  Can the doors be opened?
  Access via the windscreen, side window, cab rear wall, roof, depending on how the vehicle is lying?
- Condition of the vehicle involved in the accident?
  Stable/unstable position?
- Is there a fire risk?
  Smoke or leakage of fluids?
- Leaking fuels:
  Is there a potential threat to people and the environment?
  If binder is sprinkled on service products, the increase in surface area increases the fire risk in case of high outside temperatures.
  Take fire prevention measures.
- Check the tanks for fuel, hydraulic oil and AdBlue®:
  Damage/leaks?
  Fill level?
- Assessment of the cargo and securing of the cargo:
  Stable/unstable cargo?
  Hazardous substance?

4 Technical rescue

4.2 Switching off the engine

4.2.1 Removing the ignition key

To switch off the engine, turn the ignition key to zero position 1. Then pull out the ignition key and secure it to prevent the ignition from being switched back on.



1 Zero position, inserting or removing the ignition key

2 Unlocking the steering wheel

3 Driving position, ignition switched on

4 Start position

4.2.2 EMERGENCY OFF switch

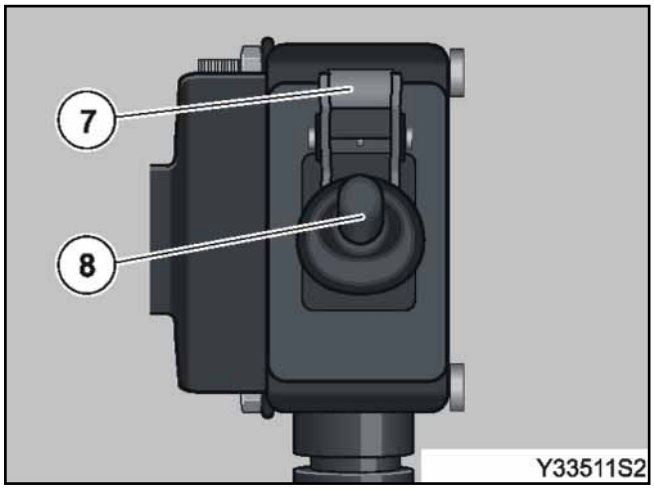
EMERGENCY OFF switches are installed in an on the vehicle for certain sector applications (such as vehicles for transporting hazardous substances).

The EMERGENCY OFF switch is located on the instrument panel and on the outside, e.g. on the wing panel extension on the driver's side.

It breaks the connection between the batteries and the electrical system. The EU monitoring device is not disconnected from the batteries.

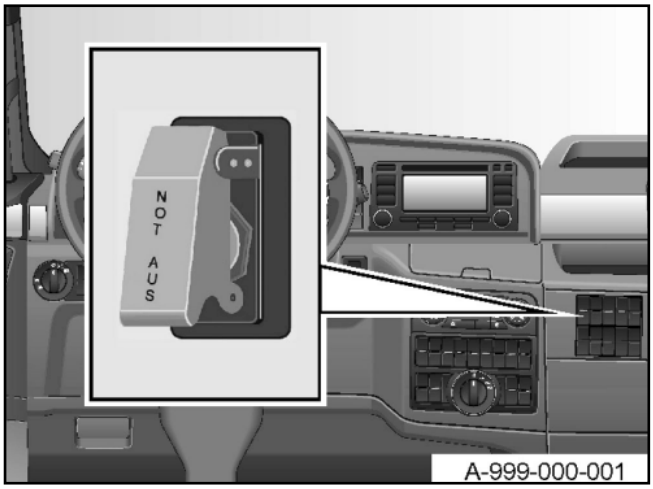
EMERGENCY OFF switch on the wing panel extension

Switch off

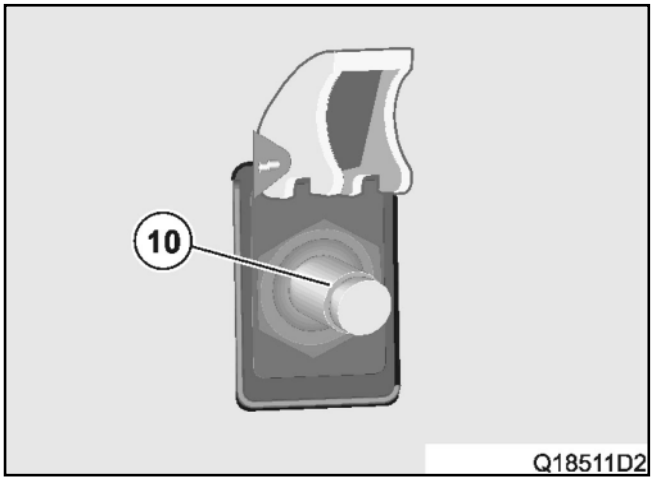


- Open the red security flap 7 upwards.
- Flick the toggle switch 8 upwards.

Emergency off switch at the driver's position



Switch off



- Open the red security flap upwards.
- Flick the toggle switch 10 upwards.

4.2.4 Blowing in CO_2

The engine can be stopped by blowing CO_2 into the air intake. The CO_2 reduces the oxygen concentration in the intake air. This lack of oxygen means the fuel/air mixture is no longer capable of supporting combustion.

- Pull the bellows of the air intake upwards.
- Blow pulses of CO_2 into the resulting opening.
- Continue or repeat the process until the engine stops.

The CO_2 emerges at a temperature of -78 °C, some of it as dry ice. Risk of freezing the hands.
Employ protection against cold and wear eye protection when using a CO_2 extinguisher to stop the engine.

4.2.5 Interrupting the fuel supply

To interrupt the fuel supply to the engine, use a suitable tool to shut off the fuel line from the tank to the engine.

When doing this, remember that the amount of fuel in the fuel line between the tank and the engine is sufficient to keep the engine running for a considerable time until stopping. Therefore, the fuel supply should only be interrupted if necessary, depending on the deployment situation.

Left air intake, example shows TGX

Right air intake, example shows TGS

Blowing in CO_2

4 Technical rescue

4.3 Securing and supporting

4.3.1 Securing the vehicle

In order to carry out the necessary repair measures quickly and safely, it is necessary for the vehicle to be secured by suitable means to prevent it from rolling away, tipping over or moving in any other ways. When attaching equipment to the vehicle in order to secure and stabilise it, make sure that the subsequent rescue measures will not be rendered more difficult or impaired thereby.

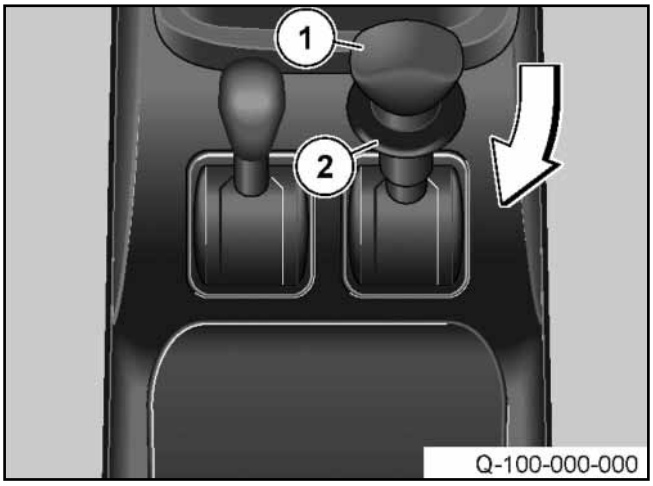
The method of securing the cab depends on the type of vehicle (high-roof, sleeper cab, etc.). Different variants are illustrated here, one of which will normally be adequate.

4.3.3 Applying the parking brake

The parking brake acts mechanically on the wheels of the rear axle(s) by spring force when the spring-loaded brake cylinders are vented. In the case of a pneumatic front axle parking brake, the brake acts on the wheels of the front axle.

▶ Push the lever 1 backwards until it engages

The parking brake has been applied when the lever can no longer be moved forwards without pulling the lever catch 2.



Parking brake (example illustrated)

1 Lever

2 Lever catch

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4.3 Securing and supporting

4.3.4 Chocks

The vehicle is secured with two chocks on the rear axle to prevent it from rolling away.

Depending on the model and version, one chock is located

- In the storage locker on the left
- Under the co-driver's seat
- On the rear left of the frame

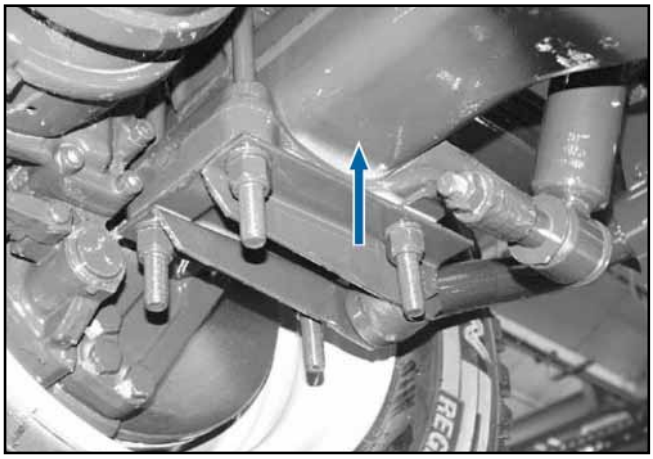
Wheel chock (example shows TGX semitrailer tractor)

Rear axle secured with chocks

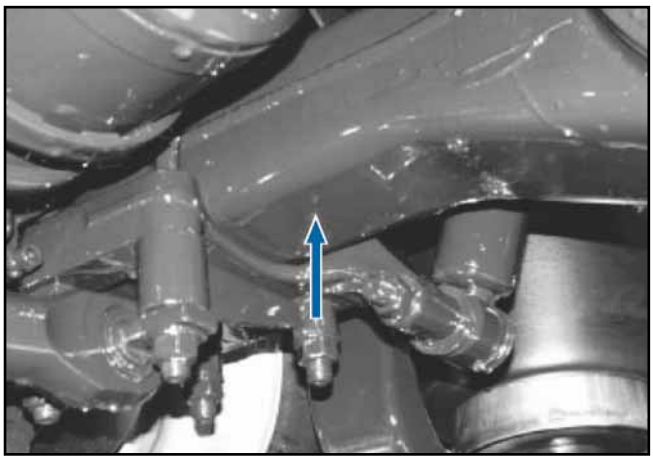
4.3.5 Chocks/blocks

The jacking points are suitable for positioning chocks or blocks.

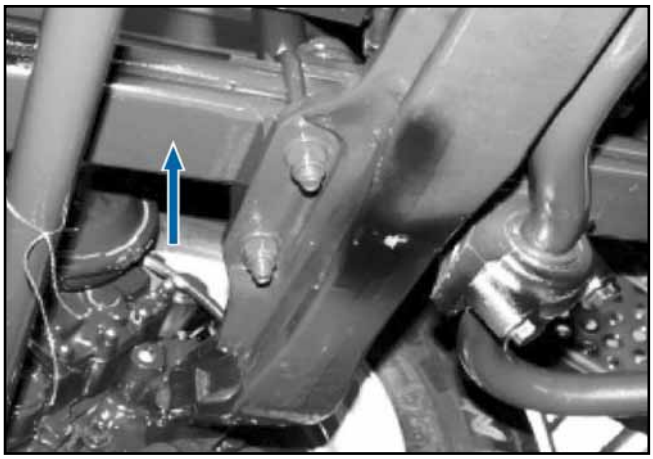
Series TGL and TGM



Rear axle with leaf-spring suspension



Rear axle with air suspension

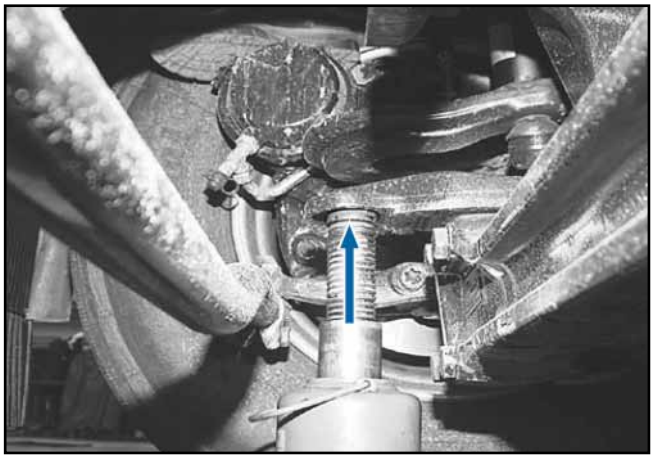


Front axle with leaf-spring suspension, non-driven

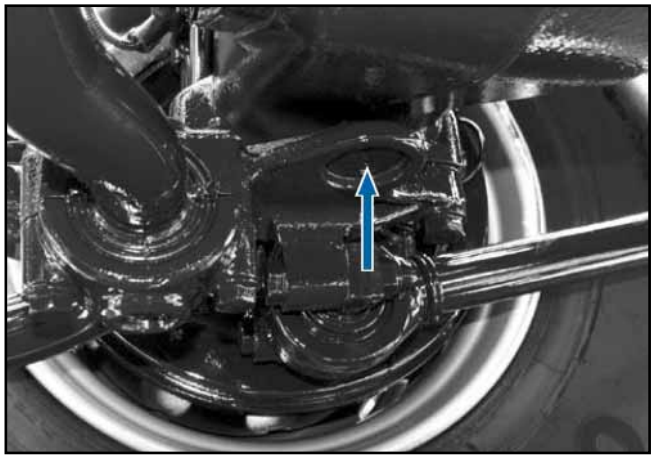
4 Technical rescue

4.3 Securing and supporting

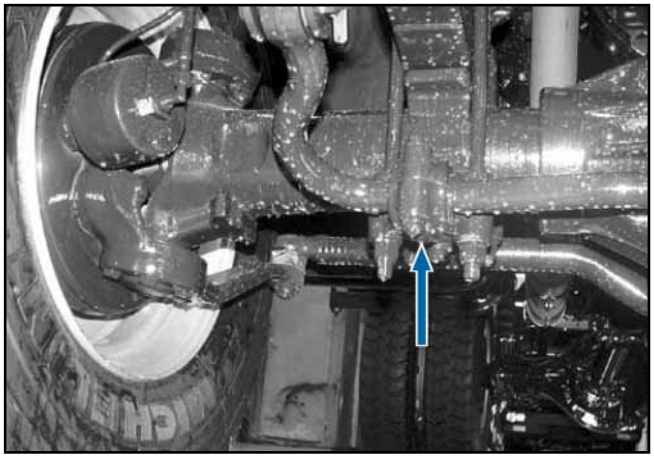
TGX, TGS and TGA series



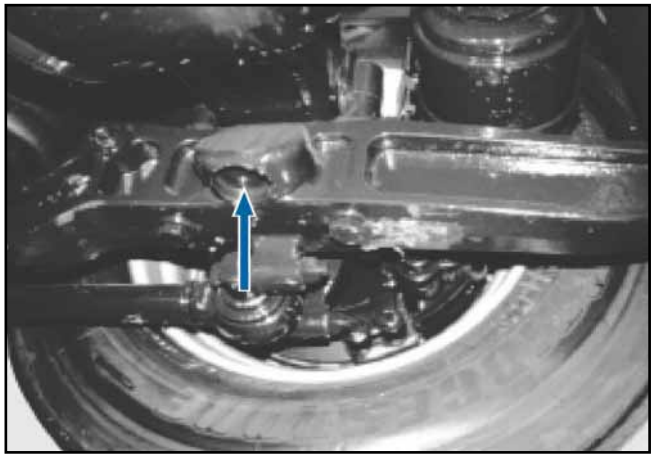
Front axle with air suspension, non-driven



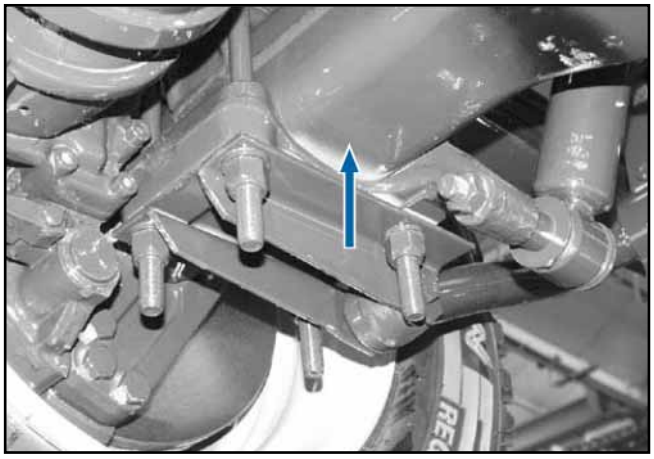
Tandem rear axle with leaf-spring suspension



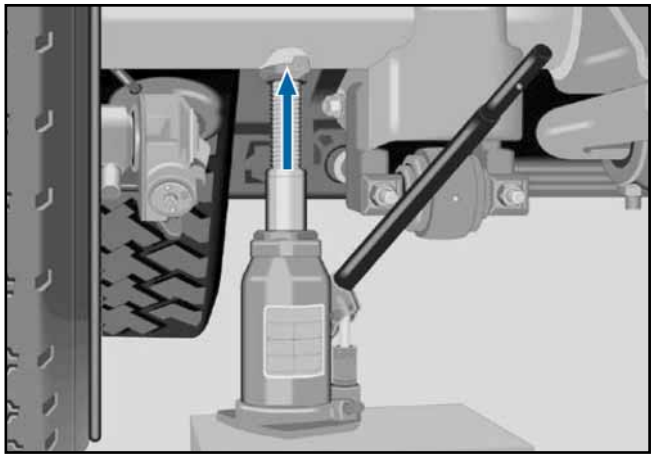
Front axle, driven



Rear axle with air suspension



Rear axle with leaf-spring suspension



Automatically lifting trailing/leading axle

4.3.7 Loop/lashing straps

When attaching loops or lashing straps for securing the vehicle, make sure that the force will be applied to the vehicle at suitable points:

- Spring articulation points
- Rear crossmember
- Front towing eyes (vehicles with plastic bumper)
- Front tow bar hitch (vehicles with steel bumper)
- Longitudinal link block, directly on the frame

These components do not have an unlimited load capacity; therefore the force should be applied via as many evenly distributed points as possible.

Examples

Front towing eyes, screwed in on both sides

The towing eyes are not mounted on the vehicle. There are two fastening threads for towing eyes in the bumper. A towing eye is supplied with each vehicle from the factory. It is located in the storage locker on the right, or in the vehicle's tool kit in vehicles without storage lockers inside the vehicle.

▶ Remove the cover for the fastening thread on the bumper.

▶ Screw in the towing eye until the stop.

Tow bar hitch on a construction site vehicle

Rear crossmember on a semitrailer tractor

4.3.8 Raising/lowering the vehicle

Electronically controlled air suspension (ECAS)

The air suspension makes it possible to lower or raise the vehicle frame, e.g. for loading and unloading.

To do this, the ignition must be switched on and there must be adequate compressed air available. The suspension travel depends on the type of vehicle.

The following versions are possible:

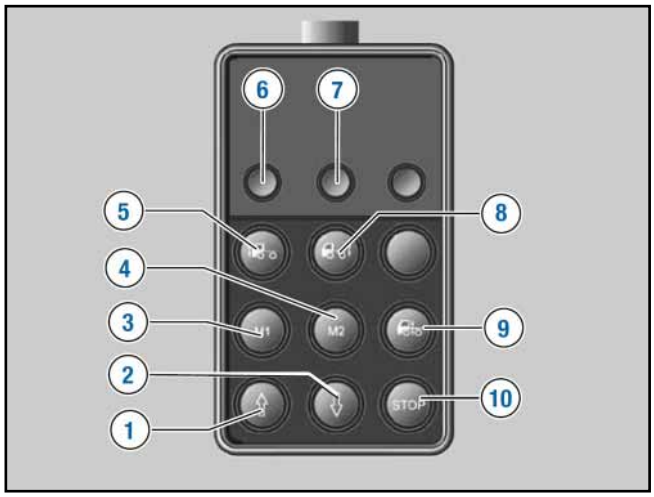
– Leaf/air suspension: There is only air suspension on the rear axle(s)
– Air/air suspension: Front and rear axles have air suspension

When the ignition is switched on, the frame is raised or lowered to the height that was set when the ignition was last switched off.

The frame height (level) is programmed and set using the control unit installed in a mounting on the side of the console for the driver's seat.

ECAS is deactivated after the battery master switch has been deactivated or the battery disconnected.

Sample arrangement of control unit



Example of air/air suspension control unit

1 Raising the vehicle's frame
2 Lowering the vehicle's frame
3 Setting or programming level 1
4 Setting or programming level 2
5 Selecting vehicle's frame at front
6 Check lamp for vehicle's frame at front
7 Check lamp for vehicle's frame at rear
8 Selecting vehicle's frame at rear
9 Setting the ride height
10 STOP button

Pressing the STOP button immediately stops any control procedure (raising, lowering and readjusting). The level reached is kept constant.

4.3.9 Securing the cab

The cab can move inadvertently during the rescue work.

Therefore, it is necessary to secure the cab with lashing straps. The straps must be secured so that the subsequent rescue measures will not be impaired.

Loop and lashing strap over the front axle

- Place the loop on the right and left around the front axle and pull it upwards.
- Secure the lashing strap to the loop on one side with a ratchet and eyelet hooks.
- On the other side, attach the lashing strap to the loop using eyelet hooks.
- Throw the lashing strap over the cab.
- Guide the lashing strap into the ratchet and tighten it.
- Secure the ratchet.

Securing the cab, example shows TGS

4 Technical rescue

4.3 Securing and supporting

Lashing strap on storage locker flap and front wheel

- Open the storage locker flap by operating the release mechanism in the cab on the rear wall, behind the seat.

  Or, if this is not accessible
- Bend the storage locker flap open at the bottom, e.g. using a wooden wedge, and pry it open with a Halligan bar.
- Hook the lashing strap with ratchet into the lock opening of the storage locker flap.
- Hook the rim hook into the wheel rim.
- Secure the lashing strap with eyelet hooks.
- Guide the lashing strap into the ratchet and tighten it.
- Secure the ratchet.

Unlocking the storage locker flap

Securing the cab using the storage locker flap, example shows TGX

Lashing strap in side wall and front wheel

- Remove the plastic cover from the air intake using a Halligan bar.
- Use the cutting tool to cut an opening into the top of the side wall.
- Alternatively, it is possible to use the Halligan bar to knock a hole in the side wall. Then make the hole larger until it is possible to hook in a rim hook.
- Hook in the rim hook.
- Secure the lashing strap with eyelet hooks.

Remove the air intake cover

Cut in side wall

Attaching the lashing strap

4 Technical rescue

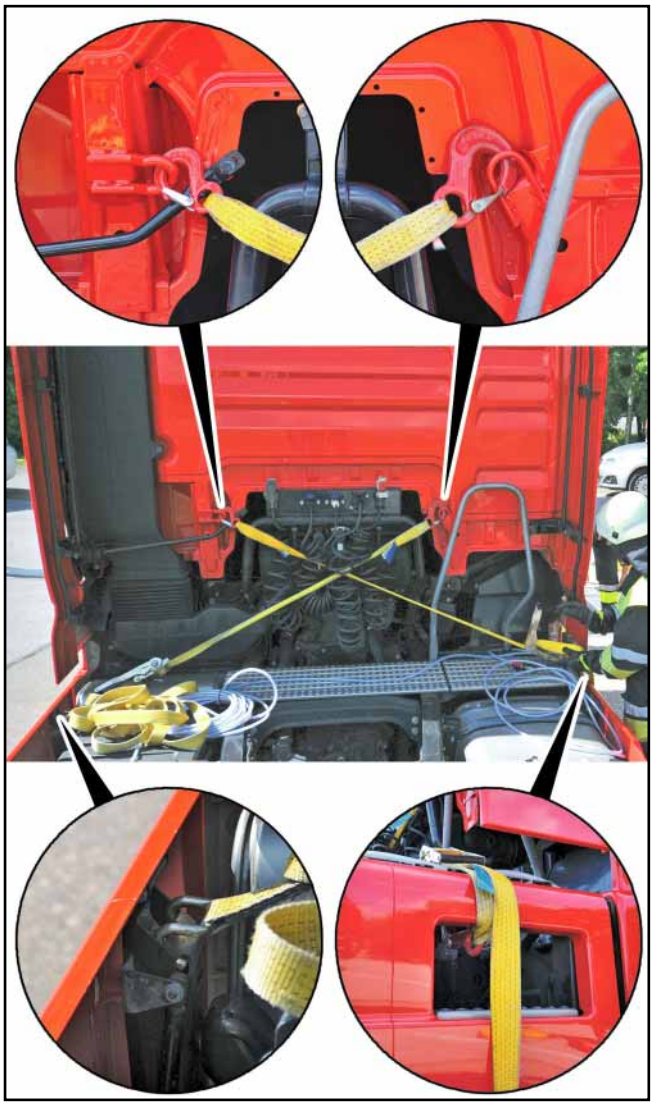
4.3 Securing and supporting

- Hook the rim hook into the wheel rim.
- Secure the lashing strap with the ratchet and eyelet hooks.
- Guide the lashing strap into the ratchet and tighten it.
- Secure the ratchet.

Attaching the lashing strap to the wheel

Lashing strap from cab rear wall to frame

- Secure the lashing strap with eyelet hooks to the attachments on the cab rear wall.
- Guide the lashing straps diagonally across to the frame on the right and left.
- Hook the rim hook into the holder of the lateral protection device.
- Secure the lashing strap with the ratchet and eyelet hooks.
- Secure the lashing strap at the top on the step of the lateral protection device with eyelet hooks.
- Secure the lashing straps with the ratchet.
- Secure the ratchets.



4 Technical rescue

4.3 Securing and supporting

Securing and support system

- Position the support system against the cab at an angle of approx. 45°.
- Adjust to the required length by pulling out the telescopic arm.
- Make sure it is firmly supported.
- Make sure there is sufficient lateral clearance from the door.
- Hook the rim hook into the wheel rim.
- Secure the lashing strap with eyelet hooks.
- Secure the lashing straps with the ratchet.
- Secure the ratchets.

4 Technical rescue

4.4 Electrical power supply

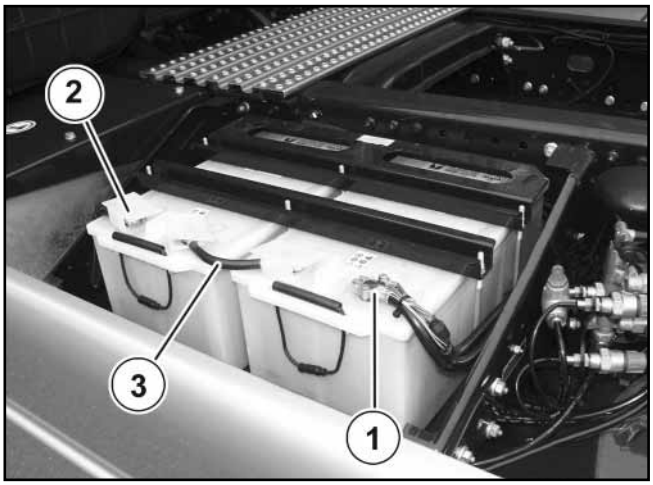
4.4.1 Batteries (12 V)

The electrical system voltage is generally 24 V. Two 12 V batteries are fitted.

Two variants are possible, depending on the model:

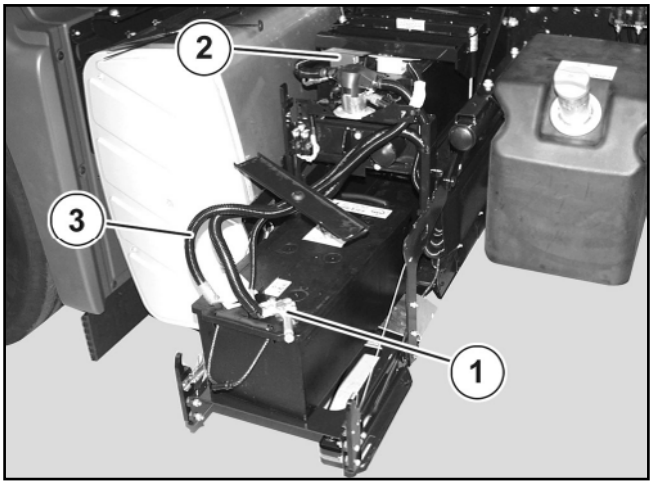
- Vehicle batteries next to one another
- Vehicle batteries one on top of the other (compact battery box) in TGS and TGX

When disconnecting the battery, first disconnect the earth connection (negative terminal). Alternatively, cut the connection cable (battery bridge). When doing this, make sure that the cutting tool does not contact metallic parts of the vehicle, otherwise there is a risk of short circuit.



Vehicle batteries next to one another (example)

1 Negative terminal
2 Positive terminal
3 Battery bridge



Vehicle batteries one on top of the other (example)

1 Negative terminal
2 Positive terminal
3 Battery bridge

4.4.2 Disconnecting the batteries

First open the battery box in order to disconnect the batteries:

Batteries next to one another

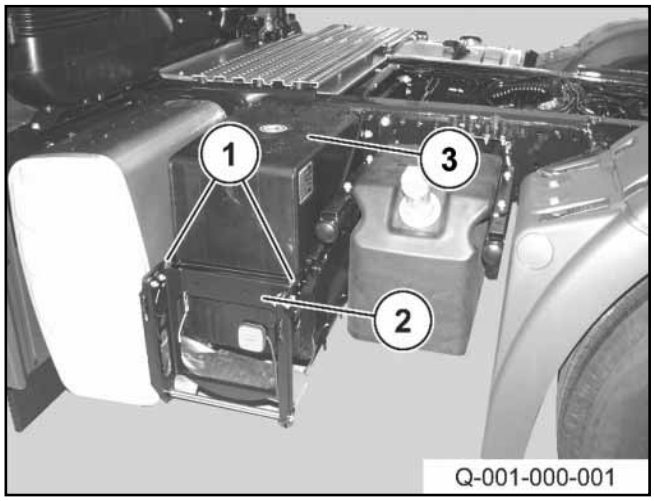
- Open the bayonet caps.
- Remove the cover from the battery box.

Batteries one on top of the other

- Open the locks.
- Fold the frame forwards.
- Push the cover backwards and remove it upwards.
- Unscrew the electrical cable at the earth connection (negative terminal) of the battery and secure to prevent further contacting.

Battery box (batteries next to one another)

1 Bayonet locks



Battery box (batteries one on top of the other)

1 Locks
2 Rack
3 Cover

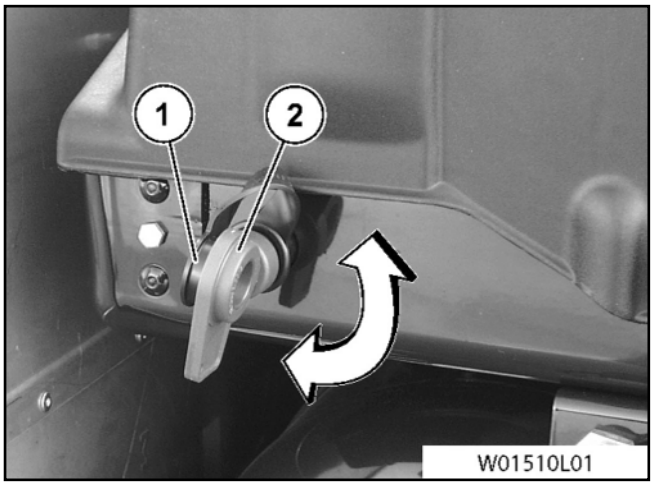
4.4.3 Mechanical battery master switch

The mechanical battery master switch interrupts the connection between the batteries and the electrical systems of the engine.

The mechanical battery master switch is located on the front or under the battery box.

Switch off

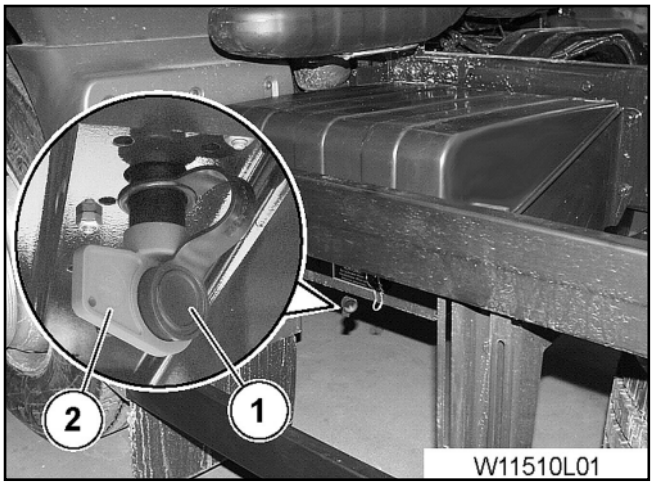
- Switch off the ignition.
- Pull out the ignition key and secure it to prevent the ignition from being switched back on.
- Remove the protective cap 1 from the master switch.
- Push on the lever 2 and turn it anticlockwise up to the stop.
- Pull off the lever 2 and put the protective cap 1 back onto the master switch.



Mechanical battery master switch (example shows TGX)

1 Protective cap

2 Lever



Mechanical battery master switch (example shows TGL/TGM)

1 Protective cap

2 Lever

4.4.3 Electrical battery isolator switch

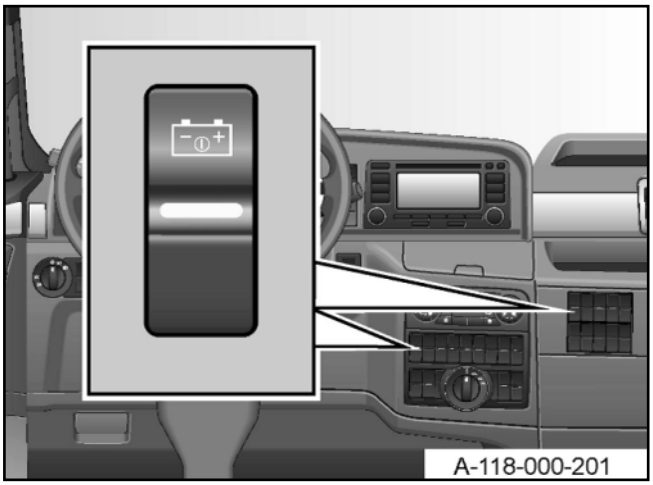
The electrical battery isolator switch interrupts the connection between the batteries and the electrical systems of the engine.

This happens about 35 seconds after the switch is actuated or as soon as the auxiliary heater power off delay is over and the auxiliary heater has switched off.

Switch off

▶ Press the bottom of the switch.

The switch springs back to the neutral position.



Electrical battery isolator switch (example shows TGX)

The mechanical battery master switch and the electrical battery isolator switch only disconnect the electrical systems located on the engine from the batteries. Components in the cab such as interior lighting, door modules and the radio are not disconnected. Therefore, to isolate the entire vehicle from the electrical power supply, it is essential to disconnect the battery.

4.5.1 General

The work steps described below are shown in chronological order.

If the paramedic service (assessment of the situation and first aid) and the fire brigade (technical rescue) work in parallel, this makes it possible significantly to shorten the time required to release the patient.

Several access openings should be created to permit the paramedic service to work in parallel with the fire brigade.

4.5.2 Rescue platform

The rescue platform offers sufficient space and a secure standpoint for working at height. The rescue platform must be set to an appropriate height so as to avoid impairing subsequent rescue work, e.g. opening the doors.

Setting up the rescue platform

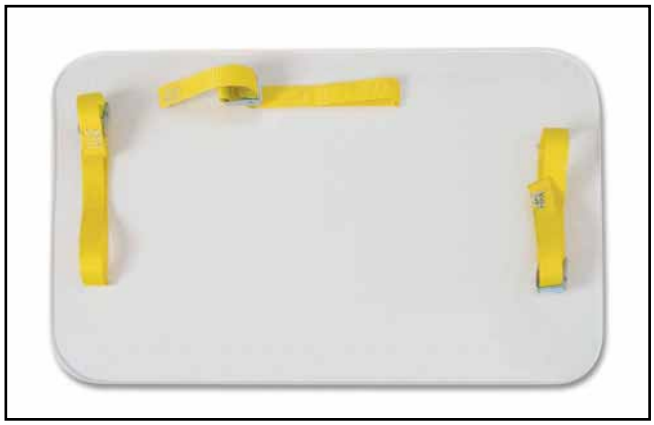
- ▶ Measure the distance from the ground to the bottom edge of the driver's door (not including the trim on the entrance steps).
- ▶ Set up the rescue platform and adjust its height accordingly.

Recovery platform (example)

4.5.3 Vehicle windows

When removing vehicle windows, always take the following precautions:

- Protect people in the vehicle against glass shards with a bright transparent foil (antistatic).
- Use shard protection.
- Using the protective glove, remove the remaining glass.
- Immediately remove glass residues on the floor from the working area (e.g. sweep them under the vehicle), otherwise there will be a danger of slipping.



Protection against glass shards

4.5.4 Windscreen

The windscreen is made of laminated safety glass (LSG) and is glued into the frame.

Laminated safety glass windscreens can be cut open or removed using the glass saw.

- Knock an opening into the windscreen.
- Cut open the windscreen along the frame at the top and down the sides.

Hand saw

Electrical saw

4 Technical rescue

4.5 Access to the vehicle

- Fold the windscreen down.
- Cover the folded-down windscreen with protective blankets.
- Remove the rescue platform.
- Position the scaling ladders and secure them.

If the windscreen is cut out completely, it must be secured to prevent it from falling down. Take account of the fact that truck windscreens are relatively heavy.

Folding the windscreen down

Securing with protective blankets

Setting up scaling ladders

4.5.5 Side windows

The side windows are made from toughened safety glass and are removed using the spring centre punch.

Driver's and co-driver's doors

- Cover the window with adhesive film or adhesive tape over the complete surface if possible, assuming the time needed to do this can be justified with regard to the nature of the injuries involved.
- In the case of windows that are accessible to rescue personnel from the inside (e.g. on the co-driver's side): Here, the glass shard protection can be pressed against the window from the inside.
- Striking the bottom right or left corner of the window with the spring centre punch causes the window to shatter into tiny pieces, which remain stuck to the adhesive foil or adhesive tape.
- Remove the window outwards.
- Using the protective glove, remove residual glass along the window seal.

Masking the windscreen

Removing the windscreen outwards

Using the glass shard protection

- Alternative possibility: Wind or move down the side windows, cover them and shatter them using the spring centre punch.

Alternative: Side window lowered

Rear side window

- The curtain in the driver's cab can be pulled in front of the side window in order to protect the vehicle occupants.
- Use the spring centre punch at the bottom corner on the right or left - the window shatters into tiny pieces.
- Remove the window outwards.
- Using the protective glove, remove the remaining glass.

Use of the protective glove

Use of the protective glove

4.5.6 Cab rear wall

If access is not possible via the front of the vehicle, it is possible to gain access through the cab rear wall.

- Use the hacksaw to cut an opening into the cab rear wall.
- Bend the sawn section down.
- Fold the insulating mat down.
- Use the Halligan bar to pull the interior trim outwards and fold it down.

Before cutting into the cab rear wall, check the interior in particular to discover if the cab is a sleeper cab.

Sawing an opening into the rear wall

Bending the sawn section down

Folding the insulating mat down

4.5.7 Vehicle doors

Before setting up the rescue platform, remove the lower door trim from the entry steps, if present.

- Saw off the door trim along the bottom edge of the door using the electrical hand saw.

The cut edge serves as a guide for the height of the rescue platform, so that the door can be opened or spread apart without hindrance.

Set up the rescue platform and arrange it parallel with the door. The working area should end about a hand's breadth behind the door in this case.

Sawing off the door trim

Cut edge of door trim

Removing trims

In order to expose the door hinges, it is necessary to remove the corresponding trim components.

- Remove the A-pillar trim with the Halligan bar.
- Use the spreader to remove the side parts of the front trim and the air ducts, positioning the spreader from above when doing so.
- Remove the trim components so that the two door hinges are exposed.

Removing the A-pillar trim

Removing the air ducts

Top door hinge

Bottom door hinge

Secure the door to prevent it from dropping down

Because of their heavy weight, the cab doors must be secured with the fire brigade rope to prevent them from dropping down.

- Spread apart the top of the door.
- Attach the fire brigade rope to the door frame.

Spreading apart the top of the door

Spreading apart the top of the door

▶ Secure the door with the fire brigade rope from the opposite side of the vehicle.

Securing the door

Unscrewing door hinges

If the accident situation and the vehicle's condition permit, it is possible to unscrew the hinges.

▶ Select a suitable socket.

▶ Use the a socket wrench, if necessary with an extension, to unscrew and remove four bolts from each hinge at the top and bottom.

▶ Lower the door, which is secured with the fire brigade rope, and remove it to the side.

1 Top door hinge bolts

2 Bottom door hinge bolts

Spreading apart the door

If it is not possible to unscrew the hinges, it will be necessary to spread apart the door using the spreader on the hinge side.

- Position the spreader above the hinge in question, between the A-pillar and the door frame.
- Spread apart the door until the hinge breaks off the door frame.
- Lower the door, which is secured with the fire brigade rope, and remove it to the side.

Alternatively, hinges can be cut through using a powerful shear.

Spreading apart the door

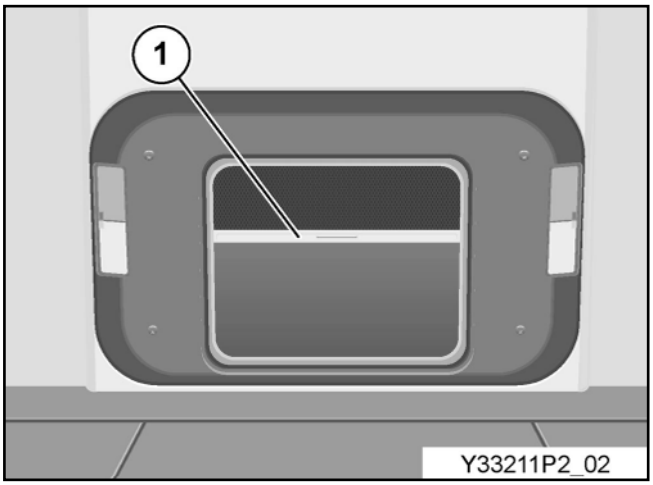
Removing the door

4.5.8 Sliding roof

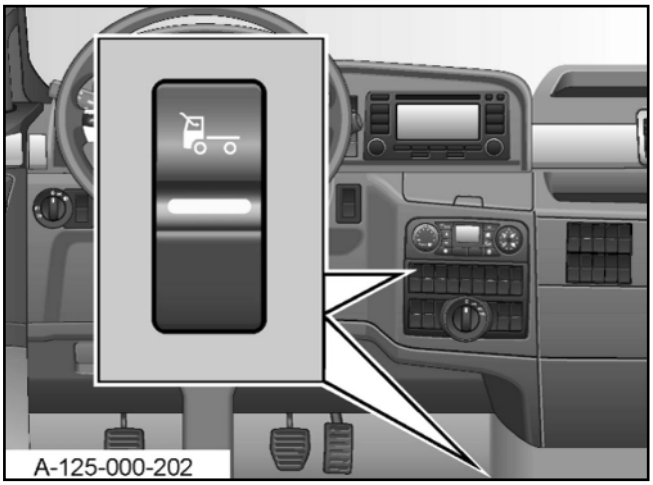
The sliding roof is operated using the sliding roof rocker button on the centre console.

Tilting and opening the roof

- To open the insect protection blind, raise strip 1 and push it back.
- Press the bottom of the rocker switch until the roof has been raised to its end position.
- Release the rocker button.
- Press the rocker button again until the roof has reached the required position.



1 Strip of insect protection blind



Sliding roof rocker button (example shows TGX)

4.5.9 Roof hatch

Opening the roof hatch from the inside

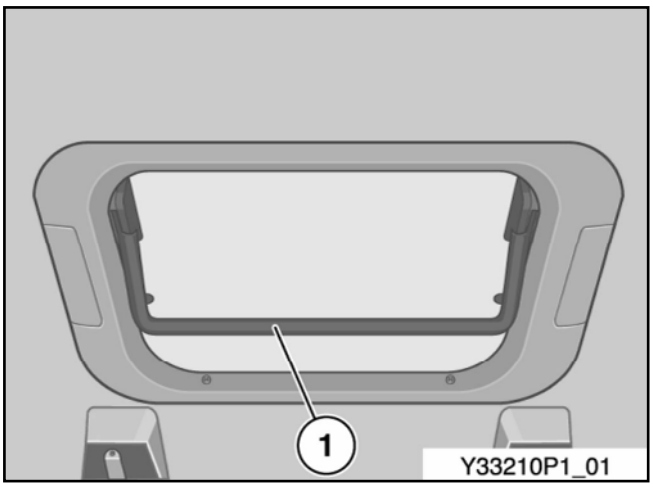
The roof hatch is operated mechanically.

Unlocking

- Swivel the bar 1 on the roof hatch downwards.

Opening

- Push up the hatch.



1 Bar

4 Technical rescue

4.5 Access to the vehicle

Opening the roof hatch from the outside

- Position the scaling ladder and secure it.
- It is essential that personnel pay attention to their own safety when on the roof.
- Open the roof hatch with a Halligan bar and/or spreader.

Danger of falling when working on the cab roof. Comply with the corresponding regulations and take the appropriate measures for personnel protection.

Opening the roof hatch with Halligan bar

Spreading apart the roof hatch

4.6.1 Pushing the forebody forwards

If the vehicle has been deformed to such an extent in the accident that the driver/co-driver is trapped between the instrument panel and seat then the forebody must be pressed forwards accordingly.

Depending on the condition of the vehicle, the rescue cylinder can be used without previously making stress-relieving cuts on the side sill and/or A-pillar in order to save time, in order to establish the necessary opening in order to allow the patient to be released.

Compressing the side sill

4.6.2 Sill cut

In order to allow the necessary cuts to be made in the side sill, it is first necessary to compress the sill using the spreader.

- Position the spreader on the side sill and push it as far as possible towards the middle of the vehicle.
- Compress the side sill.
- Repeat the procedure about 20 cm further on.
- Mark the necessary cuts on the sill.

Compressing the side sill

Marking the cuts on the sill

- Make a V-shaped cut in the side sill:
  Use the rescue shear to make the cut at an angle from the rear and then at an angle from the front. The angle of the V-cut must be selected so that the rescue shear can be guided into the cut profile.
- Guide the rescue shear into the cut profile and continue the cut into the floor of the cab, towards the interior. Only continue the cut as far as possible based on the position of the patient.

V-cut: Cut in at an angle from the rear

V-cut: Cut in at an angle from the front

Cut into the floor of the cab

4.6.3 A-pillar cut

- Mark the cut at an angle of about 45° in the upper third of the A-pillar.
- Cut through the A-pillar using the rescue shear at a rising upwards angle, from the inside to the outside.

The angled cut prevents the cut surfaces tilting forwards when the A-pillar is compressed. In addition, the A-pillar cannot spring back when the rescue cylinder is subsequently removed.

Marking of the cut on the A-pillar

Cut on A-pillar

Cut on A-pillar

- Mark additional cuts, e.g. on the handles.
- Cut off the handle on the A and B-pillar, at the top and bottom in each case, using the rescue shear.

It is necessary to cut off the handles in order to be able to attach the rescue cylinder on the A and B-pillars without hindrance.

Cutting off the handle

- Cover the cut edges and surfaces with pillar protection or protective blankets.

Pillar protection/protective blanket

4.6.4 Use of a rescue cylinder

- Remove the door seal around the circumference in order to create suitable contact surfaces for the rescue cylinder.
- Measure the distance between the A and B-pillars, and select a suitable rescue cylinder.
- Position the rescue cylinder between the A and B-pillars, about at the height of the door lock. If the B-pillar does not offer a sufficiently secure contact surface due to deformation in the accident, then use a sill support to allow the rescue cylinder to be positioned. When extending the rescue cylinder, make sure that the sill support does not slip or swivel away to the side.
- Extend the rescue cylinder until the forebody has been pushed forwards as far as necessary.

Rescue cylinder with sill support

Rescue cylinder without sill support

4 Technical rescue

4.6 Releasing someone who is trapped

In order to create the necessary space to release the patient, it is necessary to remove the horizontally inserted rescue cylinder again.

To release the strain, a second rescue cylinder must thus be inserted vertically between the cockpit crossmember and the roof frame at the level of the steering wheel.

- Position the rescue cylinder at the bottom through the steering wheel on the instrument cluster.
- Position the rescue cylinder at the top on the roof frame.
- Extend the rescue cylinder until the necessary height is reached.
- Remove the horizontal rescue cylinder.

Rescue cylinder windscreen

4.6.5 Spine board

Once all necessary medical measures have been taken, the patient is rescued from the vehicle using the spine board (rescue board). The procedure and timing are determined by the emergency doctor/paramedic service.

- Fold the railings of the working platform down or remove them (depending on the model).
- Push the spine board in into the vehicle at the height of the seat base.
- Lift the patient onto the spine board and secure him/her.
- Pull the spine board out of the vehicle and place it onto the working platform.
- Transport the patient away for further medical attention.

Pushing the spine board into the vehicle

Transporting away

4.7.1 Occupant restraint systems

Seat belt

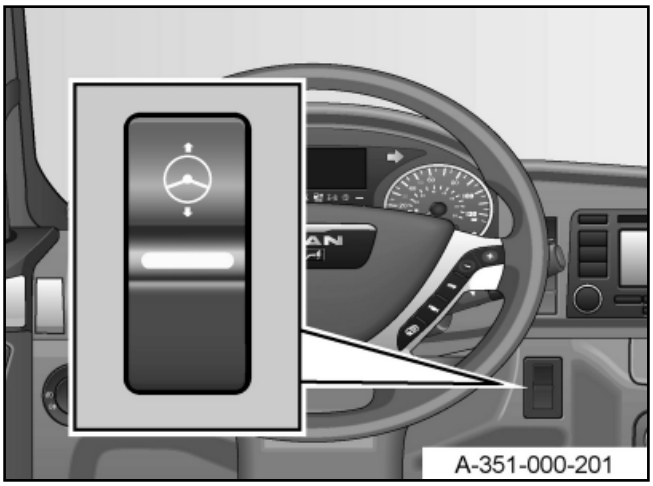
All series are equipped with 3-point seat belts for the driver and co-driver.

4.7.2 Adjusting the steering wheel

TGX and TGS series

There must be sufficient reservoir pressure in the compressed air system in order to adjust the steering wheel.

- ▶ Press the top of the rocker button and hold it.
- ▶ Adjust the height and reach of the steering wheel.
- ▶ Release the rocker button.
  The steering wheel is locked after approx. 5 seconds.



Rocker button for adjust the steering wheel

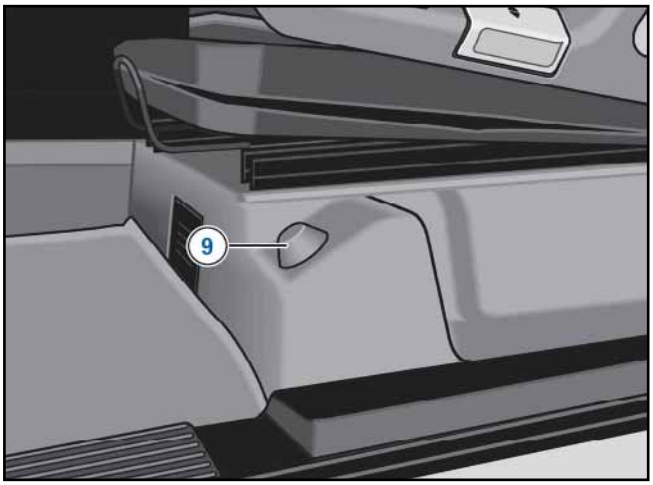
4 Technical rescue

4.7 Cab

Series TGA, TGL and TGM

There must be sufficient reservoir pressure in the compressed air system in order to adjust the steering wheel.

- ▶ Push and hold pushbutton 9 on the driver's seat console.
- ▶ Adjust the height and reach of the steering wheel.
- ▶ Release pushbutton 9.
  The steering wheel is locked.



9 Pushbutton

4.7.3 Seats

Three seat variants are available for all series. The following examples describe the maximum equipment in each case.

Static seat, Grammer

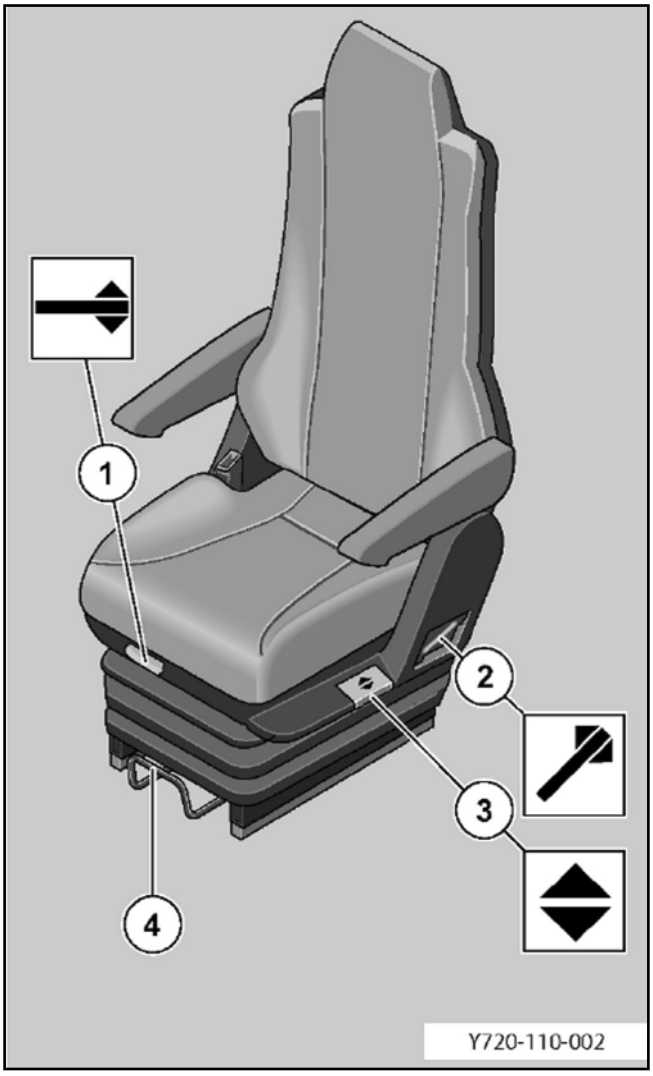
Controls

1 Setting the seat surface angle

2 Setting the backrest angle

3 Setting the seat surface height

4 Setting the fore/aft position



4 Technical rescue

4.7 Cab

Air-sprung comfort seat, Grammer

Controls

1 Setting the seat surface angle

2 Setting armrests

3 Setting the backrest angle

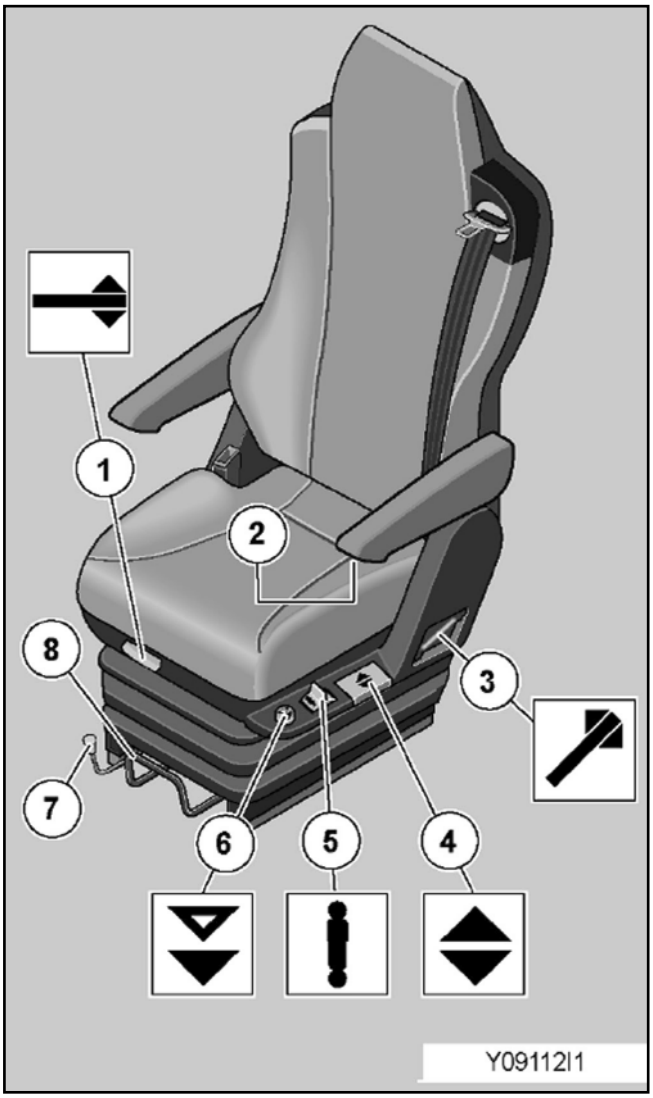
4 Setting the seat surface height

5 Setting the vertical damper (soft/hard)

6 Entry and exit aid (quick-lowering facility)

7 Setting the reclined position

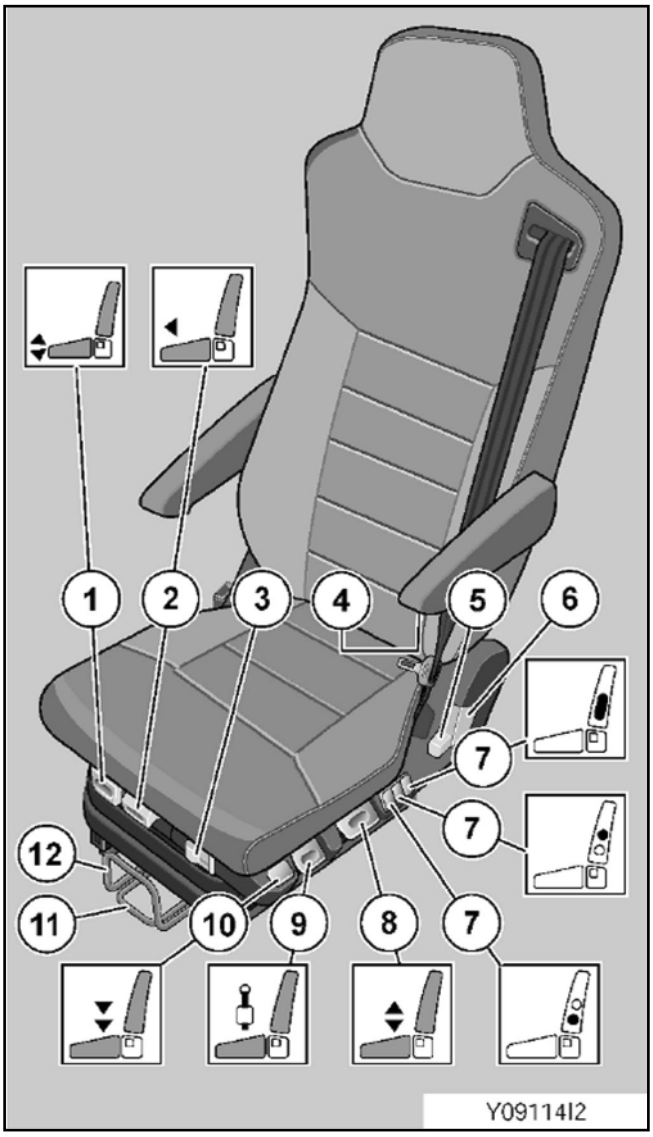
8 Setting the fore/aft position



Air-sprung comfort and luxury seat, Isringhausen

Controls

1 Setting the seat surface angle
2 Setting the depth of the seat cushion
3 Setting the horizontal cushioning
4 Setting armrests
5 Setting the angle of the top part of the backrest
6 Setting the backrest angle
7 Setting the lumbar support and lateral support
8 Setting the seat surface height
9 Setting the vertical damper (soft/hard)
10 Entry and exit aid (quick-lowering facility)
11 Setting the reclined position
12 Setting the fore/aft position



4 Technical rescue

4.7 Cab

Example of the maximum adjustment travels of the steering wheel and driver's seat (example shows TGX)

a Rake/reach of steering wheel in relation to the driver

b Distance from seat to instrument panel

c Seat height

Settings:

– Steering wheel is set fully back or down in rake and reach
– Seat is fully forward in fore/aft direction
– Seat surface fully up in height

a Rake/reach of steering wheel in relation to the driver

b Distance from seat to instrument panel

c Seat height

Settings:

– Steering wheel is set fully forward or up in rake and reach
– Seat is fully to the rear in fore/aft direction
– Seat surface fully down in height

Co-driver's seat bench and centre seat (TGL/TGM)

The position of the individual seats on the co-driver's seat bench for 2 people and the co-driver's centre seat is not adjustable.

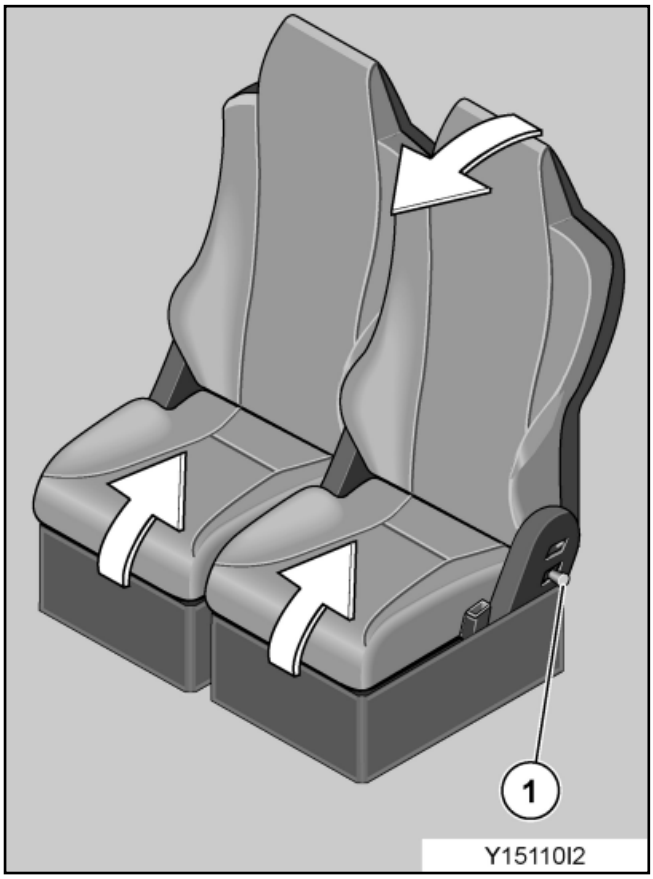
The backrest of the centre seat on the seat bench and the individual centre seat can be folded forwards to provide a writing surface, bottle holder and to allow access to the bunks.

Folding down the backrest

- ▶ Push the lever 1 backwards.
- ▶ Fold the backrest forwards until you hear it clip in.

Folding the seats up

- ▶ Raise the seats at the front.



1 Lever

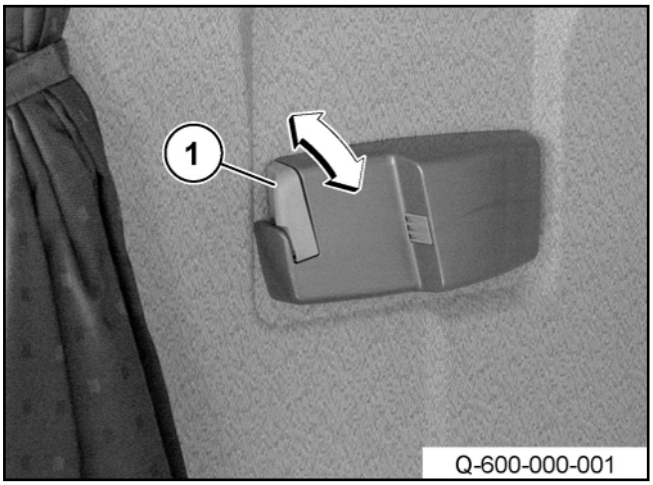
4.7.4 Bunks

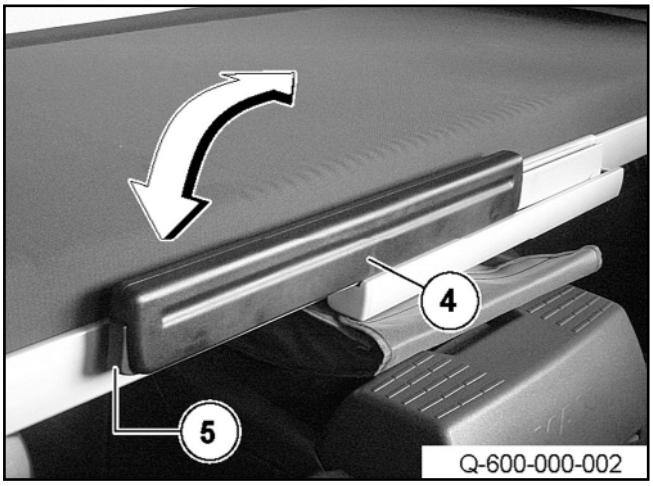
Models with a long cab are equipped with one or two bunks.

Bottom bunk

Folding up

- Move the lever 1 upwards.
- Push button 5 and, at the same time, swivel safety rail 4 down.
- Raise the bunk until the stop is reached.
- Move the lever 1 downwards.
- Release the bunk.





1 Lever

4 Safety rail

5 Button

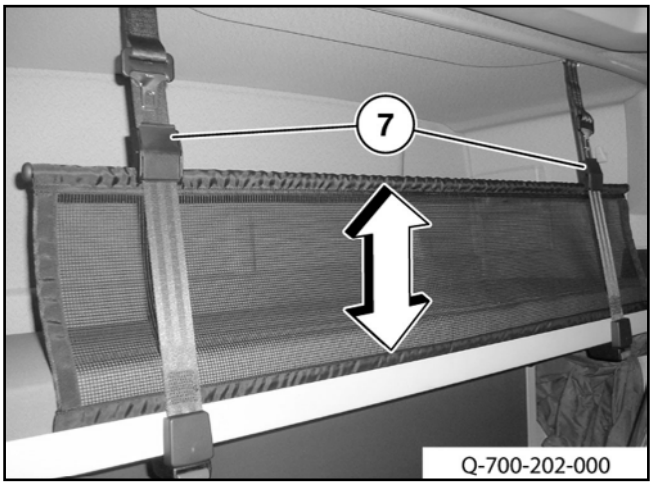
Top bunk

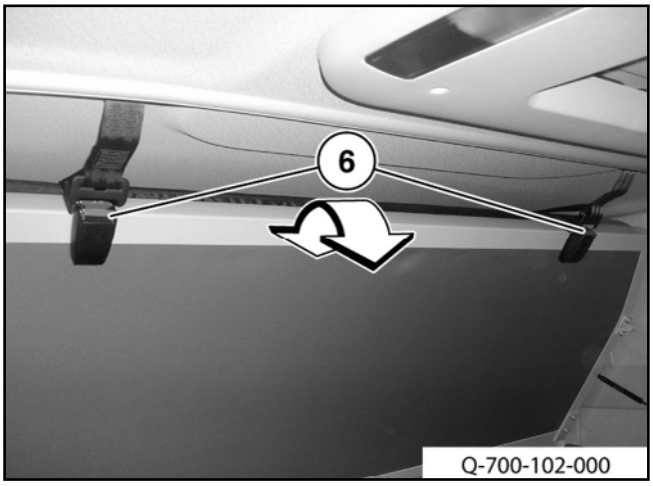
Folding up

- Press the top of button 7.
- Pull the restraint net downwards.
- Swivel the bunk upwards.

On both sides

- Press the buckle latch into the belt catch 6 until you hear it engage.



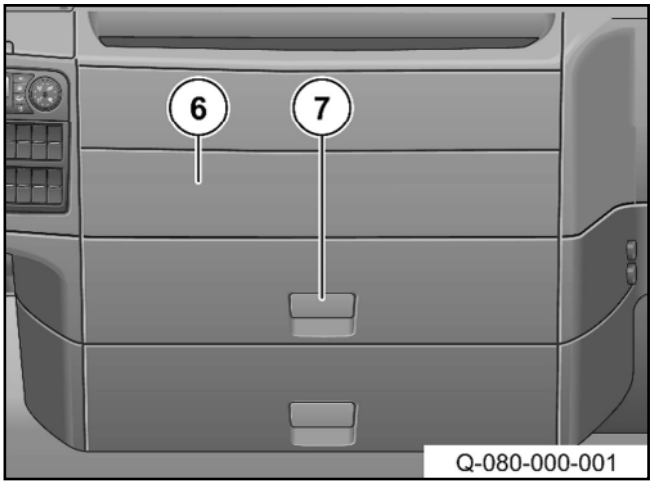


6 Lock

7 Button

4.7.5 Luggage racks

The ashtray compartment and one or two drawers are located in the centre console

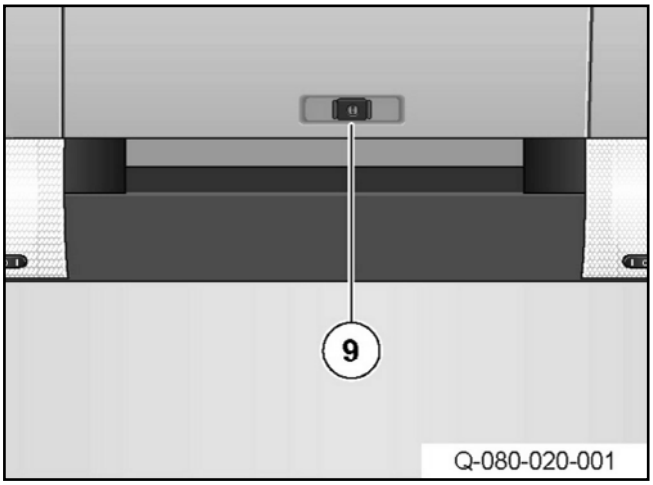


6 Ashtray compartment

7 Drawer

All series

High-roof cabs are equipped with storage compartments above the windscreen



9 Storage compartment

4 Technical rescue

4.7 Cab

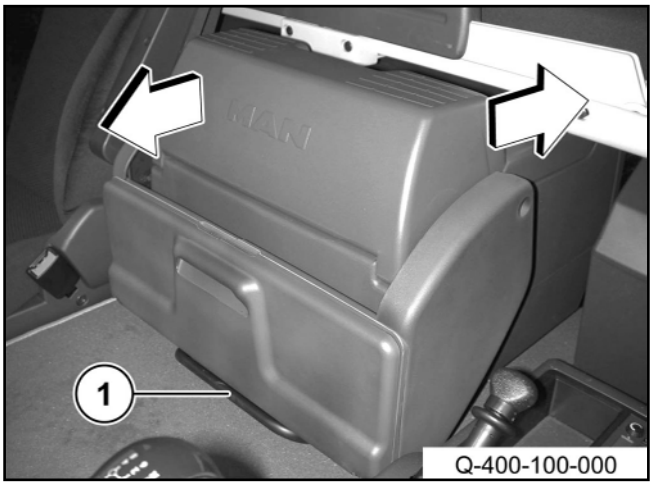
Refrigerator compartment

The refrigerator compartment is located between the seats.

It is equipped with a battery rundown protector. This switches the refrigerator compartment off automatically to protect the battery before the battery voltage drops too low to start the vehicle.

Moving the refrigerator compartment

- ▶ Pull the adjusting bar 1 upwards and push the refrigerator compartment forwards or backwards.
- ▶ Make sure you can hear the refrigerator compartment clip in.



1 Adjusting bar

4.7.5 Storage lockers

Long cabs are equipped with one storage locker each on the right and left.

Opening the flap on the outside

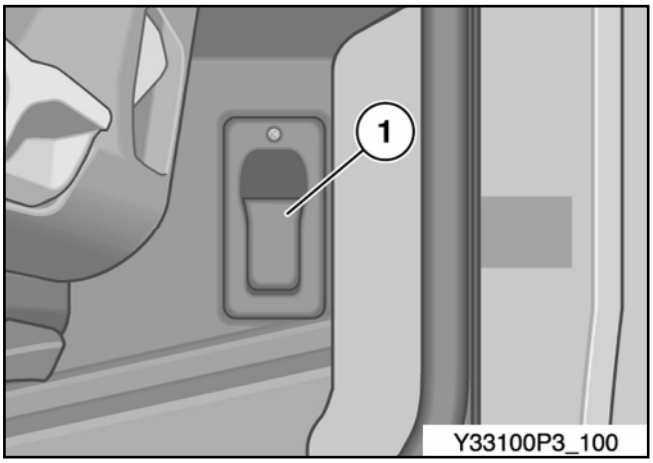
The release handle 1 for the storage locker flap 2 is located behind the driver's or co-driver's seat.

- Pull the release handle 1 – the storage locker flap 2 springs open.
- Push the lever under the storage locker flap 2 upwards with your finger in the direction of the arrow 3.
- Swivel the storage locker flap 2 upwards.

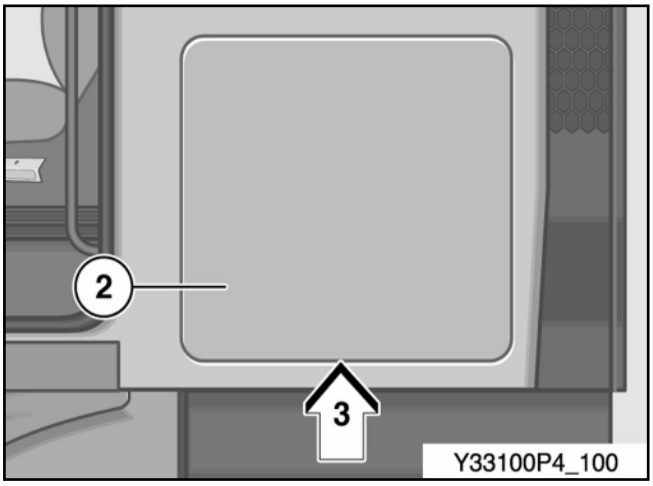
The storage locker on the driver's side is also accessible from inside the cab.

Opening the flap inward

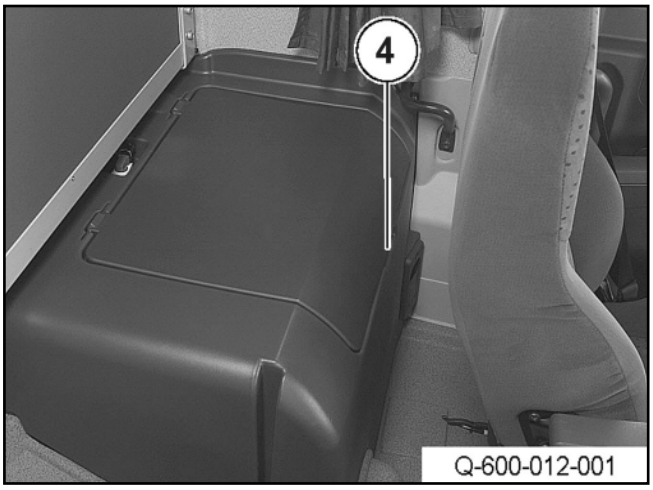
- Push the driver's seat forwards.
- Fold the bottom bunk down.
- Swivel the cover 4 upwards.



1 Release handle



2 Storage locker flap



4 Cover

4.8.1 Unhitching the trailer

Depending on the accident situation, it may be necessary to unhitch the trailer or semitrailer from the tractor unit in order to obtain unobstructed access to the rear of the cab.

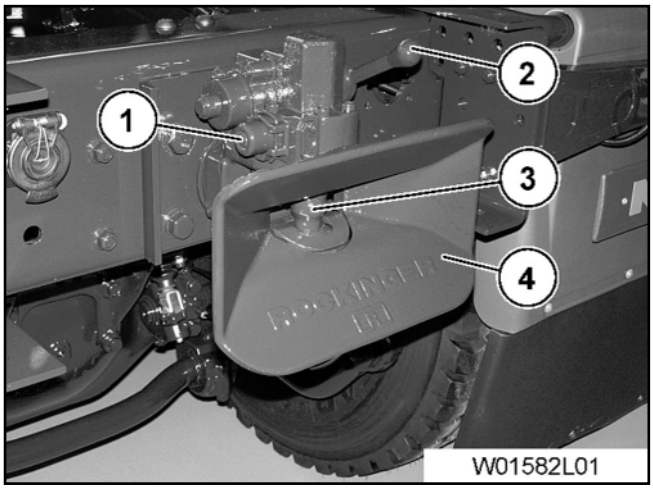
Unhitching the trailer

Trailer couplings with check pin – Rockinger and Ringfeder

The coupling can only be opened when the coupling jaw is in the middle position or the side end positions.

- Apply the parking brake and chock the rear wheels of the trailer to prevent it from rolling away.
- Fix the trailer drawbar.
- Remove the cable connectors for the trailer brakes, lighting and power supply from the sockets.
- First disconnect the reservoir line coupling head (red).
- Disconnect the brake line coupling head (yellow).
- Push the hand lever 2 upwards until it engages.
- Do not stand in the area between the tractor and trailer.
- Carefully drive the tractor vehicle forwards or pull the trailer backwards until the drawbar eye has come out of the trailer coupling.

Moving the drawbar eye out of the coupling jaw 4 causes the coupling pin 3 to be raised and unlocked. It falls down into the drawbar eye and closes the trailer coupling.



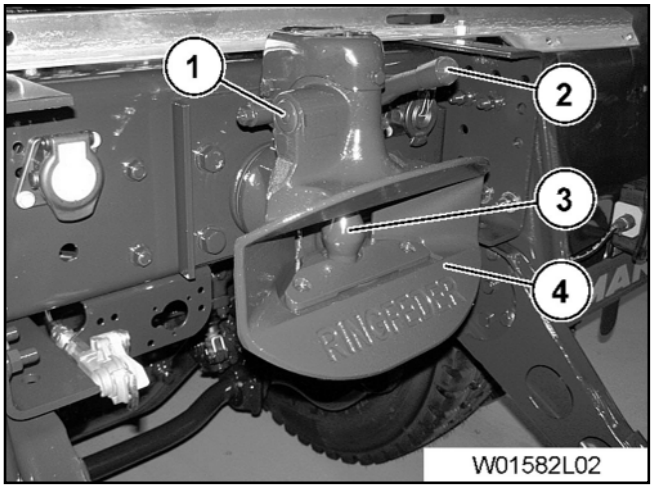
Controls of Rockinger trailer coupling models described here: RO 42, RO 400, RO 263, RO 500, RO 430

1 Check pin

2 Hand lever

3 Coupling pin

4 Coupling jaw



Controls of Ringfeder trailer coupling models described here: 4040, 4045, 5050, 5090

1 Check pin

2 Hand lever

3 Coupling pin

4 Coupling jaw

4 Technical rescue

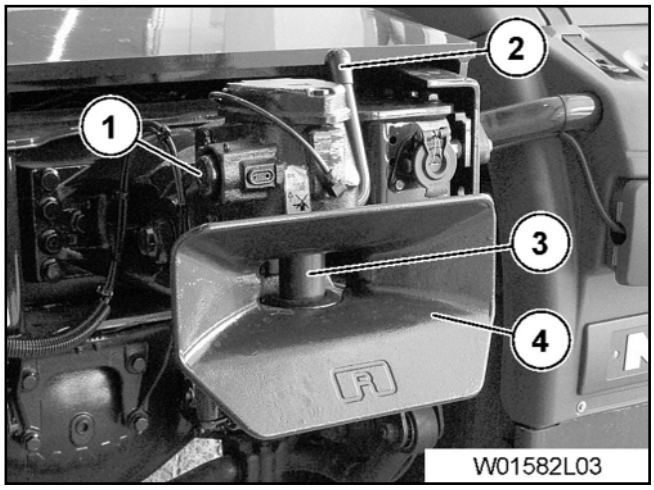
4.8 Trailer / semitrailer

Trailer coupling with check pin – Rockinger RO 56 E

The coupling can only be opened when the coupling jaw is in the middle position or the side end positions.

- Apply the parking brake and chock the rear wheels of the trailer to prevent it from rolling away.
- Fix the trailer drawbar.
- Remove the cable connectors for the trailer brakes, lighting and power supply from the sockets.
- First disconnect the reservoir line coupling head (red).
- Disconnect the brake line coupling head (yellow).
- Pull the hand lever 2 downwards until it engages.
- Do not stand in the area between the tractor and trailer.
- Carefully drive the tractor vehicle forwards or pull the trailer backwards until the drawbar eye has come out of the trailer coupling.

Moving the drawbar eye out of the coupling jaw 4 causes the coupling pin 3 to be raised and unlocked. It falls down into the drawbar eye and closes the trailer coupling.



Controls

1 Check pin

2 Hand lever

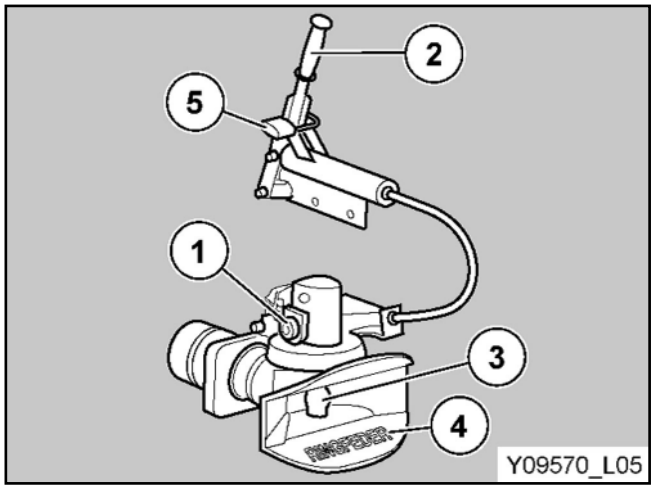
3 Coupling pin

4 Coupling jaw

Low hitch system – Ringfeder 5055AW

- Apply the parking brake and chock the rear wheels of the trailer to prevent it from rolling away.
- Fix the trailer drawbar.
- Remove the cable connectors for the trailer brakes, lighting and power supply from the sockets.
- First disconnect the reservoir line coupling head (red).
- Disconnect the brake line coupling head (yellow).
- Remove the safety lock 5.
- Push the hand lever 2 outwards past the pressure point until it engages.
- Do not stand in the area between the tractor and trailer.
- Carefully drive the tractor vehicle forwards or pull the trailer backwards until the drawbar eye has come out of the trailer coupling.

Moving the drawbar eye out of the coupling jaw 4 causes the coupling pin 3 to be raised and unlocked. It falls down into the drawbar eye and closes the trailer coupling.



Controls

1 Check pin

2 Hand lever

3 Coupling pin

4 Coupling jaw

5 Safety lock

4.8.2 Unhitching the semitrailer

Before unhitching, it is necessary to secure the semitrailer using chocks and by applying the parking brake to prevent it from rolling away.

As a rule, there are two chocks located in a holder on the rear left of the semitrailer frame.

▶ Remove the chocks from the holder.

Chocks on the semitrailer

▶ Place chocks against the rear wheel of the last axle.

Securing with chocks

Semitrailer parking brake

The semitrailer parking brake is located at the rear left of the semitrailer frame, behind the last axle.

▶ Pull out the red knob on the parking brake.

Applying the parking brake

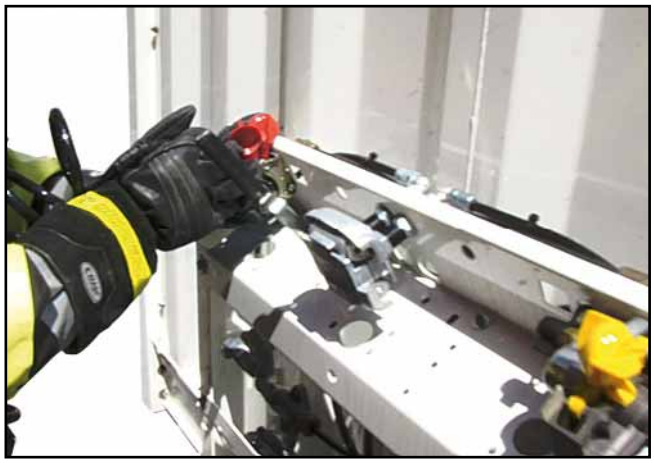
4 Technical rescue

4.8 Trailer / semitrailer

Disconnecting supply lines

After the semitrailer has been secured, disconnect the supply line between the semitrailer and tractor unit

- Remove the cable connectors for the trailer brakes, lighting and power supply from the sockets.
- First disconnect the reservoir line coupling head (red).
- Disconnect the brake line coupling head (yellow).



Disconnecting supply lines

Lowering support legs

The crank is located on the right support leg of the semitrailer.

- Take the crank out of the holder and swivel it outwards.
- Turn the crank clockwise and lower the support legs to their limit position.
- Fold in the crank.

As soon as the support legs have reached the ground, it is possible to push the crank lightly in the direction of the axis of rotation in order to change the transmission ratio. This reduces the amount of force to be applied.

Lowering support legs

Unlocking the fifth wheel coupling

The release mechanism is located on the right of the fifth wheel coupling

- Push the release mechanism forwards.
- Pull the release mechanism outwards as far as the stop.
- Carefully drive the tractor vehicle forwards or pull the semitrailer backwards.

Unlocking the fifth wheel coupling

5 Model overview

5.1 Allocation and features

5.1.1 Series

The MAN Trucknology® range of vehicles comprises the following series:

TGL (7.5 - 12 t) as chassis and tipper

TGM (12 - 26 t) as chassis and tipper

TGS (18 - 41 t) as semitrailer tractor, chassis and tipper

TGX (18 - 41 t) as semitrailer tractor and chassis

Example of TGL (tipper)

Example of TGM (chassis)

Example of TGS (chassis)

Example of TGX (semitrailer tractor)

5 Model overview

5.1 Allocation and features

5.1.2 Axle configuration/wheel formula

	Series								
	TGL 7.5 - 12 t		TGM 12 - 26 t		TGS 18 - 41 t			TGX 18 - 41 t	
R	Chassis	Tipper	Chassis	Tipper	Semitrailer tractor	Chassis	Tipper	Semitrailer tractor	Chassis
4x2	☑	☑	☑	☑	☑	☑	☑	☑	☑
4x4			☑	☑	☑	☑	☑		
6x2*)			☑		☑	☑		☑	☑
6x2**)					☑	☑		☑	
6x4			☑	☑	☑	☑	☑	☑	☑
6x4*)						☑	☑		
6x6					☑	☑	☑		
8x2*)						☑			
8x4						☑	☑		
8x4*) 8x4**)						☑		☑	☑
8x6 8x8						☑	☑		

*) With trailing axle

**) With leading axle

R = Wheel formula (number of wheels x number of driven wheels)

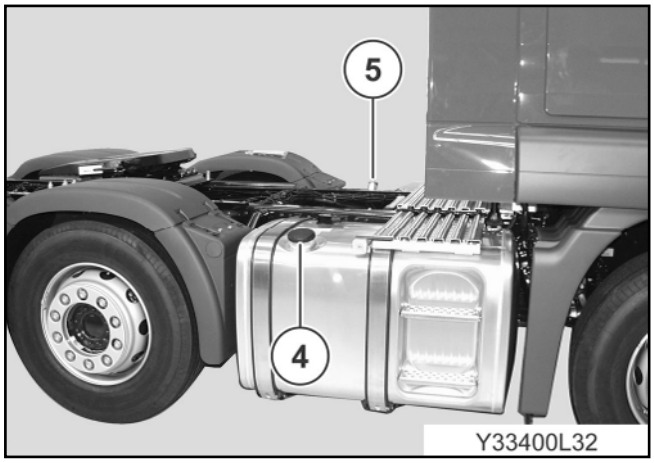
5 Model overview

5.1 Allocation and features

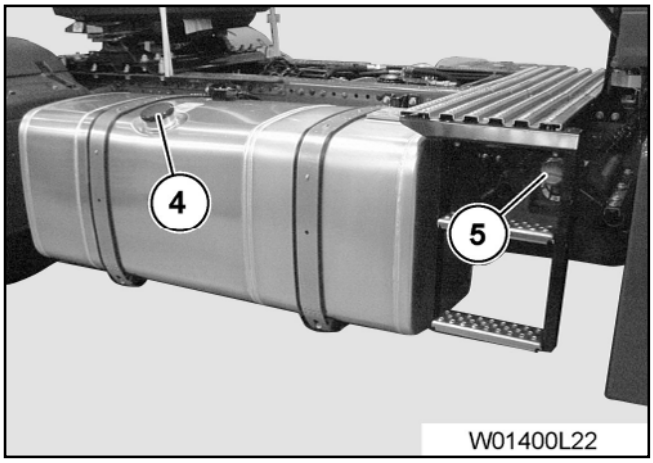
5.1.3 Tank system

	TGL	TGM	TGS	TGX
Diesel	100 to 200 litres		200 to 910 litres	
Reducing agent (AdBlue®)	10 litres	20 litres	24 to 100 litres	
Hydraulic oil			150 to 200 litres	

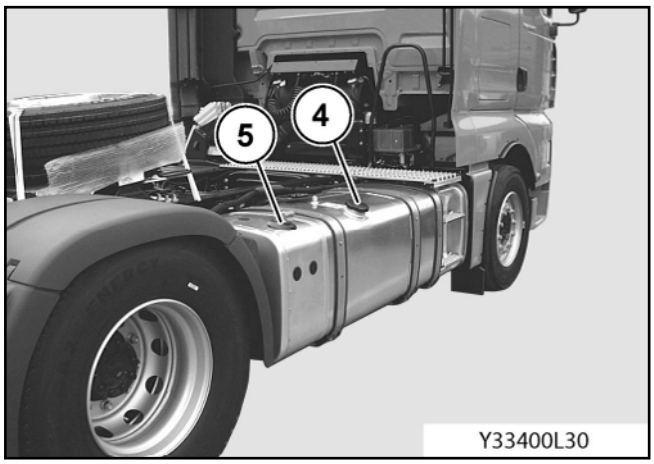
Examples of arrangement/configuration of the tanks



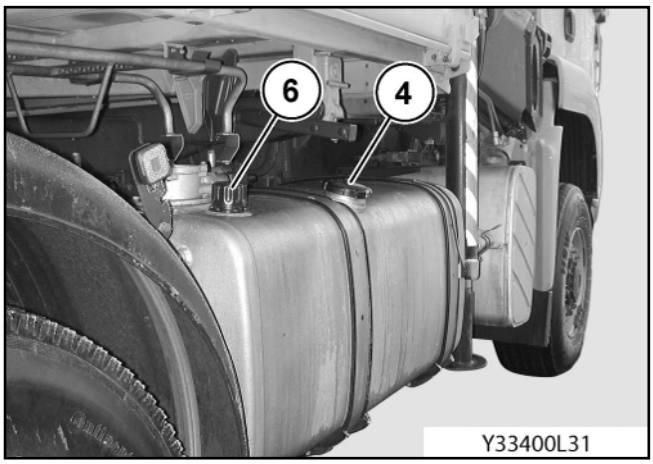
Fuel tank right/AdBlue® tank left



Fuel tank and AdBlue® tank right



Combination tank for fuel and AdBlue®



Combination tank for fuel and hydraulic oil

4 Filler pipe for fuel

5 Filler pipe for reducing agent for vehicle with AdBlue®

6 Filler pipe for hydraulic oil

5 Model overview

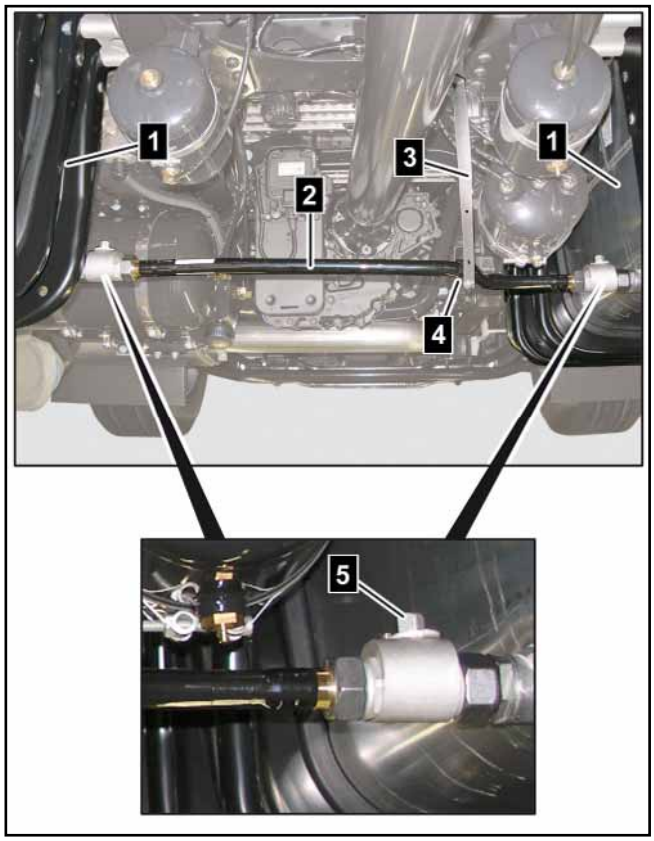
5.1 Allocation and features

Double tank system

In the MAN double tank system, both fuel tanks are connected together by a connecting line at the level of the bottom edge of the tank.

A threaded connection is welded into both tanks. A threaded connection forms the connection to the stopcock, which is intended to prevent all the fuel from draining out if the connecting line is damaged or broken off.

These stopcocks can also be operated manually and used as a shut-off device.



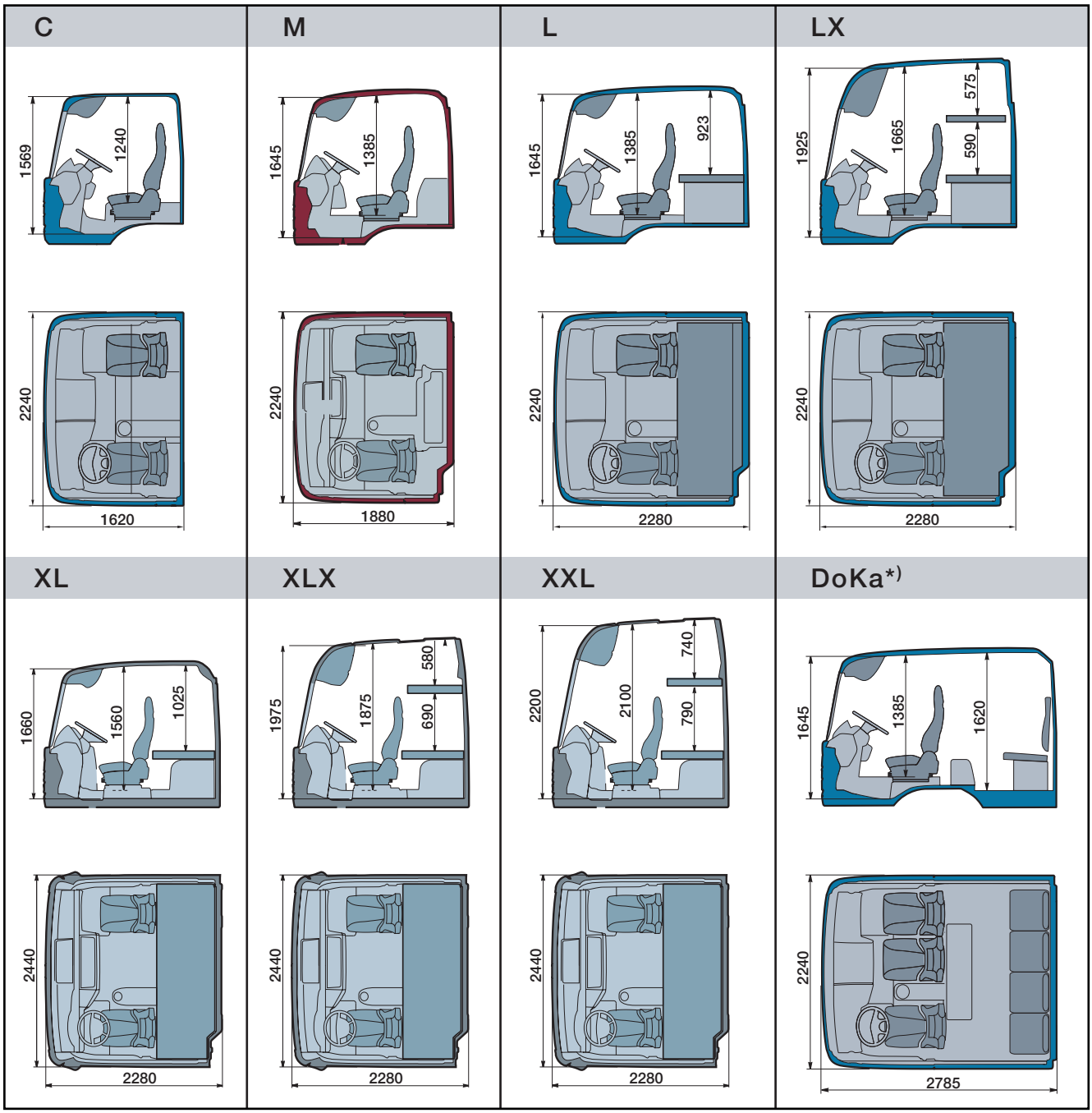
Double tank system with stopcock (schematic)

1 Draining the fuel
2 Connecting line
3 Bracket
4 Clamp
5 Stopcock

5 Model overview

5.1 Allocation and features

5.1.4 Overview of cabs



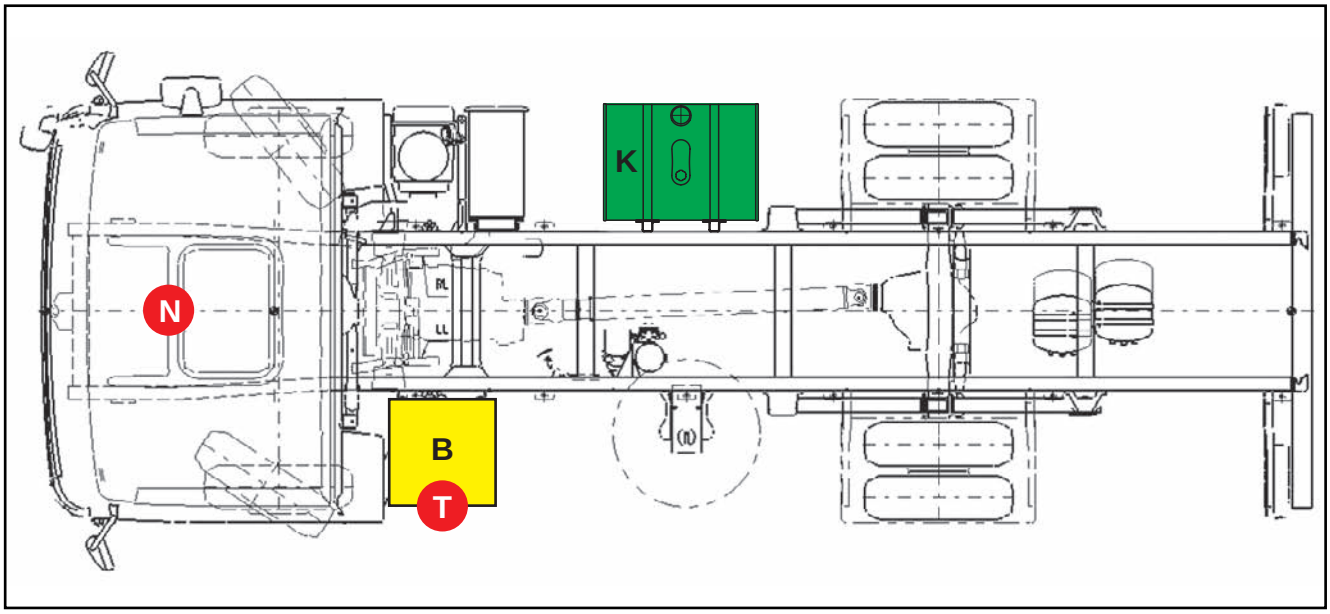
Dimensions in mm

*) Double cab

5 Model overview

5.2 Layout pictures

5.2.1 TGL Euro 3-5 chassis

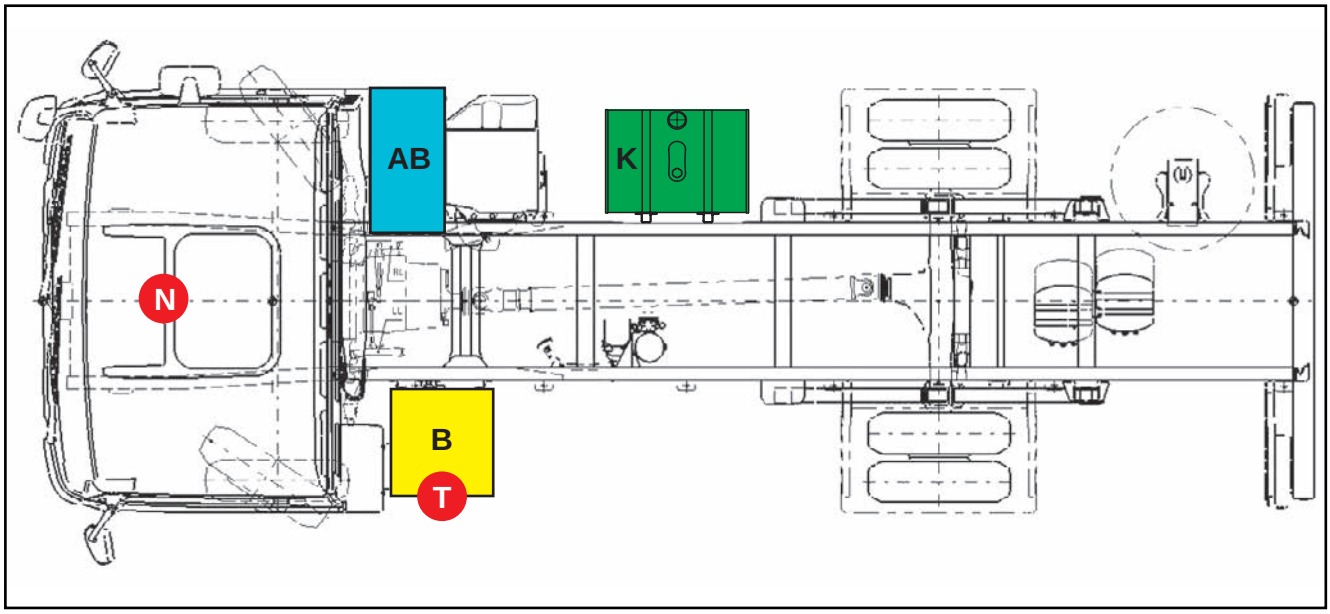


B Battery
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

5 Model overview

5.2 Layout pictures

5.2.2 TGL Euro 6 chassis

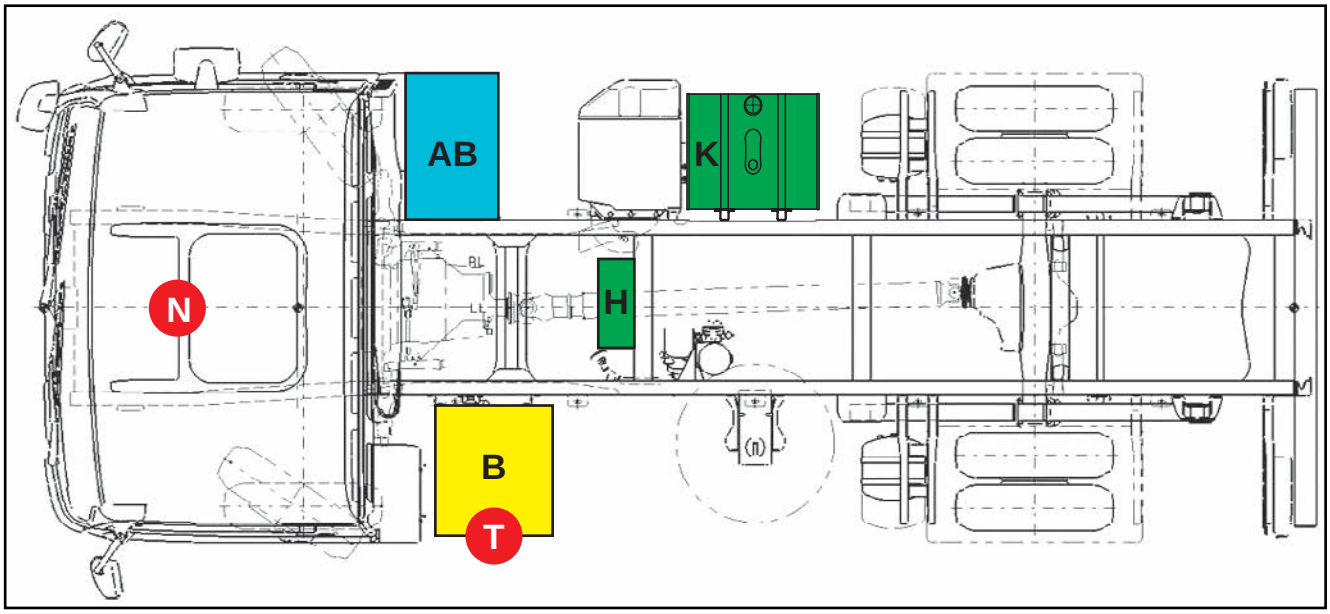


AB AdBlue® tank
B Battery
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

5 Model overview

5.2 Layout pictures

5.2.3 TGL Euro 6 tipper

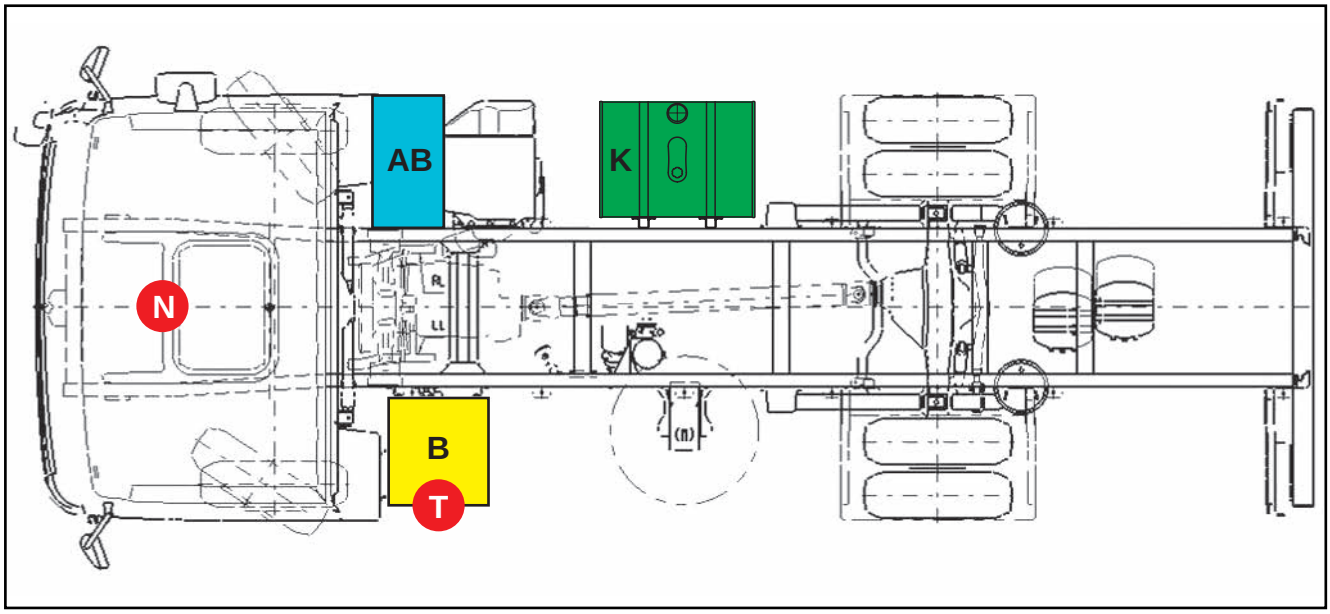


AB AdBlue® tank
B Battery
H Hydraulic oil tank
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

5 Model overview

5.2 Layout pictures

5.2.4 TGM Euro 6 chassis

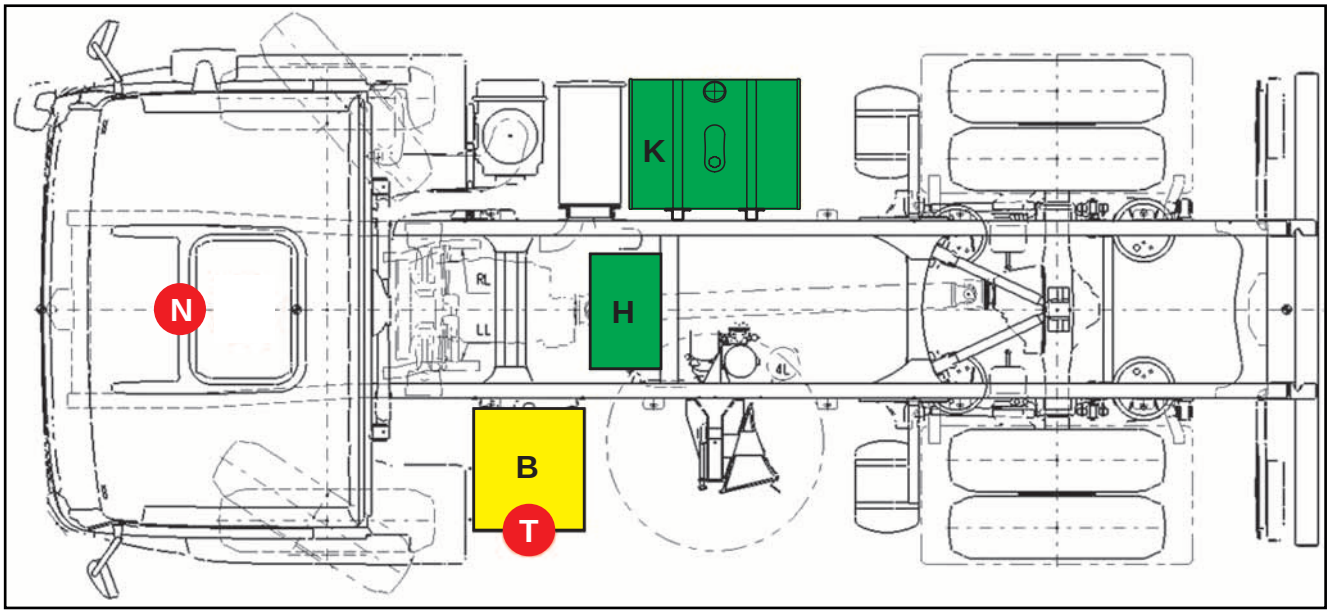


AB AdBlue® tank
B Battery
H Hydraulic oil tank
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

5 Model overview

5.2 Layout pictures

5.2.5 TGM Euro 3-5 tipper

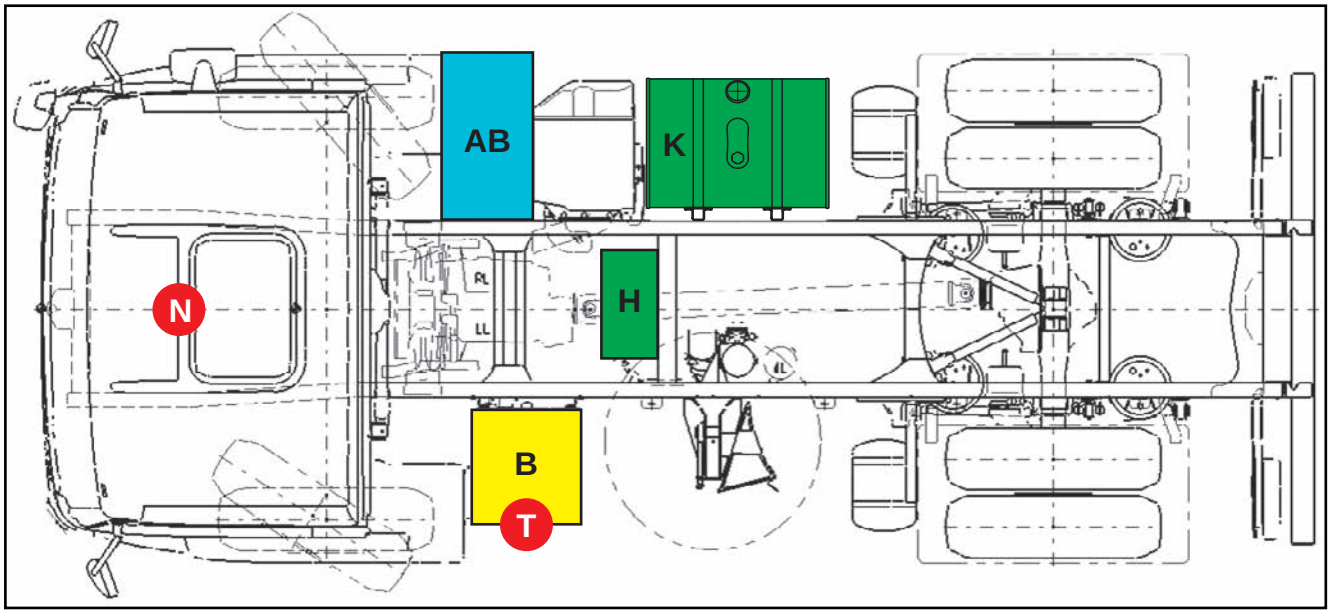


B Battery
H Hydraulic oil tank
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

5 Model overview

5.2 Layout pictures

5.2.6 TGM Euro 6 tipper

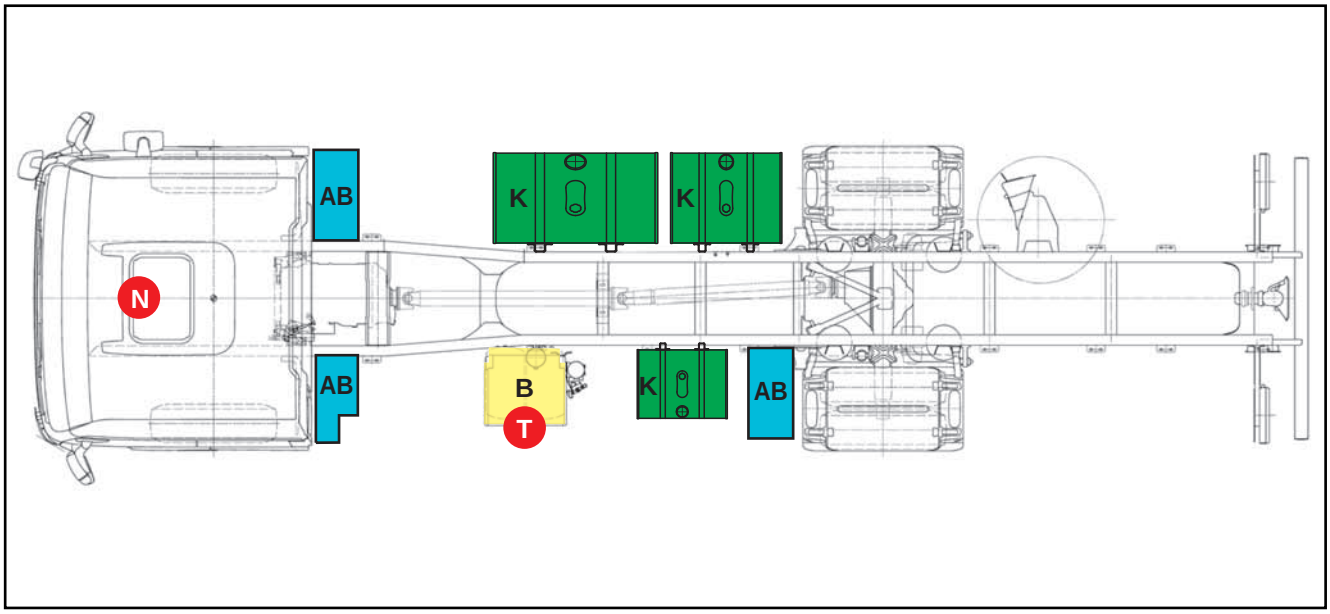


AB AdBlue® tank
B Battery
H Hydraulic oil tank
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

5 Model overview

5.2 Layout pictures

5.2.7 TGS / TGX chassis 2-axle vehicle

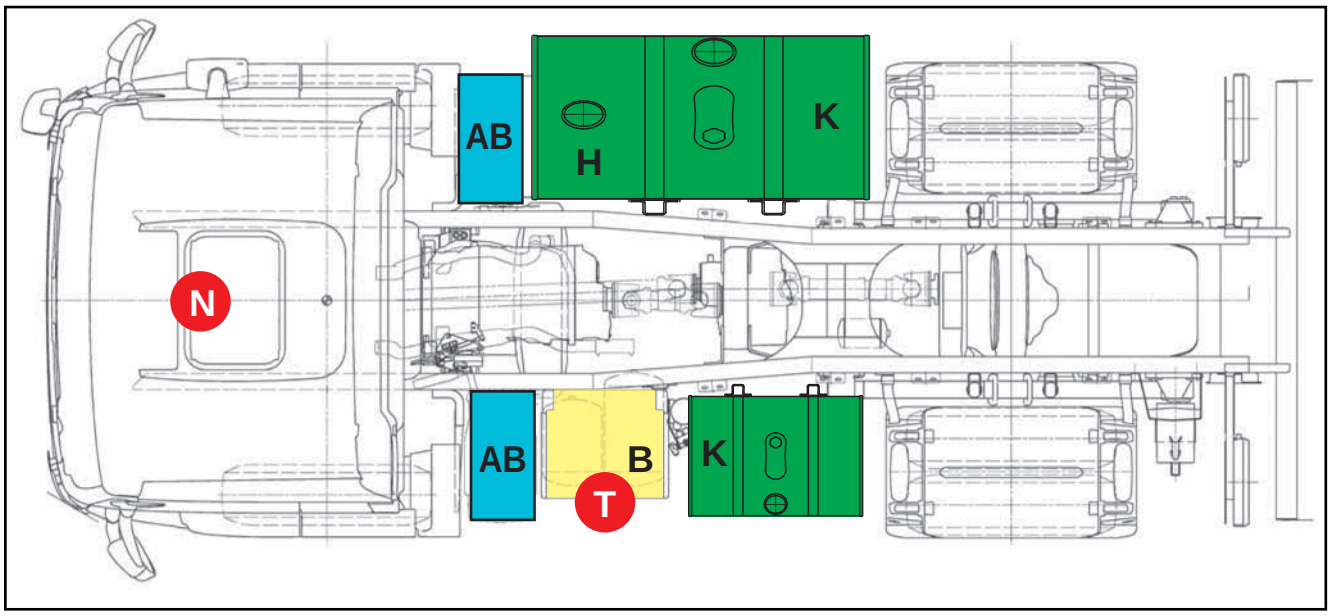


AB AdBlue® tank
B Battery
H Hydraulic oil tank
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

5 Model overview

5.2 Layout pictures

5.2.8 TGS / TGX semitrailer tractor 2-axle vehicle

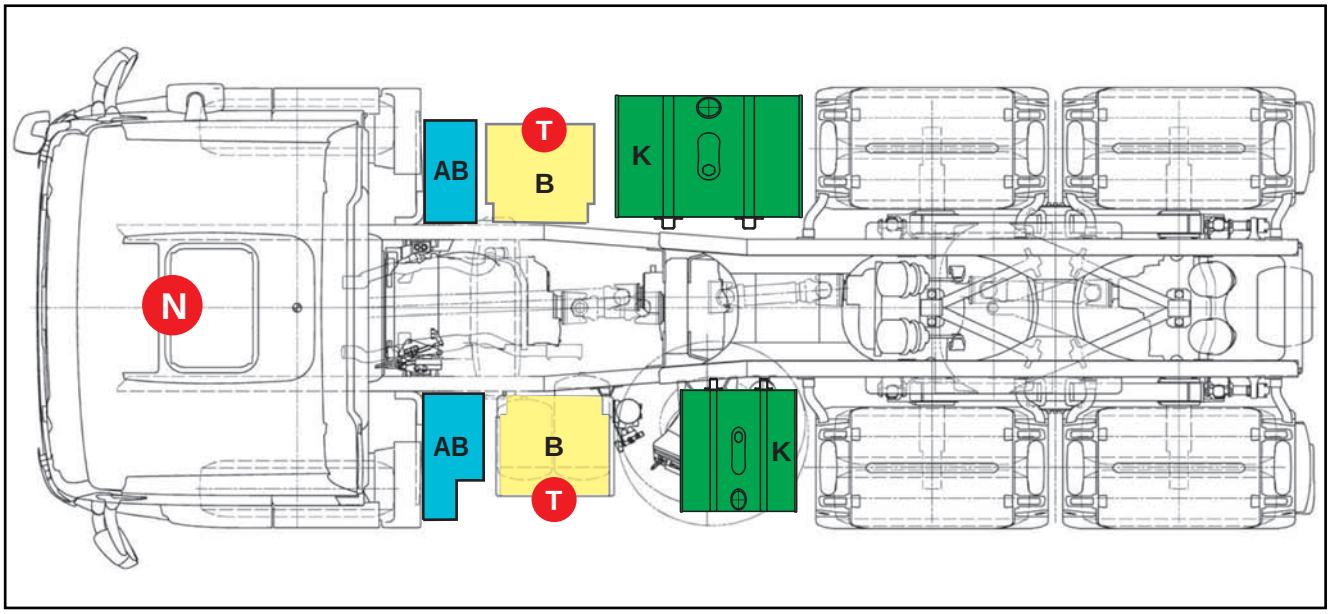


AB AdBlue® tank
B Battery
H Hydraulic oil tank
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

5 Model overview

5.2 Layout pictures

5.2.9 TGS / TGX 3-axle vehicle

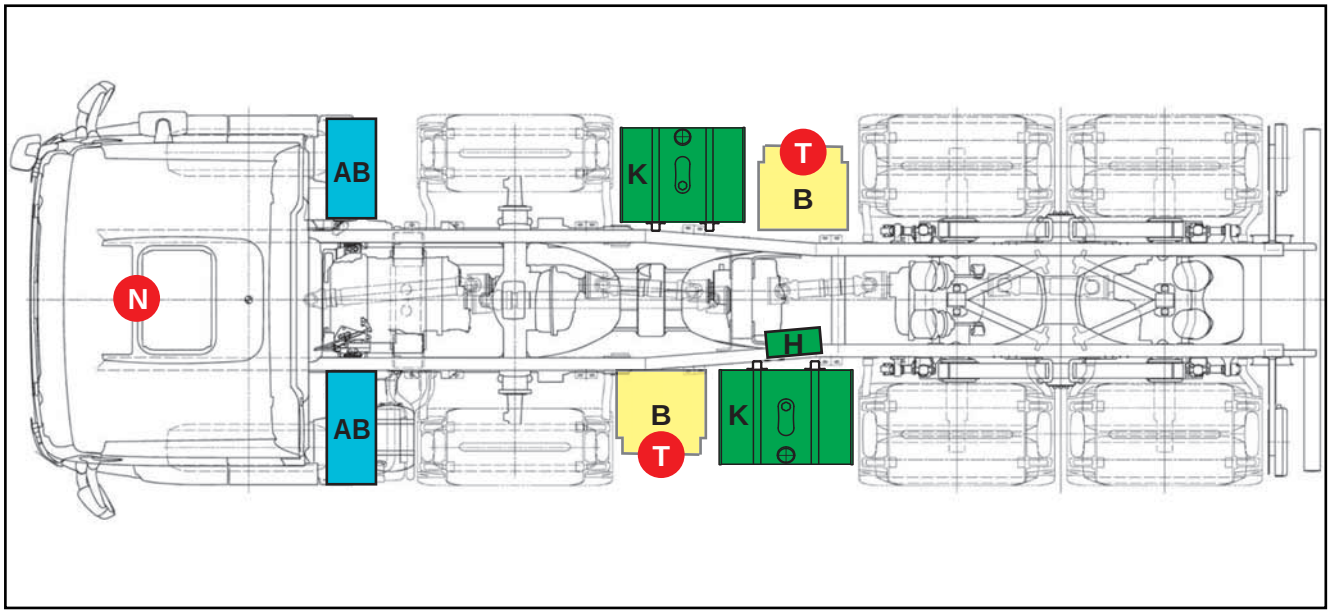


AB AdBlue® tank
B Battery
H Hydraulic oil tank
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

5 Model overview

5.2 Layout pictures

5.2.10 TGS / TGX 4-axle vehicle



AB AdBlue® tank
B Battery
H Hydraulic oil tank
K Fuel tank
N EMERGENCY OFF switch
T Battery master switch

Notes

6 Appendix

6.1 Catchwords

6 Appendix

6.1 Catchwords

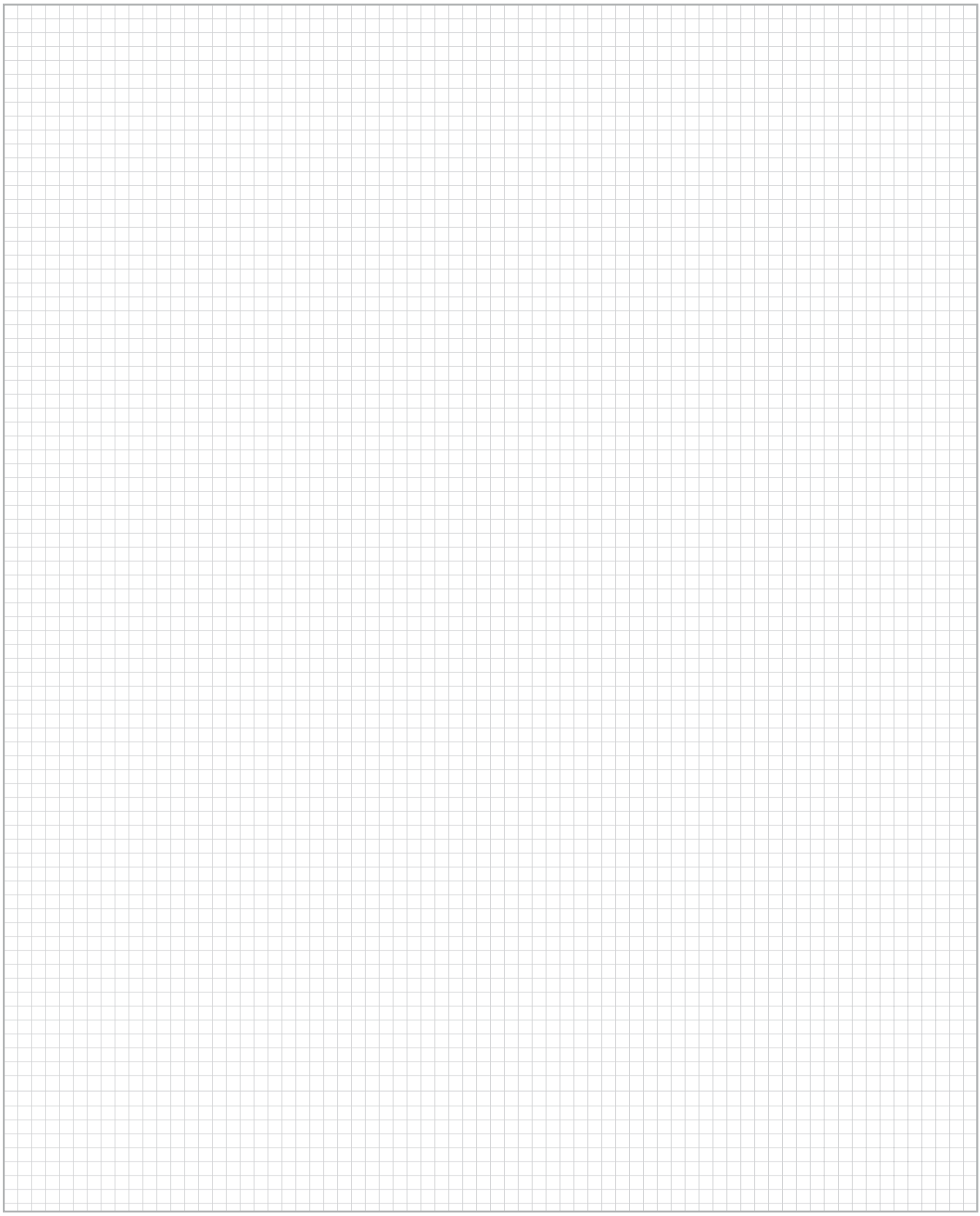
T

V

W

Notes

Notes



Notes

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