Original instructions

Electric tow tractor

LTX 70
LTX 80
LTX-T08

CE

0608 0609 0610 0688 0689 0690

1191 801 15 51 EN - 02/2021 - 10

first in intralogistics

Address of manufacturer and contact details ▷

STILL GmbH
Berzeliusstraße 10
22113 Hamburg, Germany
Tel. +49 (0) 40 7339-0
Fax: +49 (0) 40 7339-1622
Email: info@still.de
Website: http://www.still.de

1 Introduction

2 Safety

3 Overviews

4 Use

1

Introduction

Your industrial truck

General

The tow tractor described in these operating instructions complies with the applicable standards and safety regulations.

If the tow tractor is to be operated on public roads, it must conform to the existing national regulations for the country in which it is being used. The driver's licence must be obtained from the appropriate authorities.

The tow tractors have been fitted with state-of-the-art technology. All that is now required is to handle them in complete safety and keep them operational.

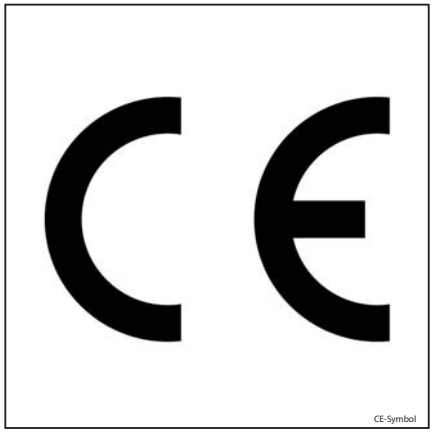
These operating instructions provide the necessary information to do this. Read and observe the information provided before commissioning the tow tractor. This precaution will prevent accidents and ensure that the warranty remains valid.

CE labelling

The manufacturer uses CE labelling to indicate that the tow tractor complies with the standards and regulations valid at the time of marketing. The supplied EC declaration of conformity confirms this. The CE labelling is attached to the nameplate.

An independent structural change or an addition to the tow tractor can compromise safety, thereby invalidating the EC declaration of conformity.

The EC declaration of conformity must be carefully stored and made available to the responsible authorities.



Copyright and property rights

EC declaration of conformity

Declaration

STILL GmbH
Berzeliusstrasse 10
22113 Hamburg
GERMANY

We declare that the machine

Industrial truck	**according to these operating instructions**
Model	**according to these operating instructions**

conforms to the latest version of the Machinery Directive 2006/42/EC.

Person authorised to compile the technical documents:

See EC compliance declaration

STILL S.A.S.

The manufacturer declares that the truck complies with the requirements of the EC directives valid at the time of marketing. This is confirmed by the EC declaration of conformity and by the EC labelling on the nameplate.

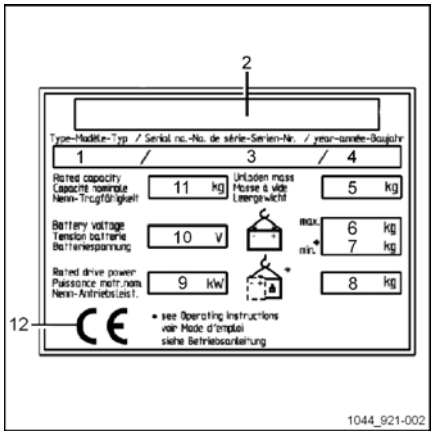
An independent structural change or addition to the truck can compromise safety, thus invalidating the EC declaration of conformity.

The EC declaration of conformity must be carefully stored and made available to the relevant authorities.

Nameplate

NOTE

Indicate the serial number for all technical enquiries.



1 Model
2 Manufacturer
3 Serial number
4 Year of manufacture
5 Unladen weight (without battery) in kg
6 Battery maximum weight
7 Battery minimum weight
8 Additional weight (ballast weight) in kg
9 Nominal motor power (kW)
10 Battery voltage in V
11 Rated capacity in kg
12 EC conformity symbol

Rules for the operating company of industrial trucks

In addition to these operating instructions, a code of practice containing additional information for the operating companies of industrial trucks is also available.

This guide provides information for handling industrial trucks:

- Information on how to select suitable industrial trucks for a particular area of application
- Prerequisites for the safe operation of industrial trucks
- Information on the use of industrial trucks
- Information on transport, initial commissioning and storage of industrial trucks

Internet address and QR code ▷

The information can be accessed at any time by pasting the address **https://m.still.de/vdma** in a web browser or by scanning the QR code.

Eco-design requirements for electric motors and variable speed drives

All motors in this industrial truck are exempt from Regulation (EU) 2019/1781 because these motors do not meet the description given in Article 2 "Scope", Item (1) (a) and because of the provisions in Article 2 (2) (h) "Motors in cordless or battery-operated equipment" and Article 2 (2) (o) "Motors designed specifically for the traction of electric vehicles".

All variable speed drives in this industrial truck are exempt from Regulation (EU) 2019/1781 because these variable speed drives do not meet the description given in Article 2 "Scope", Item (1) (b).

Spare parts list ▷

The spare parts list can be downloaded by entering the address **https://sparepartlist.still.eu** into a web browser or by scanning the QR code displayed to the side.

When the web page is open, please type in the following password: **Spareparts24!**

On the next screen, please enter your email address and truck serial number to receive the link by email. Then download the spare parts list.


2511

Correct use

The industrial truck must be used only for authorised use.

The industrial truck is used to move loads as specified on the capacity rating plate.

Damage and defects

Damage or other defects to the industrial trucks or attachments must be reported immediately to the supervisor. Industrial trucks and attachments that are dangerous to use must not be used before being properly repaired.

The safety systems and switches must not be removed or switched off. The specified settings can be modified only with the manufacturer's approval.

Danger areas

Danger areas are areas in which the movement of industrial trucks, their operating equipment or their load lifting fixtures (e.g. their attachments) may put people in danger.

This includes areas:

- With objects that could fall
- Which could be affected by the falling or lowering of equipment or devices in service

Do not stand in the danger area of an industrial truck.

Work areas

Only areas authorised by the operating company or its representative can be used for transport purposes. Loads may be removed and stored only in places designed for this purpose.

In operating areas with magnetic fields that have a magnetic flux density greater than 5 mT, unintentional truck movements cannot be entirely excluded under unfavourable circumstances. Under these circumstances, use components that are specifically designed for that purpose.

Traffic routes

Traffic routes must be well-paved, flat and free from obstacles. Drainage channels and level crossings must be level. If necessary, ramps must be provided so that trucks can drive over them with as few bumps as possible.

Industrial trucks must not be used for travelling on routes with sharp turns, steep gradients or entrances that are too narrow or low.

Slopes used by industrial trucks must be within the limits specified by the manufacturer and must have a sufficiently rough surface. Flat and gradual transitions at the top and lower ends should prevent the load from touching the ground or causing damage to the chassis.

Do not go beyond the authorised area or the loading points of the traffic areas or routes. There must be sufficient distance between the highest part of the truck or the load and the fixed parts of surrounding areas.

Comply with Directive UE 89/654/EEC (minimum health and safety requirements for the workplace). For countries outside the European Union, the national regulations for that country should be observed.

Dangerous points along traffic areas or routes must be secured and signalled by standard road signs and, if required, by additional warning signs.

When driving on public roads, observe the regulations in force as well as the winter driving restrictions in the country concerned.

Fire protection

The operating company must ensure that there is suitable fire protection in the vicinity of the industrial truck. Depending on the type of use, it must ensure that there is additional fire protection on the industrial truck. In case of any doubt, request information from the responsible supervisory authorities.

Attachments

Attachments must only be used for their intended purpose. The driver must be instructed in the handling of the attachments.

Operating instructions for the attachment are enclosed for trucks that are delivered and fitted with an attachment. Before commissioning a truck with an attachment, you must check that loads are handled safely. Depending on the type of attachment, it may be necessary to make adjustments. Corresponding instructions can be found in the operating instructions for the attachment.

If the attachments are not supplied with the industrial truck, the specifications from the industrial truck manufacturer and the attachment manufacturer must be observed.

Fitting attachments and connecting the power supply for the attachments must only be carried out by specialists in accordance with the manufacturer's specifications. After every installation, check the correct operation of the attachments before use.

Do not exceed the maximum authorised load capacity for the attachments and the industrial truck (load capacity and load moment) combined with the attachments; refer to the additional capacity rating plate.

Modifications, in particular attachments or conversions, are not permitted to be made to the industrial truck without the manufacturer's approval.

Trailers

Industrial trucks may be used to tow trailers if the manufacturer has designed them for that purpose and they are equipped with a suitable trailer coupling. Do not exceed the maximum towed load capacity specified in the operating instructions for braked or unbraked trailers.

The industrial truck must be operated in such a way as to ensure safe driving and braking of the towed vehicle in all circumstances.

Description of use and climatic conditions

Normal use

- Indoor and outdoor use
- Use in a temperature range of -20°C to +50°C
- If the tow tractor is equipped with a heated cab, it can also be used between -20°C and -30°C.

⚠ DANGER

Never use a standard tow tractor in areas in which there is a risk of explosion (gases, vapours or flammable/explosive powders present).

Tow tractors that operate in such environments must be specially protected. They must be accompanied by an EC declaration of conformity and appropriate operating instructions.

Unauthorised use

Any danger caused as a result of unauthorised use becomes the responsibility of the operator or driver and not that of the manufacturer.

Use for purposes other than those described in these operating instructions is prohibited.

Transporting people is prohibited.

The tow tractor must not be used in areas where there is a risk of fire, explosion or corrosion, or in areas that are particularly dusty.

Explanation of symbols used

⚠ DANGER

Compulsory procedure that must be followed to avoid life-threatening danger or physical harm.

⚠ WARNING

Compulsory procedure that must followed to avoid injury.

⚠ CAUTION

Compulsory procedure that must be followed to avoid damage to and/or destruction of equipment.

NOTE

For technical requirements that require special attention.

ENVIRONMENT NOTE

To prevent environmental damage.

Disposing of components and batteries

The truck is made up of different materials.

If components or batteries must be replaced and scrapped, they must be:

- disposed of
- treated or
- recycled in accordance with regional and national regulations

NOTE

The documentation provided by the battery manufacturer must be observed when disposing of batteries.

ENVIRONMENT NOTE

We recommend working with a waste management company when disposing of components and batteries.

2

Safety

Driver safety guidelines

NOTE

The safety rules in this instruction booklet must be respected at all times. These rules do not replace the rules described in the booklet supplied with the tow tractor for users of industrial and all-terrain trucks (VDMA). They complement them.

Before the tow tractor can be used or any work can be done on it, all members of staff involved (in particular the drivers and the maintenance staff) must receive training for the standard and correct use of the tow tractor. This training must be provided by qualified instructors in accordance with the safety information provided with this instruction booklet.

The employer must ensure that the driver has understood all safety information.

Please adhere to the instructions for use and the safety rules described in this instruction booklet, in particular:

- Information on the operation of industrial tow tractors
- Rules for roadways and work areas
- Rights, duties and safety rules for the driver
- Operation in special areas
- Information related to starting, driving and braking
- Service and repair information
- Recurrent inspections, accident prevention check
- Disposal of grease, oil and batteries

The driver or person in charge must ensure that the above operating guidelines and safety rules are observed at all times.

During training the driver must fully acquaint themselves with:

- Special features of the tow tractor (pedals, control levers and switches, indicators and forward/reverse selection)
- Additional attachments
- Special operating conditions

The driver must practice driving the vehicle, using the controls and steering the tow tractor whilst it is empty until he has complete control of the vehicle.

⚠ DANGER

When using a tow tractor, one of the main causes of accidents is the driver's failure to comply with or lack of knowledge of basic safety rules.

In order to ensure the safety of the driver and others, a few basic safe operating practices outlined below must also be followed.

Personal factors

– Only drivers with the correct certification, issued by qualified instructors, should operate the tow tractor.

– Drivers must drive responsibly. They must understand that they are operating valuable equipment, moving goods in a confined area, probably where other people work.

– Before starting work, the preliminary checks described in this booklet must be completed.

– If the tow tractor shows signs of damage or malfunction, or if it cannot be used in complete safety, park it in a safe place, remove the key and inform your manager. Do not use a faulty tow tractor.

– To ensure that risks are minimised, keep the tow tractor in good condition at all times.

– Keep any labels or warnings attached to the tow tractor in good condition. Replace illegible labels or warnings.

– Always handle, charge and maintain batteries according to the manufacturer's instructions. These are supplied with the battery.

– Protective equipment, i.e. goggles and gloves, must be worn at all times when completing any work involving the batteries.

– Do not install any accessories on the tow tractor unless it has been supplied or approved by your local distributor.

– Do not drive under the influence of medicines or substances that may disrupt driving

and decision-making abilities. Do not consume alcohol or take drugs before using the tow tractor.

Operating Procedures

- Never operate the tow tractor in a potentially explosive atmosphere.
- Driving styles should always be adapted to the environment, especially in dangerous work areas, and when carrying loads.
- Prior to, and whilst travelling, **ALWAYS** look in the direction of travel.
- Be aware of pedestrians, and avoid situations where they could become trapped between the tow tractor and a fixed object.
- Keep arms and legs in the driver's compartment at all times.
- Never carry passengers on the tow tractor's platform.
- Never carry passengers on a trailer unless it has been specifically designed for this purpose.
- Always sound the horn when approaching blind corners, entrances, exits etc.
- Do not overload the tow tractor with more than its nominal capacity, as stated on the capacity plate.
- Ensure that you understand how to operate any braking systems fitted to trailers being towed.
- If you need to travel on public roads, ensure that the registration plates conform to local public road regulations.
- Make sure the surface on which you are travelling is capable of supporting the combined weight of the tow tractor and load.
- Never drive onto a lift unless this is requested by your superior.
- Never alight from a moving tow tractor.

Parking

- Do not park the tow tractor in front of fire extinguishers, emergency exits or gangways where it can cause an obstruction.
- Always switch off the ignition and remove the key before leaving the driver's compartment.
- Do not park on a slope.

Summary

A competent driver is one who uses the tow tractor correctly, respects the goods in transportation, and follows the correct operating procedures. **NEVER TAKE CHANCES**.

Safety regulations for handling consumables

Permissible consumables

⚠ WARNING

Consumables can be dangerous.

It is necessary to follow the safety regulations when handling these substances.

Refer to the maintenance data table for the permissible substances necessary for operation.

Oils

⚠ DANGER

Oils are flammable!

- Follow the statutory regulations
- Do not allow oils to come into contact with hot motor parts.
- No smoking, fires or flames!

⚠ DANGER

Oils are toxic!

- Avoid contact and consumption
- In case of inhalation of steam or fumes, breathe fresh air immediately.
- After contact with the eyes, rinse thoroughly with water (for at least 10 minutes) and then consult an eye specialist.
- If swallowed, do not induce vomiting. Seek immediate medical attention.

⚠ WARNING

Prolonged intensive contact with the skin can result in loss of skin oils and cause irritation.

- Avoid contact and consumption.
- Wear protective gloves!
- After any contact, wash the skin with soap and water and then apply a skin care product.
- Immediately change soaked clothing and shoes.

⚠ WARNING

There is a risk of slipping on spilled oil, particularly when combined with water!

- Collect spilled oil immediately using an oil-binding agent and dispose of it in accordance with regulations.

ENVIRONMENT NOTE

Oils are water pollutants!

Always store oil in containers that comply with the applicable regulations.

Avoid spilling oils.

Collect spilt oil immediately using an oil binding agent and dispose of it in accordance with regulations.

Dispose of old oils according to the applicable regulations.

Hydraulic fluid

⚠ WARNING

During operation of the forklift truck, hydraulic fluids are pressurised and are hazardous to your health.

- Do not spill these fluids!
- Follow the statutory regulations
- Do not allow the fluids to come into contact with hot motor parts.
- Do not allow to come into contact with the skin.
- Avoid inhaling the spray
- Penetration of pressurised fluids into the skin is particularly dangerous if these fluids escape at high pressure due to leaks in the hydraulic system. In case of such injury, seek medical advice immediately.
- To avoid injury, use appropriate personal protective equipment (e.g. protective gloves, industrial goggles, skin protection and skin care products).

ENVIRONMENT NOTE

Hydraulic fluid is a water-polluting substance!

Always store hydraulic fluid in containers complying with the regulations.

Avoid spilling.

Spilt hydraulic fluid should be removed with oil-binding agents at once and disposed of according to the regulations.

Dispose of old hydraulic fluid according to regulations.

Battery acid

⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is toxic.

- Avoid contact and consumption.
- In case of injury, seek medical advice immediately.

⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is corrosive.

- When working with battery acid, always wear protective clothing and eye protection.
- Do not allow any acid to get onto the clothing or skin or into the eyes; if this does happen, rinse immediately with plenty of clean water.
- In case of injury, seek medical advice immediately.
- Immediately rinse away spilt battery acid with plenty of water.
- Follow the statutory regulations

ENVIRONMENT NOTE

- Dispose of used battery acid in line with the applicable regulations.

Disposal of consumables

ENVIRONMENT NOTE

Materials that have to be disposed of following maintenance, repair and cleaning must be systematically collected and disposed of in accordance with regulations. Observe the national regulations for your country. Work may only be carried out in areas designated for this purpose. Take care to minimise, as far as possible, any impact on the environment.

- Any spillage of fluids such as hydraulic oil, brake fluid or gear lubricant oil must be immediately soaked up with an oil-binding agent.
- The regulations for disposal of used oil are applicable.
- Any spillage of battery acid must be neutralised immediately.

Emissions

Noise emission values

Calculated during the test cycle performed in accordance with standard EN 12053 from the weighted values for the **DRIVE** operating statuses.

Acoustic pressure level on the driver's compartment			
in the DRIVE operating status	L_{Pc}	=	60 dB
Uncertainty	K_{PA}	±	2.5 dB

NOTE

Lower or higher noise values may occur when using industrial trucks, e.g. due to the mode of operating, environmental factors and other sources of noise.

Vibration values for upper limbs

These values were determined following tests using trucks with standard equipment according to the datasheet (driving over test course with humps).

Specified vibration characteristics (legs) according to EN 13059			
Measured vibration characteristics	$a_{W.ZS}$	=	0.5 m/s^2
Uncertainty	K	=	0.15 m/s^2

Specified characteristics for upper limb vibrations	
Vibration characteristics	< 2.5 m/s^2

NOTE

The vibration characteristics for bodily vibrations cannot be used to determine the actual vibration load level during operation. This depends on the operating conditions (state of ground, mode of operation etc.) and should therefore be determined on site, if applicable. It is mandatory to specify the hand-arm vibrations even where the values do not indicate any hazard, as in this case.

Residual dangers, residual risks

Despite all operational precautions and compliance with standards and rules, the possibility of additional risks when using the tow tractor cannot be entirely excluded.

The tow tractor and all its components comply with the regulations relating to current applicable safety rules.

Persons in the vicinity of the tow tractor must be particularly cautious and react immediately in the event of any malfunction, incident, breakdown etc.

⚠ WARNING

Personnel in contact with the tow tractor must be informed of the risks related to using the tow tractor.

These operating instructions draw your attention to the safety rules.

The risks are:

- Escape of consumables due to leaks, ruptured lines and tanks etc.
- Risk of accident when driving over difficult ground such as slopes, soft or irregular surfaces or in poor visibility etc.
- Falling, tripping etc. when moving on the tow truck, especially in the wet, with leaking consumables or on icy surfaces
- Loss of stability due to the load being unstable or the load slipping etc.
- Risk of fire and explosion due to batteries and electrical voltages
- Human error — disregarding safety regulations

Stability

Stability is only guaranteed if the tow tractor is used according to the indicated recommendations.

It is not guaranteed in the event of:

– Cornering at high speeds

– Turning and driving diagonally on descents or ascents

– Ramp edges or steps.

It is important to adjust the speed of the tow tractor depending on the load and ground conditions.

The stability of the tow tractor has been tested to the latest standards. These standards only take account of the static and dynamic tilting forces that can arise during operation that complies with the specifications and operating rules. Risks caused by misuse or incorrect operation that jeopardise the stability cannot be ruled out in extreme situations.

In case of tip-over

- Do not jump
- Hold on tight
- Brace your feet
- Lean away

The stability of your tow tractor is only ensured if used properly and as intended. Should the

tow tractor tip over during an unapproved application or due to incorrect operation, always follow the instructions depicted.

Definition of responsible persons

Operating company

The operating company is the natural or legal person or group who operates the truck or on whose authority the truck is used.

The operating company must ensure that the truck is only used for its intended purpose and in compliance with the safety guidelines set out in these operating instructions.

The operating company must ensure that all users read and understand the safety information in these instructions.

The operating company is responsible for the scheduling and correct performance of regular safety checks.

It is recommended that these checks comply with national performance specifications.

Specialist

A specialist is deemed to be:

- A person whose experience and technical training has allowed him to develop relevant knowledge of industrial trucks
- A person who is also familiar with national health and safety regulations and generally recognised technical directives and conventions (standards, VDE regulations, technical regulations of other European Union member states or countries that are signatories to the treaty that established the European Economic Area). This expertise allows him to assess the condition of industrial trucks in terms of health and safety

Drivers

This truck may only be driven by suitable persons who are at least 18 years of age, have been trained in driving, have demonstrated their skills in driving and handling loads, and have been specifically designated to drive the truck. Specific knowledge of the truck is also necessary.

Driver rights,duties and rules of behaviour

The driver must be duly informed of his rights and duties.

The driver must be granted the required rights.

The driver must wear protective equipment (protection suit, safety helmet, industrial goggles and protective gloves) that is appropriate for the conditions, the task and the load to be lifted. The driver must also wear safety footwear to be able to drive and brake in complete safety.

The driver must be familiar with the operating instructions and have access to them at all times.

The driver must:

- Have read and understood the operating instructions
- Have familiarised himself with safe operation of the truck
- Be physically and mentally able to drive the truck safely

⚠ DANGER

The use of drugs, alcohol or medications that affect reactions impair the ability to drive the truck.

Individuals under the influence of the above-mentioned substances are not permitted to perform work of any kind on or with the truck.

Prohibition of use by unauthorised persons

The driver is responsible for the truck during working hours. He must not allow unauthorised persons to operate the truck.

When leaving the truck, the driver must secure it against unauthorised use.

Safety test

Regular safety inspection of the tow tractor

Safety inspection based on time and extraordinary incidents ▷

The operating company (see chapter entitled Definition of responsible persons) must ensure that the tow tractor is checked by a specialist at least once a year or after noteworthy incidents.

As part of this inspection:

- A full check of the technical condition of the tow tractor in terms of accident safety must be performed
- The tow tractor must be thoroughly checked to detect any damage that may have been caused by improper use
- A test log must be created.

The results of the inspection must be retained until at least a further two inspections have been carried out.

The inspection date is indicated by an adhesive label on the tow tractor.

– Arrange for the service centre to perform periodic safety inspections on the tow tractor.

– Observe the guidelines for tests carried out on the tow tractor in accordance with FEM 4.004.

The forklift operator is responsible for ensuring any defects are remedied without delay.

– Contact the After Sales Service Centre.

NOTE

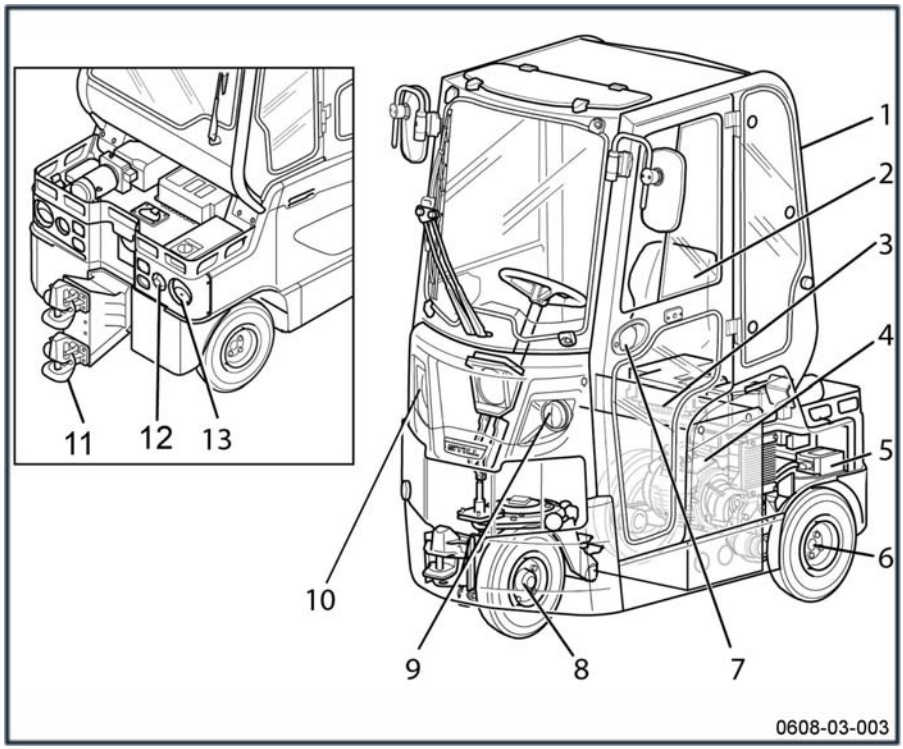
Observe the regulations in force in your country.

3

Overviews

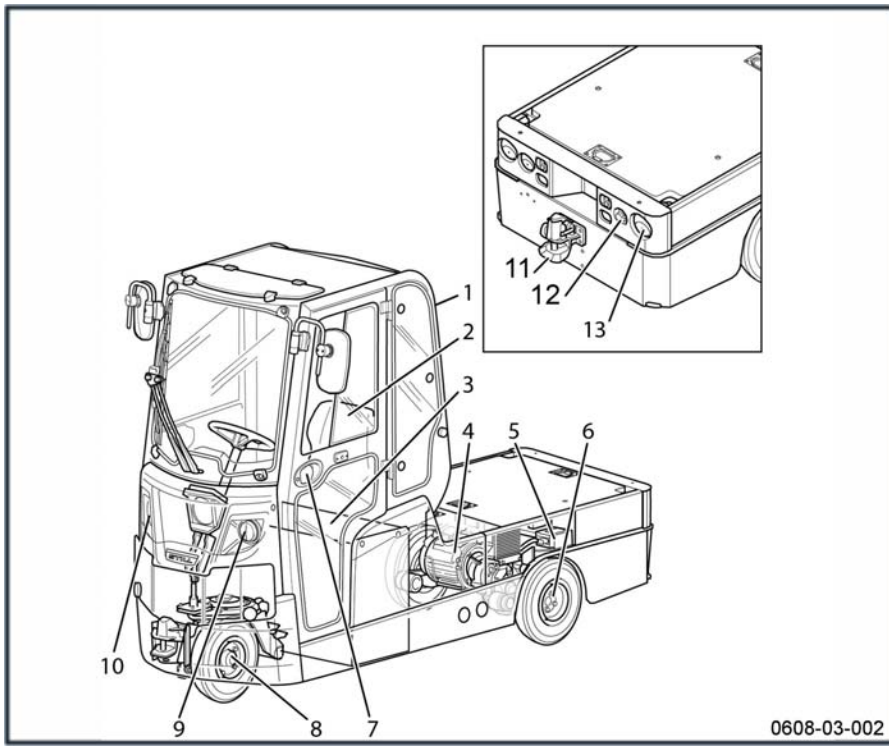
Overviews

General view of the tow tractor



1	Cab (optional)	8	Steering axle and front wheel
2	Driver's seat	9	Dipped beam headlights
3	Battery compartment	10	Direction indicator lights
4	Traction motor	11	Rear tow coupling
5	Electronic control	12	Trailer lighting socket
6	Drive axle and rear wheels	13	Rear light unit
7	Solid door (optional)		

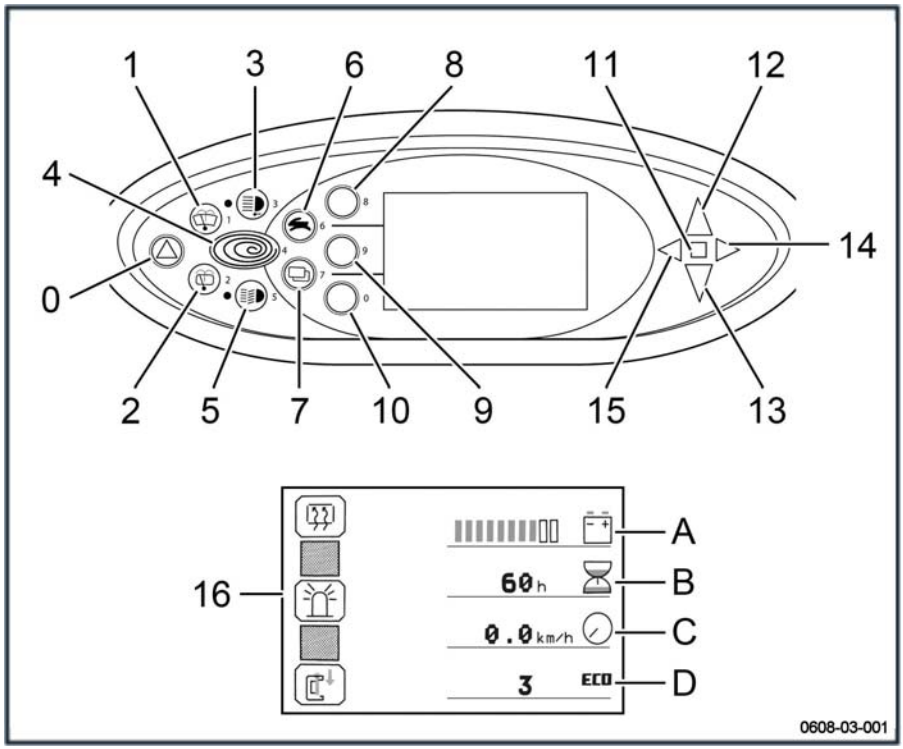
General view of the carrier



1	Cab (optional)	8	Steering axle and front wheel
2	Driver's seat	9	Dipped beam headlights
3	Battery compartment	10	Direction indicator lights
4	Traction motor	11	Rear tow coupling
5	Electronic control	12	Trailer lighting socket
6	Drive axle and rear wheels	13	Rear light unit
7	Solid door (optional)		

Control and display components

Display



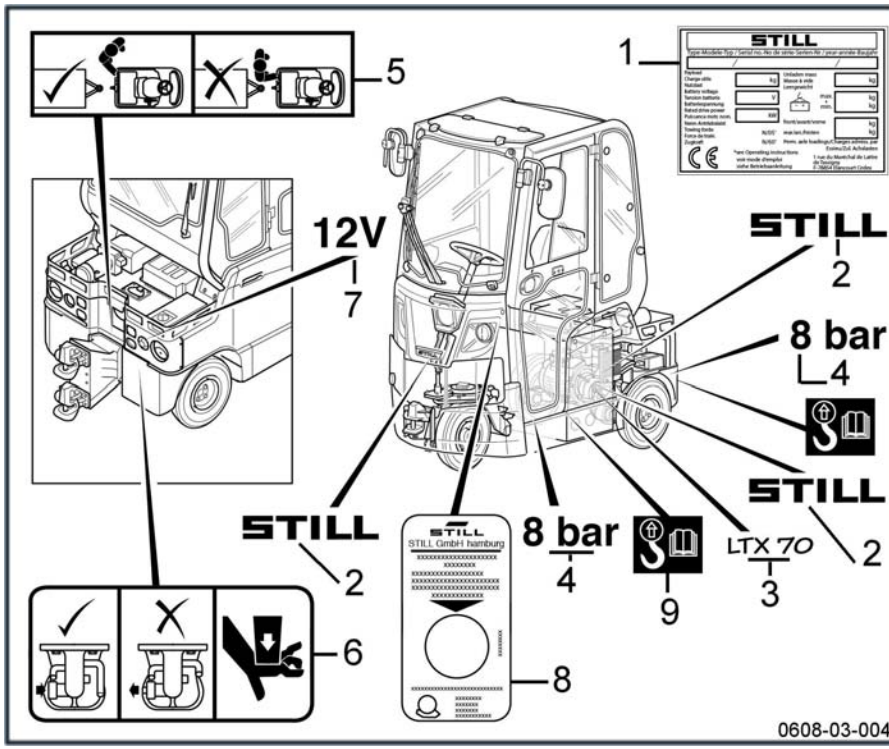
0 **Hazard warning light** button
1 **Front windscreen wiper** button
2 **Rear window wiper** button
3 **Work light** button
4 **Blue-Q mode** button
5 **Signal lights** button
6 Drive programme selection button
7 Button for changing the display
8 **Rear demisting** menu
9 **Rotating beacon** button
10 Button for accessing options (if enabled)
11 **Stop** indicator light
12 **Forwards travel** indicator light
13 **Reverse travel** indicator light
14 **Right turn indicator** light
15 **Left turn indicator** light
16 Start-up screen
A Menu 1: Battery charge status/Menu 2: Hour meter
B Menu 1: Gradient of the slope/Menu 2: Number of hours before the next service inspection
C Menu 1: Speed/Menu 2: Drive programme selection mode
D Menu 1: Clock/Menu 2: Number of kilometres per day

NOTE

If the time is no longer displayed, please contact the after-sales service department.

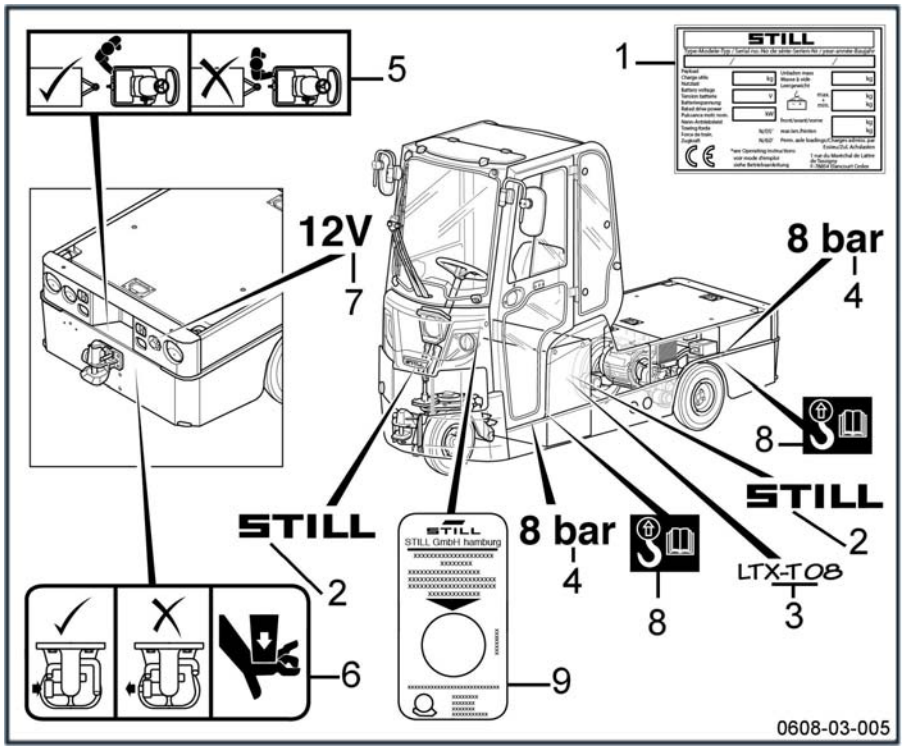
Markings

Tow tractor labels



1	Nameplate (see next page)	6	Automatic coupling label
2	Brand label	7	12-volt label for the coupling socket
3	Truck model label	8	Periodic check label
4	Tyre pressure label	9	Truck slinging label
5	Slow travel warning label		

Carrier labels



1	Nameplate (see next page)	6	Automatic coupling label
2	Brand label	7	12-volt label for the coupling socket
3	Truck model label	8	Truck slinging label
4	Tyre pressure label	9	Periodic check label
5	Slow travel warning label		

Serial number

NOTE

Indicate the serial number for all technical enquiries.

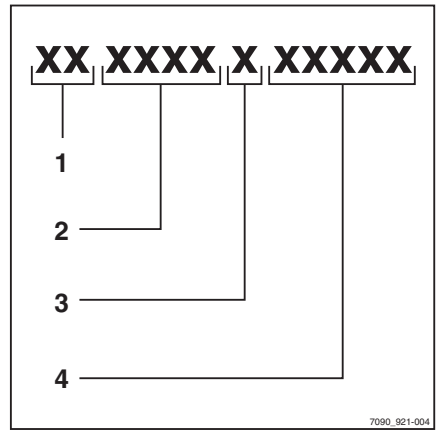
The serial number contains the following information:

1 Production location

2 Type

3 Year of production

4 Count number



4

Use

Technical description

Introduction

The tow tractor and the carrier have been developed to meet the most arduous application requirements. They comply with all current European directives. The tow tractor and the carrier have a nominal towing capacity of 6.2 to 8 tonnes and an unladen traction speed of up to 20 km/h.

There are three different models:

- The 7-tonne model
- The 8-tonne model
- The carrier model

Driver's compartment and controls

For optimal ergonomics, a low step facilitates access to the driver's compartment. Adjusting all the controls and the seat contributes to optimum driver comfort and efficiency.

The arrangement of the pedals, controls and steering wheel (automotive), together with the electronic control, provides smooth handling.

The accurate recording of the tow tractor's shift time, the hour meter and battery discharge indicator allow:

- Better management of maintenance intervals
- Minimised risk of battery damage. The truck can be equipped with an electrolyte level sensor

Chassis

The chassis is designed for maximum strength and rigidity. A low centre of gravity ensures safe road handling, and its compact size ensures excellent manoeuvrability. The traction motor and electronic control are protected within the chassis but remain easily accessible for servicing. The battery is located between the two axles to obtain maximum stability and to allow quick and easy removal.

Drive and transmission

A powerful 4.5-kW traction motor (AC technology) is mounted transversely on the drive axle. Power is transmitted to the rear wheels through a reduction gearbox as well as a differential.

Electrical equipment

These tow tractors are fitted with advanced 48 V microprocessor-based high-frequency control systems.

Steering

The single front wheel steering is both light and responsive to reduce driver fatigue. This system ensures excellent manoeuvrability and improves overall handling efficiency.

Brakes

The tow tractor has three independent braking systems:

- Hydraulic drum brakes on all three wheels
- Automatic parking brake
- Lift off braking. The tow tractor brakes electrically and comes to a standstill when the accelerator pedal is released

Tow coupling and carrying compartment

The tow tractor has provision for various towing couplings at the rear and an optional tow coupling at the front.

The carrying compartment behind the driver's seat has a load capacity of 150 kg.

Carrier

The carrier version is also available.

This allows you to carry a load of 800 kg.

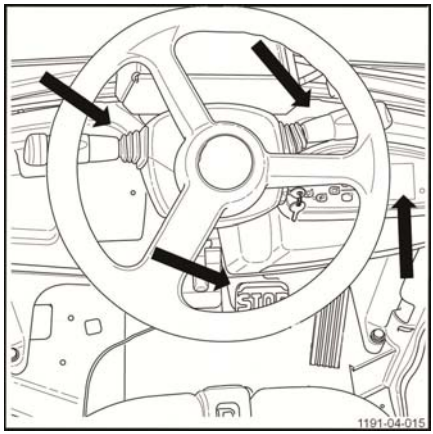
Equipment available as standard or as an additional option

- Side access to batteries

- Fork Off system for battery removal and a suitable tool for this use
- Roll Off system for battery removal
- Wheels or tyres
- Different cab types
- Different seat types
- On-board charger etc.

Checks and actions prior to commissioning

Check all controls and their operation ▷

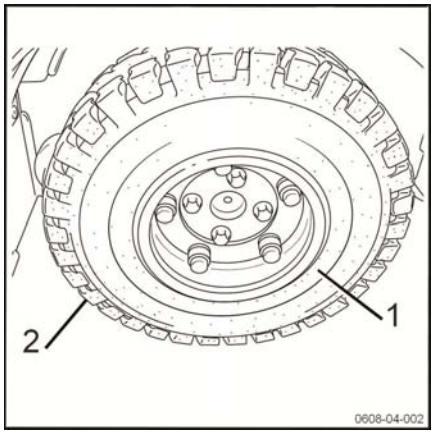


Before each shift, check that the tow tractor controls work correctly and are safe:

– Check that the braking system works correctly
– Check that the steering system works correctly
– Check that the traction system works correctly
– Check that the driver's display is working
– Check that all auxiliary controls are working

Do not use the tow tractor if one or more operations are not working correctly. Report this to a manager.

Checking tyre pressure and condition ▷



⚠ WARNING

Risk of accident

Uneven wear reduces the stability of the tow tractor and increases braking distance.

– Worn or damaged tyres (left or right) must be replaced immediately.

Normally, each tyre must be inflated to 8 bar.

– If necessary, inflate the tyres (1).
– Check the condition of the tyres and tyre wear (2). Look for tyre damage caused by foreign bodies. Tyres must be worn evenly on both sides.

Checking the battery charge status ▷

– Pull the emergency stop button(2).
– Switch on the ignition using the key (3). For trucks with digicodes, turn the start-up button to position 1, then enter the PIN code into the digicode keypad.
– Check the battery charge status on the driver display (1).

⚠ CAUTION

Batteries that are discharged to under 20% of rated capacity are over-discharged. Over-discharging shortens the service life of the batteries and could render the battery warranty void.

Never leave batteries in a discharged state.

Checking the interlocks

⚠ DANGER

For your own safety, and the safety of third parties, the tow tractor and the carrier are fitted with various interlocks.

It is imperative that these interlocks function correctly.

Before each shift, check that all the interlocks for the tow tractor work correctly and are safe.

– Check that the key switch or turning knob works correctly
– Check that the emergency off switches work correctly
– Check that the forklift operator detection system is working correctly, including on the seat
– Check that the battery locking system is operating correctly

NOTE

For any attachments, additional interlocks may be fitted. Also check that these additional interlocks are operating correctly.

Report any interlock malfunctions to your manager. Do not use the tow tractor or the carrier.

Checking the foot brake

⚠ DANGER

Risk of accident

Do not use only the electrical brake for emergency braking.

– Always actuate the foot brake (1) for emergency braking.

To test the brakes, proceed as follows:

– Accelerate the unladen tow tractor in a clear area.

– Release the actuated accelerator pedal (2).

– Press the foot brake (1) firmly.

The truck should slow down until standstill.

NOTE

Actuating the foot brake hydraulically operates brakes on both the front wheels and drive axle. Before first use, it is recommended that drivers familiarise themselves with the operation and effect of the brake on an unladen tow tractor.

Check emergency shutdown

– Press the emergency stop switch (1).
– The power supply to the machine is switched off.
– The electrical controls and motors are no longer supplied with power.
– The electromagnetic brake is applied.
– Press the emergency stop button (1), then enter the code or turn the switch key to make the functions available again.

Top up the windscreen washer bottle

⚠ CAUTION

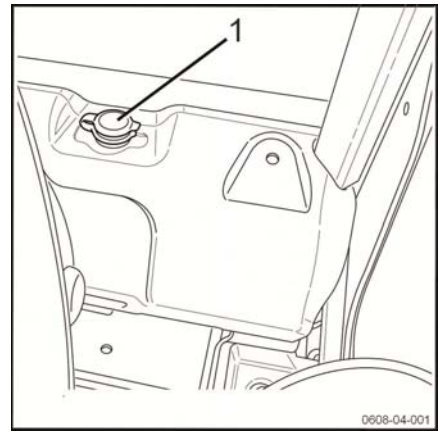
Frosty conditions can damage the windscreen washer system.

– Always use washer fluid containing antifreeze.

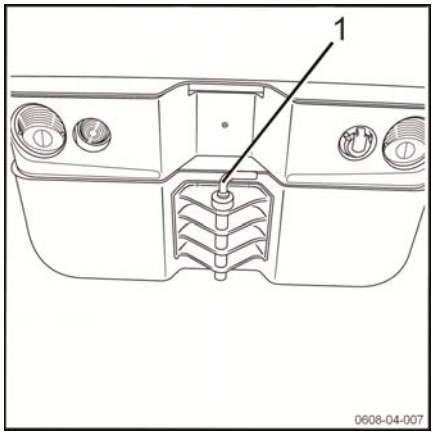
The tank for the front and rear windscreen washer fluid is located behind the chair.

To fill the windscreen washer system tank (1), proceed as follows:

– Move the chair forward.
– Open the cover on the windscreen washer bottle.
– Fill the bottle with windscreen washer fluid and antifreeze according to the manufacturer's specifications.
– Close the cover of the windscreen washer bottle (1).



Verification of manual tow coupling ▷



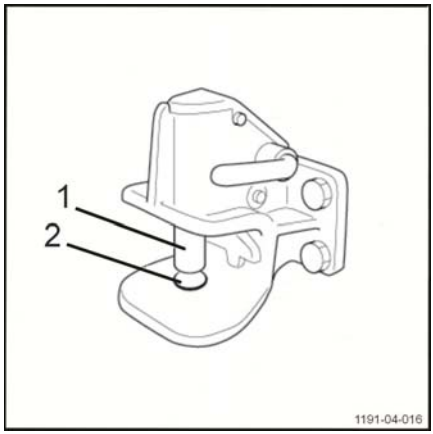
⚠ WARNING

Risk of pinching or crushing.

– Do not reach into the open coupling with your hands or arms.

– Push the towing pin (if present) (1) down, rotate 90° and pull out.
– Check the condition of the towing pin.
– Clean all debris from the housing.
– Insert the towing pin, press it down against the spring pressure, rotate it 90° and lock it into place.

Check the automatic trailer coupling (if fitted) ▷



⚠ WARNING

Do not place your hands in the open coupling.

There is a risk that it will close on them.

Checking that the automatic coupling is working properly.

– Check that the pin (1) is not damaged
– Check that the pin (1) is correctly fitted into its holding fixture (2)
– Check that the holding fixture (2) is free of debris

Truck operating instructions

The trucks are designed for indoor and outdoor use in non-hazardous atmospheres. The temperature should be between -10°C and +45°C and the relative humidity of the air less than 95%.

The places where the truck is used must comply with the applicable regulations (condition of the ground, lighting etc.).

The trucks must be used on dry, clean and flat ground.

Before using the truck, it is essential to check the working environment. This check can take the form of visual inspection.

The work area must be clear. The path of the truck must be free of obstacles and people.

The operator must be alert to anything that might prevent manoeuvres being carried out safely. The following may create a potential danger:

- A person near the truck
- The operator must not use an MP3 player or any other electrical equipment that could impair awareness of his/her surroundings
- There must be no signs of oil or grease on the floor

The operator must take care when transporting a load. The load dimensions can interfere with manoeuvres and restrict the field of vision. The speed of the truck must also be reduced as the truck could tip over when breaking or cornering.

The loads must be consistent, with a maximum recommended height of 2 m.

For uses other than those shown above, please consult the After-Sales Service Centre.

It is important to use pallets that are in good condition.

Speed must be reduced when moving over obstacles to prevent the truck from becoming unbalanced and vibrations in the arms of the operator.

The trucks can drive across ramps and shallow inclines.

⚠ WARNING

Risk of loss of stability

– Always adapt your driving to the ground conditions (uneven surfaces etc.), particularly hazardous working areas and the load.

NOTE

- *Always switch off the ignition before exiting the truck*

⚠ WARNING

Risk of injury

Always keep your hands on the controls. Always disconnect the battery before touching moving parts or assemblies.

For effective protection, safety shoes must be worn.

⚠ WARNING

Driving safety guidelines:

– The driver must drive slowly around corners and when entering narrow passageways.

– The driver must always maintain a safe braking distance from vehicles or people in front of him.

– The driver must avoid stopping suddenly, making U-turns too quickly and overtaking in dangerous areas with poor visibility.

⚠ CAUTION

Risk of injury

Ensure that the battery is locked correctly.

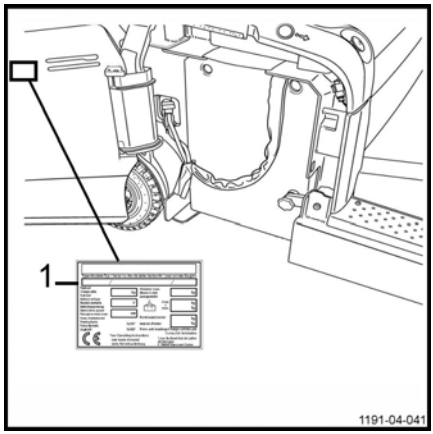
The nameplate

Before using the truck for the first time, it is advisable to read the information on the nameplate (1).

This is located inside the battery compartment.

Please refer to chapter 1 **Nameplate** for details.

▷



Display

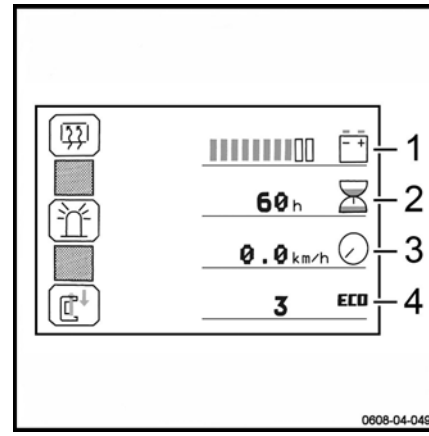
The tow tractor start-up screen

In menu 1, the main display screen shows:

- The battery charge status (1)
- The gradient of the slope (2)
- The travel speed (3)
- The time (4)

In menu 2, the main display screen shows:

- The hour meter (1)
- The number of hours before the next service inspection (2)
- The drive programme selection mode (3)
- The number of kilometres per day (4)



Steering knobs

There are several indicator lights on the display. These show the steering status of the tow tractor.

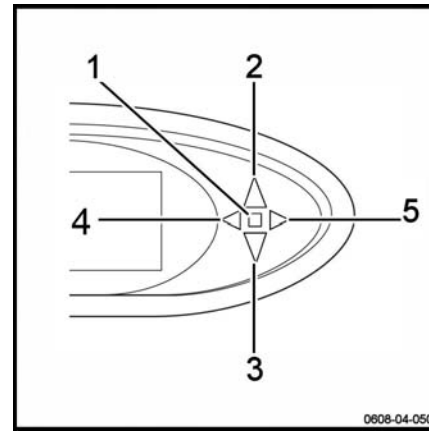
The **Stop** light (1) signals that the parking brake is applied. It also signals that errors are present.

When the **Forward travel** indicator light (2) is on, the truck is moving forwards.

When the **Reverse travel** indicator light (3) is on, the truck is moving backwards.

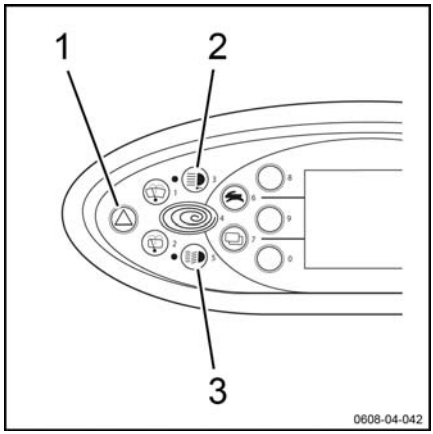
When the **Left turn** indicator light (4) is on, the operator is preparing to turn left.

When the **Right turn** indicator light (5) is on, the operator is preparing to turn right.



Using the display

Tow tractor signal buttons



The **Hazard warning light** button (1) allows you to switch on the hazard warning lights (Warning) to warn other users of a potential danger.

The **Work lights** button (2) allows you to switch on the work lights.

The **Signal lights** button (3) allows you to switch the side lights or main beam lights on and off.

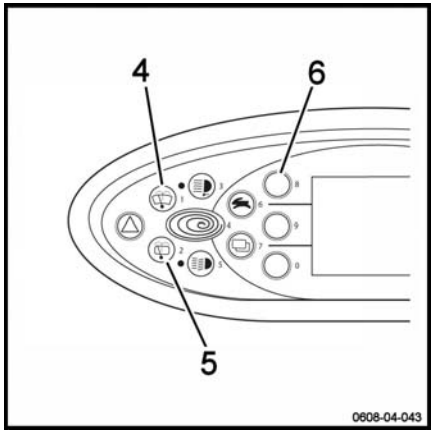
Proceed as follows:

– Press once: the side lights switch on.

– Press twice: the dipped beams switch on.

– Press three times: the side lights switch off and the dipped beams switch off.

Buttons for the windows of the tow tractor



The **Front windscreen wiper** button (4) allows you to switch the front windscreen wiper on and off.

– Press once briefly: the front windscreen wiper starts.

– Press twice briefly: the front windscreen wiper stops.

– Press once and hold (over 2 seconds) then keep the button pressed: the washer function starts. Operating the button in this way engages the washer systems for the front and rear windscreen wipers at the same time.

The **Rear windscreen wiper** button (5) allows you to switch the rear windscreen wiper on and off.

– Press once briefly: the rear windscreen wiper starts.

– Press twice briefly: the rear windscreen wiper stops.

– Press once and hold (over 2 seconds) then keep the button pressed: the washer function starts. Operating the button in this way

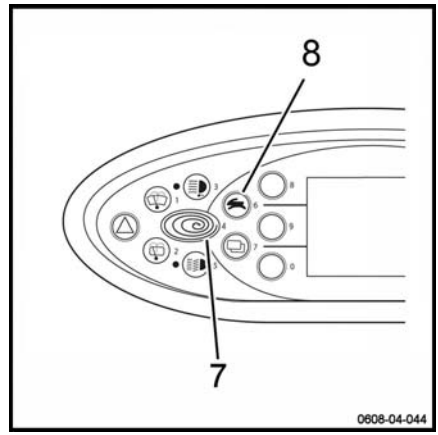
engages the washer systems for the front and rear windscreen wipers at the same time.

The **Rear demisting** button (6) allows you to demist the rear window. To access it, you must first press the menu 2 selection button.

Buttons for tow tractor performance

The **Blue-Q mode** button (7) helps you to save battery power. Activating this mode reduces the performance of the tow tractor or the platform tractor (for example the speed, acceleration).

The button for selecting the drive programme (8) allows you to reduce or increase the speed of the tow tractor.

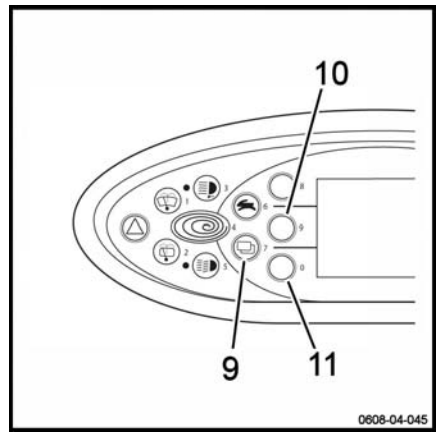


Buttons for additional options

The button (9) allows you to access additional options. Press and hold the button to display menu 2.

The **Rotating beacon** button (10) allows you to switch on the rotating beacon for the cab.

The button (11) provides access to options (if enabled).



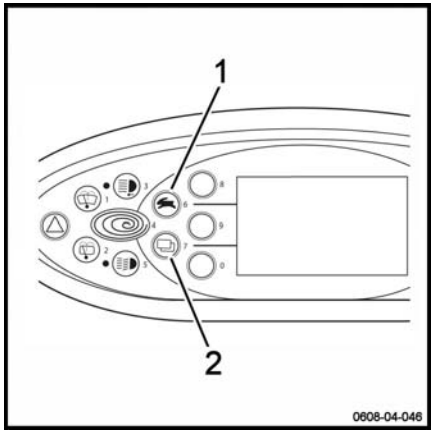
Adjusting the display

The operator can easily adjust the following items on the display:

- The language
- The time
- The date
- The daily mileage

Proceed as follows:

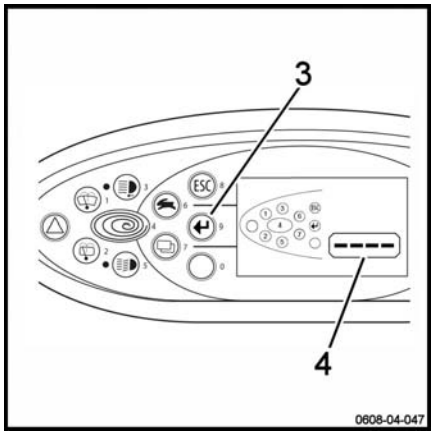
– Push the buttons (1) and (2) at the same time. ▷



– Do not enter the password (4). Press the Enter key (3). ▷

– Use the keys (1) and (2) to navigate through the menu (4).

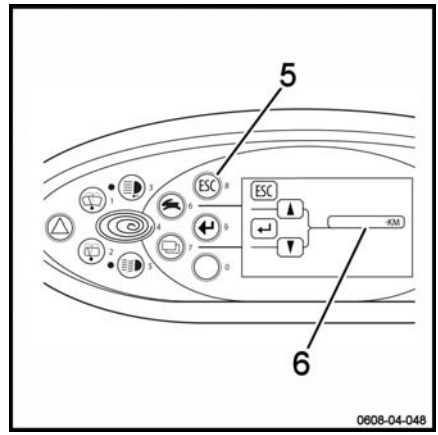
– Select the menu (4) that you want to edit.



Resetting the hour meter

– Navigate to the **Daily km** field (6) to reset the hour meter to zero.
– Press the key (5) twice to confirm.
– Switch off the tow tractor.
– Restart it.

The hour meter is reset.



Driver's compartment settings

Safety guidelines for adjustment work

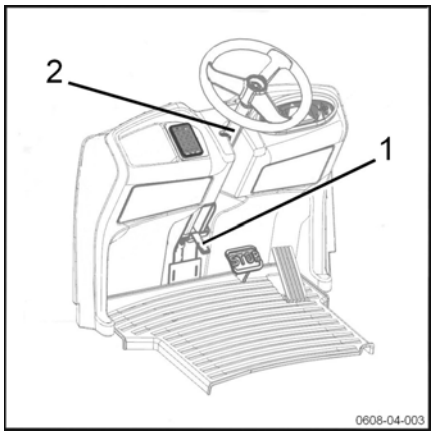
⚠ WARNING

Do not make adjustments while driving, as this could cause you to lose control of the tractor.

Carry out adjustment work only when the tow tractor is at a standstill.

Once the adjustment work is complete, check that the item is positioned and secured correctly.

Steering column adjustment ▷



⚠ DANGER

Increased risk of accidents due to the sudden adjustment of the steering column.

Making adjustments while driving can cause the truck to move in an uncontrolled manner.

– Never perform adjustments while driving.
– Always adjust the steering column so that control components can be accessed without difficulty.

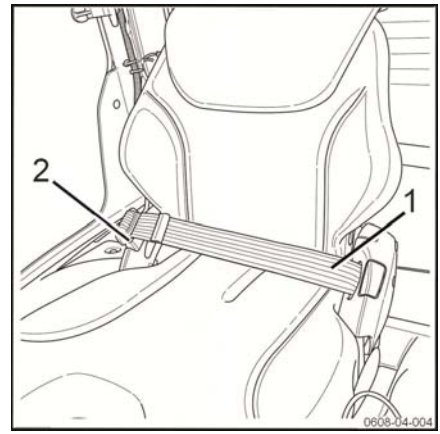
NOTE

Only make adjustments when the forklift operator is seated at the steering wheel.

Proceed as follows:

– Unlock the lever (1) by pulling it upwards. Hold the steering wheel because the steering column (2) lowers by itself.
– Move the steering wheel and steering column to the desired position.
– Lock the lever (1) again in the lower position.

Seat belt (optional) ▷



Fastening the seat belt (if fitted)

NOTE

Sit as far back as possible so that your back is leaning against the seat backrest. The automatic blocking mechanism permits sufficient freedom of movement on the seat.

– Pull the seat belt (1) out of the belt retractor without jerking, and adjust to the size of the operator.

– Click the tongue into the buckle.

– Check the tension of the seat belt. It should be close to the body.

Unfastening the seat belt (if fitted)

– Push the red button (2) on the buckle (1).

– Slowly guide the belt tongue back into the retractor by hand.

Safety guidelines for driving a tow tractor

Operators must obey the same rules within the plant as on the road. They must drive at speeds appropriate for the driving conditions.

Therefore, they must drive slowly:

- When cornering
- Through narrow passageways
- Through swing doors
- In low-visibility areas
- When the roadway is uneven

Operators must always maintain a safe braking distance from vehicles or persons. They must always maintain control of the tow tractor. They must avoid sudden stops, making fast U-turns, overtaking other vehicles in potentially hazardous or low-visibility areas.

- This tow tractor is not designed for transporting people.
- Operators must always stay within the tow tractor clearance.
- Stay in the safety area (working area defined by the manufacturer).
- Make sure the tow tractor is stable, and do not exceed its maximum capacity.

Take a test drive on an open surface.

It is not recommended to use a phone, MP3 player or any electrical equipment. They can disrupt driver concentration and awareness of surroundings.

NOTE

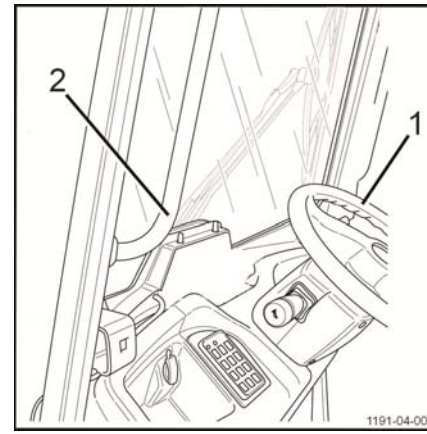
Drivers must wear properly fitting safety footwear to be able to drive and brake in complete safety.

Before using the tow tractor, it is essential to check the working environment. This check can take the form of visual inspection.

There must be no signs of leaking consumables under the tow tractor.

The battery compartment must be closed correctly and all additional equipment attached correctly.

Entering and exiting the tow tractor ▷



⚠ WARNING

Risk of falling, tripping or slipping when climbing into/out of the tractor.

Face the tractor when entering or exiting.

Make sure that the step is clean.

– Use the steering wheel (1) to help you enter or exit the tractor
– Use the vertical bar (2) (in the case of a tractor equipped with a cab)

⚠ WARNING

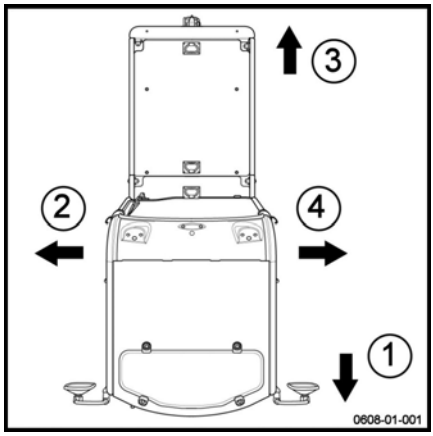
Pay attention to your surroundings when climbing out of the tractor.

Driving the tow tractor

Definition of directions

Names used in the text: forward travel (1), reverse travel (3), to the right (2) and to the left (4) refer to component installation position with respect to the driver's compartment.

The load is positioned at the rear.



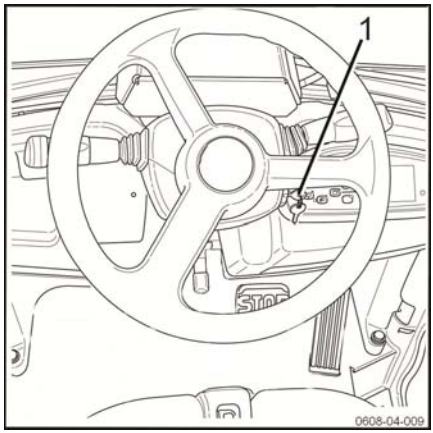
Tow tractor ignition using the key

⚠ WARNING

Risk of accident

Before switching the tow tractor on, all pre-commissioning tests must be performed. There must be no faults detected.

- Perform all tests before commissioning. See chapter **Pre-commissioning checks and procedures**.
- Do not operate the truck if faults have been identified!
- Contact the After-Sales Service Centre.

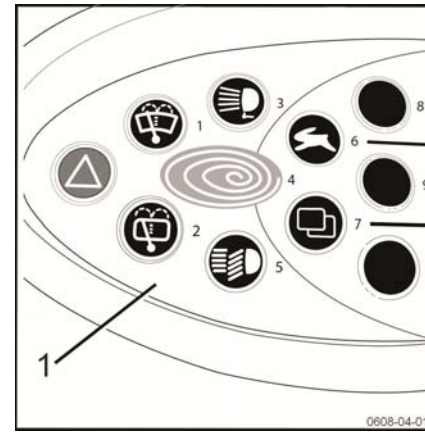


- Insert the switch key into the key switch (1).
- Turn clockwise to switch on.

All controls on the screen of the display unit briefly switch on.

The truck is ready for operation.

Starting the tow tractor with an electronic key



The tow tractor can be started with a driver-specific code.

Drivers enter their codes directly into the display (1). The display is on the dashboard (**see chapter 3 Display**). The knob must also be turned.

To start the truck, the driver must enter a five-digit personal identification number (PIN). This procedure prevents unauthorised use by third parties.

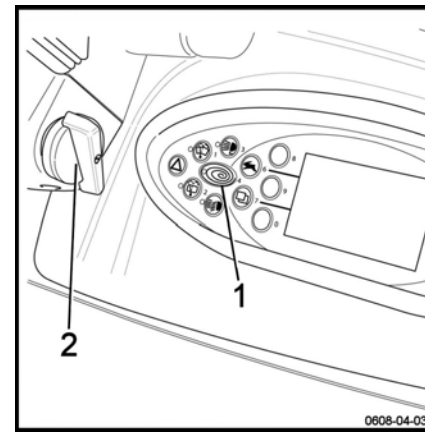
⚠ WARNING

Risk of accident

Before switching the tow tractor on, all pre-commissioning tests must be performed. There must be no faults detected.

- Perform all tests before commissioning. See chapter **Pre-commissioning checks and procedures**.
- Do not operate the truck if faults have been identified!
- Contact the After-Sales Service Centre.

Logging in



- Turn the knob (2).
- Enter the five-digit PIN into the driver display (1).

NOTE

NOTE: The driver default PIN is 1 2 3 4 5.

Logging out

- Turn the knob (2).

NOTE

If the driver's seat is unoccupied, the tow tractor automatically closes the session. The PIN must be re-entered by the driver to use the tow tractor again.

Start-up

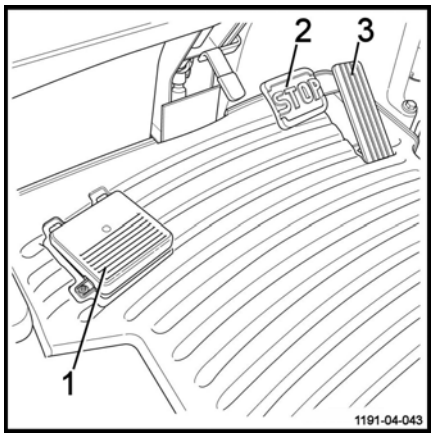
NOTE

Check that no commands are activated before starting the tow tractor.

– Check that the battery is connected and locked and that the door is closed correctly.
– Check the condition of the steps. Enter the tow tractor.
– Sit on the seat and adjust it.
– Release the emergency stop switch (1) if it has been pressed.
– Turn the key (2) or knob clockwise. For models equipped with digicodes, enter the PIN code to start the tow tractor.

The driver's display (3) illuminates. The tow tractor is ready for operation.

Dead man's pedal option



Operation

The dead man's pedal (1), positioned under the left foot of the operator, is a truck safety device.

It must be pressed in before and whilst the truck is moving.

It allows the operation of the accelerator (3) and brake (2) pedals.

⚠ CAUTION

If the dead man's pedal is released whilst the truck is moving, the accelerator will no longer function and the brake is automatically activated.

Forwards travel

Initial driving practice must be carried out in an empty space or on a clear roadway.

⚠ WARNING

Identify the direction selection lever. Depending on the model ordered, the selector for forwards travel and reverse travel is found to the right or left of the steering wheel.

– Push the direction selection lever (1) upwards.

On the display screen, the indicator light that indicates forwards travel switches on.

– Depress the accelerator pedal (2) gently. The tractor moves forwards. The tractor speed increases depending on how far the accelerator is depressed.

NOTE

Fully depressing the accelerator pedal does not increase the rate of acceleration. The maximum rate of acceleration is regulated automatically.

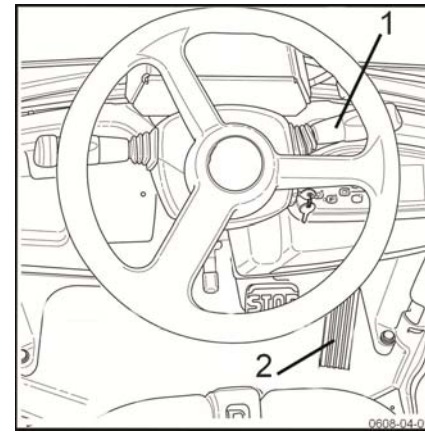
NOTE

Carefully check that your path is clear before performing the manoeuvres.

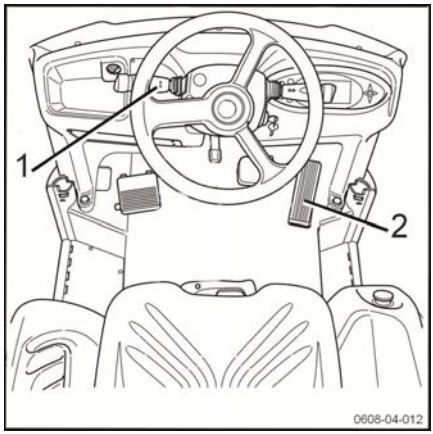
Adapt your driving to the ground and environment.

When approaching and going around bends, slow down and drive carefully.

The **Curve Speed Assist** option is available. This option allows you to automatically adjust the speed of the tractor when cornering. It aids driving.



Backwards driving



Initial driving practice must be carried out in an empty space or on a clear roadway.

⚠ WARNING

Identify the direction selection lever. Depending on the model ordered, the selector for forwards travel and reverse travel is found to the right or left of the steering wheel.

⚠ WARNING

Exercise caution during reverse travel.

Field of vision is reduced.

It is necessary to adapt the speed.

– Push the direction selection lever (1) downwards.

On the display screen, the indicator light that indicates backwards driving switches on.

– Depress the accelerator pedal (2) gently. The tow tractor moves backwards. The tractor speed increases depending on how far the accelerator is depressed.

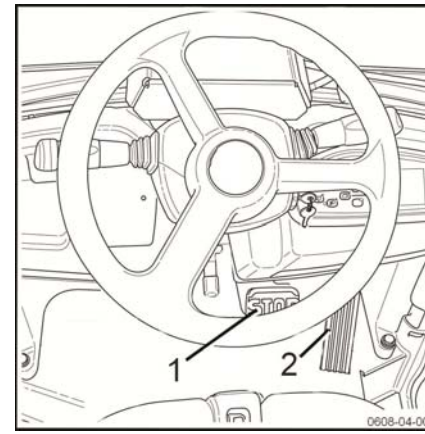
NOTE

Fully depressing the accelerator pedal does not increase the rate of acceleration. The maximum rate of acceleration is regulated automatically.

NOTE

Carefully check that your path is clear before performing the manoeuvres.

Tow tractor braking ▷



⚠ DANGER

Risk of accident

– Always use the foot brake (1) for emergency braking.

⚠ DANGER

If you are driving too fast, there is a risk that the truck skids.

The truck's braking distance depends on weather and road conditions.

– Adapt driving and braking style to suit the weather and road conditions.
– Always choose driving speeds that provide sufficient stopping distances.

– Brake the truck by releasing the accelerator pedal (2).
– If the braking effect is inadequate, apply the foot brake (1) as well.

NOTE

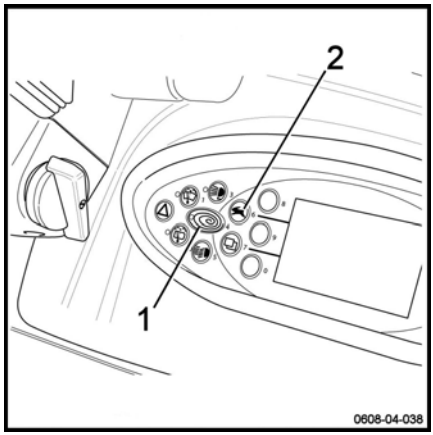
Depressing the brake pedal hydraulically operates brakes on both the front wheels and drive axle. Before taking the tractor into service, it is recommended that drivers familiarise themselves with the operation and effect of the hydraulic brake on an unladen tow tractor.

Emergency stop

– During normal operation, the emergency stop button (1) must be pulled out.

– In the event of danger, push the emergency stop button (1) to break the electrical circuit and immobilise the tow tractor.

Operating Blue Q mode



With efficiency mode, called Blue Q, you can save battery power. This mode decreases the performance (speed, acceleration) of the tow tractor or carrier.

It is possible to choose between three levels of Blue Q modes:

- Standard mode: Blue Q mode is switched off when the tow tractor is returned to service. To activate efficiency mode, the driver can press the Blue Q button at any time
- Fixed mode: Blue Q mode is continuously lit when the tow tractor is returned to service and during operation The driver cannot switch Blue Q mode off
- Fixed-flex mode: Blue Q mode is switched on To activate efficiency mode, the driver can press the Blue Q button at any time

Only After-Sales Service can change the mode choice that has been selected. Standard mode is activated by default.

To activate Blue Q mode, proceed as follows:

– Press the Blue Q (1) button

The Blue Q symbol is shown on the display next to the drive programme number.

If Blue Q mode is activated and the operator steps off the truck, the following functions are deactivated:

- Main beam lights are switched off The side-lights remain lit
- The heating is turned off
- The rear defroster is switched off
- The front windscreen wiper and the rear window wiper are stopped
- The seat heater is switched off

There is a five-second delay before the different functions are switched off.

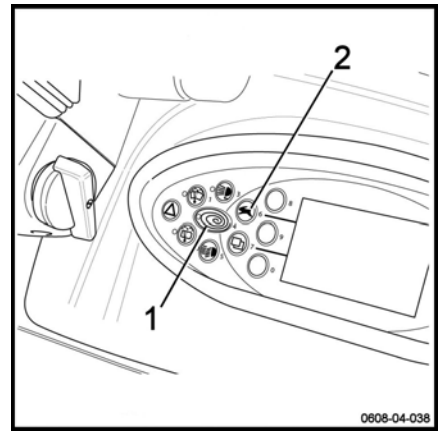
If the driver is driving in reverse travel at more than 3 km/h, the front main beam lights and the front windscreen wiper are switched off.

If the driver is driving in forward travel at more than 3 km/h, the rear main beam lights and the rear window wiper are switched off.

To deactivate Blue Q mode, proceed as follows:

– Press the Blue Q (1) button

Operating the drive programme selection button ▷



With the drive programme selection button (2), or hare button, you can reduce the performance of the tow tractor or carrier.

Three different drive programmes are available:

- Standard mode 0: the tow tractor operates normally
- Speed reduction mode 1: with this mode, you can reduce the speed of the tow tractor
- With Downhill assistance mode 2 (lowering assistance), you can reduce the speed of the tow tractor when lowering

To select a drive programme, proceed as follows:

– Press the drive programme selection button, hare button (2), several times until the chosen programme appears on the display.

Below is a list of tow tractor performance and carrier performance depending on the functions activated.

		Tow tractor speed (km/h)			Carrier speed (km/h)		
		Standard mode 0	Speed reduction mode 1	Downhill assistance mode 2	Standard mode 0	Speed reduction mode 1	Downhill assistance mode 2
Forward travel	Blue Q not activated	19	12	4	20	12	4
	Blue Q activated	16	12	4	16	12	4
Reverse travel	Blue Q not activated	10	8	4	10	8	4
	Blue Q activated	10	8	4	10	8	4

This list of performance takes the default factory-set speeds into account. Specific adjustment work can be performed by the After-Sales Service at the customer's request.

Operating the horn

The horn must be used in situations presenting a potential hazard:

- On routes where with poor visibility
- At junctions
- In the event of imminent danger

– Press the control selector (1).

NOTE

The operating lever with the horn can be placed on the left- or right-hand side of the steering column.

Starting on an incline

Use the following procedure to start the tow tractor on an incline:

– Stop the tow tractor using electrical and hydraulic braking.

– To start, press the accelerator. The tow tractor is equipped with a starting aid option for use on an incline.

– The parking brake releases automatically.

NOTE

Fully depressing the accelerator pedal does not increase the rate of acceleration. The maximum rate of acceleration is regulated automatically.

It is important to drive carefully when on an incline. Forklift operators must adapt the speed to the incline.

⚠ DANGER

Risk of loss of control

Drive slowly on an incline.

If the tractor is towing a trailer, do not manoeuvre on an incline.

Operating the FleetManager™ option

Description of the FleetManager option

The FleetManager option allows you to control access to the truck. The option is a fleet management system.

You can access the system:

- Either by using a keypad
- Or by using a reading device for a transponder or an RFID card

The fleet manager sets the access details via the web interface. This affects the transponder cards or PIN codes for the corresponding trucks. It is possible to change the amount of time for which the access authorisation is valid.

Software is also available.

Additional options:

- Shock sensor
- Tools for wireless data management:
  - ▸ GSM(2)GPRS(1) module with antenna

The options available on the truck are:

- Access control
- Access control and shock sensor
- Access control and GPRS module
- Access control, shock sensor and GPRS module

(1) GPRS: General Packet Radio Service

(2) GSM: Global System for Mobile Communication

Shock sensor

This sensor allows you to record the shocks received by the truck.

If the truck receives a shock, it is possible to configure a speed reduction.

The fleet manager is the only person who is able to change certain parameters.

NOTE

Replace the sensor if it is faulty.

GSMGPRS module

The module consists of a GSM modem and an antenna.

The module allows you to:

- Access truck information remotely
- Use geolocation

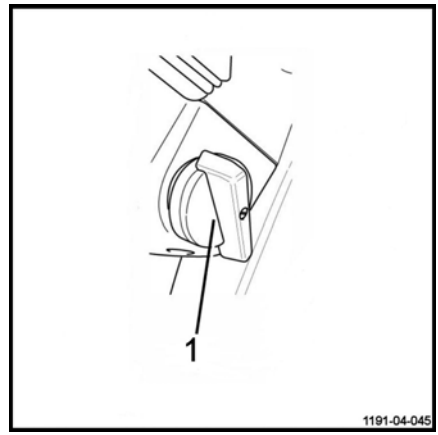
The data is stored on a server.

Data is transmitted by Bluetooth (default) or by GSM module (optional).

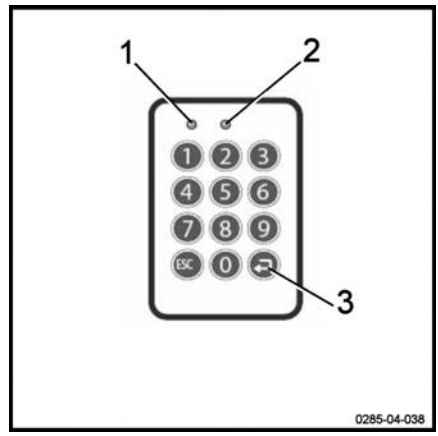
Commissioning a tow tractor equipped with the FleetManager™ option

Commissioning a tow tractor equipped with a keypad or an electronic key

– Turn the turning knob (1) clockwise. ▷



– Enter the PIN code on the keypad. The PIN code consists of five to eight digits. ▷



By default, no PIN code is given as a factory setting.

If the PIN code is correct, the LED (1) is not lit. The LED (2) flashes slowly at two-second intervals (green colour).

No acoustic signal sounds.

– Press the Enter key (3) to confirm.

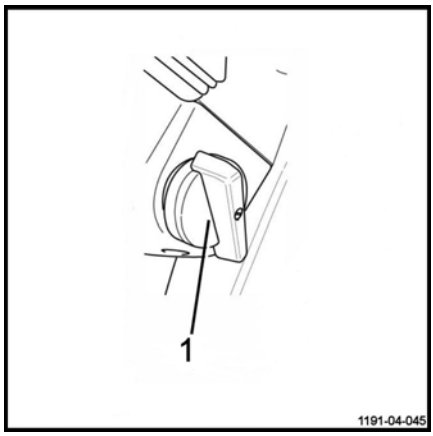
The tow tractor is now ready for use.

NOTE

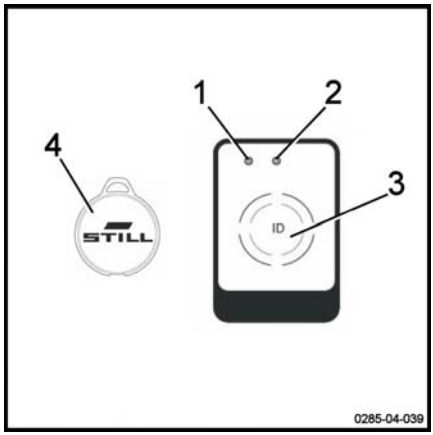
In the configuration, the fleet manager can specify that the operator must enter a preliminary code when logging in. The operator can then assess the state of the tow tractor.

Commissioning a tow tractor equipped with an RFID reading device

– Turn the turning knob (1) clockwise. ▷



– Place the RFID transponder card or the RFID transponder (4) in front of the reading device (3). ▷



If the card is correct, the LED (1) is not lit. The LED (2) flashes slowly at two-second intervals (green colour).

Two acoustic signals sound.

The tow tractor is now ready for use.

FleetManager™ option: Colour code for the LEDs

The LEDs can have different statuses and different colours. Below is the list of the most common messages and their meanings.

Malfunction			Cause	Solution
LED status		Signal transmitter		
LED 1	LED 2			
Lit continuously Red colour	Off	A long acoustic signal sounds	**Reading device variant:** no valid access authorisation	Generate a valid access authorisation using the interface
			Keypad variant: no valid access authorisation for the PIN code entered	
			Keypad variant: PIN code entered incorrect or not confirmed using the Enter key	Re-enter the PIN code
Lit continuously Red colour	Flashes once Green colour	A long acoustic signal sounds	The operator has been granted access authorisation. But the period of validity has expired.	Use the interface to enter a new period of validity
			The date of the truck is incorrect	Update the date of the truck
Flashes quickly Yellow colour	Lit continuously Green colour		Memory is 80% full	Clear the memory
Flashes quickly Red colour	Flashes quickly Red colour	A long acoustic signal sounds upon activation	There are several possible causes: - Reading device or keypad not accessible - GPRS module not accessible - Built-in rechargeable battery flat - Memory full	Contact the After-Sales Service Centre

Malfunction			Cause	Solution
LED status		Signal transmitter		
LED 1	LED 2			
Flashes quickly Red colour	Lit continuously Green colour		A shock has occurred	Reset the shock
Flashes quickly Blue colour	Off		The truck is connected via a Bluetooth link. The operating data is being read. The reading process can take up to five minutes.	The truck is switched on but is not moving. Wait for all of the relevant data to be read. As soon as the LEDs change to a different status, resume work.

Logging off a tow tractor equipped with the FleetManager™ option

NOTE

Operators must not log off intentionally while driving.

⚠ WARNING

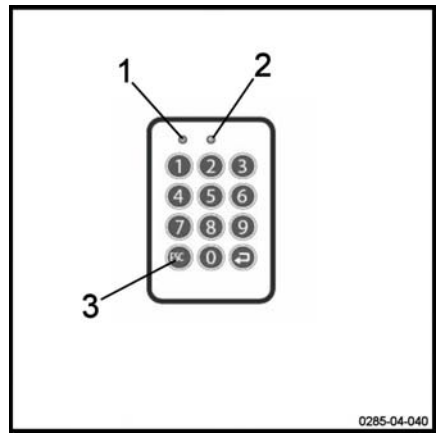
Access to the tow tractor must be deactivated.

Unauthorised users are not allowed to use the tow tractor.

Logging off a tow tractor equipped with a keypad or an electronic key

– Park the tow tractor in a safe place.

– Press the button (3) to log off. Keep the button pressed in. ▷



No LEDs light up. A long acoustic signal sounds.

The LED (1) lights up for a second (red colour). The LED (2) is not lit. A long acoustic signal sounds.

The LED (1) is no longer lit. The LED (2) flashes slowly at two-second intervals (green colour). No acoustic signal sounds.

– Turn the turning knob (1) anti-clockwise. ▷

The tow tractor is switched off.

Logging off a tow tractor equipped with an RFID reading device

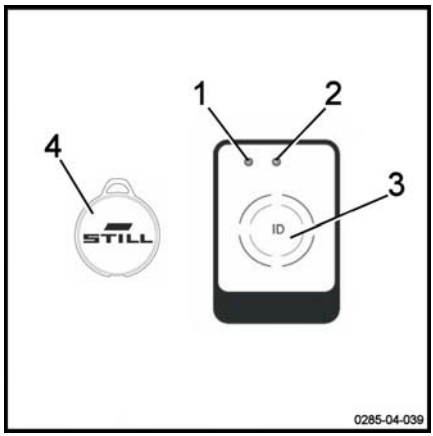
– Park the tow tractor in a safe place.

– Briefly place the RFID card or the RFID transponder (4) in front of the reading device (3) ▷

The LED (1) lights up for a second (red colour). The LED (2) is not lit. A long acoustic signal sounds.

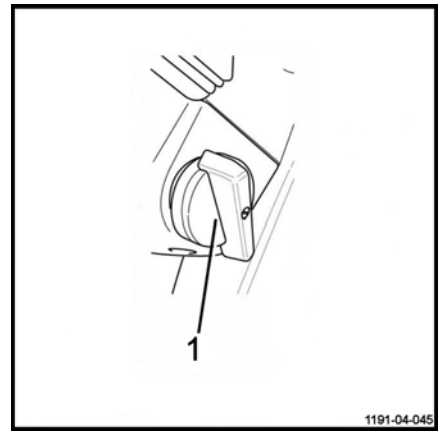
The LED (1) is no longer lit. The LED (2) flashes slowly at two-second intervals (green colour). No acoustic signal sounds.

The tow tractor is deactivated.



– Turn the turning knob (1) anti-clockwise. ▷

The tow tractor is switched off.



Lighting

Using the signal lights

⚠ WARNING

Risk of accident

If the truck must be used outdoors at night, it must be equipped with headlights.

We recommend switching off the main beam headlights when the truck is at a standstill.

Headlights are available as an option. They allow you to use the tow tractor and carrier in poorly lit areas.

Turn off the main beam headlights when the forklift operator leaves the truck.

Check the condition of the signal lights. Report any faults identified to your manager.

⚠ WARNING

Risk of burns

Do not touch the headlights, particularly the main beam headlights, during and after operation.

Using the lights

– Press the signalling lights button (1) located on the display once.

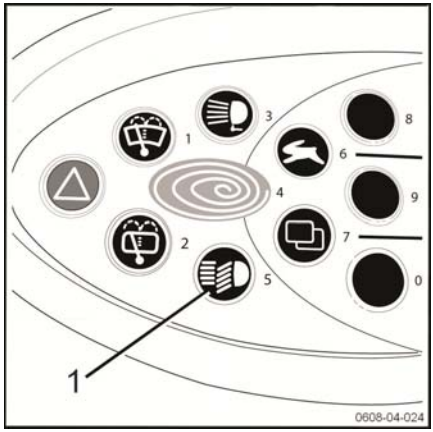
The sidelights illuminate.

– Press the signalling lights button (1) located on the display again.

The main beam headlights illuminate.

– Press the signalling lights button (1) located on the display a third time.

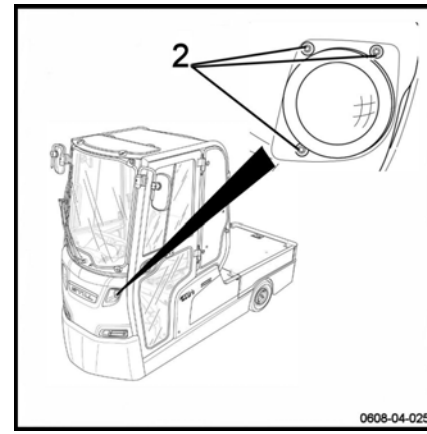
The signalling lights are switched off.



Adjusting the main beam headlights

It may be necessary to adjust the main beam headlights.

– Adjust the three screws (2) to adjust the lights



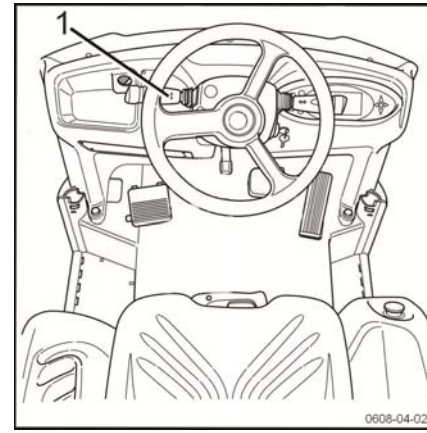
Using the direction indicators

NOTE

Always check the surrounding area before changing direction.

⚠ WARNING

Identify the direction indicator. Depending on the model ordered, the selector for changing direction is found to the right or left of the steering wheel.



Turning to the right

– Push the direction indicator (1) upwards or downwards depending on which side of the steering wheel the direction indicator is located.

– Check the change of direction information on the display.

The right-hand direction indicators operate and indicate your intention to turn right.

Turning to the left

– Push the direction indicator (1) upwards or downwards depending on which side of the steering wheel the direction indicator is located.

– Check the change of direction information on the display.

The left-hand direction indicators operate and indicate your intention to turn left.

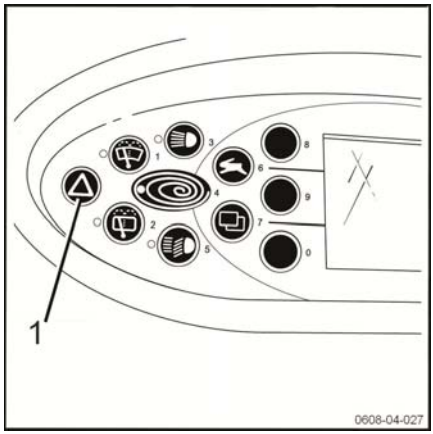
Using the hazard warning light ▷

– Press the hazard warning light button (1) located on the display once.

The warnings are switched on.

– Press the hazard warning light button (1) located on the display again.

The warnings are switched off.



Using the cab interior light ▷

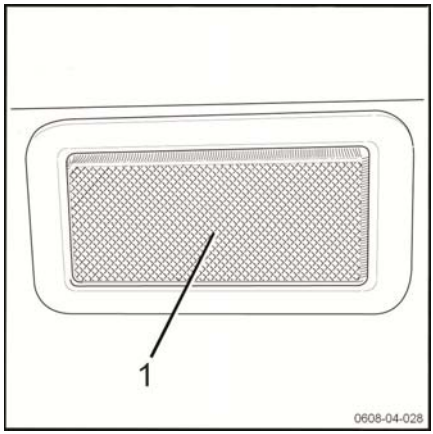
Cab light

– Press the switch (1) on the roof of the cab.

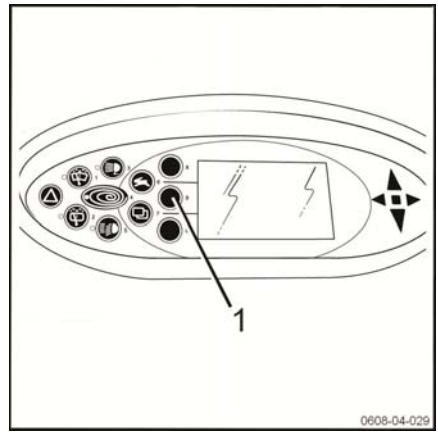
The cab light illuminates.

– Move the switch (1) on the roof of the cab in the other direction.

The cab light switches off.



Using the rotating beacon (optional) ▷



The truck may be equipped with a rotating beacon depending on the customer's choice.

– Press the rotating beacon button (1) once.

The rotating beacon is switched on.

– Press the rotating beacon button (1) again.

The rotating beacon is switched off.

Towing

Safety guidelines

⚠ DANGER

Risk to life

Hitching or unhitching a trailer on an incline is strictly prohibited. This work must be performed on level ground. Failure to comply with these guidelines may result in a risk of injury to oneself or to a third party. The trailer or tow tractor may move and gain momentum on an incline.

⚠ WARNING

Before coupling or uncoupling a trailer, ensure:

- Both the tractor and the trailer are on level ground
- The trailer tow bar and the tractor tow coupling are compatible
- If fitted, the trailer braking system is engaged, or the trailer wheels have been chocked to prevent movement

The driver must be trained to use and manoeuvre the tow tractor with or without a trailer.

⚠ DANGER

Risk of injury

Position yourself in a safe place or in a marked area for hitching or unhitching the trailer. During this hitching or unhitching work, the driver cannot be clearly seen by other forklift operators: There is a risk of impacts or collision.

⚠ WARNING

Risk of imbalance

Hitch the trailer tow bar to the tractor so that the bar is as horizontal as possible.

⚠ WARNING

Risk of trapping

During the hitching or unhitching work, always handle the trailer with care. Take care not to trap your fingers or to let them become trapped between the tractor and the trailer.

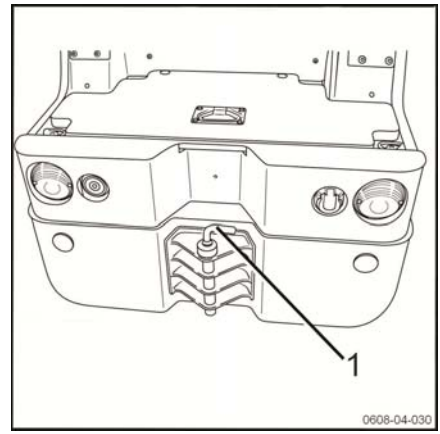
⚠ WARNING

Electrical risk

During the hitching or unhitching work, the driver may need to handle a 12-volt electrical connection. You must ensure that this connection does not show any signs of damage before use.

As a general rule, you must notify your manager of any malfunctions you identify.

Using the manual coupling



⚠ DANGER

Risk of accident If the trailer hitch pin drops out or is damaged while towing, the load is released and can no longer be controlled.

- Use only original trailer hitch pins that have been checked for good condition!
- Check that the trailer hitch pin is inserted and fitted securely.

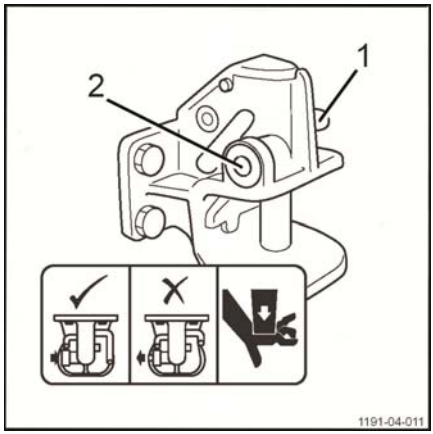
Coupling a trailer

- Reverse the tow tractor up to the trailer. The trailer hitch pin and trailer tow bar are in line as seen from the driver's seat.
- The parking brake is actuated automatically.
- Push the pin (1) down, and turn 90° to release it.
- Remove the pin from the towing coupling.
- Position the trailer tow coupling into the coupling.
- Replace the pin (1), push the pin down and turn 90° to lock into position.
- Connect the trailer lighting (if present) to the tow tractor lighting socket, and check that it is working properly.
- Remove the chocks from the trailer and release the trailer brake (if present).

Uncoupling a trailer

- Park the tow tractor. Chock the trailer, or, if fitted, apply the trailer brake.
- Disconnect trailer lighting (if fitted) from the tow tractor lighting socket.
- Remove the pin (1) and uncouple the trailer.
- Park the trailer.

Using the automatic coupling ▷



Coupling a trailer

⚠ DANGER

Incorrect operation of the coupling increases the risk of accidents.

Secure coupling can only be verified by noting the position of the trailer hitch pin (2).

The trailer hitch pin must not protrude out of its guide after a trailer has been coupled.

– Never tow a trailer if the trailer hitch pin (2) is protruding out of its guide.

It is the responsibility of the driver to ensure that the trailer hitch pin is fully engaged before towing a trailer.

⚠ WARNING

Incorrect operation leads to a risk of injury.

– Do not reach into the open coupling with your hands or arms.

– Take precautions, such as using wheel chocks, to prevent the load you want to connect from rolling.

– Slowly reverse the truck.

– Stop the truck just in front of the trailer tow bar.

– Carefully drive the tow tractor towards the drawbar until the bar is in the jaw of the tow coupling.

The coupling closes on contact, and the lever (1) on the coupling snaps downwards.

Make sure that the trailer hitch pin (2) on the tow coupling does not protrude out of its guide.

– Connect the trailer lighting (if present) to the tow tractor lighting socket, and check that it is working properly.

– Remove the equipment used to prevent the coupled load from rolling.

– Release the trailer brake (if present).

Uncoupling a trailer

⚠ WARNING

Incorrect operation leads to a risk of injury.

– Do not reach into the open coupling with your hands or arms.

– Take precautions, such as using wheel chocks, to prevent the load you want to disconnect from rolling.
– Disconnect the trailer lighting (optional) from the trailer socket.
– Push the hand lever (1) on the coupling upwards.
– Carefully drive the tow tractor forwards until the trailer tow bar and coupling are disconnected.
– Remove the trailer tow bar from the coupling jaw.
– Park the trailer.

Using electric tow coupling

⚠ DANGER

Risk of accident

Never hitch or unhitch a trailer on an incline.

The reverse travel speed is limited to 5 km/h.

Coupling a trailer

⚠ WARNING

Incorrect operation leads to a risk of injury.

– Do not reach into the open coupling with your hands or arms.

– Slowly reverse the truck.
– Stop the truck just in front of the trailer tow bar.

– Press the electric coupling button (1) for three seconds. It is located under the 12-volt socket. The status of the icon on the display then changes and indicates that the coupling release request has been validated. Do not press the button for longer than five seconds.
– Carefully drive the tow tractor towards the drawbar until the bar is in the jaw of the tow coupling.

The coupling closes on contact and the lever on the coupling snaps downwards. The status of the icon on the display then changes and indicates that the coupling is closing.

Make sure that the coupling pin on the tow coupling does not protrude out of its guide.

– Connect the trailer lighting (if present) to the tow tractor lighting socket, and check that it is working properly.
– Remove the equipment used to prevent the coupled load from rolling.
– Release the trailer brake (if present).

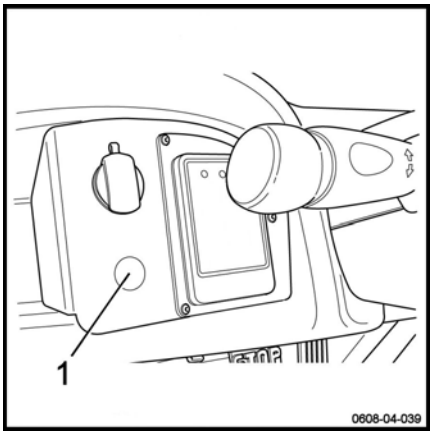
Uncoupling a trailer

⚠ WARNING

Incorrect operation leads to a risk of injury.

– Do not reach into the open coupling with your hands or arms.

– Take precautions, such as using wheel chocks, to prevent the load you want to disconnect from rolling.
– Disconnect the trailer lighting (optional) from the trailer socket.
– Press the electric coupling button (1) for three seconds. The status of the icon on the display then changes and indicates that the coupling release request has been validated. Do not press the button for longer than five seconds.
– Carefully drive the tow tractor forwards until the trailer tow bar and coupling are disconnected.
– Park the trailer.



– Close the tow coupling manually. It is also possible to leave it open.

Manually opening the electric coupling

It is possible to open the coupling in manual mode, but it is not recommended. During normal operation of the tow tractor, this type of coupling is opened in electric mode.

The forklift operator must handle the coupling carefully when it is opened in manual mode.

Inching mode option

The inching mode function (Inching) cannot be used when a forklift operator is sitting in the driver's seat.

⚠ DANGER

Risk of crushing feet. Never step between the tractor and the trailer when operating the inching mode control buttons.

Stand to the side, clear of the tractor wheels.

Wear safety footwear.

⚠ WARNING

Risk of slipping

Do not perform this adjustment when on an incline.

To facilitate trailer coupling, inching mode control buttons (Inching) can be found to the rear of the tow tractor.

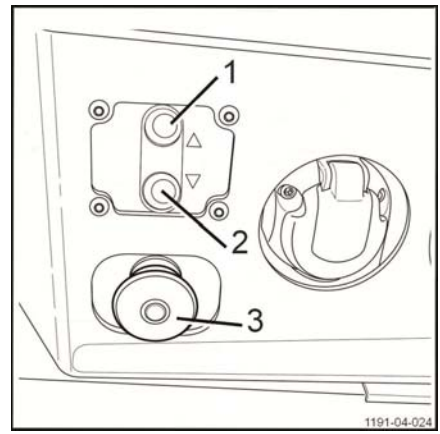
– Check that the surrounding area is clear and allows you to manoeuvre safely

– Stand clear of the tractor wheels and press the button (1) for forward travel or the button (2) for reverse travel

Each time these buttons are pressed, the tractor moves a short distance forwards or backwards.

The emergency off switch (3) actuates the parking brake in order to stop the tractor, and cuts off the power supply.

– Always take care when making the adjustments



– Pull the emergency off switch (3) to restore the power supply

Loading the platform ▷

⚠ CAUTION

Ensure that the weight of the load does not exceed the capacity of the tow tractor (150 kg) or the carrier (800 kg).

Refer to the nominal capacity specified on the capacity label for the tow tractor or carrier.

It is important that the platform is loaded correctly.

Load the tractor or the carrier on firm and level ground.

Ensure that the load of the carrying compartment is:

- Properly secured (use the tie-down rings)
- Stable
- Centred
- Evenly distributed
- Suitable for the size of the tow tractor or carrier
- Suitable for the nominal load capacity of the tow tractor

Check that the load is not damaged.

Do not transport suspended loads.

Check that the load does not obscure the signalling lights at the rear of the tractor.

No one must be in the tractor or carrier while loading and unloading.

⚠ DANGER

Risk of injury

Safety footwear must be worn.

Transporting people is strictly prohibited.

⚠ DANGER

Risk of loss of stability

It is essential to slow down when approaching a corner or on wet ground.

Adapt your driving to the load being transported and to the size of the load.

Loading trailers

NOTE

Below is a list of guidelines. This list is not exhaustive.

DANGER

Risk of accident

- Never exceed the maximum loads shown! These values apply to compact and homogeneous loads
- It is not permitted to incorrectly load or climb onto the trailer.

- Make sure that the loads are evenly distributed in the trailer, and check that they are properly secured. Do not exceed the permissible load.
- Put heavy loads at the bottom and lighter loads on top.
- The centre of gravity should be as low as possible.
- Never load a trailer on a slope.
- Do not exceed the trailer and truck load capacities.
- Never transport passengers on a trailer.

Towing a trailer

Braked trailers are not required for loads weighing less than 2.5 tonnes. For loads weighing more than 2.5 tonnes, all trailers are considered to be braked.

DANGER

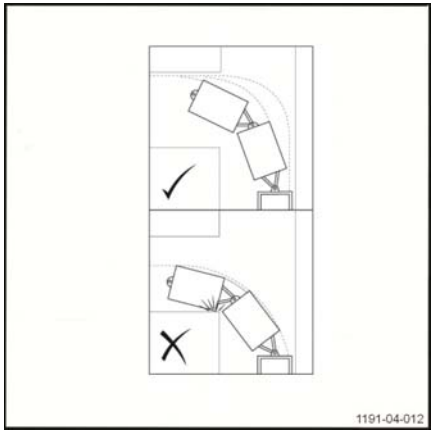
Risk of accident

Do not manoeuvre the trailers on an incline.

You must understand how to operate any braking systems fitted on towed trailers.

Ensure that the trailer load is secure, stable and evenly distributed on the trailer.

Ensure that the strength of the coupling is compatible with the weight of the load.



– Inspect the trailer steering to determine its type. This is particularly important for long trailer trains due to the cut-off effect when cornering

NOTE

If you need to travel on public roads, ensure that the registration plates conform to local public road regulations.

– Release the trailer braking system and remove any chocks from behind the trailer wheels
– Check the width of the trailer or of the load at the widest point to ensure free passage
– Adjust the rear-view mirrors as required
– Before moving, check that the path is clear in the direction of travel
– Gently start the tractor in forward travel to tighten all the loose parts of the trailer couplings, then gradually accelerate until you reach the appropriate speed
– When approaching your destination, reduce your speed in advance so that you are able to bring the tractor and trailer to a gradual stop. A sudden stop could cause the load to be offset. There is a risk of the trailers jack-knifing

NOTE

It is impossible to reverse a trailer train back into position. You must learn to position the trailers the first time.

Liftrunner system equipment option

With the Liftrunner system equipment option, the operator can lift and lower the trailer. The function is automatically available when a hydraulic pipe is connected.

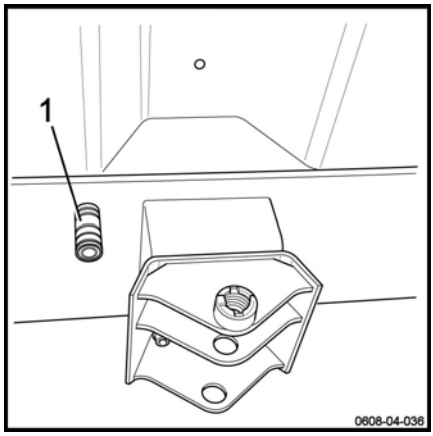
Lifting the trailer

– Safely park the tow tractor on level ground

– Switch the tow tractor off and dismount.

– Hitch the trailer The inching mode option is compatible

– Connect the hydraulic pipe union of the trailer to the (1) nipple that is provided at the rear of the tow tractor ▷



⚠ DANGER

Risk of injury.

Do not connect the pipe when the tow tractor is switched on.

Do not mount the tractor when someone is handling the pipe union.

Do not connect the pipe to the tow tractor if someone is sitting on the seat in the tow tractor or carrier.

– Switch the tow tractor on again

– Sit on the seat.

The trailer is lifted automatically. The lifting time is adjustable. The After-Sales Service can set this time.

NOTE

Until the trailer reaches its maximum height, the brake is automatically activated and the tow tractor does not operate.

The tow tractor speed is limited to 15 km/h when this equipment is in use.

Lowering the trailer

– Safely park the tow tractor on level ground

– Switch the tow tractor off and dismount.

⚠ DANGER

Risk of crushing feet.

Check that no one is next to the trailers before dismounting the tow tractor.

The trailer lowers automatically as soon as the operator gets up from the seat. The lowering time is adjustable. The After-Sales Service can set this time.

When the trailer is in the low position, the message **Low trailers** is shown on the display.

– Disconnect the hydraulic pipe after the task is complete.

⚠ DANGER

Risk of spraying oil and risk of injury.

Do not disconnect the pipe if the trailer is not in the low position. Wait until the message **Low trailers** is shown on the display.

⚠ DANGER

Risk of injury.

Do not handle the pipe union when the tractor is switched on.

Do not mount the tractor when someone is handling the pipe union.

Do not disconnect the pipe if someone is sitting on the seat of the machine.

– Uncouple the trailer.

Lifting the trailer permanently

With the function to lift the trailer permanently, you can lock the trailer in the raised position. The operator can then mount and dismount the tow tractor without the trailer lowering.

To activate the permanent lift function, proceed as follows:

– Park the tow tractor safely.

– Switch the tow tractor off and dismount.

– Hitch the trailer.

– Connect the hydraulic pipe union of the trailer to the (1) nipple that is provided at the rear of the tow tractor.

⚠ DANGER

Risk of injury.

Do not connect the pipe when the tow tractor is switched on.

Do not mount the tractor when someone is handling the pipe union.

Do not connect the pipe to the tow tractor if someone is sitting on the seat of the machine.

– Switch the tow tractor on again

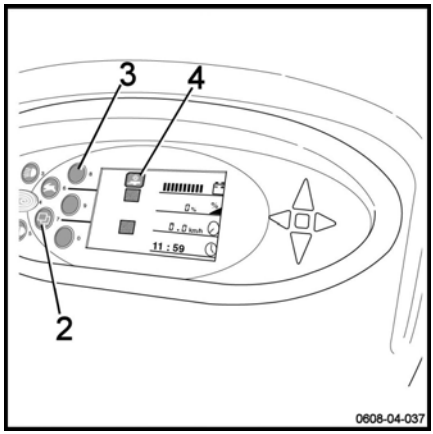
– Sit on the seat.

The operator's presence on the seat must be detected to activate the function.

The trailer starts to lift.

– Press button 7 on the display (2) to access additional options. ▷

– Press button 8 Lift the trailer permanently (3) on the display. An icon (4) is shown on the display.



The function is available. The operator can lower the truck: the trailer remains permanently in the raised position.

If the trailer has not reached its maximum height, it continues to rise until it reaches maximum height. The operator can be either on the seat or dismounted from the tractor.

NOTE

If the truck is stopped and then started up again, the function to lift the trailer permanently is automatically deactivated.

To deactivate the function to lift the trailer permanently, proceed as follows:

– Sit on the seat.

– Press button 8 Lift the trailer permanently (3)

The operator's presence on the seat must be detected to deactivate the function.

In case of a leak, lifting problems or lowering problems, the function to lift the trailer permanently is deactivated. The icon (4) is replaced by a cross.

If an error message appears, please contact the After-Sales Service.

Operating the Liftrunner system equipment option and the Pedestrian slow travel function

The Liftrunner system equipment option is compatible with the Pedestrian slow travel option. To use these options together, please follow the instructions below:

– Park the tow tractor safely.

– Switch the tow tractor off and dismount.

– Hitch the trailer.

– Connect the hydraulic pipe union of the trailer to the (1) nipple that is provided at the rear of the tow tractor.

⚠ DANGER

Risk of injury.

Do not connect the pipe when the tow tractor is switched on.

Do not mount the tractor when someone is handling the pipe union.

Do not connect the pipe to the tow tractor if someone is sitting on the seat of the machine.

– Sit on the seat.

– Press button 7 on the display (2) to access additional options.

– Press button 8 Lift the trailer permanently (3)

– Dismount the tow tractor

– Press the Pedestrian slow travel button Keep the button pressed.

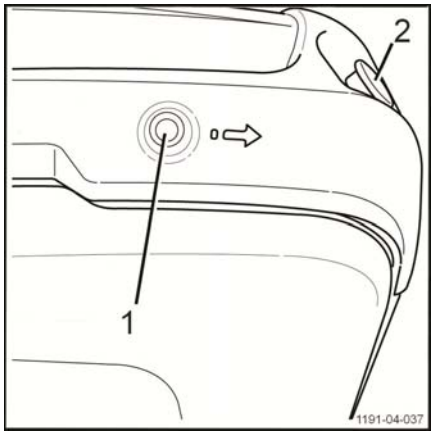
The truck moves forwards. The truck stops automatically after 4 metres, even if the operator continues to press down on the button.

NOTE

If the trailer is in the low position, the trailer is lifted automatically when the operator presses the Pedestrian slow advance button. The tow tractor moves forwards once lifting has ended.

Optional equipment

Pedestrian "Slow travel" option



The "Slow travel" option, known as Pedestrian, allows you to move the tow tractor forwards without the need for a forklift operator at the steering wheel. The speed can be set between 1 and 4 km/h. Speed is limited to 3 km/h by default.

If a forklift operator is seated at the steering wheel, a third party cannot activate the "Slow travel" button.

The button (1) for using the Pedestrian option is located on the right-hand or left-hand side of the tow tractor. This button is always located next to an emergency off switch (2).

⚠ WARNING

Risk of crushing feet

Do not allow your feet to come close to the wheels of the tow tractor.

Wear safety footwear.

To use the "Slow travel" option, proceed as follows:

– Check that the front wheel of the tow tractor pointing in a straight line
– Leave the tow tractor lights switched on and climb down from the tow tractor
– Press the "Slow travel" button (1). Keep the button pressed down. The truck moves forwards. It stops automatically after 4 metres, even if the forklift operator continues to press down on the button (1)
– In the event of danger, press the emergency off switch (2). The circuits are interrupted

NOTE

If the front wheel deviates by + or - 10°, the function is automatically stopped. On the display of the tow tractor, the direction indicators and central lights flash to indicate the fault detected. The forklift operator must return the wheel to the straight-ahead position to use the function again.

Cab option

The tow tractor and carrier can be equipped with a cab featuring various options.

Five cab types are available.

Depending on the type chosen, the cab may have:

- Rigid doors, flexible doors or no door
- Front and rear windscreen wipers
- Interior/exterior rear-view mirrors
- Optional heating/demisting function

⚠ WARNING

Risk of accident

Always take care to keep the windscreen and the windows clean and in good condition to ensure visibility.

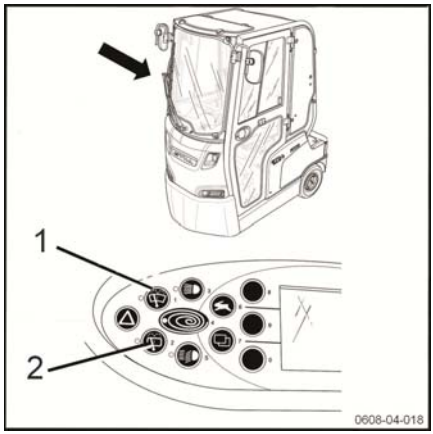
The cab cannot, under any circumstances, be considered equivalent to an overhead guard. It is therefore important that the loads transported are positioned correctly, regardless of the equipment fitted to the tow tractor or carrier.

⚠ WARNING

Risk of accident

Before driving through access passageways, make sure that the height of the tow tractor or carrier fitted with a cab is suitable for the height of the passageway.

Windscreen wiper option



The tow tractor and carrier can be fitted with front and rear windscreen wipers.

This equipment is offered as an option with the cab.

To operate the desired windscreen wiper, proceed as follows:

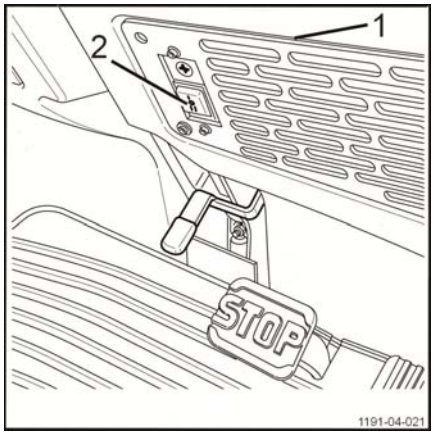
– Press the button (1) on the display for the front windscreen wiper.

– Press the button (2) on the display for the rear windscreen wiper.

Make sure that the windscreen wipers are in good condition to ensure good visibility.

To use the windscreen washer system to clean the windows, press and hold down the (1) or (2) button.

Heating/demisting option



All cabs can be equipped with the heating option. This option is also used for demisting.

The heating system is supplied by the battery.

The switch panel (1) is at knee height, and is located to the right of the steering column.

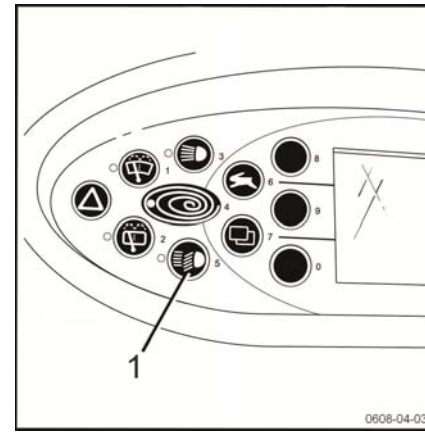
The control button for heating (2) has three positions:

- Position 0: heating is switched off
- Position 1: corresponds to speed 1
- Position 2: corresponds to speed 2

– Use the control button (2) to reach the desired intensity

The same control button is used for heating and demisting.

Automatic lights option ▷



The tow tractor can be equipped with automatic signal lights.

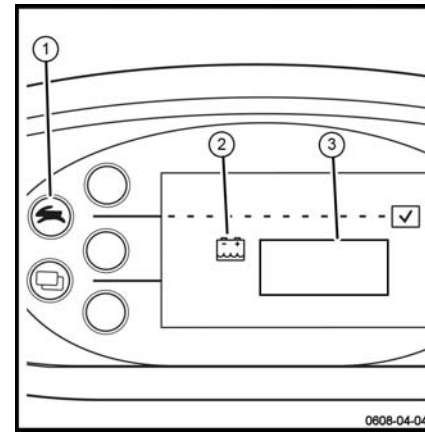
The side lights and main beam headlights switch on automatically when the forklift operator sits in the driver's seat.

To switch the signal lights off, simply press the button (1) on the display.

– Press once: main beam headlights off and side lights on

– Press twice: main beam headlights off and side lights off.

Electrolyte level display option ▷



Tow tractors may be equipped with a battery fitted with a sensor that allows the electrolyte level to be analysed.

The electrolyte level option displays the following information:

- The electrolyte level of the battery
- The status of the measuring device

Three types of message accompanied by the symbol (2) may appear in the display field (3)

BATTERY OK

- This message appears for two seconds after the start page has been displayed

ACID LEVEL

- This message appears when the electrolyte level is insufficient

– Press the button (1) to confirm the message and return to the default display

⚠ CAUTION

Reduction of truck performance

If the electrolyte level has not been corrected after 24 hours, truck performance is reduced to 4 km/h (default).

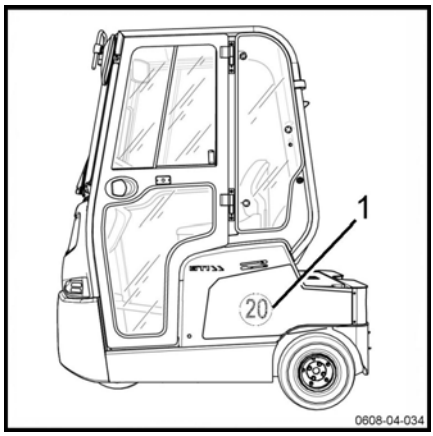
– Correct the electrolyte level.

SENSOR NOT DETECTED

- This message appears when the signal is missing or defective

– Contact the After-Sales Service Centre.

StVZO (German Road Traffic Licensing Regulations) option (intended for the German market) ▷



This option is intended for the German market only and allows the tow tractor to be driven on the road.

The speed is limited to 20 km/h on the road. Two 20 km/h labels (1) are affixed to each side of the tow tractor.

A kit is provided if you would like to have this option.

This kit allows you to prepare approval certification for driving on the road. **You must request approval certification before driving the tow tractor on the road.** This approval certification relates to the tow tractor and its trailer train.

A licence plate must be fitted, which is lit when the tow tractor or carrier is being used on the road at night.

Parking the tow tractor

⚠ WARNING

Do not stop the tow tractor on an incline. If necessary, make sure it is safely secured using chocks.

Immobilising the tow tractor

– Immobilise the tow tractor.

– Switch off the ignition, and remove the key. For tow tractors with digicodes, turn the knob.

– Press the emergency stop button.

Restarting work

– Replace the key into the ignition, or turn the knob and enter the driver code.

– Pull the emergency stop switch.

Battery

Battery type

Tow tractors can be fitted with different types of batteries. Comply with the information indicated on your battery's type plate, as well as with its features.

⚠ WARNING

The weight and size of the battery affect the stability of the tow tractor.

The new battery must weigh the same as the old one. Do not remove extra weight or change its position.

⚠ CAUTION

Be careful not to damage any wiring when replacing the battery.

⚠ DANGER

Batteries must be handled with the utmost care.

Do not open the battery.

Do not smoke or use naked flames near a battery.

Keep combustible material and tools that create sparks away from the tow tractor and battery charger.

The area in which recharging takes place must be well ventilated and equipped with fire extinguishers.

⚠ CAUTION

Never disassemble the bar located in the battery compartment to fit the carrier with a DIN 48 V/3PzS/345/375/Ah battery.

There is a risk of overload on the front wheel that may result in a considerable safety risk.

If the battery is installed in spite of this (this procedure **MUST** be performed by the service department), the speed of the carrier is limited. Do not drive at a speed of more than 10 km/h.

Accessing the battery

⚠ WARNING

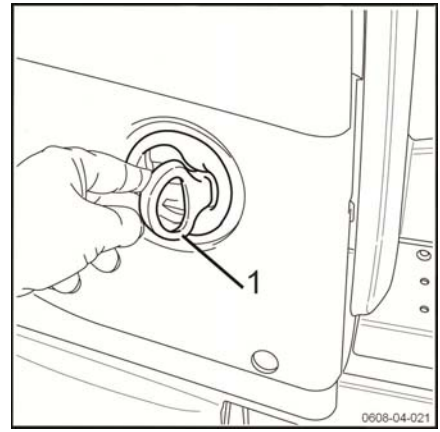
We recommend wearing safety footwear when carrying out any work on the tow tractor.

Opening the battery compartment

– Immobilise the tow tractor.
– Switch off the ignition, and remove the key.
– Press the emergency stop button.
– Climb out of the tow tractor, paying attention to your surroundings.

The battery compartment is on the right-hand side of the tow tractor.

– Open the battery compartment door using the handle (1).



Unlocking the battery

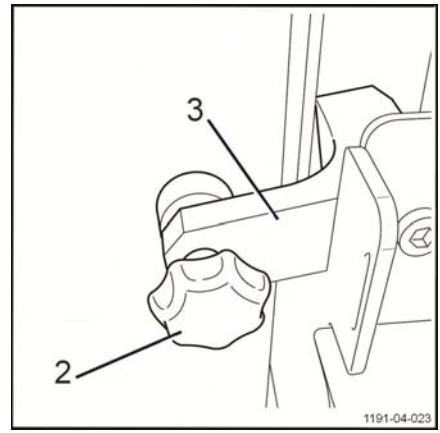
– Disconnect the battery.
– Turn the handwheel (2) to unlock it.
– Lift the stop (3).

You can now pull the battery towards you using a suitable tool (see chapter "Battery replacement" below).

⚠ WARNING

Risk of trapping fingers

Always wear suitable gloves when handling the battery.



Locking the battery

⚠ DANGER

Risk of damage to the tow tractor or injury to a person

It is essential that you lock the battery before closing the battery compartment door and manoeuvring the tow tractor.

– Fully lower the stop (3).

– Turn the handwheel (2) to lock it.

– Connect the battery.

The battery is now locked.

Closing the battery compartment

It is essential that you close the battery compartment door before driving. The door closes only if the battery is locked correctly.

– Carefully check that the battery is locked correctly.

– Close the battery compartment door.

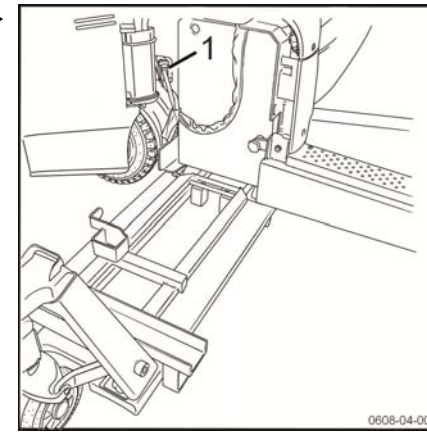
⚠ WARNING

Risk of trapping fingers

Do not position your fingers at the edge of the door when closing it.

– Return the tow tractor to service.

Battery connection



⚠ CAUTION

May cause a short circuit and damage the electrical and electronic components.

– Always connect or disconnect the battery connector when the tractor is off.

– Open the battery compartment door. See the chapter **Accessing the battery.**
– Insert the battery male connector (1) into the truck socket.
– Carefully check the battery locking system.
– Close the battery compartment door.

Charging the battery using an external charger

⚠ CAUTION

The battery may be damaged if discharged beyond a given limit.

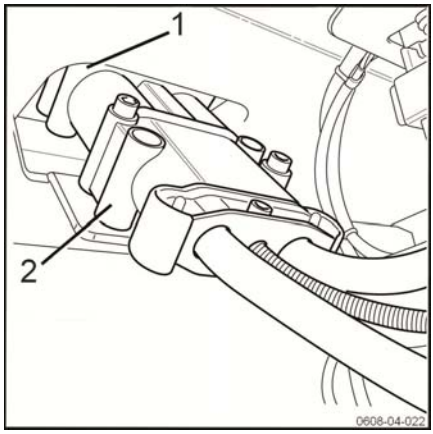
– Immediately charge the battery.

⚠ DANGER

Risk of gas escaping.

No one must be inside the cab. The cab door must be closed during battery charging.

– Park the tow tractor safely.
– Before charging, check the condition of the battery cable and charger cable. Replace them, if necessary.
– Open the battery compartment door and leave it open.
– Remove the battery disconnection handle (1) from the tow tractor plug (2). ▷
– Connect the battery connector to the wall-mounted connector.



⚠ WARNING

Only unplug the battery connector from the battery charger when both the battery charger and tow tractor are switched off.

NOTE

Follow the instructions provided by the battery and battery charger manufacturers (equalising charge).

⚠ WARNING

Risk of damage, short circuit or explosion.

Do not place any metallic objects or tools onto the battery.

Do not smoke.

⚠ WARNING

The electrolyte (diluted sulphuric acid) is toxic and very caustic.

Follow the safety rules when handling battery acid.

⚠ WARNING

Explosive gases are generated during battery charging.

– Make sure the work area is well ventilated.
– Make sure the battery compartment door remains open for the entire time the battery is charging.

General information on the on-board charger

⚠ CAUTION

It is strictly prohibited to use an on-board charger other than the one recommended.

Thanks to the on-board charger, it is no longer necessary to use a charging room. In fact, this charger can be connected to any 2P+E, 230-V, 16-A socket.

However, before charging in this way, it is necessary to ensure that the location selected for charging satisfies all of the safety requirements.

NOTE

The on-board charger of the tow tractor or the carrier is compatible with wet lead batteries with a capacity of 240, 345 and 375 Ah and gel batteries with a capacity of 210, 225, 300, and 330 Ah.

The charger is designed:

- To be incorporated inside the carrier or outside the tow tractor
- To remain permanently connected to the battery
- To operate in all positions
- To remain connected to the mains during periods of tow tractor downtime to ensure the availability of the machine

⚠ CAUTION

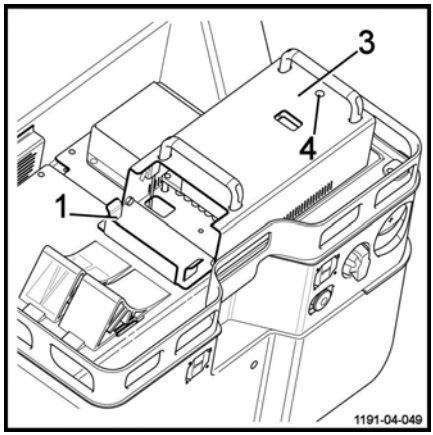
The tow tractor cannot be operated during charging.

Using the on-board charger (optional) ▷

The on-board charger is factory-set for a specific battery type and battery power. If the battery must be changed, please contact the After-Sales Service for reprogramming.

The on-board charger (3) is visible on the tow tractor. The on-board charger is located at the rear above the technical compartment. The access door (1) is located on the on-board charger.

The on-board charger is not visible outside on the carrier. The on-board charger is located inside the technical compartment. An access door (1) is located on the side of the carrier.



Proceed as follows:

- Park the tow tractor safely. Ensure that the tow tractor is not located near flammable substances. Ensure that the area is clear and well ventilated.
- Switch off the ignition.

– Ensure that the side ventilation openings are clear.

⚠ CAUTION

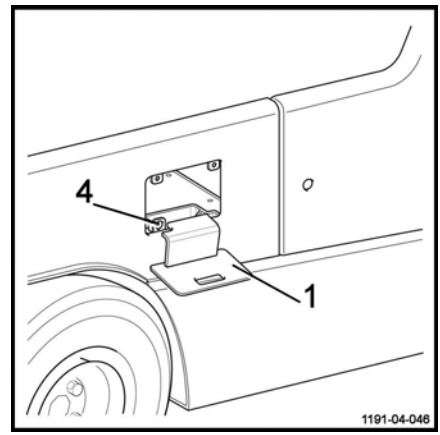
Risk of damage to the mains cable resulting in electric shock and/or burns!

Park the truck close to the mains wall socket. The mains cable of the on-board charger must not be taut when connected and charging.

– Open the access door (1) ▷

When the access door is opened, a switch automatically turns off the tow tractor.

– Connect the charger plug to an external connector. If the connector supplied does not meet country standards, use an intermediate adapter.



NOTE

Opening the door of the battery compartment during charging is recommended whenever possible (risk of gas escaping).

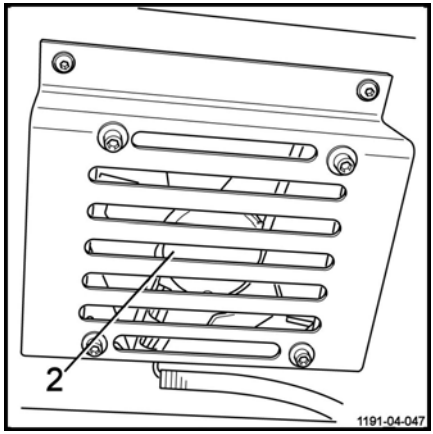
The external LED (4) can change between three different colours.

Phase	LED (4)
Battery not connected	Off
Charging in progress	Continuously lit – orange colour
Charging completed soon	Lit and blinking – orange colour
Charging ended	Continuously lit – green colour
Alarm	Continuously lit – red colour
Charging in programming mode	Lit and blinking – green colour
Fan is blocked – charging stopped	Lit and blinking – red colour
Fan out of service – charging stopped	Lit and blinking – red colour

If the colour of the LED is red, please contact the After-Sales Service.

The maximum charging time is 11 hours. If the battery is worn, the charger stops automatically after 15 hours.

– Check the operation of the fan (2), located behind the seat. Check that no objects are stopping the fan from operating properly. ▷



If the fan malfunctions, you must open the door to the battery compartment for ventilation. Contact the After-Sales Service to repair or to change the fan.

When charging is complete:

– Disconnect the charger connector.

– Close the access door (1).

– Check that the door to the battery compartment is closed securely.

– Restart the tow tractor.

⚠ CAUTION

Risk of damage to the mains cable due to frequent operator handling. Risk of electric shock and/or burns!

The mains cable must be checked regularly as part of periodic statutory checks and maintenance operations.

The on-board charger option and additional equipment

It is possible to connect a data terminal to the tow tractor. A cable is supplied with the tow tractor and the carrier (available as an option only).

This piece of additional equipment can be supplied with a voltage of 12 V or 24 V.

If the battery is recharged by the on-board charger:

- The data terminal supplied with a voltage of 12 V continues to operate during charging
- The data terminal supplied with a voltage of 24 V is automatically cut off during charging

Charging the battery with opportunity charging (optional)

⚠ CAUTION

Risk of equipment damage

Make sure that the charger is compatible with the tractor's battery in terms of charging voltage and current (refer to the instructions for the external charger).

Always follow the manufacturer's instructions supplied with the battery charger.

For a gel battery, use a gel battery charger or an adjustable charger on the gel setting.

Ensure the correct "+" and "-" polarity when connecting the battery and charger connectors. Do not reverse the connectors.

⚠ WARNING

Risk of discharge sparks

To avoid any sparks, always connect the battery connector before switching the battery charger on and disconnect it after switching the charger off.

Make sure you are in an area free from any risk of fire.

NOTE

- *When recharging a gel battery with this equipment, a complete charging cycle is recommended. Short charging times may damage the battery.*
- *When recharging a lead battery, we recommend that you also select electrolyte agitation.*

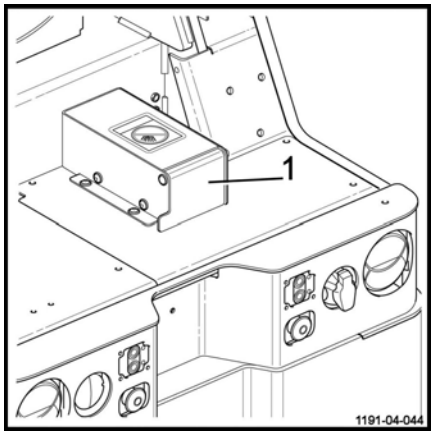
Operating the opportunity charging option on the tow tractor

For tow tractors fitted with the opportunity charging option, a connector is available at the rear of the truck. The connector allows you to charge the battery with an external charger.

Proceed as follows:

– Safely park the tractor close to the battery charging station. Ensure that the tow tractor is not located near flammable substances. Ensure that the area is clear and well ventilated.

– Switch off the ignition.
– Ensure that the side ventilation openings are clear.
– Open the access door (1) ▷
– Plug the socket of the battery charging station into the opportunity charging equipment connector.



NOTE

Opening the door of the battery compartment during charging is recommended whenever possible (risk of gas escaping).

The battery will start charging.

⚠ DANGER

While the battery is charging, check the operation of the fan behind the socket.

If the fan is out of service, you must open the door to the battery compartment (risk of gas escaping). Contact the After-Sales Service.

Also check that no objects are stopping the fan from operating properly.

⚠ DANGER

Risk of gas escaping.

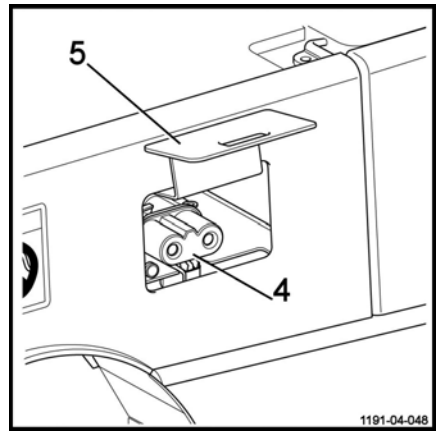
No one must be inside the cab.

When charging is complete and the charger has stopped:

– Disconnect the charging connector.
– Close the access door (1).
– Check that the door to the battery compartment is closed securely.
– Switch on the ignition and check the charging status of the two tractor on the display.

The tow tractor is now ready for use.

Operating the opportunity charging option on the carrier ▷



For carriers fitted with the opportunity charging option, a socket (4) is available on the side of the machine. The connector allows you to charge the battery with an external charger.

Proceed as follows:

– Safely park the carrier close to the battery charging station. Ensure that the carrier is not located near flammable substances. Ensure that the area is clear and well ventilated.
– Switch off the ignition.
– Ensure that the side ventilation openings are clear.
– Open the access door (5) located at the side of the carrier.
– Plug the socket of the battery charging station (4) into the opportunity charging equipment.

NOTE

Opening the door of the battery compartment during charging is recommended whenever possible (risk of gas escaping).

The battery will start charging.

⚠ DANGER

While the battery is charging, check the operation of the fan behind the socket.

If the fan is out of service, you must open the door to the battery compartment (risk of gas escaping). Contact the After-Sales Service.

Also check that no objects are stopping the fan from operating properly.

⚠ DANGER

Risk of gas escaping.

No one must be inside the cab.

When charging is complete and the charger has stopped:

– Disconnect the charging connector.

– Close the access door (5).
– Check that the door to the battery compartment is closed securely.
– Switch on the ignition and check the charging status of the carrier on the display.

The carrier is now ready for use.

The opportunity charging option and additional equipment

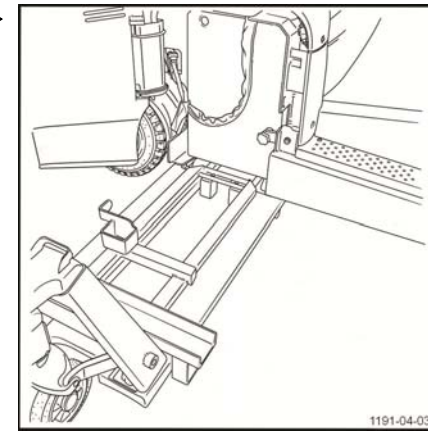
It is possible to connect a data terminal to the tow tractor. A cable is supplied with the tow tractor and the carrier (available as an option only).

This piece of additional equipment can be supplied with a voltage of 12 V or 24 V.

If the battery is recharged via by the opportunity charging equipment:

- The data terminal supplied with a voltage of 12 V continues to operate during charging
- The data terminal supplied with a voltage of 24 V is automatically cut off during charging

Changing the battery with the Fork Off tool ▷



⚠ CAUTION

Risk of damage to the tow tractor

– The replacement battery MUST be identical in size and weight to the standard battery.

⚠ WARNING

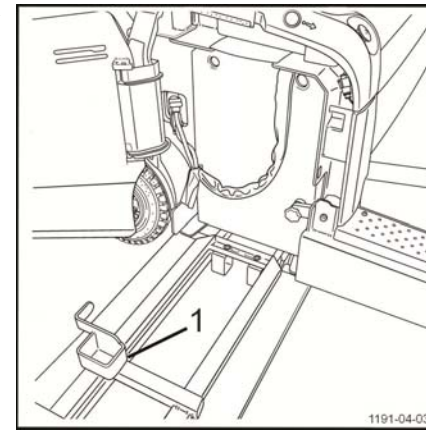
Risk of trapping fingers

It is recommended that you wear gloves when changing the battery.

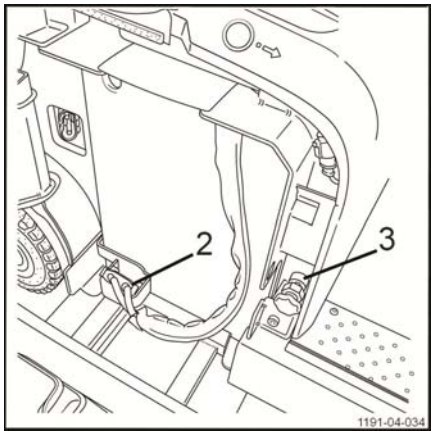
When changing the battery, it is essential that you use the Fork Off tool sold with the battery by Still.

Proceed as follows:

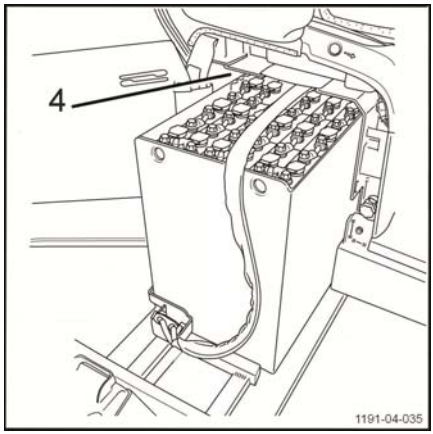
– Immobilise the tow tractor in a suitable open area, on even, horizontal ground.
– Switch off the ignition, and remove the key or turn the knob.
– Press the emergency stop button.
– Open the battery compartment door. ▷
– Position the Fork Off tool as shown. Adjust the feet of the tool so that it is centred and parallel to the forks. Position the tool correctly under the battery.



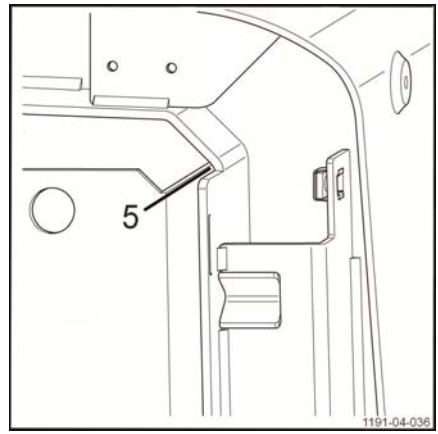
– Position the tool up to the stop (1).
– Unplug the battery connector (2). Place it in the location provided for this purpose.



– Unlock the battery (3).



– Using the Fork Off tool, gently lift the battery and remove it from the battery compartment (4). ▷
– Align the battery and chassis in accordance with the visual marking (5).
– Change the battery.
– Using the tool, push the new battery down to the bottom of the battery compartment (4).



⚠ WARNING

Risk of pinching the cables

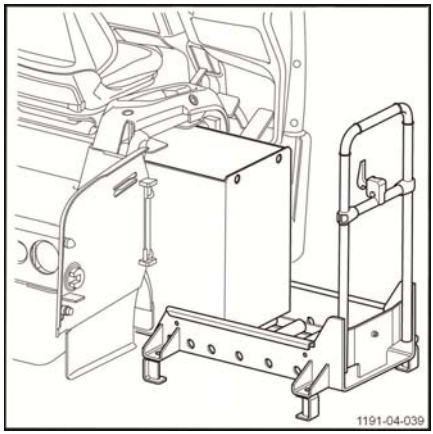
Take care not to pinch the battery connector cable.

– Align the battery and chassis in accordance with the visual marking (5).
– Lock the battery.
– Reconnect the battery connector.
– Close the battery compartment door.

Driving with the battery compartment door open is not permitted.

– Restart the truck.

Changing the battery with the Roll Off tool ▷



⚠ WARNING

Risk of trapping fingers

It is recommended that you wear gloves when changing the battery.

It is possible to change the battery using a Roll Off tool. The spare battery is on the tool already.

Proceed as follows:

– Immobilise the tow tractor in a suitable open area, on even, horizontal ground.
– Switch off the ignition and remove the key or turn the turning knob.
– Press the emergency off switch.
– Open the battery compartment door.
– Position the tool near the tow tractor. The empty slot is level with the battery compartment.
– Disconnect the battery connector.
– Unlock the battery.
– Pull the battery towards the roll holder. Remove the battery completely.
– Connect the battery connector to the second battery, which is located on the Roll Off tool.
– Pull the emergency off switch and restart the tow tractor.
– Move the tow tractor forwards slowly and carefully with the battery compartment door open.

NOTE

This is the only manoeuver where it is permitted to drive while the battery door is open.

– Immobilise the truck at the second battery.
– Switch off the ignition and remove the key or turn the turning knob.

– Press the emergency off switch.
– Disconnect the battery connector.
– Push the second battery to the bottom of the battery compartment.

⚠ WARNING

Risk of pinching of the cables

Take care not to pinch the battery connector cable.

– Lock the battery.
– Reconnect the battery connector.
– Close the battery compartment door.
– Restart the truck.

Handling the truck in an emergency

Precautions before towing the tractor

⚠ DANGER

Risk of accident

Check the capacity and braking of the vehicle used to tow the tractor.

⚠ DANGER

Risk of accident The tractor could crash into the towing vehicle during braking.

If a rigid connection is not used during towing to transmit power in both directions, the tractor could drive into the towing vehicle when the towing vehicle brakes. For safety reasons, only a rigid tow bar can be used.

– Always use a rigid tow bar.

⚠ DANGER

Risk to life: people can be crushed between the tractor and the towing vehicle during manoeuvring. There is a risk of injury and death.

– Make sure that a trained person provides guidance during manoeuvring.

⚠ CAUTION

Increased risk of accident due to reduced braking effect.

Braking effect greatly reduced.

– Tow the tractor carefully.

⚠ CAUTION

Risk of overturning. If the truck is not steered while it is being towed, it can veer in an uncontrolled manner.

– The truck being towed must be steered by a driver.

⚠ CAUTION

Do not tow a tow tractor with a mechanical failure in the transmission or steering system because the damage can worsen.

In an emergency, use a wheeled support or other suitable equipment.

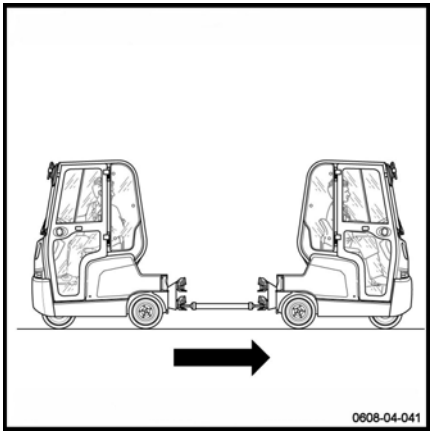
Towing the tractor ▷

⚠ CAUTION

Do not tow a tow tractor with a mechanical failure in the transmission or steering system because the damage may worsen.

In an emergency, use a wheeled support or other suitable equipment.

– Remove the load
– Make sure that the direction selection lever of the tow tractor is in the neutral position.
– Attach a towing vehicle (with sufficient tractive and braking force) to the tow coupling using a **RIGID** tow bar.
– Disconnect the battery.



⚠ CAUTION

The lift off brake is inoperative when the battery is disconnected.

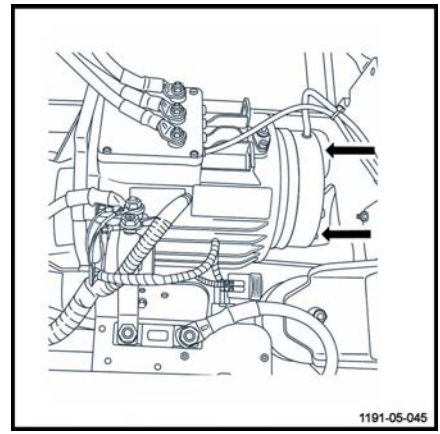
Exercise caution when driving an unpowered towed tractor.

⚠ WARNING

Risk of damage to the wheels and tyres.

The mechanical brake must be released. Otherwise, the wheels cannot rotate freely.

– Remove the cover of the technical compartment.
– Use two M6x55 mm screws. Position them in the two holes in the brake, as shown. ▷
– Tighten the screws gently and, if necessary, until the tow tractor moves.
– Someone must be seated on the tractor being towed in order to steer it and operate the brakes, if required.
– **When towing the tractor, do not exceed the maximum recommended speed of 10 km/h**.



NOTE

When towing on a gradient, reduce speed to a minimum, and make sure that wheel chocks are available.

Handling the tow tractor in specific situations

Transporting the tow tractor

⚠ CAUTION

To secure the tow tractor in order to transport it, use only the attachment points shown.

Using attachment points other than those shown may damage the tow tractor.

NOTE

Protect the areas on the tow tractor that come into contact with the straps.

Tow tractors without a cabin or fitted with a weather protection canopy ▷

- Immobilise the tow tractor.
- Switch off the ignition and remove the key.
- Push the emergency off switch and disconnect the battery.
- Ensure that the battery is properly locked and that the battery compartment door is closed
- Chock all three wheels securely.
- Pass a ratchet strap through the tow coupling to prevent the tow tractor from rolling forwards.
- Pass a ratchet strap over the bottom plate to prevent the tow tractor from rolling backwards.

NOTE

If the tow tractor has a front tow coupling, pass the ratchet strap through the front tow coupling to prevent the tow tractor from rolling backwards.

Tow tractors fitted with a full cabin with solid doors ▷

– Park the tow tractor against the trailer headboard.

NOTE

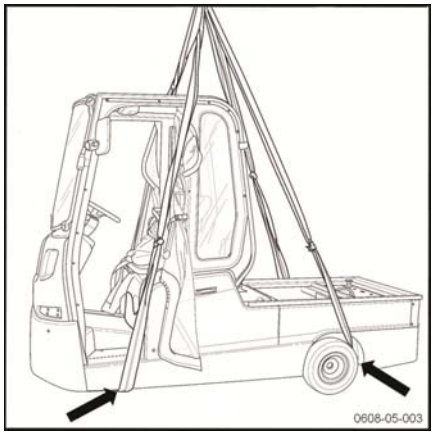
Protect the areas on the tow tractor that come into contact with the headboard.

– Immobilise the tow tractor.
– Switch off the ignition and remove the key.
– Push the emergency off switch and disconnect the battery.
– Ensure that the battery is properly locked and that the battery compartment door is closed
– Chock all three wheels securely.
– Pass a ratchet strap through the rear trailer coupling to prevent the tow tractor from rolling backwards

NOTE

If the tow tractor has a front tow coupling, pass ratchet straps through both tow couplings to prevent the tow tractor from moving.

Slinging the tow tractor ▷



⚠ DANGER

Risk of injury and death due to broken harnesses

– Sharp edges can damage the harnesses. Protect the harnesses from sharp edges.

– Only use harnesses with adequate load capacities. Refer to the truck type/capacity plate to determine the weight of the tow tractor and battery.

⚠ DANGER

Risk of tractor falling

– Never lift the truck using the tow coupling.

– Only use the tow coupling for towing.

– Sling only at the corresponding connecting points.

⚠ CAUTION

Risk of tow tractor damage if the harnesses are incorrectly adjusted

Pressure from the harnesses can damage or destroy attachment parts when the tractor is lifted.

– Secure harnesses so that they do not touch any attachment parts.

⚠ CAUTION

Harnesses can damage the tractor's paintwork.

Harnesses can damage paintwork by chafing and pressing on the surface of the tractor. Particularly hard or sharp-edged harnesses, such as wires or chains, can damage the surface.

– Use textile harnesses, for example, lifting straps, with edge protectors or similar protective devices, if necessary

Observe the following instructions:

– Immobilise the tow tractor.

– Switch off the ignition, and remove the key.

– Press the emergency stop button.

– Remove any items that could fall.

– Ensure that the battery is properly locked and that the battery compartment door is closed

– Protect all parts that come into contact with the lifting device.
– Attach the lifting device as illustrated.
– Lift the tow tractor slowly and carefully.

⚠ DANGER

Never step under an elevated load.

When lifting the tractor, make sure that no one is in the vicinity.

Jacking the tow tractor ▷

⚠ DANGER

Only use a hydraulic jack with sufficient lifting capacity.

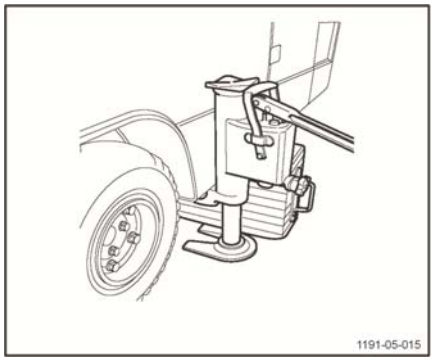
Refer to the tow tractor or carrier capacity plate to determine the weight of the truck and battery.

⚠ DANGER

Never work on a jacked tow tractor or carrier or leave it unattended.

Always chock the raised tow tractor securely after jacking.

– Before lifting the tow tractor, ensure that the load has been removed. ▷
– Only raise the tow tractor at lifting points (1) and (2).



5

Maintenance

General maintenance information

General

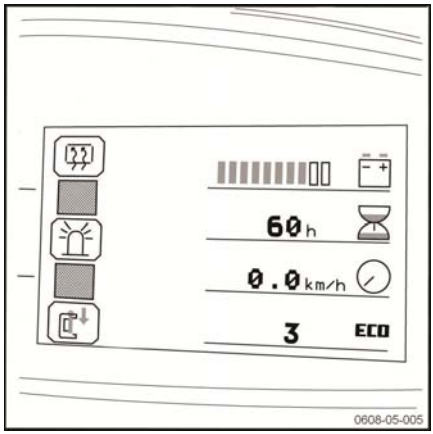
The following instructions contain all the information required for servicing your tow tractor. Carry out the various maintenance work in compliance with the maintenance plan. This ensures that your tow tractor is reliable and in good working order and that the warranty remains valid.

Service plan

One of the functions of your display shows the hours of operation of your tow tractor. Refer to it and consult the tow tractor's service plan.

The service plan is followed by advice to facilitate work.

Maintenance intervals must be reduced if the truck is used under harsh conditions (extreme heat or cold, large quantities of dust).



Grade and quantity of lubricants and other consumables

Only lubricants and other consumables specified in these operating instructions are authorised for use in maintenance work.

Lubricants and other consumables required for tow tractor maintenance are listed in the maintenance specifications table.

Never mix different qualities of grease or oil. If it is absolutely necessary to change brands, make sure to flush thoroughly beforehand.

Before changing any filters or working on the hydraulic system, thoroughly clean the surface and the areas around the part.

All containers used to pour oil must be clean.

Servicing and maintenance personnel training and qualification

Truck maintenance must only be carried out by qualified and authorised personnel.

The annual inspection for prevention of accidents at work must be carried out by a person qualified to do so. The person carrying out this inspection must provide their expertise and opinion without being influenced by economic factors or company internal issues. Safety is the only critical deciding factor.

The person responsible for carrying out the inspection must have sufficient knowledge and experience to be able to assess the condition of the truck and the efficiency of the protective installations in accordance with the technical regulations and principles established for checking industrial trucks.

Battery maintenance staff

Batteries must only be recharged, maintained and changed by specially trained personnel. Personnel must follow the manufacturer's instructions of the battery, the battery charger and the truck.

It is essential to follow the battery maintenance instructions and the battery charger operating instructions.

Maintenance operations that do not require special training

Simple maintenance operations such as checking the hydraulic fluid level or checking the battery electrolyte level can be carried out by persons with no special training.

A specific qualification is not necessary.

Refer to the maintenance section of this manual for further information.

Ordering spare parts and consumables

Spare parts are provided by our spare parts service department. You will find the information required to place an order in the spare parts and fitting catalogue.

Only use spare parts recommended by the manufacturer.

Unauthorised spare parts may increase the risk of accidents due to faults relating to quality or incorrect choices. Anyone who uses non-compliant spare parts must assume full responsibility in the event of an accident.

Safety guidelines for maintenance

Servicing and maintenance measures

To avoid accidents during servicing and maintenance operations, take all necessary safety measures. For example:

– Ensure that there is no risk of the truck moving or starting up unexpectedly. For this reason, remove the battery connector.

Working on the electrical equipment

Operations on the truck's electrical system must only be carried out when there is no voltage supply.

Operating checks, testing and adjustment work on parts supplied with voltage must only be carried out by personnel:

- who have received detailed instructions
- who have been authorised to perform this work
- who have taken the necessary precautionary measures.

Rings, metal bracelets etc., must be removed before carrying out any operations on electric components.

Remove the electric equipment (which comprises electric components such as the traction controller) before carrying out any welding operations. This precaution prevents this electric equipment from being damaged.

Operations on the electric system require the consent of the manufacturer.

Safety devices

After any repair or maintenance work, it is necessary:

- to refit all safety devices
- to check these for correct operation.

Technical data for inspection and maintenance

Assembly	Material/Lubricant	Capacity/Adjustment value	
Drive axle	Gearbox oil		1.2 litres
Tyres		Front	8 bar
		Rear	8 bar
Brake system	Brake fluid		As required
	Brake linings		Minimum thickness 2 mm
Steering chain	Chain spray		As required
General lubrication points	Grease/oil		As required
Electrical equipment			
Main circuit	Fuse	48 V	1 x 160 A
Battery	Distilled water		As required
	Non-acidic grease		As required
Traction motor		28 V AC	

Recommended lubricants

⚠ DANGER

Toxic products.

Oils and other consumables are toxic products. It is advisable to handle and use them with the utmost care.

Multi-purpose grease

Lithium soap grease, extreme pressure with anti-wear additive - Standard DIN 51825 - KPF 2K - 30, KPF 2K - 20, KPF 2N - 30.

Gearbox oil

Q8 Type T55. Viscosity: 85W140.

NOTE

If in doubt, please contact the After-Sales Service Centre. You should also consult your local dealer if a representative of an oil company offers you an oil product that is not specified in these operating instructions. Only the oils listed above are approved by the manufacturer. Using oil mixtures or hydraulic fluids that are not recommended can cause damage that may be expensive to rectify.

Steering chain

Chain spray

Brake fluid

Original ATE DOT4 brake fluid, type “S”, classification FMVSS 116 or SAE J 1703 issue 1980 and ISO 4925.

NOTE

Contact the After-Sales Service Centre for further information.

ENVIRONMENT NOTE

Used oil must be stored in a suitable place until it is disposed of in compliance with environmental protection measures. Never dispose of used oil in drains or allow it to penetrate soil. Disposal of waste and soiled packaging must be carried out according to current regulations.

ENVIRONMENT NOTE

Do not allow the product to disperse into the environment. Do not dispose of directly into drains or rivers. Packaging that has contained this product must be treated as waste. Contaminated packaging must be completely emptied and may then be recovered following a thorough clean.

Removing the cover to access the technical compartment

⚠ WARNING

Pay attention to the weight of the tow tractor cover and the carrier.

Do not hesitate to use a lifting system to remove the cover of the tow tractor or the carrier.

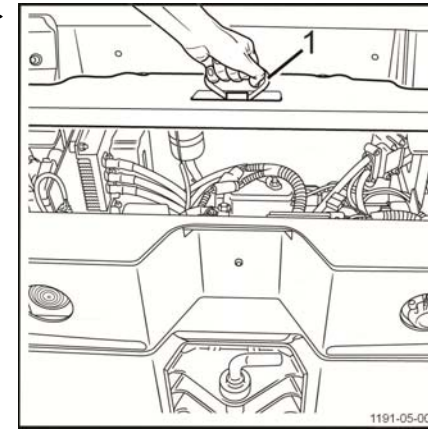
⚠ WARNING

Risk of crushing upper limbs

When opening or closing the cover, limbs could become trapped.

Do not reach between the cover and the chassis with your hands or arms.

Access to the technical compartment of the tow tractor ▷



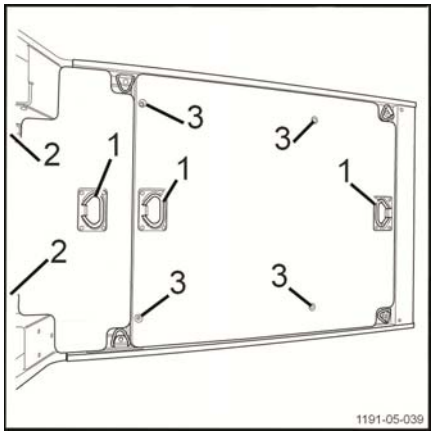
In order to perform maintenance on various tow tractor components, it is necessary to access the technical compartment.

- Immobilise the tow tractor in an open area.
- Switch off the ignition, and remove the key.
- Press the emergency stop button.
- Dismount from the tow tractor.
- Loosen and remove the two screws holding the cover in place.
- Lift the cover using the handle (1).
- Remove the cover and set it aside.

It is now possible to access the technical compartment. After the operation, the cover must be repositioned.

- Put the cover in place.
- Tighten the two screws that hold the cover in place.
- Return the tow tractor to service.

Access to the technical compartment of the carrier ▷



Proceed as follows to access the technical compartment of the carrier.

– Immobilise the carrier in an open area.
– Switch off the ignition, and remove the key.
– Press the emergency stop button.
– Dismount from the carrier.
– Loosen and remove the two screws (2) holding the first cover in place.
– Lift the cover using the handle
– Remove the cover and set it aside.
– Loosen and remove the four screws (3) holding the second cover in place

It is now possible to access the technical compartment. After the procedure, the cover (or covers) must be repositioned.

– Put the covers back in place.
– Tighten the six screws holding the covers in place.
– Return the carrier to service.

Maintenance schedule as required

Depending on the application, environmental conditions and driving style, the following procedures should be carried out as required
Chassis and accessories
Cleaning the truck
Filling the washer system reservoir (if applicable)
Checking the condition and operation of the seat belt (if applicable)
Chassis, bodywork and fittings
Checking that the wheel nuts are correctly attached
Checking the condition and pressure of the tyres
Checking the front and rear brake shoes
Cleaning the heater
Refilling the brake fluid reservoir
Electrical/electronic equipment
Checking the condition of the battery and the battery cable
Cleaning the battery and the battery compartment
Checking the condition and operation of the signal lights
Checking the fuses

1000-hour maintenance schedule

Depending on the application, environmental conditions and driving style, the following procedures should be carried out every 1000, 2000, 4000, 5000, 7000, 8000 and 10,000 hours
Preparation
Cleaning the truck
Checking the error codes using the diagnostic tool
Chassis and accessories
Checking and lubricating the driver's seat
Checking and lubricating the automatic tow coupling
Checking and lubricating the latches and hinges
Chassis, bodywork and fittings
Cleaning and checking the gearbox breather
Checking and lubricating the steering chain
Checking the front suspension
Lubricating the front suspension
Checking and lubricating the front wheel bearing
Checking the brake fluid level

Checking the condition of the front and rear brake shoes
Checking the drive axle rubber shock mounts
Checking the drive axle suspension bushes
Checking the steering stops (wear and tightness)
Checking and adjusting the battery compartment door latch
Electrical/electronic equipment
Checking the battery acid level and electrolyte density
Checking the traction controller
Optional equipment
Checking the oil level in the Liftrunner system equipment
Checking the condition of the motor brushes for the Liftrunner system equipment
Checking the condition of the mounting for the Opportunity Charging equipment

3000-hour/two-year maintenance plan

Depending on the application, environmental conditions and driving style, the following procedures should be carried out every 3000, 6000 and 9000 hours
Information
Carry out all 1000-hour maintenance work
Chassis, bodywork and fittings
Changing the brake fluid
Checking the electromagnetic brake
Draining and filling the drive axle
Optional equipment
Draining then refilling the Liftrunner system equipment with engine oil
Visually checking the condition of the air filter for the agitation pump (on board charger). Cleaning the filter with water if necessary.

Chassis, bodywork and fittings

Cleaning the tow tractor

Precautions before cleaning

⚠ WARNING

Risk of injury due to the use of materials that are corrosive and hazardous to health

- Always use appropriate personal protective equipment for cleaning work (industrial goggles and solvent-resistant protective gloves).
- Read the safety information provided by the cleaning material manufacturer.

⚠ WARNING

Risk of fire: flammable fluids can be ignited by hot components on the tow tractor.

- Do not use flammable fluids for cleaning.
- Observe manufacturer's guidelines for working with cleaning materials.

⚠ CAUTION

If water penetrates the electrical system, there is a risk of short circuit!

- Always switch off the electrical system before cleaning.
- Do not spray electric motors and other electrical components or their covers directly with water.

⚠ CAUTION

Excessive water pressure or excessively hot water and steam can damage tow tractor components.

- Only use high-pressure cleaners with a maximum output power of 50 bar and maximum temperature of 85°C.
- When using high-pressure cleaners, maintain a nozzle distance of at least 20 cm.
- Do not aim the cleaning jet directly at adhesive labels or decal information.

⚠ CAUTION

Abrasive cleaning materials can damage component surfaces!

- Using abrasive cleaning materials that are unsuitable for plastics can dissolve plastic parts or make them brittle. It could make the display screen on the display unit cloudy.
- Clean plastic parts with plastic cleaning materials only.
- Observe manufacturer's guidelines for working with cleaning materials.

NOTE

The frequency with which the tow tractor is cleaned depends on how it is used. If it is used with very aggressive substances (salt water, fertiliser, chemicals, cement, etc.), the tow tractor must be cleaned thoroughly after every shift.

Before cleaning

- Park the tow tractor safely.
- Switch off the ignition and remove the key.
- Press the emergency stop button.
- Open the battery compartment door.
- Disconnect the battery connector.

Cleaning the tow tractor ▷

⚠ CAUTION

Risk of damage

High-pressure cleaner must not be used in the technical compartment.

Use hot steam or intensive degreasing solutions with extreme caution. The grease in the sealed-for-life bearings will dissolve and leak out. As regreasing is not possible, damage to the bearings will result.

- Clean the outside of the tow tractor with soluble cleaning materials and water (water jet, sponge, cloth).
- Clean all accessible areas.

– Clean the oil filling openings and the surrounding area.
– Clean all the grease nipples before performing lubrication.
– If using compressed air for cleaning, first remove stubborn deposits using a cold cleaning agent.
– Regrease the steering chain after cleaning the underside of the tow tractor. This prolongs the tow tractor's lifespan.

NOTE

The more often the tow tractor is cleaned, the more frequently it must be lubricated.

Cleaning the electrical system

⚠ CAUTION

Cleaning electrical system parts with water can damage the electrical system.

– Cleaning electrical system parts with water is forbidden!
– Use dry cleaning materials in accordance with the manufacturer's specifications.
– Do not remove covers, etc.

– Clean the electrical system parts with a metal-free brush, and blow the dust off with low-pressure compressed air.

Cleaning the windows

The cab windows must always be kept clean and free of ice. This helps maintain good visibility.

⚠ CAUTION

Do not damage the rear window heater (inside).

– Be very careful when cleaning the rear window, and do not use objects with sharp edges.

– Clean the windows.

NOTE

Cleaning can be performed using a commercially available glass cleaner.

After washing

⚠ CAUTION

Danger of short-circuits!

– If any moisture has penetrated into the motors, despite the precautionary measures taken, it is crucial to dry them using compressed air.

– The tow tractor must then be started up to prevent possible corrosion damage.

– Carefully dry the tow tractor (e.g., with compressed air).

– Sit in the driver's seat and start up the tow tractor in accordance with applicable regulations.

General information on battery maintenance

⚠ DANGER

Risk of injury

Before carrying out any operations on the electric installation, turn the truck power supply off. Disconnect the battery connector.

Precautions to be taken during battery maintenance

The plugs on the battery cells must always be dry and clean.

Neutralise any spilt battery acid immediately.

The battery terminals and lugs must be clean, lightly covered with grease for terminals and securely tightened.

Charging the battery

During the charging process, the surface of the battery cells must be clear to ensure sufficient ventilation.

Do not place metal objects on the battery.

The battery cover must remain open during charging. See the chapter entitled **Battery charging using an external charger.**

Battery type

Lead or gel batteries are used. It is advisable to choose a compatible charger.

Before charging, ensure that the charger is suitable for the type of battery.

⚠ CAUTION

Gel batteries are subject to specific charging, maintenance and treatment instructions. A non-compatible charger may result in a battery failure.

Observe the manufacturer's recommendations.

NOTE

- *The discharge indicators used to check the battery must also be suitable for the type of battery*
- *Contact the relevant After-Sales Service Centre*

Charging the battery

– Park the truck in an area without condensation or pollution and with sufficient ventilation.

– Stop the truck.

– Press the emergency off switch.

– Open the battery hood.

– Follow the instructions.

⚠ CAUTION

Do not expose the charger to water, rain, oils, grease or any similar substances.

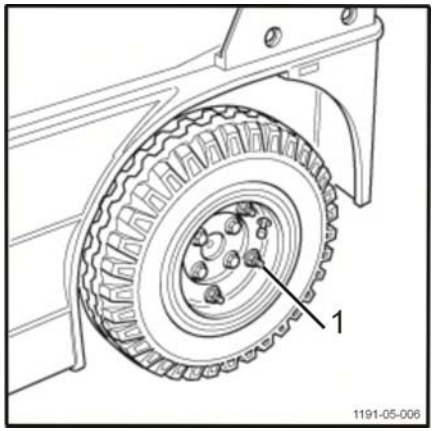
The charger becomes hot during the operation.

⚠ CAUTION

Risk of injury

Do not obstruct the ventilation. Allow the charger to cool down for 10 minutes after charging is complete before touching it. Do not use the charger out of the truck.

Check that the wheel nuts are fitted securely ▷



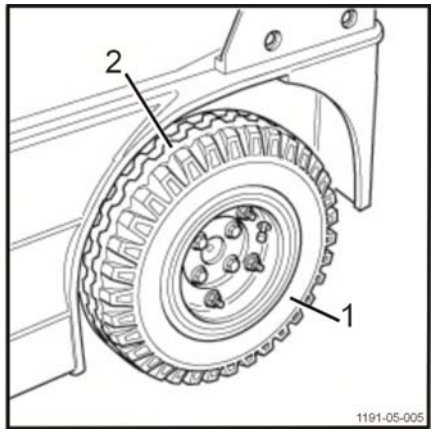
It is advisable to regularly check that the wheel nuts (1) are fitted securely.

For effective wheel fixing, tighten the wheel nuts diametrically to 195 Nm.

NOTE

The wheel bolts must be tightened to the specified torque.

Checking the condition and pressure of the tyres ▷



NOTE

If the tow tractor is to be used on public roads, the tyres must comply with the relevant Road Traffic Regulations.

- Check that the pressure of all the tyres (1) is correct
- Check the condition and wear of the tyres Look for any foreign bodies
- Remove all swarf and sharp objects from the tyre treads

Cleaning the battery and the battery compartment

⚠ WARNING

This delicate operation must be carried out wearing acid resistant gloves, glasses and clothing.

Do not pour acid-bearing wash water down the drain.

For more information, see the battery instructions.

To perform the operations described below, the electrical supply to the tow tractor must be cut off:

– Immobilise the tow tractor
– Switch off the ignition, and remove the key
– Press the emergency stop button
– Open the battery compartment door
– Unlock the battery
– Remove the battery from its compartment using a suitable tool

Gel battery

– Check for traces of sulphate in the compartment and frame
– If there is only minimal sulphate build-up, just wipe the top of the cells with a damp cloth
– If sulphate build-up is substantial, you must jet wash the battery and clean the frame

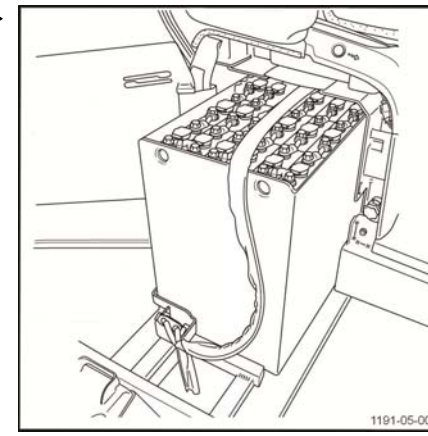
Lead battery

– Check that there is no electrolyte in the bottom of the compartment. To do this, connect the suction bulb supplied with the battery to the plastic plunger tube
– Pump off any electrolyte that may have spilled between the cells
– Clean the top of the cells with a damp cloth

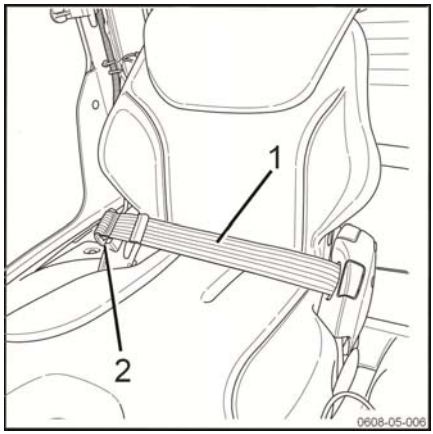
⚠ CAUTION

In the event of substantial sulphate build-up or excessive electrolyte spillage, please contact the after-sales service department as soon as possible.

After these checks have been performed, please lock the battery correctly and close the battery compartment door.



Checking the seat belt



NOTE

Carry out the following checks on a regular basis. In the event of significant strain, a daily check is necessary before each use.

Checking the seat belt (if fitted)

– Pull out the belt (1) completely, and check for wear.

The belt must not be frayed or cut. The stitching must not be loose.

– Check whether the belt is dirty.

– Check whether parts are worn or damaged (including the anchor points).

– Check the buckle to make sure that it locks into place properly.

When the belt tongue is inserted, the belt must be held securely.

– The belt tongue (2) must release when the red button is pressed.

Cleaning the seat belt

– Clean the seat belt, as necessary, but without using chemical cleaning materials (a brush suffices)

Replacement after an accident

As a rule, the seat belt must be replaced after an accident.

Checking the condition and operation of the signal lights

The condition and operation of the signal lights must be checked regularly.

– Check the two road lights located at the front

Check that the lamp lenses are clean and are not broken, and that the lights work.

Incorrect adjustment of the road lights will result in reduced field of vision to the front and will risk dazzling other users.

– Check the direction indicator lights located on the front and rear

If the direction indicator lights are adjusted incorrectly, other users may not know that you want to change direction.

– Check the brake lights located at the rear

Incorrectly functioning brake lights are detrimental to your safety and that of third parties. You could cause an accident.

⚠ DANGER

Risk of accident

Never use the tow tractor if the brake lights are faulty.

– Replace the bulbs in the event of failure

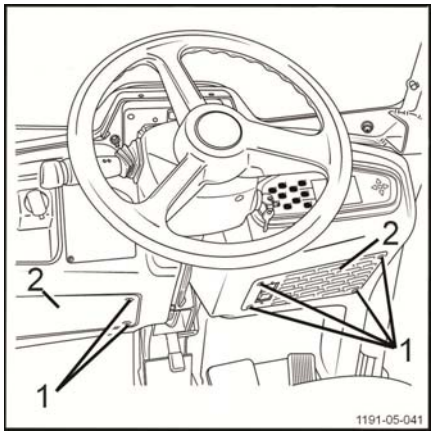
⚠ WARNING

Risk of burns

Do not touch the headlights, particularly the main beam headlights, during and after operation.

– Replace the lights if they are broken

Cleaning the heater

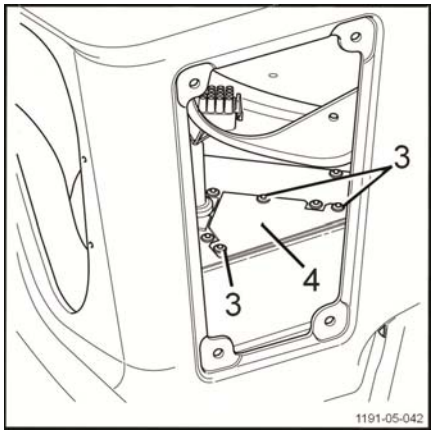


- Park the tow tractor safely.
- Switch off the ignition and remove the key.
- Press the emergency off switch.
- Open the battery compartment door.
- Disconnect the battery connector.
- Unscrew the four screws (1) on the two grilles (2). They are located on each side of the steering column.
- Remove the two grilles (2).
- Blow compressed air into the interior of the compartment to remove all dust and dirt.

⚠ WARNING

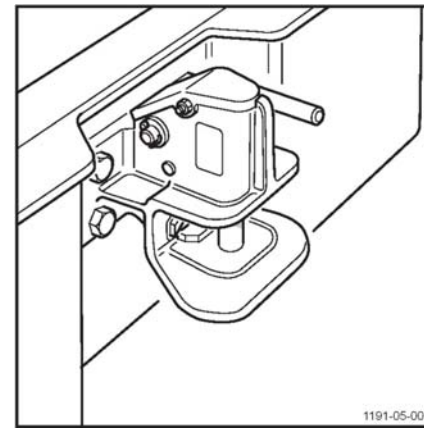
It is advisable to wear industrial goggles and a mask.

It is necessary to access the interior doors to clean the heater completely.



- Unscrew the three screws (3) on the interior doors (4).
- Remove the two doors (4).
- Blow compressed air into the interior of the enclosure to remove all dust and dirt.
- Refit the two doors (4).
- Screw the three screws (3) on the two interior doors back in.
- Refit the two grilles (2).
- Screw the four screws (1) on the two grilles back in.
- Reconnect the battery connector. Lock it.
- Close the battery compartment door.
- Return the tow tractor to service.

Checking and lubricating the automatic tow coupling



⚠ WARNING

Risk of crushing

– Do not reach into the open coupling with your hands or arms. It may close.

– Lubricate the automatic coupling locking mechanism.

For tow tractors equipped with a coupling that can be controlled remotely:

– Tighten the mounting screws on the remotely unlockable tow coupling.

– Ensure that all the safety locking pins are mounted correctly.

Checking the braking system

⚠ DANGER

Increased risk of accident if the braking system is faulty

– Never drive a tow tractor with a faulty braking system

– If the braking system is faulty, park the tow tractor safely. Inform a manager immediately so that the fault can be rectified

⚠ DANGER

Increased risk of accident following a failure in the braking system

– Never use the tow tractor if the brake fluid level is low

– Fill the brake fluid reservoir immediately and check the braking system for leaks

– Look for corrosion and damage to the brake pipes and check for leaks

– Check for leaks on the front brake calipers

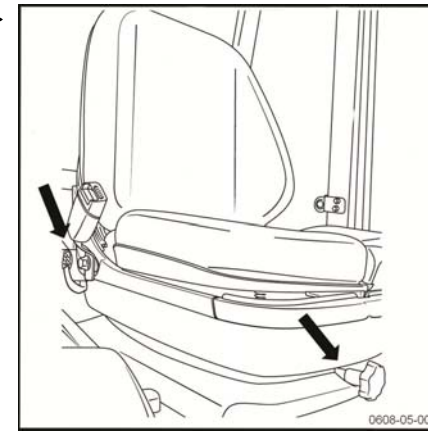
– Check for leaks on the slave cylinder on the rear axle

NOTE

It is strongly recommended that this operation and any other adjustments to the braking system are carried out by the after-sales service department.

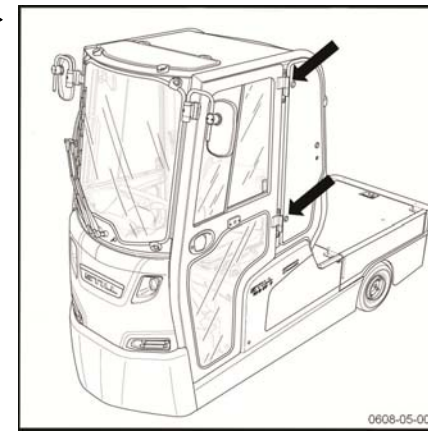
Driver's compartment

Checking and lubricating the driver's seat ▷



– Check the driver's seat adjustment mechanism for correct operation
– Check that the seat locking mechanism engages correctly after adjustment
– Lubricate both seat slides and associated adjustment mechanism
– Check that the connector for the forklift operator detection system is present and working correctly

Checking and lubricating the latches and hinges ▷

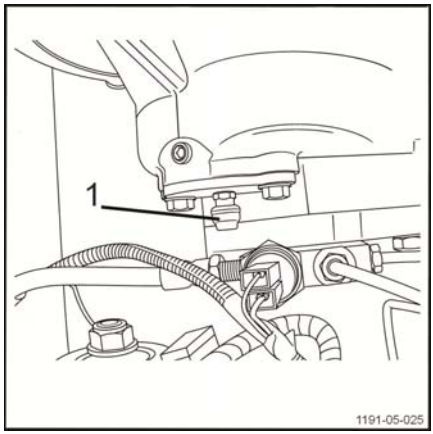


To maintain your tow tractor or carrier and to keep it in good condition for as long as possible, the latches and hinges must be lubricated

– Check and lubricate:
• The hinges and locking mechanisms
• The battery compartment door hinges
• The cab door hinges if your tow tractor is equipped with a rigid cab. Lubricate the hinges if necessary

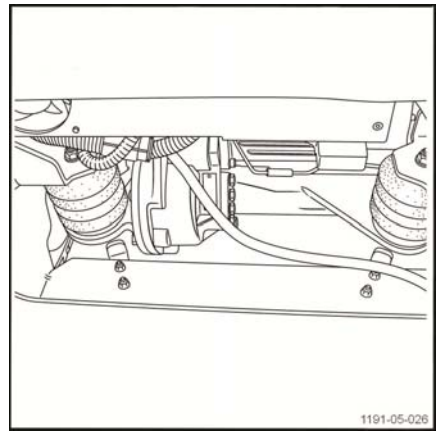
Transmission

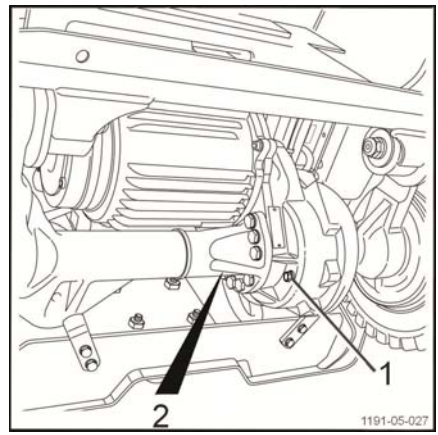
Cleaning and checking the gearbox breather ▷



– Park the tow tractor safely
– Switch off the ignition and remove the key
– Press the emergency stop button
– Open the battery compartment door
– Disconnect the battery connector
– Remove the cover
– Remove the breather from the gearbox (1)
– Clean the breather with clean fuel then check for correct operation
– Refit the breather on the gearbox
– Refit the cover
– Reconnect the battery connector. Lock the battery
– Close the battery compartment door
– Restart the tow tractor

Draining and filling the drive axle ▷





NOTE

To facilitate the flow of oil, draining should preferably be performed when the engine is hot.

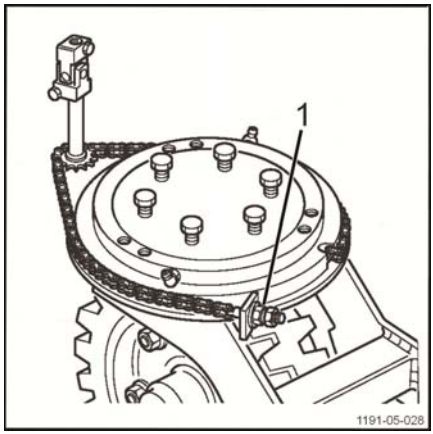
– Park the tow tractor safely
– Switch off the ignition and remove the key
– Press the emergency stop button
– Open the battery compartment door
– Disconnect the battery connector
– Remove the cover
– Remove the oil drain plug (1) from the drive axle gearbox. Allow the oil to drain completely into a container
– Remove the filler/level plug (2) from the drive axle gearbox
– Refit and tighten the oil drain plug (1)
– Fill the drive axle up to the filler plug

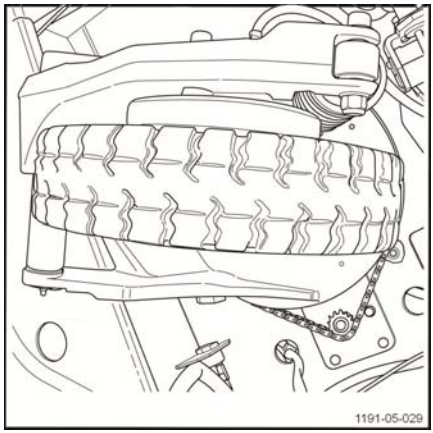
Axle capacity: 1.2 litres

– Refit and tighten the filler/level plug (2)
– Refit the cover
– Reconnect the battery connector. Lock the battery
– Close the battery compartment door
– Restart the tow tractor

Chassis

Checking and lubricating the steering chain ▷



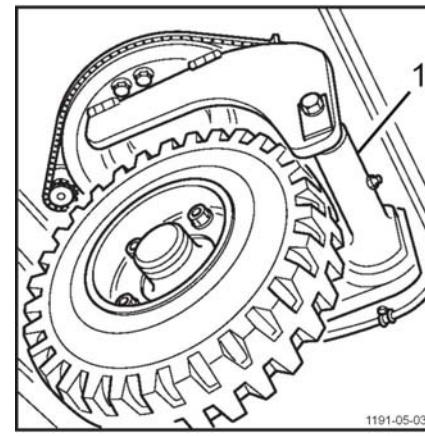


– Park the tow tractor safely
– Switch off the ignition and remove the key
– Press the emergency stop button
– Open the battery compartment door
– Disconnect the battery connector
– Jack the truck front and chock securely
– Check the chain tension. The chain deflection must be no more than 3–5 mm at the midpoint

If the chain is too tight, steering will be heavy and chain wear will increase. If the chain is not tight enough, the steering wheel play will be greater.

– To adjust the tension of the chain, remove the rubber mat from the floorplate. Turn the steering wheel until the adjustment nut (1) is accessible through the left-hand cutout in the floorplate
– Clean and lubricate the chain and ring gears
– Check the ring gears and chain links for wear
– Remove the chocks and the jack
– Reconnect the battery connector.
– Close the battery compartment door
– Restart the tow tractor

Checking the front suspension

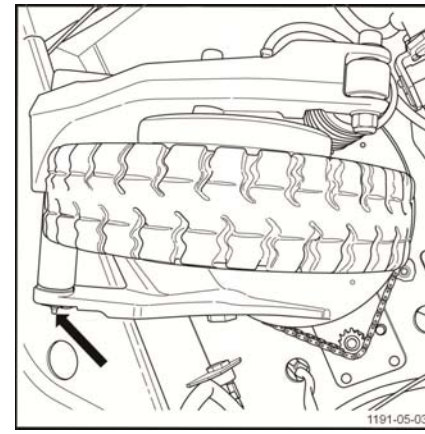


- Park the tow tractor safely
- Switch off the ignition and remove the key
- Press the emergency stop button
- Open the battery compartment door
- Disconnect the battery connector
- Jack the truck front and chock securely
- Check the front suspension arm bearing (1) for wear and excessive play

If wear or damage is evident, please contact the after-sales service department.

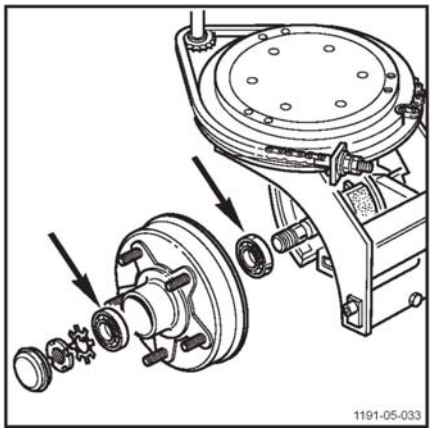
- Remove the chocks and the jack
- Reconnect the battery connector.
- Close the battery compartment door
- Restart the tow tractor

Lubricating the front suspension



- Park the tow tractor safely
- Switch off the ignition and remove the key
- Press the emergency stop button
- Open the battery compartment door
- Disconnect the battery connector
- Jack the truck front and chock securely
- Lubricate the front suspension arm pivot until fresh grease emerges from the pivot
- Remove the chocks and the jack
- Reconnect the battery connector.
- Close the battery compartment door
- Restart the tow tractor

Checking and lubricating the front wheel bearing



– Park the tow tractor safely
– Switch off the ignition and remove the key
– Press the emergency stop button
– Open the battery compartment door
– Disconnect the battery connector
– Jack the truck front and chock securely
– Check the wheel bearings for excessive play, loud rolling noises, and damage or wear
– Renew the wheel hub bearing grease

To renew the hub bearing grease, or if damage or wear is evident, please contact the after-sales service department.

– Remove the chocks and the jack
– Reconnect the battery connector.
– Close the battery compartment door
– Restart the tow tractor

Checking the brake fluid level

⚠ DANGER

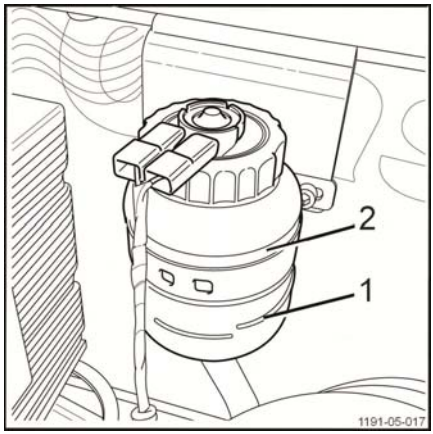
Risk of accident following a failure in the braking system.

– Never use the tow tractor if the brake fluid level is low
– Fill the brake fluid reservoir immediately and check the braking system for leaks

NOTE

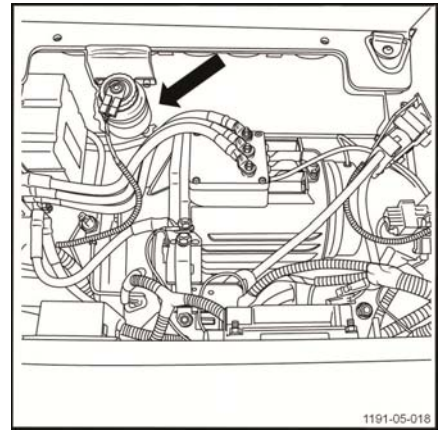
A low brake fluid level indicator is fitted and will indicate on the driver's display when the brake fluid level is low. However, it is advisable to check the brake fluid level every 1000 hours.

– Switch off the ignition using the key switch or turning knob
– The parking brake is activated automatically



– Press the emergency stop button
– Open the battery compartment door and disconnect the battery
– Lift and remove the technical compartment cover
– Check the level of the brake fluid reservoir is up to the maximum level (2). The brake fluid level must never drop below the minimum level (1)
– If necessary, open the reservoir filler cap and add brake fluid up to the maximum level (2)
– Replace the reservoir filler cap
– Reposition the technical compartment cover
– Reconnect the battery connector and lock the battery
– Close the battery compartment door
– Return the tow tractor to service

Changing the brake fluid



NOTE

We strongly recommend that this operation and other brake adjustments be carried out by the after-sales service department.

⚠ DANGER

Never use a tow tractor with a defective braking system.

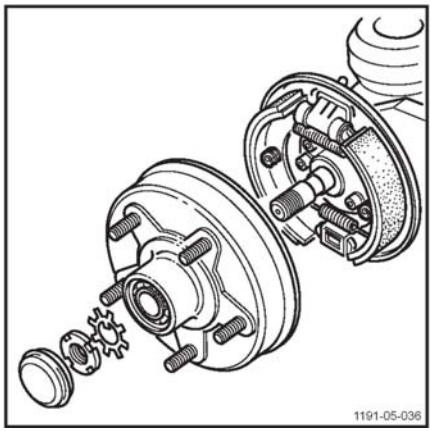
If faults develop in the brake system, park the tow tractor in a safe location.

Inform your manager.

NOTE

Do not use mineral oil in accordance with ISO VG32.

Checking the front and rear brake shoes ▷



The brake shoes must be checked every 1000 hours.

NOTE

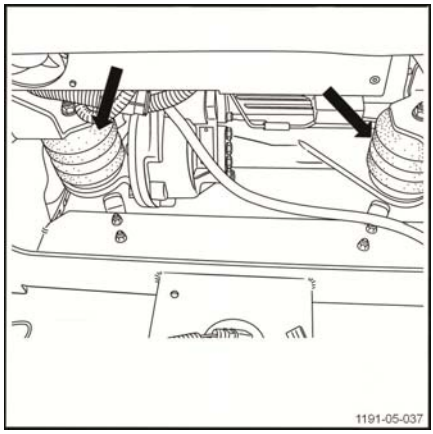
We strongly recommend that this operation and other brake adjustments be carried out by the after-sales service department.

⚠ DANGER

Never use a tow tractor with a defective braking system.

If faults develop in the braking system, park the tow tractor in a safe location. Inform a manager.

Checking the drive axle rubber shock mounts ▷



– Park the tow tractor safely.
– Switch off the ignition and remove the key.
– Press the emergency off switch.
– Open the battery compartment door.
– Disconnect the battery connector.
– Remove the cover.
– Check the condition of the drive axle rubber shock mounts. Look for cracks in particular.

⚠ WARNING

Risk of accident

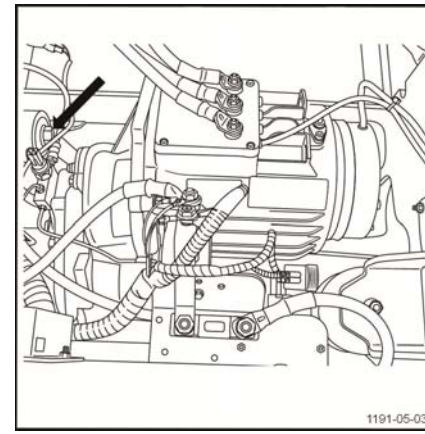
The shock mounts affect the safety and operation of the tow tractor.

Damaged shock mounts must be replaced.

Contact the After-Sales Service Centre.

– Reconnect the battery connector.
– Close the battery compartment door.
– Return the tow tractor to service.

Checking the drive axle suspension bushes ▷

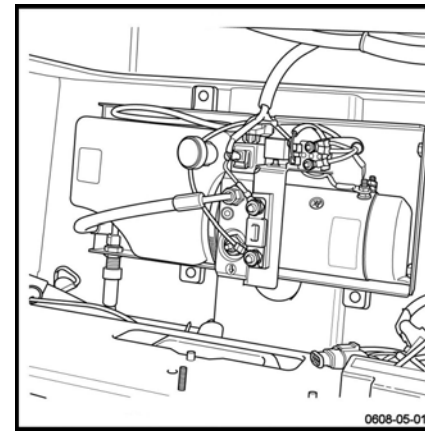


– Park the tow tractor safely.
– Switch off the ignition and remove the key.
– Press the emergency off switch.
– Open the battery compartment door.
– Disconnect the battery connector.
– Remove the cover.
– Check the drive axle suspension bushes for condition and wear.

If wear is evident, please contact the after-sales service department.

– Refit the cover.
– Reconnect the battery connector.
– Close the battery compartment door.
– Return the tow tractor to service.

Maintaining the Liftrunner system equipment ▷

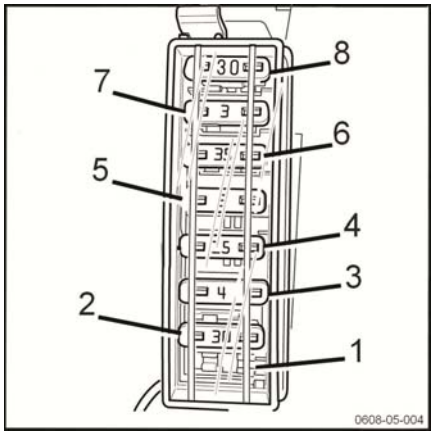


For this optional equipment, certain checks must be performed.

Only authorised technicians may work on this equipment.

Electrical equipment

Checking the fuses



NOTE

Do not use automotive fuses even if they are interchangeable. Only the fuses supplied by the manufacturer have sufficient nominal voltage to ensure adequate protection for the voltages used in tow tractors and carriers.

– Switch off the ignition using the key switch or knob.

– The parking brake is activated automatically.

– Press the emergency stop button.

– Open the battery compartment door, and disconnect the battery.

– Lift and remove the technical compartment cover.

– Check that the following eight fuses are correctly secured:

The 30 A fuse (1) protects the converter for additional customer options.

The 30 A fuse (2) protects the cab converter.

The 4 A fuse (3) protects the emergency stop.

The 15 A fuse (4) protects the 75 watt converter.

The 3 A fuse (5) protects the controller.

The 35 A fuse (6) protects the heating.

The 3 A fuse (7) protects the lighter socket.

The 30 A fuse (8) protects the lighting converter.

This operation should preferably be carried out by our service engineers.

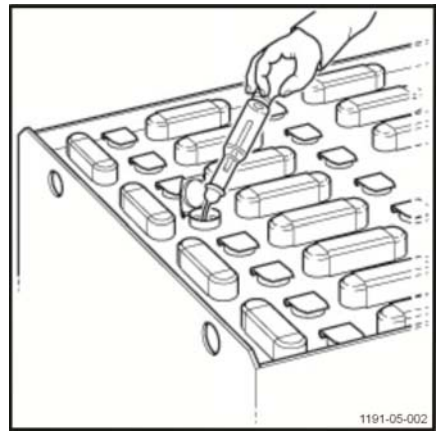
– Reposition the technical compartment cover.

– Reconnect the battery connector, then lock the battery.

– Close the battery compartment door.

– Return the tow tractor to service.

Checking the battery acid level and electrolyte density ▷



⚠ WARNING

The electrolyte (diluted sulphuric acid) is poisonous and caustic!

- Always wear suitable protective equipment (industrial goggles, safety gloves) when working on a battery
- Never wear a watch or jewellery when handling battery acid
- Do not allow any acid to get onto clothing or skin or into the eyes. If this does happen, rinse immediately with plenty of clean water
- Immediately rinse away any spilled battery acid with plenty of water
- In case of injury, seek medical advice immediately
- Always follow the safety information provided by the battery manufacturer
- Follow the statutory regulations

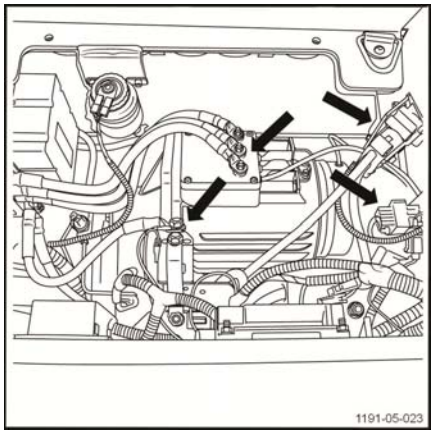
- Park the tow tractor safely
- Switch off the ignition and remove the key
- Press the emergency stop button
- Open the battery compartment door
- Disconnect the battery connector. Unlock the battery
- Remove the battery from its compartment using suitable tools (Fork Off tool)
- Check the battery acid level and electrolyte density according to the battery manufacturer's recommendations
- The cell covers of the battery must be kept dry and clean
- Any spilt battery acid must be neutralised immediately
- Refit the battery in its compartment. Lock the battery
- Close the battery compartment door
- Return the tow tractor to service

ENVIRONMENT NOTE

Dispose of any used battery acid in accordance with the regulations.

The tow tractor is compatible with the electrolyte level checking sensor. The tow tractor or carrier can be equipped with a battery that features this sensor.

Checking the condition and secure attachment of electrical connections and cables ▷



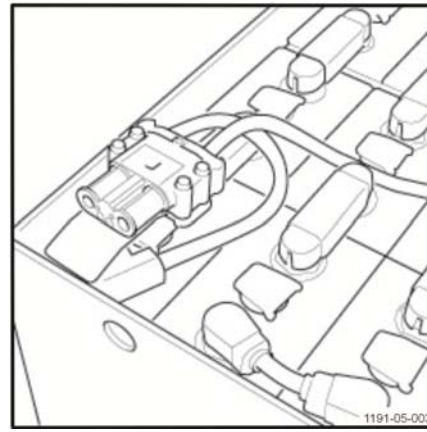
- Switch off the ignition and press the emergency off switch.
- Open the battery compartment door and disconnect the battery.
- Check that the battery cables are in good condition and are well insulated.
- Check that plugs are present on the + and - terminals of the battery.
- Lift and remove the technical compartment cover.
- Check the tightness of the connections and remove any corrosion.
- Check that the electric motor cable connections are securely attached. Make sure that there are no signs of corrosion.
- Check that all motor cables are in good condition and are well insulated.

NOTE

Corroded connections and damaged cables cause voltage drops and overheating, which can lead to malfunctions.

- Remove any corrosion and replace any damaged cables.
- Refit the technical compartment cover.
- Reconnect the battery connector and close the battery compartment door.
- Return the tow tractor to service.

Checking the battery and the condition of the battery cable ▷



⚠ DANGER

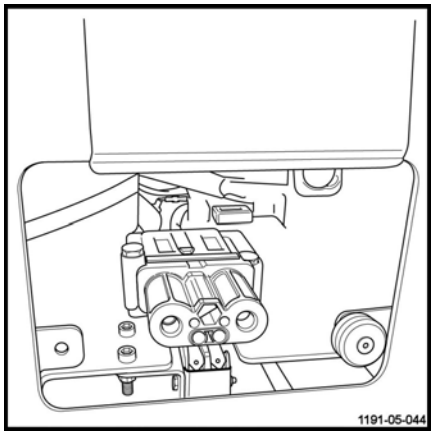
Risk of fatal electric shock

- Never wear a watch or jewellery when handling a battery
- Never place metal objects on the battery
- Never touch uninsulated cables
- Never touch damaged plugs
- Always use an insulated tool
- Always wear suitable personal protective equipment

- Check that there are no cracked cells, deformed plates or evaporated electrolyte
- Check that the connections are in good condition and that they are positioned correctly
- Check the condition and wear of the cable insulation
- Check the battery/charger connectors and cables for damage and burnt contacts
- Check that the insulation is intact on the cell connections
- Check that the upper part of the cells is clean and dry
- Check that there is no wear or corrosion on the lifting eyes

Immediately report any battery part corrosion or wear to your manager.

Cleaning the opportunity charging equipment ▷



The opportunity charging equipment must be cleaned regularly to remove dust.

⚠ CAUTION

Always disconnect the battery connector before working on an electrical component.

– Immobilise the tow tractor
– Switch off the ignition.
– Raise the access door to the opportunity charging equipment
– Blow the components with compressed air

⚠ WARNING

It is advisable to wear industrial goggles and a mask.

– Close the access door again
– Restart the tow tractor.

Decommissioning and storage

Tow tractor storage

Precautions must be taken if the tow tractor is not used for an extended period of time. Procedures depend on the length of time it is unused.

Long-term tow tractor storage

The following work must be carried out on the tow tractor to prevent corrosion if it must be stored for a long period. If it will be stored for more than two months, position it in a clean and dry location. The area must be well-ventilated with no risk of freezing.

The following procedures must be performed:

– Clean the tow tractor thoroughly.

– Coat any unpainted metal parts with a thin layer of oil or grease.

– Oil all hinges and joints.

– Check the battery condition and electrolyte density. Maintain the battery in accordance with manufacturer's guidelines. (Follow the manufacturer's instructions.)

– Spray contacts with an aerosol product designed for contacts.

– Raise and chock the tow tractor: the tyres must not touch the ground in order to prevent irreversible deformation.

– Cover the tow tractor with a cover to protect it from dust.

⚠ CAUTION

We recommend that you do not use a plastic sheet, as plastic sheets encourage condensation to form.

Consult the after-sales service department for further measures to take if the tow tractor is stored for a longer period of time.

Recommissioning after storage

If the tow tractor has been stored for more than six months, it must be checked carefully before being recommissioned. This check is similar to the workplace accident prevention inspection. It is therefore necessary to check all points and devices that are important for the safety of the tow tractor.

Carry out the following procedures:

– Clean the tow tractor thoroughly.

– Check that the time displayed is correct.

– Oil all hinges and joints.

– Check the condition and density of electrolyte, and, if necessary, recharge the battery.

– Carry out the same maintenance work as when it was first commissioned.

– Commission the tow tractor.

– In particular, check the following during start-up:

- Traction, control and steering
- Brakes

Permanent putting out of commission (destruction)

When scrapping the tow tractor, you must:

- Remove the various parts of the tow tractor (covers, batteries, chains, motors etc.)
- Sort out the components depending on their type: pipes, rubber components, lubricants, aluminium, iron etc.
- Before scrapping the truck, notify the competent authorities of your country in writing
- After receiving the authorisation from the competent authorities, remove any components according to national standards

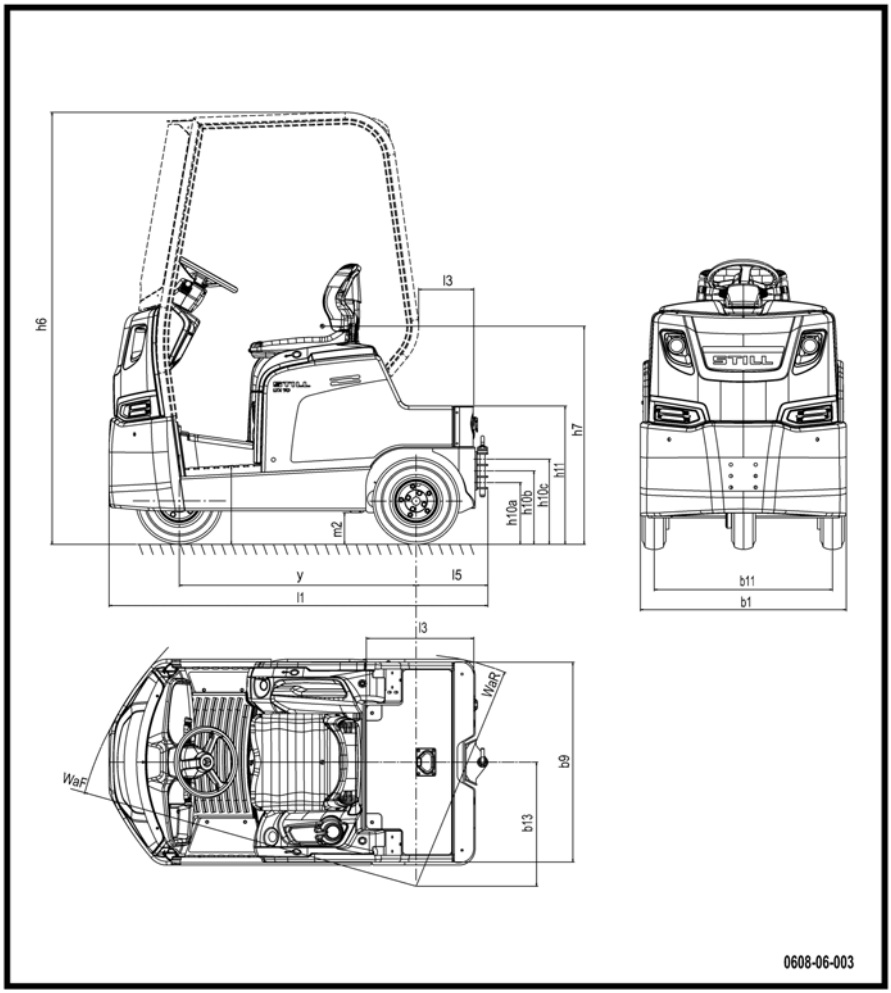
NOTE

The client bears sole responsibility for any deviations made by the client during or after the scrapping of the tow tractor's components and the removal of components.

6

Technical specifications

Datasheet for the tow tractor



DESIGNATION					
1.1	Manufacturer			KION	KION
1.2	Model type			LTX 70	LTX 80
1.3	Method of propulsion: battery, diesel, petrol, LPG, mains power			Battery	Battery
1.4	Driving: manual, pedestrian, standing, seated, order picking			Seated	Seated
	Towing capacity(1)		t	7(1)	8(1)
1.5	Load capacity	Q	t	0.15	0.15
1.7	Rated drawbar pull	F	N	1400	1600
1.9	Wheelbase	y	±5 mm	1190	1190

WEIGHT				LTX 70	LTX 80
2.1	Kerb weight (with cab)	kg	±10%	1515	1515
2.2	Axle load without load, front/rear (with cab)	kg	±10%	665/850 (2)	665/850 (2)
2.1	Kerb weight (without cab)	kg	±10%	1260	1260
2.2	Axle load without load, front/rear (without cab)	kg	±10%	550/710 (2)	550/710 (2)
2.2	Axle load with load, front/rear (with cab)	kg	±10%	665/1000 (2)	665/1000 (2)
2.2	Axle load with load, front/rear (without cab)	kg	±10%	550/860 (2)	550/860 (2)

WHEELS AND PNEUMATIC TYRES				LTX 70	LTX 80
3.1	Tyres, front/rear (SE = CS superelastic, P = pneumatic) (3)			pneumatic (SE optional) (3)	pneumatic (SE optional) (3)
3.2	Tyre size, front			4.00–8/6 PR	4.00–8/6 PR
3.3	Tyre size, rear			4.00–8/6 PR	4.00–8/6 PR
3.5	Wheels, number front/rear (x = driven)			1/2 x	1/2 x
3.6	Track width, front	b10	±5 mm	0	0
3.7	Track width, rear	b11	±5 mm	860	860

DIMENSIONS				LTX 70	LTX 80
4.7	Overhead guard height (cab)	h6	±5 mm	2070	2070
4.8	Seat/stand-on platform height	h7	±5 mm	1020	1020
4.12	Tow coupling height	h10	±5 mm	a) 1285 b) 340 c) 395	a) 1285 b) 340 c) 395
4.13	Platform height, without load	h11	±5 mm	645	645

4.16	Loading platform length (with and without cab)	l3	±5 mm	265/520	265/520
4.17	Rear overhang	l5	±5 mm	350	350
4.18	Loading platform width	b9	±5 mm	900	900
4.19	Overall length	i1	±5 mm	1830	1830
4.21	Overall width	b1	±5 mm	1000	1000
4.32	Ground clearance at centre of wheelbase	m2	±2 mm	135	135
4.35	Turning radius, front	Wa F	±20 mm	1650	1650
	Turning radius, rear	Wa R	±20 mm	1115	1115
	Minimum steering angle 180°		±20 mm	2765	2765
4.36	Minimum pivot point distance	b13	±20 mm	600	600

PERFORMANCE DATA				LTX 70	LTX 80
5.1	Driving speed, with/without load		±5% km/h	11/20	10/20
5.5	Tractive force, without load, 60 minute rating	N		1400	1600
5.6	Maximum tractive force, without load, 5 minute rating	N		6250	6250
5.7	Climbing ability, with/without load, 30 minute rating	%		See graph	See graph
5.8	Maximum climbing ability, with/without load, 5 minute rating	%		See graph	See graph
5.10	Service brake			Hydraulic/electric	Hydraulic/electric

DRIVE SYSTEM				LTX 70	LTX 80
6.1	Traction motor, 60 minute rating	kW		AC 4.5	AC 4.5
6.3	Battery type in accordance with DIN/EC			DIN 43531 (12 - 1998)	DIN 43531 (12 - 1998)
6.4	Battery voltage and nominal capacity (5 h)	V/ Ah		48/375	48/375
6.5	Battery weight (±10%)	kg	±10%	560	560
6.6	Energy consumption according to VDI cycle (2012)	kW h	±10%	4.71	4.98

6.6	Energy consumption according to VDI cycle (2002)	kW h	±10%	1.68	1.73
6.7	Turnover output (consumption)	kW h	±10%	4.01	4.89
6.8	Turnover output (transfer of capacity)	t/h	±10%	602	688

MISCELLANEOUS				LTX 70	LTX 80
8.1	Type of drive control			Electronic	Electronic
8.4	Noise level at forklift operator's ears	dB (A)	±2.5	60	60
8.5	Tow coupling, design/type, DIN			See the list of options	See the list of options

(1) Based on a level, dry surface with rolling resistance of 200 N/t.

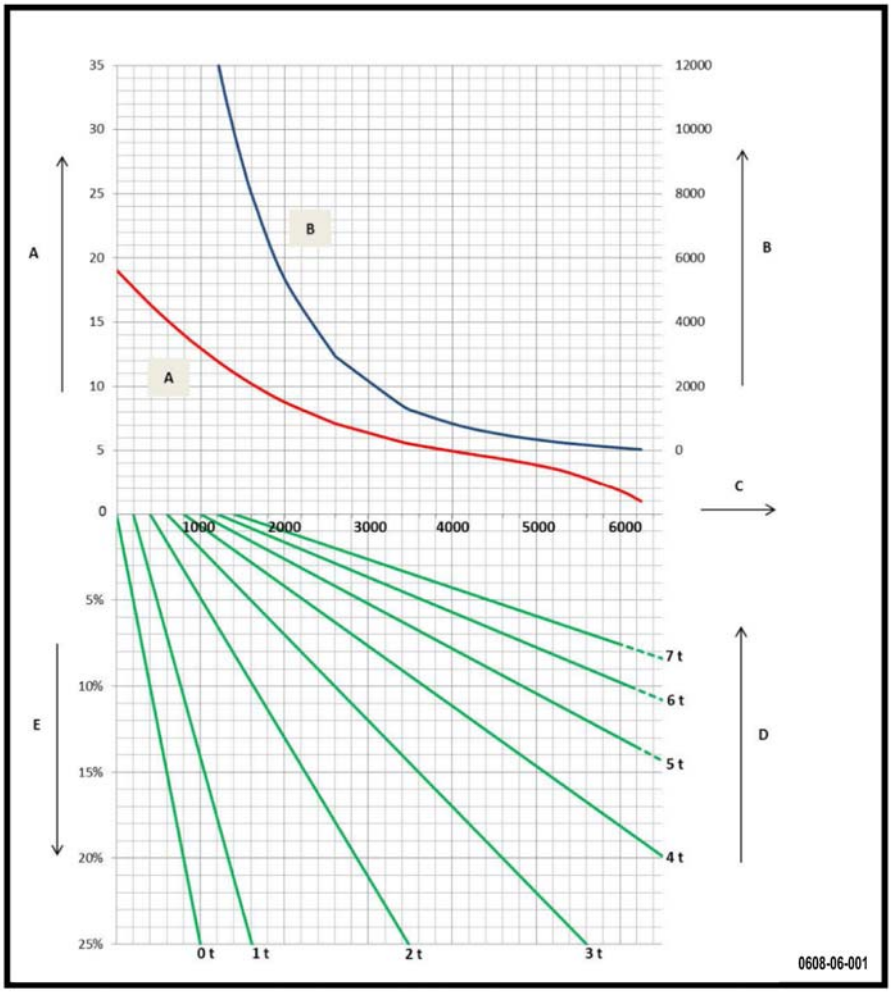
Refer to the capacity charts for the specific conditions of use and when application includes gradients and ramps.

(2) The weight of the loaded platform must be added to the rear axle load.

(3) Contoured solid pneumatic tyres (superelastic) are available.

Towing diagram for the tow tractor

Tow tractor LTX 70



A Speed (km/h)
B Permissible haul per hour (m)
C Drawbar pull (N)
D Trailer weight (t)
E Gradient (%)

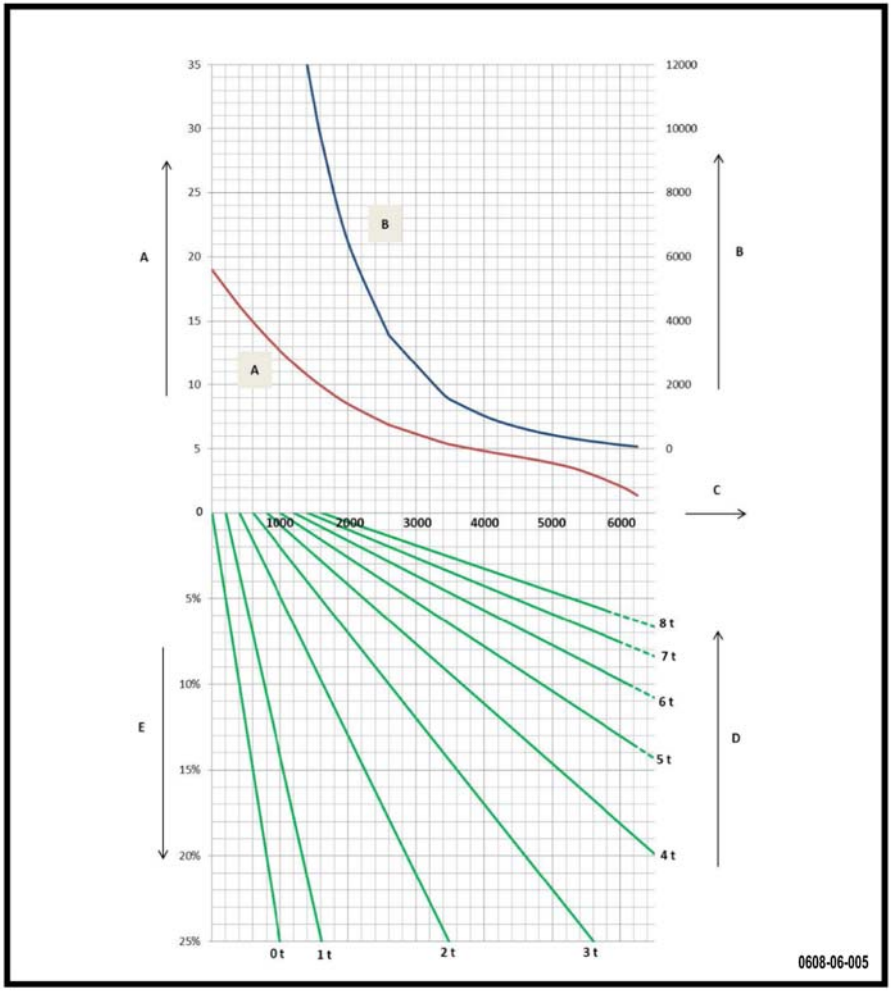
NOTE

The load/gradient combinations shown by the full line can be restarted from stationary on the gradient.

NOTE

The permissible haul per hour is the total distance travelled, including the return journey and any downhill slopes.

Tow tractor LTX 80



A	Speed (km/h)	D	Trailer weight (t)
B	Permissible haul per hour (m)	E	Gradient (%)
C	Drawbar pull (N)		

NOTE

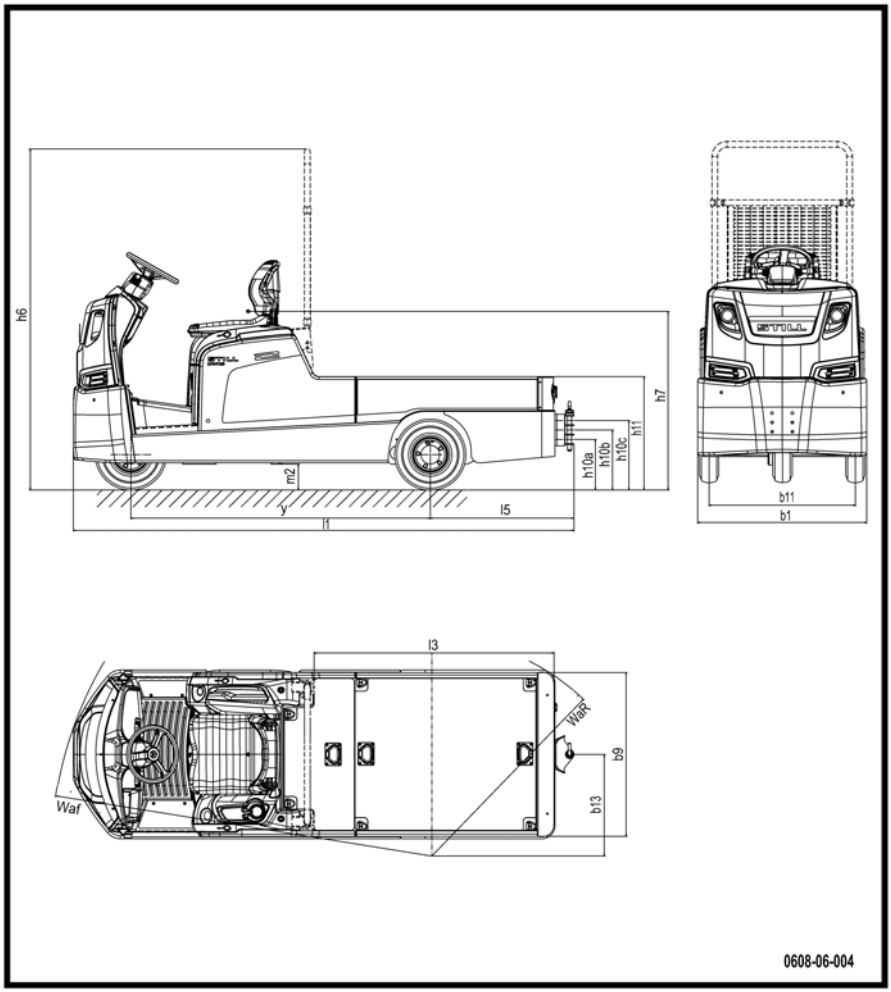
The load/gradient combinations shown by the full line can be restarted from stationary on the gradient.

NOTE

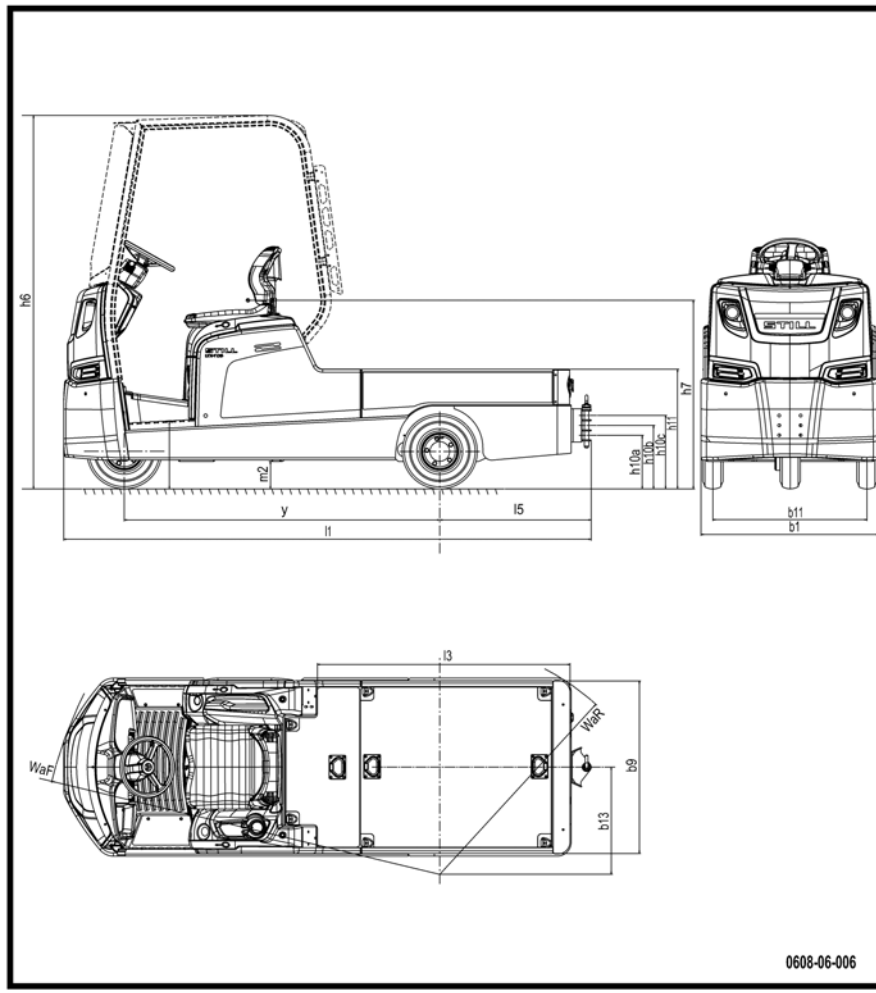
The permissible haul per hour is the total distance travelled, including the return journey and any downhill slopes.

Datasheet for the transponder

Platform tractor without cab



Platform tractor with cab



Datasheet for the platform tractor

DESIGNATION				
1.1	Manufacturer			KION
1.2	Model type			LTX T 08
1.3	Method of propulsion: battery, diesel, petrol, LPG, mains power			Battery
1.4	Driving: manual, pedestrian, standing, seated, order picking			Seated
	Towing capacity$_{(1)}$		t	6.2 (1)
1.5	Load capacity	Q	t	0.8
1.7	Rated drawbar pull	F	N	1240
1.9	Wheelbase	y	±5 mm	1795

WEIGHT				LTX T 08
2.1	Kerb weight (with cab)	kg	±10%	1470
2.2	Axle load without load, front/rear (with cab)	kg	±10%	740/730 (2)
2.1	Kerb weight (without cab)	kg	±10%	1215
2.2	Axle load without load, front/rear (without cab)	kg	±10%	580/635(2)
2.2	Axle load with load, front/rear (with cab)	kg	±10%	740/1530 (2)
2.2	Axle load with load, front/rear (without cab)	kg	±10%	580/1435(2)

WHEELS AND PNEUMATIC TYRES				LTX T 08
3.1	Tyres, front/rear (SE = CS superelastic, P = pneumatic)			SE
3.2	Tyre size, front			125/75 - 8
3.3	Tyre size, rear			125/75 - 8
3.5	Wheels, number front/rear (x = driven)			1/2 x
3.6	Track width, front	b10	±5 mm	0
3.7	Track width, rear	b11	±5 mm	860

DIMENSIONS				LTX T 08
4.7	Height of the overhead guard with/without cab	h6	±5 mm	2070/2000
4.8	Seat/stand-on platform height	h7	±5 mm	1020 (4)
4.12	Tow coupling height	h10	±5 mm	a) 1285 b) 340 c) 395 (4)
4.13	Platform height, without load	h11	±5 mm	645 (4)
4.16	Loading platform length (with and without cab)	l3	±5 mm	1275/1415
4.17	Rear overhang	l5	±5 mm	840
4.18	Loading platform width	b9	±5 mm	900
4.19	Overall length	i1	±5 mm	2955
4.21	Overall width	b1	±5 mm	1000
4.32	Ground clearance at centre of wheelbase	m2	±2 mm	135

4.35	Turning radius, front	WaF	±20 mm	2230
	Turning radius, rear	Wa R	±20 mm	1290
	Minimum steering angle 180°		±20 mm	3520
4.36	Minimum pivot point distance	b13	±20 mm	600

PERFORMANCE DATA				LTX T 08
5.1	Driving speed, with/without load		±5% km/h	12/20
5.5	Tractive force, without load, 60 minute rating	N		1240
5.6	Maximum tractive force, without load, 5 minute rating	N		6250
5.7	Climbing ability, with/without load, 30 minute rating	%		See graph
5.8	Maximum climbing ability, with/without load, 5 minute rating	%		See graph
5.10	Service brake			Hydraulic/electric

DRIVE SYSTEM				LTX T 08
6.1	Traction motor, 60 minute rating	kW		AC 4.5
6.3	Battery type in accordance with DIN/EC			DIN 43531 (12 - 1998)
6.4	Battery voltage and nominal capacity (5 h)	V/A h		48/240
6.5	Battery weight (±10%)	kg	±10%	395
6.6	Energy consumption according to VDI cycle (2012)	kWh	±10%	5.38
6.6	Energy consumption according to VDI cycle (2002)	kWh	±10%	
6.7	Turnover output (consumption)	kWh	±10%	4.15
6.8	Turnover output (transfer of capacity)	t/h	±10%	574

MISCELLANEOUS				LTX T 08
8.1	Type of drive control			Electronic
8.4	Noise level at forklift operator's ears	dB (A)	±2.5	60
8.5	Tow coupling, design/type, DIN			See the list of options

(1) Based on a level, dry surface with rolling resistance of 200 N/t.

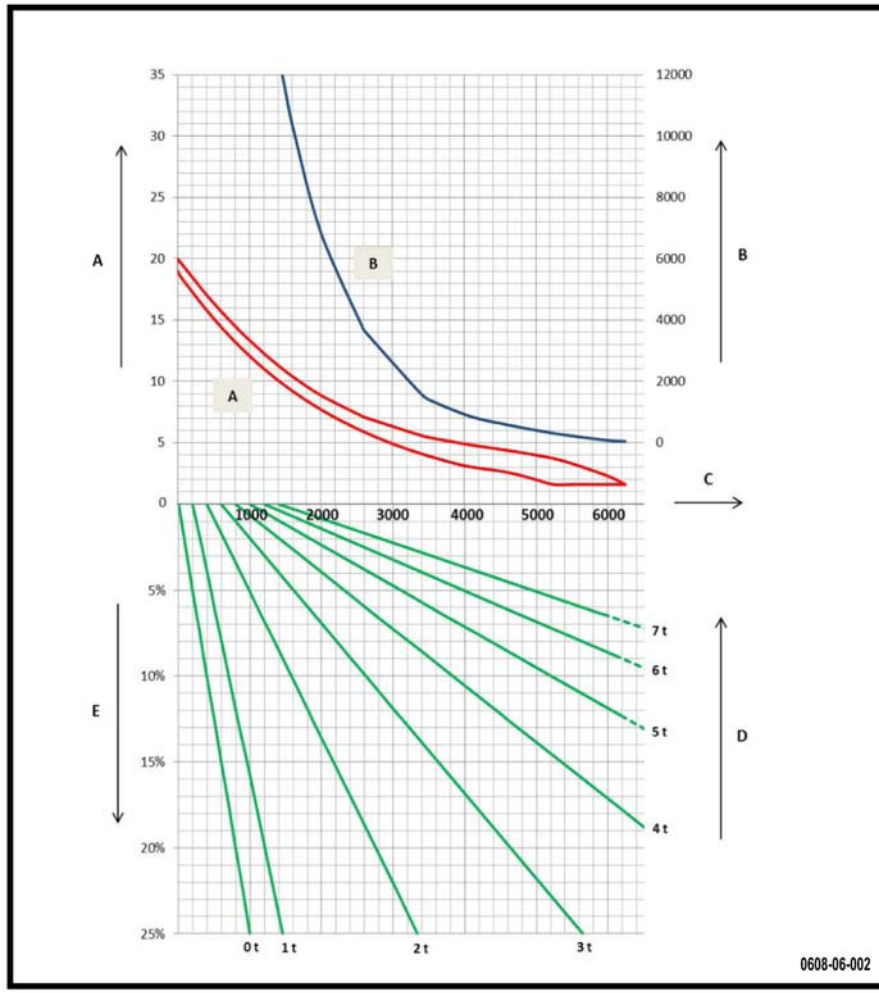
Refer to the capacity charts for the specific conditions of use and when application includes gradients and ramps.

(2) The weight of the loaded platform must be added to the rear axle load.

(3) Contoured solid pneumatic tyres (superelastic) are available.

(4) -35 mm without cab

Towing diagram for the transponder



A Speed (km/h)
B Permissible haul per hour (m)
C Drawbar pull (N)
D Trailer weight (t)
E Gradient (%)

Towing diagram for the transponder

NOTE

The load/gradient combinations shown by the full line can be restarted from stationary on the gradient.

NOTE

The permissible haul per hour is the total distance travelled, including the return journey and any downhill slopes.

Other Characters

A

B

C

D

E

F

G

H

I

T

U

V

W

STILL GmbH

1191 801 15 51 EN - 02/2021 - 10