



Original instructions

LPG trucks

RX70-20/600  
RX70-25  
RX70-25/600  
RX70-30  
RX70-30/600  
RX70-35



7400 7401 7402 7403 7404 7405  
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first in intralogistics





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## 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.





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1

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## Foreword

## Your truck

# Your truck

## Description of the truck

### General

The trucks in the RX70-20/25/30/35 series with a load capacity of up to 3.5 t are equipped with an internal combustion engine/electric drive. This drive combines the advantages of the internal combustion engine with the precise control of an electric drive. The maximum speed is 21 km/h (without load).

The bend-resistant and warp-resistant lift mast enables safe load handling, even with heavy loads. The comfortable driver's compartment features the most up-to-date ergonomic design to prevent signs of fatigue and increase safety.

The truck supports all of the functions of Fleet-Manager 4.0.

### Brake system

The brake system of the truck is comprised of three different brakes:

- Service brake
- Regenerative brake
- Parking brake

The service brake is based on a wear-free, oil-immersed multi-disc brake. This multi-disc brake is used as the service brake for heavy braking or emergency braking with the brake pedal. In the normal working mode, the regenerative brake of the electric traction motor takes effect. The regenerative brake converts the acceleration energy of the truck into electrical energy. This causes the truck to decelerate as soon as the accelerator pedal is released. Completely removing your foot from the accelerator pedal causes the truck to brake until it comes to a standstill. A parking brake ensures that the truck remains securely in place when parked.

### Steering

The truck is equipped with a swing axle and has kickback-free, hydraulic rear-wheel steering. Stability is guaranteed when cornering

thanks to speed limitation based on the steering angle. Simple handling of the truck is assisted by the manoeuvrable steering axle.

## Hydraulic system

All lift cylinders are hydraulically actuated. The oil volume flow required for the steering and the lift mast is provided by a gear pump connected to the internal combustion engine. The directional control valve block with electrical proportional technology enables extremely sensitive movements and safe handling of the load. The hydraulic functions can be parameterised individually by the authorised service centre.

Up to three hydraulic circuits can be used to activate attachments (variant). Depending on the equipment, the lifting circuit may have a hydraulic accumulator for load-damping purposes. This will help to reduce knocks to the load in the lift line due to uneven ground, for example.

## Drive concept

The internal combustion engine drives an electric three-phase generator. The generated current is routed to two maintenance-free, electrical 11.7-kW three-phase AC traction motors, which drive the truck using the two front wheels. Electronic revolution control gently provides high torque for both forwards and backwards travel.

The components for the drive unit and the lift drive are enclosed in order to prevent the ingress of dust or moisture. This means that the truck is suitable for indoor and outdoor use. In addition, all drives for traction, steering and lifting are maintenance-free.

The driving characteristics and lifting behaviour can be adapted to the application or driving habits. Five drive programmes are available for this purpose. The maximum driving speed is 21 km/h. The Blue-Q energy-saving mode reduces energy consumption by up to 10% without impairing performance.

## Your truck

### Operating devices

The truck is characterised by its accessible operating concept. When purchasing the truck, a variety of operating devices and equipment variants are available:

- Double mini-lever
- Triple mini-lever
- Quadruple mini-lever
- Joystick 4Plus
- Fingertip
- Single pedal
- Dual pedal

Hands are always kept free for steering and for controlling the operational movements to allow efficient working. The forces that need to be applied for this purpose are reduced to a minimum thanks to the compact steering wheel.

Operational information, such as the fuel level or an indication that the Blue-Q energy-saving mode is enabled, is shown on the STILL Easy Control display-operating unit.

For drive mode, the truck features either single-pedal or dual-pedal operation. The accelerator pedal is used to accelerate and brake (electric brake) the truck. In emergency situations or when carrying heavy loads, the driver can also brake the truck using the service brake by pressing the brake pedal. In dual-pedal operation, the truck has one pedal for the "Forwards" drive direction and one pedal for the "Reverse" drive direction. The acceleration and braking behaviour can be selected individually using five different driving programmes.

### General

The truck described in these operating instructions corresponds to the applicable standards and safety regulations.

If the truck 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 driving permit must be obtained from the appropriate office.



The truck has been fitted with state-of-the-art technology. Following these operating instructions will allow the truck to be handled safely. By complying with the specifications in these operating instructions, the functionality and the approved features of the truck will be retained.

Get to know the technology, understand it and use it safely - these operating instructions provide the necessary information and help to avoid accidents and to keep the truck ready for operation beyond the warranty period.

Therefore:

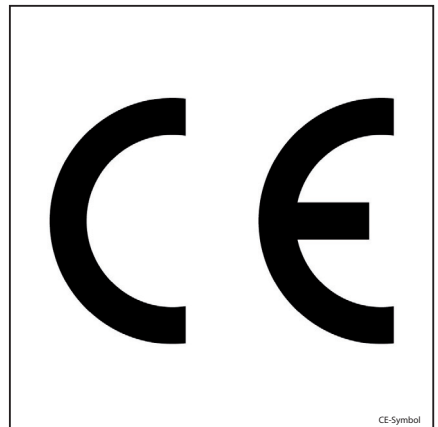
- Before commissioning the truck, read the operating instructions and follow the instructions.
- Always follow all of the safety information contained in the operating instructions and on the truck.

## CE labelling

The manufacturer uses CE labelling to indicate that the truck complies with the standards and regulations valid at the time of marketing. This is confirmed by the issued EC declaration of conformity. The CE labelling is attached to 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 responsible authorities.



## EC declaration of conformity in accordance with Machinery Directive

### Declaration

STILL GmbH  
Berzeliusstraße 10  
D-22113 Hamburg Germany

We declare that the

Industrial truck  
Model

**according to these operating instructions**  
**according to these operating instructions**

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

Personnel authorised to compile the technical documents:

See EC compliance declaration

STILL GmbH

## Accessories

- Key for key switch (two pieces)
- Key for cab (variant)
- Hexagon socket wrench for emergency lowering

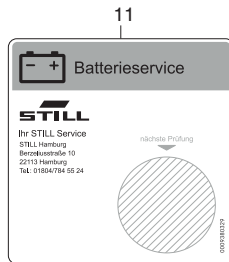
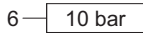
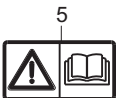
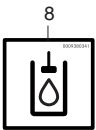
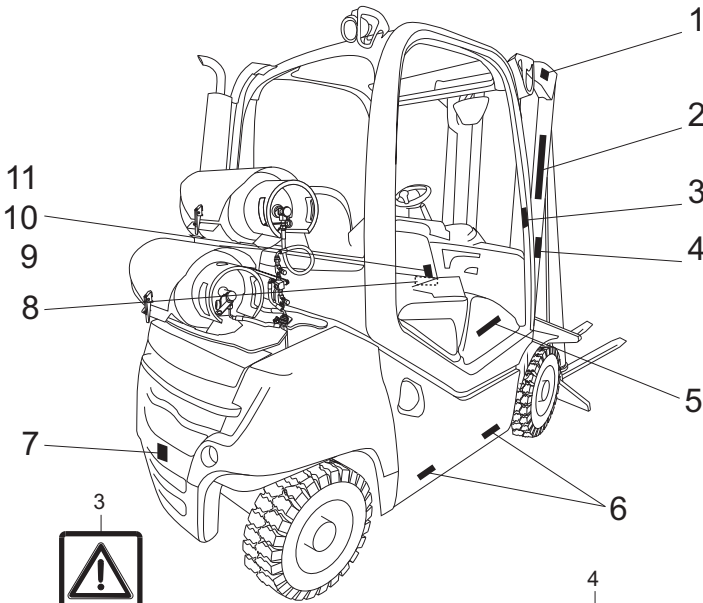




5	Manufacturer's label text	9	Decal information: Sound power level
6	Warning sign: Danger due to shearing/ Danger due to high fluid pressure	10	Decal information: Load capacity: Attach- ment
7	Decal information: Nameplate	11	Decal information: Load capacity: Basic ta- ble
8	Decal information: StVZO (German Road Traffic Licensing Regulations) information (variant)		

Your truck

Labelling points on the right of the truck

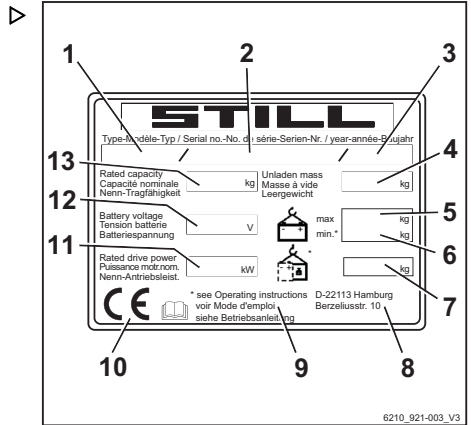


- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1 Decal information: Fixing point for lifting gear</li> <li>2 Manufacturer's label text</li> <li>3 Decal information: Caution/Read the operating instructions/Fasten seat belt/Apply parking brake when leaving the truck/Passengers are not allowed/Do not jump off if the truck is tipping over/Lean in the opposite direction to which the truck is tipping</li> <li>4 Warning sign: Danger due to shearing/Danger due to high fluid pressure</li> </ul> | <ul style="list-style-type: none"> <li>5 Decal information: Caution/Read the operating instructions/Fasten seat belt</li> <li>6 Decal information: Tyre filling pressure</li> <li>7 Decal information: Lifting gear fixing point</li> <li>8 Decal information: Hydraulic oil tank</li> <li>9 Decal information: Regular testing</li> <li>10 Inspection sticker</li> <li>11 Decal information: Battery service</li> </ul> |
|--|--|

## Nameplate

The truck can be identified from the information on the nameplate.

The information for the battery weights (5, 6) and the ballast weight (7) only applies to electric forklift trucks.



- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>1</li> <li>2</li> <li>3</li> <li>4</li> <li>5</li> <li>6</li> <li>7</li> <li>8</li> <li>9</li> <li>10</li> <li>11</li> <li>12</li> <li>13</li> </ul> | <ul style="list-style-type: none"> <li><b>Type</b></li> <li><b>Production number</b></li> <li><b>Year of manufacture</b></li> <li><b>Tare weight in kg</b></li> <li><b>Max. permissible battery weight in kg</b></li> <li><b>Min. permissible battery weight in kg</b></li> <li><b>Ballast weight in kg</b></li> <li><b>Address of manufacturer</b></li> <li><b>Refer to the technical data listed in these operating instructions for more detailed information</b></li> <li><b>CE labelling</b></li> <li><b>Nominal drive power in kW</b></li> <li><b>Battery voltage in V</b></li> <li><b>Rated capacity in kg</b></li> </ul> |
|---|--|

## Your truck

## Production number

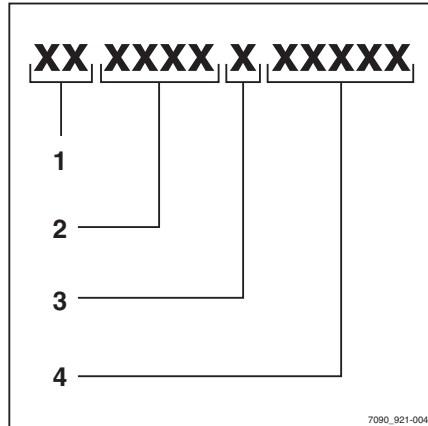


## NOTE

The production number is used to identify the truck. It can be found on the nameplate and must be referred to in all technical questions.

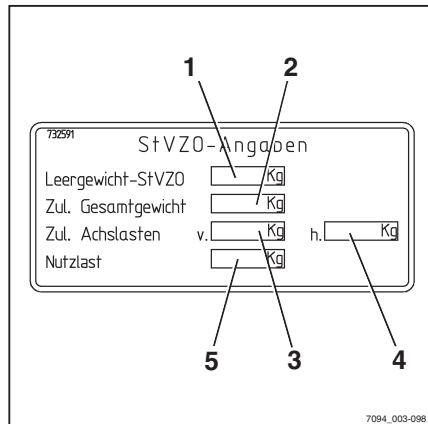
The production number contains the following coded information:

- (1) Production location
- (2) Model
- (3) Year of manufacture
- (4) Sequential number



## StVZO (Road Traffic Licensing Regulations) information

This label includes information on the weight and load distribution of the truck.



- 1 Tare weight (in kg)
- 2 Permitted total weight (in kg)
- 3 Permitted front axle weight (in kg)
- 4 Permitted rear axle weight (in kg)
- 5 Payload (in kg)



## Using the truck

### Proper usage

The truck described in these operating instructions is suitable for lifting, transporting and stacking loads.

The truck may only be used for its proper purpose as set out and described in these operating instructions.

If the truck is to be used for purposes other than those specified in the operating instructions, the approval of the manufacturer and, if applicable, the relevant regulatory authorities must be obtained beforehand to prevent hazards.

The maximum load to be lifted is specified on the capacity rating plate (load diagram) and must not be exceeded; see also the chapter entitled "Before picking up a load".

### Proper use during towing

This truck is suitable for the occasional towing of trailers and is equipped with a towing device for this purpose. This occasional towing may not exceed 2% of the daily operating time. If the truck is to be used for towing on a more regular basis, the manufacturer should be consulted.

The regulations regarding trailer operation must be observed; see chapter "Trailer operation".

### Impermissible use

The operating company or driver, and not the manufacturer, is liable for any hazards caused by improper use.

#### NOTE

*Please observe the definition of the following responsible persons: "operating company" and "driver".*

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

## Using the truck



### **⚠ DANGER**

**There is a risk of fatal injury from falling off the truck while it is moving!**

- It is prohibited to carry passengers on the truck.

The truck may not be operated in areas where there is a risk of fire, explosion or corrosion, or in areas that are particularly dusty.

Stacking or unstacking is not permissible on inclined surfaces or ramps.

## Place of use

The truck can be used outside and, with the correct equipment, in buildings.

Operation on public roads is only permitted with the "StVZO" (Road Traffic Licensing Regulations) equipment variant.

If the truck 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 ground must have an adequate load capacity (concrete, asphalt) and a rough surface. Routes, working areas and aisle widths must conform to the specifications in these operating instructions; see chapter entitled "Routes".

Driving on upward and downward gradients is permitted provided the specified data and specifications are observed; see chapter entitled "Routes".

The truck is suitable for use in countries ranging from the Tropics to Nordic regions (temperature range: -12 °C to +40 °C).

This truck is not designed to be operated in cold stores.

The operating company must ensure that suitable fire protection is available for the relevant application in the truck's surroundings. Depending on the application, additional fire protection must be provided on the truck. If in doubt, contact the relevant authorities.

**NOTE**

*Please observe the definition of the following responsible person: "operating company".*

**⚠ DANGER****Risk of fatal poisoning!**

It is dangerous to leave the engine running in enclosed spaces. The engine consumes oxygen and emits carbon dioxide, carbon monoxide and other poisonous gases. There is a risk of fatal injury!

- Only operate the truck in areas that are well ventilated.

**Using working platforms****⚠ WARNING**

The use of working platforms is regulated by national law. The use of working platforms is only permitted by virtue of the jurisdiction in the country of use.

- Observe national legislation.
- Before using working platforms, consult the national regulatory authorities.

## Information about the documentation

# Information about the documentation

## Scope of the documentation

- Original operating instructions of the truck
- Original operating instructions of the display-operating unit
- Operating instructions of the installed variants that are not mentioned in the aforementioned original operating instructions
- "UPA" Operating instructions or inserts (depending on the truck equipment)
- Spare parts list



### NOTE

*Refer to the additional information in the section entitled "Rules for the operating company of industrial trucks".*

These operating instructions describe all measures necessary for the safe operation and proper maintenance of the truck in all possible variants available at the time of printing. Special versions to meet customer requirements (UPA) are documented in separate operating instructions.

- If you have any questions, contact your authorised service centre.

Enter the production number and year of manufacture from the nameplate in the space provided:

**Production number:**

---

**Year of manufacture:**

---

- Please quote the production number in all technical enquiries.

Each truck comes with a set of operating instructions. These instructions must be stored carefully and must be available to the driver and operating company at all times. The storage location is specified in the chapter entitled "Driver's compartment".

If the operating instructions are lost, the operating company must obtain a replacement from the manufacturer immediately.

The operating instructions are included in the spare parts list and can be reordered as a spare part.

The personnel responsible for operating and maintaining the equipment must be familiar with these operating instructions.

The operating company must ensure that all users have received, read and understood these operating instructions.

Safely store the complete documentation and pass on to the subsequent operating company when transferring or selling the truck.

**NOTE**

*Please note the definition of the following responsible persons: "operating company" and "driver".*

Thank you for reading and complying with these operating instructions. If you have any questions or suggestions for improvements, or if you have found any errors, please contact the authorised service centre.

## Supplementary documentation

This industrial truck can be fitted with unplanned equipment (**UPA**) that deviates from the standard equipment and/or the variants.

The UPA may be, for example:

- Special sensors
- Special attachments
- Towing devices
- Customised attachments

In this case, the industrial truck has additional documentation. This may be in the form of an insert or separate operating instructions.

The original operating instructions for this industrial truck are valid for the operation of standard equipment and variants without restriction. The operational and safety information in the original operating instructions continues to be valid in its entirety unless it is countermanded in this additional documentation.

## Information about the documentation

The requirements for the qualification of personnel as well as the time for maintenance may vary. This is defined in the additional documentation.

- If you have any questions, please contact your authorised service centre.

## Issue date and topicality of the operating instructions

The issue date and the version of these operating instructions can be found on the title page.

STILL is constantly engaged in the further development of trucks. These operating instructions are subject to change, and any claims based on the information and/or illustrations contained in them cannot be asserted.

Please contact your authorised service centre for technical support relating to your truck.

## Copyright and trademark rights

These instructions must not be reproduced, translated or made accessible to third parties—including as excerpts—except with the express written approval of the manufacturer.

## Explanation of information symbols used

### DANGER

Indicates procedures that must be strictly adhered to in order to prevent the risk of fatalities.

---

### WARNING

Indicates procedures that must be strictly adhered to in order to prevent the risk of injuries.

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### CAUTION

Indicates procedures that must be strictly adhered to in order to prevent material damage and/or destruction.

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**i** NOTE

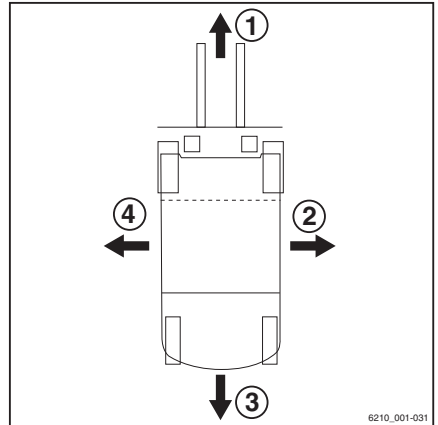
*For technical requirements that require special attention.*

**⚠** ENVIRONMENT NOTE

*To prevent environmental damage.*

**Definition of directions**

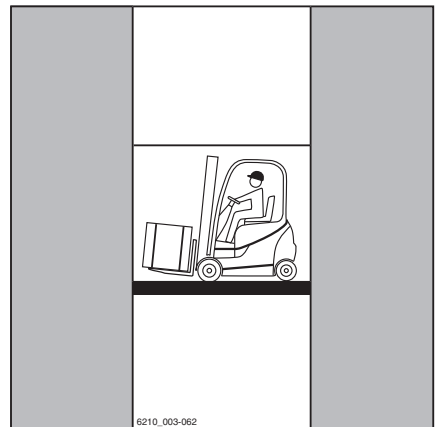
The directions "forwards" (1), "backwards" (3), "right" (2) and "left" (4) refer to the installation position of the parts as seen from the driver's compartment; the load is to the front.

**Schematic views****View of functions and operating procedures**

At many points in this documentation, the (mostly sequential) operation of certain functions or operating procedures is explained. Schematic diagrams of a counterbalance truck are used to illustrate these procedures.

**i** NOTE

*These schematic views are not representative of the construction of the documented truck. The views are used solely for the purpose of clarifying procedures.*



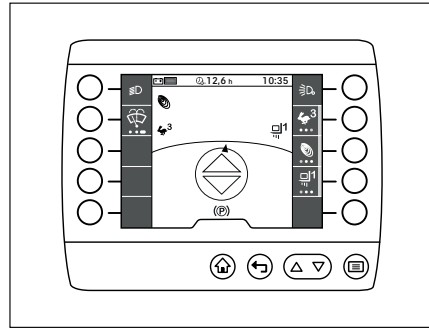
## Information about the documentation

### View of the display-operating unit



#### NOTE

Views of operating statuses and values in the display of the display and operating unit are examples and partly dependent on the truck equipment. As a result, the displays shown of the actual operating statuses and values may vary.



## List of abbreviations

This list of abbreviations applies to all types of operating instructions. Not all of the abbreviations that are listed here will necessarily appear in these operating instructions.

Abbreviation	Meaning	Explanation
ArbSchG	Arbeitsschutzgesetz	German implementation of EU occupational health and safety directives
Betr-SichV	Betriebssicherheitsverordnung	German implementation of the EU working equipment directive
BG	Berufsgenossenschaft	German insurance company for the company and employees
BGG	Berufsgenossenschaftlicher Grundsatz	German principles and test specifications for occupational health and safety
BGR	Berufsgenossenschaftliche Regel	German rules and recommendations for occupational health and safety
DGUV	Berufsgenossenschaftliche Vorschrift	German accident prevention regulations
CE	Communauté Européenne	Confirms conformity with product-specific European directives (CE labelling)
CEE	Commission on the Rules for the Approval of the Electrical Equipment	International commission on the rules for the approval of electrical equipment
DC	Direct Current	Direct current
DFÜ	Datenfernübertragung	Remote data transfer
DIN	Deutsches Institut für Normung	German standardisation organisation
EG	European Community	
EN	European standard	
FEM	Fédération Européenne de la Manutention	European Federation of Materials Handling and Storage Equipment
F <sub>max</sub>	maximum Force	Maximum power



Abbreviation	Meaning	Explanation
GAA	Gewerbeaufsichtsamt	German authority for monitoring/issuing regulations for worker protection, environmental protection, and consumer protection
GPRS	General Packet Radio Service	Transfer of data packets in wireless networks
ID no.	Identification number	
ISO	International Organization for Standardization	International standardisation organisation
$K_{pA}$	Uncertainty of measurement of sound pressure levels	
LAN	Local Area Network	Local area network
LED	Light Emitting Diode	Light emitting diode
$L_p$	Sound pressure level at the workplace	
$L_{pAZ}$	Average continuous sound pressure level in the driver's compartment	
LSP	Load centre of gravity	Distance of the centre of gravity of the load from the front face of the fork backs
MAK	Maximum workplace concentration	Maximum permissible air concentrations of a substance at the workplace
Max.	Maximum	Highest value of an amount
Min.	Minimum	Lowest value of an amount
PIN	Personal Identification Number	Personal identification number
PPE	Personal protective equipment	
SE	Super-Elastic	Superelastic tyres (solid rubber tyres)
SIT	Snap-In Tyre	Tyres for simplified assembly, without loose rim parts
StVZO	Straßenverkehrs-Zulassungs-Ordnung	German regulations for approval of vehicles on public roads
TRGS	Technische Regel für Gefahrstoffe	Ordinance on hazardous materials applicable in the Federal Republic of Germany
VDE	Verband der Elektrotechnik Elektronik Informationstechnik e. V.	German technical/scientific association
VDI	Verein Deutscher Ingenieure	German technical/scientific association
VDMA	Verband Deutscher Maschinen- und Anlagenbau e. V.	German Mechanical Engineering Industry Association
WLAN	Wireless LAN	Wireless local area network

## Environmental considerations

# Environmental considerations

## Packaging

During delivery of the truck, certain parts are packaged to provide protection during transport. This packaging must be removed completely prior to initial start-up.



### ENVIRONMENT NOTE

*The packaging material must be disposed of properly after delivery of the truck.*

## Disposal of components and batteries

The truck is composed of different materials. If components or batteries need to be replaced and disposed of, 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 for disposal purposes.*

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**Safety**

## Definition of responsible persons

# 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 proper purpose and in compliance with the safety regulations set out in these operating instructions.

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

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

We recommend that the national performance specifications are adhered to.

## Specialist

A qualified person is defined as a service engineer or a person who fulfils the following requirements:

- A completed vocational qualification that demonstrably proves their professional expertise. This proof should consist of a vocational qualification or a similar document.
- Professional experience indicating that the qualified person has gained practical experience of industrial trucks over a proven period during their career. During this time, this person has become familiar with a wide range of symptoms that require checks to be carried out, such as based on the results of a hazard assessment or a daily inspection.
- Recent professional involvement in the field of the industrial truck test in question and an appropriate further qualification are essential. The qualified person must have experience of carrying out the test in question or of carrying out similar tests. Moreover, this person must be aware of the latest technological developments regarding the industrial truck to be tested and the risk being assessed.

## 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 to the operating company or an authorised representative, and have been specifically instructed to drive the truck. Specific knowledge of the truck to be operated is also required.

The training requirements under §3 of the Health and Safety at Work Act and §9 of the plant safety regulations are deemed to have been satisfied if the driver has been trained in accordance with BGG (General Employers' Liability Insurance Association Act) 925. Observe the national regulations for your country.

### Driver rights, duties and rules of behaviour

The driver must be trained in his rights and duties.

The driver must be granted the required rights.

The driver must wear protective equipment (protection suit, safety footwear, safety helmet, industrial goggles and gloves) that is appropriate for the conditions, the job and the load to be lifted. Solid footwear should be worn to ensure safe driving and braking.

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 manual
- 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 aforementioned substances are not permitted to perform work of any kind on or with the truck.

## Definition of responsible persons

### **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, e.g. by pulling out the key.

## Basic principles for safe operation

### Insurance cover on company premises

In many cases, company premises are restricted public traffic areas.

#### NOTE

The business liability insurance should be reviewed to ensure that, in the event of any damage caused in restricted public traffic areas, there is insurance cover for the truck in respect of third parties.

### Modifications and retrofitting

If the truck will be used for work that is not listed in the directives or in these instructions, convert or retrofit the truck for this purpose as required. Any structural modification can impair the handling and stability of the truck, and can result in accidents.

Any modifications that adversely affect the stability, the load capacity or the circumferential view of the truck require written approval from the manufacturer.

The following components may only be modified with prior written approval from the manufacturer:

- Brakes
- Steering
- Operating devices
- Safety systems
- Equipment variants
- Attachments

The truck may only be converted with written approval from the manufacturer. If necessary, obtain approval from the relevant authorities.

- Only the authorised service centre is permitted to perform welding work on the truck.

We warn against installing and using restraint systems that have not been approved by the manufacturer.

## Basic principles for safe operation

- Contact the authorised service centre before converting or retrofitting the truck.

The operating company is only permitted to make modifications to the truck independently if the manufacturer goes into liquidation and the company is not taken over by another legal person.

The operating company must also fulfil the following prerequisites:

- Design documents, test documents and assembly instructions associated with the modification must be permanently archived and remain accessible at all times.
- The capacity rating plate, the decal information, the hazard warnings and the operating instructions must be checked to ensure that they are consistent with the modifications and must be amended if required.
- Modifications must be designed, checked and implemented by a design office that specialises in industrial trucks. The design office must comply with the standards and directives valid at the time that modifications are made.

Decal information with the following data must be permanently affixed to the truck so that it is clearly visible:

- Type of modification
- Date of modification
- Name and address of the company that carried out the modification

## Changes to the overhead guard and roof loads

### DANGER

**In the event of the overhead guard falling due to a falling load or the truck tipping over, there are potentially fatal consequences for the driver. There is a risk to life!**

Welding and drilling on the overhead guard changes the material characteristics and the structural design of the overhead guard. Excessive forces caused by falling loads or the truck tipping over may result in buckling of the modified overhead guard and no protection for the driver.

- Do not perform welding on the overhead guard.
- Do not perform drilling on the overhead guard.



**⚠ CAUTION**

Heavy roof loads damage the overhead guard!

To ensure the stability of the overhead guard at all times, a roof load may only be mounted on the overhead guard if the structural design has been tested and the manufacturer has given approval.

- Seek advice from the authorised service centre for the mounting of roof loads.

**Warning about any manipulation of the internal combustion engine**

The internal combustion engine used in this truck possesses an EU type approval, which is required for the legitimate operation of this truck.

Manipulation of the internal combustion engine in any way invalidates this EU type approval. In this case, operation of the truck is also no longer permitted.

**Warning regarding non-original parts**

Original parts, attachments and accessories are specially designed for this truck. We specifically draw your attention to the fact that parts, attachments and accessories supplied by other companies have not been tested and approved by STILL.

**⚠ CAUTION**

Installation and/or use of such products may therefore have a negative impact on the design features of the truck and thus impair active and/or passive driving safety.

We recommend that you obtain approval from the manufacturer and, if necessary, from the relevant regulatory authorities before installing such parts. The manufacturer accepts no liability for any damage caused by the use of non-original parts and accessories without approval.

## Basic principles for safe operation

### Damage, defects and misuse of safety systems

Damage or other defects on the truck or attachment must be reported to the supervisor or responsible fleet manager immediately so that they can have the defect rectified.

Trucks and attachments that are not functional or safe to drive may not be used until they have been properly repaired.

Do not remove or deactivate safety systems and switches.

Fixed set values may only be changed with the approval of the manufacturer.

Work on the electrical system (e.g. connecting a radio, additional headlights etc.) is only permitted with the manufacturer's written approval. All electrical system interventions must be documented.

Even if they are removable, roof panels may not be removed, as they are designed to protect against small falling objects.

### Tyres

#### DANGER

##### **Risk to stability!**

Failure to observe the following information and instructions can lead to a loss of stability. The truck may tip over, risk of accident!

The following factors can lead to a loss of stability and are therefore **prohibited**:

- Different tyres on the same axle, e.g. pneumatic tyres and superelastic tyres
- Tyres not approved by the manufacturer
- Excessive tyre wear
- Tyres of inferior quality
- Changing rim wheel parts
- Combining rim wheel parts from different manufacturers

The following rules must be observed to ensure stability:

- Only use tyres with equal and permitted levels of wear on the same axle
- Only use wheels and tyres of the same type on the same axle, e.g. only superelastic tyres
- Only use wheels and tyres approved by the manufacturer
- Only use high-quality products

Wheels and tyres approved by the manufacturer can be found on the spare parts list. If other wheels or tyres are to be used, authorisation from the manufacturer must be obtained beforehand.

- Contact the authorised service centre on this matter.

When changing wheels or tyres, always ensure that this does not cause the truck to tilt to one side (e.g. always replace right-hand and left-hand wheels at the same time). Changes must only be made following consultation with the manufacturer.

If the type of tyre used on an axle is changed, for example from superelastic tyres to pneumatic tyres, the load diagram must be changed accordingly.

- Contact the authorised service centre on this matter.

## Medical equipment

### WARNING

Electromagnetic interference may occur on medical devices!

Only use equipment that is sufficiently protected against electromagnetic interference.

Medical equipment, such as pacemakers or hearing aids, may not work properly when the truck is in operation.

- Ask your doctor or the manufacturer of the medical equipment to confirm that the medical equipment is sufficiently protected against electromagnetic interference.

## Basic principles for safe operation

### Exercise caution when handling gas springs and accumulators

#### WARNING

Gas springs are under high pressure. Improper removal results in an elevated risk of injury.

For ease of operation, various functions on the truck can be supported by gas springs. Gas springs are complex components that are subject to high internal pressures (up to 300 bar). They may under no circumstances be opened unless instructed to do so, and may be installed only when not under pressure. If required, the authorised service centre will depressurise the gas spring in accordance with the regulations before removal. Gas springs must be depressurised before recycling.

- Avoid damage, lateral forces, buckling, temperatures over 80°C and heavy contamination.
- Damaged or defective gas springs must be changed immediately.
- Contact the authorised service centre.

#### WARNING

Accumulators are under high pressure. Improper installation of an accumulator results in an elevated risk of injury.

Before starting work on the accumulator it must be depressurised.

- Contact the authorised service centre.

### Length of the fork arms

#### DANGER

**Risk of accident due to the incorrect selection of fork arms!**

- The fork arms must match the depth of the load.

If the fork arms are too short, the load may fall off the arms after it has been picked up. In addition, be aware that the load centre of gravity may shift as a result of dynamic forces, such as braking. A load that is otherwise resting safely on the fork arms may move forwards and fall.

If the fork arms are too long, they can catch on loading units behind the load that is to be picked up. These other loading units then fall over when the load is raised.

- For help with selecting the correct fork arms, contact the authorised service centre.

## Residual risk

# Residual risk

## Residual dangers, residual risks

Despite careful working and compliance with standards and regulations, the occurrence of other risks when using the truck cannot be entirely excluded.

The truck and all other system components comply with current safety requirements. Nevertheless, even when the truck is used for its proper purpose and all instructions are followed, some residual risk cannot be excluded.

Even beyond the narrow danger areas of the truck itself, a residual risk cannot be excluded. Persons in this area around the truck must exercise a heightened degree of awareness, so that they can react immediately in the event of any malfunction, incident or breakdown etc.

### **WARNING**

All persons that are in the vicinity of the truck must be instructed regarding these risks that arise through use of the truck.

In addition, we draw attention to the safety regulations in these operating instructions.

Risks can include:

- Escape of consumables due to leakages, rupture of lines and containers etc.
- Risk of accident when driving over difficult ground such as gradients, smooth or irregular surfaces, or with poor visibility etc.
- Falling, tripping etc. when moving on the truck, especially in wet weather, with leaking consumables or on icy surfaces
- Fire and explosion risks due to batteries and electrical voltages
- Human error resulting from failure to observe the safety regulations,
- Unrepaired damage or defective and worn components,
- Insufficient maintenance and testing
- Use of incorrect consumables
- Exceeding test intervals

The manufacturer is not held responsible for accidents involving the truck caused by the failure of the operating company to comply

with these regulations either intentionally or carelessly.

### Stability

The stability of the truck has been tested to the latest technological standards and is guaranteed provided that the truck is used properly and according to its intended purpose. These standards only take into account the dynamic and static tipping forces that can arise during specified use in accordance with the operating rules and intended purpose. However, the danger of exceeding the moment of tilt due to improper use or incorrect operation and losing stability can never be excluded.

The loss of stability can be avoided or minimised by the following actions:

- Always secure the load against slipping, e.g. by lashing.
- Always transport unstable loads in suitable containers.
- Always drive slowly when cornering.
- Drive with the load lowered.
- Even with sideshifts, align the load as centrally as possible with the truck and transport in this position.
- Avoid turning and diagonally driving across slopes or gradients.
- Never have the load facing downhill when travelling on slopes or gradients.
- Pick up only loads of the approved width.
- Always take great care when transporting suspended loads.
- Do not drive over ramp edges or steps.

### Special risks associated with using the truck and attachments

Approval from the manufacturer and attachment manufacturer must be obtained each time the truck is used in a manner that falls outside the scope of normal use, and in cases where the driver is not certain that he can use

## Residual risk

the truck correctly and without the risk of accidents.





## Residual risk

## Overview of hazards and countermeasures



## NOTE

*This table is intended to help evaluate the hazards in your facility and applies to all drive types. It does not claim to be complete.*

- Observe the national regulations for the country in which the truck is being used.

Hazard	Course of action	Check note √ done - Not applicable	Notes
Truck equipment does not comply with local regulations	Testing	○	If in doubt, consult the responsible factory inspectorate or employers' liability insurance association
Driver's lack of skills or qualifications	Driver training (sit-on and stand-on)	○	DGUV principle 308-001 VDI 3313 driver's licence
Usage by unauthorised persons	Access with key only for authorised persons	○	
Truck not safe for operation	Periodic inspection and rectification of defects	○	German Ordinance on Industrial Safety and Health (BetrSichV)
Risk of falling when using working platforms	Compliance with national regulations (different national laws)	○	German Ordinance on Industrial Safety and Health (BetrSichV) and employer's liability insurance associations
Impaired visibility due to load	Application planning	○	German Ordinance on Industrial Safety and Health (BetrSichV)
Contamination of breathable air	Assessment of diesel exhaust gases	○	Technical Regulations for Hazardous Substances (TRGS) 554 and the German Ordinance on Industrial Safety and Health (BetrSichV)
	Assessment of LPG exhaust gases	○	German threshold limit values list (MAK-Liste) and the German Ordinance on Industrial Safety and Health (BetrSichV)

Hazard	Course of action	Check note √ done - Not applicable	Notes
Impermissible usage (improper usage)	Provide operating instructions	○	German Ordinance on Industrial Safety and Health (BetrSichV) and German Health and labour protection law (ArbSchG)
	Written notice of instruction to driver	○	German Ordinance on Industrial Safety and Health (BetrSichV) and German Health and labour protection law (ArbSchG)
	German Ordinance on Industrial Safety and Health (BetrSichV), observe the operating instructions	○	
When fuelling			
a) Diesel	German Ordinance on Industrial Safety and Health (BetrSichV), observe the operating instructions	○	
b) LPG	DGUV regulation 79, observe the operating instructions	○	
When charging the drive battery	German Ordinance on Industrial Safety and Health (BetrSichV), observe the operating instructions	○	VDE 0510-47 (= DIN EN 62485-3): In particular - Ensure adequate ventilation - Insulation value within the permissible range
When using battery chargers	German Ordinance on Industrial Safety and Health (BetrSichV), DGUV rule 113-001 and observe the operating instructions	○	German Ordinance on Industrial Safety and Health (BetrSichV) and DGUV rule 113-001
When parking LPG trucks	German Ordinance on Industrial Safety and Health (BetrSichV), DGUV rule 113-001 and observe the operating instructions	○	German Ordinance on Industrial Safety and Health (BetrSichV) and DGUV rule 113-001

## Residual risk

Hazard	Course of action	Check note ✓ done - Not applicable	Notes
When operating driverless transport systems			
Roadway quality inadequate	Clean/clear roadways	○	German Ordinance on Industrial Safety and Health (BetrSichV)
Loading equipment incorrect/slipped	Reposition load on pallet	○	German Ordinance on Industrial Safety and Health (BetrSichV)
Unpredictable driving behaviour	Employee training	○	German Ordinance on Industrial Safety and Health (BetrSichV)
Routes blocked	Mark routes Keep roadways clear	○	German Ordinance on Industrial Safety and Health (BetrSichV)
Routes intersect	Announce right-of-way rule	○	German Ordinance on Industrial Safety and Health (BetrSichV)
No person detection when placing goods into stock and removing goods from stock	Employee training	○	German Ordinance on Industrial Safety and Health (BetrSichV)

## Danger to employees

According to the German Ordinance on Industrial Safety and Health (BetrSichV) and labour protection law (ArbSchG), the operating company must determine and assess hazards during operation, and establish the labour protection measures required for employees (BetrSichVO). The operating company must therefore draw up appropriate operating instructions (§ 6 ArbSchG) and make them available to the driver. A responsible person must be appointed.



### NOTE

*Please observe the definition of the following responsible persons: "operating company" and "driver".*

The construction and equipment of the truck correspond to the Machinery Directive 2006/42/EC and are therefore marked with CE labelling. These elements are therefore not

included in the hazard assessment. Attachments possess their own CE labelling and likewise are not included for that reason. The operating company must, however, select the type and equipment of the trucks so as to comply with the local provisions for deployment.

The result must be documented (§ 6 ArbSchG). In the case of truck applications involving similar hazard situations, the results may be summarised. This overview (see chapter "Overview of hazards and countermeasures") provides help on complying with this regulation. The overview specifies the main hazards that are the most frequent cause of accidents in the event of non-compliance. If other major operational hazards are involved, they must also be taken into consideration.

The conditions of use for trucks are broadly similar in many plants, so the hazards can be summarised in one overview. Observe the information provided by the relevant employers' liability insurance association on this subject.

## Safety tests

### Safety tests

#### Regular safety inspection of the truck



#### Safety inspection based on time and extraordinary incidents

The operating company must ensure that the truck is checked by a specialist at least once a year or after particular incidents.

As part of this inspection, a complete check of the technical condition of the truck must be performed with regard to accident safety. In addition, the truck must be thoroughly checked for damage that could potentially have been caused by improper use. A test log must be created. The results from the inspection must be retained until a further two inspections have been carried out.

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

- Arrange for the service centre to perform periodic safety inspections on the truck.
- Observe guidelines for checks carried out on the truck in accordance with FEM 4.004.

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

- Contact your service centre.



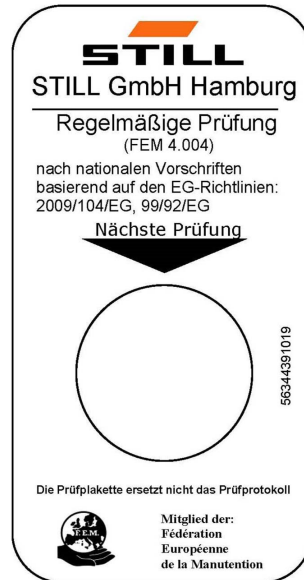
#### NOTE

*Observe the national regulations for your country!*

#### Carrying out regular safety inspections on the LPG system

#### Technical safety inspection of the LPG system

The operating company must commission a competent person to check the LPG system. Observe the national regulations in the relevant country! In Germany, check the system in accordance with § 37 of the employers' liability



association regulations BGV D34 entitled "Accident prevention regulation for the use of LPG".



#### NOTE

*Please observe the definition of the following responsible persons: "operating company" and "competent person".*

The LPG system must be checked:

- Recurring in regular intervals, but at least once per year
- After repair work that may affect operational safety
- After changes that may affect operational safety
- After breaks in operation of more than one year.

The following will be checked: proper condition, the possibility of leakages, function, installation and the functionality of the safety devices.

The results from the inspection must be recorded in an inspection document in accordance with BGG 936 (observe the applicable national regulations). The results must be retained until the next inspection. The inspection documents must be available for viewing by the authorities at any time.

The type and scope of tests may differ according to the country. Any differing legal provisions in the respective country of operation must be observed when using trucks with an LPG system.

The operating company is responsible for ensuring any defects are remedied without delay. In the event of defects, notify the authorised service centre.

### **Regularly checking the level of harmful substances in the exhaust gas**

The operating company must ensure that the level of harmful substances in the exhaust gas is checked recurrently by a competent person at regular intervals, at least every six months.

## Safety tests

Observe the national regulations in the relevant country! In Germany, perform checks in accordance with § 37 of the employers' liability insurance association regulations BGV D34 entitled "Accident prevention regulation for the use of LPG".

The type and scope of tests may differ according to the country. Any differing legal provisions in the respective country of operation must be observed when using trucks with an LPG system.



### NOTE

*Please observe the definition of the following responsible persons: "operating company" and "competent person".*

## Insulation testing

The truck insulation must have sufficient insulation resistance. For this reason, insulation testing in accordance with DIN EN 1175 and DIN 43539, VDE 0117 and VDE 0510 must be conducted at least once every year.



### NOTE

*Contact your service centre to arrange for an insulation test.*

## Measuring the insulation resistance of the electrical system



### NOTE

*Nominal battery voltage < test voltage < 500 V.*

- Ensure that all voltage sources have been disconnected from the circuit to be tested.
- Measure the insulation resistance with a suitable measuring device.

The insulation resistance can be considered sufficient if it measures at least 1000  $\Omega/V$  for nominal battery voltage against ground.

- Contact the authorised service centre.



## Safety regulations for handling consumables

### Permissible consumables

#### WARNING

Consumables can be dangerous!

- Observe the safety regulations for handling these materials; refer to the section entitled "Safety regulations for handling consumables".
  - Note the safety datasheets provided by the manufacturer of the consumables in question.
- 
- The consumables permitted for truck operation can be found in the maintenance data table.

### LPG

Approved for the VW engine:

- LPG with a propane concentration of max. 95%
- LPG with a butane concentration of max. 80% and a propane concentration of at least 20%

The LPG quality must comply with the requirements of **DIN 51622** as a minimum. In the best case scenario, the LPG complies with the requirements of **EN 589** (automotive gas).

### Condition of the LPG cylinders

#### DANGER

##### Risk of explosion!

LPG cylinders must not protrude beyond the edges of the truck body, because collisions with objects or other trucks could cause them to be torn off.

- Only use LPG cylinders that have been approved for operation of the LPG system.
-

## Safety regulations for handling consumables

### Oils



#### **⚠ DANGER**

##### **Oils are flammable!**

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



#### **⚠ DANGER**

##### **Oils are toxic!**

- Avoid contact and consumption.
- If vapour or fumes are inhaled, move to fresh air immediately.
- In the event of contact with the eyes, rinse thoroughly (for at least 10 minutes) with water 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 dryness and irritate the skin!

- 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!

- Spilt oil should be removed immediately with oil-binding agents and disposed of according to the regulations.

**ENVIRONMENT NOTE**

*Oil is a water-polluting substance!*

- *Always store oil in containers that comply with the applicable regulations.*
- *Avoid spilling oils.*
- *Spilt oil should be removed immediately with oil-binding agents and disposed of according to the regulations.*
- *Dispose of old oils according to the regulations.*

**Hydraulic fluid****⚠ WARNING**

These fluids are pressurised during operation of the truck and are hazardous to your health.

- Do not spill the fluids.
- Follow the statutory regulations.
- Do not allow the fluids to come into contact with hot engine parts.

**⚠ WARNING**

These fluids are pressurised during operation of the truck and are hazardous to your health.

- Do not allow the fluids to come into contact with the skin.
- Avoid inhaling 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, immediate medical assistance is required.
- To avoid injury, use appropriate personal protective equipment (e.g. protective gloves, industrial goggles, skin protection and skin care products).

## Safety regulations for handling consumables



### ENVIRONMENT NOTE

*Hydraulic fluid is a water-polluting substance.*

- Always store hydraulic fluid in containers that comply with regulations
- Avoid spills
- Spilt hydraulic fluid should be removed immediately with oil-binding agents and disposed of according to the regulations
- Dispose of old hydraulic fluid according to the regulations

## Battery acid



### ⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is toxic.

- Avoid touching or swallowing the battery acid at all costs.
- In case of injury, seek medical advice immediately.



### ⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is corrosive.

- When working with battery acid, use appropriate PSA (rubber gloves, apron, protection goggles).
- When working with battery acid, never wear a watch or jewellery.
- 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.
- 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.

## LPG

Always observe the "Use of LPG" (BGV D34) accident prevention regulations published by the main trade association of employers' liability insurance carriers, as well as the relevant national guidelines.

LPG includes the flammable gases PROPANE, BUTANE and mixtures of these substances.

LPG is stored in LPG cylinders or LPG tanks and is kept there ready to drive internal combustion engines.

The pressure of these gases in the container depends on the outside temperature and can reach up to 25 bar or more.

### NOTE

*In these operating instructions, liquid gases are called **LPG**.*



#### DANGER

**Risk of explosion! LPG immediately becomes gaseous when it escapes, meaning that a hazardous explosive atmosphere is created immediately.**

- Use only anti-static-treated tools that do not produce sparks.
- Anti-static clothing and footwear are recommended.



#### DANGER

**Risk of fire!**

No open flames (stoves, storm lanterns, activities producing sparks etc.) and no smoking in storage rooms and when working on the LPG system!

- In the event of fires involving LPG, only carbon dioxide dry fire extinguishers or carbon dioxide gas extinguishers may be used.

## Safety regulations for handling consumables



### **⚠ DANGER**

#### **Risk of poisoning!**

Please ensure that trucks with LPG systems are only operated in rooms that are entirely or partially enclosed if there is no possibility that hazardous concentrations of noxious exhaust gas components exist in the air.

### **⚠ CAUTION**

Highly flammable! Vapours spread along the ground. Vapours spread over large areas and can cause fires and reignition.

- Trucks fuelled by LPG should only be parked in rooms that are above ground level and have adequate ventilation. They must not be parked near openings to rooms below ground level.
- Sufficient space must be left around trucks that have been parked; such areas must not include cellar openings or access points, pits or similar cavities, drains without liquid traps, ventilation shafts and light wells or combustible material.

## Safe use of LPG trucks

The LPG system must be checked for damage and leaks at least once a year by a person qualified in LPG systems; see the chapter entitled "Carrying out regular safety inspections on the LPG system".

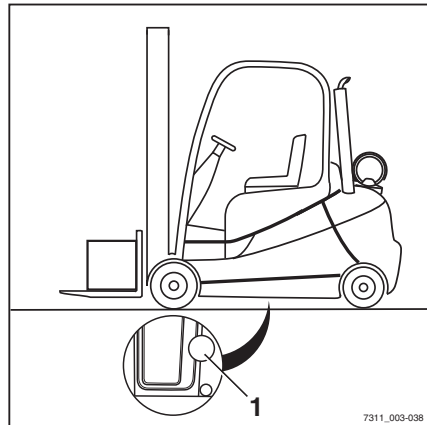
A person qualified in LPG systems should be hired immediately to carry out testing if you are unsure of the type and condition of the evaporator pressure regulator, or if the LPG system has not been checked in a long time.



### **⚠ WARNING**

#### **Risk of explosion!**

When operating a truck with an LPG system, make sure that the floor opening (1) below the engine compartment is not closed. Make sure there are sufficiently large ventilation openings (at least 200 cm<sup>2</sup> in total) in the engine compartment floor, so that gas cannot accumulate.



## Storing pressurised-gas vessels

The cylinder and main shut-off valves must be closed as soon as the truck is parked.

The special regulations governing the storage of pressurised-gas containers must be observed without fail, in addition to country-specific regulations where applicable.

Pressurised gas containers must be stored as follows:

- Away from sources of ignition and heat
- Protected from sunlight
- Locked away and not accessible to children
- Not in rooms below ground level
- Not in stairwells, hallways/landings, confined yards and passageways/thoroughfares or in their immediate vicinity
- Not on steps of outdoor installations
- Not in specially marked escape routes
- Not in garages
- Not in work rooms



### NOTE

*Please also observe the section entitled "General requirements for pressurised-gas containers; Operating pressurised-gas containers" in the technical regulations for pressurised-gas containers (TRG 380 and 404), in addition to the relevant national guidelines.*

Electric hand lamps used in these rooms must be equipped with an enclosed sealed cover and a strong basket guard.

Set-down rooms, storage rooms and maintenance workshops must be well ventilated. It is important to bear in mind that LPG is heavier than air. It collects at floor level, in work pits and other depressions in the ground, where explosive mixtures of gas and air may accumulate.

## Safety regulations for handling consumables

### Coolant and cooling fluid



#### **⚠ WARNING**

Coolant and cooling fluid can be hazardous to your health and the environment!

Coolants are chemical corrosion inhibitors and cooling system protecting agents such as Glysantin. The cooling fluid is an appropriate mixture of water and coolant. Coolant in both concentrated and dilute form can be hazardous to your health if swallowed, or hazardous to the environment if spilled.

- Store coolant and cooling fluid only in their original containers and do not spill them.
- Never store coolant or cooling fluid in empty food containers, bottles or other containers.
- Observe the national regulations for the country of use.



#### **ENVIRONMENT NOTE**

- Soak up any spilt coolant or cooling fluid immediately using an oil binding agent and dispose of it in accordance with the national regulations for the country of use.
- Dispose of old coolant or cooling fluid in accordance with the national regulations for the country of use.

### Brake fluid



#### **⚠ WARNING**

Brake fluid is poisonous!

- Avoid swallowing. In the event of swallowing, do not induce vomiting. Rinse out your mouth thoroughly with water and ask a doctor for advice.
- Avoid aerosolisation and inhalation. In the event of inhalation, seek fresh air. Ask a doctor for advice if necessary.





### ⚠ WARNING

Brake fluid is hazardous to your health!

Brake fluid irritates the eyes and can dry out the skin upon prolonged contact.

- Coat your hands with a protective skin cream prior to starting work.
- Avoid prolonged or intensive skin contact. In the event of skin contact, clean the wetted skin with water and soap, and subsequently apply a skin care product.
- Prevent contact with the eyes. In the event of contact with the eyes, wash out the affected eye(s) with clean water for ten minutes and then ask a doctor for advice.
- Change clothing soiled with brake fluid as soon as possible.

### ⚠ CAUTION

Brake fluid is flammable!

- Do not allow brake fluid to come into contact with hot motor parts.
- Smoking, fires and naked flames are prohibited.

### ⚠ CAUTION

Brake fluid has strong dissolving and colour-changing properties.

- Immediately rinse off any brake fluid that has splashed on paint, clothing, and shoes with plenty of water



### ENVIRONMENT NOTE

*Brake fluid is a water pollutant!*

- *Always store brake fluid in containers complying with the regulations..*
- *Do not spill brake fluid.*
- *Spilt brake fluid must be removed immediately using an oil binding agent and disposed of in accordance with regulations*
- *Dispose of old brake fluid according to the regulations.*
- *Observe the national regulations for the country in which the truck is being used.*

## Safety regulations for handling consumables

### Disposal of consumables



#### ENVIRONMENT NOTE

*Materials that accumulate during repair, maintenance and cleaning must be collected properly and disposed of in accordance with the national regulations for the country in which the truck is being used. Work must only be carried out in areas designated for the purpose. Care must be taken to minimise any environmental pollution.*

- Soak up any spilt fluids such as hydraulic oil, brake fluid or gearbox oil using an oil-binding agent.
- Neutralise any spilt battery acid immediately.
- Always observe national regulations concerning the disposal of used oil.

## Emissions

The values specified apply to a standard truck (compare the specifications in the "Technical data" chapter). Different tyres, lift masts, additional units etc. may produce different values.

### Noise emissions

The values were determined based on measuring procedures from the standard EN 12053 "Safety of industrial trucks - Test methods for measuring noise emissions", based on EN 12001, EN ISO 3744 and the requirements of EN ISO 4871.

This machine emits the following sound pressure level:

#### Continuous sound pressure level in the driver's compartment

$L_{pAZ}$	Measurement uncertainty $K_{pA}$
< 77 dB(A)	4 dB(A)

The values were determined in the test cycle on an identical machine from the weighted values for operating statuses and idling.

Time proportions:

- Lifting 18%
- Idling 58%
- Driving 24%

However, the indicated noise levels at the truck cannot be used to determine the noise emissions at workplaces according to the most recent version of **Directive 2003/10/EC** (daily personal noise pollution). If necessary, these noise emissions must be determined by the operating company directly at the workplaces under the actual conditions there (additional noise sources, special application conditions, sound reflections).

#### NOTE

*Please observe the definition of the following responsible person: "operating company".*

## Emissions

### Vibrations

The vibrations of the machine have been determined on an identical machine in accordance with the standards DIN EN 13059 "Safety of industrial trucks - Test methods for measuring vibration" and DIN EN 12096 "Mechanical vibration - Declaration and verification of vibration emission values".

#### Frequency-weighted effective value of acceleration on the seat

MSG 65 driver's seat	Uncertainty of measurement
< 0.58 m/s <sup>2</sup>	0.174 m/s <sup>2</sup>

Tests have indicated that the amplitude of the hand and arm vibrations on the steering wheel or on the operating devices in the truck is less than 2.5 m/s<sup>2</sup>. There are therefore no measurement guidelines for these measurements.

The personal vibration load on the driver over a working day must be determined by the operating company at the actual place of use in accordance with **Directive 2002/44/EC**, in order to consider all additional influences, such as driving route, intensity of use etc.



#### NOTE

*Please observe the definition of the following responsible person: "operating company".*

## Exhaust gases

### DANGER

#### Risk to health from exhaust gases!

Exhaust gases from internal combustion engines are harmful to your health. In particular, the soot particles contained in the diesel exhaust gas can cause cancer. When the internal combustion engine is running, there is a risk of poisoning from the CO, CH and NOx components contained in the exhaust gas.

Modern exhaust gas treatment systems (e.g. catalytic converters, particle filters or comparable systems) can clean exhaust gases in a way that reduces the health hazard and risk of poisoning when operating the truck.

- Always observe the national laws and regulations of the country of use when using trucks with an internal combustion engine in entirely or partially enclosed working areas.
- Always ensure that there is sufficient ventilation available.

## Heat



### DANGER

#### Risk of burns due to hot exhaust gases!

Exhaust gases or components that carry exhaust gases (e.g. exhaust pipes) can become so hot that direct body contact can cause burns to the skin and materials that are too close can be burned or singed.

- Do not grasp or touch hot exhaust pipes.
- Keep combustible materials away from the exhaust pipe.
- In the event of burns, seek first aid immediately.
- If materials are burning, take appropriate fire protection measures immediately.

## Radiation

In accordance with the guidelines DIN EN 62471:2009-03 (VDE 0837-471:2009-03), the STILL Safety-Light (variant) is assigned to risk group 2 (medium risk) due to its photobiological hazard potential.



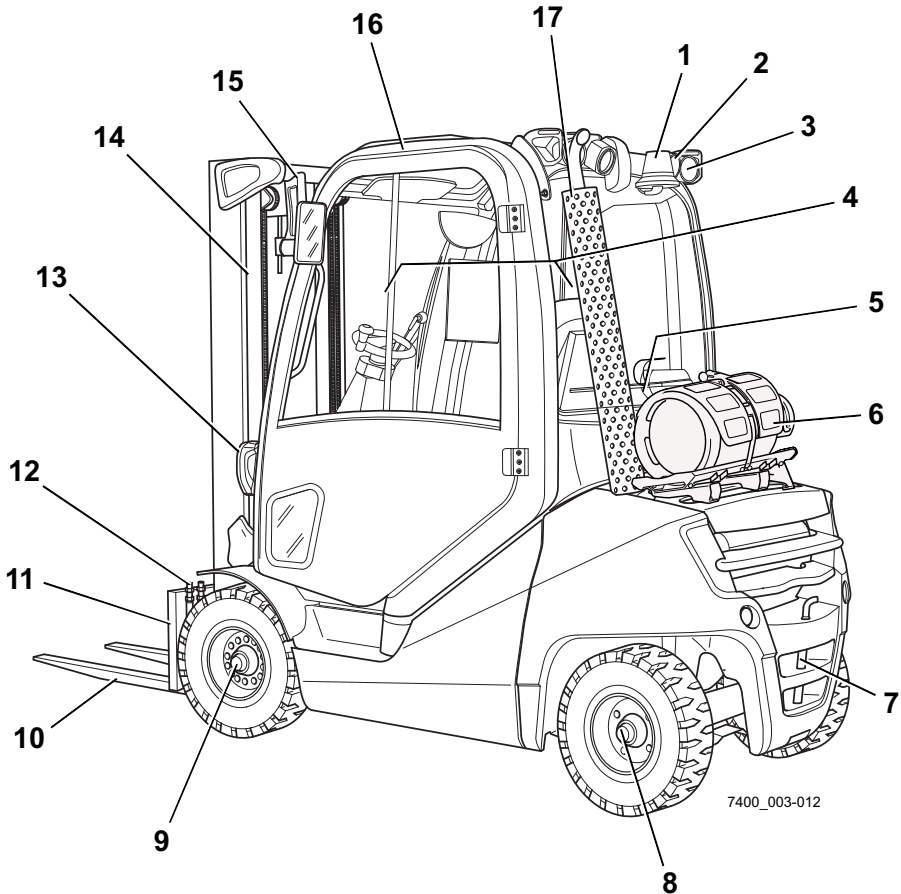
**3**

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## **Overviews**

## Overview

## Overview

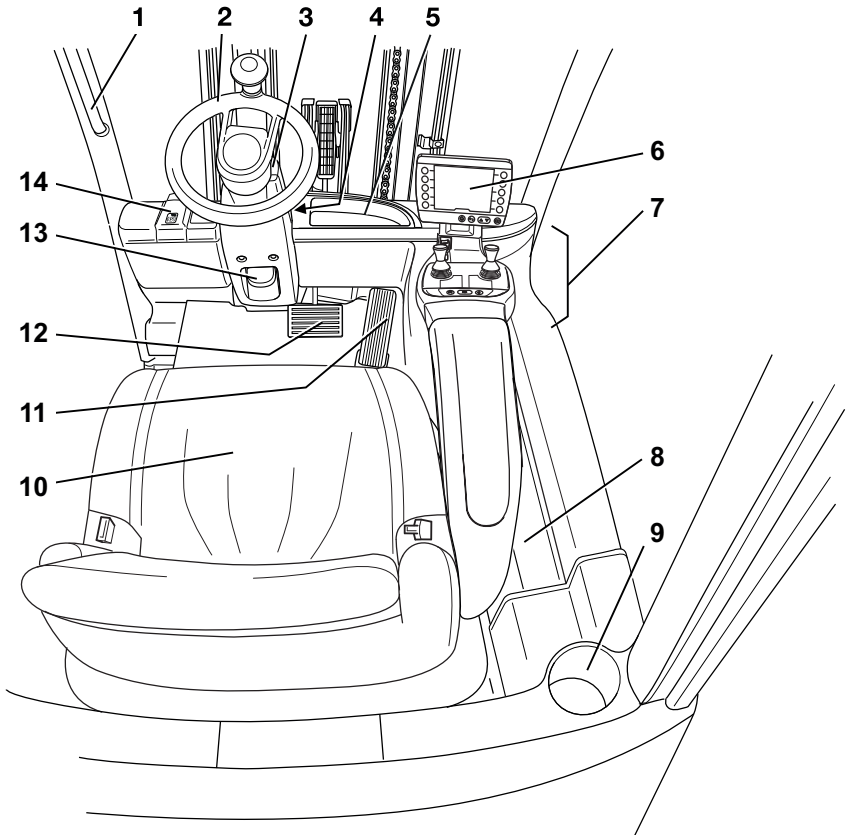


7400\_003-012

- |   |                                  |    |  |
|---|----------------------------------|----|--|
| 1 | Rotating beacon (variant)        | 10 | Fork arms                              |
| 2 | Rear working spotlight (variant) | 11 | Fork carriage                          |
| 3 | Rear lighting (variant)          | 12 | Hydraulic connection for an attachment |
| 4 | Driver's compartment             | 13 | Front lighting (variant)               |
| 5 | Starter battery                  | 14 | Lift mast                              |
| 6 | LPG cylinder/LPG tank (variant)  | 15 | Front working spotlight (variant)      |
| 7 | Towing device                    | 16 | Overhead guard                         |
| 8 | Steering axle                    | 17 | Exhaust pipe                           |
| 9 | Drive axle                       |    |  |



## Driver's compartment



7400\_003-001

- |   |   |    |                                  |
|---|---|----|----------------------------------|
| 1 | Handle  | 9  | Cup holder                       |
| 2 | Steering wheel  | 10 | Driver's seat                    |
| 3 | Mini-console  | 11 | Accelerator pedal                |
| 4 | Key switch  | 12 | Brake pedal                      |
| 5 | Compartment   | 13 | Steering column adjustment lever |
| 6 | Display/control unit "STILL Easy Control"                   | 14 | Parking brake                    |
| 7 | Operating devices   |    |                                  |
| 8 | Compartment and storage location for operating instructions |    |                                  |

## Shelves and cup holders



### NOTE

*The truck equipment may differ from the equipment shown.*

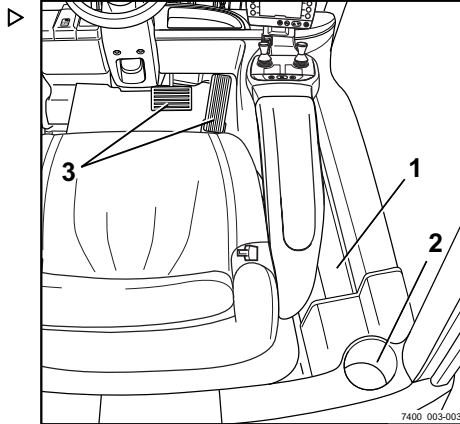
## Shelves and cup holders

### ⚠ WARNING

Risk of accident as a result of objects that are not secure!

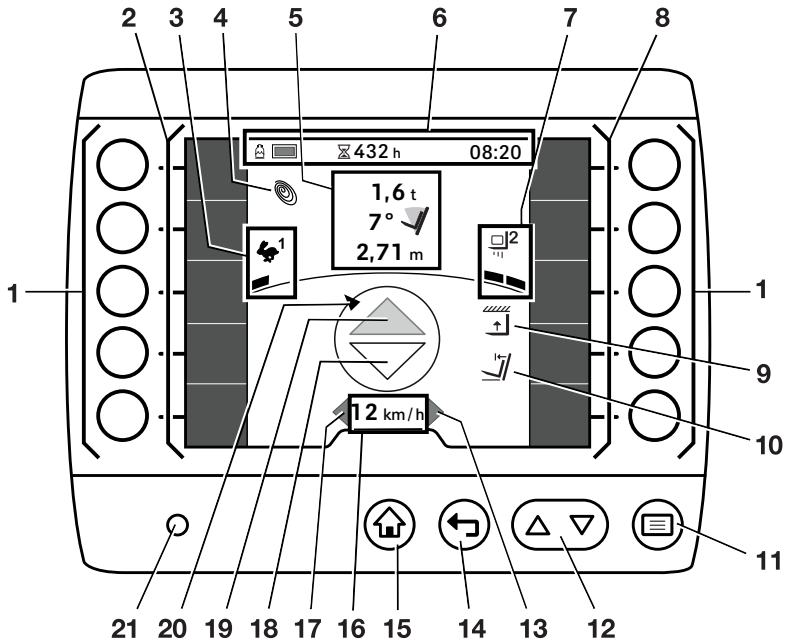
Objects that are not safely stowed may fall into the footwell and slide between the pedals (3). As a result, the pedals may get stuck. This could prevent braking.

- Stow away objects and check that objects are secure.
- Make sure that stored objects cannot fall from the shelf (1) when the truck sets off, is steered or braked.
- Bottles of max. 1.5 l may be stored in the cup holder (2).



## Operating devices and display elements

### Display/control unit "STILL Easy Control"



- |   |   |    |  |
|---|---|----|--|
| 1 | Softkeys  | 10 | Automatic mast vertical positioning            |
| 2 | Left-hand favourites bar  | 11 | Menu button                                    |
| 3 | Selected drive programme with driving dynamics display                                  | 12 | Scrolling buttons                              |
| 4 | Blue-Q symbol   | 13 | "Right" turn indicator display                 |
| 5 | Load information (variants):<br>Load measurement<br>Lift-mast tilt angle<br>Lift height | 14 | Back button                                    |
| 6 | Status bar: fuel level, operating hours, time   | 15 | Main-display button                            |
| 7 | Selected load programme with load dynamics display                                      | 16 | Driving speed or parking brake (®)             |
| 8 | Right-hand favourites bar   | 17 | "Left" turn indicator display                  |
| 9 | Lift height restriction   | 18 | "Reverse" drive direction indicator            |
|   |   | 19 | "Forward" drive direction indicator            |
|   |   | 20 | Display for direction of movement of the truck |
|   |   | 21 | Brightness sensor                              |

The "STILL Easy Control" is a display-operating unit that serves as an operating device for various truck functions, such as lighting or driving dynamics. It uses various symbols, values and display messages to provide information about the status of the truck, e.g. the load statuses, the operating hours and tasks that

## Operating devices and display elements

are necessary for truck operation. Examples of the displays are provided in this figure. The display-operating unit provides further display options that can be configured by the driver or fleet manager.

- For information about the other display options, see the original operating instructions entitled "STILL Easy Control display-operating unit".



### NOTE

*Do not put a label over the brightness sensor (21) or cover it with anything. This sensor allows the display to adapt to the current light conditions.*

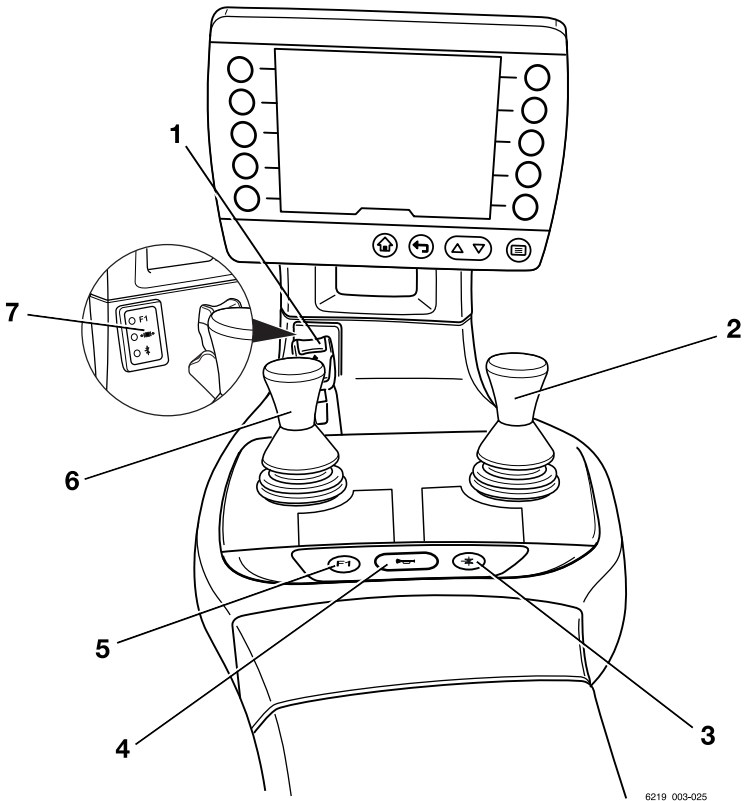
## Operating devices for hydraulic and driving functions

Different versions of the operating devices are available for operating the truck's hydraulic functions and drive functions.

The truck can be equipped with the following operating devices:

- **Double mini-lever**
- **Triple mini-lever**
- **Quadruple mini-lever**
- **Joystick 4Plus**
- **Fingertip**
- **Mini-console**

### Double mini-lever



6219\_003-025

- |   |                                     |   |   |
|---|-------------------------------------|---|---|
| 1 | Drive direction switch              | 5 | "F1" function key                         |
| 2 | Cross lever "Attachments"           | 6 | "Lift mast" 360° lever                    |
| 3 | Function key for the "5th function" | 7 | Display field for the hydraulic functions |
| 4 | Signal horn button                  |   |   |

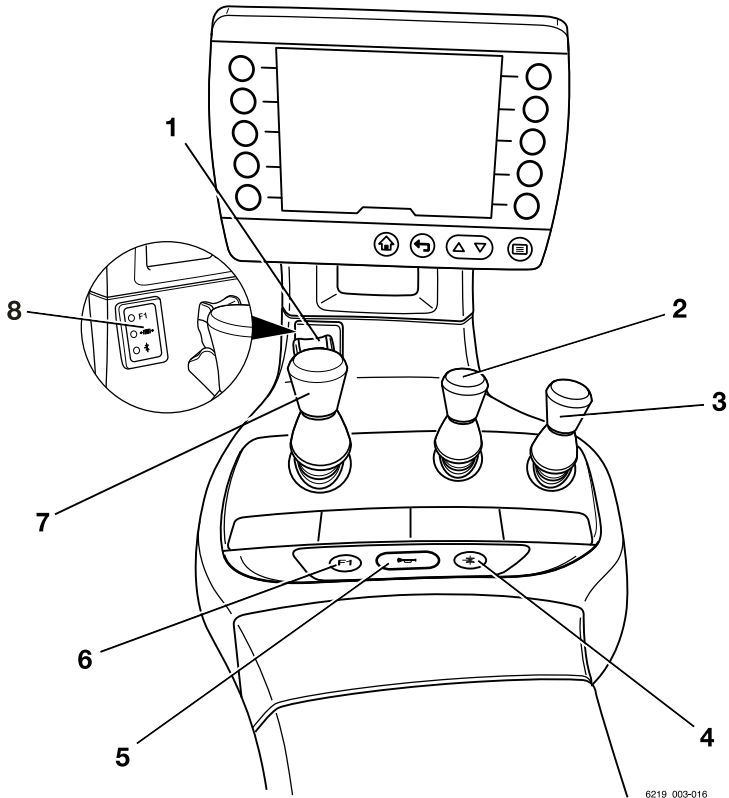
## Operating devices and display elements



### NOTE

- *In the dual-pedal version (variant), the drive direction switch (1) is used exclusively to activate the cruise control function (variant). The drive direction is selected exclusively via the pedals in the dual-pedal version.*
- *The authorised service centre can assign different functions to the "F1" function key (5).*

### Triple mini-lever



6219\_003-016

- |   |  |   |   |
|---|--|---|---|
| 1 | Drive direction switch                   | 5 | Signal horn button                        |
| 2 | "Auxiliary hydraulics 1" operating lever | 6 | "F1" function key                         |
| 3 | "Auxiliary hydraulics 2" operating lever | 7 | "Lift mast" 360° lever                    |
| 4 | Function key for the "5th function"      | 8 | Display field for the hydraulic functions |

## Operating devices and display elements

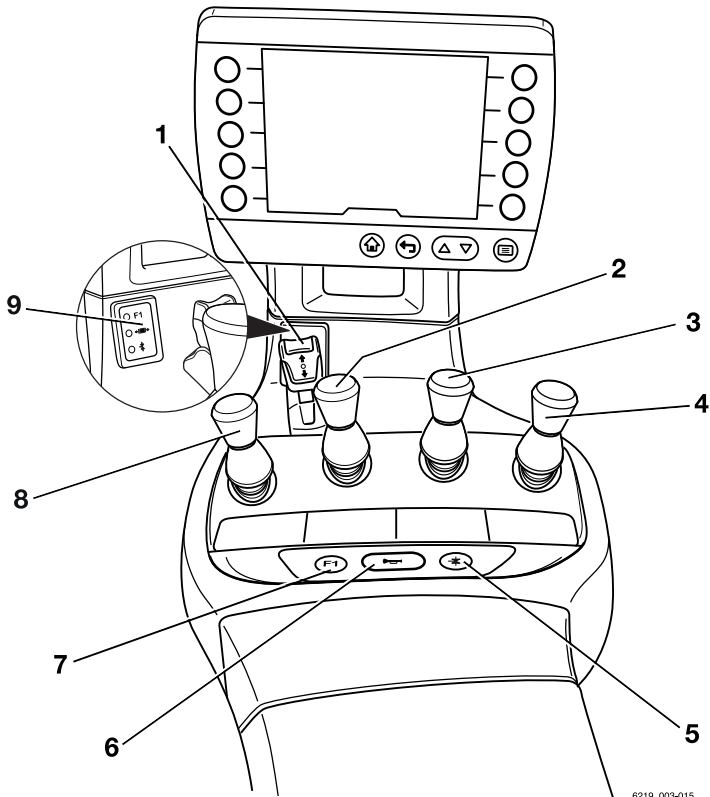


### NOTE

- *In the dual-pedal version (variant), the drive direction switch (1) is used exclusively to activate the cruise control function (variant). The drive direction is selected exclusively via the pedals in the dual-pedal version.*
- *The authorised service centre can assign different functions to the "F1" function key (6).*



### Quadruple mini-lever



6219\_003-015

- |   |  |   |   |
|---|--|---|---|
| 1 | Drive direction switch                   | 6 | Signal horn button                        |
| 2 | "Tilt" operating lever                   | 7 | "F1" function key                         |
| 3 | "Auxiliary hydraulics 1" operating lever | 8 | "Lift/lower" operating lever              |
| 4 | "Auxiliary hydraulics 2" operating lever | 9 | Display field for the hydraulic functions |
| 5 | Function key for the "5th function"      |   |   |

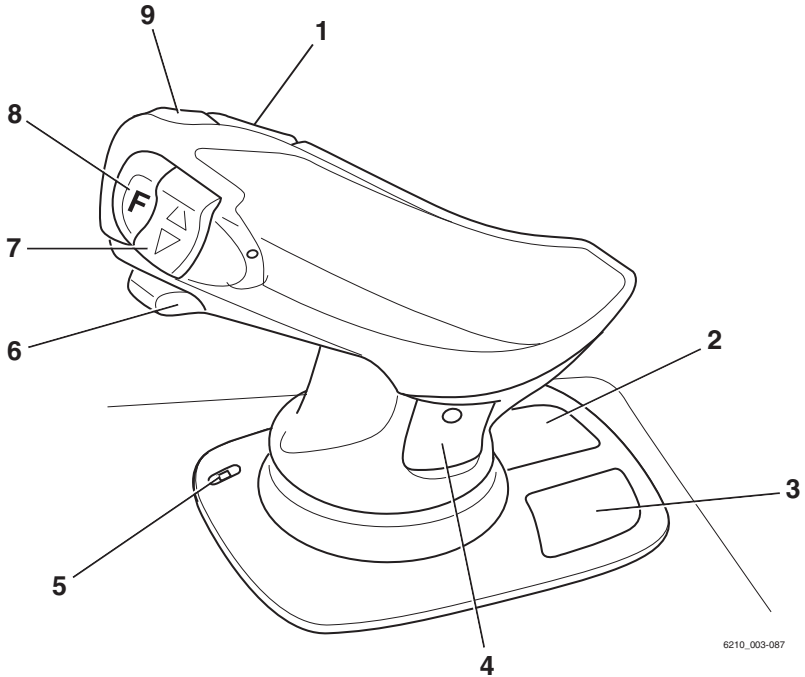
## Operating devices and display elements



### NOTE

- *In the dual-pedal version (variant), the drive direction switch (1) is used exclusively to activate the cruise control function (variant). The drive direction is selected exclusively via the pedals in the dual-pedal version.*
- *The authorised service centre can assign different functions to the "F1" function key (7).*

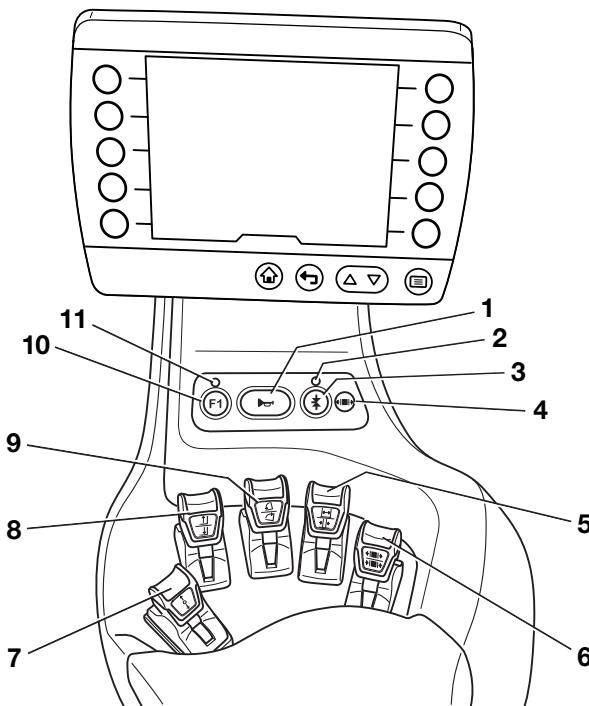
### Joystick 4Plus



- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>1 Horizontal rocker button for the "3rd hydraulic function", tilting the lift mast</li> <li>2 Symbols for the basic hydraulic functions</li> <li>3 Pictograms for the 5th hydraulic function and for the clamp locking mechanism (variant)</li> <li>4 Pictograms for the 3rd &amp; 4th hydraulic function</li> </ul> | <ul style="list-style-type: none"> <li>5 LED for the clamp locking mechanism (variant)</li> <li>6 Slider for the "4th hydraulic function", e.g. side shift frame forwards/backwards</li> <li>7 Vertical rocker button for the "drive direction"</li> <li>8 Shift key "F"</li> <li>9 Signal horn button</li> </ul> |
|---|---|

## Operating devices and display elements

## Fingertip



- |   |  |    |                              |
|---|--|----|------------------------------|
| 1 | Signal horn button                           | 7  | Drive direction switch       |
| 2 | LED for the "5th function"                   | 8  | "Lift/lower" operating lever |
| 3 | Function key for the "5th function"          | 9  | "Tilt" operating lever       |
| 4 | LED for the "Clamp release"                  | 10 | "F1" function key            |
| 5 | Operating lever for "Auxiliary hydraulics 1" | 11 | LED for "F1"                 |
| 6 | Operating lever for "Auxiliary hydraulics 2" |    |                              |



## NOTE

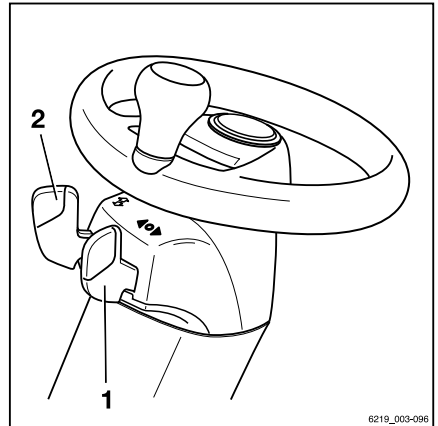
- In the dual-pedal version (variant), the drive direction switch (7) is used exclusively to activate the cruise control function (variant). The drive direction is selected exclusively via the pedals in the dual-pedal version.
- The authorised service centre can assign different functions to the "F1" function key (10).

## Travel direction selector and indicator module (variant) ▷

The travel direction selector and indicator module is located on the steering column below the steering wheel.

### NOTE

*If the drive direction switch on the operating device is defective and the truck stops in a danger area, the drive direction selection lever on the travel direction selector and indicator module can be used for emergency driving. Refer to the section entitled "Emergency driving via the drive direction switch/drive direction selection lever" in the chapter entitled "Procedure in emergencies".*



- 1 Drive direction selection lever
- 2 Turn indicator switch



4

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## Operation

## Checks and tasks before daily use

## Checks and tasks before daily use

## Visual inspections and function checking

**⚠ WARNING**

Risk of injury from falling off the truck!

When climbing onto the truck, there is a risk of getting stuck or slipping and falling. Use suitable equipment to reach higher points on the truck.

- Use only the steps provided for this purpose to climb onto the truck.
- Use equipment such as stepladders or platforms to reach inaccessible areas.

Damage to the truck or the attachment (variant), non-functional switches or safety systems and modification of predefined set values can lead to unpredictable and dangerous situations.

The following checks and tasks enable causes of this type to be identified in good time. It is important to run through all the checks and tasks listed in the following table from top to bottom before daily use of the truck.

If damage or other defects are identified on the truck or the attachment (variant), the truck must not be used until it has been properly repaired.

**Ensure that the truck is safe for operation each day before it is used:**

Component	Course of action
Fork arms, general lifting accessories	Perform a visual inspection to check for deformation and wear (e.g. to check if they are bent, broken or feature significant wear). Check the condition and function of the fork locking devices for preventing lifting and shifting.
Lift mast roller tracks	Make sure that there is a film of grease.
Load chains	Perform a visual inspection to ensure that the chains are intact and have adequate and even tension.
Attachments (variant)	Ensure that the attachments are mounted correctly in accordance with the operating instructions from the manufacturer. Perform a visual inspection to ensure that the attachments are intact and are leak-tight. Perform checks to ensure the attachments are working correctly.



Component	Course of action
Underside	Check the area under the truck for leaking consumables.
Overhead guard, guard grille (variant)	Perform a visual inspection for integrity. Check for secure mounting.
Steps	Make sure they are clean (free of ice, not slippery).
Panes of glass (variant)	Perform a visual inspection for integrity. Make sure they are clean (also free of ice).
Handholds	Check for secure mounting.
Maintenance lids	Check the close function and close.
Fuel system, fuel tank	Perform a visual inspection for damage and leakages. Have damaged components replaced only by the authorised service centre.
Battery	Perform a visual inspection for integrity and deformation.
Bonnet and side flap	Perform a visual inspection for integrity and deformation. Check that the interlock is in good condition and is working correctly. Check the close function and close.
Coupling pin, tow coupling (variant)	Perform a visual inspection for deformation and wear (for example: bent, torn, broken). Check the securing bush in the counterweight for integrity and to ensure that it is working correctly. Check that the linchpin is present and working correctly (chain, rope, split pin).
Labelling, adhesive label	Check for presence, integrity and legibility. Replace damaged or missing adhesive labels in accordance with the section entitled "Labelling points".
Driver's seat, seat belt	Check the integrity and function.
Lighting, warning units	Check the integrity and function.
Antistatic belt	Perform a visual inspection for integrity. Ensure cleanliness. The antistatic belt must be long enough to touch the ground adequately.
Lift and tilt cylinders, tank, valve block, hoses, pipes, connections	Perform a visual inspection for damage and leakages. Check the area under the truck for leaking consumables. Have damaged components replaced only by the authorised service centre.

## Checks and tasks before daily use

Component	Course of action
Wheels, tyres	Perform a visual inspection for wear and damage. Make sure that only rims of the same type from the same manufacturer are fitted. In the event of uneven tyre wear, replace both tyres. Observe the safety regulations in the section entitled "Tyres".
Axle	Make sure that no consumables are escaping from the axle.
Engine	Check the engine oil level. Top up if necessary. Check the coolant level. Top up if necessary.

- Do not use the truck if there is any damage or defects.
- Contact the authorised service centre.

## Climbing in and out of the truck

### WARNING

Risk of injury when climbing in and out of the truck due to slipping, hitting yourself on parts of the truck or becoming stuck!

If the footwell cover is very dirty or smeared with oil, there is a risk of slipping. There is a risk of hitting your head on the post of the overhead guard or of your clothes becoming stuck when climbing out of the truck.

- Ensure that the footwell cover is non-slip.
- Do not jump into or out of the truck.
- Ensure that you have a secure grip on the truck.

### WARNING

Risk of injury when jumping off the truck!

If your clothing or jewellery (e.g. watch, ring etc.) becomes stuck on a component while you are jumping out of the truck, this can lead to serious injuries (e.g. from falling, loss of fingers etc.). It is forbidden to jump off the truck.

- Do not jump off the truck.
- Do not wear jewellery at work.
- Do not wear loose-fitting workwear.

### CAUTION

Components may become damaged through incorrect use!

Truck components, such as the driver's seat, steering wheel, parking brake lever etc., are not designed to be used for climbing in and out of the truck and can be damaged due to misuse.

- Only use the devices specifically designed for the purpose of climbing in and out of the truck.

## Checks and tasks before daily use

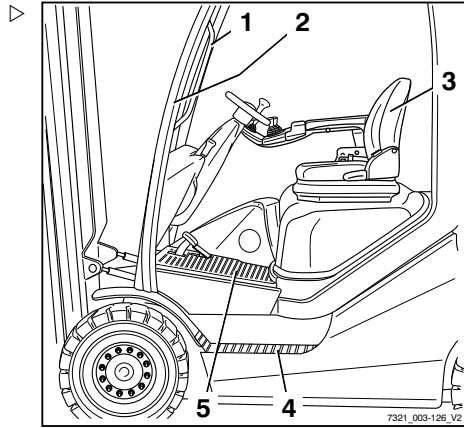
To assist with climbing in and out of the truck, the footwell must be used as a step (5) and the handle (1) must be used for support. The post of the overhead guard (2) can also be used for support.

Always climb into the truck in a forwards motion:

- Grip the handle (1) with your left hand and hold on.
- Put your left foot on the step (4).
- Enter the truck with your right foot first and sit down on the driver's seat (3).

Always climb out of the truck backwards:

- Grip the handle (1) with your left hand and hold on.
- Stand up from the driver's seat and place your left foot on the step (4).
- Climb out of the truck right foot first.



### Operating the signal horn

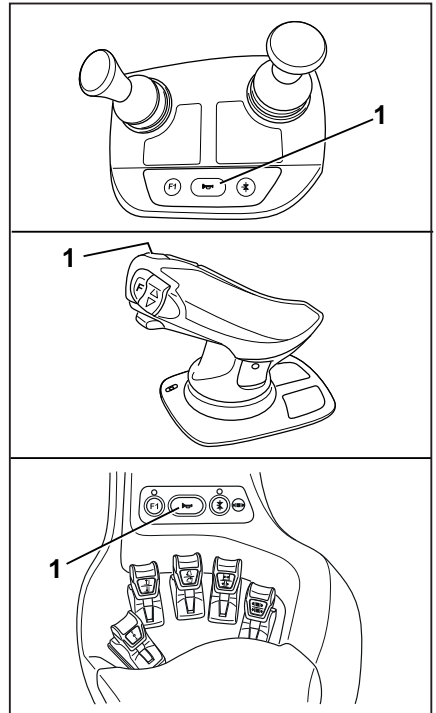
- Push the signal horn button (1).

The signal horn sounds.



#### NOTE

*The signal horn is used to warn people against imminent danger or to announce your intention to overtake.*



## Checks and tasks before daily use

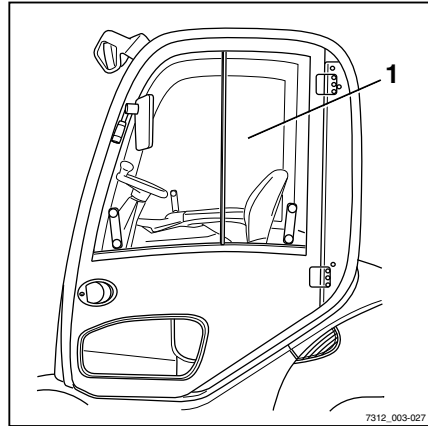
### Driver's cab

#### **⚠ DANGER**

#### **Risk of fatal injury in the event of falling from the truck if it tips over!**

In order to prevent the driver from sliding underneath the truck and being crushed if the truck tips over, a restraint system must be in place and must be used. The restraint system prevents the driver from being thrown from the truck if it tips over. The cab door must be sturdy and be closed in order for the driver's cab to function as a driver restraint system. Fabric-covered cabs (variant) with doors made of plastic or canvas do not constitute a driver restraint system and offer no protection from the consequences of the truck tipping over!

- Close the cab door prior to commissioning.
- If the door is open or has been removed, use a comparably secure restraint system.
- We recommend that you always use the seat belt.



### Checking the condition of the wheels and tyres

#### **⚠ WARNING**

Risk of accident! With uneven wear or incorrect air pressure, the stability of the truck decreases and the braking distance increases.

- Change worn or damaged tyres without delay.

#### **⚠ WARNING**

Risk of tipping!

Tyre quality affects the stability of the truck.

If you wish to use a different type of tyre on the truck from the tyres approved by the truck manufacturer, or tyres from a different manufacturer, you must first obtain approval from the truck manufacturer.

#### **⚠ WARNING**

Risk to stability!

When using pneumatic tyres or solid rubber tyres, rim wheel parts must never be changed and rim wheel parts from different manufacturers must not be mixed.

**i NOTE**

Only approved types of tyre may be used; see chapter entitled "Tyres".

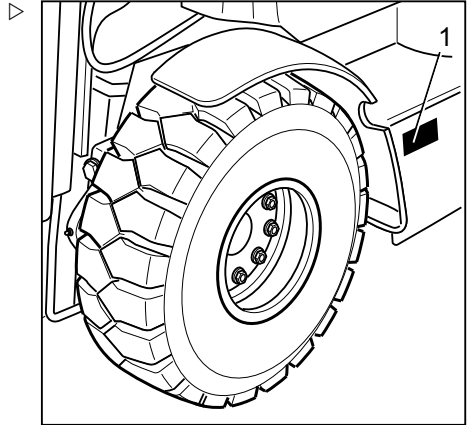
- Check tyres (1) for wear or damage.

Tyres must not be damaged or excessively worn. They must be worn evenly on both sides.

- If pneumatic tyres are fitted, check the air pressure. The air pressure indicated on the adhesive labels (2) must be observed.

**i NOTE**

Observe the safety principles outlined in the chapter entitled "Tyres".



## Checking the brake system for correct function

**⚠ DANGER****Risk of accident due to failure of the brake system!**

If the brake system fails, the truck will be insufficiently braked or will not be braked at all.

- Do not operate the truck with a defective brake system.

## Checks and tasks before daily use

### Checking the service brake

- Release the parking brake.
- Depress the brake pedal (1).

There must be a slight pedal clearance and then a noticeable pressure point at the brake.

- Accelerate the unladen truck in a clear area.
- Depress the brake pedal firmly.

The truck must decelerate noticeably.

### Checking the parking brake

#### On a gradient or a ramp:



#### **⚠ DANGER**

##### **Risk to life if the truck rolls away!**

The truck could run people over if the parking brake is not applied.

- Do not exit the truck during the following check.

- Stop the truck on a steep gradient (e.g. a ramp) and actuate the parking brake.

The parking brake must hold the truck on the incline.

If the truck rolls back despite the parking brake being applied:

- Secure the truck using the service brake.
- Secure the truck with chocks so that the truck does not roll away.
- Contact the authorised service centre.

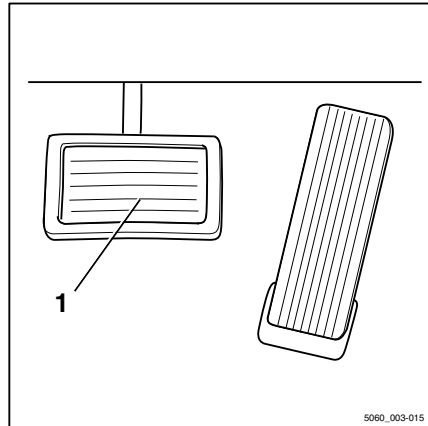
#### On level ground:

#### **⚠ WARNING**

Risk of accident!

The truck may decelerate abruptly.

- Fasten the seat belt.
- Activate the available restraint systems.





**⚠ WARNING**

There is no electric braking assistance when the key switch is switched off!

Switching off the key switch will de-energise the entire electrical system. After this, the regenerative brake will not be available.

**⚠ CAUTION**

There is no power steering when the key switch is switched off!

The truck is equipped with hydraulic power steering. Switching off the key switch switches off the hydraulics. Steering forces are increased due to the remaining emergency steering function.

- Steer with a higher level of force.
- Find a sufficiently large, open area in which nobody will be obstructed.
- Accelerate the truck to walking speed.
- Use the key switch to switch off the engine.
- Apply the parking brake.

The truck must decelerate and remain stationary.

If the truck only coasts and does not decelerate or decelerates only slightly:

- Secure the truck using the service brake.
- Secure the truck with chocks so that the truck does not roll away.
- Have the parking brake checked and repaired by the authorised service centre.

**i NOTE**

*Special features of the electric parking brake:*

- *The deceleration cannot be influenced.*
- *The electric parking brake is applied moderately until the truck comes to a stop.*
- *The internal combustion engine must be switched on in order to release the electric parking brake.*

## Checks and tasks before daily use

### Checking the electric brake

#### **⚠ DANGER**

#### **Risk of accident due to reduced braking power!**

The regenerative brake may not be sufficient for emergency braking.

- Always actuate the brake pedal (2) for emergency braking.

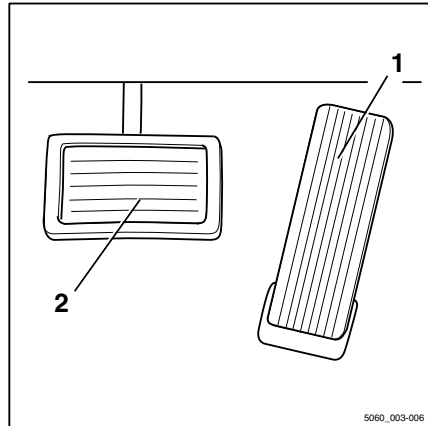
If the driving speed is restricted or if the opposite drive direction is selected, the truck brakes electrically.

- Release the accelerator pedal (1).

The truck must brake to a standstill.

If the truck only coasts and does not decelerate or decelerates only slightly:

- Secure the truck using the service brake.
- Apply the parking brake.
- Have the service brake checked and repaired by the authorised service centre.



### Checking the steering system for correct function

#### **⚠ DANGER**

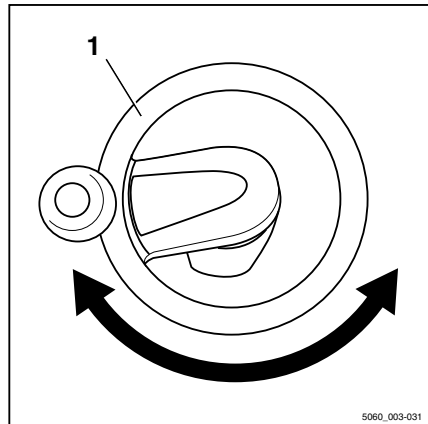
#### **If the hydraulics fail, there is a risk of accident as the steering characteristics have changed.**

- Do not operate the truck if it has a defective steering system.
- Operate steering wheel (1). The steering play while stationary must not be more than two finger widths.



#### **NOTE**

*If the truck is switched on with the steering wheel turned, the maximum driving speed is limited. Travel speed limitation is removed as soon as the steering wheel is moved out of a cornering position into the straight-ahead position. This requires a change in steering angle of about half a revolution.*




## Function checking of the automatic mast vertical positioning function (variant)

### CAUTION

Risk of damage to property due to the lift mast colliding with racks or other objects!

- Before using the "automatic mast vertical positioning" assistance system, position the truck at a sufficient distance from racks and other objects.

- To check the function of the automatic mast vertical positioning function, proceed as follows:
- Push the "automatic mast vertical positioning" softkey .

The  symbol appears in the display.

- Tilt back the lift mast until it reaches the end stop.
- Tilt the lift mast forwards.

The lift mast must stop in the vertical position.

The automatic mast vertical positioning can be used.

- If the lift mast does not stop in the vertical position, do not use the assistance system.
- In this case, contact your authorised service centre.

## Driver's seats

## Driver's seats

### Adjusting the MSG 65/MSG 75 driver's seat

**⚠ WARNING**

Slipping of the seat poses a risk of accident during travel!

If the driver's seat slips from the set position while driving, the seat position is unstable. This may result in unintentional actuation of the steering or operating devices and cause the truck or load to move in an uncontrolled fashion.

- Adjust the seat and the seat backrest only when the truck is at a standstill.
- Adjust the seat and the seat backrest so that all operating devices can be actuated safely.
- Make sure that the seat and the seat backrest are engaged.

**⚠ WARNING**

On some equipment variants, the amount of head clearance on the truck may be restricted.

On these specific equipment variants, the distance between the head and the lower edge of the roofing sheet must be at least 40 mm.

**⚠ WARNING**

Optimum seat cushioning is better for your back and protects your health.

To obtain optimum seat cushioning, adjust the seat suspension to your own body weight.

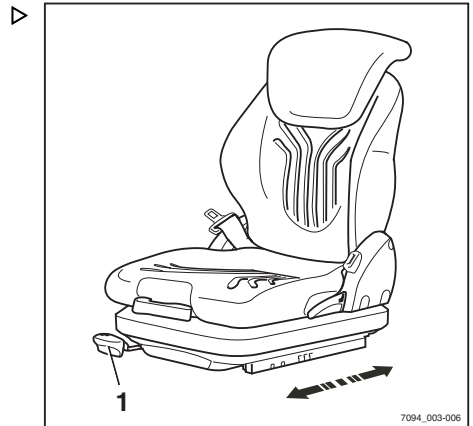
- Make sure that there are no objects within the swivel area of the seat.

**NOTE**

*Observe any separate operating instructions for the seat.*

### Moving the driver's seat

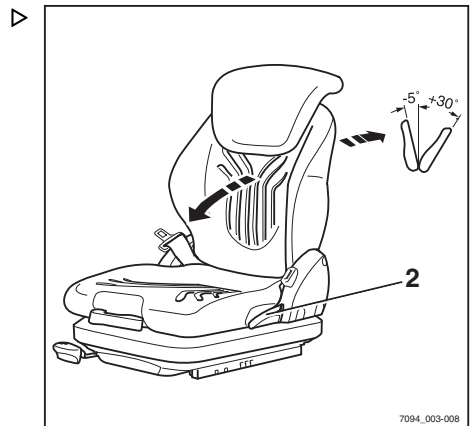
- Lift the lever (1) and hold the lever in position.
- Push the driver's seat into the desired position.
- Release the lever.
- Make sure that the driver's seat is engaged.



### Adjusting the seat backrest

When the seat backrest is occupied, it can be difficult to release the seat backrest.

- Release the seat backrest.
- Lift the lever (2) and hold the lever in position.
- Push the seat backrest into the desired position.
- Release the lever.
- Make sure that the seat backrest is engaged.



#### NOTE

*The backwards tilt angle of the seat backrest can be restricted by means of the truck's structure.*

## Driver's seats

### Adjusting the seat suspension

#### NOTE

The driver's seat can be adjusted to the driver's weight. To ensure optimum adjustment of the seat suspension, the driver must be sitting on the seat.

#### NOTE

The MSG 65/MSG 75 driver's seat is designed for people weighing between 45 kg and 170 kg.

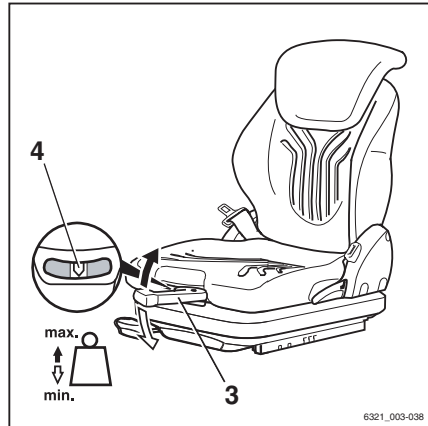
#### NOTE

The MSG 75 seat is equipped with electric air suspension that is activated using an electric switch instead of the lever (3).

- Sit in the driver's seat.
- Fully fold out the weight-adjusting lever (3).
- Pump the lever up or down to set the driver's weight.
- After each stroke, move the weight-adjusting lever back to the centre position until the weight-adjusting lever audibly engages.
- Fully fold in the weight-adjusting lever once the adjustment is complete.

#### NOTE

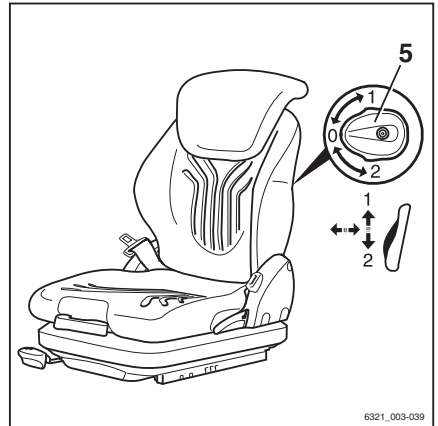
The correct driver's weight has been selected when the arrow (4) is in the centre position in the inspection window. A noticeable empty stroke on the weight-adjusting lever indicates that the minimum or maximum weight setting has been reached.



### Adjusting the lumbar support (variant) ▷

The lumbar support can be adjusted to suit your own lumbar vertebrae. Adjusting the lumbar support moves a convex support cushion into the upper or lower part of the backrest.

- To move the lumbar support into the required position, turn the turning knob (5) up or down.

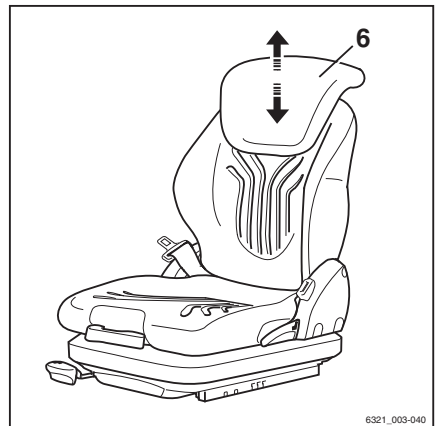


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### Adjusting the backrest extension (variant) ▷

The backrest extension (6) is in the seat backrest and is height-adjustable.

- To move the backrest extension into the required position, pull up or push in the backrest extension.
- To remove the backrest extension, tug the backrest extension up past the end stop and out.



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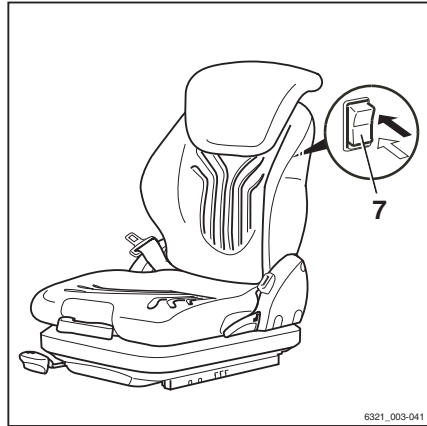
## Driver's seats

### Switching the seat heater (variant) on and off ▷

#### NOTE

*The seat heater only heats up when the seat heater is switched on and the seat base is occupied.*

- Sit in the driver's seat.
- Switch the seat heater (7) on or off using the switch.



### Swivelling the driver's seat to the right for reverse travel (variant) ▷

#### WARNING

Swivelling the seat out of the engaged position while driving poses a risk of accident!

If the driver's seat swivels out of the set position while driving, the seat position is unstable.

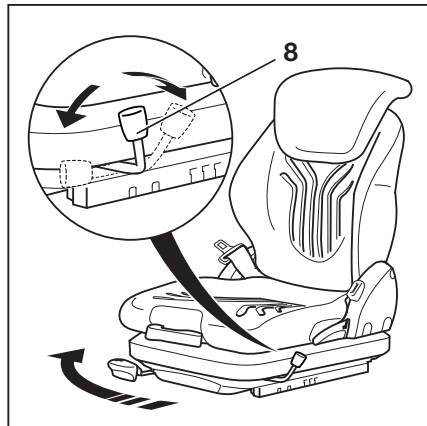
- Swivel the driver's seat only while the truck is stationary.

The driver's seat designed to swivel to the right makes it easier to look back during reverse travel without having to rotate the upper body too much.

To swivel the seat to the right for reverse travel:

- Sit in the driver's seat.
- Pull the lever (8) back and hold it in position.
- Swivel the driver's seat to the right until it reaches the stop.
- Move the lever forwards.
- Make sure that the driver's seat is engaged.

Swivelling the driver's seat to the right is intended only for reverse travel. The driver's seat





must be swivelled back into place for forward travel.

To swivel back for forward travel:

- Pull the lever (8) back and hold it in position.
- Swivel the driver's seat to the left until it reaches the stop.
- Move the lever forwards.
- Make sure that the driver's seat is engaged.

## Adjusting the armrest

### **⚠ DANGER**

**There is a risk of accident if the armrest lowers suddenly, causing the driver to move in an uncontrolled manner.**

This may result in unintentional actuation of the steering or operating devices and thus cause the truck or load to move in an uncontrolled fashion.

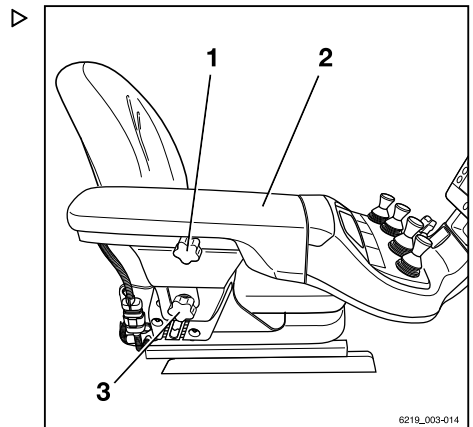
- Do not adjust the armrest while driving.
- Adjust the armrest so that all operating devices can be actuated safely.
- Ensure that the armrest is securely tightened.

### Adjusting the length of the armrest

- Release the star-grip handle (1) by turning to the left.
- Shift the armrest (2) into the desired position.
- Tighten the star-grip handle by turning to the right.
- Check that the armrest is firmly attached.

### Adjusting the height of the armrest

- Release the hand wheel (3) by turning to the left.
- Shift the armrest (2) into the desired position.
- Tighten the hand wheel by turning to the right.
- Check that the armrest is firmly attached.



## Driver's seats

### Longitudinal horizontal suspension (variant)

If the driver's seat is equipped with the "longitudinal horizontal suspension" variant, impacts in the drive direction are damped by additional seat suspension.

### Longitudinal seat adjustment

As with a standard driver's seat, the lever (1) on the front right-hand side of the driver's seat can be used to adjust the longitudinal position of the driver's seat. ▷

- To unlock the driver's seat, pull up the lever (1) and hold it place.
- Push the driver's seat into the required position.
- To lock the driver's seat again, release the lever (1).
- Gently slide the seat back and forth to lock the seat in place.



### Blocking the longitudinal horizontal suspension ▷

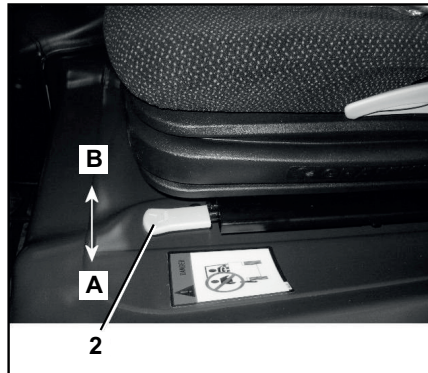
- To block the longitudinal horizontal suspension, push down the locking lever (2) on the left-hand side of the driver's seat (A).

#### **CAUTION**

Suspension comfort reduced!

If the longitudinal horizontal suspension is blocked, the suspension comfort is significantly lower. Impacts are much more noticeable.

- To activate the longitudinal horizontal suspension, pull up the locking lever (2) on the left-hand side of the driver's seat (B).



- A Longitudinal horizontal suspension activated  
 B Longitudinal horizontal suspension blocked

## Seat belt



### **⚠ DANGER**

**Even when using an approved restraint system, there is some residual risk of the driver being injured if the truck tips over.**

This risk of injury can be reduced through the combined use of the restraint system and the seat belt.

In addition, the seat belt protects against the consequences of rear-end collisions and falling off a ramp.

- Recommendation: When operating the truck on a ramp, fasten the seat belt in addition to using the driver's cab, the bracket door or the restraining bracket.

### **⚠ DANGER**

**Only bracket doors (variant), the restraining bracket (variant) or the driver's cab (variant) with closed, fixed doors constitute a driver restraint system. Plastic doors (weather protection) do not constitute a restraint system!**

If the doors are open or have been removed, you must use an alternative suitable restraint system (e.g. a seat belt)!

## Fastening the seat belt

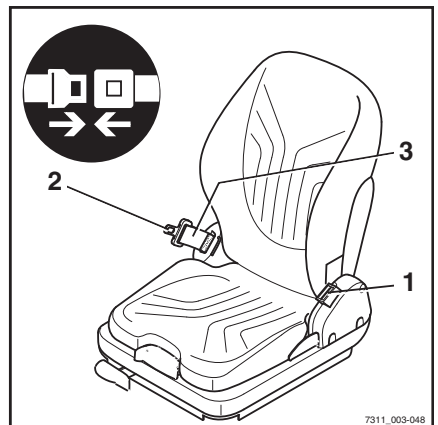
### **⚠ DANGER**

**Risk to life when driving without a seat belt!**

If the truck tips over or crashes into an obstacle and the driver is not wearing the seat belt, the driver may be thrown from the truck. The driver could slide under the truck or collide with an obstacle.

There is a risk of fatal injury!

- Fasten the seat belt before every trip.
- Do not twist the seat belt when fastening it.
- Only use the seat belt to secure one person.
- Have any malfunctions repaired by the authorised service centre.



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## Driver's seats



### NOTE

*The buckle has a buckle switch (variant). In the event of an operating error or malfunction, the message SAFETY BELT appears in the display and operating unit, see the chapter entitled "Display messages".*

- Pull the seat belt (3) smoothly out of the belt retractor and fasten closely around the body over the thighs.



### NOTE

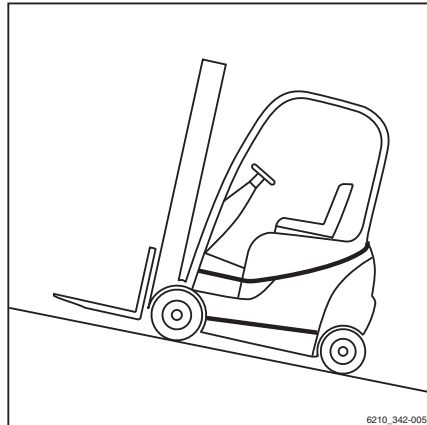
*Sit as far back as possible so that your back is leaning against the seat backrest. The automatic blocking mechanism permits sufficient freedom of movement on the seat.*

- Click the belt tongue (2) into the buckle (1).
- Check the tension of the seat belt. The belt should fit closely around your body.

## Fastening on a steep slope

The automatic blocking mechanism prevents the belt from being extended whenever the truck is on a steep gradient. It is no longer possible to pull the seat belt out of the belt retractor.

- Move away carefully from the slope.
- Fasten the seat belt.



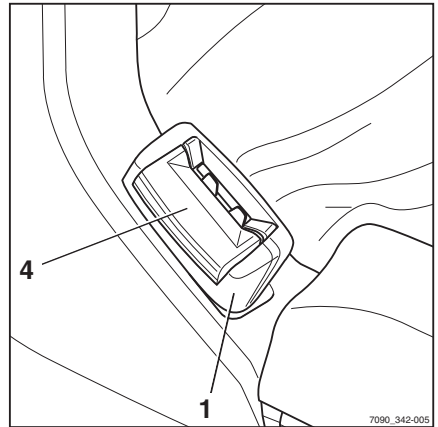
### Releasing the seat belt

- Push the red button (4) on the buckle (1). ▷
- Slowly guide the belt tongue back to the retractor by hand.

#### NOTE

*Do not allow the seat belt to retract too quickly. The automatic blocking mechanism may be triggered if the belt tongue strikes the housing. It will then no longer be possible to pull the seat belt out with the usual force.*

- Using increased force, pull the seat belt around 10-15 mm out of the retractor to disengage the blocking mechanism.
- Slowly allow the seat belt to retract again.
- Protect the seat belt from dirt (for example, by covering it).



### Malfunction due to cold weather conditions

- If the buckle or belt retractor is frozen, thaw them out and dry them thoroughly to prevent recurrence.

#### CAUTION

The seat belt may be damaged by heat!

Do not subject the buckle or belt retractor to excessive heat when thawing.

- Do not use air warmer than 60°C when thawing.

## Pre-Shift Check

# Pre-Shift Check

## Description of the Pre-Shift Check (variant)

The Pre-Shift Check is a guided dialogue in the display-operating unit. It also helps the driver conduct the necessary "visual inspections and function checking" before everyday use. After the truck has been switched on, the driver must answer questions about the condition of the forklift truck with "Yes" or "No".

While the driver is doing this, the truck functions are available with restrictions. The driving speed and hydraulic functions are restricted.

To commission the truck, the authorised service centre can compile the Pre-Shift Check from a question catalogue in consultation with the fleet manager. If no question catalogue has been compiled, only the question "Truck ready for operation?" is stored in the factory settings.

The authorised service centre can then restrict the truck functions in the event of a negative test result.

There are fixed responses:

- No response
- Speed limitation
- Restriction of hydraulics to 33%

In addition, the fleet manager has the following options:

- The fleet manager can view the results of all checks via the "History".
- The fleet manager can define the shift start for three different shifts. The Pre-Shift Check must be performed when these shifts start.

If the truck is equipped with "FleetManager", the shifts are defined on the FleetManager interface. See the relevant operating instructions.

- If, due to a negative test result, truck functions are restricted, the fleet manager can reset these restrictions.
- The fleet manager can specify the question sequence.

**i** NOTE

*During commissioning, the first question can also be answered with "No". Truck functions are not restricted until the question catalogue has been compiled by the authorised service centre and the restrictions have been set by the fleet manager.*

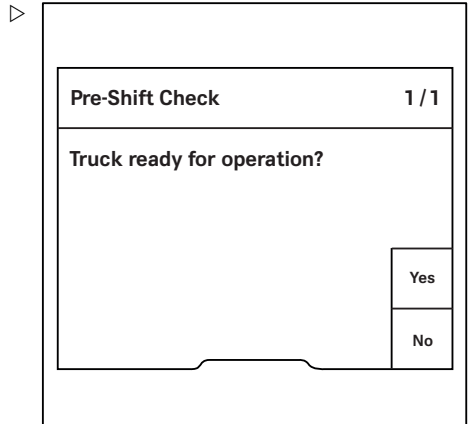
## Process

- Switch the truck on.

The first question appears.


- Press the "Yes" or "No" softkey.



The next question appears.




Some of the questions require a functional test, such as the functional test of the lighting.


**i** NOTE

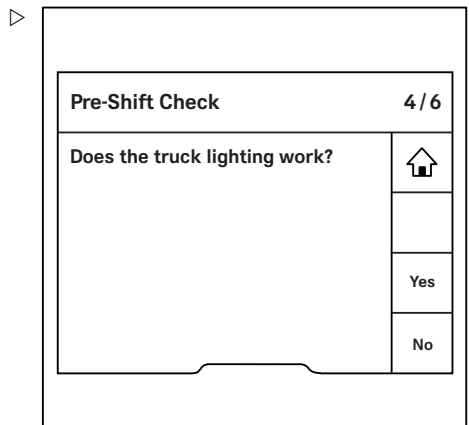
*The main display symbol  appears only when it is required for the test.*

- To access the main display, press the main display button  or the softkey .


The main display contains the message To complete Pre-Shift Check, press .

This means that the Pre-Shift Check is still active and the truck functions are restricted.

- To acknowledge the message, press the  softkey.



## Pre-Shift Check


- Switch on and check the function to be tested, e.g. lighting.
- Press the back button  to go back to the Pre-Shift Check. ▷
- Answer the question based on the result of the function check.

The next question appears.

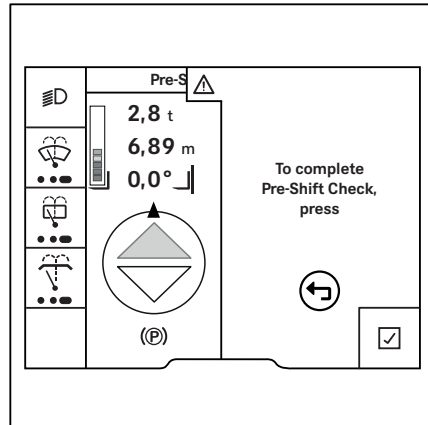


### NOTE

*If no questions regarding the Pre-Shift Check have been compiled, the question Truck ready for operation? is displayed.*

If the truck has to be moved for a test, e.g. for a brake test, you can simply release the parking brake. The message To complete Pre-Shift Check, press  is displayed. The truck can be moved at reduced speed. If you apply the parking brake again, the view goes back to the Pre-Shift Check.

At the end of the check, truck functions are restricted if they have been adjusted as a reaction to a negative test result. The message Pre-Shift Check truck restrictions active shows that truck functions are restricted. As long as the truck functions are restricted, no further Pre-Shift Check is requested at the start of a new shift. The check is only requested again after the fleet manager has reset the restrictions.



## All questions

The authorised service centre can use this question catalogue to put together the Pre-Shift Check during commissioning:

Are the fork arms damaged (e.g. bent or cracked)?
Are the fork arms securely mounted and the locking devices undamaged?
Are the roller tracks on the lift mast sufficiently greased?
Are the load chains damaged?
Are the load chains sufficiently tensioned and loaded equally.?
Are all attachments securely mounted and undamaged? Are they in working order?
Are operating fluids (e.g. oil, water, fuel) visibly leaking?
Are the wheels damaged? Are they worn beyond permissible limits?



Is the tyre pressure correct?
Is the overhead guard visibly damaged?
Is the entry area or footwell dirty or slippery?
Are the windows clean and undamaged?
Are the maintenance lids securely closed?
Is the battery door/hood undamaged and securely closed?
Is the battery lock present, undamaged and closed?
Is the battery connection assembly dirty or damaged (e.g. housing deformed, contacts corroded)?
Is the towing device damaged?
Is the capacity rating plate present, undamaged, and legible?
Is the driver restraint system damaged?
Does the horn work?
Does the truck lighting work?
Do the warning lights work?
Is the antistatic belt present and does it have sufficient contact with the floor?
Is the corona electrode present and clean?
Does the parking brake work properly?
Does the service brake work properly?
Does the steering work properly?
Does the emergency off work?
Is the condition of the battery obviously not OK?
Are all decal information and adhesive labels present and legible?
Is the load backrest undamaged?
Does the accelerator pedal work properly?
Is the engine compartment dirty or does it contain foreign objects?
Are the lift mast or the fork carriage obviously damaged?
Do the working hydraulics work properly according to the labeling?
Are the mirrors dirty or damaged?
Is the gas tank or its mounting obviously damaged?
Can unusual noises be heard when the industrial truck is used?
Is there any other obvious damage to the truck?
Does the washer system work?
Is the bonnet undamaged and securely closed?


If no Pre-Shift Check questions have been compiled, the initial configuration as at the time of delivery appears.

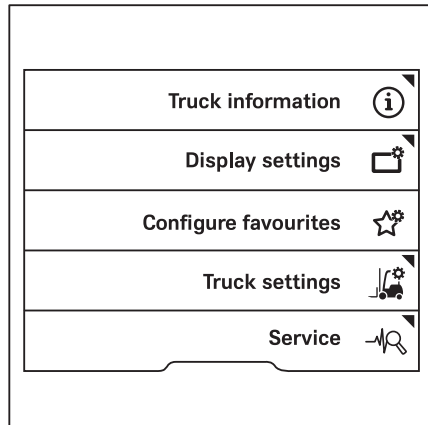
## Pre-Shift Check



### Defining the question sequence

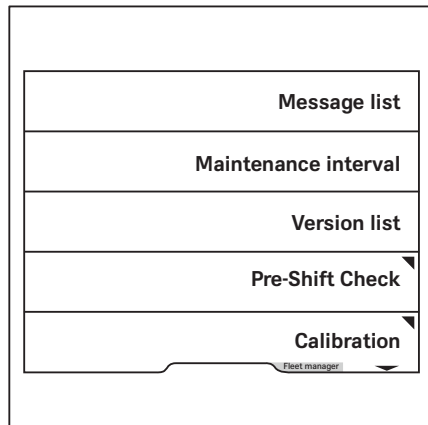
The questions for the Pre-Shift Check can be defined in a random sequence or in a fixed sequence.

The random sequence is advisable, because the questions are then read more consciously by the driver. This means that there is no routine aspect.

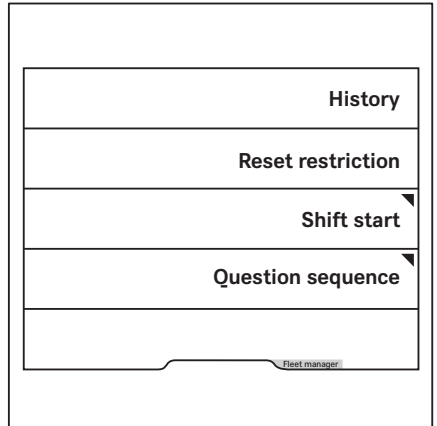
- Activate the "Access authorisation for the fleet manager".
- Press the **Service** softkey .



- Press the scroll keys   until the Pre-Shift Check menu appears.
- Press the **Pre-Shift Check** softkey.




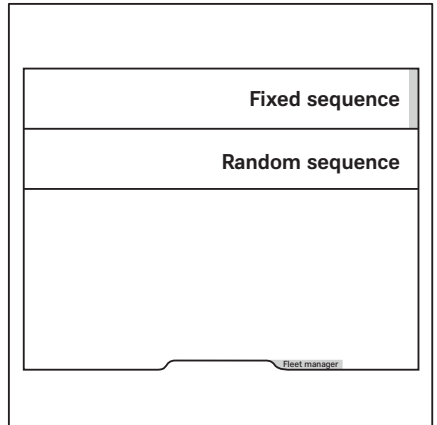
- The Pre-Shift Check menu appears.
- Press the **Question sequence** softkey.



- Pressing the softkey allows fixed or random question sequences to be selected.

The orange activation bar displays the current selection.

- To access the main display, press the main display button .




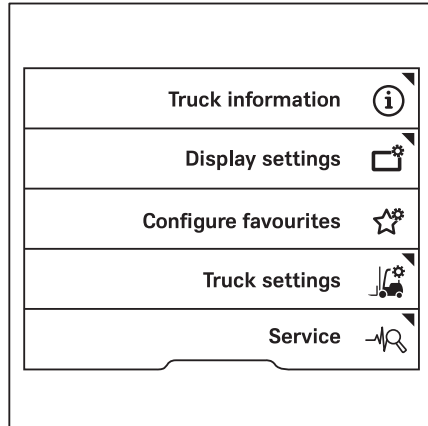
### Displaying the history


The fleet manager can display a Pre-Shift Check history.

- Activate the "Access authorisation for the fleet manager".

## Pre-Shift Check

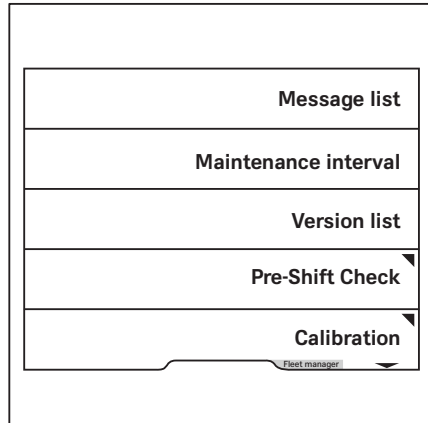
- Press the Service softkey .



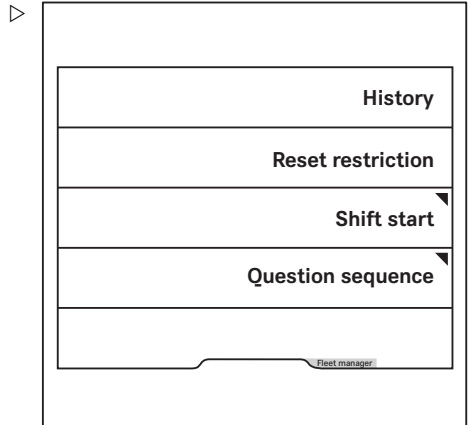
- Press the scroll keys   until the Pre-Shift Check menu appears.



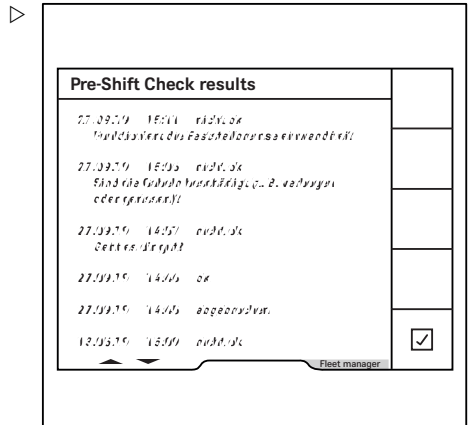
- Press the Pre-Shift Check softkey.



- The Pre-Shift Check menu appears.
- Press the History softkey.



- The "Pre-Shift Check results" display opens.
- This display shows all checks and questions that have been answered with the date and time.



- To see more results, press the scroll buttons  $\Delta$   $\nabla$ .
- To go back to the previous menu, press the softkey  $\checkmark$ .
  - To access the main display, press the main display button  $\text{Home}$ .


## Defining the shift start

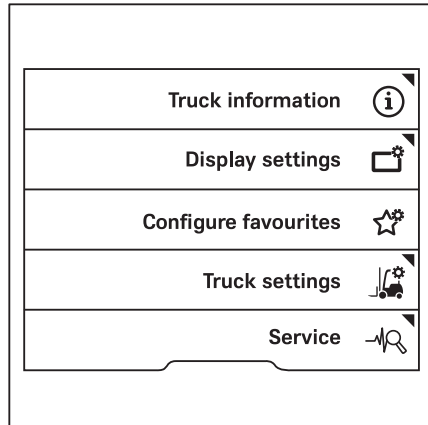
As a standard setting after commissioning, the Pre-Shift Check is always requested 24 hours after the last check was performed. The fleet manager can define up to three shifts and their start times. The Pre-Shift Check is then always requested at this time.



### NOTE

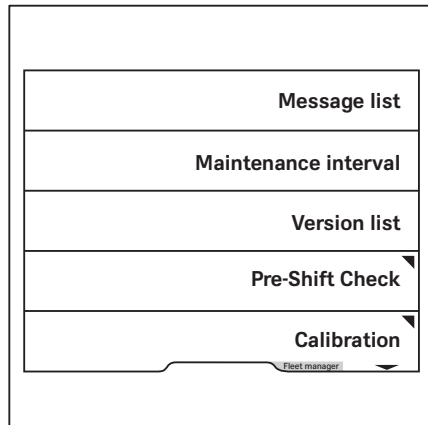
*If the truck is equipped with FleetManager, the shifts are defined on the FleetManager interface. See the relevant operating instructions.*

## Pre-Shift Check

- Activate the "Access authorisation for the fleet manager".
- Press the Service  softkey.

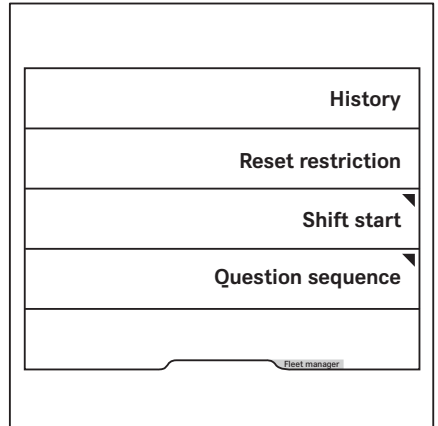


- Press the scroll keys   until the Pre-Shift Check menu appears.
- Press the Pre-Shift Check softkey.



The Pre-Shift Check menu appears.

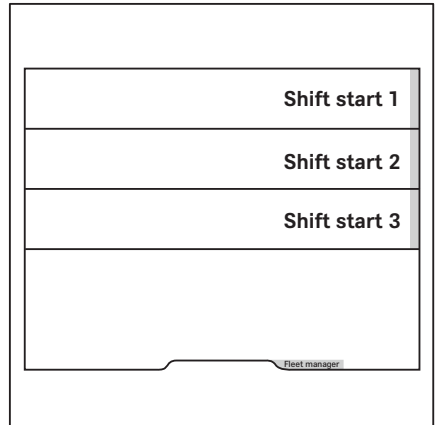
- Press the "Shift start" softkey.



In this menu, you can call up the shift to be defined and its start time.


The orange activation bar indicates which shifts are activated.

- To edit a shift, press the corresponding softkey.



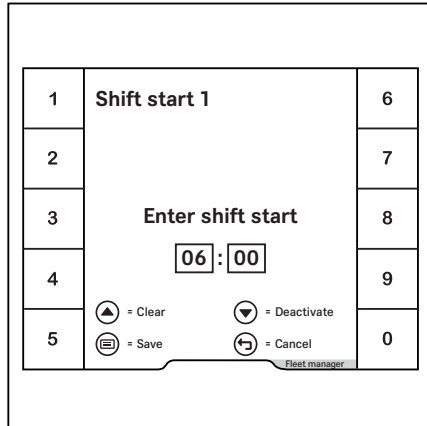
## Pre-Shift Check

In this menu you can define the shift start. ▷

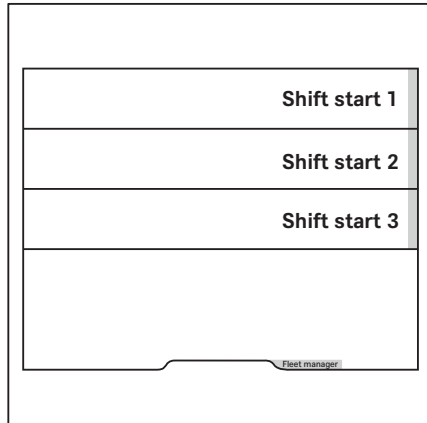
- Enter the time using softkeys "0 to 9".
- To save, press the  button.

The shift start is now defined. The Pre-Shift Check is always requested from this shift start time.

The display returns to the previous menu.



- To deactivate a certain shift start, select the relevant shift. ▷





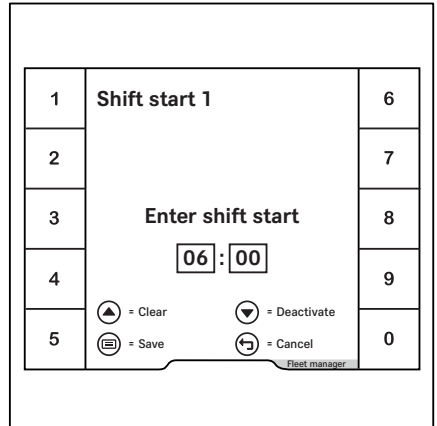
- Press the ▾ scroll button to deactivate the shift. ▷

- To confirm, press the [List] button.

The time is shown in grey.

The shift is deactivated. The display returns to the previous menu. There is no activation bar next to this shift.

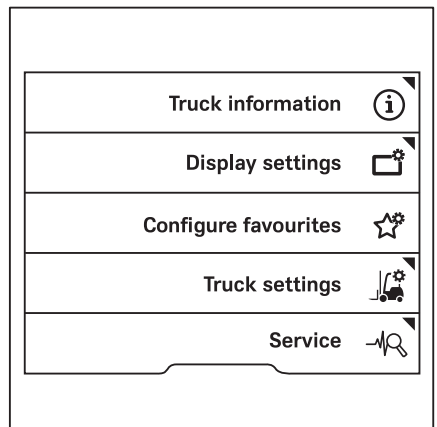
- To cancel, press the back button ⬅.
- To access the main display, press the main display button [Home].



### Resetting the truck restrictions

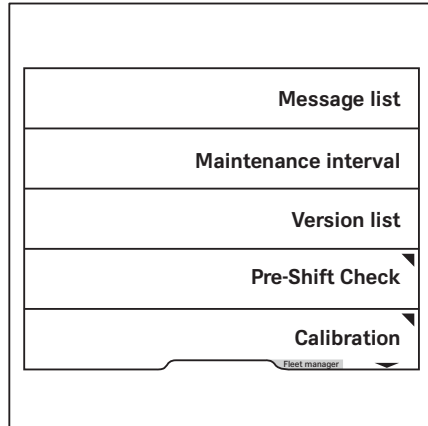
If truck functions are restricted due to checks with a bad result, the fleet manager can reset these restrictions. The fleet manager can also do this if a problem on the truck has been rectified.

- Activate the "Access authorisation for the fleet manager".
- Press the Service [Service] softkey. ▷



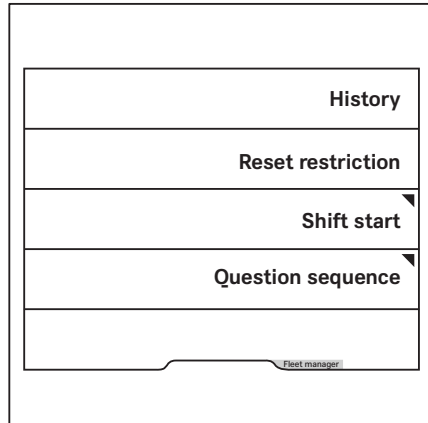
## Pre-Shift Check

- Press the scroll keys  $\Delta$   $\nabla$  until the Pre-Shift Check menu appears.  $\triangleright$
- Press the Pre-Shift Check softkey.



The Pre-Shift Check menu appears.  $\triangleright$

- Press the "Reset vehicle restrictions" softkey.




A question pops up asking if you want to reset the truck restrictions. ▷

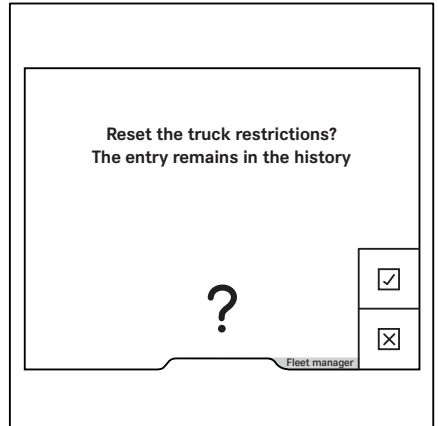
- To confirm, press the  softkey.

The full scope of the truck functions is now available. The display returns to the previous menu.

- To cancel, press the  softkey.

The truck functions remain restricted. The display returns to the previous menu.

- To access the main display, press the main display button .



## Driver profiles

### Driver profiles

#### Driver profiles (variant)

This variant allows up to ten individual driver profiles to be created. The driver is greeted with the selected name after logging in. Once the softkey  $\checkmark$  is pressed, the main display is shown.

If the truck is equipped with the "Access authorisation with PIN code" or "FleetManager" variants, these driver profiles can be linked to the relevant variant.

The driver profile allows the following settings to be saved:

- Language
- Favourites
- Configuration of the status line
- Configuration of drive programmes A and B

In addition, the operating statuses saved for the last selected driver profile are called up again the next time a user logs in with this driver profile:

- Selected drive programme 1 to 3
- Load dynamics
- Efficiency and drive modes  
(Blue-Q/sprint mode)

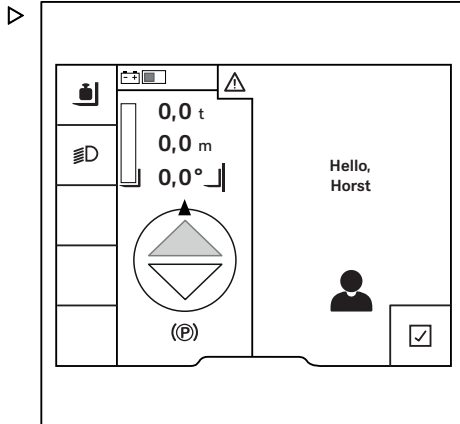
If a driver without an existing driver profile logs in using the "Access authorisation with PIN code" or "FleetManager" variants, a driver profile is generated. This driver profile corresponds to the settings when the truck was delivered.

If the truck is not equipped with these variants, drivers must select their profiles manually.

Any changes that drivers make to the settings while they are logged in are saved. These will then be available the next time that the driver logs in.

#### Selecting driver profiles




If the truck is equipped with the "Access authorisation with PIN code" or "FleetManager" variants, the corresponding driver profile is active after logging in. If the truck is not

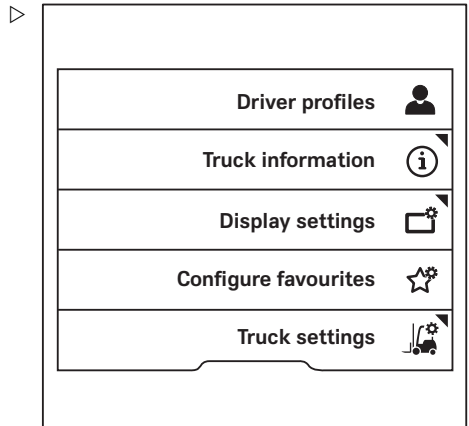


equipped with these variants, drivers must select their profiles manually.

 **NOTE**

*Access to the settings menu is only available if the truck is at a standstill and the parking brake is applied. If the parking brake is released prematurely, the settings menu will close.*

- Stop the truck.
- Actuate the parking brake.
- Press the button .
- Press the "Settings" softkey .
- Press the Driver profiles softkey .

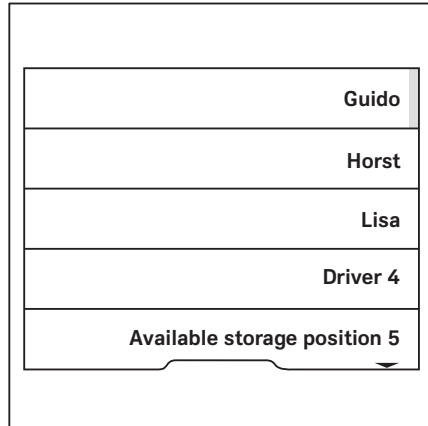


## Driver profiles

The orange activation bar displays the current selection. ▷

- Press the softkey for the required driver profile.

The driver profile is active. The driver is greeted with the selected name the next time that the truck is switched on.






## Creating driver profiles

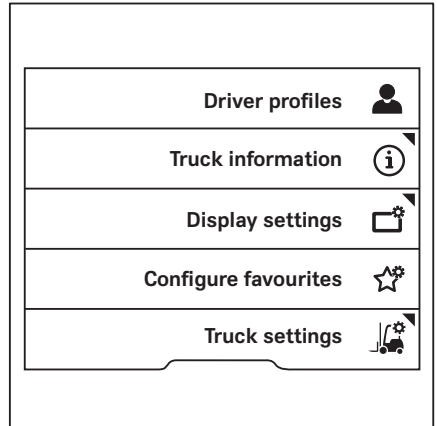
Both the fleet manager and the driver can create up to ten driver profiles.

### NOTE

*If the truck is equipped with the "Access authorisation with PIN code" or "FleetManager" variants, the driver profile is generated automatically when logging in for the first time.*

- Apply the parking brake.
- Press the button .
- Press the "Settings" softkey .

- Press the Driver profiles softkey .



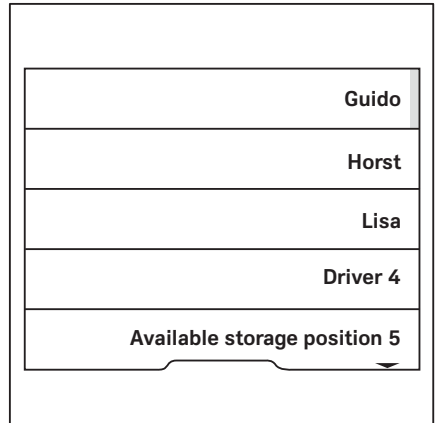
This menu provides storage space for saving ten driver profiles.



- Press the softkey for the required storage location.


 **NOTE**

*Unoccupied storage locations that do not contain a driver profile are indicated by Available storage position.*







## Driver profiles

The **Driver name** menu is displayed. ▷

- Use the softkeys to enter the desired name.
- To confirm, press the  button.

The driver profile is active. The driver is greeted with the selected name after the next login.




Any changes that drivers make to the settings while they are logged in are saved. These will then be available the next time that the driver logs in.

1.,	<b>Driver name</b>  <b>Enter driver name</b> <input type="text" value="Horst"/>  = Clear  = abc -> ABC  = Save  = Cancel	6mno
2abc		7pqrs
3def		8tuv
4ghi		9wxyz
5jkl		0_

## Renaming driver profiles

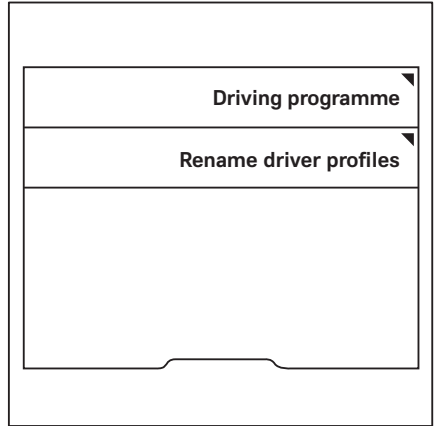
Driver profiles can be renamed. Drivers can only rename their own driver profile. The fleet manager has access authorisation to rename all driver profiles.

### Renaming by the driver


- Apply the parking brake.
- Press the button .
- Press the "Settings" softkey .
- Press the **Truck settings**  softkey.




- Press the **Rename driver profiles** softkey.

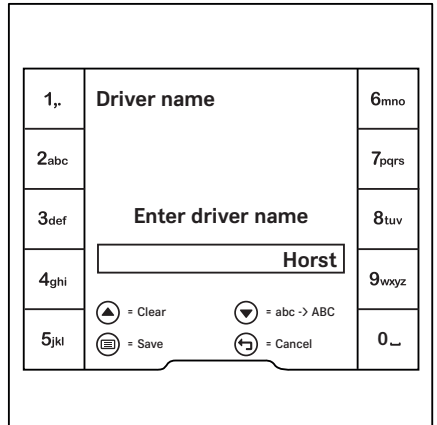


The **Driver name** menu is displayed.

- Use the softkeys to enter the desired name.
- To confirm, press the  button.

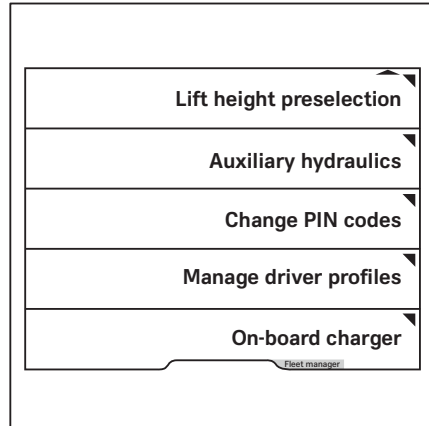
### Renaming by the fleet manager

- Activate the "Access authorisation for the fleet manager".
- Press the **Truck settings**  softkey.

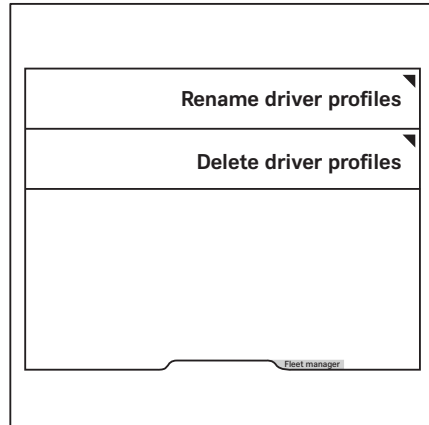



## Driver profiles

- Press the Manage driver profiles softkey. ▷



- Press the Rename driver profiles softkey. ▷





- The Driver name menu is displayed.
- Use the softkeys to enter the desired name.
  - To confirm, press the  button.



1.,	<b>Driver name</b>	6mno
2abc	Enter driver name <input type="text" value="Horst"/>	7pqrs
3def		8tuv
4ghi		9wxyz
5jkl		0_
		▲ = Clear      ▼ = abc → ABC ☒ = Save      ↺ = Cancel

### Deleting driver profiles

The fleet manager has access authorisation to delete driver profiles.

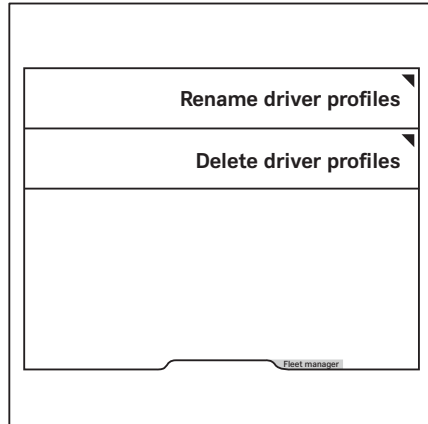
- Activate the "Access authorisation for the fleet manager".
- Press the Truck settings softkey .
- Press the Manage driver profiles  softkey.



Lift height preselection
Auxiliary hydraulics
Change PIN codes
Manage driver profiles
On-board charger
<small>Fleet manager</small>

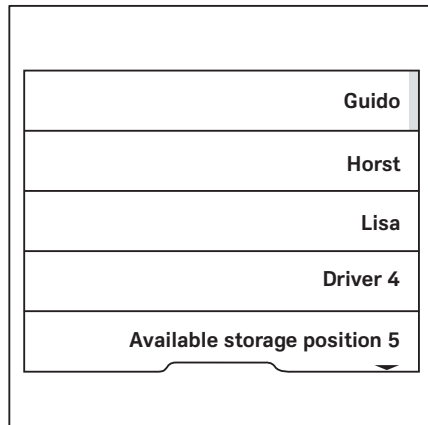
## Driver profiles

- Press the Delete driver profiles softkey. ▷



- Press the softkey for the driver profile to be deleted. ▷

The driver profile is deleted.



## Switching on and starting

### Engine preheating (variant)

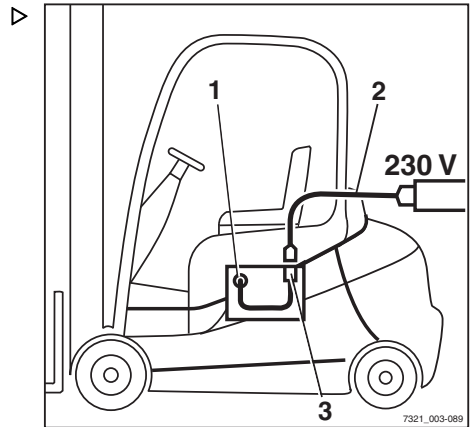
#### Function

At ambient temperatures below the freezing point, a preheated engine is easier to start. The starter battery is protected. The engine consumes less fuel.

In trucks with the engine preheating function, a heating element (1) that is connected to a built-in plug (3) in the engine compartment is located in the cooling system of the internal combustion engine.

Connecting the connecting cable (2) (230V) switches on the heating element. The activated heating element heats the coolant. The preheating time depends on the ambient temperature. The preheating time is at least 2 hours.

Engine preheating can be safely used continuously. Temperature control prevents the coolant temperature from exceeding 58°C.



### Engine preheating

#### ⚠ CAUTION

Overheating can damage the heating element!

Contaminants such as dirt, ice, air or radiator sealing compound, or insufficient coolant in the cooling system, can cause the heating element to overheat.

- Check the coolant level.
- If there are contaminants in the cooling system, do not preheat the engine.

#### ⚠ DANGER

##### Danger to life from electric shock!

- Use only marked connecting cables (2) in accordance with CEE IP67, 3 x 1.5 mm<sup>2</sup>.
- Connect the connecting cable only to an earthed 230V socket.

## Switching on and starting

- Plug the connecting cable (2) into the built-in socket (3).
- Plug the connecting plug (4) into an earthed 230V socket.
- Preheat the engine for at least 2 hours.

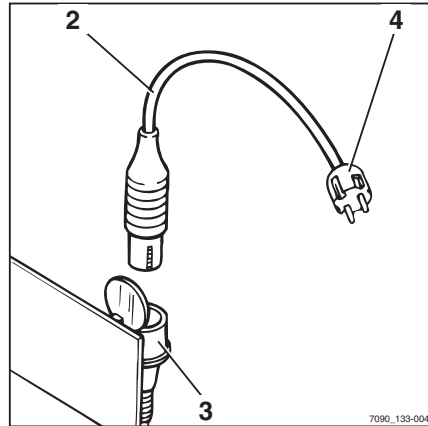
The preheating time may be longer than this depending on the ambient temperature. During preheating, a quiet bubbling sound may be heard.

### ⚠ CAUTION

Risk of damage to the connecting cable!

- Before starting the engine, remove the connecting cable from the 230V socket and from the built-in socket.

- Start the engine.



## Opening the LPG cylinder valve



### ⚠ DANGER

**There is a risk of explosion if LPG escapes.**

Escaping LPG may explode when exposed to ignition sources and cause serious accidents.

- Do not smoke or use a naked flame/lighter.
- Do not start the engine.
- Close the cylinder valve.
- Notify your authorised service centre.
- LPG cylinders should be opened in well-ventilated spaces, away from openings in the ground.



### ⚠ DANGER

**Risk of explosion from spark discharge!**

- Do not use a striking tool when opening and closing.



### ⚠ WARNING

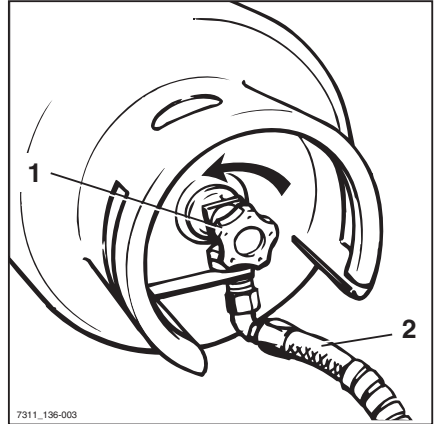
LPG can cause frostbite on the skin.

- Wear protective gloves.

**⚠ CAUTION**

Opening the cylinder valve too quickly can lead to the system icing over.

- Open the cylinder valve slowly.
- 
- Open the cylinder valve (1) by slowly turning the star-grip handle anti-clockwise.
  - Check whether the smell of gas is evident.
  - Check whether the hose (2) is securely connected to the gas cylinder.
  - Check to see whether the hose and connection screw joints have iced over.



### Opening the LPG cylinder valve for a double-cylinder holder

**⚠ DANGER**

**There is a risk of explosion if LPG escapes.**

Escaping LPG may explode when exposed to ignition sources and cause serious accidents.

- Do not smoke or use a naked flame/lighter.
- Do not start the engine.
- Close the cylinder valve.
- Notify your authorised service centre.
- LPG cylinders should be opened in well-ventilated spaces, away from openings in the ground.

**⚠ DANGER**

**Risk of explosion from spark discharge!**

- Do not use a striking tool when opening and closing.

## Switching on and starting

**⚠ WARNING**

- LPG can cause frostbite on the skin!
- Wear protective gloves.

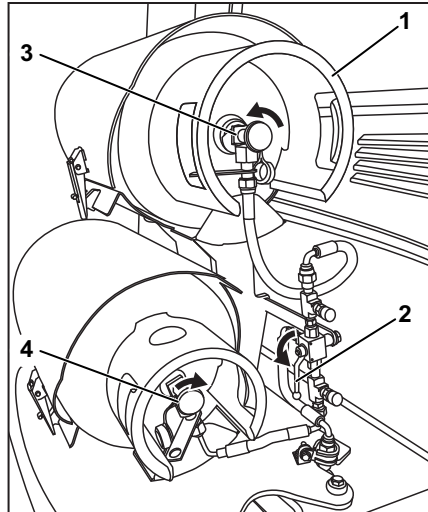
**⚠ CAUTION**

Opening the cylinder valve too quickly can lead to the system icing over.

- Open the cylinder valve slowly.
- ▷
- To open the upper gas cylinder (1), push the lever (2) down.
  - Open the cylinder valve (3) of the upper gas cylinder by slowly turning the star-grip handle anti-clockwise.
  - Check the cylinder valve (4) of the lower gas cylinder.

The valve must be closed.

- If necessary, close the valve of the lower gas cylinder by turning it clockwise.

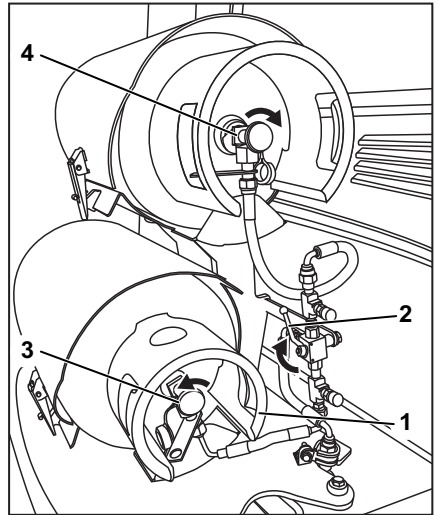




- To open the lower gas cylinder (1), push the lever (2) up. ▷
- Open the cylinder valve (3) of the lower gas cylinder by slowly turning the star-grip handle anti-clockwise.
- Check the cylinder valve (4) of the upper gas cylinder.

The valve must be closed.

- If necessary, close the valve of the upper gas cylinder by turning it clockwise.
- Check whether the smell of gas is evident.
- Check whether the hose is securely connected to the gas cylinder.
- Check to see whether the hose and connection screw joints have iced over.



### Opening the shut-off valve of an LPG tank (variant)



#### **⚠ DANGER**

**There is a risk of explosion if LPG escapes.**

Escaping LPG may explode when exposed to ignition sources and cause serious accidents#.

- Do not smoke or use a naked flame/lighter.
- Do not start the engine.
- Close the shut-off valve.
- Notify your authorised service centre.
- Only open the shut-off valve in well-ventilated rooms and not near openings in the ground.



#### **⚠ DANGER**

**Risk of explosion from spark discharge!**

- Do not use any striking tools when opening and closing.

## Switching on and starting

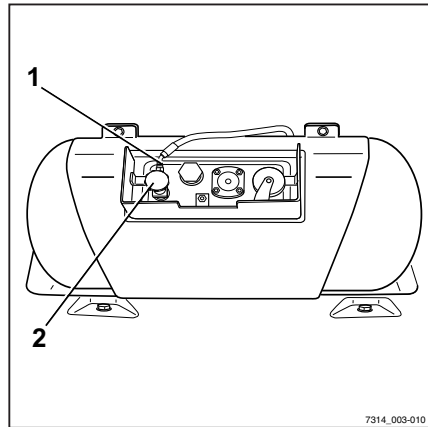
**⚠ WARNING**

- LPG can cause frostbite on the skin.
- Always wear protective gloves.

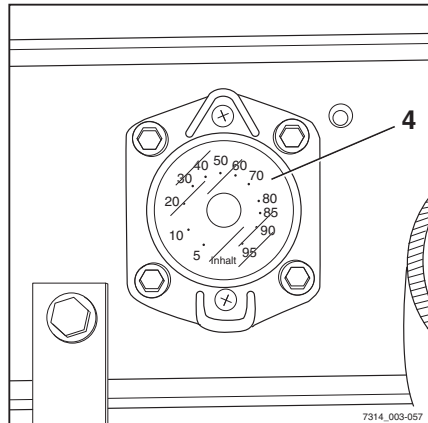
**⚠ CAUTION**

Opening quickly can lead to the system icing over.

- Slowly open the shut-off valve.
- Open the shut-off valve (2) by slowly turning the valve anti-clockwise. ▷
- Check whether it smells of gas.
  - Check whether the hose (1) is securely connected to the LPG tank.
  - Check to see whether the hose and connection screw joints have iced over.



The fill level display (4) on the LPG container displays how much LPG is available. ▷



## Switching on the key switch

### WARNING

Before switching on the key switch, all visual inspections and function checking must be carried out without any defects being identified.

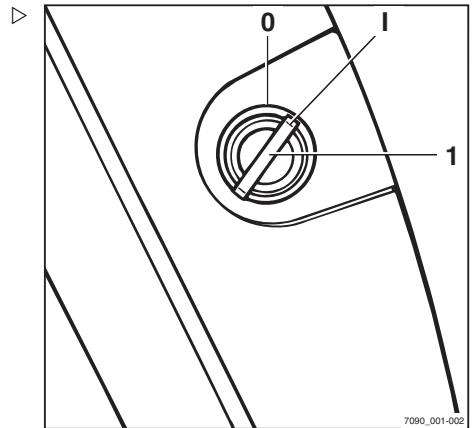
- Perform the visual inspections and function checking.
- **Do not** operate the truck if defects have been detected; contact the authorised service centre.

- Insert the switch key (1) into the key switch and turn it to the "I" position.

### NOTE

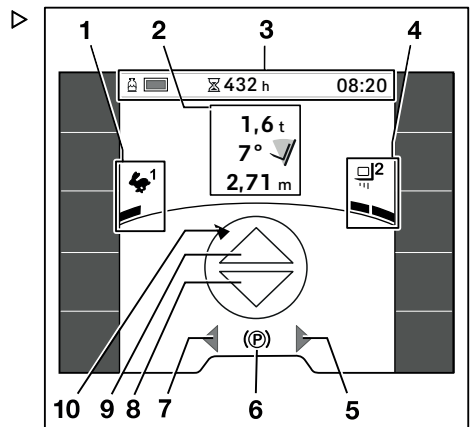
*If the truck is equipped with the "Access authorisation with PIN code" variant, the display initially changes to the input menu for access authorisation.*

Once the truck is ready for operation, the main screen is shown on the display.



## Main screen

- 1 Selected drive programme with driving dynamics display
- 2 Load information (variants)
- 3 Status bar<sup>1</sup>: fuel level, operating hours, time
- 4 Selected load dynamics programme with dynamics bar
- 5 "Right" turn indicator display
- 6 Driving speed or parking brake (P)
- 7 "Left" turn indicator display
- 8 "Reverse" drive direction indicator
- 9 "Forward" drive direction indicator
- 10 Steering angle display



Additional information may appear on the display.

<sup>1</sup> An example status bar (3) is shown in this figure.

## Switching on and starting

- Refer to the chapter entitled "Display messages".

### Access authorisation with PIN code (variant)

Trucks equipped with the "Access authorisation with PIN code" variant are protected against unauthorised use by a PIN code. So that the same truck can be used by different drivers, individual PIN codes can be specified.

An initial PIN code of "11111" is preset at the factory for the first use.



#### NOTE

*We recommend that the fleet manager changes this PIN code using their access authorisation. See also the section entitled "Access authorisation for the fleet manager (variant)".*

When the key switch is switched on, the Access authorisation input menu appears.

All hydraulic functions and drive functions of the truck are blocked. In the StVZO (German Road Traffic Licensing Regulations) variant, the function of the hazard warning system (variant) is guaranteed.

- To activate the blocked functions, use the softkeys to enter the PIN code.
- To confirm, push the button.

If the input was correct, the display changes to the main display. The truck is ready for use.

- If the input was incorrect, enter the PIN code again.



#### NOTE

*The authorised service centre can configure access authorisation so that the PIN code has to be re-entered each time after someone leaves the truck.*

When the driver's seat is occupied again, the message Log in appears. The display




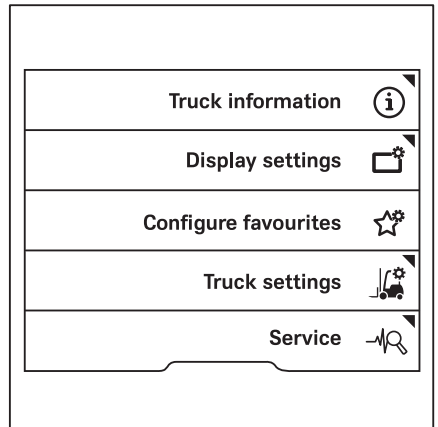
1	<b>Access authorisation</b>  Enter PIN code  <input type="text"/>  = Clear = Save       = Cancel	6
2		7
3		8
4		9
5		0



then changes to the "Access authorisation" input menu.

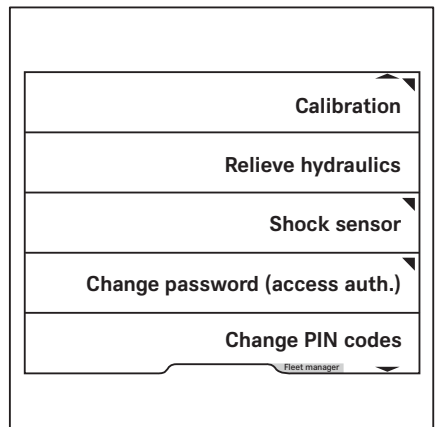
### Changing the PIN codes

The fleet manager can change the PIN codes. See also the following section entitled "Access authorisation for the fleet manager (variant)".

- Activate the "Access authorisation for the fleet manager".
- Press the Service  softkey.



- Press the scroll keys   until the Change PIN codes menu appears.
- Press the Change PIN codes softkey.
- Follow the instructions on the display.



## Switching on and starting



### Access authorisation for the fleet manager (variant)

Trucks equipped with the "Access authorisation for the fleet manager" variant can be configured by the users themselves. Access to these settings is protected by a fleet manager password.


The initial fleet manager password was sent with the invoicing documents. For safety reasons, change this password after the first use. See also the section entitled "Changing the fleet manager password".

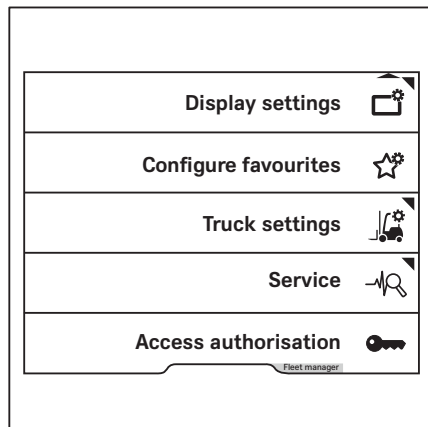
#### NOTE

*Access to the settings menu is only available if the truck is at a standstill and the parking brake is applied. If the parking brake is released prematurely, the settings menu will close.*


- Stop the truck.
- Actuate the parking brake.
- Press the button .
- Press the "Settings" softkey .

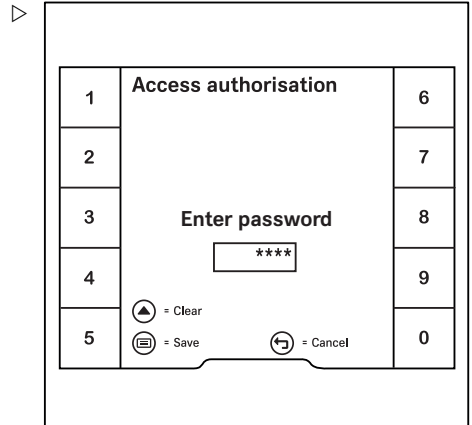
The first menu level appears.

- Press the Access authorisation softkey .



The display changes to the Access authorisation menu.

- Enter the fleet manager password using the softkeys.
- To confirm, press the  button.



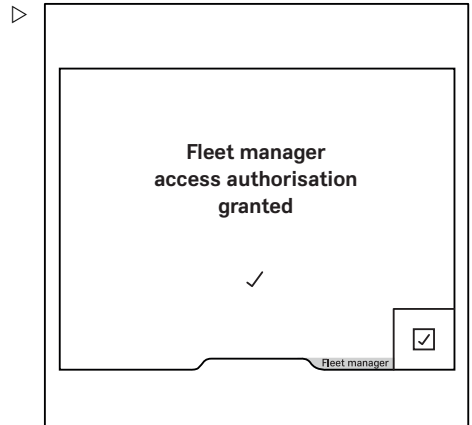
The message Fleet manager access authorisation granted ✓ appears.

- To confirm, press the ✓ softkey.

"Access authorisation for the fleet manager" is activated. The display returns to the settings menu.

If the password entered was incorrect, the message Password incorrect is displayed.

- If this happens, enter the password again.




 **NOTE**

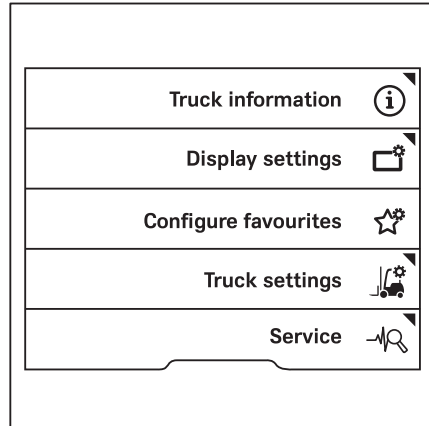
*While the "Access authorisation for the fleet manager" is activated, Fleet manager is displayed in an orange bar at the bottom of the screen. When the users switches to the main display, the access authorisation expires again.*



**Changing the fleet manager password**

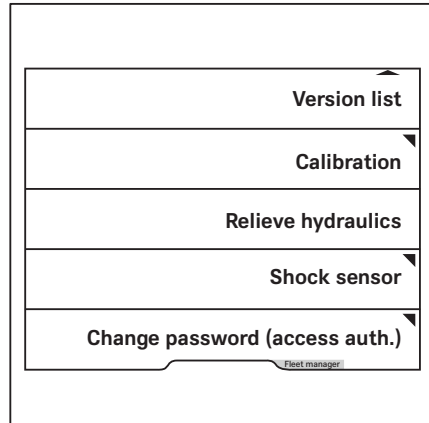
- Activate the "Access authorisation for the fleet manager".

## Switching on and starting

- Press the Service  softkey.



- Press the scroll buttons   until the Change password (access auth.) menu appears.
- Press the Change password (access auth.) softkey.
- Follow the instructions on the display.



## Starting the engine

### DANGER

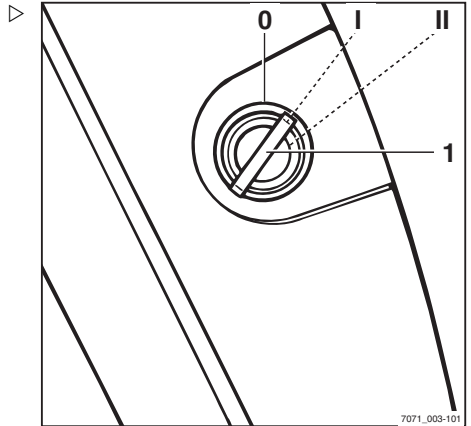
#### Risk to health from exhaust gases!

It is dangerous to leave the engine running in enclosed spaces. The engine consumes oxygen and emits carbon dioxide, carbon monoxide and other poisonous gases.

- Observe the national laws and regulations when using trucks with an internal combustion engine in entirely or partially enclosed working areas.
- Always ensure that there is sufficient ventilation available.



- Apply the parking brake.
- Insert the switch key (1) into the key switch and turn to position "I".



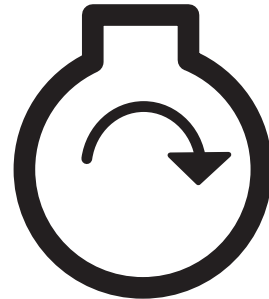
If the truck controller is powered up, the message "Start" appears on the display.

**i NOTE**

*The engine will not start until the truck controller is powered up.*

- Turn the switch key to position "II" and hold it there until the engine starts.
- Release the switch key when the engine starts.

If the engine does not start after 20 seconds, stop the starting procedure to protect the starter battery then repeat after one minute.



**⚠ CAUTION**

Risk of engine damage!

If an error message appears on the display after the engine has been started, the engine lubrication may be insufficient. Insufficient lubrication may cause engine damage.

- Stop the engine immediately.
- Check the engine oil level and top up if necessary
- If the message continues to appear, notify the authorised service centre.

- Please note the information in the chapter entitled "Malfunctions".

## Switching on and starting




### NOTE

*If the engine does not start due to a discharged battery, charge the battery or jump-start the engine.*










## Lighting

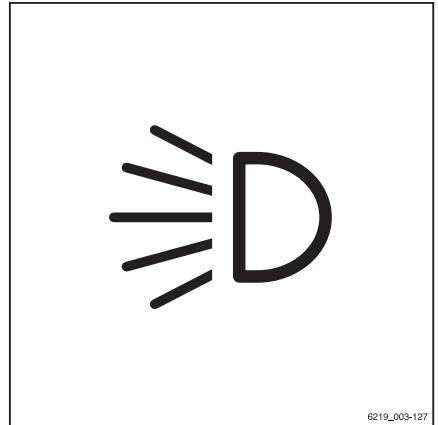
### Meaning of the symbols

Individual lighting devices are switched on and off using the "Lighting" sub-menu.

- To access this sub-menu, push the button .

Symbols for the lighting and their meanings

	Parking light
	Headlights
	Hazard warning system <sup>1</sup>
	Rotating beacon
	STILL SafetyLight
	Warning zone light
	Front working spotlights
	Rear working spotlights
	Roof working spotlights



Only the symbols of the lighting devices that are installed in the truck can be selected. When one of the lighting devices is switched on, the activation bar next to the relevant symbol lights up orange.

### NOTE

*If the truck is equipped with the "StVZO" (German Road Traffic Licensing Regulations) variant, the hazard warning system works even when the truck is switched off.*

<sup>1</sup> This function is not available if the truck is equipped with the "StVZO" (German Road Traffic Licensing Regulations) variant. In this case, the hazard warning system is switched on and off via the hazard warning button on the steering column. For more information, refer to the section entitled "Hazard warning system".

## Lighting

### Driving lights

- To switch on the parking light (1), push the associated Softkey on the display-operating unit.

The front side lights and the tail lights light up.

- To switch on the driving light (2), press the associated Softkey on the display-operating unit.

The headlights and tail lights light up. If the truck has StVZO (German Road Traffic Licensing Regulations) equipment (variant) and a licence plate lamp, then this also lights up.

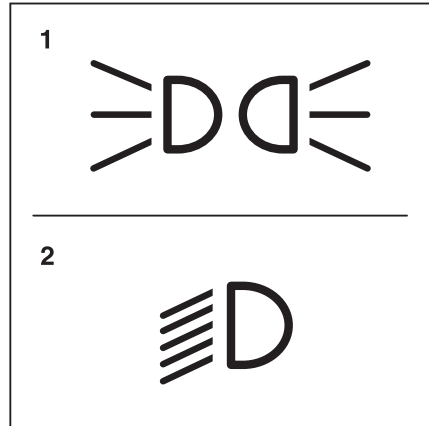
- To switch off the driving light (2), press the Softkey again.

The driving light and licence plate lamp go out.

- To switch off the parking light (1), push the Softkey again.

The front side lights and the tail lights go out.

If the truck does not have StVZO (German Road Traffic Licensing Regulations) equipment (variant), then the parking light and driving light can be switched on and off independently of each other.



- 1 Parking light
- 2 Driving light

## Working spotlights

### Front and rear working spotlights

- To switch on the front working spotlights (3), push the associated Softkey on the display-operating unit.

The front working spotlights light up.

- To switch off the front working spotlights (3), push the Softkey again.

The front working spotlights go out.

- To switch on the rear working spotlights (4), push the associated Softkey on the display-operating unit.

The rear working spotlights light up.

- To switch off the rear working spotlights (4), push the Softkey again.

The rear working spotlights go out.

#### NOTE

*For the StVZO (German Road Traffic Licensing Regulations) variant, the parking light is also switched on when the working spotlights are switched on. The licence plate lamp (if present) is also switched on when the forward-facing working spotlights are switched on.*

### Working spotlights on the roof and the side of the lift mast

The roof spotlights light up the working area when the fork carriage is raised.

- To switch on the roof spotlights (5), push the associated Softkey on the display-operating unit.

The roof spotlights (5) light up.

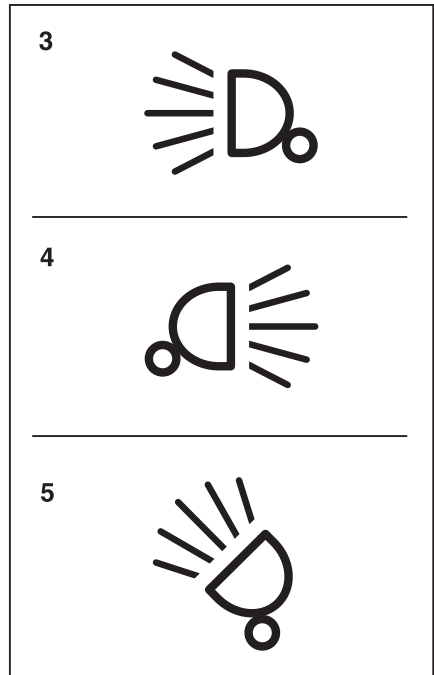
- To switch off the roof spotlights (5), push the Softkey again.

The roof spotlights (5) go out.

#### NOTE

*Depending on the configuration, the roof spotlights automatically switch on when the fork carriage is raised.*

▷




- 3 Front working spotlights
- 4 Rear working spotlights
- 5 Roof spotlights

## Lighting

### Working spotlight for reverse travel (variant)

In this equipment variant, a working spotlight for reverse travel is fitted on the rear of the overhead guard and provides optimum illumination of the roadway during reverse travel.

- Press the  softkey.

The activation bar next to the symbol lights up.  
The working spotlight does not yet light up.

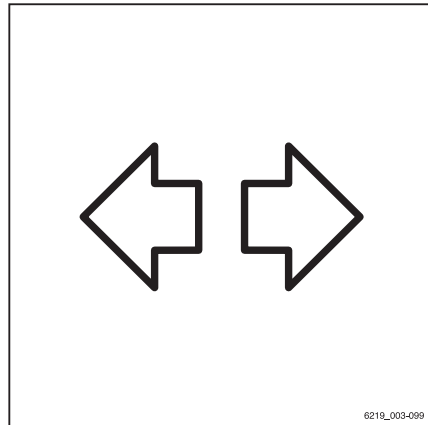
- Set the drive direction to "Reverse".

The working spotlight for reverse travel lights up.

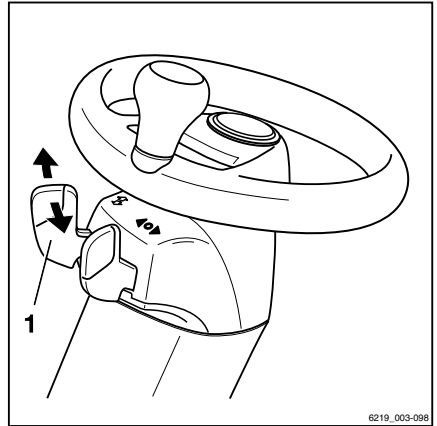
If the drive direction is set to "Forward", the working spotlight goes out.

### Turn indicators

The turn indicators are switched on and off via the travel direction selector and indicator module.



- To switch on the left or right turn indicator, move the lever (1) to the desired direction.



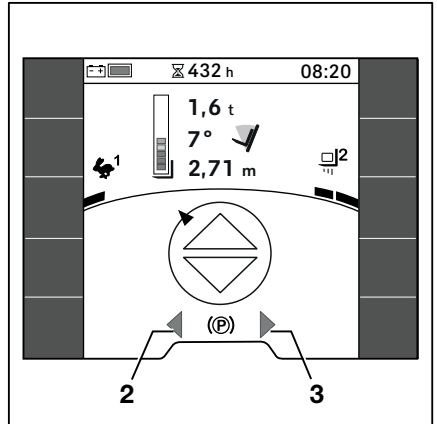
6219\_003-098

The turn indicators and the turn indicator display (2) or (3) on the display-operating unit flash.



- To switch off the turn indicators, push the lever (1) back to the centre position.

All turn indicators and the turn indicator displays on the display/operating unit stop flashing.



## Lighting

### Hazard warning system

Switching the hazard warning system on and off is different for trucks with and without the StVZO (German Road Traffic Licensing Regulations) variant.

- To switch on the hazard warning system, push the associated Softkey on the display-operating unit.

All direction indicators and the turn indicator displays on the display-operating unit flash.

- To switch off the hazard warning system, push the Softkey again.

All direction indicators and the turn indicator displays on the display-operating unit stop flashing.

### Specific features of the StVZO (German Road Traffic Licensing Regulations) variant

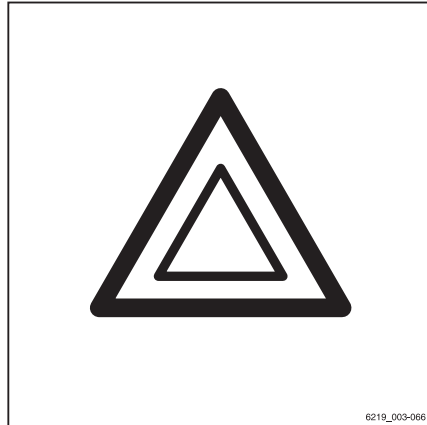
For the StVZO (German Road Traffic Licensing Regulations) variant, the hazard warning system cannot be switched on and off via the display/operating unit. It is switched on and off using the hazard warning button on the steering column. The hazard warning system in this variant works even when the truck is switched off.

- To switch on the hazard warning system, push the hazard warning button (1).

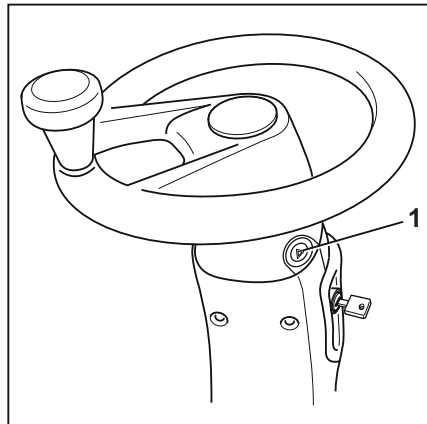
All direction indicators and the turn indicator displays on the display/operating unit flash.

- To switch off the hazard warning system, push the hazard warning button (1) again.

All direction indicators and the turn indicator displays on the display-operating unit stop flashing.




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## StVZO equipment

If the truck is fitted with StVZO (German Road Traffic Licensing Regulations) equipment, the "StVZO" softkey  is stored in the favourites bar. This softkey is used to switch off all lighting devices that are not permitted on roads subject to the StVZO.

This relates to the following variants of lighting equipment:

- STILL SafetyLight
- Warning zone light
- Working spotlight
- Rotating beacon

– To switch off this lighting equipment, push the "StVZO" softkey .

The orange activation bar lights up next to the softkey.

– To switch on this lighting equipment, push the "StVZO" softkey  again.

The orange activation bar goes out.

### NOTE

*This function is configured for the German StVZO ex works.*

- *Outside of Germany, observe the national regulations for the country of use.*
- *The authorised service centre can amend the function so that fewer lighting devices or more lighting devices are switched off.*

The softkey is also located in the "Driving" menu.



## Lighting

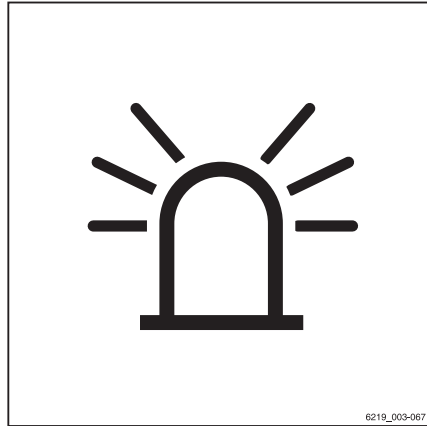
### Rotating beacon

- To switch on the rotating beacon, push the associated Softkey on the display-operating unit.

The rotating beacon is switched on.

- To switch off the rotating beacon, push the Softkey again.

The rotating beacon goes out.



### STILL SafetyLight (variant)



#### **⚠ WARNING**

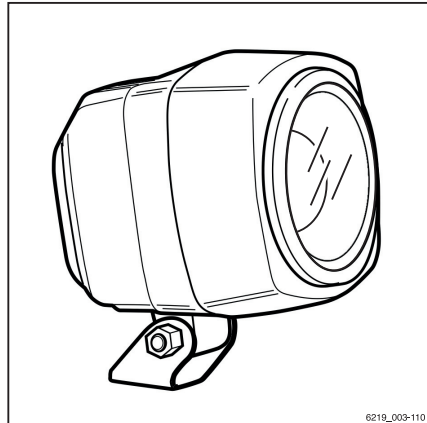
Danger of damage to eyes from looking into the STILL SafetyLight.


**Do not** look into the STILL SafetyLight.

The STILL SafetyLight is a visual warning unit designed to enable early detection of trucks in driving areas with low visibility (such as drive lanes, high racks), as well as at blind junctions. The STILL SafetyLight is mounted on a support on the overhead guard such that it is not affected by jolts and vibrations.

Depending on the version, the STILL SafetyLight projects one or more light-blue light spots in front of or behind the truck and thus warns others about the approaching truck. Several light spots are projected as a chase light. The chase light indicates the location of the truck with its direction of travel.

Depending on the configuration of the truck, the STILL SafetyLight automatically switches itself on when the truck is moving. This means that, during reverse travel (variant), for example, it can be used as an additional light for the working spotlight for reverse travel. The STILL SafetyLight can also be switched on and off on the display-operating unit.



- To do so, push the Softkey .

 **NOTE**

*If the truck is to be operated on public roads,  
the STILL SafetyLight must be switched off.*

## Blue-Q efficiency mode

# Blue-Q efficiency mode

### Functional description

The Blue-Q efficiency mode affects both the drive unit and the activation of the additional consumers and reduces the truck's energy consumption.

If the efficiency mode has been activated, the acceleration behaviour of the truck changes to make acceleration more moderate.

When travelling at low speeds, normally when manoeuvring, no reduction is noticeable despite the activated efficiency mode. For moderate speeds of at least approx. 7 km/h, acceleration is gentler. Therefore, on distances of up to approx. 40 m, lower speeds are reached than would be the case if the efficiency mode was not activated. The maximum speed is 18 km/h, compared to a maximum speed of 21 km/h in the mode STILL-Classic.

To reduce fuel consumption and noise volume, Blue-Q lowers the number of revolutions of the internal combustion engine in drive mode.

Blue-Q has no influence on:


- Climbing capability
- Pulling force
- Braking characteristics




### NOTE

*If no other energy mode is selected, STILL-Classic is automatically active. No pictogram is displayed for STILL-Classic.*

## Switching Blue-Q on and off

- To switch on Blue-Q efficiency mode, push the softkey .

The Blue-Q symbol  appears on the display/operating unit and Blue-Q efficiency mode is switched on.

- To switch off Blue-Q efficiency mode, push the associated softkey again.

The Blue-Q symbol disappears and Blue-Q efficiency mode is switched off.



### NOTE

*The fleet manager can also use his access authorisation to activate Blue-Q efficiency mode permanently. See the next section.*

## Blue-Q efficiency mode

**Switching off additional consumers**

If the Blue-Q efficiency mode is activated, the controller switches off various additional consumers after a few seconds in certain conditions. The additional consumers available depend on the truck equipment. The following table shows the conditions that cause additional consumers to be switched off. Only one of the conditions listed must be met.

Additional consumers	Condition		
	Seat switch not actuated	Truck stopped	Truck is in motion
Front working spot-lights	X	X	Backwards > 3 km/h
Rear working spot-lights	X	X	Forwards
Top double working spotlight	X	X	> 3 km/h
Headlights	X	X	-
Front wiper	X	X	Backwards > 3 km/h
Rear wiper	X	X	Forwards
Seat heater	X	-	-
Cab heating	X	-	-

**NOTE**

*On the version with StVZO (German Road Traffic Licensing Regulations) equipment, the Blue-Q efficiency mode does not switch off the lighting devices headlights and working spot-lights, side lights, rear lights and license plate lamps.*

## STILL Classic and sprint mode

Drive modes influence the driving performance and the lifting performance of the electric drive.

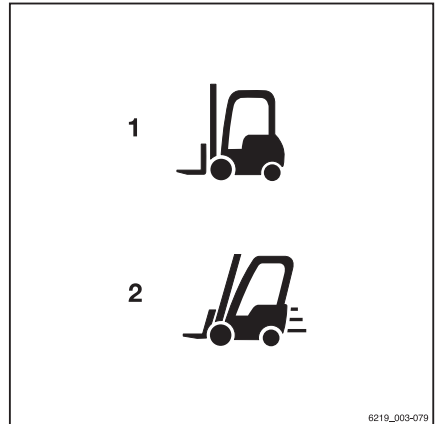
Two different drive modes are available:

### 1 STILL Classic

This mode is active after the truck has been switched on. This mode is the default setting and provides a balance between hydraulic functions and driving functions. The maximum speed is 18 km/h. No symbol is shown on the display.

### 2 Sprint mode

In sprint mode, the truck accelerates more quickly to a maximum speed of 21 km/h. Sprint mode is for driving on clear and spacious terrain.




### NOTE

*If sprint mode is used, the drive units heat up more quickly.*

## Switching sprint mode on and off

- To switch on sprint mode, push the associated Softkey.

The "sprint mode" symbol  (2) appears on the display of the display-operating unit. Sprint mode is switched on.

- To switch off the mode, push the Softkey again.

The symbol disappears and the mode is switched off. The truck is then back in STILL Classic mode.

## Automatic switch off for sprint mode

If the truck is operated in sprint mode at the maximum performance level, the truck will consume more energy. This means that both the drive units and the energy supply may get too hot.

The temperatures of the drive units and the energy supply are monitored continuously. If an excessively high temperature occurs, sprint mode is automatically deactivated.

### Blue-Q efficiency mode

If the truck is automatically switched off, sprint mode can then only be switched on again if the following conditions are met:

- The temperatures of the drive units and the energy supply are not too high
- The truck has been restarted.



## Driving

### Safety regulations when driving

#### Driving conduct

The driver must follow the public rules of the road when driving in company traffic.

The speed must be appropriate to the local conditions.

For example, the driver must drive slowly around corners, in tight passageways, when driving through swing-doors, at blind spots, or on uneven surfaces.

The driver must always maintain a safe braking distance from vehicles and persons in front, and must always have the truck under control. Stopping suddenly, turning quickly and overtaking at dangerous or blind spots must be avoided.

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

The following are forbidden during driving:

- Allowing arms and legs to hang outside the truck
- Leaning the body over the outer contour of the truck
- Climbing out of the truck
- Moving the driver's seat
- Adjusting the steering column
- Releasing the seat belt
- Disabling the restraint system
- Raising the load higher than 300 mm above the ground (with the exception of manoeuvring processes during the placement into stock/removal from stock of loads)
- Using electronic devices, for example radios, mobile phones etc.

## Driving

### **⚠ WARNING**

The use of multimedia and communication equipment as well as playing these devices at an excessive volume during travel or when handling loads can affect the operator's attention. There is a risk of accident!

- Do not use devices during travel or when handling loads.
- Set the volume so that warning signals can still be heard.

### **⚠ WARNING**

In areas where use of mobile phones is prohibited, use of a mobile phone or radio telephone is not permitted.

- Switch off the devices.

## Visibility when driving

The driver must look in the drive direction and have a sufficient view of the driving lane.

Particularly for reverse travel, the driver must be sure that the driving lane is clear.

When transporting goods that impair visibility, the driver must drive the truck in reverse.

If this is not possible, a second person acting as a guide must walk in front of the truck.

In this case the driver must only move at walking pace and with extra care. The truck must be stopped immediately if eye contact with the guide is lost.

Rear-view mirrors are only to be used for observing the road area behind the truck and not for reverse travel. If visual aids (mirror, monitor) are necessary to achieve sufficient visibility, it is necessary to practise using them. For reverse travel using visual aids, extra care should be taken.

When using attachments, special conditions apply; see the chapter entitled "Fitting attachments".

Any glass (variant, e.g. windscreen) and mirrors must always be clean and free of ice.

## Roadways

### Dimensions of roadways and aisle widths

To ensure safe manoeuvring, the following dimensions and aisle widths apply under specified conditions. In individual cases, check to determine whether a larger aisle width is necessary, e.g. in the case of load dimensions, attachments or lift masts that deviate from the standard configuration.

In the European Union, Directive 89/654/EEC concerning the "minimum safety and health requirements for the workplace" applies. Outside the European Union, the respective national regulations apply.

The required aisle widths depend on the dimensions of the load.

For pallets, these are:

Model	Type	Aisle width [mm]	
		With pallet 1000x1200 crosswise	With pallet 800x1200 lengthwise
RX70-20/600	7400	3963	4163
RX70-25	7401	3963	4163
RX70-25/600	7402	4047	4247
RX70-30	7403	4060	4260
RX70-30/600	7404	4127	4352
RX70-35	7405	4127	4327

The truck must be used only on roadways that do not have excessively sharp curves, excessively steep gradients or excessively narrow or low entrances.

### Driving on gradients

#### WARNING

Driving up and down longer gradients can cause the drive unit to overheat and switch off.

Driving up and down longer gradients greater than 15% is not permitted due to the minimum specified braking values. The climbing capability values given below apply only to negotiating obstacles on the roadway and to temporary differences in level, e.g. ramps.

## Driving

The truck is approved for driving on the following ascending and descending gradients:

Model	Type	Maximum gradient [%]	
		With a load	Without a load
RX70-20/600	7400	29	26
RX70-25	7401	29	26
RX70-25/600	7402	25	24
RX70-30	7403	25	24
RX70-30/600	7404	24	20
RX70-35	7405	24	20

The stated values are used only to compare the performance of trucks in the same category. The gradient values in no way represent the normal daily operating conditions.

### CAUTION

To use the truck safely—with or without a load—the maximum permitted ascending or descending gradient for travel is 15%.

- If you have any questions, contact your authorised service centre.

The ascending and descending slopes must not exceed the above gradient.

A rough road surface is non-slip and increases tyre grip.

Even transitions of the road surface to the gradient prevent impact with the ground. This helps to avoid damage to the load, the truck and the road surface.

### Warning about components that protrude beyond the truck contour

Trucks are designed to enter very narrow or very low areas, such as aisles and containers. Moving components may protrude beyond the truck contour and become damaged or severed. Examples of these components are:

- A folding roof panel in the driver's cab
- Cab doors
- LPG cylinders that can be swung out

## Condition of the roadways

Roadways must be firm, level and free from contamination and fallen objects.

The structural design of drains, level crossings and other similar facilities must enable them to be driven over with as few bumps as possible. If necessary, use ramps to compensate for uneven roadways.

Note the load capacity of manhole covers, drain covers etc.

There must be sufficient distance between the highest points of the truck or the load and the fixed elements of the surrounding area. The height is based on the overall height of the lift mast and the dimensions of the load; see the chapter entitled "Technical data".

## Rules for roadways and the working area

Only routes approved by the operating company or its representative may be driven on. The roadways must be free of obstacles. The load must only be set down and stored in the designated locations. The operating company and its representative must ensure that unauthorised persons do not enter the working area.



### NOTE

*Please note the definition of the following responsible person: "operating company".*


## Hazardous areas



Hazardous areas on roadways must be indicated by the customary road traffic signs.

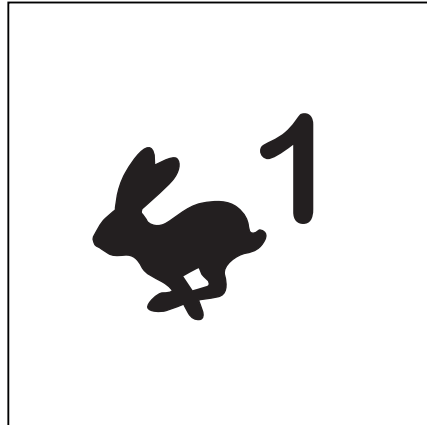
## Driving


**Selecting drive programmes 1 to 3** ▷

The truck has three drive programmes with different preset driving and braking characteristics. The basic principle is that the higher the number of the drive programme selected, the greater the driving dynamics.

The drive programme is selected using the display-operating unit under the "Drive"  menu item.

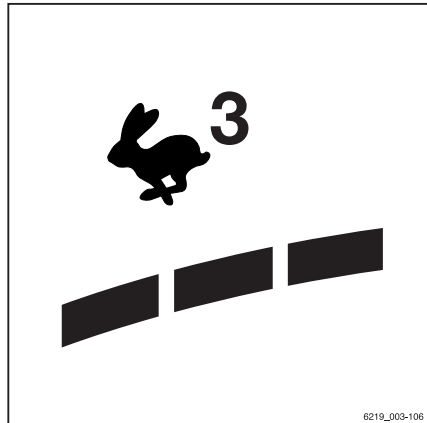
- Press the Softkey ... to select the desired drive <sup>3</sup> programme.



- If the drive programmes are saved as a favourite on a Softkey, press the "Drive programme" Softkey  until the number of the desired drive programme is shown on the display.

The number of dynamic bar segments indicates the driving dynamics of the selected drive programme:

- One bar: slower acceleration and deceleration
- Three bars: faster acceleration and deceleration







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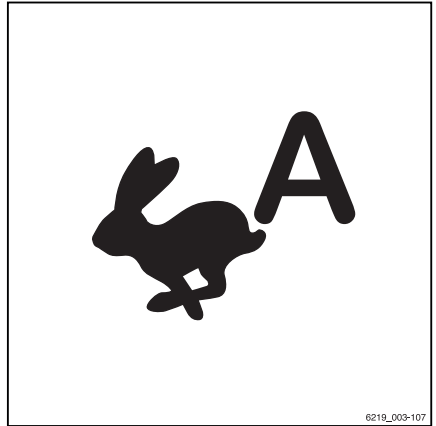
## Selecting drive programme A or B ▷

The truck has two driving programmes for personalised handling and braking characteristics.

Unlike the fixed drive programmes "1 to 3", the programs "A" and "B" can be configured. The procedure for this is described in the following section.

The drive programme is selected using the display-operating unit under the "Drive"  menu item.

- Press the  or  softkey to select the desired drive programme.
- If the drive programmes are saved as a favourite on a softkey, press the "Drive programme"  Softkey until the letter of the desired drive programme is shown on the display.




## Configuring drive programmes A and B



The drive programmes can be configured by the driver.

### NOTE

*Access to the settings menu is only available if the truck is at a standstill and the parking brake is applied. If the parking brake is released prematurely, the settings menu will close.*

- Stop the truck.
- Actuate the parking brake.
- Press the button .

The first menu level appears.

- Press the "Settings"  Softkey.
- Press the Truck settings  Softkey.
- Press the drive programme Softkey.

The "drive programme" menu appears.

## Driving

- Press the associated Softkey for drive programme A or drive programme B.

The process for configuring the drive programmes using "drive programme A" is explained here.

The menu **Set drive programme A** appears. ▷


The following parameters can be set:

- **Max. speed**  
Determines the maximum speed (max. 21 km/h).
  - **Agility**  
Determines the acceleration behaviour and the reversing behaviour using five levels. "1" indicates the lowest agility and "5" indicates the greatest agility
  - **Deceleration**  
Determines the deceleration using five levels. "1" indicates the lowest deceleration and "5" indicates the greatest deceleration
- To select a higher level, press the appropriate "plus" Softkey + .
  - To select a lower level, press the appropriate "minus" Softkey – .
  - To save the setting, press the "confirm" Softkey .

The settings are saved.

- To cancel the setting, press the "cancel"  Softkey.

The settings return to the most recently saved value.

Press the button  once to return to the previous menu level.

<input type="checkbox"/>	Set drive programme A	<input checked="" type="checkbox"/>
–	max. speed 16 km/h	+
–	Agility 3	+
–	Deceleration 2	+



## Selecting the drive direction

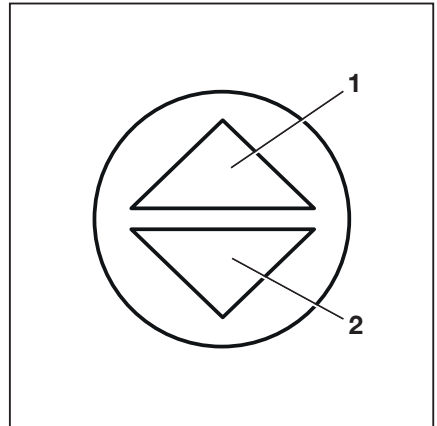
The drive direction of the truck must be selected using the drive direction switch/drive direction selection lever before attempting to drive. The method of actuating the drive direction switch/drive direction selection lever depends on the operating devices that are fitted in the truck.

The drive direction switch is located on the operating devices for the hydraulic functions. The drive direction selection lever is located on the travel direction selector and indicator module (variant).

### NOTE

*The drive direction can also be changed during travel. Your foot can remain on the accelerator pedal while you do so. The truck is then decelerated and accelerated again in the opposite direction (reversing).*

The indicator for the selected drive direction ("forwards" (1) or "backwards" (2)) lights up on the display-operating unit.



## Neutral position

If leaving the truck for a prolonged period, the neutral position must be selected in order to avoid the truck suddenly moving off due to an inadvertent actuation of the accelerator pedal.

- Briefly select the drive direction switch/drive direction selection lever for the direction opposite to the current drive direction.

The drive direction indicator on the display-operating unit goes out.

### NOTE

*When the seat is vacated, the selected drive direction is set to the "neutral position". To drive, the drive direction switch/drive direction selection lever must be actuated again.*

## Driving

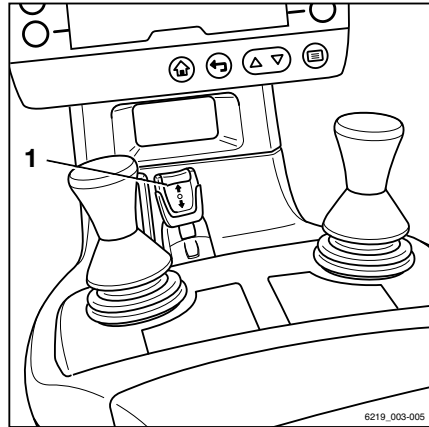
### Actuating the drive direction switch with the mini-lever version

- For the "forwards" drive direction, push the drive direction switch (1) forwards.
- For the "backwards" drive direction, pull the drive direction switch (1) backwards.



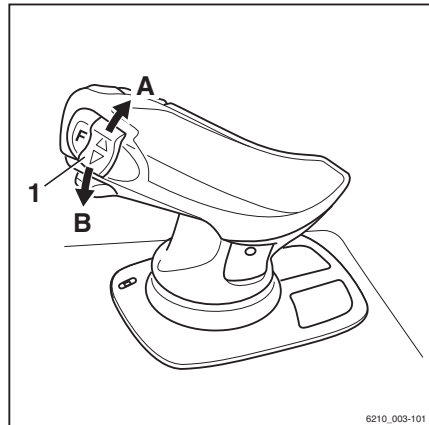
#### NOTE

*If the drive direction switch (1) is defective and the truck stops in a danger area, the drive direction selection lever on the travel direction selector and indicator module (variant) can be used for emergency driving. Refer to the section entitled "Emergency driving via the drive direction switch/drive direction selection lever" in the chapter entitled "Procedure in emergencies".*



### Actuating the vertical rocker button for the "drive direction", Joystick 4Plus version

- For the "forward" drive direction, push the vertical rocker button for the "drive direction" (1) upwards (A).
- For the "backward" drive direction, push the vertical rocker button for the "drive direction" (1) downwards (B).

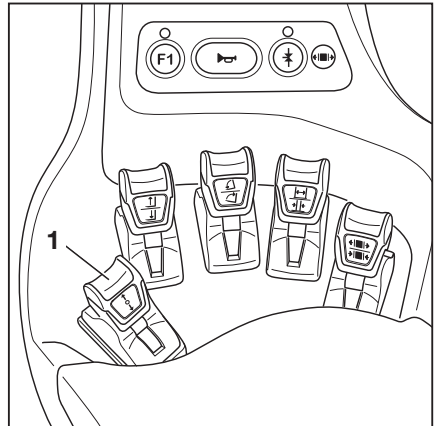


### Actuating the drive direction switch with the Fingertip version

- For the "forwards" drive direction, push the drive direction switch (1) forwards.
- For the "backwards" drive direction, pull the drive direction switch (1) backwards.

#### NOTE

*If the drive direction switch (1) is defective and the truck stops in a danger area, the drive direction selection lever on the travel direction selector and indicator module (variant) can be used for emergency driving. Refer to the section entitled "Emergency driving via the drive direction switch/drive direction selection lever" in the chapter entitled "Procedure in emergencies".*

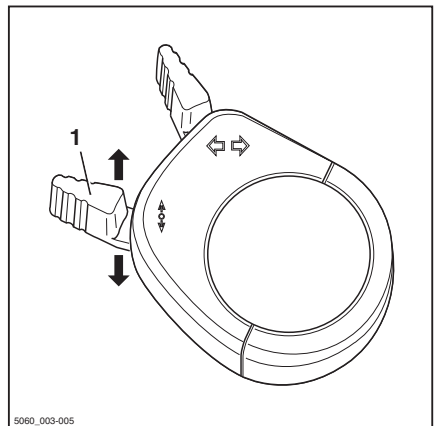


### Actuating the drive direction switch, mini-console version

- For the "forwards" drive direction, push the drive direction switch (1) forwards.
- For the "backwards" drive direction, push the drive direction switch to the rear.

#### NOTE

*Alternatively, the drive direction can also be selected using the drive direction switches on the operating devices.*



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### Starting drive mode

#### DANGER

**Risk to life if the truck rolls away or tips over!**

- Sit on the driver's seat.
- Fasten the seat belt.
- Activate the available restraint systems.

## Driving

- Observe the information in the chapter entitled "Safety regulations when driving".

The driver's seat is equipped with a seat switch. This seat switch checks whether the driver's seat is occupied. If the driver's seat is not occupied or if the seat switch is malfunctioning, the truck cannot be moved and all lifting functions are locked. In these situations, the message *Sit in the driver's seat* is shown on the display of the display-operating unit.

- Sit on the driver's seat. Fasten the seat belt.
- Lift the fork carriage until the necessary ground clearance is achieved.
- Tilt the lift mast backwards.
- Release the parking brake.
- Select the desired drive direction.

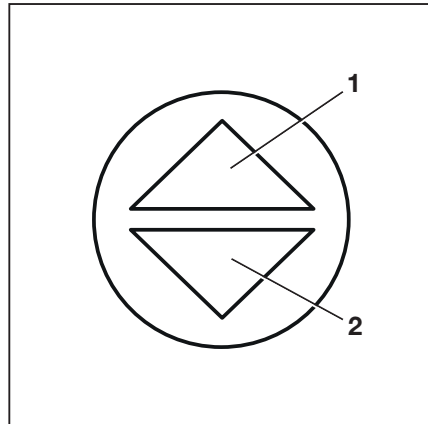
The indicator for the selected drive direction ("forwards" (1) or "backwards" (2)) lights up on the display-operating unit.



### NOTE

*Depending on the equipment, one of the equipment variants activates as a warning for reverse travel:*

- *Signal tone*
- *Warning light*
- *Hazard warning system*



- Press the accelerator pedal (3).

The truck travels in the selected drive direction. The speed is controlled by the accelerator pedal position. The truck brakes when the accelerator pedal is released.

### NOTE

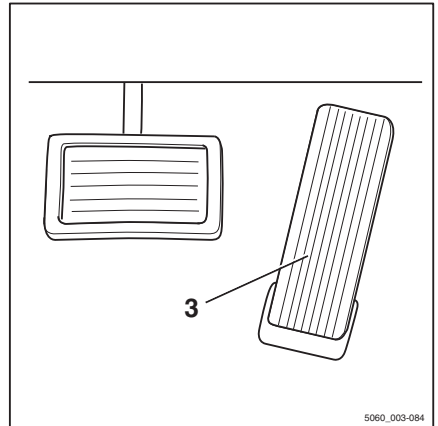
*The truck is also held in place on ascending or descending gradients even if the electric parking brake is not engaged.*

### DANGER

#### Risk of accident due to brake failure!

The regenerative brake functions only while the truck is switched on and the parking brake is released.

- Use the brake pedal if the regenerative brake malfunctions.
- Engage the parking brake before leaving the truck.



## Changing the drive direction

- Take your foot off the accelerator pedal.
- Select the desired drive direction.
- Press the accelerator pedal.

The truck will travel in the selected drive direction.

### NOTE

*The drive direction can also be changed during travel. Your foot can remain on the accelerator pedal while you do so. The truck is then decelerated and accelerated again in the opposite direction (reversing).*

### NOTE

*If an electrical fault occurs in the accelerator, the drive unit is switched off. In this situation, the truck is not electrically braked. Once the electrical fault has been corrected, it will be possible to drive the truck again by releasing the accelerator pedal and then actuating the accelerator pedal again. If the truck still cannot be operated, park the truck securely and contact the authorised service centre.*

## Driving

## Starting drive mode, dual pedal version (variant)

### **⚠ DANGER**

#### **Risk to life if the truck rolls away or tips over!**

- Sit on the driver's seat.
  - Fasten the seat belt.
  - Activate the available restraint systems.
- 
- Observe the information in the chapter entitled "Safety regulations when driving".

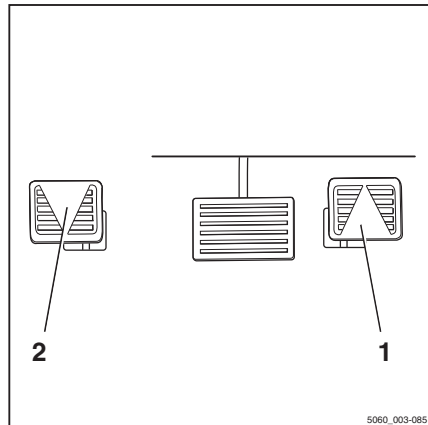
The driver's seat is equipped with a seat switch. This seat switch checks whether the driver's seat is occupied. If the driver's seat is not occupied or if the seat switch is malfunctioning, the truck cannot be moved and all lifting functions are locked. In these situations, the message *Sit in the driver's seat* is shown on the display of the display-operating unit.

- Sit on the driver's seat. Fasten the seat belt.
- Lift the fork carriage until the necessary ground clearance is achieved.
- Tilt the lift mast backwards.
- Release the parking brake.
- Press the right accelerator pedal (1) for the "forwards" drive direction and press the left accelerator pedal (2) for the "backwards" drive direction.



### **NOTE**

*In the dual pedal version, the drive direction switches do not function.*



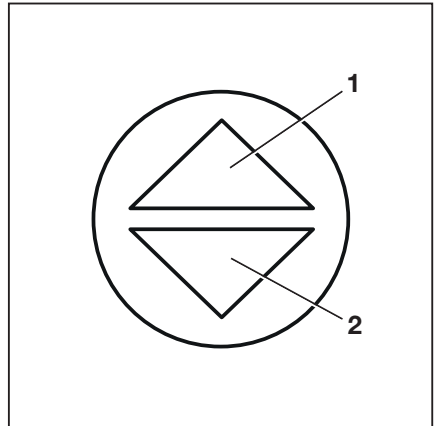
The indicator for the selected drive direction ("forwards" (1) or "backwards" (2)) lights up on the display-operating unit. ▷

**i NOTE**

*Depending on the equipment, one of the equipment variants activates as a warning for reverse travel:*

- Signal tone
- Warning light
- Hazard warning system

The truck travels in the selected drive direction. The speed is controlled by the accelerator pedal position. The truck brakes when the accelerator pedal is released.



**i NOTE**

*The truck is also held in place on ascending or descending gradients even if the electric parking brake is not engaged.*

**⚠ DANGER**

**Risk of accident due to brake failure!**

The regenerative brake functions only while the truck is switched on and the parking brake is released.

- Use the brake pedal if the regenerative brake malfunctions.
- Engage the parking brake before leaving the truck.

**Changing the drive direction**

- Remove your foot from the actuated accelerator pedal.
- Press down the accelerator pedal for the opposite direction.

The truck will travel in the selected drive direction.

## Driving

**NOTE**

*If an electrical fault occurs in the accelerator, the drive unit is switched off. In this situation, the truck is not electrically braked. Once the electrical fault has been corrected, it will be possible to drive the truck again by releasing the accelerator pedal and then actuating the accelerator pedal again. If the truck still cannot be operated, park the truck securely and contact the authorised service centre.*

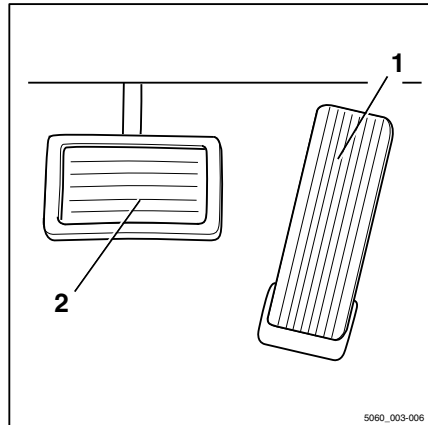
**Operating the service brake**

The electric brake converts the acceleration energy of the truck into electrical energy. This causes the truck to decelerate.

In addition, the truck can be braked using the service brake:

- Press the brake pedal (2).

In the first section of the brake pedal's travel, only the regenerative braking takes effect. As the pedal is depressed further, the service brake is also activated and acts on the drive wheels.

**⚠ DANGER****Risk of accident!**

If the service brake fails, the truck cannot brake sufficiently.

- Bring the truck to a standstill by applying the parking brake.
- Do not operate the truck again until the service brake has been repaired.

**⚠ DANGER****Risk of tipping and risk of slipping!**

The braking distance of the truck depends on the weather conditions and the level of contamination on the roadway. The braking distance increases with the square of the speed. There is a danger that the truck could slip or overturn.

- Adapt your driving and braking style to suit the weather conditions and the level of contamination on the roadway.
- Always choose a driving speed that will provide a sufficient stopping distance.



- Brake the truck by releasing the accelerator pedal (1).
- If the braking effect is inadequate, brake using the service brake (2) as well.

### Zero braking (variant)

#### **⚠ DANGER**

##### **Risk of accident!**

Trucks with zero braking (variant) are not braked when the accelerator pedal is released.

- Bring the truck to a standstill by actuating the brake pedal.

If your truck features the zero braking equipment variant, the electric brake function is disabled. Taking your foot off the accelerator pedal does not brake the truck.

In this case, the truck can only be slowed by applying the service brake via the brake pedal.

### Actuating the electric parking brake ▷



#### **⚠ DANGER**

**There is a risk of fatal injury from being run over if the truck rolls away.**

- Do not park the truck on a gradient.
- Do not leave the truck until the parking brake has been applied.
- In an emergency, secure the truck with wedges on the downhill-facing side to prevent it from rolling away.

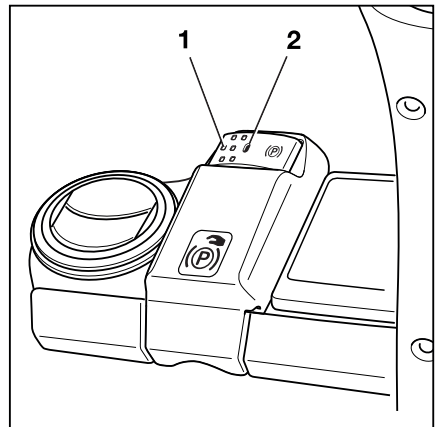
This truck is equipped with an electric parking brake. The parking brake is applied automatically when leaving the truck.

Despite these automatic aids, the driver is always responsible for parking the truck safely. The safety information about parking the truck safely applies.



#### **NOTE**

*The internal combustion engine must be switched on in order to apply and release the electric parking brake.*



## Driving

If the parking brake is applied, this is indicated by a symbol in the display-operating unit in place of the driving speed.

Symbols for the parking brake in the display-operating unit

Symbol	Description
(P)	The parking brake was applied automatically. Actuating the accelerator pedal automatically releases the parking brake.
(P)	The parking brake was applied by pressing the push button. Pressing the push button is the only way to release the parking brake.

### Releasing the electric parking brake after the truck has been switched on

- Press the push button (1) to release the parking brake.

The traction motor keeps the truck at a standstill.

### Manually actuating the electric parking brake when the truck is stationary

#### Applying the parking brake manually

- Press the push button (1).

The electric parking brake will make a noise when it is applied and the LED (2) lights up continuously. The (P) symbol appears in the display.

#### Releasing the parking brake manually

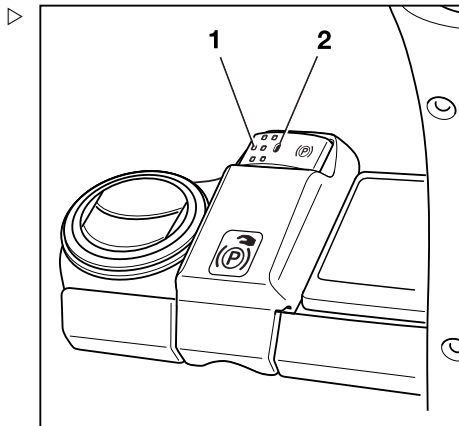
- Sit on the driver's seat.
- Press the push button (1).

The electric parking brake will make a noise when it releases and the LED (2) goes out.

The driving speed display is replaced by the (P) symbol.

### Automatic actuation of the electric parking brake when the truck is stationary

The electric parking brake is applied automatically when the truck is stationary in the following situations:



**Automatically triggered actuation when the truck is stationary**

Cause	Effect
The driver's seat is vacated.	The electric parking brake will make a noise when it is applied. The LED (2) lights up.
The internal combustion engine is switched off.	The electric parking brake is immediately applied with an audible sound. The LED (2) lights up until the control units switch off.

If the electric parking brake has applied automatically, the (P) symbol appears in the display-operating unit. The LED (2) lights up.

- To release the electric parking brake, the driver must sit down on the driver's seat again.
- Press the accelerator pedal.

The electric parking brake will make a noise when it is released. The LED (2) goes out.

**i NOTE**

*If the (P) symbol appears in the display, the truck cannot be driven until the electric parking brake has been released by pressing the push button (1). The symbol may appear if the parking brake was not applied as a result of releasing the accelerator pedal or vacating the driver's seat.*

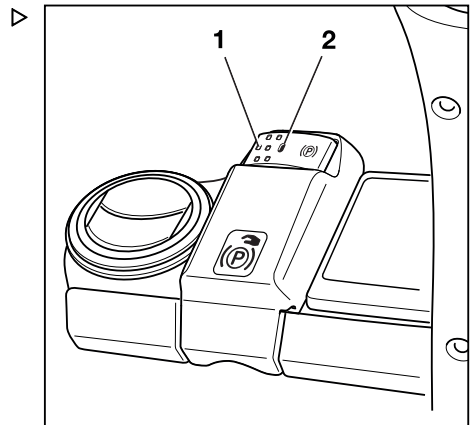
**Actuation of the electric parking brake when the truck is in motion**

**Manual actuation when the truck is in motion**

- Press the push button (1).

The truck is braked with the drive unit in accordance with the selected drive programme. Once the truck has come to a standstill, the electric parking brake is applied with an audible sound. The LED (2) lights up with a steady light. The (P) symbol appears in the display-operating unit.

- If the braking effect is insufficient, also use the service brake.



## Driving

**NOTE**

*If the drive unit fails, the truck can be braked by pressing the push button (1). The truck brakes more strongly if the push button (1) is pressed and held or pressed several times. The electric parking brake cannot be released by actuating the accelerator pedal.*

**⚠ WARNING**

Risk of accident!

The truck may decelerate abruptly.

- Fasten the seat belt.

**Automatically triggered actuation when the truck is in motion**

Cause	Effect
The driver's seat is vacated.	The truck is braked in accordance with the selected drive programme. Once the truck has come to a standstill, the electric parking brake is applied with an audible sound. The LED (2) lights up. The (P) symbol appears in the display.
The key switch is switched off.	The truck will coast to a stop. Once the truck has come to a standstill, the electric parking brake is applied with an audible sound. The LED (2) lights up. The (P) symbol appears in the display until the control units switch off.
The truck accelerates sharply, even though the driver's seat has been vacated.	The electric parking brake is immediately applied with an audible sound. The LED (2) lights up. The (P) symbol appears in the display.
The truck accelerates sharply, even though the accelerator pedal has not been actuated.	The parking brake is immediately applied with an audible sound. The LED (2) lights up. The (P) symbol appears in the display.

## Malfunctions in the electric parking brake



### **⚠ DANGER**


There is a risk of fatal injury from being run over if the truck rolls away.

- Do not park the truck on a gradient.
  - Do not leave the truck until the parking brake has been applied.
  - In an emergency, secure the truck with wedges on the downhill-facing side to prevent it from rolling away.
- 
- Before leaving the truck, make sure that the parking brake is properly applied.

### Message:

#### Apply parking brake via button.

If the truck control unit detects a malfunction in the parking brake, the truck cannot be switched off. ▷

- The  Apply parking brake via button message appears on the display-operating unit.
- The LED (1) on the push button (2) flashes.
- A warning signal sounds.



### NOTE

*If it becomes necessary to switch off a truck with a faulty parking brake, always secure the truck to prevent it from rolling.*

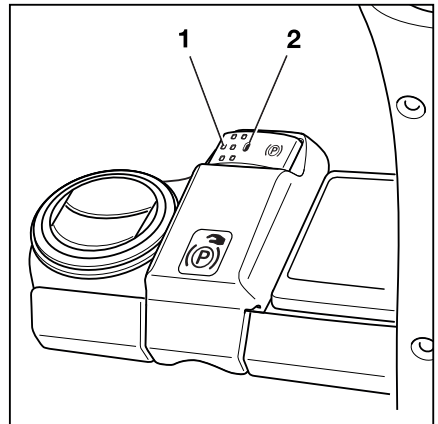
A possible cause of the malfunction is that the parking brake cannot determine whether the truck is stationary or still in motion. The following section describes how to actuate the parking brake when it is faulty:

#### Actuating a faulty parking brake when the truck is stationary

There are two ways to apply the parking brake:

- Press and hold the push button (1) for at least five seconds and then release the push button.

OR



## Driving

- Press the push button (1) several times in succession so that the push button is actuated for a total of 5 seconds.

The parking brake is applied with an audible sound. After the push button is released, the parking brake should not make any further sounds; if a sound is heard, this means the push button was pressed for less than five seconds. In this case, press the push button again to apply the parking brake again. Repeat this process as necessary until the parking brake applies and the (P) symbol appears.

### Actuating a parking brake with a malfunction when the truck is in motion

- Press the push button (1).

The parking brake is applied.



#### NOTE

*The truck brakes more strongly if the push button (1) is pressed and held down for longer or pressed several times.*

### "Safe parking" function

This function monitors the braking effect after the truck is parked. If a sensor is fitted on the lift mast (variant), it also checks whether the fork carriage is lowered.

This function alerts the driver with an audible warning signal if:

- The driver leaves the driver's seat and it has not been possible to apply the parking brake
- The driver leaves the driver's seat without lowering the fork carriage (variant)
- The driver attempts to switch off the truck and it has not been possible to apply the parking brake
- The truck starts moving within the next 20 seconds after the parking brake is applied

**Activation and intervention by the "Safe parking" function**

Cause	Effect
<p>The driver's seat is vacated. The electric parking brake cannot be applied or previously could not be applied.</p>	<p>The following message appears in the display: Parking brake cannot be applied.                      - To confirm the message, press the <input checked="" type="checkbox"/> Soft-key.                      A warning signal sounds when the driver's seat is vacated. Sitting in the driver's seat silences the warning signal again.</p>
<p>The truck must be switched off. The electric parking brake cannot be applied or previously could not be applied.</p>	<p>The truck cannot be switched off. A warning signal sounds.                      The following messages appear in the display: Parking brake cannot be applied. (Ⓞ)                      - To confirm the message, press the <input checked="" type="checkbox"/> Soft-key.                      Switch off truck anyway? ?                      - To confirm the message, press the <input checked="" type="checkbox"/> Soft-key.                      Secure the truck to prevent it from rolling. (⚠)                      - Secure the truck with wedges so that the truck does not roll away.                      - To confirm the message, press the <input checked="" type="checkbox"/> Soft-key.                      It is now possible to switch off the truck.</p>

**⚠ DANGER**

**Risk of fatal injury from being run over if the truck rolls away!**

Park the truck securely if the parking brake is faulty. Secure the industrial truck to prevent it from rolling away.

- To do this, strictly adhere to the following instructions:

- If the parking brake cannot be applied automatically or via the push button, perform an emergency actuation of the parking brake. Refer to the section entitled "Emergency operation of the parking brake" in the chapter "Procedure in emergencies".
- If the parking brake cannot be applied via the emergency actuation mechanism, secure the truck with wedges so that the truck cannot roll away.
- Have the parking brake repaired by an authorised service centre.

## Driving

### Message: Parking brake cannot be applied

If the truck control unit detects a malfunction in the parking brake, the truck cannot be switched off. ▷

- The Parking brake cannot be applied message appears on the display-operating unit. 📖
- The LED (2) on the push button (1) flashes.
- A warning signal sounds.



## NOTE

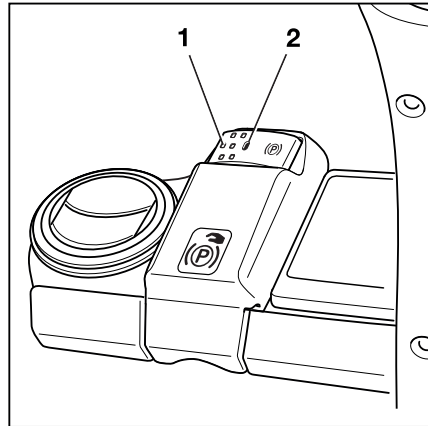
*If it is necessary to switch off a truck with a faulty parking brake, the section entitled "Switching off the truck when the electric parking brake is faulty" must be observed. It is essential to secure the truck to prevent it from rolling away.*



## NOTE

*If the parking brake is released via the emergency actuation mechanism, it is possible to drive the truck at a low speed.*

- *The truck can be moved out of the hazardous situation or to the repair location.*
  - *Driving with a faulty parking brake requires the driver to be especially vigilant.*
- If the parking brake cannot be applied automatically or via the push button, apply the parking brake via the emergency actuation process. Refer to the section entitled "Emergency operation of the parking brake" in the chapter "Procedure in emergencies".
- If the parking brake cannot be applied via the emergency actuation process, secure the truck with wedges so that the truck cannot roll away.
- Have the parking brake repaired by an authorised service centre.





## Steering

### **⚠ DANGER**

If the hydraulics fail, there is a risk of accident as the steering characteristics have changed.

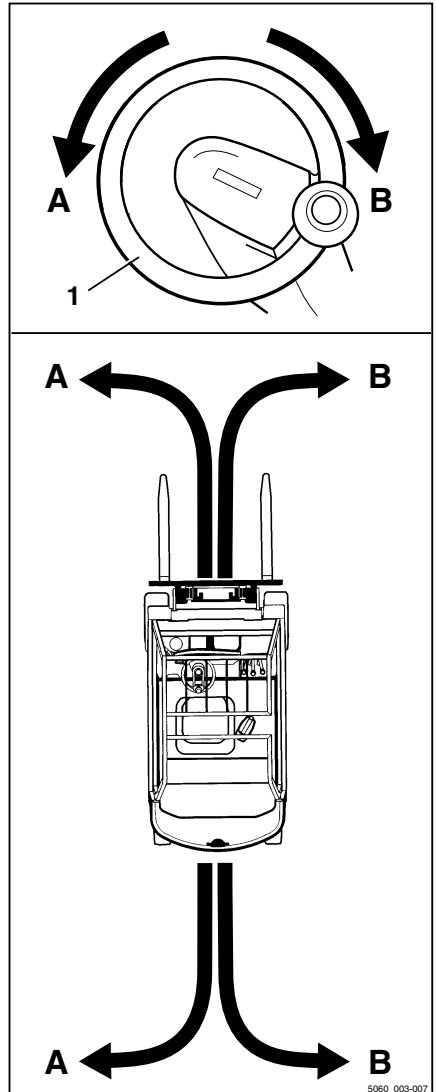
- Do not operate the truck if it has a defective steering system.

- Steer the truck by turning the steering wheel (1) accordingly.

Turning the steering wheel in the direction of arrow (A) steers the truck in drive direction (A).

Turning the steering wheel in the direction of arrow (B) steers the truck in drive direction (B).

For turning radius information, see ⇒ Chapter "Technical data", Page 391 .



## Driving

## Driving on ascending and descending gradients ▷

### **⚠ DANGER**

#### **Danger to life!**

Driving on ascending and descending gradients carries special dangers!

- Always follow the instructions below.
- 
- On ascending and descending gradients, the load must be carried facing uphill.
  - It is only permitted to drive on ascending and descending gradients that are marked as traffic routes and that can be used safely.
  - Ensure that the ground to be traversed is clean and provides a good grip.
  - Do not turn on ascending and descending gradients.
  - Do not drive onto or along ascending and descending gradients at an angle.
  - Do not park the truck on ascending or descending gradients.
  - In case of emergency, secure the truck with wedges so that the truck does not roll away.
  - Reduce the driving speed on descending gradients.

It is not permitted to drive on long ascending and descending gradients greater than 15% due to the specified minimum braking and stability values.

- Before driving on ascending and descending gradients greater than 15%, consult the authorised service centre.

The process of placing loads into stock and removing loads from stock while on an ascending or descending gradient is not permitted!

- Always place loads into stock and remove loads from stock on a horizontal plane.



## Speed reduction when the fork carriage is raised (variant)

If the truck is equipped with this variant, the driving speed is automatically reduced to 5 km/h (forwards and backwards) from a lift height of more than 500 mm.

If the fork carriage is lowered below this lift height again, the driving speed limitation is deactivated.

### NOTE

*If the lift height measuring system is not working correctly, e.g. due to contamination of the sensor, the driving speed is permanently limited to 5 km/h.*

## Engine automatic shut-off function (variant)

If certain conditions are met and a pre-set response time has elapsed, the engine automatic shut-off function (variant) automatically switches off the internal combustion engine.

The message CUTOFF MODE appears in the display.

### Conditions that apply simultaneously:

- The truck is stationary.
- The driver's seat is not occupied.
- Energy-intensive consumers are switched off, e.g. the air conditioning.

### Response time

The response time is set between 30 seconds and 30 minutes at the factory.

If all the conditions are met simultaneously, the response time starts to count down.

As soon as one of the conditions is no longer met, the response time stops counting down.

If all the conditions are met again, the response time starts to count down again from the beginning.

## Driving

10 seconds before the response time elapses, ▷ the following message appears: Switch off combustion engine.

The following driver responses are possible:

- No response

The engine switches off after 10 seconds.

- Press softkey .

The engine does not switch off.

- Press softkey .

The engine switches off **immediately**.

After the automatic shut-off function has switched off the engine, the driver can start the engine again via the display-operating unit.

- Sit on the driver's seat.

The message *Start internal combustion engine* appears.

The following driver responses are possible:

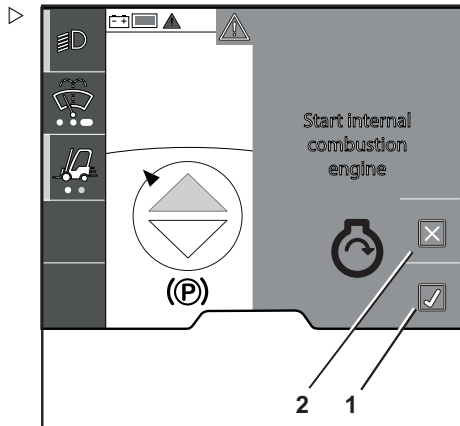
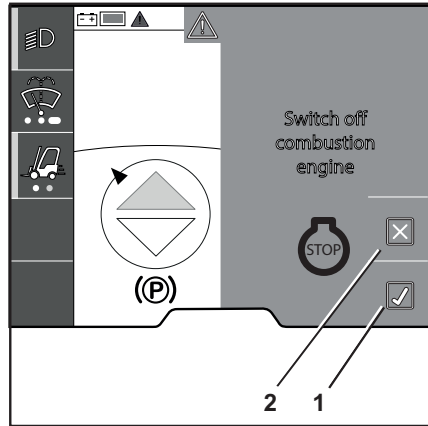
- Press softkey .

The engine does not start; the message disappears.

- Press softkey .

The engine starts; the message disappears.

- To change the response time, contact the authorised service centre.



## Engine stalls because the evaporator has iced over



### NOTE

*Gas cools significantly upon evaporation. If the evaporator is not warmed sufficiently by the coolant circulation in the engine, it may ice over. This can interrupt the gas supply and the engine stalls.*

If the engine stalls directly after the key switch is actuated, proceed as follows:

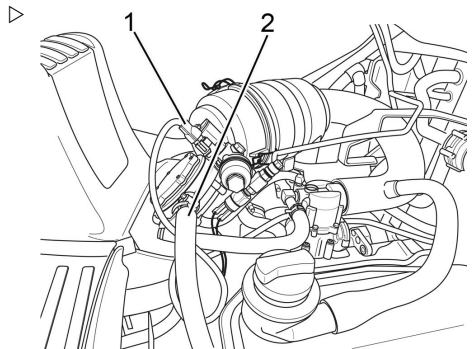
## De-ice the evaporator via the coolant circulation

### **⚠ DANGER**

**Risk of fire!** If the engine stalls before it has used up the residual gas, residual gas can remain in the evaporator. This cooled gas expands upon heating and is conveyed into the engine. From the engine, the gas can be conveyed further into the exhaust system. When the next start attempt occurs, the gas in the exhaust system may ignite, or smouldering particles may shoot out of the exhaust pipe.

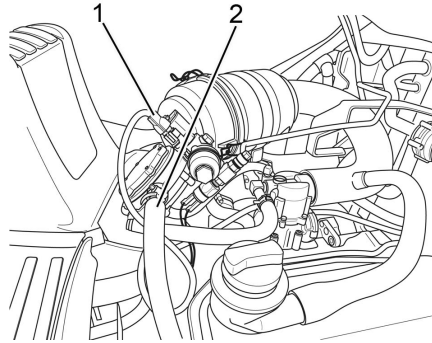
If the truck stalls when in the vicinity of combustible or easily flammable materials, do not attempt to start the truck in this area. Tow the truck out of the danger area before attempting to start the truck again. Make sure that there are no people or objects in the area behind the exhaust.

- Close the valve on the gas cylinder.
- Disconnect the plug (1) from the gas shut-off valve. The gas shut-off valve is closed. The gas flow to the evaporator is blocked.
- Attempt to start the engine again using the key switch. If the engine starts, leave it running until it stalls again due to the lack of gas.
- Once the engine has stalled, wait for two minutes then start the engine again, allowing it to run until it stalls again.
- Once the engine has stalled again, reinsert the plug (1) into the gas shut-off valve. Start the engine again and allow it to run.
- If the engine runs steadily while idling, after approx. 15 seconds slowly open the valve on the gas cylinder and allow the engine to idle so that it reaches operating temperature.



## Driving

- Check that the cooling water supply (2) to the evaporator is warm. ▷
- Wait until the evaporator has reached operating temperature as a result of the truck idling.
- If the evaporator has not warmed up, slowly close the valve on the gas cylinder and allow the engine to run until it stalls by itself due to the lack of gas.
- You can now attempt to de-ice the evaporator using a different method. To do this, proceed as described in the following chapter.



## Manually de-icing the evaporator



### ⚠ DANGER

**Risk of explosion when de-icing the gas system! Gas can ignite and explode when exposed to excessive heat, naked flames, smouldering objects and objects that produce sparks.**

Never thaw frozen system components by means of a naked flame or smouldering objects! Carefully follow the instructions below.

### ⚠ DANGER

**Risk of explosion! Escaping gas can ignite when it comes into contact with the heating coil in heating devices such as a hot air gun. During de-icing tasks, the heat source must not exceed 50°C.**

Do not deliver the warm air straight from a heating device. However, it is acceptable to deliver the warm air via a warm air hose.


The following resources are suitable for thawing frozen system components:

- Warm air
- Warm water
- Warm sandbags
- Once the system components have been thawed, de-ice the evaporator using the above resources.
- Switch on the key switch and start the engine.
- If the engine still stalls, do not attempt to start the truck; contact the authorised service centre.

## Cruise control (variant)


The cruise control function keeps the driving speed constant. In addition, the cruise control function can be used to comply with any speed limitation that is in force. The cruise control function operates when driving forwards at a speed of 6 km/h or faster. The function is put on standby via the display-operating unit and can be activated and deactivated using the drive direction switch on the operating device for the hydraulic functions.

When the cruise control function is activated, the speed can be saved when driving forwards at a speed of at least 6.0 km/h by pressing a button and the truck can continue driving without the accelerator pedal being actuated.

The pictogram  for operating the cruise control function is located on the operating device for the hydraulic functions.

### Putting the cruise control function on standby

In order for the cruise control function to be activated via the drive direction switch, the function must first be put on standby using the display-operating unit.


- Press the  button.


The first menu level appears.


- Press the "Drive" softkey .

The "Drive" menu appears.


## Driving


- Press the "cruise control"  softkey. ▷

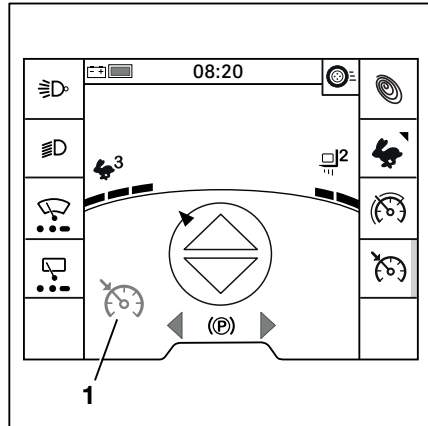
The orange-coloured activation bar next to the "cruise control"  softkey lights up. The cruise control function is ready.

The greyed-out "cruise control"  symbol (1) appears on the display.

### Taking the cruise control function off standby

Pressing the "cruise control"  softkey again takes the function off standby.

A signal sounds. The "cruise control" symbol  goes out.



### Activating cruise control function

#### WARNING

Risk of accident from failing to adjust speed!

Driving at excessive speeds can cause accidents, e.g. the truck could tip over when cornering.

- Adjust speed along the entire distance being travelled
  - Pay particular attention to cornering speed
  - Observe safety regulations when driving
  - Observe the special behaviour of the cruise control function and the dangers associated with it
- 
- Accelerate the truck to the required speed (at least 6.0 km/h)




- Actuate the drive direction switch (1) for forwards travel. ▷

### NOTE

*In the dual pedal version (variant), the drive direction switch is used exclusively to activate and deactivate the cruise control function (variant).*

The cruise control function is active. The current speed is saved.

Two signals sound. The symbol  appears in black on the display.


- Take your foot off the accelerator pedal.

The truck continues to drive at the selected speed until the cruise control function is deactivated.

- To save a different speed, deactivate the cruise control function and activate the function at the newly selected speed.

### Deactivating cruise control

Deactivating the cruise control function means that the speed is again controlled by the accelerator pedal. The cruise control function remains on standby. The function can be activated at any time when the accelerator pedal is depressed by pressing the drive direction switch for forwards travel again.

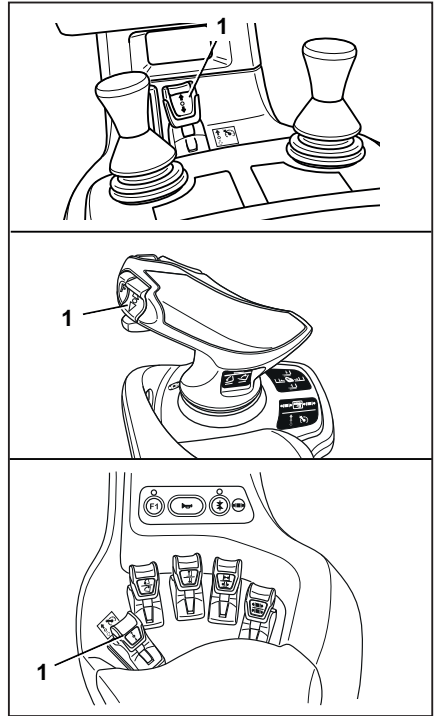
When the cruise control function is deactivated, the symbol  is greyed out.

### NOTE

*The easiest way to deactivate the cruise control function is to touch the accelerator pedal.*

The following actions deactivate the cruise control function:

- Actuating the foot brake
- Actuating the parking brake
- Actuating the accelerator pedal  
Depressing the accelerator pedal beyond the set speed accelerates the truck.
- Changing the travel direction



## Driving

- Press the drive direction switch for forwards travel again without actuating the accelerator pedal
- Press the "cruise control" softkey  
Actuating the "cruise control" softkey switches off the cruise control function.

Other conditions that will cause the truck control unit to deactivate the cruise control function are:

- Vacating the driver's seat
- Truck speed less than 2.5 km/h.
- Speed limit set to less than 4.5 km/h.
- The truck control unit detects abnormalities, e.g. a voltage drop

If the accelerator pedal is actuated in these circumstances, the truck is initially braked via the drive unit. The following message appears on the display: Release the accelerator pedal.

- To continue driving, release the accelerator pedal and actuate it again.

If these circumstances have changed again, the speed that was initially saved is set again.



### NOTE

*If the truck is configured with automatic functions to reduce the driving speed and the driving speed is reduced to 6.0 km/h or less, the cruise control function is automatically deactivated.*

## Parking

### Parking the truck securely and switching it off



#### **⚠ DANGER**

**Risk of fatal injury from the truck rolling away!**

- Do not park the truck on gradients.
- In emergencies, secure the truck using wedges on the side facing downhill.
- Only leave the truck when the parking brake has been applied.

#### **⚠ DANGER**

**There is a risk of fatal injury from a falling load or parts of the truck being lowered!**

- Lower the load fully before leaving the truck.



#### **⚠ WARNING**

Volatile LPG can build up and ignite. There is a risk of explosion!

LPG is heavier than air. It collects on the ground, where it may form hazardous explosive mixtures of gas and air.

- Do not park the truck near pits, cellars, stairwells, heating systems or other heat sources.
- Do not park the truck below ground level.
- Protect gas cylinders from heat.
- Observe the safety regulations for working with LPG.

- Apply the parking brake.
- Lower the fork to the ground.
- Tilt the lift mast forwards until the tips of the fork arms rest on the ground.
- If attachments (variant) are fitted, retract the working cylinders; see the chapter entitled "General instructions for controlling attachments".
- Take your foot off the accelerator pedal and allow the engine to continue idling for a short while.



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## Parking

- Turn the switch key to the left and remove it.

The solenoid valve in the LPG system will close. The engine will continue to run for a few seconds in order to burn off the gas remaining in the LPG system. This process can take anything from 2–20 seconds, depending on the temperature of the LPG.



### NOTE

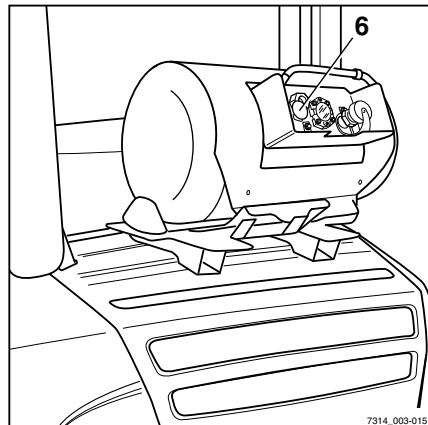
*An error has occurred if the engine switches off only after around 60 seconds and the LPG AUTO . VALVE error message appears on the display and operating unit. The truck can still be operated but your authorised service centre must be notified of the error immediately. The error message is shown on the display and operating unit until the error has been rectified by the authorised service centre.*



### NOTE

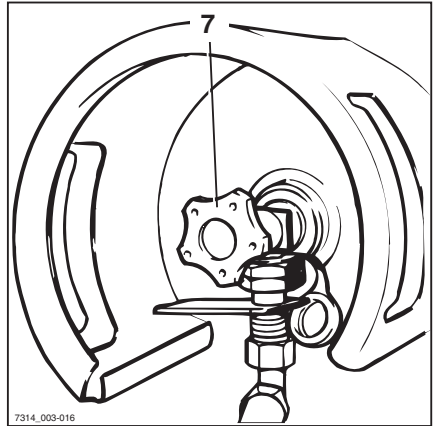
*Switch keys, FleetManager cards (variant), FleetManager transponder chips (variant) and the PIN code for access authorisation (variant) must not be handed over to other persons unless explicit instructions to this effect have been given.*

- For trucks with an LPG tank (variant), close the shut-off valve (6). ▷



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- For trucks with LPG cylinders, close the cylinder valve (7).



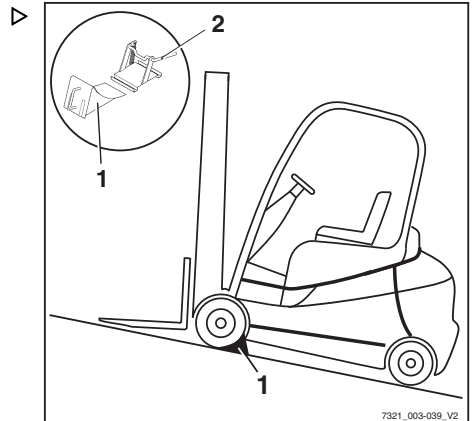
### Wheel chock (variant)

The wheel chock (variant) is used to prevent the truck from rolling away on a slope.

- Lift handle (2) on the support mounting.
- Remove wheel chock (1) from the support mounting.
- Push the wheel chock under a front axle wheel on the side facing the downhill slope.

#### NOTE

*After use, return the wheel chock to the support mounting and press the handle (2) down again.*



## Lifting

## Lifting

## Lifting system variants

The movement of the fork carriage and the lift mast heavily depends on the following equipment:

- The lift mast with which the truck is equipped, see → Chapter "Types of lift mast", Page 188
- The operating device with which the hydraulic functions are controlled, see → Chapter "Lifting system operating devices", Page 191

Regardless of the equipment variants of the truck, the basic specifications and procedures must be complied with, see → Chapter "Safety regulations when handling loads", Page 208 .

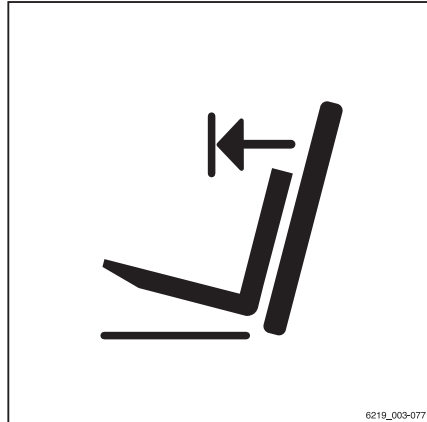
### Automatic mast vertical positioning (variant) ▷

#### ⚠ CAUTION

Risk of damage to property due to the lift mast colliding with racks or other objects!

- Before using the "automatic mast vertical positioning" assistance system, position the truck at a sufficient distance from racks and other objects.

The "automatic mast vertical positioning" assistance system can be used to set down the goods so that the goods are exactly vertical, e.g. paper rolls. This prevents damage when setting down the load. "Automatic mast vertical positioning" functions when tilting forwards. A further variant is available which also functions when tilting backwards. The tilt cylinders run into the end stops gently to prevent hard vibrations and impacts. Oscillating motions of the truck are minimised, thus increasing work safety. Automatic mast vertical positioning reduces wear on various components, thereby reducing repair costs.



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
The "automatic mast vertical positioning" assistance system consists of the following individual functions:

- Display of the "Automatic mast vertical positioning" feature
- Automatic startup of the "Automatic mast vertical position" feature

The truck can also be equipped with only the "mast tilt angle display" feature.

### NOTE

*Check the function of automatic mast vertical positioning whenever the truck is used.*

- See the section entitled "Function checking of the automatic mast vertical positioning function".
- Push the "automatic mast vertical positioning" softkey .

The  symbol appears in the display.

- Tilt back the lift mast until it reaches the end stop.
- Tilt the lift mast forwards.

The lift mast stops in the vertical position.

### NOTE

*The lift mast also stops in the vertical position if it is tilted forwards by  $\geq 3^\circ$  from a backward tilt.*

### NOTE

*The automatic mast vertical positioning must be calibrated in order to ensure accuracy at all times. The "access authorisation for the fleet manager" is required for the calibration. This access is required:*

- *When placing loads into stock and removing loads from stock on HGV ramps*
- *In the event of tyre wear*
- *If the lift mast is obviously not in the vertical position*
- See the section entitled "Calibrating the automatic mast vertical positioning".

## Lifting

## Types of lift mast

One of the following lift masts may be installed in the truck:

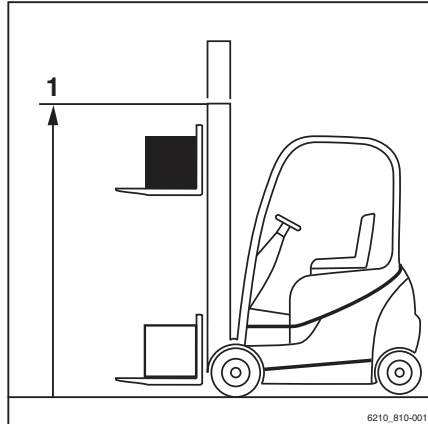
## Telescopic mast

During lifting, the lift mast rises over the outer lift cylinders, bringing the fork carriage with it via the chains (fork carriage rises twice as fast as the inner lift mast). The top edge (1) of the inner lift mast can therefore be higher than the fork carriage.

**⚠ DANGER**

**Risk of accident due to collision of the lift mast or load with low ceilings or entrances.**

- Note that the inner lift mast or load may be higher than the fork carriage.
- Note the heights of ceilings and entrances.



## Hi-Lo lift mast (variant)

During lifting, the inner lift cylinder moves up to free lift (3), and then the outer lift cylinders raise the inner lift mast up to the max. height (2).

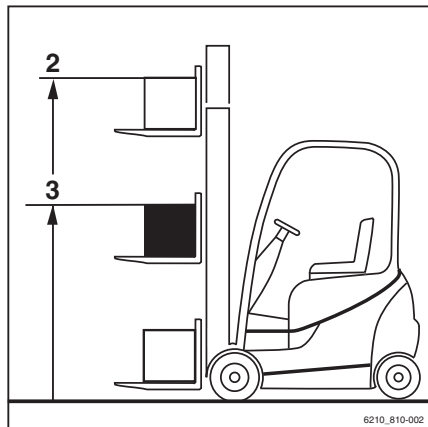
**NOTE**

*When lifting above the free lift, the fork carriage always remains at the upper edge of the extending lift mast.*

**⚠ DANGER**

**Risk of accident due to collision of the lift mast or load with low ceilings or entrances.**

- Note that the inner lift mast or load may be higher than the fork carriage.
- Note the heights of ceilings and entrances.





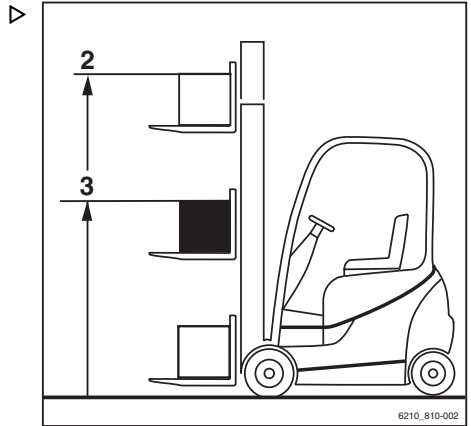
### Triplex lift mast (variant)

During lifting, the inner lift cylinder moves up to free lift (3), and then the outer lift cylinders raise the inner lift mast up to the max. height (2).

#### **⚠ DANGER**

**Risk of accident due to collision of the lift mast or load with low ceilings or entrances.**

- Note that the inner lift mast or load may be higher than the fork carriage.
- Note the heights of ceilings and entrances.



## Malfunions during lifting mode

### Incorrect extension sequence

#### **⚠ DANGER**

##### **Risk of accidents!**

In the case of Hi-Lo lift masts (variant) and triplex lift masts (variant), an incorrect extension sequence may occur, i.e. the inner lift mast may extend before the free lift is complete. As a result, the overall height is exceeded and damage may occur in passageways or from low ceilings.

An incorrect extension sequence may, for instance, result from:

- The hydraulic oil temperature being too low.
  - Blocking of the fork carriage in the inner lift mast.
  - Blocking of the free lift cylinder.
  - Blocking of the chain roller on the free lift cylinder.
- If the hydraulic oil temperature is too low, slowly actuate the lift mast functions several times in order to raise the oil temperature.

In the event that the fork carriage is blocked in the inner lift mast, or the free lift cylinder or chain roller are blocked, the cause of the blockage must be eliminated before resuming work.

- Notify your service centre

## Lifting

### Load chains not under tension

#### **⚠ DANGER**

##### **Danger caused by a falling load!**

- Make sure that the chain(s) does (do) not become slack when lowering the load.

Slack chains can, for instance, result from:

- Resting the fork carriage or the load on the racking.
- Fork carriage rollers blocking in the lift mast due to contamination.
- If the fork carriage or the load comes to an unexpected stop, lift the fork carriage until the chains are under tension again and lower the load at another suitable location.
- If the fork carriage rollers in the lift mast become blocked due to contamination, lift the fork carriage until the chains are under tension again. Remove the contamination before resuming work.

#### **⚠ WARNING**

Risk of injury!

- Observe the safety regulations for working on the lift mast, see the chapter entitled "Working at the front of the truck".

### Hydraulic blocking function

The hydraulic blocking function ensures that all the functions of the working hydraulics are disabled whenever the seat switch in the driver's seat is unloaded.

If the driver stands up from the driver's seat, the blocking function prevents the hydraulic functions that:

- Lift the load
- Lower the load
- Tilt the lift mast
- Additional functions

### Releasing the block on the hydraulics

Proceed as follows to release the block on the hydraulics:

- Sit down on the driver's seat.

All the relevant functions of the working hydraulics will be available again.

**NOTE**

*If it is not possible to release the block on the hydraulics when the load is raised because of a technical fault, the load must be lowered using the "emergency lowering" mechanism before any further action is taken. Do not operate the truck again until the fault has been rectified by the authorised service centre.*

**Lifting system operating devices**

The method of operating the lifting system depends on the operating devices included in the truck's equipment.

Possible equipment variants include:

- **Double mini-lever**
  - **Triple mini-lever**
  - **Quadruple mini-lever**
  - **Joystick 4Plus**
  - **Fingertip**
- The following information must be observed regardless of the equipment variant.

**⚠ DANGER**

**Reaching into or climbing between moving parts of the truck (e.g. lift mast, sideshifts, working equipment, load carrying devices etc.) can lead to serious injury or death and is therefore prohibited.**

- Observe the safety regulations for handling loads.
- Only operate the lifting system from the driver's seat.

## Lifting

## Controlling the lifting system using a double mini-lever

### **⚠ DANGER**

Reaching into or climbing between moving parts of the truck (e.g. lift mast, sideshifts, working equipment, load carrying devices etc.) can lead to serious injury or death and is therefore prohibited.

- Observe the safety regulations for handling loads.
- Operate the lifting system from the driver's seat only.

The lifting, lowering and tilting movements of the lift mast are controlled using the "lift mast" 360° lever (3). The adhesive label bearing the pictograms for the hydraulic functions (1) or (2) is affixed at the designated point (4).

- If the adhesive label becomes illegible or is missing, please contact your authorised service centre.
- Observe the pictograms on the adhesive labels (1) and (2).

The pictograms are arranged according to the direction of movement of the "lift mast" 360° lever (3).



### NOTE

The truck is configured at the factory in accordance with the adhesive label (1). The following steps for moving the fork carriage and lift mast are based on this configuration.

### Lifting/lowering the fork carriage

To lift the fork carriage:

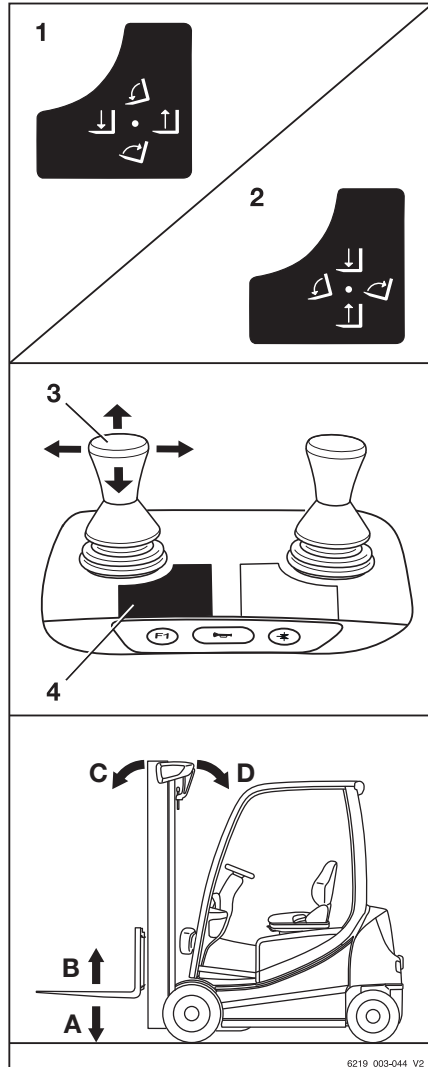
- Move the "lift mast" 360° lever (3) in the direction of the arrow (B).

To lower the fork carriage:

- Move the "lift mast" 360° lever (3) in the direction of the arrow (A).

### Tilting the lift mast

To tilt the lift mast forwards:







- Move the "lift mast" 360° lever (4) in the direction of the arrow (C).

To tilt the lift mast backwards:

- Move the "lift mast" 360° lever (4) in the direction of the arrow (D).

### **Movements of the lifting system and meanings of the pictograms**

- A  Lowering
- B  Lifting
- C  Tilting forwards
- D  Tilting backwards

## Lifting

## Controlling the lifting system using a triple mini-lever

### **⚠ DANGER**

Reaching into or climbing between moving parts of the truck (e.g. lift mast, sideshifts, working equipment, load carrying devices etc.) can lead to serious injury or death and is therefore prohibited.

- Observe the safety regulations for handling loads.
- Operate the lifting system from the driver's seat only.

The lifting, lowering and tilting movements of the lift mast are controlled using the "lift mast" 360° lever (3). The adhesive label bearing the pictograms for the hydraulic functions (1) or (2) is affixed at the designated point (4).

- If the adhesive label becomes illegible or is missing, please contact your authorised service centre.
- Observe the pictograms on the adhesive labels (1) and (2).

The pictograms are arranged according to the direction of movement of the "lift mast" 360° lever (3).



### NOTE

The truck is configured at the factory in accordance with the adhesive label (1). The following steps for moving the fork carriage and lift mast are based on this configuration.

### Lifting/lowering the fork carriage

To lift the fork carriage:

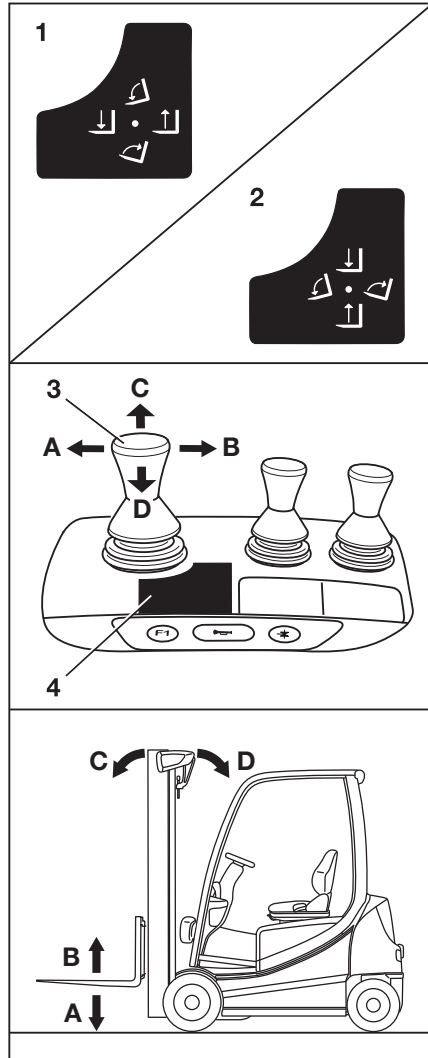
- Move the "lift mast" 360° lever (3) in the direction of the arrow (B).

To lower the fork carriage:

- Move the "lift mast" 360° lever (3) in the direction of the arrow (A).

### Tilting the lift mast

To tilt the lift mast forwards:







- Move the "lift mast" 360° lever (4) in the direction of the arrow (C).

To tilt the lift mast backwards:

- Move the "lift mast" 360° lever (4) in the direction of the arrow (D).

### **Movements of the lifting system and meanings of the pictograms**

- A  Lowering
- B  Lifting
- C  Tilting forwards
- D  Tilting backwards

## Lifting

## Controlling the lifting system using a ▸ quadruple mini-lever

### ⚠ DANGER

Reaching into or climbing between moving parts of the truck (e.g. lift mast, sideshifts, working equipment, load carrying devices etc.) can lead to serious injury or death and is therefore prohibited.

- Observe the safety regulations for handling loads.
- Operate the lifting system from the driver's seat only.

The lifting, lowering and tilting functions of the lift mast are controlled using the "lifting/lowering" operating lever (3) and the "lift mast" operating lever (4). The adhesive label bearing the pictograms for the hydraulic functions (1) is affixed at the designated point (6). The adhesive label (2) is attached at the designated point (5). The truck is configured at the factory in accordance with the adhesive label (1).

- Observe the pictograms on the adhesive labels (1) and (2).

The pictograms are arranged according to the direction of movement of the operating lever (3) or (4).

### Lifting/lowering the fork carriage

To lift the fork carriage:

- Move the "lifting/lowering" operating lever (3) in the direction of the arrow (D).

To lower the fork carriage:

- Move the "lifting/lowering" operating lever (3) in the direction of the arrow (C).

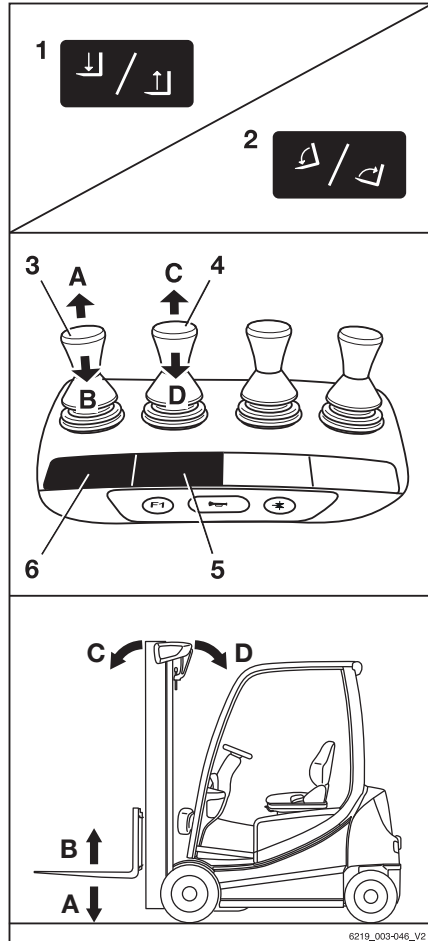
### Tilting the lift mast

To tilt the lift mast forwards:

- Move the "lift mast" operating lever (4) in the direction of the arrow (A).





To tilt the lift mast backwards:

- Move the "lift mast" operating lever (4) in the direction of the arrow (B).





### Movements of the lifting system and meanings of the pictograms

- A  Lowering
- B  Lifting
- C  Tilting forwards
- D  Tilting backwards

### Controlling the lifting system using the Joystick 4Plus

#### DANGER

Reaching into or climbing between moving parts of the truck (e.g. lift mast, sideshifts, working equipment, load carrying devices etc.) can lead to serious injury or death and is therefore prohibited.

- Observe the safety regulations for handling loads.
- Only operate the lifting system from the driver's seat.

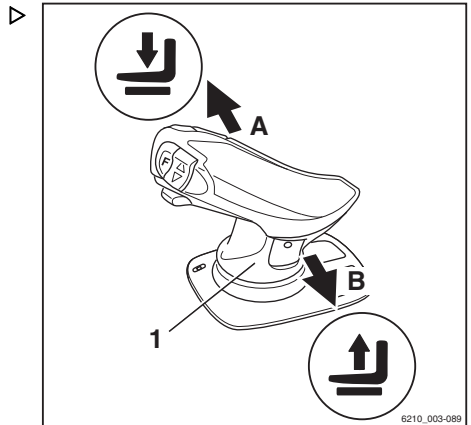
#### Lifting/lowering the fork carriage

To lift the fork carriage:

- Pull the Joystick 4Plus (1) backwards (B).

To lower the fork carriage:

- Push the Joystick 4Plus (1) forwards (A).



## Lifting

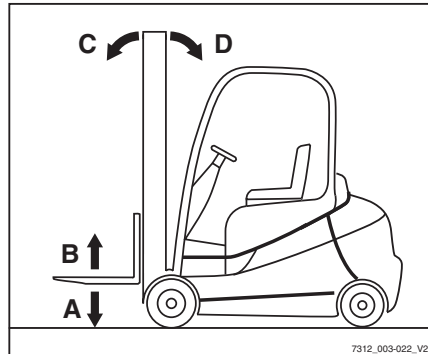
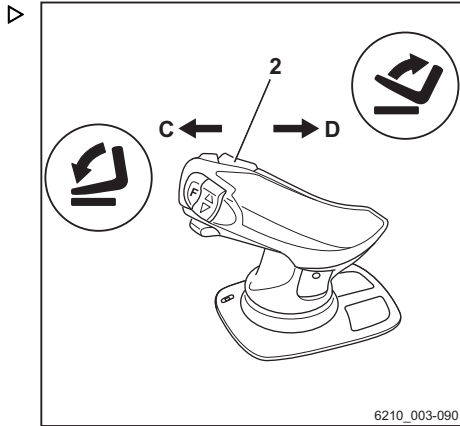
**Tilting the lift mast**

To tilt the lift mast forwards:

- Tilt the horizontal rocker button (2) to the left (C).

To tilt the lift mast backwards:

- Tilt the horizontal rocker button (2) to the right (D).



### Fork carriage sideshift

To move the fork carriage to the left:

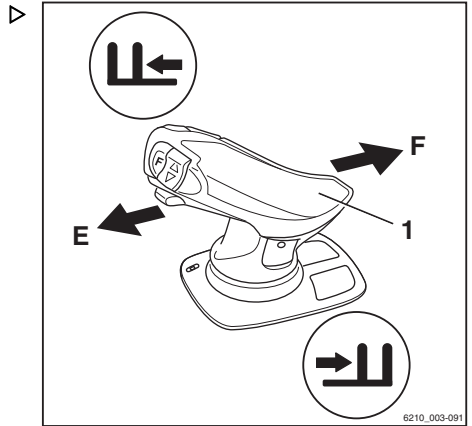
- Push the Joystick 4Plus (1) to the left (E).

To move the fork carriage to the right:

- Push the Joystick 4Plus (1) to the right (F).

 **NOTE**

*The symbols on the Joystick 4Plus indicate the direction of movement of the lift mast or fork carriage.*



## Lifting

## Controlling the lifting system using the Fingertip

### **▲ DANGER**

Reaching into or climbing between moving parts of the truck (e.g. lift mast, sideshifts, working equipment, load carrying devices etc.) can lead to serious injury or death and is therefore prohibited.

- Observe the safety regulations for handling loads.
- Operate the lifting system from the driver's seat only.

The lifting, lowering and tilting functions of the lift mast are controlled using the "lifting/lowering" operating lever (1) and the "tilting" operating lever (4). The adhesive labels bearing the pictograms for the hydraulic functions (2, 3) are affixed on the operating levers.

- Observe the pictograms on the adhesive labels (2) and (3).

The pictograms are arranged according to the direction of movement of the operating lever (1) or (2).

### Lifting/lowering the fork carriage

To lift the fork carriage:

- Move the "lifting/lowering" operating lever (1) in the direction of the arrow (A).

To lower the fork carriage:

- Move the "lifting/lowering" operating lever (1) in the direction of the arrow (B).

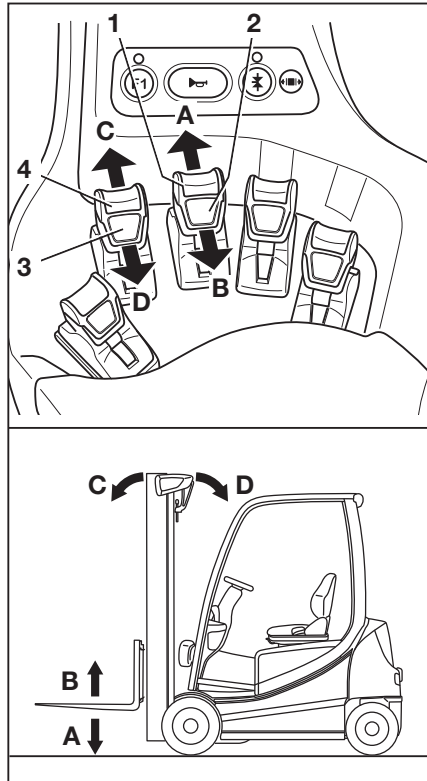
### Tilting the lift mast

To tilt the lift mast forwards:





- Move the "tilting" operating lever (2) in the direction of the arrow (C).

To tilt the lift mast backwards:

- Move the "tilting" operating lever (2) in the direction of the arrow (D).



## Movements of the lifting system and meanings of the pictograms

- A  Lowering
- B  Lifting
- C  Tilting forwards
- D  Tilting backwards

## Fork wear protection (variant)

The "fork wear protection" variant ensures that the fork arms do not touch the ground. The fork arms are protected against wear and the building floor is protected against damage.

The lift cylinders have in-built fixed stops to prevent the fork arms from hitting the ground. The lower stop makes inserting the forks into a pallet more comfortable.

### Mechanical version

Fixed stops in the lift cylinder prevent the fork arms from hitting the ground. No symbol appears in the display-operating unit.

This version cannot be adjusted.

### NOTE

*The mechanical fork wear protection must be continually adjusted as the wear on the front tyres increases. For help with this, call the authorised service centre.*

## Changing the fork arms

### DANGER

**Risk of fatal injury from being run over if the truck rolls away!**

- Do not park the truck on a gradient.
- Apply the parking brake.
- Change the fork arms in a separate, safe location on a level surface.

## Lifting

### WARNING

There is a risk of injury when changing the fork arms; the weight of the fork arms could cause them to fall on your legs, feet or knees. The space to the left and right of the fork is a danger area.

- Always wear protective gloves and safety footwear when changing the fork arms.
- Ensure that no one stands in the danger area!
- Do not pull on the fork arms.
- The fork arms must always be carried by two people; if necessary, use a hoist.



### NOTE

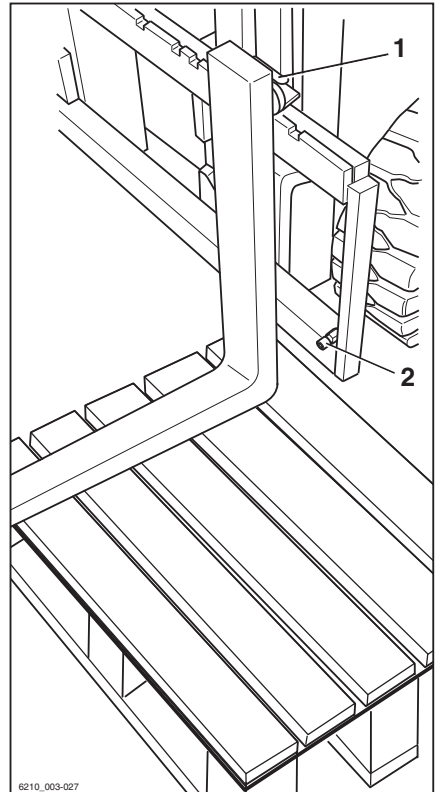
- *For installation and removal, a transport pallet is recommended for supporting the fork arms. The pallet size depends on the fork arm size used and should be dimensioned such that the fork arms do not protrude after being placed on the pallet. This means the fork arms can be safely placed down and transported.*
- *Both fork arms can be pushed over to the same side. It is possible to choose the side via which the forks are removed*

## Removal

- Select a pallet corresponding to the fork arm size.
- Set down the pallet next to the fork carriage on the side chosen for removal.
- Lift the fork carriage until the fork arms are approx. 3 cm above the pallet.
- Apply the parking brake.
- Remove the switch key.
- Unscrew the locking screw (2) on the side chosen for removal.
- Pull up the locking lever (1) and push the fork arms onto the pallet one after the other.

## Installation

- Make sure that the locking screw is unscrewed on the side chosen for installation.
- Place the fork arms on a pallet next to the fork carriage on the side chosen for installation.
- Pull up the locking lever (1) and push the fork arms onto the fork carriage one after the other.
- Place the fork arms in the required position and push down the locking lever. Ensure that the locking lever snaps into place.
- Screw in and tighten the locking screw (2).



## **⚠ DANGER**

**There is a risk of fatal injury from a falling load or fork!**

- Tighten the locking screw each time a fork is changed.
- Driving and moving loads without the locking screw is prohibited.

## Lifting



### NOTE

*If the truck is equipped with the "load measurement" comfort feature, a "zero adjustment of the load measurement" must always be performed after the fork arms have been changed. Otherwise, correct load measurement cannot be guaranteed.*

## Fork extension (variant)

### DANGER

**There is a risk of being run over if the truck rolls away and therefore a danger to life.**

- Do not park the truck on a slope.
- Apply the parking brake.
- Change the fork extension in a separate, safe location on a level surface.

### WARNING

There is a risk of crushing!

The weight of the fork extension can cause crushing or cuts on sharp edges or burrs.

- Always wear protective gloves and safety footwear.

### WARNING

There is a risk of tipping!

The weight and dimensions of the fork extension affect the stability of the truck. The permissible weights stated on the capacity rating plate must be reduced in proportion to the actual load distance.

The truck is equipped with a fork extension ex works, the capacity rating plate is already adjusted accordingly.

- Observe load capacity, see the "Before picking up a load" chapter.



### NOTE

*If the truck is equipped with the "load measurement" comfort feature, a "zero adjustment of the load measurement" must always be performed after the fork extensions have been changed. Otherwise, correct load measurement cannot be guaranteed.*



## Attachment

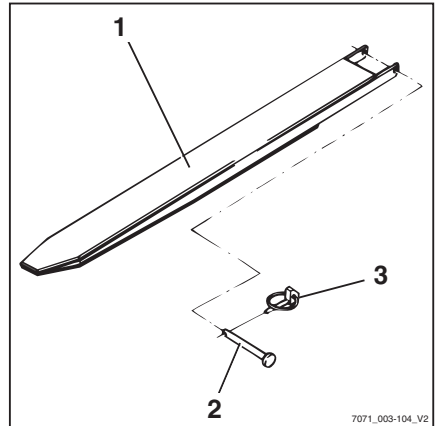
### **⚠ DANGER**

#### **Risk to life from falling load!**

At least 60% of the length of the fork extension must lie on the fork arm. A maximum 40% overhang over the fork arm end is permissible. The fork extension must also be secured against slipping from the fork arm.

If the fork extension (1) is not secured with a securing bolt (2) and linch pin (3), the load with the fork extension may fall.

- Push the fork extension completely to the back of the fork.
  - Make sure that 60% of the length of the fork extension is on the fork arm.
  - Always secure the fork extension with a securing bolt.
  - Always secure the securing bolt with a linch pin.
- 
- Remove the linch pin (3) from the securing bolt (2).
  - Remove the securing bolt from the fork extension (1).
  - Push the fork extension onto the fork arms until it is flush with the fork back.
  - Insert the securing bolts located behind the fork back fully into the fork extension.
  - Insert the linch pin into the securing bolt and secure.



## Removal

- Remove the linch pin (3) from the securing bolt (2).
- Remove the securing bolt from the fork extension (1).
- Pull the fork extension from the fork arms.
- Insert the securing bolt fully into the fork extension.
- Insert the linch pin into the securing bolt and secure.

## Lifting

## Operation with reversible fork arms (variant) ▷

### ⚠ DANGER

#### Risk to life from falling load!

Standard fork arms are not structurally designed for reverse operation. If this instruction is not observed, it can lead to material failure and the load falling.

- Only work in reverse operation using reversible fork arms (1)

### ⚠ WARNING

Risk of accident from slipping load!

Loads may slip on the reversible fork arms if there is no load support. A fork extension (variant) cannot be secured against slipping.

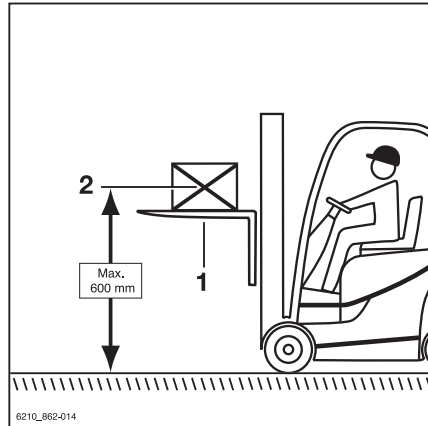
- Do not use a fork extension (variant)

### ⚠ WARNING

Risk of accident from the truck tipping over.

When driving, the centre of gravity of the load (2) must not be higher than 600 mm above the ground. The truck may tip forwards when driving or braking.

- Only drive with a load centre of gravity up to a max. of 600 mm above the ground

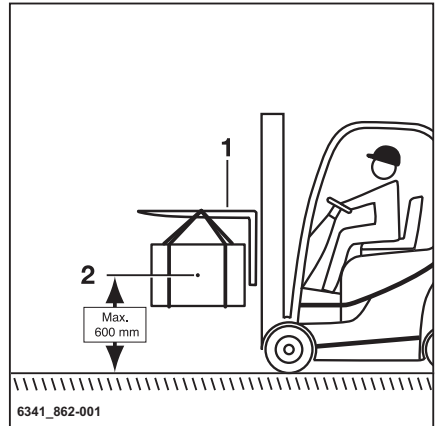


### **i** NOTE

*If the truck is equipped with the "load measurement" comfort feature, a "zero adjustment of the load measurement" must always be performed after the reversible fork arms have been changed. Otherwise, correct load measurement cannot be guaranteed.*

Reversible fork arms (1) can be used to reach an additional lift height. The reversible fork arms are installed on the fork carriage in the same manner as standard fork arms. Loads may be lifted on and beneath the reversible fork arms. The mast is lifted and tilted in the same manner.

- Only work in reverse operation using reversible fork arms
- Do not use a fork extension (variant)
- If the "load measurement" comfort feature is available, perform a "zero adjustment of the load measurement"
- To drive, raise the load centre of gravity (2) to a max. of 600 mm above the ground
- Observe the information in the section entitled "Transporting suspended loads"



## Handling loads

### Handling loads

#### Safety regulations when handling loads

The safety regulations for handling loads are shown in the following sections.

##### **⚠ DANGER**

**There is a risk to life caused by falling loads or if parts of the truck are being lowered.**

- Never walk or stand underneath suspended loads or raised fork arms.
- Never exceed the maximum load indicated on the capacity rating plate. Otherwise stability cannot be guaranteed!

##### **⚠ DANGER**

**Risk of accident from falling or crushing!**

- Do not step onto the forks.
- Do not lift people.
- Never grab or climb on moving parts of the truck.

##### **⚠ DANGER**

**Risk of accident from a falling load!**

- When transporting small items, attach a load safety guard (variant) to prevent the load from falling on the driver.
- Use a closed roof covering (variant) in addition.



## Before taking up load

### Load capacity

The load capacity indicated for the truck on the capacity rating plate may not be exceeded. The load capacity is influenced by the load centre of gravity and the lift height as well as by the tyres, if applicable.

The position of the capacity rating plate can be found in the chapter entitled "Identification points".

#### **⚠ WARNING**

The figures show examples.

Only the capacity rating plates on the truck are valid!

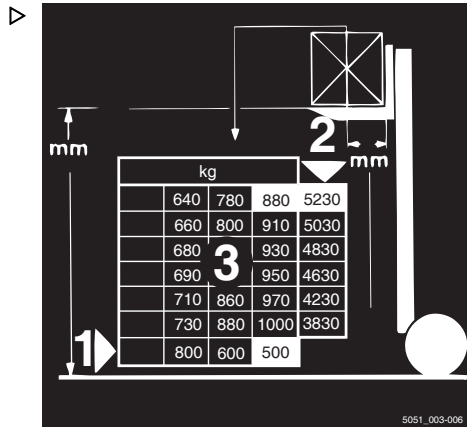
The attachment of additional weights to increase load capacity is prohibited.

#### **⚠ DANGER**

##### **Risk to life from the truck losing stability!**

Never exceed the maximum loads shown! These values apply to compact and homogenous loads. Otherwise, the stability as well as the rigidity of the fork arms and lift mast cannot be guaranteed.

Improper or incorrect operation or the placement of persons to increase load capacity is prohibited.



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## Handling loads

### Example

Weight of load to be lifted: 880 kg (3)

Load distance from fork back: 500 mm (1)

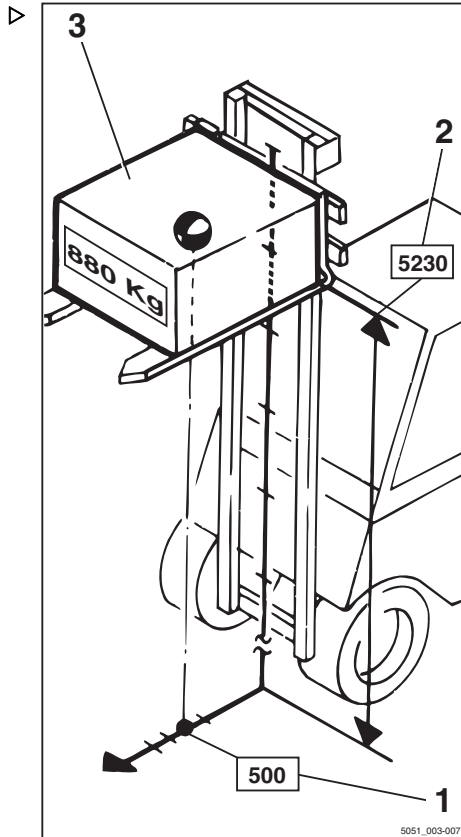
Permitted lift height: 5230 mm (2)

#### **⚠ WARNING**

Risk of accident from the truck losing stability!

The permissible load of the attachments (variant) and the reduced lifting capacity of the combination of truck and attachment must not be exceeded.

- Observe the special capacity rating plate information shown on the truck and the attachment.



## Load measurement (variant)

Knowing the weight of the load to be transported gives the driver greater security. If the truck is equipped with the "load measurement" assistance system, the weight of the lifted load is measured and displayed in the display-operating unit (1). The measuring accuracy is 5% of the rated capacity.

- Observe the following safety information.

### **⚠ DANGER**

#### **Risk of accident from a falling load!**

The load may fall if the load centre of gravity has not been taken into account or the load has not been picked up securely.

- Pick up the load securely; see the chapter entitled "Picking up loads".

### **⚠ WARNING**

Risk of accident as a result of exceeding the residual load capacity.

If the weight determined by a load measurement exceeds the permissible residual load capacity of the truck, the truck cannot be operated safely.

- Set down and reduce the load immediately.
- If necessary, use another truck with sufficient load-bearing capacity.

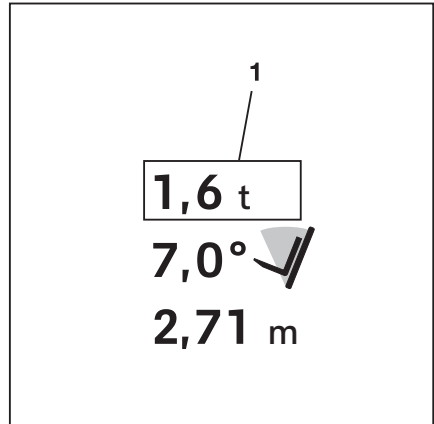
### **i NOTE**

*The load measurement must be calibrated in order to ensure accuracy at all times. The "access authorisation for the fleet manager" is required for the calibration. This access is required:*

- After changing the fork arms,
- After fitting or changing attachments
- If the displayed values are obviously incorrect

If  $- \dots t$  is displayed permanently, this means that the function is calibrated incorrectly (load < 0 kg).

- See the section entitled "Calibrating the load measurement".



## Handling loads

### Picking up loads

To make sure that the load is securely supported, it must be ensured that the fork arms are sufficiently far apart and are positioned as far as possible under the load.

If possible, the load should rest on the back of the fork.

The load must not protrude too far over the fork tips, nor should the fork tips protrude too far out from the load.

Loads are to be picked up and transported as close to the middle as possible.

#### **⚠ DANGER**

##### **Risk of accident from a falling load!**

When transporting small items, attach a load safety guard (variant) to prevent the load from falling on the driver.

A closed roof covering (variant) should also be used.

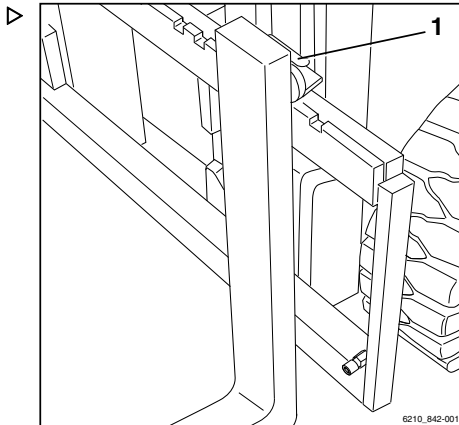
Removable roof panels may not be removed.

### Adjusting the fork

- Lift the locking lever (1) and move the fork arms to the desired position.
- Allow the locking lever to snap back into place.

The load centre of gravity must be midway between the fork arms.

- Only actuate the fork prong positioner (variant) when the fork is not carrying a load.



### Danger area

The danger area is the area in which people are at risk due to the movements of the truck, its working equipment, its load-carrying equipment (e.g. attachments) or the load. Also



included are the areas where loads could fall or working equipment could fall or be lowered.



### **⚠ DANGER**

#### **Risk of injury!**

- Do not step on the fork.



### **⚠ DANGER**

#### **Risk of injury!**

- Do not step under the raised forks.

### **⚠ DANGER**

#### **People may be injured in the danger area of the truck!**

The danger area of the truck must be completely clear of all personnel, except the driver in his normal operating position. If persons fail to leave the danger area despite warnings:

- Cease work with the truck immediately.
- Secure the truck against use by unauthorised parties.



### **⚠ DANGER**

#### **Danger of death from falling loads!**

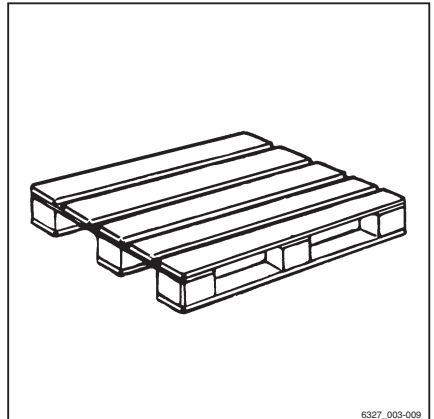
- Never walk or stand underneath suspended loads.

## Transporting pallets

As a rule, loads (e.g. pallets) must be transported individually. Transporting multiple loads at the same time is only permitted:

- when instructed by the supervisor and
- when the technical requirements have been met.

The driver must ensure proper condition of the load. Only safely and carefully positioned loads may be transported.



6327\_003-009

## Handling loads

### Transporting suspended loads

Before transporting suspended loads, consult the national regulatory authorities (in Germany, the employer's liability insurance associations).

National regulations may place restrictions on these operations. Contact the relevant authorities.

#### **⚠ DANGER**

**Suspended loads that begin to swing can result in the following risks:**

- Impaired braking and steering action
- Tipping over the load wheels or drive wheels
- Tipping the truck at right angles to the direction of travel
- Risk of crushing of guide persons
- Reduced visibility.

#### **⚠ DANGER**

##### **Loss of stability.**

Slipping or swinging suspended loads can lead to a loss of stability and cause the truck to tip over.

- When transporting suspended loads, observe the following instructions

##### **Instructions for transporting suspended loads:**

- Swinging loads must be prevented by using the proper driving speed and driving style (careful steering, braking)
- Hanging loads must be hooked on to the truck in such a way that the harness cannot shift or release unintentionally and cannot be damaged
- When transporting suspended loads, suitable devices (e.g. guy wires or supporting poles) must be available so that accompanying persons can guide suspended loads and prevent the loads from swinging
- Take particular care to ensure that there is no one in the drive direction in the driving lane
- If, despite this, the load begins to swing, ensure that no person is placed at risk



**⚠ DANGER****Risk of accidents!**

When transporting hanging loads, never perform or end driving and load movements abruptly.

Never drive on slopes with a suspended load.

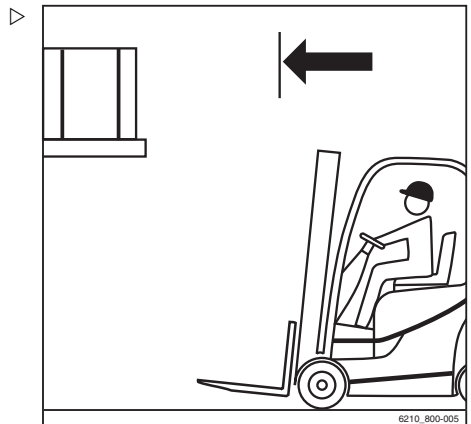
Transporting containers holding fluids as hanging loads is not permitted.

## Picking up a load

**⚠ DANGER**

**There is a risk to life caused by a falling load or if parts of the truck are being lowered.**

- Never walk or stand underneath suspended loads or raised fork arms.
- Never exceed the maximum load values specified on the capacity rating plate. Otherwise, stability cannot be guaranteed.
- Only store pallets that do not exceed the specified maximum size. Damaged loading equipment and incorrectly formed loads must not be stored.
- Attach or secure the load to the lifting accessory so that the load cannot move or fall.
- Store the load so that the specified aisle width is not reduced by protruding parts.
- Approach the rack carefully, brake gently and stop just in front of the rack.



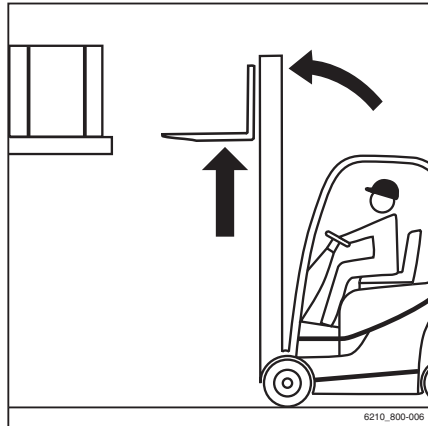
## Handling loads

- Position the forks.
- Set the lift mast to vertical.
- Lift the fork carriage to the stacking height.

### ⚠ CAUTION

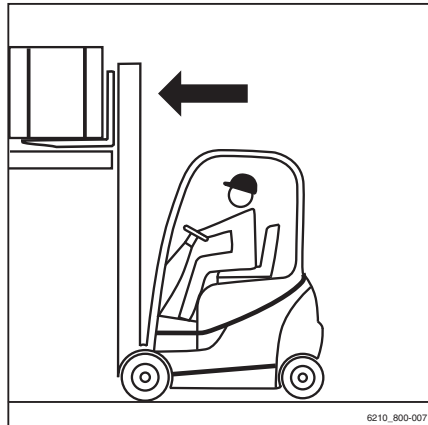
Risk of component damage!

Ensure that the rack and load do not become damaged when inserting the fork into the rack.



6210\_800-006

- Insert the fork as far under the load as possible. Stop the truck as soon as the fork back is resting on the load. The load centre of gravity must be midway between the fork arms.



6210\_800-007

- Lift the fork carriage until the load is resting entirely on the fork. ▷

**⚠ DANGER**

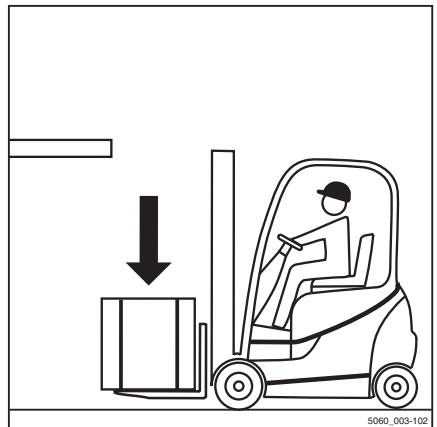
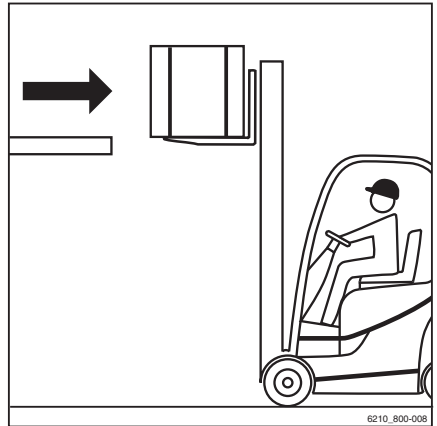
**Risk of accident!**

- Beware of any people in the danger area.
- Ensure that the roadway behind you is clear.

**⚠ DANGER**

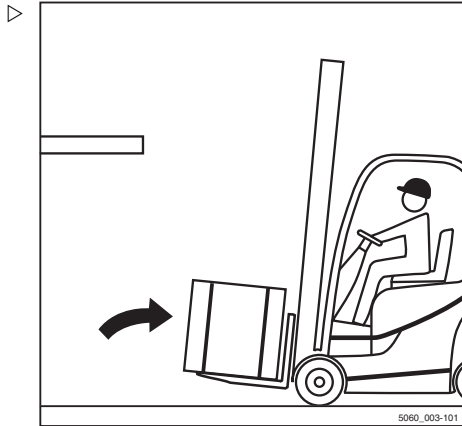
**Due to the risk of tipping, never tilt the lift mast with a raised load!**

- Lower the load before tilting the lift mast.
- Reverse carefully and slowly until the load is clear of the rack. Brake gently.
- Lower the load while maintaining ground clearance. ▷



## Handling loads

- Tilt the lift mast backwards.  
The load can be transported.



## Transporting loads

### NOTE

Observe the information in the chapter entitled "Safety regulations when driving".

### DANGER

**The higher a load is lifted, the less stable it becomes. The truck can tip over or the load can fall, increasing the risk of accident!**

Driving with a raised load and the lift mast tilted forward is not permitted.

- Only drive with the load lowered.
- Lower the load until ground clearance is reached (not over 300 mm).
- Only drive with the lift mast tilted backwards.



- Drive slowly and carefully round corners!

**i** NOTE

Observe the information in the chapter entitled "Steering".

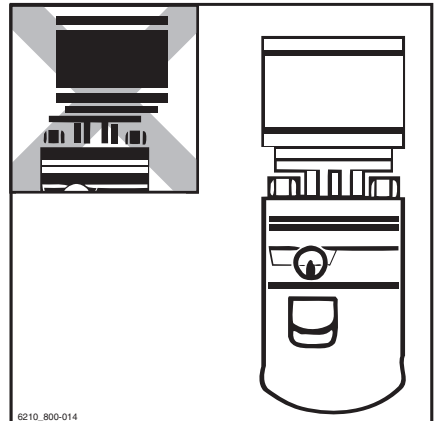
- Always accelerate and brake gently!

**i** NOTE

Observe the information in the chapter entitled "Operating the service brake".



- Never drive with a load protruding to the side (e.g. with the sideshift)!



## Setting down loads

**⚠ DANGER**

**Risk of accident due to changed moment of tilt!**

The load centre of gravity and the moment of tilt move due to tilting the lift mast forwards with a raised load or due to the load slipping. The truck may tip forwards.

- Only tilt the lift mast forwards with a raised lifting accessory when it is directly above the stack.
- When the lift mast is tilted forwards, take particular care to ensure that the truck does not tip forwards and that the load does not slip.

## Handling loads

### **⚠ WARNING**

Risk of accident from a falling load!

If the fork or the load remains suspended during lowering, the load may fall.

- When removing from stock, move the truck far enough back so that the load and the fork can be lowered freely.

- Drive up to the stack with the load lowered in accordance with regulations. ▷
- Set lift mast to vertical.
- Lift the load to the stacking height.
- Drive the truck towards the rack carefully.



- Lower the load until it rests securely on the rack. ▷

### **⚠ DANGER**

**Risk of accident!**

- Beware of any people in the danger area.
- Ensure that the roadway behind you is clear.

- Move the truck back until the fork arms can be lowered without touching the stack.
- Lower the fork while maintaining ground clearance.
- Tilt the lift mast backwards and drive away.





## Shake function (variant)

### NOTE

*The shake function is intended only for short-term use, as it reduces the service life of the load chains due to the increased loading on them.*

### Description

The shake function of the hydraulics makes it easier for the driver to perform tasks such as emptying containers of bulk material. The shake function moves the fork carriage quickly up and down via the "Lifting" function.

This function may only be used for a limited load and must not be used with a full nominal load.

### Maximum permissible load for the shake function:

- Maximum 30% of the nominal load. If an attachment is being used, its weight must be subtracted from this value.

### NOTE

*The weight of an attachment can be seen on its nameplate.*

### Operation

To activate the shake function:

- Move the corresponding operating device for the "Lifting" function over the zero position four times in quick succession.

The fork carriage moves as normal. The shake function is active after the fourth time the operating device is moved.

- Continue to move the operating device back and forth.

The fork carriage moves up and down more quickly and more jerkily.

The intensity of the shaking is controlled via the vigour with which the operating device is moved. The more vigorously and frequently the operating device is moved, the more intense the shaking is.

## Handling loads



### NOTE

*After the function has been activated, the driver has two seconds to start the shaking. If the two seconds elapse without the shake function being used, the shake function is deactivated again.*

### ⚠ WARNING

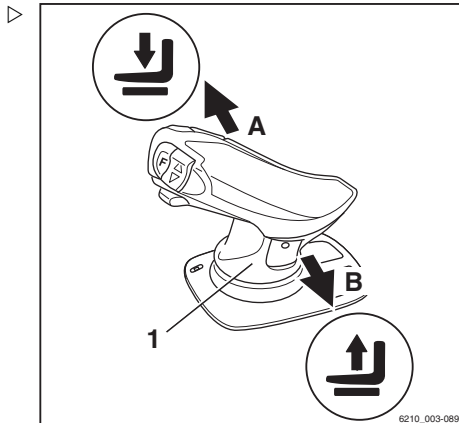
The shake function remains active for two seconds following activation.

If the driver simply wants to lift or lower the load during this time, note that the fork carriage may move significantly more jerkily with the load than in normal operation. If the two seconds elapse without the shake function being used, the fork carriage can be moved normally again with the load.

The following section shows how the shake function is activated via the standard assignment for "lifting/lowering" using the different variants of the operating devices. If the "lifting/lowering" function is assigned differently on the operating device, the shake function is activated via this other assignment.

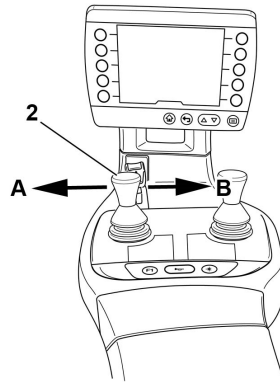
#### Joystick 4Plus:

- Move the Joystick 4Plus (1) back and forth between positions (A) and (B) four times. Then continue to move the component in the same way.

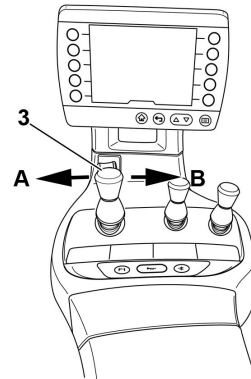


**Double mini-lever:**

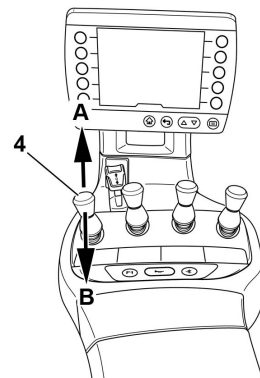
- Move the 360° lever (2) back and forth between positions (A) and (B) four times. Then continue to move the component in the same way.

**Triple mini-lever:**

- Move the 360° lever (3) back and forth between positions (A) and (B) four times. Then continue to move the component in the same way.

**Quadruple mini-lever:**

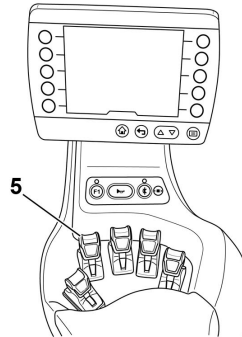
- Move the operating lever (4) back and forth between positions (A) and (B) four times. Then continue to move the component in the same way.



## Handling loads

### Fingertip:

- Move the operating lever (5) back and forth four times. Then continue to move the component in the same way.



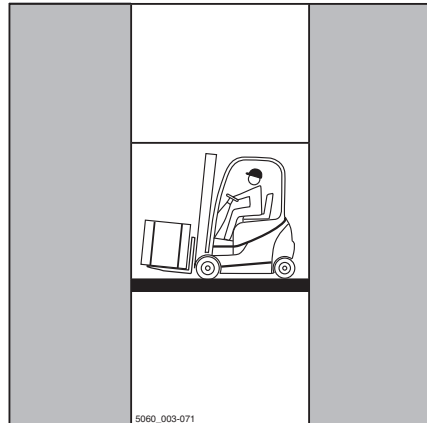
## Driving on lifts

The driver may only use this truck on lifts with a sufficient rated capacity and for which the operating company has been granted authorisation.

### **⚠ DANGER**

**There is a risk to life if you are crushed or run over by the truck.**

- There must be no personnel already in the lift when the truck is driven into the lift.
- Personnel are only permitted to enter the lift once the truck is secure, and must exit the lift before the truck is driven out.



5060\_003-071

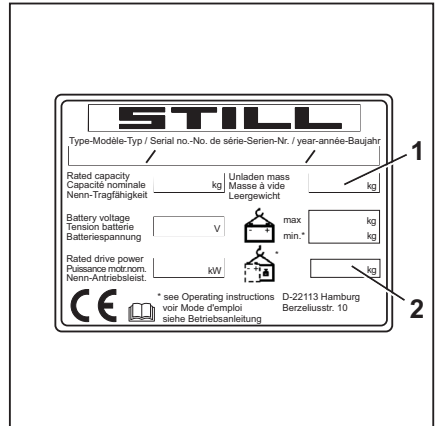
### Determining the actual total weight

- Park the truck securely.
- Determine the unit weights by reading the truck nameplate and, if necessary, the attachment (variant) nameplate and, if necessary, by weighing the load to be lifted.
- Add the determined unit weights to obtain the actual total weight of the truck:

Tare weight (1)

- + Ballast weight (variant) (2)
- + Attachment net weight (variant)
- + Weight of the load to be lifted
- + 100 kg allowance for driver
- = Actual total weight

- Drive the truck with the forks forwards into the lift without touching the shaft walls.
- Park the truck securely in the lift to prevent uncontrolled movements of the load or the truck.



### Driving on loading bridges

**⚠ DANGER**

#### Risk of accident if the truck crashes!

Steering movements can cause the tail end to veer off the loading bridge towards the edge. This may cause the truck to crash.

The lorry driver and the truck driver must agree on the lorry's departure time.

- Before driving across a loading bridge, ensure that it is properly attached and secured and has a sufficient load capacity (lorry, bridge etc.).
- Drive slowly and with care on the loading bridge.
- Ensure that the vehicle onto which you will be driving is secured to prevent it from shifting and that it can support the load of the truck.



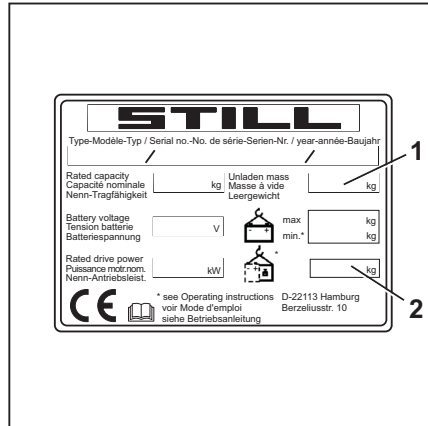
## Handling loads

### Determining the actual total weight

- Park the truck securely.
- Determine the unit weights by reading the truck nameplate and, if necessary, the attachment (variant) nameplate and, if necessary, by weighing the load to be lifted.
- Add the determined unit weights to obtain the actual total weight of the truck:

Tare weight (1)

- + Ballast weight (variant) (2)
- + Attachment net weight (variant)
- + Weight of the load to be lifted
- + 100 kg allowance for driver
- = Actual total weight



## Attachments

### Fitting attachments

If the truck is equipped with an integrated attachment (variant) at the factory, the specifications in the STILL operating instructions for integrated attachments must be observed.

If attachments are fitted at the place of use, the specifications in the operating instructions of the attachment manufacturer must be observed.

If an attachment is not delivered together with the forklift truck, the specifications and operating instructions of the attachment manufacturer must be observed.

Before initial commissioning, the function of the attachment and the visibility from the driver's position with and without a load must be checked by a competent person. If the visibility is deemed insufficient, visual aids such as mirrors, a camera/monitor system etc. must be used.

In addition, it is essential that the warnings below are observed.

#### CAUTION

Attachments must be CE-certified. If the truck is not fitted with an attachment-specific residual load capacity rating plate and the operating devices are not marked with corresponding pictograms, the truck must not be used.

- Order the residual load capacity rating plate and pictograms from your authorised service centre in good time.
- The authorised service centre must adapt the hydraulic system to the requirements of the attachment (e.g. by adjusting the pump motor speed).

## Attachments

### **⚠ DANGER**

#### **There is risk to life caused by a falling load!**

Attachments that hold the load by exerting pressure on it (e.g. clamps) must be controlled additionally by a second operating function (lock) that is actuated to prevent an unintentional release of the load.

If such an attachment is retrofitted, a second operating function for actuation must also be retrofitted.

- Make sure that the additional clamp locking mechanism function is available.

### **⚠ DANGER**

#### **There is risk to life caused by a falling load!**

During installation of a clamp with integral sideshift, ensure that the clamp does not open when the sideshift is actuated.

- Notify your authorised service centre before installation.
- Never grab or climb on moving parts of the truck.

## Hydraulic connection

- Before installing the attachment, release the pressure from the hydraulic system.

### **⚠ CAUTION**

Risk of damage to components!

Open connections of plug connectors can become dirty. The plug connectors can become stiff and dirt can enter the hydraulic system.

- Once the attachment has been disassembled, attach the protective caps to the plug connectors.

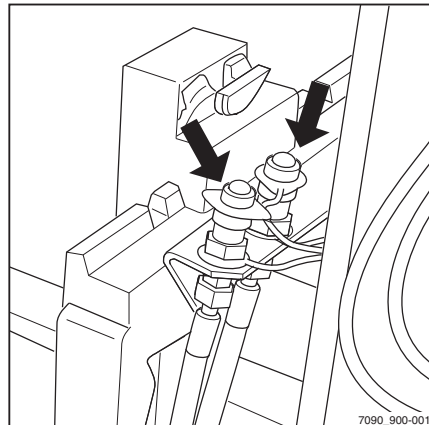
## Mounting attachments

Mounting an attachment and connecting the energy supply for an attachment must only be performed by competent persons in accordance with the information provided by the manufacturer and supplier of the attachment. After each installation, the attachment must be checked for correct function prior to initial commissioning.



### **NOTE**

Please observe the definition of the following responsible person: "competent person".





## Load capacity with attachment

The permissible load capacity of the attachment and the allowable load (load capacity and load moment) of the truck must not be exceeded by the combination of attachment and payload. The specifications of the manufacturer and supplier of the attachment must be complied with.

- Observe the residual load capacity rating plate, see the chapter entitled "Taking up a load using attachments".

## Depressurising the hydraulic system

### WARNING

The movements of the load lift system present a risk of crushing.

During the process described below, the fork carriage or the lift mast can only be moved slightly.

- Do not reach into or stand below the components of the load lift system.

### NOTE

*The internal combustion engine must be switched off in order to depressurise the system.*

- Insert the switch key into the key switch and turn it to the "I" position.

The valves are supplied with power and the hydraulic system is depressurised.

## Depressurising the hydraulic circuits for the basic functions

The basic functions include the first four hydraulic functions. The basic functions are controlled via the first two hydraulic circuits.

The basic functions are:

- Lifting the fork carriage
- Lowering the fork carriage
- Tilting the lift mast forwards
- Tilting the lift mast backwards

## Attachments

- Actuate the operating levers for controlling the hydraulic functions once in the directions of the arrows as far as the end positions.

The hydraulic circuits of the basic functions are now depressurised.

### Depressurising the hydraulic circuits for the "5th hydraulic function"

If the truck has a "5th hydraulic function", the hydraulic circuits of these functions must also be depressurised. The procedure is similar to the depressurisation of the hydraulic circuits for the basic functions. In addition, the hydraulic circuits are depressurised in the same way as the attachments are operated.

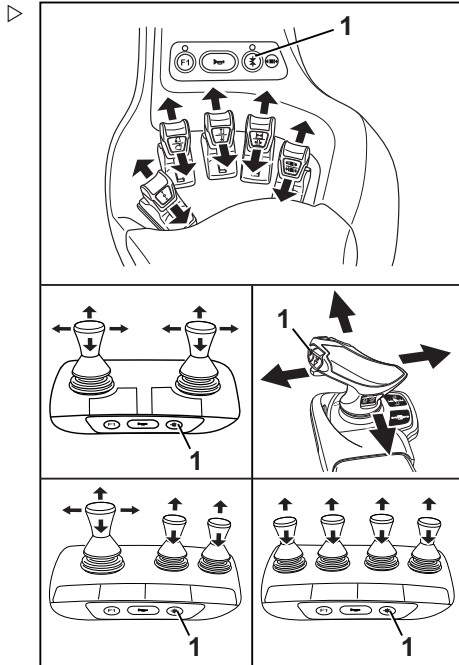
The hydraulic circuits for the "5th hydraulic functions" are actuated via the corresponding buttons on the operating devices.

- Function key for the "5th function" with mini-lever control and Fingertip operation
- Shift key "F" with Joystick 4Plus operation (hereinafter referred to as the "button")

- Press and hold the button (1) for the operating devices.
- Again, actuate the operating levers for controlling the hydraulic functions once in the directions of the arrows as far as the end positions.
- With Joystick 4Plus operation, also actuate the slider and the rocker buttons.

The hydraulic circuits for the "5th hydraulic function" are depressurised. The plug connectors on the lift mast are depressurised.

- Release the button (1).



## Special feature for clamping attachments




### NOTE

*If a clamping attachment is fitted, please observe the following:*

- *Depressurising the hydraulic circuit for clamping attachments is performed in the same way as opening and closing the clamp.*
- *Loosen the clamp locking mechanism; see the relevant sections related to the clamp locking mechanism.*
- *Push the operating device once in the "Open" direction.*
- *Push the operating device once in the "Close" direction.*

## Completing the depressurisation

- After the hydraulics have been depressurised, press the Softkey  to confirm.
- Switch off the truck.
- Install the attachment.
- Switch on the truck.

The function for depressurising the hydraulics is inactive. The truck is ready for operation.

- Check and ensure all functions of the installed attachment are working properly.

## Attachments

### General instructions for controlling attachments

The way in which attachments (variant) are controlled depends on the operating devices included in the truck's equipment.

Essentially, a distinction is drawn between:

- **Double mini-lever**
  - **Double mini-lever and 5th function** (variant)
  - **Triple mini-lever**
  - **Triple mini-lever with a 5th function** (variant)
  - **Quadruple mini-lever**
  - **Quadruple mini-lever with a 5th function** (variant)
  - **Joystick 4Plus**
  - **Joystick 4Plus with a 5th function** (variant)
  - **Fingertip**
  - **Fingertip with a 5th function** (variant)
- For information on controlling attachments with the respective operating devices, see the relevant sections in this chapter.

#### **WARNING**

Use of attachments can give rise to additional hazards such as a change in the centre of gravity, additional danger areas etc.

Attachments must only be deployed for their intended use as described in the relevant operating instructions. Drivers must be taught how to operate the attachments.

Loads may only be picked up and transported with attachments if the loads are securely grasped and attached. Where necessary, loads must also be secured against slipping, rolling away, falling over, swinging or tipping over. Note that any change to the position of the load centre of gravity will affect the stability of the truck.

- Refer to the capacity rating plate for the attachments being used.



#### **NOTE**

*Further variants and functions are available in addition to the functions described below. The directions of movement can be seen in the pictograms on the operating devices.*

**i NOTE**

All the attachments described fall into the category of equipment variants. Please see the respective operating instructions for an exact description of the respective movements/ actions of the attachment fitted.

With fleet manager access authorisation (variant), the fleet manager can adjust the speed of the auxiliary hydraulics for attachments.

- See also the section entitled "Adjusting the hydraulic speed for attachments" in this chapter.

### Attachment example for the connection of the auxiliary hydraulics

**i NOTE**

The authorised service centre will tell you which attachments can be used with this truck.

The connection of attachments to the auxiliary hydraulics is performed as per the diagram, as highlighted in the operating instructions for the attachment.

In the menu for the available hydraulic axes for attachments, the designation **Hydraulic axle** specifies the connection of the corresponding auxiliary hydraulics. See also the section entitled "Adjusting the hydraulic speed for attachments" in this chapter.

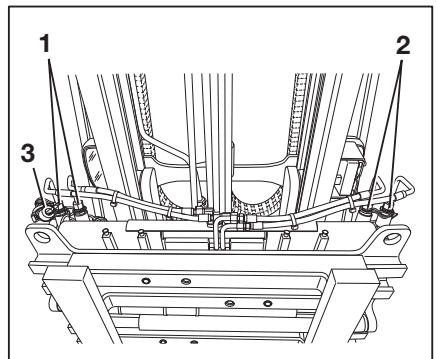
Attachment example for an attachment for adjustment of the fork arms ▷

- 1 Auxiliary hydraulics 1
- 2 Auxiliary hydraulics 2
- 3 Electrical connection for switch valve 1 (two switch valves are possible)

If an attachment is connected to the auxiliary hydraulics 1 (1) and this attachment requires another function, this is referred to as the function of the auxiliary hydraulics 3.

There is an electrical connection (3) for the switch valve that is required for this purpose.

The same applies to the auxiliary hydraulics 4, which is fed from the auxiliary hydraulics 2 (2) and is implemented by an additional



## Attachments

connection for a switch valve that is not shown here.



### NOTE

*If one switch valve is used, the auxiliary hydraulic functions 1 & 3 and 2 & 4 that are supplied by this switch valve cannot be operated simultaneously. The switch valve supplies either auxiliary hydraulics 1 & 3 or 2 & 4.*

## Adjusting the hydraulic speed for attachments



If different attachments are mounted, the fleet manager can adjust the hydraulic speed for attachments and thus the flow rate of hydraulic oil. Obtain the necessary values from the operating instructions for the attachment. The authorised service centre will help to make the correct adjustments.

The "Information on the auxiliary hydraulics" differs depending on the truck. Take this into consideration when selecting the attachment.



### NOTE

*The adjustment procedure requires access authorisation for the fleet manager. Access to the settings menu is only available if the truck is at a standstill and the parking brake is applied. If the parking brake is released prematurely, the settings menu will close.*

- Apply the parking brake.
- Press the  button.
- Press the "Settings" Softkey .
- Activate the "Access authorisation for the fleet manager".
- Push the "Auxiliary hydraulics" Softkey.

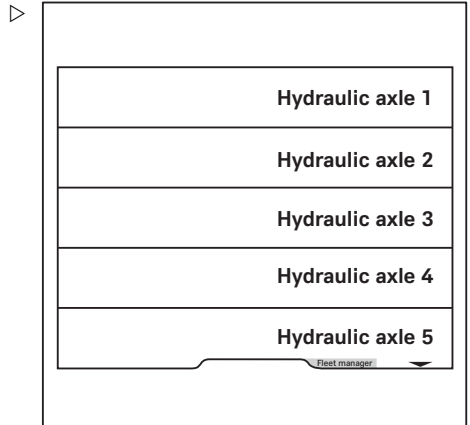
This menu lists all the available hydraulic axes for attachments.

- Refer to the operating instructions of the attachment to determine which hydraulic axle is occupied by the attachment.

The authorised service centre will help you determine the axles.

### Setting the revolution speed

- Push the softkey for the hydraulic axle to be configured.




This menu indicates the supply flow.

The return flow is shown in a lighter colour.

- The currently set speed of the hydraulic pump is given in rpm
- The currently set supply flow rate is given in L/min.

### NOTE

*The supply flow rate depends on the speed.*

The return flow automatically adjusts to the set supply flow. When the orange activation bar next to the "Synchronise auxiliary hydraulics" softkey  lights up, synchronisation takes place automatically. The return flow is shown only dimly on the display.

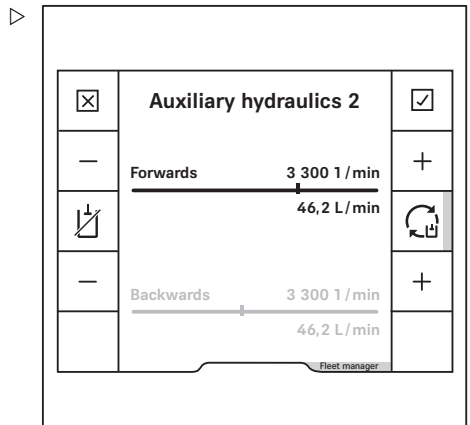
To adjust the speed, push the "Plus" + or "Minus" – softkey.

- To save the setting, press the "Confirm"  softkey.

The settings are saved.

- To cancel the setting, press the "Cancel"  softkey.


The settings return to the most recently set value.



## Attachments

### Locking the flow rate


You can also lock the hydraulic oil flow rate in full.

- To do this, push the "Deactivate auxiliary hydraulics" softkey .

The hydraulic oil flow rate for this hydraulic axle is locked.


### Setting the return flow rate separately

Depending on the attachment, the return flow rate may need to be set separately.


- To do this, push the "Synchronise auxiliary hydraulics" softkey .

The return flow is displayed in addition to the supply flow at full brightness. ▷

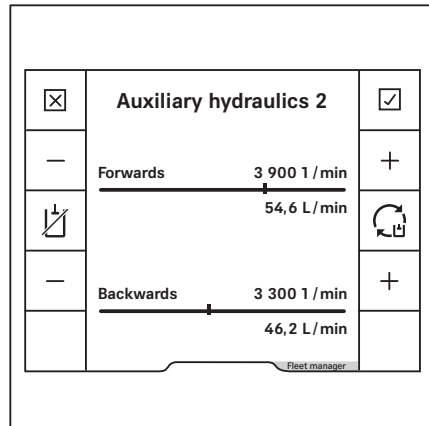
To adjust the speed, push the "Plus" + or "Minus" – softkey.

- To save the setting, press the "Confirm"  softkey.

The settings are saved.

- To cancel the setting, press the "Cancel"  softkey.

The settings return to the most recently set value.





### Controlling attachments using a double mini-lever

In this version, the attachments (variant) are controlled using the "attachments" cross lever (1). The adhesive label bearing the pictograms for the hydraulic functions (2) is affixed at the designated point.

- If the adhesive label becomes illegible or is missing, please contact your authorised service centre.
- Observe the pictograms for the attachment functions on the adhesive label (2).

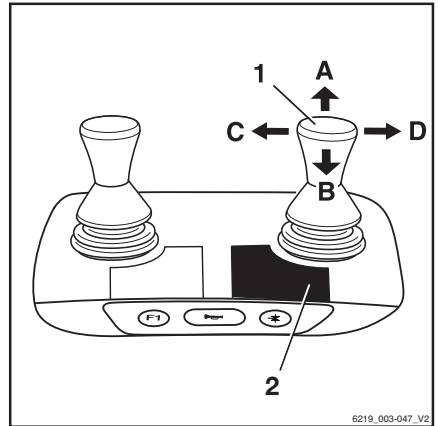
The pictograms on the "attachments" cross lever (1) show the respective functions that are activated by this lever.

The pictograms are arranged according to the direction of movement of the "attachments" cross lever (1).

The following applies:

- Move the "attachments" cross lever(1) in the direction of arrow (A), (B), (C) or (D).

The attachment moves accordingly in the directions (A), (B), (C) or (D) as shown in the pictogram.



Pictogram	Attachment function
	Move the side shift frame or fork forwards
	Move the side shift frame or fork backwards
	Move the sideshift to the left
	Move sideshift to the right
	Adjust fork arms: open
	Adjust fork arms: close
	Release load retainer
	Clamp load retainer
	Open clamps
	Close clamps
	Rotate to the left
	Rotate to the right
	Tip shovel over
	Tip shovel back

## Attachments

**NOTE**

The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.

**Clamp locking mechanism**

- To release the clamp locking mechanism, push the operating lever (2) forwards.

The clamp locking mechanism is released. The LED for the "clamp release" (1) lights up and remains lit while the clamp locking mechanism is released.

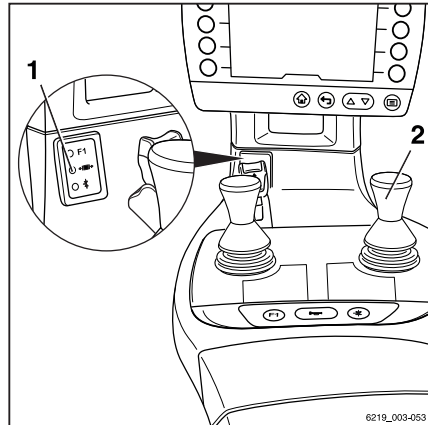
**NOTE**

The hydraulic function for opening the clamp is available for one second after the clamp locking mechanism is released. After one second, the clamp locking mechanism is automatically reactivated.

- To open the clamp, push the operating lever (2) forwards again.

It is not necessary to release the clamp locking mechanism in order to close the clamp.

- To close the clamp, pull the operating lever (2) backwards.



## Controlling attachments using the double mini-lever and the 5th function

### NOTE

For technical reasons, clamping attachments **must not** be controlled via the "5th function".

The function key for the "5th function" (3) and the cross lever (1) are used to control the "5th function".


The adhesive label bearing the pictograms for the hydraulic functions (2) is affixed at the designated point.

- If the adhesive label becomes illegible or is missing, please contact your authorised service centre.
- Observe the pictograms for the attachment functions on the adhesive label (2).

The pictograms on the "attachments" cross lever show the respective functions that are activated by this lever.

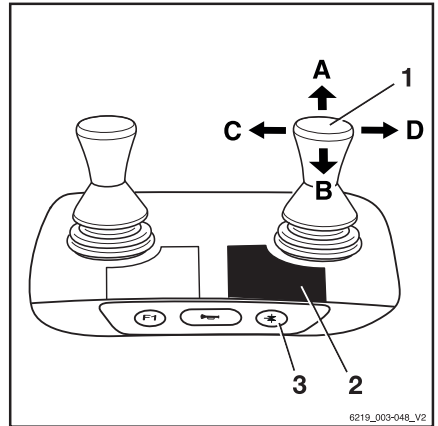
The following applies:

- Actuate the function key for the "5th function" (3).

The LED for the "5th function"  lights up.

- Move the "attachments" cross lever (1) in the direction of the arrow (A), (B), (C) or (D).

The attachment moves accordingly in the directions (A), (B), (C) or (D) as shown in the pictogram.

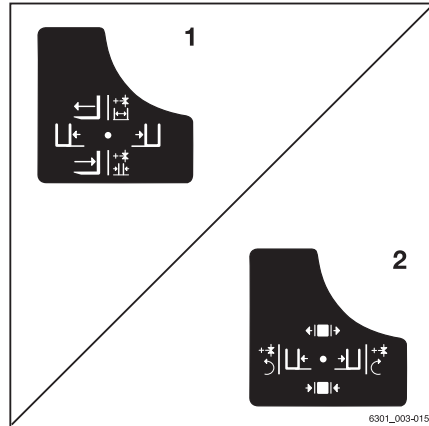


## Attachments

Example using the pictograms for configuration (1): ▷

If the "attachments" cross lever (1) is moved in the direction of the arrow (A), the fork is extended.

If the function key for the "5th function" (3) is actuated and the "attachments" cross lever (1) is moved in the direction of the arrow (A), the fork arms open.



Picto-gram	Attachment function
+*	Auxiliary hydraulics "5th function"
←	Move the side shift frame or fork forwards
→	Move the side shift frame or fork backwards
←	Move the sideshift to the left
→	Move sideshift to the right
↔	Adjust fork arms: open
↕	Adjust fork arms: close
↶	Rotate to the left
↷	Rotate to the right



### NOTE

*The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.*

### Controlling attachments using a triple mini-lever

In this version, the attachments (variant) are controlled using the operating levers (1, 2). The adhesive label bearing the pictograms for the hydraulic functions (3) for the operating lever (2) and the adhesive label (4) for the operating lever (1) are affixed at the designated points.

- If the adhesive labels become illegible or are missing, please contact your authorised service centre.
- Observe the pictograms for the attachment functions on the adhesive labels (3, 4).

The pictograms on the operating levers show the respective functions that are activated by these levers.

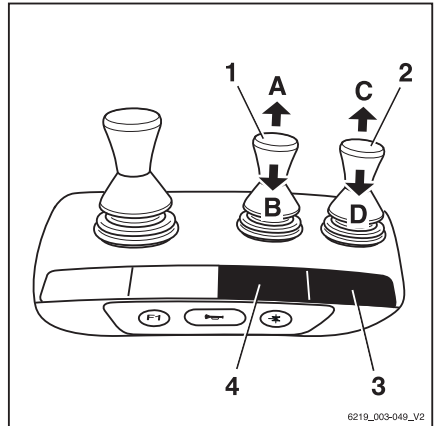
The following applies:

- Move the operating lever (1) in the direction of the arrow (A) or (B).

The attachment moves accordingly in the directions (A) or (B) as shown in the pictogram.



- Move the operating lever (2) in the direction of the arrow (C) or (D).

The attachment moves accordingly in the directions (C) or (D) as shown in the pictogram.



Pictogram	Attachment function
	Move the side shift frame or fork forwards
	Move the side shift frame or fork backwards
	Move the sideshift to the left
	Move sideshift to the right
	Adjust fork arms: open
	Adjust fork arms: close
	Release load retainer
	Clamp load retainer
	Open clamps
	Close clamps
	Rotate to the left
	Rotate to the right

## Attachments

Pictogram	Attachment function
	Tip shovel over
	Tip shovel back

**NOTE**

*The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.*

**Clamp locking mechanism**

- To release the clamp locking mechanism, push the operating lever (2) forwards.

The clamp locking mechanism is released. The LED for the "clamp release" (1) lights up and remains lit while the clamp locking mechanism is released.

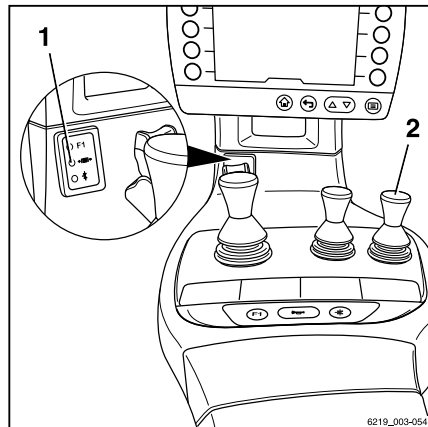
**NOTE**

*The hydraulic function for opening the clamp is available for one second after the clamp locking mechanism is released. After one second, the clamp locking mechanism is automatically reactivated.*

- To open the clamp, push the operating lever (2) forwards again.

It is not necessary to release the clamp locking mechanism in order to close the clamp.

- To close the clamp, pull the operating lever (2) backwards.



## Controlling attachments using the triple mini-lever and the 5th function

### NOTE

For technical reasons, clamping attachments **must not** be controlled via the "5th function".

The function key for the "5th function" (2) and the operating lever (1) are used to control the "5th function".

The adhesive label bearing the pictograms for the hydraulic functions (3) is affixed at the designated point.

- If the adhesive label becomes illegible or is missing, please contact your authorised service centre.
- Observe the pictograms for the attachment functions on the adhesive label (3).

The pictograms on the operating lever show the respective functions that are activated by this lever.

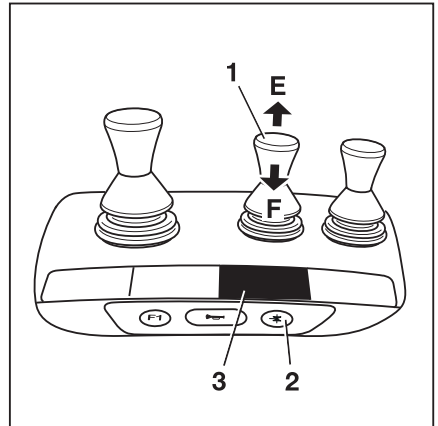
The following applies:

- Actuate the function key for the "5th function" (2).

The LED for the "5th function" \*\* lights up.

- Move the operating lever (1) in the direction (E) or (F).

The attachment moves accordingly in the directions (E) or (F) as shown in the pictogram.









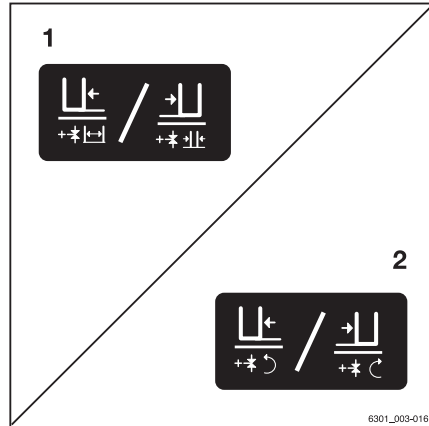
## Attachments

Example using the pictograms for configuration (1): ▷

If the operating lever (1) is moved in the direction of the arrow (E), the sideshift moves to the left.

If the function key for the "5th function" (2) is actuated and the operating lever (1) is moved in the direction of the arrow (E), the fork arms open.

Picto-gram	Attachment function
+*	Auxiliary hydraulics "5th function"
	Move the sideshift to the left
	Move sideshift to the right
	Adjust fork arms: open
	Adjust fork arms: close
	Rotate to the left
	Rotate to the right



### NOTE

*The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.*



### Controlling attachments using a quadruple mini-lever

In this version, the attachments (variant) are controlled using the operating levers (1, 2). The adhesive label bearing the pictograms for the hydraulic functions (3) for the operating lever (2) and the adhesive label (4) for the operating lever (1) are affixed at the designated points.

- If the adhesive labels become illegible or are missing, please contact your authorised service centre.
- Observe the pictograms for the attachment functions on the adhesive labels (3, 4).

The pictograms on the operating levers show the respective functions that are activated by these levers.

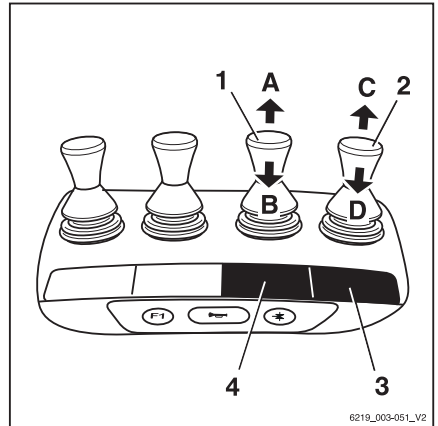
The following applies:

- Move the operating lever (1) in the direction of the arrow (A) or (B).

The attachment moves accordingly in the directions (A) or (B) as shown in the pictogram.



- Move the operating lever (2) in the direction of the arrow (C) or (D).

The attachment moves accordingly in the directions (C) or (D) as shown in the pictogram.



Pictogram	Attachment function
	Move the side shift frame or fork forwards
	Move the side shift frame or fork backwards
	Move the sideshift to the left
	Move sideshift to the right
	Adjust fork arms: open
	Adjust fork arms: close
	Release load retainer
	Clamp load retainer
	Open clamps
	Close clamps
	Rotate to the left
	Rotate to the right

## Attachments

Pictogram	Attachment function
	Tip shovel over
	Tip shovel back

**NOTE**

*The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.*

**Clamp locking mechanism**

- To release the clamp locking mechanism, push the operating lever (2) forwards.

The clamp locking mechanism is released. The LED for the "clamp release" (1) lights up and remains lit while the clamp locking mechanism is released.

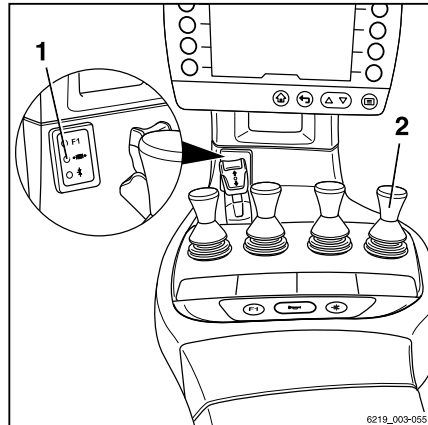
**NOTE**

*The hydraulic function for opening the clamp is available for one second after the clamp locking mechanism is released. After one second, the clamp locking mechanism is automatically reactivated.*

- To open the clamp, push the operating lever (2) forwards again.

It is not necessary to release the clamp locking mechanism in order to close the clamp.

- To close the clamp, pull the operating lever (2) backwards.



### Controlling attachments using the quadruple mini-lever and the 5th function

**i NOTE**

For technical reasons, clamping attachments **must not** be controlled via the "5th function".

The function key for the "5th function" (2) and the operating lever (1) are used to control the "5th function".

The adhesive label bearing the pictograms for the hydraulic functions (3) is affixed at the designated point.

- If the adhesive label becomes illegible or is missing, please contact your authorised service centre.
- Observe the pictograms for the attachment functions on the adhesive label (3).

This essentially involves the following:

- Actuate the function key for the "5th function" (2).

The LED for the "5th function"  $\rightarrow*$  lights up.

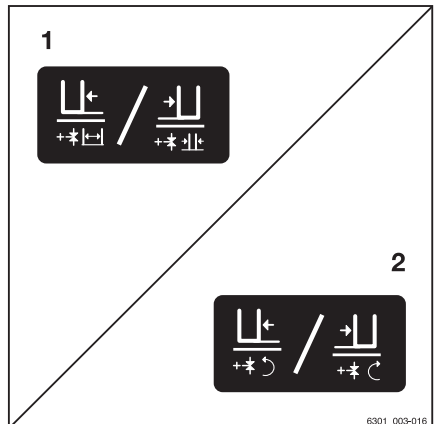
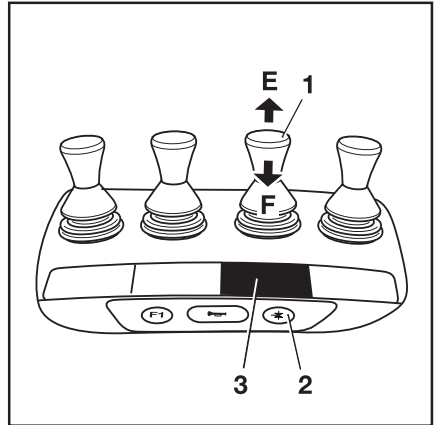
- Move the operating lever (1) in the direction (E) or (F).

The attachment moves accordingly in the directions (E) or (F) as shown in the pictogram.

Example using the pictograms for configuration (1):




If the operating lever (1) is moved in the direction of the arrow (E), the sideshift moves to the left.

If the function key for the "5th function" (2) is actuated and the operating lever (1) is moved in the direction of the arrow (E), the fork arms open.



Pictogram	Attachment function
$\rightarrow*$	Auxiliary hydraulics "5th function"
	Move the sideshift to the left
	Move sideshift to the right
	Adjust fork arms: open

## Attachments

Pictogram	Attachment function
	Adjust fork arms: close
	Rotate to the left
	Rotate to the right

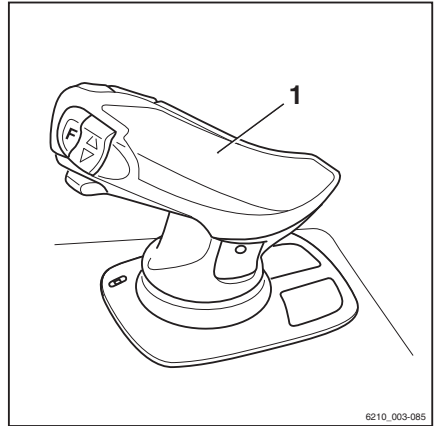
**NOTE**

*The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.*

### Controlling attachments using the Joystick 4Plus

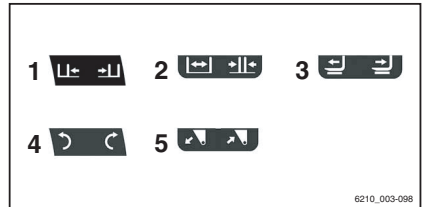
In this equipment, the attachments (variant) are controlled using the Joystick 4Plus (1).

The pictograms on the decal information regarding operation of the Joystick 4Plus show the respective functions that are activated by the individual operating devices of the Joystick 4Plus.



6210\_003-085

- Observe the following attachment functions and pictograms.



6210\_003-098

	Operating device	Function of the attachment
1	Joystick 4Plus	Move sideshift to the left/right
2	Joystick 4Plus or slider	Adjust fork arms: open/close
3	Slider	Move side shift frame or fork carriage forwards/backwards
4	Joystick 4Plus or slider	Rotate attachment left/right
5	Slider	Tip shovel over/tip shovel back

 **NOTE**

*The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.*

## Attachments

## Controlling attachments with Joystick 4Plus and the 5th function

### NOTE

For technical reasons, clamping attachments **must not** be controlled via the 5th function.

### NOTE

The 5th hydraulic function can be used to control an attachment. The pictograms on the Joystick 4Plus show which attachment functions can be controlled using the 5th function.

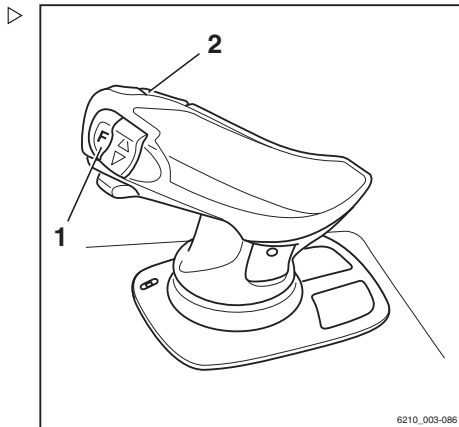
For attachments that are controlled using the 5th hydraulic function, the procedures for operation are as follows:

- Press and hold shift key "F" (1) on the Joystick 4Plus.
- Simultaneously actuate the horizontal rocker button (2) in the direction shown in the pictogram.

The attachment moves in the selected direction.

### NOTE

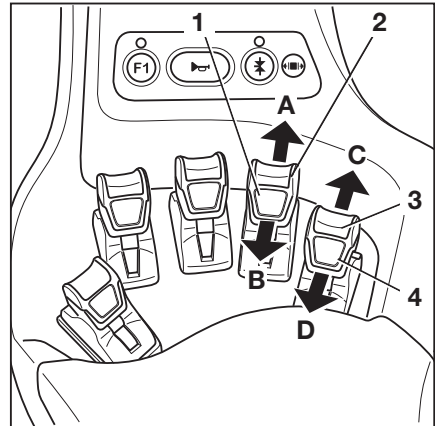
The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.



### Controlling attachments using the Fingertip

In this version, the attachments (variant) are controlled using the operating levers (1) and (2). The adhesive label bearing the pictograms for the hydraulic functions (3) for the operating lever (2) and the adhesive label (4) for the operating lever (1) are affixed at the designated points.

- If the adhesive labels become illegible or are missing, please contact your authorised service centre.
- Observe the pictograms for the attachment functions on the adhesive labels (3, 4).



The pictograms on the operating levers show the respective functions that are activated by these levers.

The following applies:

- Move the operating lever (1) in the direction of the arrow (A) or (B).



The attachment moves accordingly in the directions (A) or (B) as shown in the pictogram.

- Move the operating lever (2) in the direction of the arrow (C) or (D).

The attachment moves accordingly in the directions (C) or (D) as shown in the pictogram.

Pictogram	Attachment function
	Move the side shift frame or fork forwards
	Move the side shift frame or fork backwards
	Move the sideshift to the left
	Move sideshift to the right
	Adjust fork arms: open
	Adjust fork arms: close
	Release load retainer
	Clamp load retainer
	Open clamps
	Close clamps
	Rotate to the left
	Rotate to the right

## Attachments

Pictogram	Attachment function
	Tip shovel over
	Tip shovel back

**NOTE**

The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.

**Clamp locking mechanism**

- To release the clamp locking mechanism, push the operating lever (2) forwards.

The clamp locking mechanism is released. The LED for the "clamp release" (1) lights up and remains lit while the clamp locking mechanism is released.

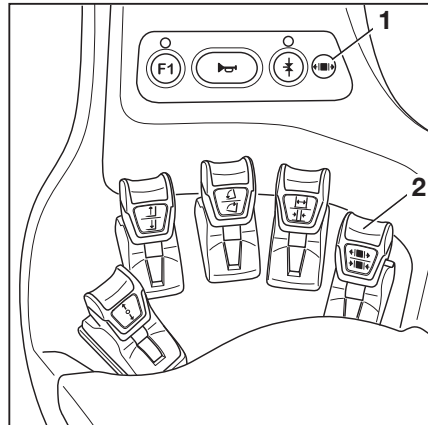
**NOTE**

The hydraulic function for opening the clamp is available for one second after the clamp locking mechanism is released. After one second, the clamp locking mechanism is automatically reactivated.

- To open the clamp, push the operating lever (2) forwards again.

It is not necessary to release the clamp locking mechanism in order to close the clamp.

- To close the clamp, pull the operating lever (2) backwards.





### Controlling attachments using the Fingertip and the 5th function

**i** NOTE

For technical reasons, clamping attachments **must not** be controlled via the 5th function.

The function key for the "5th function" (2) and the operating levers (1, 6) are used to control the "5th function".

The pictograms (1, 5) behind the operating levers show the functions that are activated by the respective levers.

- If the adhesive labels become illegible or are missing, please contact your authorised service centre.

The following applies:

- Actuate the function key for the "5th function" (2).

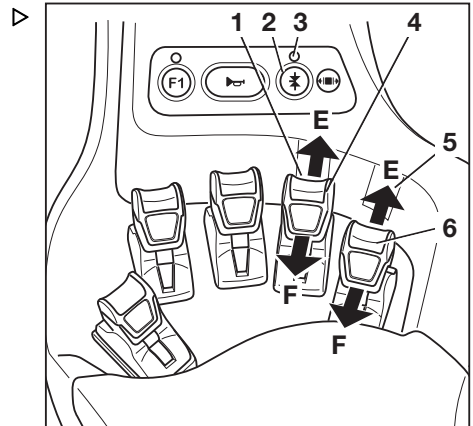
The LED for the "5th function" +\* (3) lights up.

- Move the operating lever (4) or (6) in the direction of the arrow (E) or (F).

The attachment moves accordingly in the directions (E) or (F) as shown in the pictogram.

**i** NOTE

The place where the adhesive label bearing the pictograms (1) or (5) is affixed shows which operating lever is intended to operate the "5th function". The pictograms show the functions that are activated by switching with the function key (2).



Pictogram	Attachment function
+*	Auxiliary hydraulics "5th function"
⏪	Move the sideshift to the left
⏩	Move sideshift to the right
⏪⏩	Adjust fork arms: open
⏩⏪	Adjust fork arms: close
↶	Rotate to the left
↷	Rotate to the right

## Attachments



### NOTE

*The pictograms are affixed according to the attachment fitted at the factory. If an attachment with different functions is fitted, the authorised service centre must check that the pictograms bear the correct representation and must change them if necessary.*

## Clamp locking mechanism (variant)

This truck can be fitted with a clamp locking mechanism for clamping attachments. This prevents the clamp from opening unintentionally if the operating function is inadvertently triggered.

### DANGER

**If the correct function of the clamp locking mechanism is not guaranteed, there is a risk to life from a falling load!**

If other attachments are used on this truck in addition to the clamp, make sure that the function of the clamp locking mechanism is reassigned to the corresponding operating device every time the clamp is refitted. See the section entitled "Fitting attachments".

- Make sure that the additional clamp locking mechanism function is available.



### NOTE

*For technical reasons, clamping attachments must not be controlled via the "5th function".*

### Double mini-lever

- To release the clamp locking mechanism, push the operating lever (2) forwards.

The clamp locking mechanism is released. The LED for the "clamp release" (1) lights up and remains lit while the clamp locking mechanism is released.

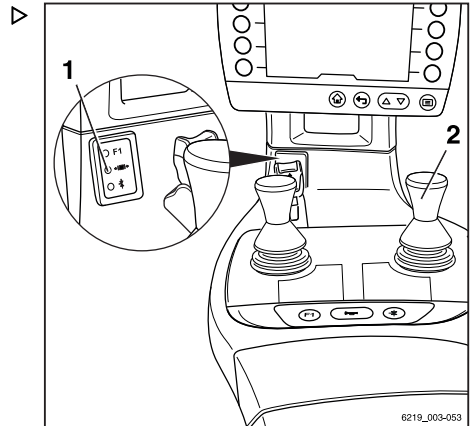
#### NOTE

*The hydraulic function for opening the clamp is available for one second after the clamp locking mechanism is released. After one second, the clamp locking mechanism is automatically reactivated.*

- To open the clamp, push the operating lever (2) forwards again.

It is not necessary to release the clamp locking mechanism in order to close the clamp.

- To close the clamp, pull the operating lever (2) backwards.



### Triple mini-lever

- To release the clamp locking mechanism, push the operating lever (2) forwards.

The clamp locking mechanism is released. The LED for the "clamp release" (1) lights up and remains lit while the clamp locking mechanism is released.

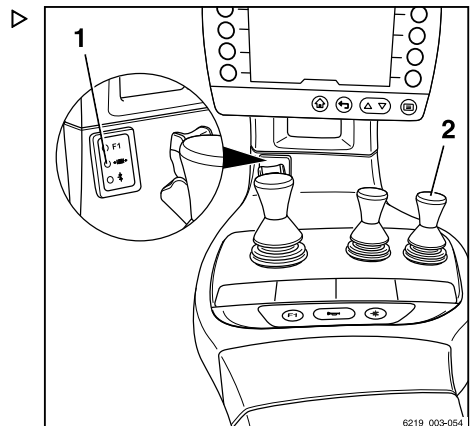
#### NOTE

*The hydraulic function for opening the clamp is available for one second after the clamp locking mechanism is released. After one second, the clamp locking mechanism is automatically reactivated.*

- To open the clamp, push the operating lever (2) forwards again.

It is not necessary to release the clamp locking mechanism in order to close the clamp.

- To close the clamp, pull the operating lever (2) backwards.



## Attachments

**Quadruple mini-lever**

- To release the clamp locking mechanism, push the operating lever (2) forwards.

The clamp locking mechanism is released. The LED for the "clamp release" (1) lights up and remains lit while the clamp locking mechanism is released.

**NOTE**

*The hydraulic function for opening the clamp is available for one second after the clamp locking mechanism is released. After one second, the clamp locking mechanism is automatically reactivated.*

- To open the clamp, push the operating lever (2) forwards again.

It is not necessary to release the clamp locking mechanism in order to close the clamp.

- To close the clamp, pull the operating lever (2) backwards.

**Fingertip**

- To release the clamp locking mechanism, push the operating lever (2) forwards.

The clamp locking mechanism is released. The LED for the "clamp release" (1) lights up and remains lit while the clamp locking mechanism is released.

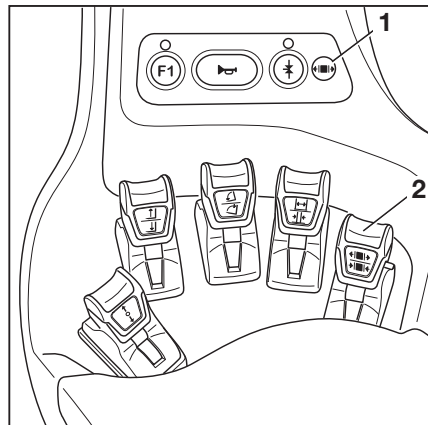
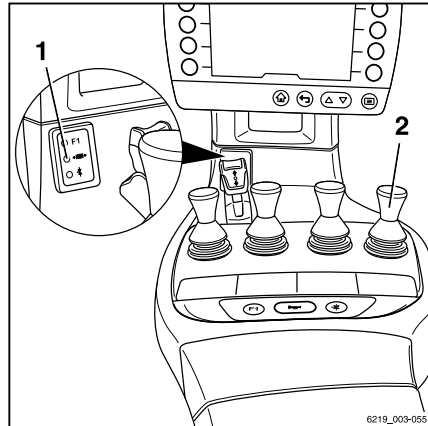
**NOTE**

*The hydraulic function for opening the clamp is available for one second after the clamp locking mechanism is released. After one second, the clamp locking mechanism is automatically reactivated.*

- To open the clamp, push the operating lever (2) forwards again.

It is not necessary to release the clamp locking mechanism in order to close the clamp.

- To close the clamp, pull the operating lever (2) backwards.



### Joystick 4Plus

- To release the clamp locking mechanism, push the slider (1) to the left.

The clamp locking mechanism is released. The LED for the "clamp release" (2) lights up and remains lit while the clamp locking mechanism is released.

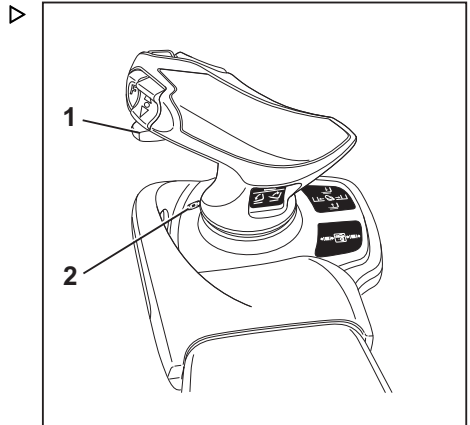
- To open the clamp, push the slider (1) to the left again.

**i** NOTE

*The hydraulic function for opening the clamp is available for one second after the clamp locking mechanism is released. After one second, the clamp locking mechanism is automatically reactivated.*

It is not necessary to release the clamp locking mechanism in order to close the clamp.

- To close the clamp, push the slider (1) to the right again.



### Taking up a load using attachments

**⚠ WARNING**

Risk of accidents!

Attachments may only be used for their intended purpose as described in the relevant operating instructions.

Drivers must be instructed in the handling of the attachments.

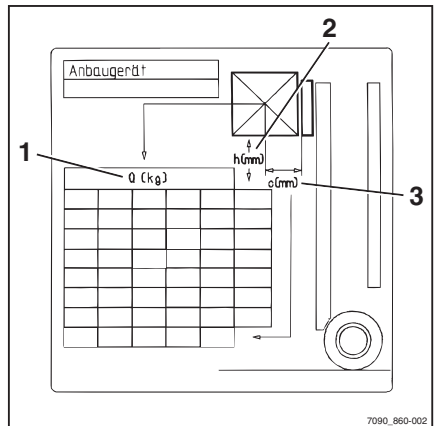
**⚠ WARNING**

Risk of accidents!

Loads may only be picked up and transported with attachments if they are securely attached. Where necessary, loads should also be secured against slipping, rolling, falling over, swinging or tipping over. Note that any change to the position of the load's centre of gravity will affect the stability of the forklift truck.

Check the capacity rating plates for the attachments or combination of attachments.

- The rating plates show the permissible values for:



## Attachments

- Load capacity Q (kg) (1)
- Lift height h (mm) (2)
- Load distance C (mm) (3)


## Auxiliary equipment

### Actuating the windscreen wipers and windscreen washers (variant)

Pressing the softkey switches between the operating stages in the sequence shown below.

Press softkey	Operating stage
	Off
1st time	On
2nd time	Interval
3rd time	Off
Hold (possible in all operating stages)	Washer

#### Front windscreen wiper and washer

- To activate the "On" operating stage, press the softkey  (1).

The "On" operating stage is activated. The symbol (3) appears

- To activate the "Intermittent mode" operating stage, press the softkey again.

The symbol (2) is shown with an orange background.

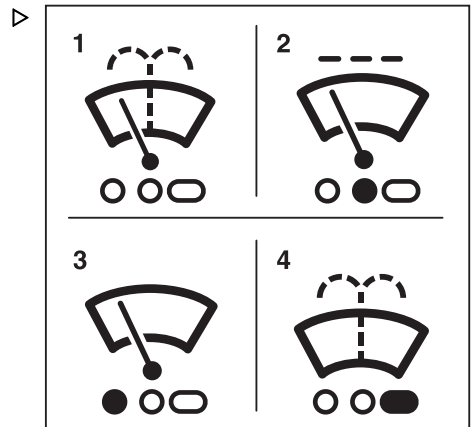
- To activate the "Washer" operating stage, press and hold the softkey.

The "Washer" operating stage is activated. The symbol (4) is displayed for as long as the softkey is pressed.

- Once the window is clean, release the softkey.


The previous operating stage is reactivated.

- To switch this operating stage off, press the softkey repeatedly until the symbol (1) appears again on the display. The activation bar next to the symbol goes out.



## Auxiliary equipment

### Rear window wiper and washer

- To activate the "On" operating stage, press the corresponding softkey  (5).

The "On" operating stage is activated. The symbol (7) appears

- To activate the "Intermittent mode" operating stage, press the softkey again.

The symbol (6) is shown with an orange background.

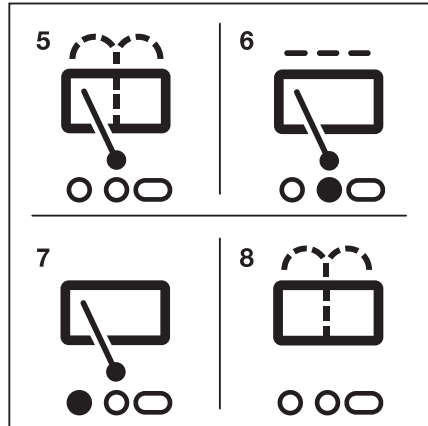
- To activate the "Washer" operating stage, press and hold the softkey.

The "Washer" operating stage is activated. The symbol (8) is displayed for as long as the softkey is pressed.


- Once the window is clean, release the softkey.

The previous operating stage is reactivated.

- To switch this operating stage off, press the softkey repeatedly until the symbol (1) appears again on the display.



### Roof panel wiper and washer

- To activate the "On" operating stage, press the corresponding softkey  (9).

The "On" operating stage is activated. The symbol (11) appears

- To activate the "Intermittent mode" operating stage, press the softkey again.

The symbol (10) is shown with an orange background.

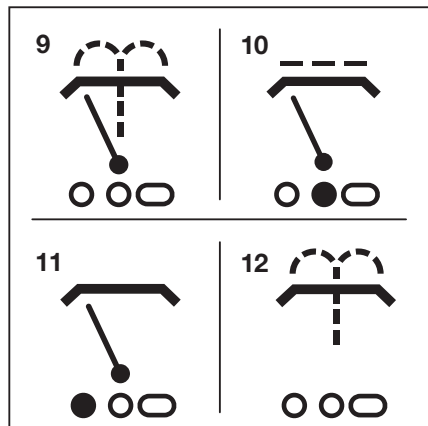
- To activate the "Washer" operating stage, press and hold the softkey.

The "Washer" operating stage is activated. The symbol (12) is displayed for as long as the softkey is pressed.

- Once the window is clean, release the softkey.

The previous operating stage is reactivated.

- To switch off the speed limitation, press the softkey again.





## Filling the washer system

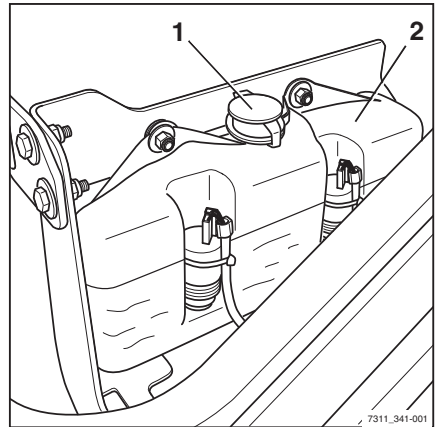
- Open the bonnet; see ⇒ Chapter "Opening the bonnet", Page 354 .

### ⚠ CAUTION

Components may become damaged due to the effects of frost!

Water expands when it freezes. If there is no anti-freeze in the washer system (variant), the system may be damaged due to the build up of ice in freezing conditions.

- Always use washer fluid containing anti-freeze.
- 
- Open the filler cap (1) of the washer system container (2).
  - Fill the windscreen washer fluid container with washer fluid containing anti-freeze in accordance with the maintenance data table (see ⇒ Chapter "Maintenance data table", Page 351 ).
  - Close the filler cap.
  - Close the bonnet.
  - Operate washer system until washer fluid is discharged from the spray nozzles.



## FleetManager (variant)

FleetManager is an equipment variant and can be fitted to the truck in different versions. The description and operation information can be found in the separate operating instructions for the corresponding FleetManager versions.

## Shock recognition (variant)

The shock recognition is an equipment variant of the FleetManager (variant) in which an acceleration sensor is installed in the truck. The acceleration sensor records data arising from rapid accelerations or decelerations of the truck, e.g. in the event of an accident. This data can be electronically read out and evaluated.

- If you have any questions, please contact your authorised service centre.


## Auxiliary equipment

### Driver restraint systems (variants)

Different driver restraint systems are available as variants for this truck. The description and operation for these systems can be found in the separate "Driver restraint systems" operating instructions.

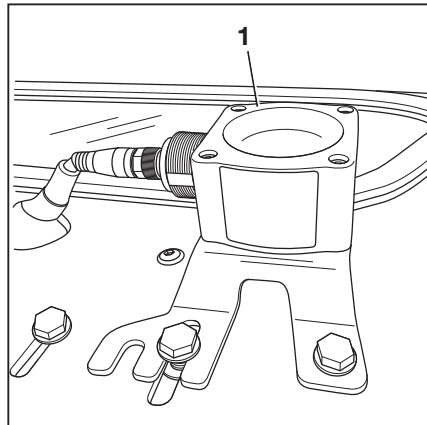
### Ceiling sensor (variant)

#### Description

The ceiling sensor (1) on the overhead guard  is an assistance system that automatically reduces the driving speed of the truck within halls. However, this assistance system does not release the driver from the responsibility of observing the speed limits on company premises.

Depending on the system setting, the ceiling sensor can detect overhead structures above the truck at a height of 2 m to 24 m above the sensor.

If the truck is equipped with a ceiling sensor, this assistance system is listed in the "Assistance systems" menu in the display-operating unit.




#### Operating the ceiling sensor system

The drivers must be instructed on the use of the ceiling sensor system by the operating company.

When the driver enters a hall for the first time after starting work, they must be certain that the ceiling sensor system is working correctly. Despite the ceiling sensor system being installed, the driver must also check the speed indicator on the display-operating unit on a regular basis to ensure that they do not exceed the maximum speed permitted for the environment.

- **Entering a hall**

The ceiling sensor system automatically detects when the truck enters a hall. The system then automatically slows the truck to the maximum speed that is set for the hall.

The "Speed restriction" symbol  appears in the display.

- **Leaving a hall**

If the truck leaves the hall again, the ceiling sensor system enables the maximum speed set for areas outside the hall. Due to the range of the sensor, this may not happen until the truck is a few metres away from the hall exit. Before the truck is able to accelerate to the maximum speed permitted for outdoor areas, the speed limitation must still be unlocked. To do this, release the accelerator briefly and then operate the accelerator again.

- **Switching on the truck in a hall**

If the truck is switched on inside a hall, the ceiling sensor system detects the hall ceiling and reduces the driving speed to the maximum speed that is set for halls.

### Possible limitations for object recognition

- If the truck moves under larger overhead structures outdoors, e.g. a pedestrian bridge, the ceiling sensor system may interpret this overhead structure to be a hall ceiling and reduce the maximum speed.
- In rare cases, it may occur that the ceiling sensor system does not recognize a ceiling and does not then reduce the speed. This can happen if the signals from the ceiling sensor are insufficiently reflected due to the ceiling geometry; for example, if there are large window areas at a 45° angle.

In these cases, the sensitivity and the range of the ceiling sensor system must be adjusted. See the following section.

### Changing the sensor settings



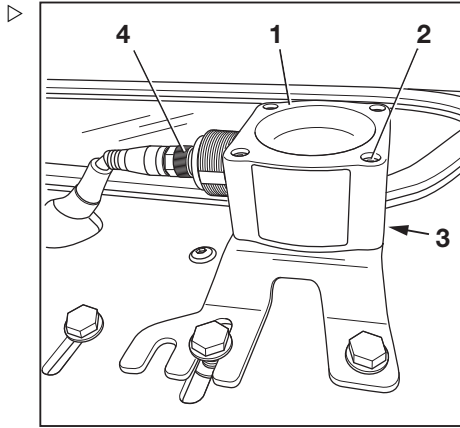
#### NOTE

*The ceiling sensor system is supplied by STILL with the following factory settings:*

- *Sensitivity: High*
  - *Ceiling height: 24 m*
- Park the truck securely and switch it off.

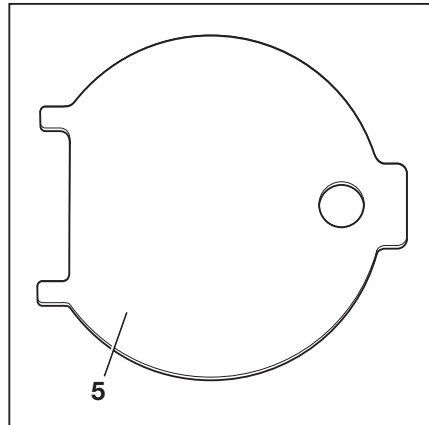
## Auxiliary equipment

- Turn the union nut (4) anti-clockwise to loosen it. Disconnect the electrical connection assembly by pulling out the plug.
- On the underside of the assembly baseplate on the overhead guard, hold four nuts (3) in place.
- Unscrew four socket head screws (2).



The key (5) is secured with a nut under the assembly baseplate.

- Carefully remove the ceiling sensor (1).

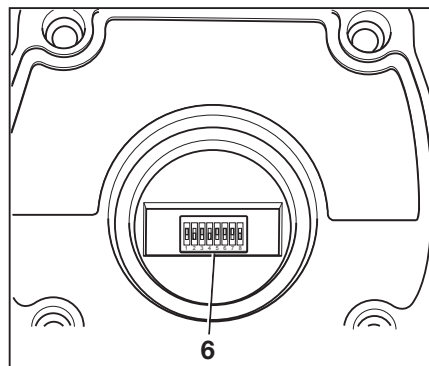


The sensor is adjusted using DIP switches (6).

- To access the DIP switches, open the cover on the underside of the sensor housing with the key (5).

During this process, the two tabs of the key (5) fit into the recesses of the cover.

- Using the DIP switches "1 to 5" (6), adjust the range and the sensitivity of the sensor. The DIP switches can be adjusted using a small screwdriver.



**⚠ CAUTION**

The settings for DIP switches "6 to 8" are the factory settings of the manufacturer.

Do **not** change the factory settings of the manufacturer!

Factory settings of the manufacturer

DIP switch		
6	7	8
1	1	0

The possible settings for DIP switches "1 to 5" are shown in the following tables:

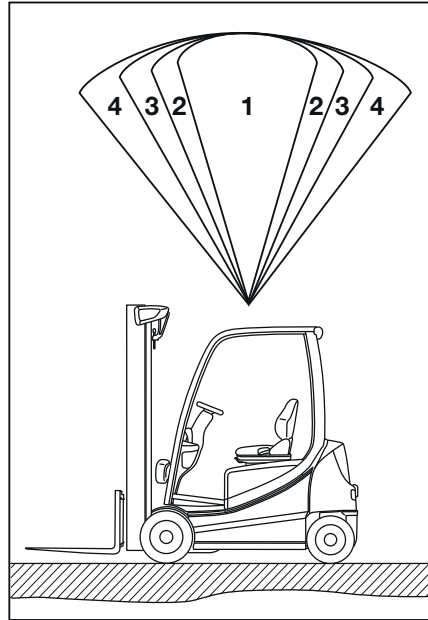
DIP switch			Range
1	2	3	
0	0	0	2 m
0	0	1	3 m
0	1	0	4 m
0	1	1	6 m
1	0	0	8 m
1	0	1	12 m
1	1	0	16 m
1	1	1	24 m

4	5	Sensitivity
0	0	Very high
0	1	High
1	0	Medium
1	1	Low

## Auxiliary equipment

Representation of the beam angle depending on the sensitivity of the sensor that has been set, from (1) "low" to (4) "very high".

The sensor has different beam angles depending on the combination of range and sensitivity that has been set. See the following table:



Sensitivity	Range	Beam angle
Low (1)	2 m	22.5°
	4 m	22.5°
	8 m	20°
	16 m	15°
	24 m	5°
Medium (2)	2 m	35°
	4 m	30°
	8 m	25°
	16 m	22.5°
	24 m	10°

Sensitivity	Range	Beam angle
High (3)	2 m	42°
	4 m	33°
	8 m	22.5°
	16 m	20°
	24 m	15°
Very high (4)	2 m	45°
	4 m	43°
	8 m	30°
	16 m	22.5°
	24 m	18°

- After the adjustment, refit the cover.
- Refit the ceiling sensor and connect it.
- Check that it is working correctly.

## Cab

## Cab

## Opening the cab door

**⚠ DANGER**

There is a risk of damage caused by collision if the cab door opens while driving.

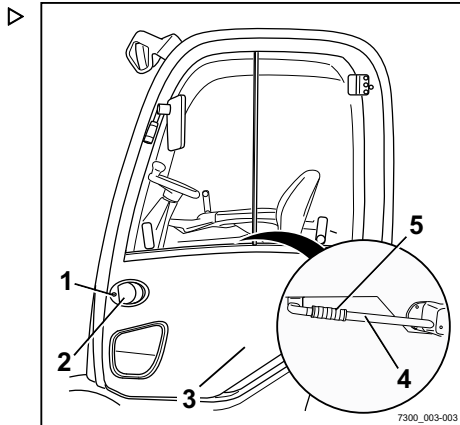
- The cab door must be latched securely in the engaged position.

**Opening the cab door from the outside:**

- Insert the key in the door lock (1), unlock the door and remove the key.
- To release the door, pull on the door handle (2) and open the cab door (3) outwards.

**Opening the cab door from the inside:**

- Turn the rotary handle (4) on the handle (5) and push the cab door outwards.





## Closing the cab door

### **⚠ DANGER**

There is a risk of damage caused by collision if the cab door opens while driving.

- The cab door must be latched securely in the engaged position.

### Closing the cab door from the outside:

- Push the cab door (3) inwards until the door lock engages.
- Make sure that the cab door is fully closed.
- Insert the key in the door lock (1), lock the door and remove the key.

### **i** NOTE

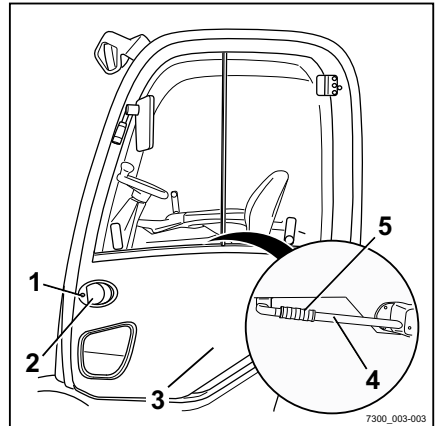
*Do not close the cab door while pulling the door handle (2), otherwise the locking mechanism in the lock will not function. Use the door handle only to open the cab door.*

### Closing the cab door from the inside:

- Take hold of the handle (5).
- Pull the cab door inwards until the door lock engages.
- Make sure that the cab door is fully closed.

### **i** NOTE

*Do not turn the rotary handle (4) when closing the door or when the cab door is closed. Doing so will cause the lock to unlock, meaning that the door will not be securely closed. Use the rotary handle only to open the cab door.*



## Cab

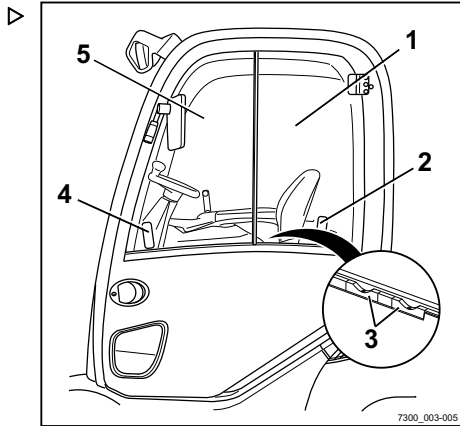
**Opening the side windows****⚠ WARNING**

There is a risk of crushing between the window frame and side window due to the side windows slipping inadvertently during travel.

- Make sure that the handle engages securely in the corresponding stop slot.

**Opening the rear side window:**

- Press the handle (2) together and slide the rear side window (1) forwards.
- Make sure that the handle engages in the stop slot (3).

**Opening the front side window:**

- Press the handle (4) together and slide the front side window (5) to the rear.
- Make sure that the handle engages in the stop slot (3).

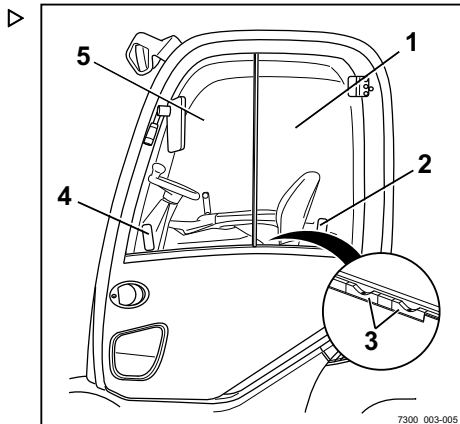
**Closing the side windows****⚠ WARNING**

There is a risk of crushing between the window frame and side window due to the side windows slipping inadvertently during travel.

- Make sure that the handle engages securely in the corresponding stop slot.

**Closing the rear side window:**

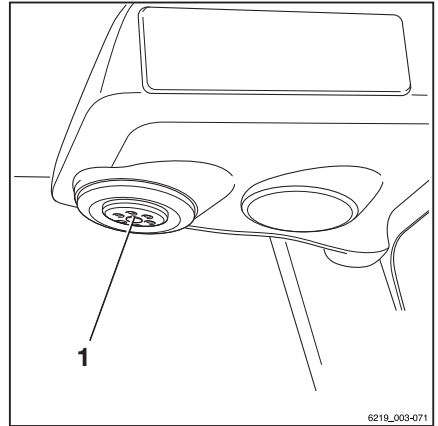
- Press the handle (2) together and pull the rear side window (1) to the rear.
- Make sure that the handle engages in the stop slot (3).

**Closing the front side window:**

- Press the handle (4) together and slide the front side window (5) forwards.
- Make sure that the handle engages in the stop slot (3).

### Turning the interior lighting on or off (variant) ▷

- To turn the interior lighting on or off, press the push button switch (1) in the middle of the interior lighting.



### Operating the rear window heating ▷

- To switch on the rear window heating, push the associated Softkey on the display-operating unit.

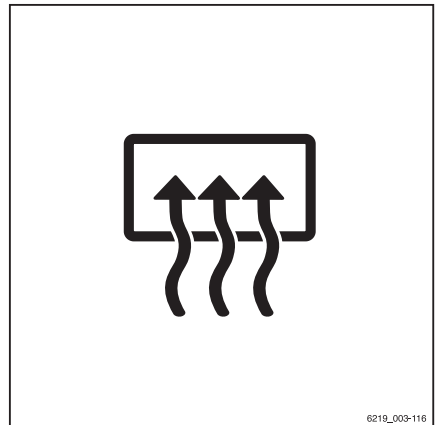
The rear window heating is switched on.

- To switch off the rear window heating, push the Softkey again.

The rear window heating is switched off.

#### NOTE

*The screen heating will switch off automatically after approx. 10 minutes.*



## Cab

## Radio (variant)

**⚠ WARNING**

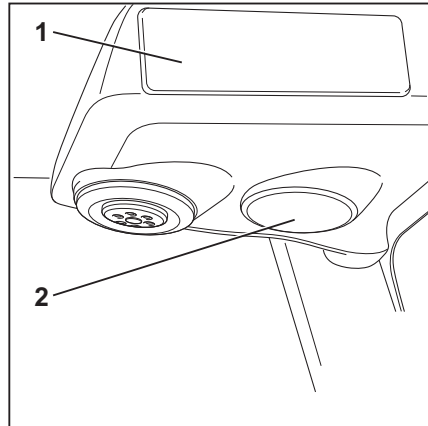
Risk of accident as a result of impaired perception!

The driver's attention is adversely affected by operating the radio or listening to it at excessive volumes while driving or handling loads.

- Do not operate the radio when driving or when handling loads.
- Keep the radio at a volume that allows you to hear warning signals.

The radio (1) and the loudspeakers (2) are an equipment variant. If the truck is equipped with a radio and loudspeakers, they are integrated into the roof lining.

The description and information relating to the operation of this equipment can be found in the separate operating instructions for the radio.



## Radio with Bluetooth interface (variant)

### **⚠ WARNING**

The driver's attention is adversely affected by operating the radio or listening to it at excessive volumes while driving or handling loads. Risk of accident!

- Do not operate the radio when driving or when handling loads.
- Adjust the radio volume so that you can still hear warning signals.

### Pairing a smartphone

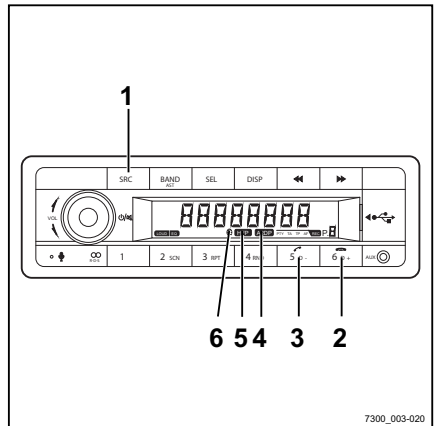
The Bluetooth interface on the radio is always active. The radio can be paired with a smartphone at any time using the Bluetooth function.

Carry out the following steps on your smartphone:

- Switch on the Bluetooth function.
- Go to the Bluetooth settings.
- Select the relevant device with the name of the radio.
- Enter the code 1234.

The symbols "A2DP" (4), "HFP" (5) and "Bluetooth" (6) appear on the radio display.

The smartphone is paired with the radio.



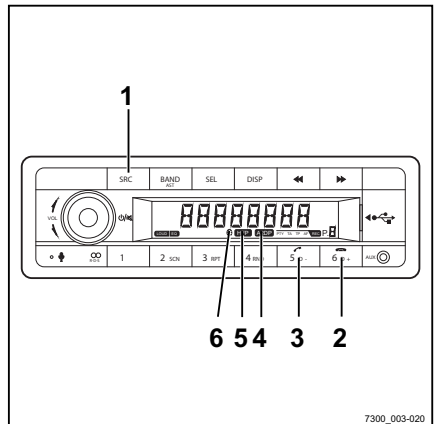
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### Unpairing a smartphone

- Select mode "A2DP" (4) on the radio using the **[SRC]** button (1).
- Press and hold the **[6D+]** button (2) for 2 seconds.

The symbols "A2DP" (4), "HFP" (5) and "Bluetooth" (6) will disappear from the radio display.

The smartphone is no longer paired with the radio.



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## Cab

**Hands-free device**

Prerequisite: The smartphone is paired with the radio.

**Incoming calls:**

Regardless of the mode (Radio, AUX, A2DP), the ringtones are broadcast via the radio speaker.

- Accept the call using the smartphone or by pressing the button depicting a green handset (3).
- End the call using the smartphone or by pressing the button depicting a red handset (2).

**Outgoing calls:**

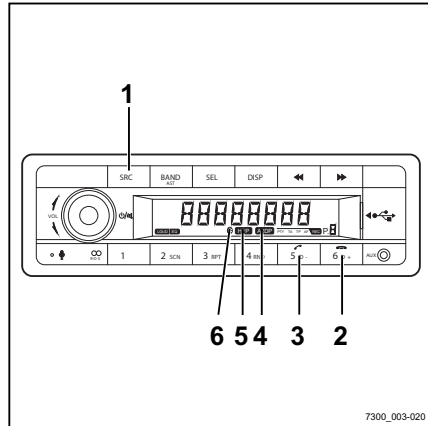
- Regardless of the mode (Radio, AUX, A2DP), dial the number on the smartphone and make the call.

The acoustic signals are automatically broadcast via the radio speaker.

- End the call using the smartphone or by pressing the button depicting a red handset (2).

**NOTE**

*The telephone number can also be selected via the radio; refer to the original operating instructions for the radio.*



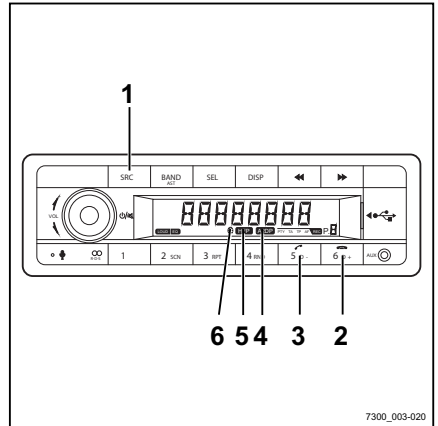
### Wireless music playback (A2DP)

Prerequisite: The smartphone is paired with the radio.

- Select mode "A2DP" (4) on the radio using the [SRC] button (1).
  - The music starts to play on the smartphone.
- The music is broadcast via the radio speaker.

 **NOTE**

*For more general information and information on operating the system, refer to the original operating instructions for the radio.*



### Heating system (variant)



 **DANGER**

**There is a risk of poisoning if heavily polluted surrounding air is aspirated into the closed cab!**

- Do not operate the heating system in the vicinity of storage areas or similar areas in which fuel vapours or fine dust (e.g. coal, wood or grain dust) can build up.



 **DANGER**

**Risk of explosion due to heat!**

The heat can cause gases to expand considerably or to ignite.

- Do not expose spray cans or gas cartridges to the flow of hot air.

## Cab

**⚠ DANGER****Risk of fire due to overheating!**

The heating system can overheat if the hot air cannot escape from it.

The heating system may only be switched on if the blower is running and the heating system is not covered by objects (such as a jacket or cover).

- Always switch the blower on first.
- Do not switch the heating system on until the blower is switched on.
- Move any objects away from the heating system or air distributors.

**⚠ DANGER**

**The heating system housing can become very hot during heating operation. There is a risk of burns if it is touched!**

- Do not touch the heating system housing during operation.
- Only touch the switches provided.

### Operating devices of the heating system

The operating devices of the heating system include:

- 1 Heating level control knob
- 2 Fan control knob
- 3 Air vent control knob

### Switching on the blower and heating system

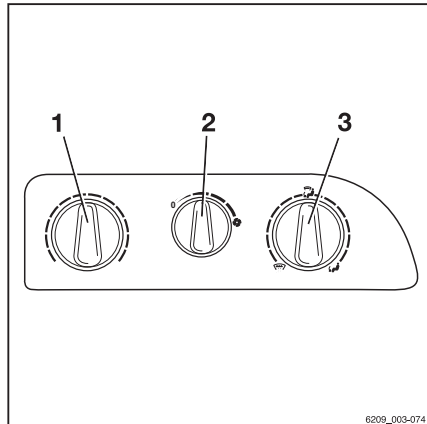
- Turn the fan control knob (2) to the desired blower position.

The blower runs at the speed level selected via the fan control knob (2).

- Turn the heating level control knob (1) to the desired heating level.

The heater warms the air to the heating level selected via the heating level control knob (1)

- Turn the air vent control knob (3) to the desired position.



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### Selecting blower settings


- To select a lower fan output, turn the fan control knob (2) anticlockwise.
- To select a high blower output, turn the fan control knob (2) clockwise.

### Setting heating levels

- To set a lower heater power, turn the heating level control knob (1) anticlockwise.
- To set a higher heater power, turn the heating level control knob (1) clockwise.

### Setting the air vent control knob

- To direct the air flow to the footwell, turn the air vent control knob (3) in an anticlockwise direction to position .
- To direct the air flow to the windscreen, turn the air vent control knob (3) in a clockwise direction to position .

The centre position  directs the air flow to the footwell and the windscreen.

### Switching off the heating system and blower

- Turn the heating level control knob (1) in an anticlockwise direction until it reaches the stop.

The heating system is shut off.

- Turn the fan control knob (2) in an anticlockwise direction until it reaches the stop.

The blower is shut off.

## Cab

**Adjusting the air distributors**

The air distributors for the driver are always supplied with air. It is not necessary to adjust the heating system using the operating devices.

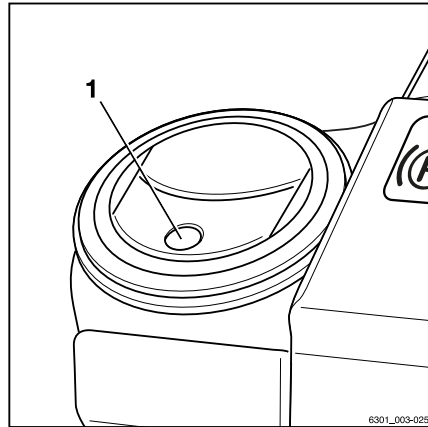
- To open the air distributor, push the indentation (1) on the disc.

The discs open.

- Grasp the discs to align the air flow:

The discs can be adjusted to the desired angle. The air distributor can be rotated.

- Press down again to close the discs.

**Changing fuses****⚠ DANGER****Risk of fire as a result of short circuits!**

Using the wrong fuses can result in short circuits.

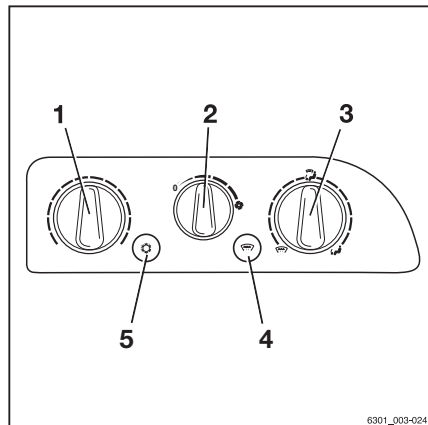
- Use only fuses with the prescribed nominal current.

**Air conditioning (variant)**

The air conditioning dries the air in the cab to prevent the glass panes misting up. The temperature of the air that is blown out is based on the heating level that has been set. The defrost function can be used to de-ice the windscreen quickly.

The operating devices of the air conditioning include:

- 1 Heating level control knob
- 2 Fan control knob
- 3 Air vent control knob
- 4 Defrost switch
- 5 On/off switch



- To adjust the air distributors and to control the blower positions, the heat settings and the air vent control knob, see the section entitled "Heating system (variant)".

### Switching the air conditioning on and off


- Push the on/off switch (5).

The LED on the switch lights up green. The air conditioning is switched on.

- Press the on/off switch (5) again.

The LED on the switch goes out. The air conditioning is switched off.

### Defrost function

The defrost function can be used to de-ice and dehumidify the windscreen quickly. To do this, turn the air vent control knob (3) clockwise to the  position. Open the air distributors and direct them onto the windscreen.

- Switch on the air conditioning.
- Push the defrost switch (4).

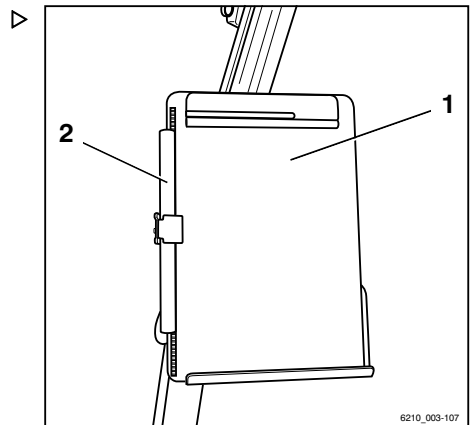
The LED on the switch lights up green. The air conditioning operates at full power. The highest heating level is selected. This feature operates for a limited period only. To save energy, it switches itself off automatically.

- Press the defrost switch (4) again.

The defrost function is switched off.

### Clipboard (variant)

The clipboard (1) with reading lamp (2) is an equipment variant.



## Cab

**Push-up roof window (variant)****⚠ WARNING**

Risk of crushing!

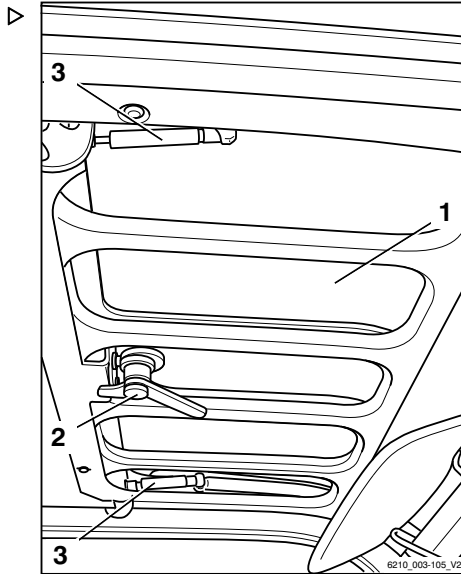
- When closing the roof window, do not reach between the roof window and the overhead guard.
- Do not reach in to touch components as they are being closed.

The push-up roof window (1) is an equipment variant.

- To unlock and open the roof window, rotate the handle (2) in an anti-clockwise direction and use it to push the roof window upwards.

The roof window is held in the open position by means of gas springs (3).

- To close and lock the roof window, pull the roof window downwards using the handle and rotate the handle in a clockwise direction

**12 V socket**

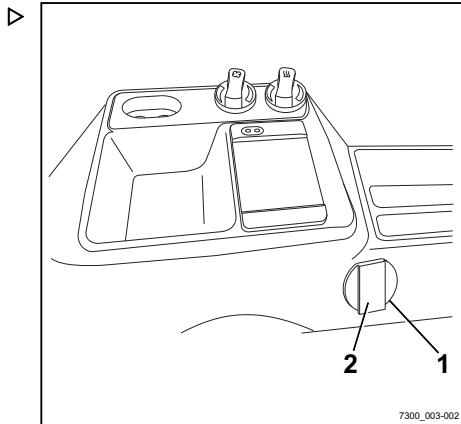
A 12 V socket (1) is fitted to the right of the driver's seat for connecting an external electrical consumer.

**⚠ CAUTION**

Risk of short circuit!

The nominal current of the connected consumer must not exceed 10 A.

- Before connecting, check the nominal current of the device in question.
- Lift up the dust guard cover (2).
- Insert the plug of the device to be connected into the socket (1).
- Rest the dust guard cover on the plug.
- Perform a functional check of the electrical connection on the connected device.



**⚠ CAUTION**

Malfunctions possible.

The exposed socket may become dirty and dusty if no plug is inserted or the dust guard cover is not closed. Over time, this can lead to problems with the electrical connection.

- Push the dust guard cover all the way down after using the socket.
-

## Trailer operation

## Trailer operation

## Towed load

**⚠ DANGER**

**There is an increased risk of accident when using a trailer.**

Using a trailer changes the truck handling characteristics. When towing, operate the truck such that the trailer train can be safely driven and braked at all times. The maximum permissible speed when towing is 5 km/h.

- Do not exceed the permissible speed of 5 km/h.
- Do not couple the truck in front of rail vehicles.
- The truck must not be used to push any kind of trolley.
- It must be possible to drive and brake at all times.

**⚠ CAUTION**

Risk of damage to components!

The maximum towed load for occasional towing is the rated capacity specified on the nameplate. Overloading can lead to component damage on the truck. The sum of the actual towed load and the actual load on the fork must not exceed the rated capacity. If the existing towed load corresponds to the rated capacity of the truck, no load may be transported on the fork at the same time. The load can be distributed between the fork and the trailer.

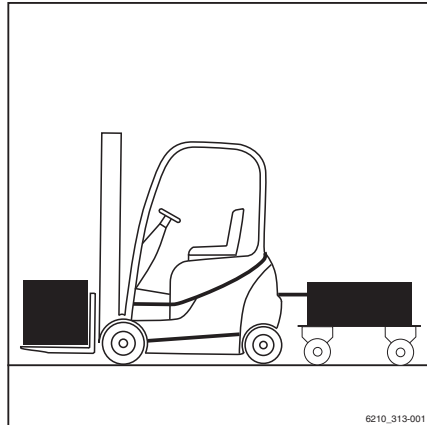
- Check the load distribution and adjust it to correspond to the rated capacity.
- Observe the permissible rigidity value of the tow coupling.

**⚠ CAUTION**

Risk of damage to components!

The maximum towed load only applies when towing unbraked trailers on a level surface (maximum deviation +/- 1%) and on firm ground. The towed load must be reduced if towing on gradients. If necessary, notify the authorised service centre of the application conditions. The service centre will provide the required data.

- Inform the authorised service centre.



**⚠ CAUTION**

Risk of damage to components!

A support load is not permitted.

- Do not use trailers with tillers supported by the tow coupling.

This truck is suitable for the occasional towing of trailers. If the truck is equipped with a towing device, this occasional towing must not exceed 2% of the daily operating time. If the truck is to be used for towing on a more regular basis, the manufacturer should be consulted.

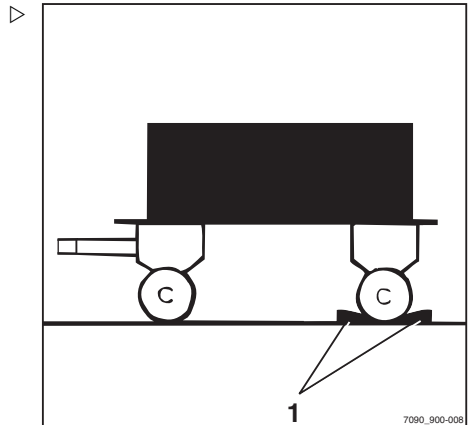
## Coupling pin in the counterweight

### Coupling the trailer

**⚠ DANGER**

**If you leave the truck briefly to couple or uncouple the trailer, there is a risk of fatal injury from the truck rolling away.**

- Apply the parking brake.
  - Lower the fork to the ground.
  - Switch off the key switch and remove the key.
- 
- Take measures to prevent the trailer from rolling away, e.g. using wheel chocks (1).



## Trailer operation

- Push the coupling pin (2) down, rotate by 90° and pull out.
- Adjust the tiller height.

### **⚠ DANGER**

**People can become trapped between the truck and trailer.**

When coupling, ensure that there are no persons present between the truck and the trailer.

- Slowly move the truck backwards.
- By moving the truck back, introduce the tiller into the recess (3) in the counterweight.

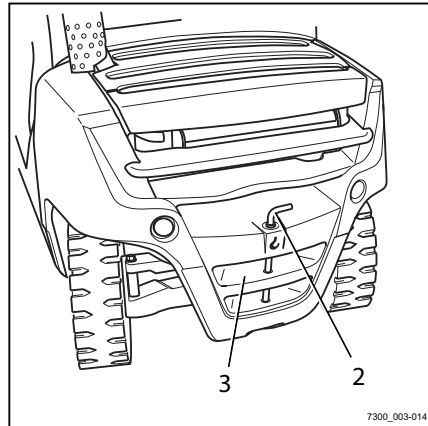
### **⚠ DANGER**

**If the coupling pin or securing bush are lost or destroyed during towing, the trailer will work loose and become uncontrollable. This poses a risk of accident!**

- Only use original coupling bolts that have been checked.
  - Ensure that the coupling pin is correctly inserted and secured.
- 
- Insert the coupling pin into the counterweight, press downwards against the spring pressure and rotate by 90° (the coupling pin is locked in this position).
  - Remove any items used to prevent the trailer from rolling away.

## Uncoupling the trailer

- Take measures to prevent the trailer from rolling away, e.g. using wheel chocks.
- Push the coupling pin (2) down, rotate by 90° and pull out.
- Slowly move the truck forwards and guide the tow-bar eye completely out of the counterweight.
- Insert the coupling pin into the counterweight, press downwards against the spring pressure and rotate by 90° (the coupling pin is locked in this position).





## Automatic tow coupling

### **⚠ DANGER**

**People may be trapped between the truck and trailer.**

When hooking up, ensure that no one is between the truck and trailer.

---

### **⚠ DANGER**

**Never jack up the truck on the tow coupling or use it for crane lifting. The tow coupling is not designed for this and could be deformed or damaged. This could cause the truck to fall, with potentially fatal consequences!**

- Use the tow coupling only for towing.
  - For jacking up and crane loading, use only the designated lifting points.
- 

### **⚠ DANGER**

**The tow coupling is not designed to support loads and could become deformed or destroyed. This could cause the supported load to fall, with potentially fatal consequences!**

- The tow coupling should be subjected only to horizontal loads, i.e. the tiller must be horizontal.
- 

### **⚠ DANGER**

**If you briefly leave the truck to couple or uncouple the trailer, there is a risk to life caused by the truck rolling away and running you over.**

- Apply the parking brake.
  - Lower the forks to the ground.
  - Switch off the key switch and remove the key.
- 

### **⚠ WARNING**

Never reach between the coupling pins and the towing jaws. If the component moves suddenly there is a risk of injury!

- To release the coupling pin, actuate the corresponding lever or use a suitable device (e.g. assembly lever).
  - When not in use, close the automatic tow coupling.
-

## Trailer operation

### **WARNING**

Risk of damage due to component collision.

A truck with tow coupling needs more room for manoeuvring due to its overhang. The tow coupling can damage the racking or the tow coupling itself when manoeuvring. If there is a collision with the tow coupling, test the tow coupling for damage such as cracks. A damaged tow coupling must not be used again.

- Always manoeuvre carefully and with sufficient room.
- In the case of a collision, test the tow coupling for damage.
- Replace tow coupling if damaged, if necessary contact the authorised service centre.

### **WARNING**

Risk of damage to the tow bar eye or tiller!

Due to the truck's rear wheel steering, the side slewing angle of the tiller may not be adequate. The coupling or the tiller may be damaged! The tow bar eye of the tiller must fit the tow coupling in terms of shape and size.

- Ensure that the tow bar eye and tiller fit correctly.
- Avoid sharp cornering.
- Exercise care when travelling and manoeuvring in reverse.

### **WARNING**

Risk of component damage if the tiller in the tow coupling is tilted!

The tiller should be kept as horizontal as possible when towing. This ensures that the rotation range is sufficient at the top and bottom. The authorised service centre can adjust the assembly height for the tow coupling to the tiller height if necessary.

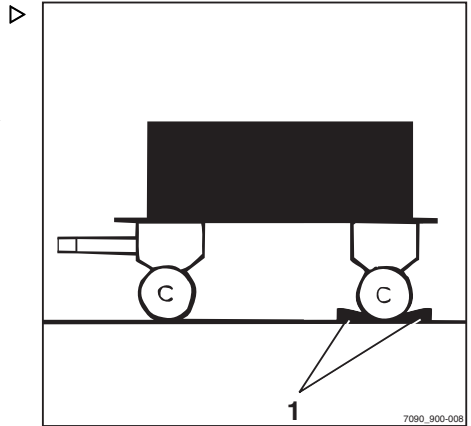
- Make sure that the tiller is level.
- To change the coupling height, contact the authorised service centre.

### Coupling model RO\*243

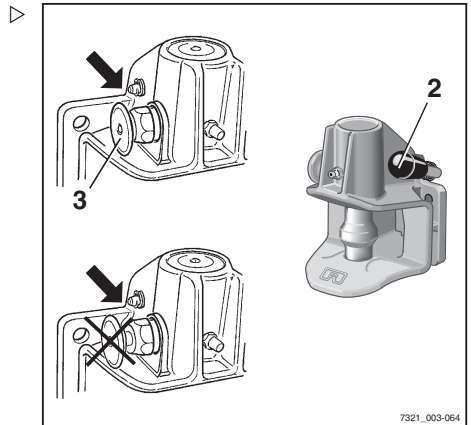
**i** NOTE

*Tow coupling RO 243 is intended for a tow-bar eye in accordance with DIN 74054 (bore diameter: 40 mm).*

- Take measures to prevent the trailer from rolling away, e.g. use wheel chocks (1).
- Adjust the tow bar eye of the tiller so that it is at the centre of the towing jaws.



- Pull out the safety handle (3).
- Push the hand lever (2) upwards.



**⚠ DANGER**

**Persons may become trapped between the truck and trailer.**

When hooking up, ensure that no one is between the truck and trailer.

**⚠ CAUTION**

When being coupled, the tow-bar eye must engage in the middle of the coupling jaw. Failure to follow these instructions could result in damage to the coupling jaw or to the tow-bar eye!

- Ensure that the tow-bar eye enters the coupling jaw centrally.

- Slowly move the truck back.

**⚠ DANGER**

**If the coupling pin drops out during towing, the trailer will work loose and can no longer be controlled. There is a risk of accident!**

A protruding safety handle means that the tow bar eye has not been coupled correctly. The trailer must not be towed in this condition.

- Ensure that the safety handle is flush with the securing bush.
- If the safety handle protrudes, repeat the coupling process.

## Trailer operation

- Remove any items used to prevent the trailer from rolling away.
- Tow the trailer.

## Closing model RO\*243 by hand

### **⚠ DANGER**

#### **Risk of injury from hand becoming trapped!**

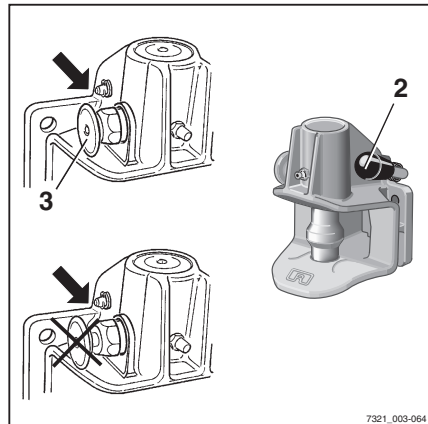
Do not reach into the coupling pin area. If, for example, a tow rope is to be secured in the tow coupling, use only a suitable device to close the tow coupling (e.g. assembly lever).

- Use a suitable device (e.g. assembly lever) to push the coupling pin up.

The coupling pin is released from the latch and the tow coupling then closes automatically.

## Uncoupling model RO\*243

- Take measures to prevent the trailer from rolling away, e.g. use wheel chocks.
- Pull out the safety handle (3).
- Push the hand lever (2) upwards.
- Slowly drive the truck forwards until the tow-bar eye and towing jaws are disconnected.
- Close the tow coupling by hand.



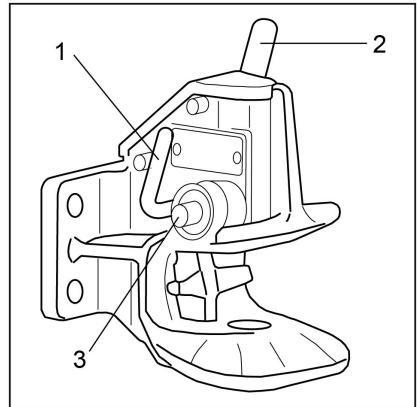
## Coupling model RO\*244 A

### NOTE

*Trailer coupling RO 244 is intended for a tow bar eye in accordance with DIN 74054 (bore diameter 40 mm) or DIN 8454 (bore diameter 35 mm).*

- Take measures to prevent the trailer from rolling away, e.g. use wheel chocks.
- Adjust the tow bar eye of the tiller so that it is at the centre of the towing jaws.
- Push the hand lever (2) upwards until it snaps into place.

The tow coupling is opened.



### DANGER

**People can become trapped between the truck and trailer!**

When hooking up, ensure that no one is between the truck and trailer.

### CAUTION

When being coupled, the tow-bar eye must engage in the middle of the coupling jaw. Failure to follow these instructions could result in damage to the coupling jaw or to the tow-bar eye!

- Ensure that the tow-bar eye enters the coupling jaw centrally.
- Move the truck back slowly until the tow bar eye is inserted centrally into the coupling jaw of the tow coupling and the coupling pin engages.

### NOTE

*The coupling pin is correctly engaged if the control pin (3) does not protrude out of its guide.*

## Trailer operation

### **⚠ DANGER**

**If the coupling pin drops out during towing, the trailer will work loose and can no longer be controlled. There is a risk of accident!**

The control pin (3) must not protrude out of its guide.

- Ensure that the coupling pin is engaged correctly.

If the coupling pin is not correctly engaged:

- Remove any items used to prevent the trailer from rolling away.
- Move the truck with the trailer forwards approx. 1 m and then move it back slightly.
- On the coupling pin, check again that the control pin does not protrude out of its guide.

- 
- Remove any items used to prevent the trailer from rolling away.

- Tow the trailer.

### Closing model RO\*244 A by hand

#### **⚠ DANGER**

**Risk of injury from hand becoming trapped!**

Do not reach into the coupling pin area. If, for example, a tow rope is to be secured in the tow coupling, only actuate the tow coupling via the closing lever (1).

- Press the closing lever (1) downwards as far as it will go.

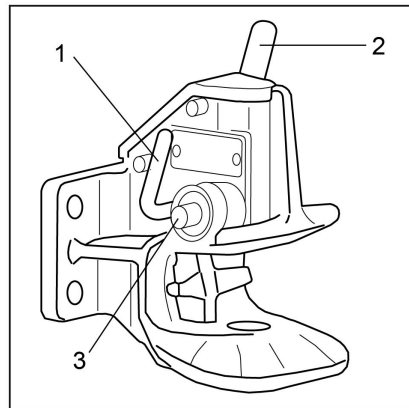
The tow coupling is closed.

### Uncoupling model RO\*244 A

- Take measures to prevent the trailer from rolling away, e.g. use wheel chocks.
- Push the hand lever (2) upwards until it snaps into place.

The tow coupling is opened.

- Slowly drive the truck forwards until the tow-bar eye and towing jaws are disconnected.
- Close the tow coupling by actuating the closing lever (1).



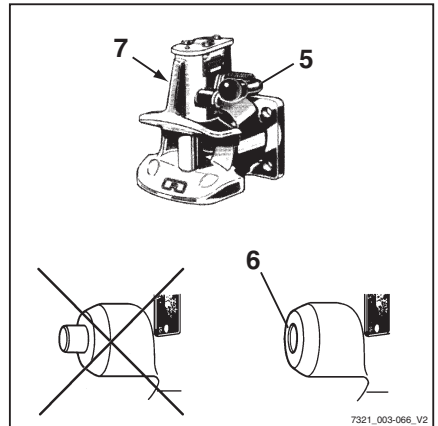
**i NOTE**

To protect the lower coupling pin bush against contamination, always keep the tow coupling closed.

**Coupling model RO\*245****i NOTE**

Trailer coupling RO 245 is intended for a tow bar eye in accordance with DIN 74054 (bore diameter 40 mm) or DIN 8454 (bore diameter 35 mm).

- Take measures to prevent the trailer from rolling away, e.g. use wheel chocks.
- Adjust the tow bar eye of the tiller so that it is at the centre of the towing jaws.
- Push the hand lever (5) upwards.
- The tow coupling is opened.

**⚠ DANGER**

**People can become trapped between the truck and trailer!**

When hooking up, ensure that no one is between the truck and trailer.

- Slowly move the truck back.

**⚠ DANGER**

**If the coupling pin drops out during towing, the trailer will work loose and can no longer be controlled. There is a risk of accident!**

A protruding safety handle means that the tow bar eye has not been coupled correctly. The trailer must not be towed in this condition.

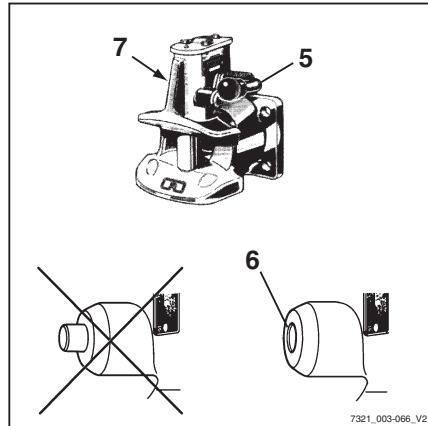
- Make sure that the control pin does not protrude from the control bush.
  - Repeat the coupling process if necessary.
- 
- Remove any items used to prevent the trailer from rolling away.
  - Tow the trailer.

## Trailer operation

## Uncoupling model RO\*245

- Take measures to prevent the trailer from rolling away, e.g. use wheel chocks.
- Push the hand lever (5) upwards.
- Slowly drive the truck forwards until the tow-bar eye and towing jaws are disconnected.
- Push the closing lever (7) on the left side of the tow coupling down as far as it will go.

The tow coupling is closed.



## Coupling model RO\*841



## NOTE

*Tow coupling RO 841 is intended for a tow-bar eye in accordance with DIN 74054 (bore diameter 40 mm).*

- Take measures to prevent the trailer from rolling away, e.g. use wheel chocks.
- Push the hand lever (7) upwards until it snaps into place.

**⚠ DANGER**

**People may be trapped between truck and trailer.**

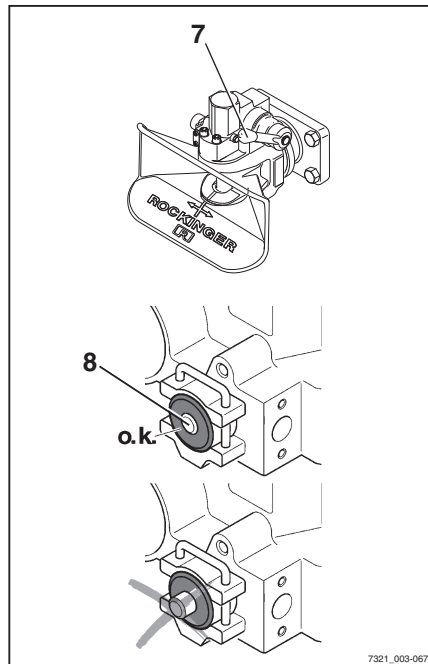
When hooking up, ensure that no one is between the truck and trailer.

**⚠ CAUTION**

When being coupled, the tow-bar eye must engage in the middle of the coupling jaw. Failure to follow these instructions could result in damage to the coupling jaw or to the tow-bar eye!

- Ensure that the tow-bar eye enters the coupling jaw centrally.

- Slowly move the truck back.





**⚠ DANGER**

**If the coupling pin drops out during towing, the trailer will work loose and can no longer be controlled. There is a risk of accident!**

A protruding safety handle means that the tow bar eye has not been coupled correctly. The trailer must not be towed in this condition.

- Make sure that the control pin does not protrude from the control bush.
  - Repeat the coupling process if necessary.
- 
- Remove any items used to prevent the trailer from rolling away.
  - Tow the trailer.

**Uncoupling model RO\*841**

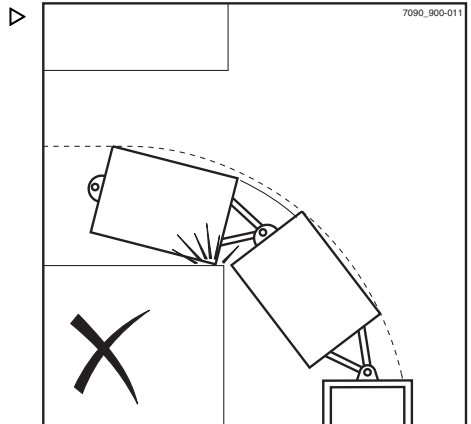
- Take measures to prevent the trailer from rolling away, e.g. use wheel chocks.
- Push the hand lever (7) upwards.
- Slowly drive the truck forwards until the tow-bar eye and towing jaws are disconnected.
- Close the tow coupling.

**Towing trailers**

- Drivers who are towing a trailer for the first time must practise driving with a trailer in a suitable area.
- When passing through narrow road areas (entrances, gates etc.), observe the dimensions of the trailer and load.
- When towing multiple trailers, ensure a sufficient minimum distance to fixed installations when turning and cornering.

The permissible length of the trailer trains depends on the roadways to be driven and may need to be determined during the test drive.

It is the responsibility of the operating company to instruct the drivers regarding the permissible number of trailers and, where required, any additional speed reductions on individual sections of the route.



## Trailer operation



### NOTE

*Please observe the definition of the following responsible persons: "operating company" and "driver".*

## Display messages

### Messages

Certain truck conditions may cause event-related messages to be shown on the display of the display-operating unit.

There are messages about operation and messages about the truck. If a message about operation appears, the display-operating unit will prompt you to perform an action. A message about the truck means that the truck control unit has detected a fault.

The following types of message may appear individually or in combination:

- A graphic symbol
- The message
- A code consisting of a letter and a four-digit number








The message is displayed until either the cause has been corrected or the message has been acknowledged.

In the case of successive events, the respective messages are displayed one after another on the display.

## Display messages







### Messages about operation








If messages about operation appear on the display-operating unit, an action must be carried out.

Shown on display	Cause/action
Log in 	The access authorisation (variant) is preventing the use of the truck. - Enable the access authorisation.
Release brake pedal !	The desired action is only possible after releasing the brake pedal. - Release the brake pedal.
Curve Speed Control Active !	Curve Speed Control reduces the curve speed. - No action is required.
Data transmission required !	If the truck is equipped with this variant, data transmission must be carried out. - See the associated instructions.
Diagnostic mode active 	This message is not displayed during normal operation. - Contact the authorised service centre.
Set revolution speed 	If an attachment is fitted and no pump speed has been set for its direction of movement, this message will be displayed. - Set the revolution speed with the access authorisation.
Development mode active 	This message is not displayed during normal operation. - Contact the authorised service centre.
Drive unit blocked !	This message follows earlier messages, e.g. over-temperature. It is not possible to drive the truck. - Wait until the message disappears. If necessary, switch the truck off and on again. If the message continues to appear, please contact the authorised service centre.
Sit on driver's seat 	The truck is equipped with a seat contact switch. If the driver's seat is not occupied, the drives and the hydraulic functions are disabled. - Sit on the driver's seat.
Secure the truck to prevent it rolling away 	If the truck control unit detects a movement of the truck without the accelerator pedal being actuated, this message appears. - Apply the parking brake. - If necessary, secure the truck with wedges so that it cannot roll away.
Switch off truck? 	If the truck is switched off without having first applied the parking brake, this message appears. - Apply the parking brake.

Shown on display	Cause/action
Switch off truck anyway? ⓘ	If the truck is to be switched off although the parking brake is not applied, this message appears. - Secure the truck with wedges so that it cannot roll away.
Truck stop: Access system 🔒	The access authorisation (variant) is preventing the use of the truck. This can be caused by entry of an incorrect code. - Enable the access authorisation.
Apply parking brake ⓘ	If the truck control unit detects a movement of the truck without the accelerator pedal being actuated, this message appears. - Apply the parking brake.
Release parking brake ⓘ	The desired action is only possible after releasing the parking brake. - Release the brake pedal.
Check parking brake ⚠	The truck control unit detects that the braking force of the electric parking brake is reducing. - Secure the truck with wedges so that the truck does not roll away. - Contact your authorised service centre.
Parking brake cannot be applied ⓘ	The parking brake cannot be applied due to a technical fault. - Apply the parking brake according to the section entitled "Malfunctions in the electric parking brake". - Secure the truck with wedges so that it cannot roll away.
Apply parking brake via button ⓘ	The electric parking brake is not applying automatically. - Apply the parking brake by pressing the button.
Release parking brake via button ⓘ	The electric parking brake cannot be released automatically. - Release the parking brake by pressing the button.
Parking brake: Maintenance required 🔧	The truck control unit detects that the electric parking brake needs a service. - Secure the truck with wedges so that the truck does not roll away. - Contact your authorised service centre.
Lower forks !	This message appears e.g. for precision load measurement (variant). - Lower the fork carriage.
Lift height restriction active !	The lift height restriction (variant) is switched on. - Observe the heights of ceilings and entrances.
Close cab door or seat belt !	If the seat belt is not fastened and the cab door (variant) is not closed, the driving speed is limited to 4 km/h and this message appears. - Close the cab door or fasten the seat belt.

## Display messages

Shown on display	Cause/action
Close cab door !	If the cab door is opened while the truck is in motion, the truck brakes automatically to a speed of 4 km/h. - Close the cab door.
Configuration: Please wait 	This message is not displayed during normal operation. - Contact the authorised service centre.
Unsent data will be overwritten !	If the truck is equipped with this variant, data transmission must be carried out. - See the associated instructions.
Emergency drive direction via drive direction selection lever 	If the truck control unit has detected a fault that affects the drive functions, it is possible to activate emergency running. - Set the direction selection lever to the desired direction. - Drive the truck to a safe area and park it safely. - Contact the authorised service centre.
Emergency drive direction via drive direction switch 	If the truck control unit has detected a fault that affects the drive functions, it is possible to activate emergency running. - Set the drive direction switch to the desired direction. - Drive the truck to a safe area and park it safely. - Contact the authorised service centre.
Parameter calibration 	This message is not displayed during normal operation. - Contact the authorised service centre.
Seatbelt sequence !	If the configured sequence for applying the restraint systems is not observed, this message appears. - Fasten the seat belt.
Close restraint system 	If, for example, the truck is equipped with a bracket as a restraint system and the accelerator pedal is actuated, this message appears. The truck will not move. - Close the restraint system.
Shaking blocked – overload 	If the shaking function (variant) is overloaded by an excessive load, this message appears. The shake function will remain unavailable as long as this situation persists.
Switch on switch lock !	If the hazard warning system (variant) is switched on when the truck is switched off, the display-operating unit remains active. Then, when a truck function is called up, this message appears. - Switch on the truck.
Shock event detected !	If the truck control unit detects a very strong acceleration or deceleration, e.g. in the event of an accident, this message appears.

Shown on display	Cause/action
Service required 	If the maintenance interval has been reached, this message appears. - Contact the authorised service centre.
Service mode active 	This message is not displayed during normal operation. - Contact the authorised service centre.
Close seat belt 	If the seat belt is not fastened, the driving speed is limited to 4 km/h and this message appears. - Fasten the seat belt.
Are you sure? ?	If the display-operating unit is expecting confirmation from the driver, this message appears. - Continue with or cancel the input prompt.
Sprint mode blocked – temperature 	If the temperature at the drive units is too high, this message appears. Sprint mode is no longer available. - Observe the previous message.
Foot switch 	If the truck is equipped with a foot switch, and a truck function is called up when the foot switch is not actuated, this message appears. - Actuate the foot switch.
Overload 	With the "overload protection" variant, this message appears if an excessive load is picked up. - Set down the load.
Factory mode active 	This message is not displayed during normal operation. - Contact the authorised service centre.
Access expired !	If the truck is equipped with this variant, this message might appear. - See the associated instructions.
Access denied !	
Access expires in < 1 month !	
Access expires in < 1 day !	
Access expires in < 1 week !	
Access expires in < 2 days !	
Access expires in < 3 days !	

## Display messages




















### Messages about the truck

If messages with a code appear on the display-operating unit, the truck control unit has detected a fault. The message with a code is stored in the message list until the cause of the message is corrected. The saved messages can be called up from the "message list".

















If, for example, the reflector or the lift-height sensor is contaminated, it usually helps to clean these components.

- Switch the truck off and on again.
- If the message still appears, please contact the authorised service centre.

The messages are sorted in ascending order according to their code:

Code	Shown on display	Description/possible solution
A2103	Parameter faulty 	Collective fault of the parameters
A2305	Fault: Control unit 	Collective fault on the control unit
A2545	Actuator error 9: 	Actuator breakdown If no attachment is fitted, this message can be ignored. - If there is an attachment fitted, contact the authorised service centre.
A2801	Monitoring 	Process monitoring, proc 1
A2802	Monitoring 	Process monitoring, proc 2
A2803	Monitoring 	Process monitoring, proc 3
A2804	Monitoring 	Process monitoring, proc 4
A2805	Monitoring 	Process monitoring, proc 5
A2806	Monitoring 	Process monitoring, proc 6
A2807	Monitoring 	Process monitoring, proc 7
A2808	Monitoring 	Process monitoring, proc 8
A2809	Monitoring 	Process monitoring, proc 9
A2810	Monitoring 	Process monitoring, proc 10
A2811	Monitoring 	Process monitoring, proc 11
A2899	Monitoring 	Collective fault of the process monitoring
A3015	Fault: Brake sensor 	Collective fault on the brake sensor
A3027	Fault: Seat switch 	The seat switch does not open - Stand up from the driver's seat and sit down again.
A3035	Fault: Brake fluid 	Brake fluid switch
A3143	Check lift height sensor and reflector 	Lift-height sensor measurement error



Code	Shown on display	Description/possible solution
A3151	Plausibility of shift function hydraulics 	If no attachment is fitted, this message can be ignored. - If there is an attachment fitted, contact the authorised service centre.
A3230	Fault: Monitoring of steering 	Collective fault on the steering
A3340	Monitoring: Electrics 	Collective fault on the additional electrical installation
A3345	Monitoring: Electrics 	Collective fault on the powertrain
A3346	Monitoring: Drive unit 	Collective fault on the drivetrain
A3347	Hydraulics 	If no attachment is fitted, this message can be ignored. - If there is an attachment fitted, contact the authorised service centre.
A5090	Overtemp.: Drive unit 	Drive unit overtemperature collective fault - Switch off the truck and leave it to cool down.
A5091	Overtemp.: Hydraulic drive 	Hydraulic drive overtemperature collective fault - Switch off the truck and leave it to cool down.
A5632	Check the engine oil level 	Engine oil level too high/too low The driving speed is reduced. - Check the engine oil level and if necessary drain or refill the engine oil.
A5986	Fault: Control unit 	General battery current measurement
A6502	Overtemp.: Parking brake 	Electric parking brake detects overtemperature
A6510	Fault: Parking brake 	Electric parking brake detects fatal fault
A6511	Fault: Parking brake 	Brake cannot release
A6512	Fault: Parking brake 	Brake cannot apply
A6701	Fault: Monitoring of assistance system 	Collective fault on the assistance systems
None	Error 	General fault

## Refuelling

## Refuelling

## Changing the LPG cylinder

**⚠ DANGER**

**There is a risk of explosion if LPG escapes!**

LPG cylinders with an expired inspection date must not be used.

The inspection intervals stipulated in the Pressure Equipment Directive must be observed under all circumstances. The most recent inspection date marked on the LPG cylinder is the date that applies. Observe the national regulations in the relevant country!

- Switch off the engine.
- Do not smoke, and do not use an open flame or fire.
- Check that the LPG cylinders are approved.
- Only change LPG cylinders in well-ventilated spaces, away from openings in the ground.
- Observe the safety regulations for working with LPG.

**⚠ DANGER**

**Risk of explosion from spark discharge!**

Striking tools must not be used to aid opening and closing.

**⚠ DANGER**

**Open flames, red-hot objects etc. may cause explosions.**

Frozen system parts must be thawed out using only hot water, hot sandbags or similar.

**Observe the following safety regulations in all cases:**

- Observe the safety guidelines for LPG trucks
- Cylinders must only be changed by trained personnel.
- Before releasing pipe or hose connections, the cylinder valves and main shut-off valves must be closed.

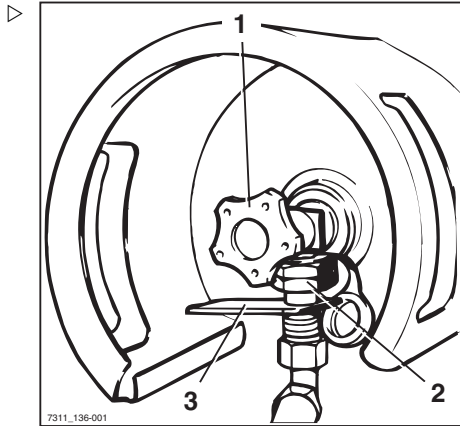
- The connecting nuts on the cylinders must only be released slowly and, at first, only very slightly; otherwise, the gas remaining in the line will spurt out.
- The lines and related equipment for gas in the liquid phase and LPG containers must not be exposed to an impermissible level of heat.
- Removable LPG containers (LPG cylinders) must be positioned on the truck such that they are lying with the collar opening facing downwards.
- Upon installation and removal, the gas outlet connection of the cylinder valve must be sealed with a lock nut that has been securely tightened using a wrench.
- Before the LPG cylinders are connected, the pipe connections must be checked to ensure that they are in good condition.
- After removal, the cylinder cap must immediately be screwed onto the cylinders fitted with a lock nut.
- The valves must be opened slowly.
- Leaking gas cylinders must not be reused. Taking all precautions into account, leaking gas cylinders must immediately be emptied outside by blowing and marked as leaking.
- If damaged gas cylinders are supplied, the provider or a representative (service-station attendant etc.) must be immediately notified of the damage present, where possible in writing.
- Even if no accident occurs as a result, explosions involving gas cylinders or LPG systems must be immediately reported to the employers' liability insurance association and the trade supervision agency responsible (applies to Germany). Damaged parts must be stored carefully until the conclusion of the investigation. Observe the national regulations in the relevant country!
- Removable LPG containers may only be changed in storage rooms if there is no possibility of a hazardous explosive atmosphere being produced.

**⚠ WARNING**

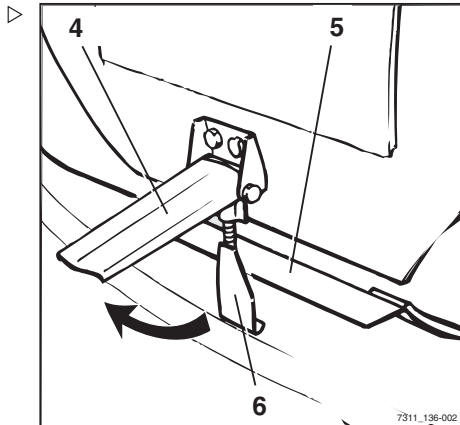
- LPG can cause frostbite on the skin.
- Wear protective gloves.

## Refuelling

- Close the cylinder valve (1).
- Securely grip the connection nipple using the handhold (3) and carefully (2) loosen the union nut (left-hand thread).



- Swivel the handle of the tensioning device (4) upwards and remove the hook (6) from the support mounting.
- Remove the upper part of the cylinder holder (5).
- Exchange the empty gas cylinder for a full one.
- When installing the gas cylinder, make sure that the connection screw joint of the cylinder shut-off valve points vertically downwards.
- Secure the gas cylinder properly in the cylinder holder.
- Open the cylinder valve (1) by slowly turning the star-grip handle anti-clockwise.
- Check whether the hose or connection screw joints have iced over.



### **⚠ DANGER**

**There is a risk of explosion if LPG escapes!**

Do not start the engine if there is a leakage, gas smell etc.

- Close the cylinder valve again.
- Notify your supervisor or the authorised service centre.

## Changing the LPG cylinder in a double-cylinder holder



### **⚠ DANGER**

**There is a risk of explosion if LPG escapes!**

Escaping LPG may explode when exposed to ignition sources and cause serious accidents.

- Do not use LPG cylinders with an expired inspection date.
- Observe the inspection intervals stipulated in the Pressure Equipment Directive. The most recent inspection date marked on the LPG cylinder is the date that applies. Observe the national regulations in the relevant country!
- Switch off the engine.
- Do not smoke or use a naked flame/lighter.
- Ensure that permissible LPG cylinders are used.
- Only change LPG cylinders in well-ventilated spaces, away from openings in the ground.
- Thaw frozen system parts with hot water, hot sandbags or similar.



### **⚠ DANGER**

**Risk of explosion from spark discharge!**

- Do not use a striking tool when opening and closing.



### **⚠ WARNING**

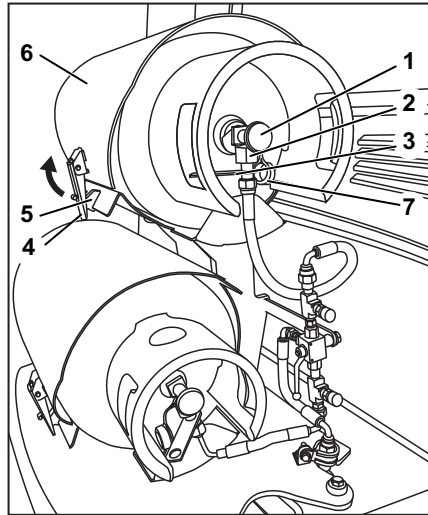
LPG can cause frostbite on the skin!

- Wear protective gloves.

The process for changing the gas cylinder is the same for both cylinders.

## Refuelling

- Close the cylinder valve (1) of the gas cylinder ▷
- Securely grip the connection nipple using the handhold (3) and carefully loosen the union nut (2) (left-hand thread).
- Swivel the handle of the tensioning device (4) upwards and remove the hook (5) from the holder.
- Remove the upper part of the cylinder holder (6).
- Remove the empty gas cylinder and screw on the cylinder cap (7).
- Install the full gas cylinder.
- When installing the gas cylinder, make sure that the connection screw joint of the cylinder shut-off valve points vertically downwards.
- Insert the upper part of the cylinder holder.
- Fit the hook to the holder and swivel the handle of the tensioning device downwards.
- Securely grip the connection nipple using the handhold and screw on the union nut.
- Open the cylinder valve by slowly turning the star-grip handle anti-clockwise.
- Check to see whether the hose and connection screw joints have iced over.



## Filling the LPG tank (variant)



### **⚠ DANGER**

**There is a risk of explosion if LPG escapes!**

If LPG escapes when filling the LPG tank (1), exposure to ignition sources can cause the LPG to explode.

- Switch off the engine.
- Do not smoke or use a naked flame/ fire.
- Observe the safety regulations for working with LPG.
- Observe the safety information for the filling station.



### **⚠ DANGER**

**Risk of explosion from spark discharge!**

Striking tools can generate sparks.

- Open or close the shut-off valve or the locking cap without using striking tools.

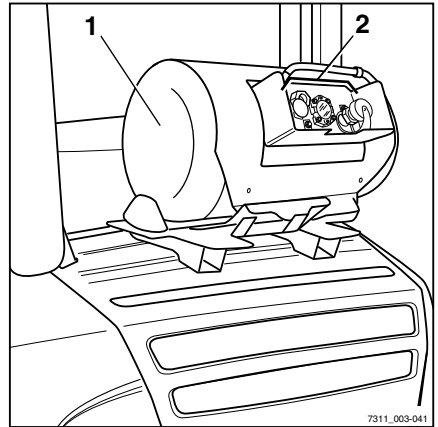


### **⚠ DANGER**

**Risk of explosion during thawing of gas system!**

Gas can ignite and explode when exposed to excessive heat, naked flames, glowing objects and objects that produce sparks. Frozen system components must only be thawed using warm air, warm water, warm sand bags or similar. The temperature of the applied heat must not exceed 50°C. Do not apply warm air directly using a heating device, e.g. a hot air blower. The gas can ignite when it comes into contact with the heating coil in devices of this kind. It is acceptable to deliver the warm air via a warm-air hose.

- Thaw frozen system parts with a temperature < 50°C.
- Set up heating appliances at a sufficiently safe distance from the truck.

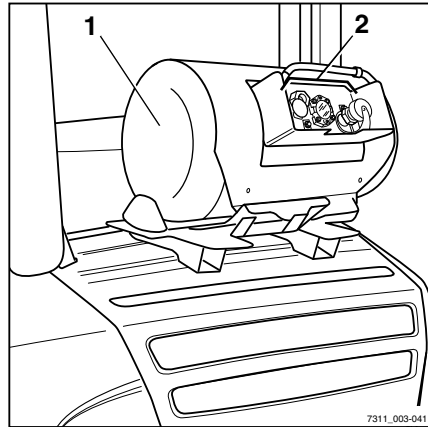


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## Refuelling

### Observe the following safety regulations in all cases:

- Observe the safety guidelines for LPG trucks
- Only allow trained personnel to fill the LPG tank
- Only fill the LPG tank at filling stations in which compressed gases in pressurised gas containers are filled exclusively for your own use ("filling stations that do not require prior authorisation").
- Before connecting the pistol-type nozzle, check whether the LPG tank (1) or the fitting (2) exhibit any defects.
- Adhere to the inspection intervals in the pressure vessel code. The most recent inspection date marked on the container is the date that applies. Do not use containers with an expired inspection date.
- If defects are detected or if the inspection deadline has passed, do not fill the LPG tank.
- The piping and related accessories for gas in the liquid phase and in the LPG container must not be exposed to an impermissible level of heat.
- Explosions involving a gas cylinder or an LPG system must always be reported immediately (in Germany, to the employers' liability insurance association and the responsible industrial inspectorate). Store damaged components until the investigation has been completed.
- Replace removable LPG containers in storage rooms only when there is no risk of an explosive atmosphere being produced.
- Observe the national regulations for the country in which the truck is being used.



### NOTE

*We recommend refuelling the truck before starting work and when the engine is cold. If there is a major difference in temperature between the storage tank out in the open and the LPG tank on the truck, the delivery pressure of the pump may no longer be sufficient to ensure that filling occurs properly.*

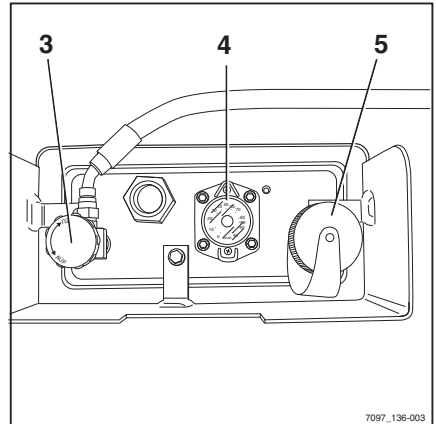




**⚠ WARNING**

- LPG can cause frostbite on the skin.
- Wear protective gloves.

- Switch off the engine and heating system.
- Close the shut-off valve (3).
- Unscrew the locking cap (5) from the filling valve.
- Check that the connection thread of the pistol-type nozzle is clean.
- Screw the pistol-type nozzle to the filling valve securely.
- Open the main shut-off valve for the filling system.
- Switch on the pump motor and actuate the pistol-type nozzle until the tank valve switches off the filling process.

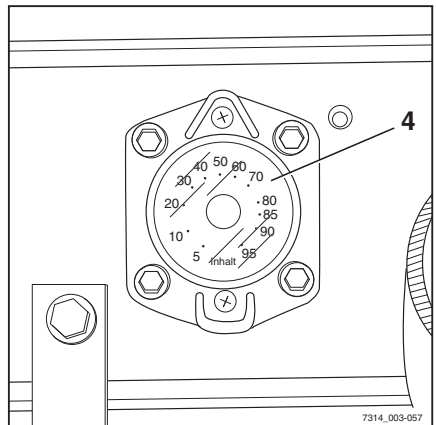


**⚠ CAUTION**

It is possible to underfill or overfill the LPG tank!

- Only fill the LPG tank until the tank valve switches itself off.

- Do not fill according to the fill level indicator (4).
- Release the actuating lever for the pistol-type nozzle immediately after the tank valve has switched off and stop the filling process.
- Switch off the pump motor and close the main shut-off valve of the filling station.
- Carefully unscrew the pistol-type nozzle from the filling valve.
- Screw the locking cap (5) back onto the filling valve.



## Refuelling



### **⚠ DANGER**

#### **Risk of explosion in the event of irregularities!**

If irregularities or noteworthy incidents occur during the filling process that are not covered in these operating instructions, there is a risk of serious accidents in certain circumstances.

- Take the following measures immediately.

#### **Action in the event of irregularities:**

- Stop filling the tank immediately.
- If possible, remove the pistol-type nozzle and screw on the locking cap.
- In the event of faults in the gas system, do not operate the truck until the fault is resolved.
- Contact your supervisor, the fleet manager or the authorised service centre.

## Cleaning

### Cleaning the truck



#### ⚠ WARNING

Risk of injury from falling off the truck!

When climbing onto the truck, there is a risk of getting stuck or slipping and falling. Use suitable equipment to reach higher points on the truck.

- For climbing onto the truck, use only the steps provided for this purpose.
- For reaching inaccessible places, use devices such as stepladders or platforms.



#### ⚠ WARNING

Risk of fire due to flammable cleaning materials!

Flammable cleaning materials can be ignited by hot components.

- Do not use any flammable cleaning materials.



#### ⚠ CAUTION

Risk of fire due to flammable materials!

Deposits and solids can be ignited by hot components, e.g. drive units.

- Remove deposits and solids.

#### ⚠ CAUTION

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

The engine must be switched off during washing.

Do not use water to clean the area around the central electrical system; instead, only clean with a dry cloth or clean compressed air.

- Adhere strictly to the following steps.

#### ⚠ CAUTION

Excessive water pressure or water and steam that are too hot can damage truck components.

- Adhere strictly to the following steps.

## Cleaning

### **⚠ CAUTION**

Abrasive cleaning materials can damage the surfaces of components!

Using abrasive cleaning materials that are unsuitable for plastics can cause plastic parts to dissolve or become brittle. The screen on the display-operating unit could become cloudy.

- Adhere strictly to the following steps.
- 
- Park the truck securely.
  - Switch off the key switch.
  - Do not spray electric motors and other electrical components or their covers directly with water.
  - Use only high-pressure cleaners with a maximum output power of up to 50 bar and 85°C.
  - If a high-pressure cleaner is used, maintain a distance of at least 20 cm between the nozzle and the object being cleaned.
  - Do not aim the cleaning jet directly at adhesive labels or decal information.
  - Remove all deposits and accumulations of foreign materials in the vicinity of hot components.
  - Use only non-flammable fluids for cleaning.
  - Observe the manufacturer's guidelines for working with cleaning materials.
  - Clean plastics only with cleaning materials intended for plastics.
  - Observe the manufacturer's guidelines for working with cleaning materials.
  - Clean the truck exterior using water-soluble cleaning materials and water. Cleaning with a water jet, a sponge or a cloth is recommended.
  - Clean all accessible areas.
  - Before lubrication, clean the oil filling openings and the area around the oil filling openings, as well as the lubricating nipples.

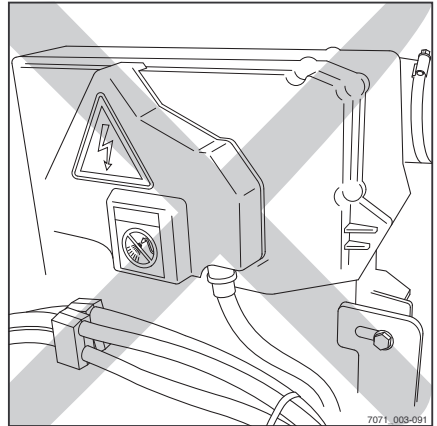
## Cleaning the electrical system



### 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.



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## Cleaning load chains

### WARNING

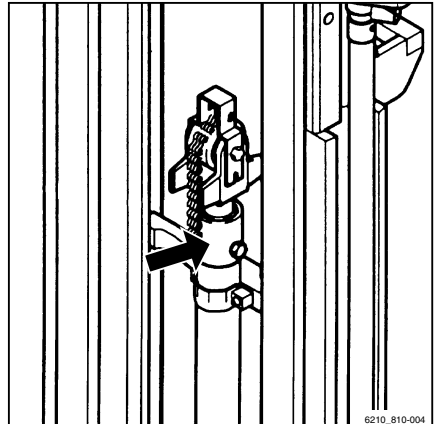
Risk of accident!

Load chains are safety elements.

The use of cold/chemical cleaners or fluids that are corrosive or contain acid or chlorine can damage the chains and is forbidden!

- Observe the manufacturer's guidelines for working with cleaning materials.
- 
- Place a collection vessel under the lift mast.
  - Clean with paraffin derivatives, such as benzine.
  - When using a steam jet, do not use additional cleaning agents.
  - Remove any water in the chain links using compressed air immediately after cleaning. Move the chain several times during this procedure.
  - Immediately after drying the chain, spray it with chain spray. Move the chain several times during this procedure.

For chain spray specifications, see the "Maintenance data table" chapter.



8210\_810-004

## Cleaning



### ENVIRONMENT NOTE

*Dispose of any fluid that has been spilled or collected in the collection vessel in an environmentally friendly manner. Follow the statutory regulations.*

## Cleaning the windows

Any panes of glass, e.g. cab windows (variant), must always be kept clean and free of ice. This is the only means of guaranteeing good visibility.

### CAUTION

Do not damage the rear window heater (inside)!

- Take great care when cleaning the rear window and do not use any objects with sharp edges.
- 
- Clean the windows using a commercially available glass cleaner.

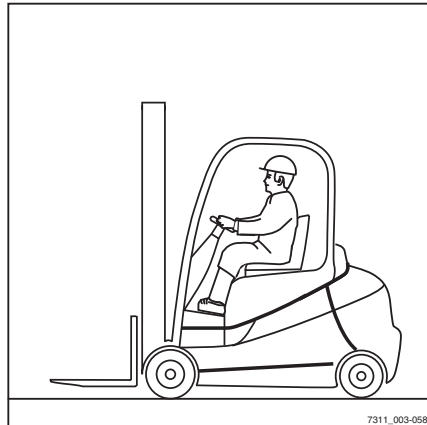
## After washing

- Carefully dry the truck (e.g. with compressed air).
- Sit on the driver's seat and start up the truck in accordance with regulations.

### CAUTION

Risk of short circuit!

- If any moisture has penetrated into the engine despite the precautionary measures taken, this must first be dried with compressed air.
- The truck must then be started up to prevent possible corrosion damage.



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## Procedure in emergencies

### Procedure if truck tips over

#### **⚠ DANGER**

**If the truck tips over, the driver could fall out and slide under the truck with potentially fatal consequences. There is a risk to life.**

Failure to comply with the limits specified in these operating instructions, e.g. driving on unacceptably steep gradients or failing to adjust speed when cornering, can cause the truck to tip over. If the truck starts to tip over, do not leave the truck under any circumstances. This increases the danger of being hit by the truck.

- Do not release your seat belt.
- Never jump off the truck.
- You must adhere to the rules of behaviour if the truck tips over.

#### **Rules of behaviour if truck tips over:**

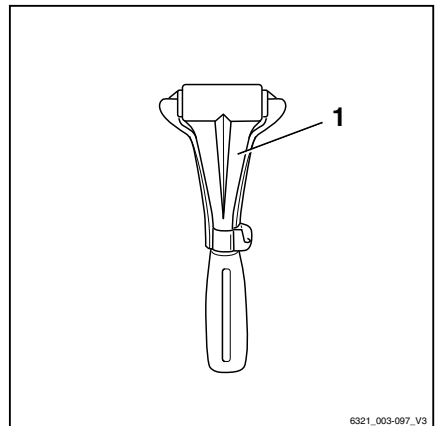
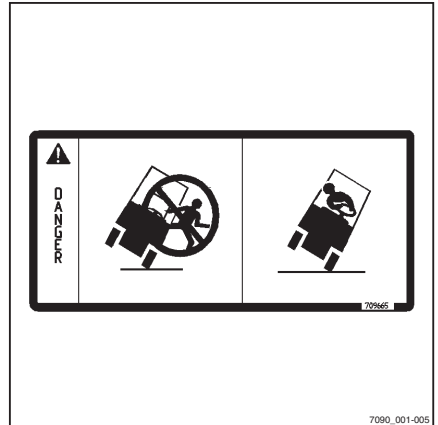
- Hold onto the steering wheel with your hands.
- Brace your feet in the footwell.
- Bend your upper body over the steering wheel.
- Bend your body against the direction of the fall.

### Emergency hammer

The emergency hammer is used to rescue the driver if he is shut inside the cab in a hazardous situation, for example if the truck has toppled over and the cab door cannot be opened.

Single-pane safety glass can be struck relatively safely using the emergency hammer in order for the driver to escape or be rescued from the danger area.

#### **Using the emergency hammer**



## Procedure in emergencies

### **⚠ WARNING**

When glass is smashed there is a risk of injury caused by glass splinters!

When the cab glass is smashed, splinters of glass can shoot into the face and cause damage to skin and eyes through cuts. When a pane of glass is smashed, the face should be turned away and covered with the crook of the free arm.

- Protect the face when smashing a pane of glass.
- 
- Pull the emergency hammer out of its support mounting at the handle.
  - Using one of the two metal tips on the head of the emergency hammer, hit the pane of glass with force until it breaks.

## Emergency lowering

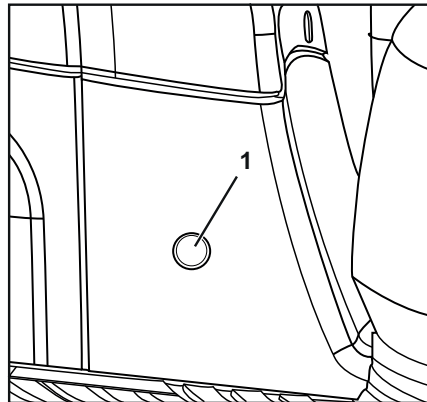
If the hydraulic controller fails whilst a load is raised, emergency lowering can be performed. An emergency lowering screw designed for this purpose is located on the valve block.



### **⚠ DANGER**

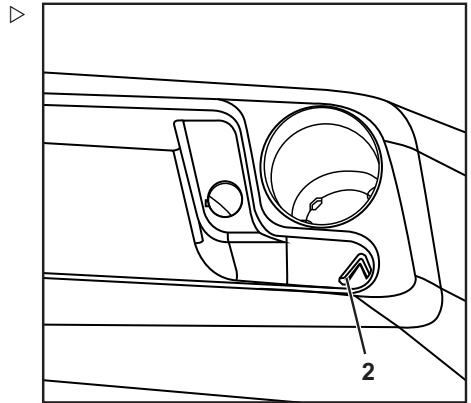
**There is a risk to life from falling loads or from truck components being lowered.**

- Do not walk beneath the raised load.
  - Adhere to the steps detailed below.
- 
- Remove the lid (1) on the right-hand side of the footwell panelling near the accelerator pedal. ▷

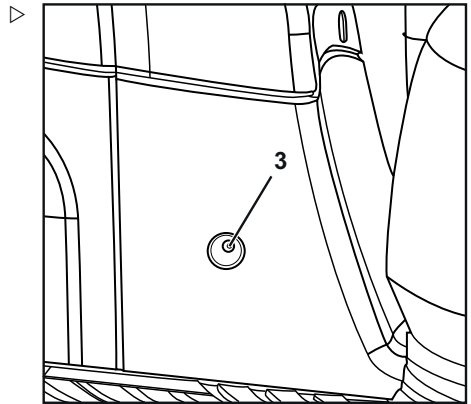




- Remove the hexagon socket wrench (2) from the compartment on the right next to the driver's seat.



- Using the hexagon socket wrench, turn the emergency lowering screw (3) a maximum of 1.5 revolutions to loosen it.



#### **⚠ WARNING**

The load is lowered!

Unscrewing the emergency lowering screw regulates the lowering speed.

- Observe the list of points below.

#### **The following applies:**

- Tightening torque:  
Max. 2.5 Nm
- Unscrewing the emergency lowering screw slightly:  
The load is lowered slowly
- Unscrewing the emergency lowering screw further:  
The load is lowered quickly

#### **After lowering:**

- Re-tighten the emergency lowering screw.
- Return the hexagon socket wrench to the support mounting in the compartment.
- Refit the lid.

## Procedure in emergencies

### DANGER

If the truck is operated while the hydraulic controller is blocked, there is an increased risk of accidents.

- After the emergency lowering procedure, have the malfunction rectified.
- Notify the authorised service centre.

## Emergency operation of the electric parking brake



### DANGER

**Risk of fatal injury from being run over if the truck rolls away!**

Emergency operation of the parking brake can be initiated only when the fork is lowered and the truck is switched off.

The truck can roll away when the parking brake is released.

- Use wedges to prevent the truck from rolling away.
- Lower the fork to the ground.
- Switch off the key switch.

The electric parking brake can be released and applied via an emergency actuation mechanism.

The emergency operation of the electric parking brake is required under the following conditions:

- The parking brake is not functioning properly.
- No power supply to the parking brake, e.g. if the starter battery is discharged or removed



### NOTE

*If the parking brake is released via the emergency actuation mechanism, it is possible to drive the truck at a low speed.*

- *This allows the truck to be moved out of the hazardous situation or to the repair location.*
- *Driving with a faulty parking brake requires the driver to be especially vigilant.*

- Lift the cover (1) and fold it up.

**Release parking brake ←(P)→**

**⚠ CAUTION**

Risk of component damage by pulling on the emergency actuation mechanism with excessive force!

- Apply a maximum force of 50 N to the emergency actuation mechanism.
- If the emergency actuation mechanism does not move, depress the brake pedal.

- To release the mechanism, fully depress the brake pedal and hold it down.
- Remove and hold on to the emergency actuation mechanism (2).
- Release the brake pedal. Let go of the emergency actuation mechanism (2).

Once two grooves are visible (see arrow), the parking brake is released.

**Apply parking brake →(P)←**

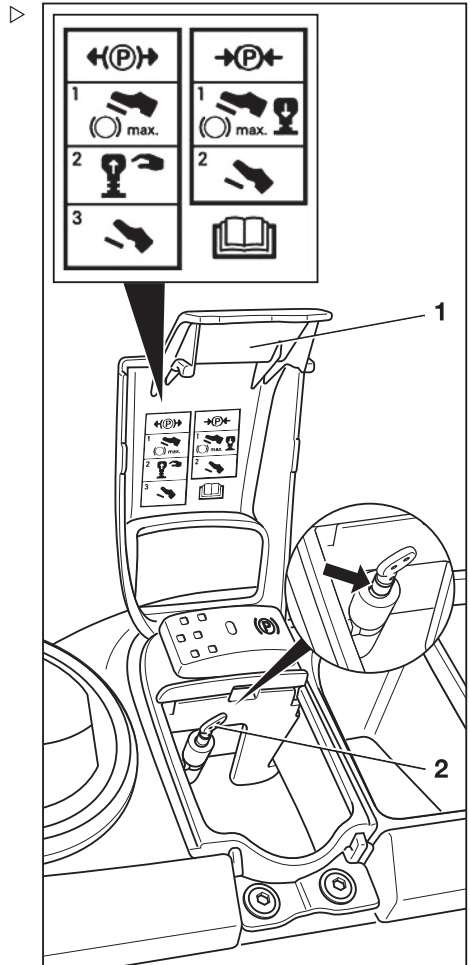
- Fully depress the brake pedal.

The emergency actuation mechanism (2) returns to its initial position.

- Release the brake pedal.

Once only one groove is visible (see arrow), the parking brake is applied.

- If the status of the parking brake cannot be reliably determined from the position of the emergency actuation mechanism, secure the truck with wedges.



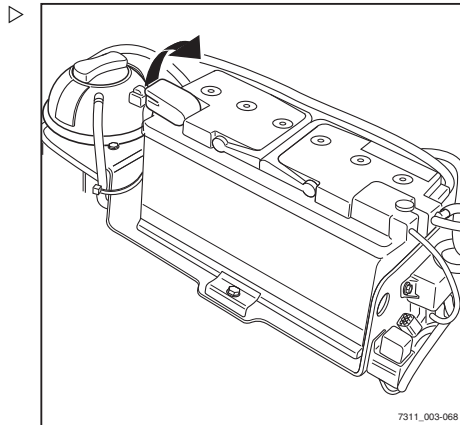
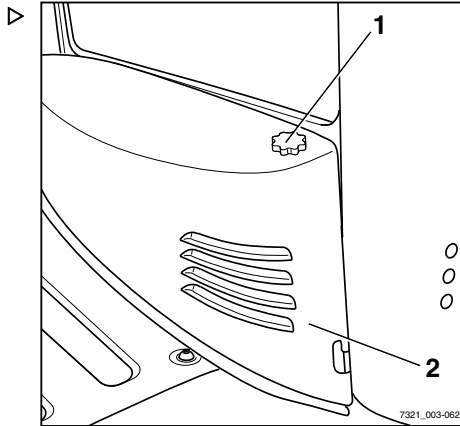
## Procedure in emergencies

### Disconnecting the battery

In order to quickly disconnect the battery in the event of a dangerous situation (e.g. a burning cable or electrical malfunction), the negative battery terminal is fitted with a quickly removable battery-terminal clip.

Proceed as follows to quickly disconnect the battery:

- Unscrew star-grip screws (1) to the left and right of the rear cover and fold the cover (2) back.
- Pull the negative terminal battery-terminal clip upward.
- Lift the battery-terminal clip off the negative terminal of the battery and place it to the side.



## Jump-starting

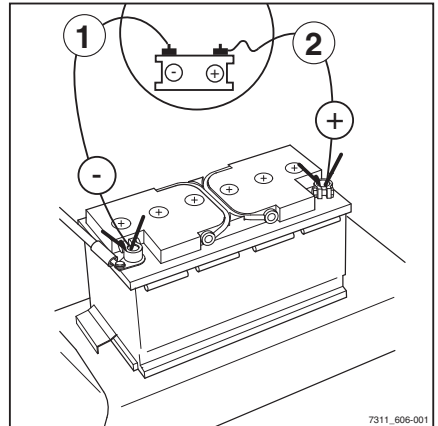


### **⚠ DANGER**

#### **Risk of explosion from spark discharge!**

If the electrical system on the truck is switched on, or a live cable touches a metal part of the truck, this can cause a spark discharge. Any escaping gas may explode as a result.

- If the truck has not been used for a long period of time and before starting work, ensure that the closed room is well ventilated before operating the truck.
- The metal parts of the truck must not touch the connecting terminals.



### **NOTE**

A 12-V power source (e.g. second forklift truck of the same type) must be available.

### **⚠ WARNING**

Risk of short circuit if the jump leads are connected or disconnected in the incorrect order!

If the battery's negative terminals are connected to the negative cable, both bodies are also conductively connected to one another. If the positive cable touches one of the two bodies as further cables are connected, a short circuit can occur.

- Ensure that the correct order is followed when connecting and disconnecting the jump leads.
- Remove covering from the back, see ⇒ Chapter "Removing and attaching the rear cover", Page 358 .
- Leave the engine of the current-giving truck to run.

#### **Connect the jump leads:**

- Connect the positive cable (2) to the positive terminal on the discharged battery.
- Connect the positive cable to the positive terminal on the current-giving battery.
- Connect the negative cable (1) to the negative terminal on the current-giving battery.
- Connect the negative cable to negative terminal on the discharged battery.

## Procedure in emergencies

### ⚠ CAUTION

The vibrations produced when the engine is started can cause the jump leads to slip off. There is a risk of short circuit!

- Before starting the engine, check that the jump leads are connected securely.
- Start the engine, see → Chapter "Starting the engine", Page 132 .

### Disconnect the jump leads:

- Disconnect the negative cable (1) from the negative terminal on the discharged battery.
- Disconnect the negative cable from the negative terminal on the current-giving battery.
- Disconnect the positive cable (2) from the positive terminal on the discharged battery.
- Disconnect the positive cable from the positive terminal on the current-giving battery.



### NOTE

*Leave the engine to run because the battery is not yet sufficiently charged.*

- Replace the covering at the back.

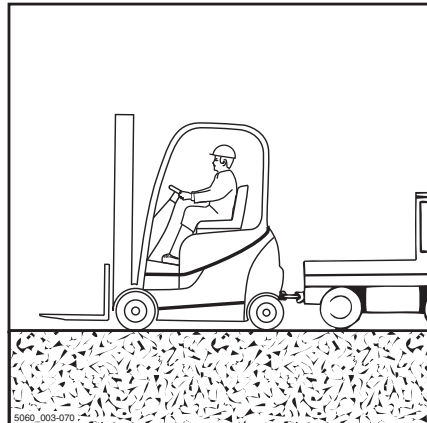
## Towing

### ⚠ DANGER

#### Risk of accident due to failure of the brake system of the towing vehicle!

If the brake system of the towing vehicle is not adequately sized, the vehicle may not brake safely or the brakes may fail. The towing vehicle must be designed such that it is able to absorb the pulling and braking forces from the unbraked towed load (the actual total weight of the truck).

- Check the pulling and braking forces of the towing vehicle.



**⚠ DANGER**

**If the towing vehicle brakes, there is a risk that the truck will drive into the towing vehicle!**

If a rigid connection has not been used for power transmission in two directions during towing, the truck may drive into the towing vehicle when the towing vehicle brakes. Use a tested tow bar for safety reasons.

- Use a tested tow bar.

**⚠ CAUTION**

If the truck drive between the drive motor and the drive axle is not interrupted, the drive may be damaged.

- Place the drive direction switch in the neutral position.

**⚠ DANGER**

**While manoeuvring, there is a risk of fatal injury in the area between the truck and the towing vehicle!**

Inform the driver of the towing vehicle and the mechanic attaching the tow bar about the risks. When you fit the tow bar, always use a second person to guide the towing vehicle manoeuvres.

- Manoeuvre with a second person as a guide.

**⚠ CAUTION**

Steering is stiff! There is no power steering if the hydraulics fail!

- Select a slow towing speed to ensure that the truck and the towing vehicle can be braked and controlled effectively at all times.

**⚠ CAUTION**

If the truck is not steered while it is being towed, the truck may veer out in an uncontrolled manner!

- The truck being towed must also be steered by a driver.
  - The driver of the truck being towed must sit in the driver's seat and fasten the seat belt before towing.
  - Where possible, activate the restraint systems provided.
- 
- Set down the load and lower the fork arms so that they are close to the ground.

## Procedure in emergencies

- Set the drive direction switch to the neutral position.
- Apply the parking brake.
- Switch off the key switch.
- Check the pulling and braking forces of the towing vehicle.
- With a second person as a guide, manoeuvre the towing vehicle to the truck.
- Secure the tow bar to the tow coupling on the towing vehicle and on the truck.
- Sit in the driver's seat of the truck being towed and fasten the seat belt.
- Where possible, activate the restraint systems provided.
- Release the parking brake.
- Select a slow towing speed.
- Tow the truck.
- After towing, secure the truck so that it cannot roll away (e.g. by applying the parking brake or by using wedges).
- Remove the tow bar.



## Transporting the truck

### Transporting

#### ⚠ CAUTION

Risk of material damage from overloading!

If the truck is driven onto a means of transport, the load capacity of the means of transport, the ramps and the loading bridges must be greater than the actual total weight of the truck. Components can be permanently deformed or damaged due to overloading.

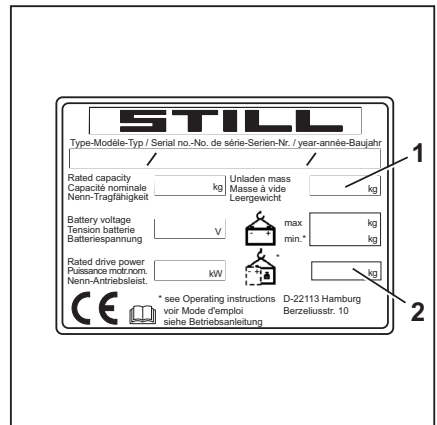
- Determine the total actual weight of the truck.
- Only load the truck if the load capacity of the means of transport, the ramps and the loading bridges is greater than the actual total weight of the truck.

#### Determining the total actual weight

- Park the truck safely.
- Determine the unit weights by reading the truck nameplate and, if necessary, the attachment nameplate (variant).
- Add together the determined unit weights to obtain the total actual weight of the truck:

Net weight (1)

- + Ballast weight (variant) (2)
- + Net weight of attachment (variant)
- + 100 kg allowance for driver
- = Total actual weight



## Transporting the truck

### **⚠ DANGER**

#### **Risk of accident from the truck crashing!**

Steering movements can cause the rear of the truck to veer off the loading bridge towards the edge. This may cause the truck to crash.

- Before driving across a loading bridge, ensure that the loading bridge is properly attached and secured.
- Ensure that the transport vehicle onto which the truck is to be driven has been sufficiently secured against moving.
- Maintain a safety distance from edges, loading bridges, ramps, working platforms etc.
- Drive slowly and carefully onto the transport vehicle.

#### **Wedging the wheels**

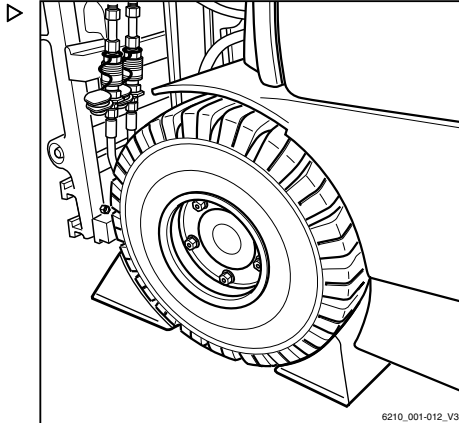
- Use two wedges to secure each of the front and rear wheels against sliding or rolling away.

#### **Lashing down**

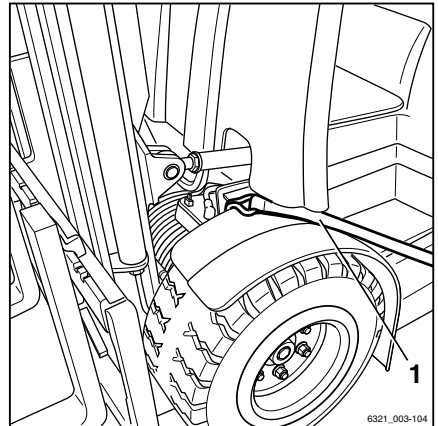
### **⚠ CAUTION**

Harnesses can rub against the seating and cause damage!

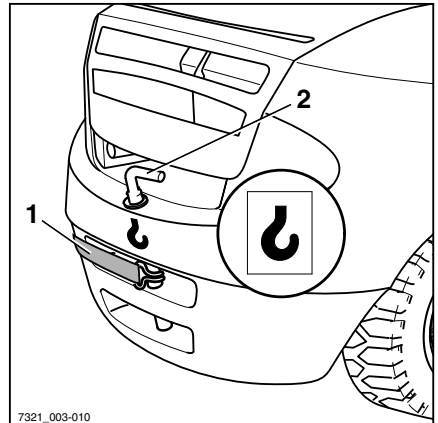
- Place a slip-resistant material between the harness and the seating, e.g. rubber mats or foam.



- Attach the harness (1) to each side of the truck.
- Lash the truck towards the rear.



- Attach the harness (1) to the coupling pin (2) or loop the harness around the coupling pin.
- Lash the truck at both sides.



**⚠ DANGER**

**The truck may slip if the harnesses slip!**

The truck must be lashed securely to ensure that it does not move during transportation.

- Ensure that the harnesses are tightened securely and that the pads cannot slip off.

**Crane loading**

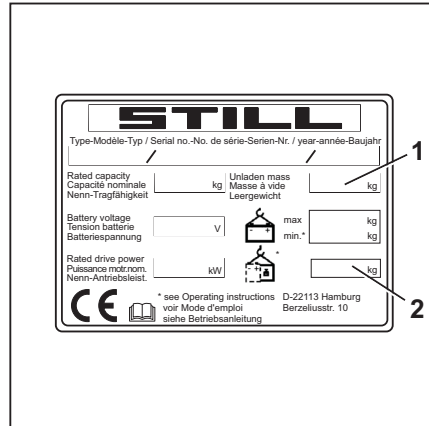
Crane loading is only intended for transporting the complete truck, including the lift mast, for its initial commissioning. For application conditions that require frequent loading or that are not presented here, please contact the manufacturer with regard to special equipment variants.

Trucks may only be laden by persons with sufficient experience of suitable harnesses and hoists.

## Transporting the truck

### Determining the loading weight

- Park the truck securely; see ⇒ Chapter "Parking the truck securely and switching it off", Page 183 .
- Determine the unit weights by reading them off the truck nameplate and, if necessary, the attachment (variant) nameplate.
- Add the determined unit weights to obtain the loading weight of the truck:
  - Tare weight (1)
  - + Ballast weight (variant) (2)
  - + Attachment net weight (variant)
  - = Loading weight



### Hooking on the lifting straps

#### ⚠ CAUTION

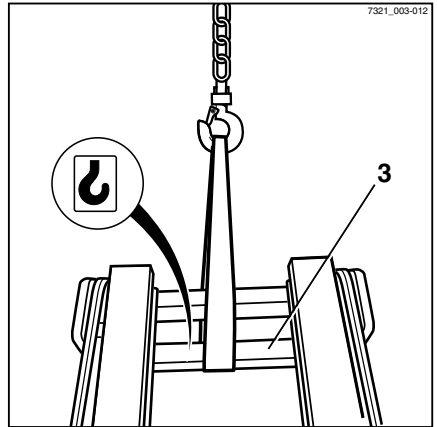
- Harnesses may damage the truck's paintwork!
- Harnesses may damage paintwork by chafing and pressing on the surface of the truck. Hard or sharp-edged harnesses, such as wires or chains, can quickly damage the surfaces.
- Use textile harnesses, e.g. lifting straps, with edge protectors or similar protective devices if necessary.

#### ⚠ DANGER

**There is a risk of being hit if the hoists and harnesses fall and cause the truck to fall. Danger to life!**

- Only use hoists and harnesses with adequate load capacity for the determined loading weight.
- Only use the truck's designated lifting points.
- Make sure that harnesses such as hooks, shackles, belts etc. are only used in the indicated load direction.
- The harnesses must not be damaged by truck parts.

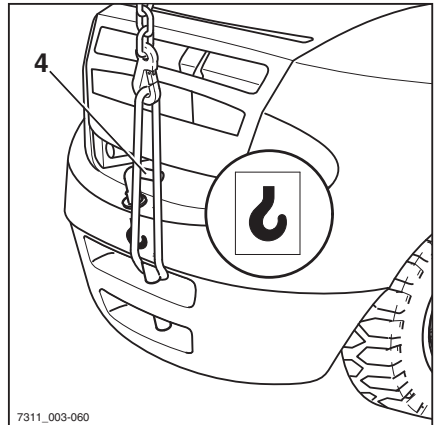
- Loop the lifting straps around the main traverse (3) on the outer mast of the lift mast.



**i** NOTE

*The lifting points are indicated by a hook symbol.*

- Loop the lifting straps around the tow bolt (4) in the tow-bar eye of the towing device.
- Secure the tow bolt.
- Determine the truck's centre of gravity; see →Chapter "Dimensions", Page 392 .



## Transporting the truck

- Adjust the length of the harnesses so that the lifting eye (6) is directly above the truck's centre of gravity.

This ensures that the truck hangs level when lifted.

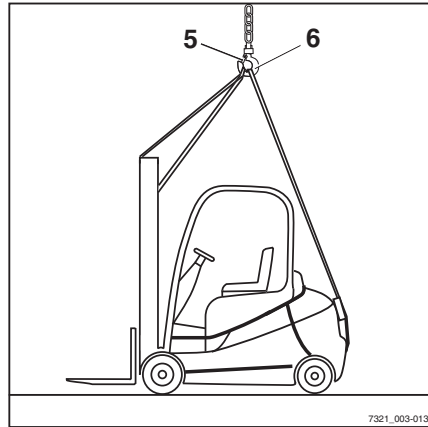
- Connect the lifting straps to the lifting eye and insert the safety device (5).

### ⚠ CAUTION

Incorrectly fitted harnesses may damage attachment parts!

Pressure from the harnesses can damage or destroy attachment parts when the truck is lifted. Take particular care to ensure the LPG tank system is not damaged or destroyed. LPG might leak out if LPG systems are damaged.

- Secure harnesses so that they are not touching any attachment parts.
  - If applicable, the LPG cylinder or LPG tank should be disassembled by trained personnel.
- 
- Check that harnesses cannot collide with attachment parts.



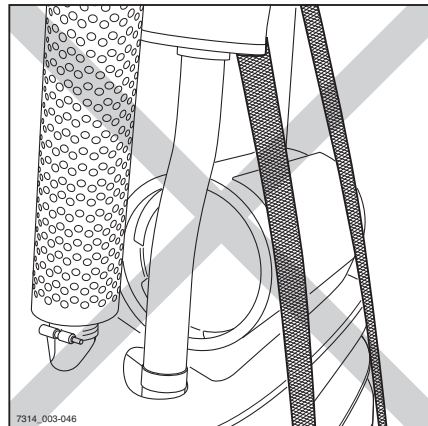
## Loading the truck



### ⚠ DANGER

**If the raised truck swings in an uncontrolled fashion, it may crush people. There is a risk to life!**

- Never walk or stand underneath suspended loads.
  - Do not allow the truck to bump into anything whilst it is being lifted, or allow it to move in an uncontrolled way.
  - If necessary, hold the truck using guide ropes.
- 



- Carefully lift the truck and set it down at the intended location.

## Short-term operation

### NOTE

*If the truck is operated frequently and only for short periods, the cooling circuit of the engine cannot reach the operating temperature. The evaporator of the LPG system is heated by the coolant circuit of the engine. This prevents the evaporator from icing over because gas cools significantly upon evaporation. The gas supply can be interrupted if the evaporator ices over. This causes the engine to come to a halt.*

The evaporator can ice over as a result of:

- Frequent operation for short periods
- High engine loads at low ambient temperatures

### NOTE

*Avoid short-term operation and high motor loads in low ambient temperature wherever possible. If necessary, run the engine until the operating temperature is reached.*

If the engine stalls suddenly and does not start again, check whether the evaporator has iced over and de-ice the evaporator as necessary; refer to the section entitled "De-icing the evaporator".

## Decommissioning

# Decommissioning

## Shutting down and storing the truck

### ⚠ CAUTION

Component damage due to incorrect storage!

If the truck is stored or shut down incorrectly for more than two months, it may suffer corrosion damage. If the truck is parked in an ambient temperature of less than  $-10^{\circ}\text{C}$  for an extended period, the battery will cool down. The electrolyte may freeze and damage the battery.

- Carry out the following measures before shut-down.

### ⚠ CAUTION

Danger of tyre deformation by continuously loading on one side!

Have the truck raised and jacked up only by the authorised service centre so that all the wheels are clear of the ground. This prevents permanent deformation of the tyres.

### ⚠ CAUTION

Danger of damage from corrosion due to condensation on the truck!

Many plastic films and synthetic materials are water-tight. Condensation water on the truck cannot escape through these covers.

- Do not use plastic film as this facilitates the formation of condensation water.



### NOTE

*Store only fully charged batteries.*

## Measures before shutdown

- Store the truck in a dry, clean, frost-free and well-ventilated environment.
- Clean the truck thoroughly; see the chapter entitled "Cleaning".
- Lift fork carriage to stop several times.
- Tilt the lift mast forwards and backwards several times and, if fitted, move attachment repeatedly.



- To relieve the strain on the load chains, lower the fork onto a suitable supporting surface, e.g. a pallet.
- Check the hydraulic oil level and top up if required.
- Apply a thin layer of oil or grease to all untreated moving parts.
- Grease the forklift truck.
- Lubricate the joints and controls.
- Remove LPG cylinder.
- Remove the battery and store in a warm and dry location.
- Regularly check the charge state of the battery and recharge if necessary.
- Apply a suitable contact spray to all exposed electrical contacts.
- Preserve the engine as specified by the manufacturer.
- Cover the truck with vapour-permeable materials, such as cotton, in order to protect against dust.
- If the truck is to be shut down for even longer periods, contact your authorised service centre to find out about additional measures.

## Returning to service after decommissioning



### **⚠ DANGER**

#### **Risk of explosion!**

If the truck has been parked in an enclosed space for an extended period of time, there is a risk of explosive gases forming as a result of potential leakages on the truck or as a result of gas emissions.

- Ventilate the room well before switching on the electrical system.

If the truck has been decommissioned for longer than six months, the truck must be carefully checked before being recommissioned. As with the yearly safety inspection, this check

## Decommissioning

must also include all safety-related aspects of the truck.

- Thoroughly clean the truck.
- Oil joints and controls.
- Check the battery condition and acid density, and recharge the battery if necessary.
- Restore the engine to normal condition as specified by the engine manufacturer.
- Check if there is any condensation water in the hydraulic oil and replace the oil if necessary.
- Change the brake fluid.
- Connect the LPG cylinder; see the chapter entitled "Changing the LPG cylinder".
- Check the LPG tank (variant).
- Check the LPG system for leak tightness using leak spray.
- Check the screw joints of the LPG system for tightness.
- Have the same checks and tasks carried out by the authorised service centre that were carried out before initial commissioning.
- Carry out the checks and tasks that are to be performed before daily use.
- Recommission the truck.

During commissioning, the following points must be checked in particular:

- Leak tightness and function of the LPG system
- Drive, controller, steering
- Brake system (service brake, parking brake, regenerative brake)
- Lifting system (lifting accessories, load chains, mounting)



### NOTE

*For further information, see the workshop manual for the truck or contact the authorised service centre.*

**5**

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## **Maintenance**

## Safety regulations for maintenance

# Safety regulations for maintenance

## General information

### **⚠ DANGER**

#### **Risk of fatal poisoning!**

It is dangerous to leave the engine running in enclosed spaces. The engine consumes oxygen and emits carbon dioxide, carbon monoxide and other poisonous gases. There is a risk of fatal poisoning!

- Only operate the truck in areas that are well ventilated.

To prevent accidents during maintenance work and repair work, all necessary safety measures must be taken, e.g.:

- Apply the parking brake.
- Switch off the key switch and remove the key.
- Ensure that the truck cannot move unintentionally or start up inadvertently.
- If required, have the truck jacked up by the authorised service centre.
- Have the raised fork carriage or the extended lift mast secured against accidental lowering by the authorised service centre.
- Insert an appropriately sized wooden beam as an abutment between the lift mast and the cab, and secure the lift mast to prevent it tilting backwards unintentionally.
- Observe the maximum lift height of the lift mast, and compare the dimensions from the technical data with the dimensions of the hall into which the truck is to be driven. These steps are taken to prevent a collision with the ceiling of the hall and to avoid any damage caused as a result.

## Working on the hydraulic equipment

The hydraulic system must be depressurised prior to all work on the system.

## Working on the electrical equipment

Work may only be performed on the electrical equipment of the truck when it is in a voltage-free state. Function checks, inspections and adjustments on energised parts must only be performed by trained and authorised persons, taking the necessary precautions into account. Rings, metal bracelets etc. must be removed before working on electric components.

To prevent damage to electronic systems with electronic components, such as an electronic driving regulator or lift control, these components must be removed from the truck prior to the start of electric welding.

Work on the electrical system (e.g. connecting a radio, additional headlights etc.) is only permitted with approval from the authorised service centre.

## Working on the ignition system

To prevent personal injury and/or destruction of the ignition system, please observe the following:

- Only connect and disconnect ignition system lines, including high-voltage lines and measuring device lines, with the ignition switched off.
- If the engine is to be operated at starting speed but not actually started (e.g. for a compression pressure test), disconnect the connection assembly from the ignition coil.
- Use of a quick charger to jump start the engine is only permitted for a period of up to 1 minute at max. 16.5 volts.
- The engine may only be washed when the ignition is switched off.
- When performing electric or point welding, completely disconnect the battery.
- Trucks that have a fault in the ignition system, or a suspected fault, may only be towed if the plug is disconnected from the ignition coil.

## Safety regulations for maintenance

### Working on the LPG system



#### **⚠ DANGER**

##### **Risk of explosion!**

Observe the safety regulations for working with LPG.

The condition of the entire LPG system must be kept under constant surveillance to ensure safety of operation, in particular in terms of leakage. It is not permitted to use the truck if the gas system is leaking. When checking for leaks, soapy water, a solution of Nekal or other foaming products must be used.



#### **⚠ DANGER**

##### **Risk of explosion!**

It is not permitted to inspect the gas system using a naked flame for illumination.

The level of harmful substances in the exhaust gases must be set at the lowest possible value (CO content lower than 0.1 vol. % during idling with engine at operating temperature).

When replacing individual system parts, the manufacturers' installation instructions must be observed. The cylinder and main shut-off valves must be closed when doing so.

The condition of the electrical system of trucks running on LPG must be kept under constant surveillance. Sparks may cause explosions if system parts containing gas are leaking. After a truck running on LPG has been shut down for a long period of time, the storage room must be ventilated thoroughly before starting up the truck or its electrical system.

When working in maintenance workshops, the cylinder and main shut-off valves must be closed and the LPG cylinders protected from heat.

Before work breaks and the end of the day's work, a responsible person must check that all valves, in particular cylinder valves, are closed.

Do not perform any work involving fire, in particular welding and cutting jobs, near the LPG cylinders.

LPG cylinders, even when empty, must not be stored in workshops.

## Safety devices

After maintenance and repair work, all safety devices must be reinstalled and tested for operational reliability.

## Set values

The device-dependent set values must be observed when making repairs and when changing hydraulic and electrical components. These are listed in the appropriate sections.

## Lifting and jacking up

### DANGER

#### **There is a risk to life if the truck tips over!**

If not raised and jacked up properly, the truck may tip over and fall off. Only the hoists specified in the workshop manual for this truck are allowed and are tested for the necessary safety and load capacity.

- Only have the truck raised and jacked up by the authorised service centre.
- Only jack the truck up at the points specified in the workshop manual.

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The truck must be raised and jacked up for various types of maintenance work. The authorised service centre must be informed that this is to take place. Safe handling of the truck and the corresponding hoists is described in the truck's workshop manual.

## Working at the front of the truck

### DANGER

#### **Risk of accident!**

If the lift mast or fork carriage is raised, no work may be performed on the lift mast or at the front of the truck unless the following safety measures are observed.

- When securing, only use chains with sufficient load-bearing capacity.
- Contact the authorised service centre.

## Safety regulations for maintenance

### ⚠ CAUTION

Possibility of damage to the ceiling!

- Note the maximum lift height of the lift mast.

### Securing the lift mast against tilting backwards

A hardwood beam with a cross-section of 120 x 120 mm is required. The length of the hardwood beam must approximately correspond to the width of the fork carriage (b3). To avoid impact injuries, the hardwood beam must not protrude beyond the outer contour of the truck. A maximum length matching the total width (b1) of the truck is recommended.

- Obtain the dimensions (b1) and (b3) from the corresponding VDI datasheet.
- Clamp the hardwood beam (1) between the driver protection structure (2) and the lift mast (3).

### Removing the lift mast

#### ⚠ DANGER

##### Risk of accident!

This work must only be performed by an authorised service technician.

- Arrange for an authorised service technician to remove the lift mast.

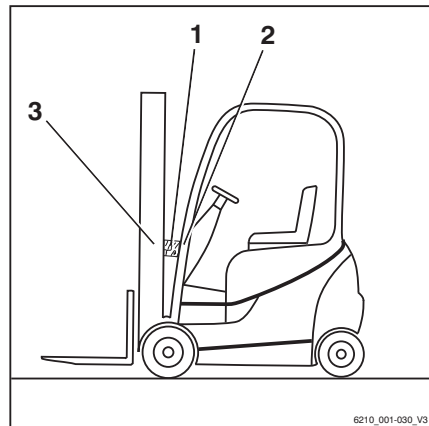
### Securing the lift mast against falling off

#### ⚠ DANGER

##### Risk of accident!

This work must only be performed by an authorised service technician.

- Arrange for an authorised service technician to secure the lift mast.





## General maintenance information

### Personnel qualifications

Only qualified and authorised personnel are allowed to perform maintenance work. Regular safety checks and checks after unusual incidents must be performed by a competent person. The competent person must conduct their evaluation and assessment from a safety standpoint, unaffected by operational and economic conditions. The competent person must have sufficient knowledge and experience to be able to assess the condition of a truck and the effectiveness of the protective devices in accordance with technical conventions and the principles for testing trucks.

### Maintenance work without special qualifications

Simple maintenance work, such as checking the hydraulic oil level, may be carried out by untrained personnel. A qualification such as those held by a competent person is not required to carry out this work. The required tasks are described in the chapter entitled "Remaining ready for operation".

### Information for carrying out maintenance

This section contains all information required to determine when the truck needs maintenance. Carry out maintenance work within the time limits according to the hour meter and using the following maintenance check lists. This is the only way to ensure that the truck remains ready for operation and provides optimal performance and service life. It is also a precondition for any warranty claims.

## General maintenance information

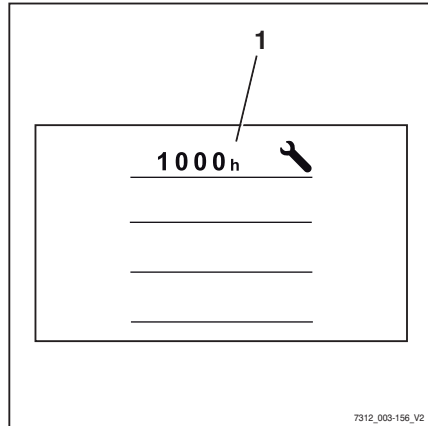
### Maintenance timeframe

- Carry out maintenance work on the truck in accordance with the "Service in" display (1).
- The maintenance check lists indicate the maintenance work that is due.

The intervals are defined for standard use. Shorter maintenance intervals can be defined in consultation with the operating company, depending on the application conditions of the truck.

The following factors may necessitate shorter maintenance intervals:

- Contaminated, poor quality roads
- Dusty or salty air
- High levels of air humidity
- Extremely high or low ambient temperatures, or extreme changes in temperature
- Multi-shift operation with a high duty cycle
- Specific national regulations for the truck or individual components



### **⚠ CAUTION**

Risk of component damage!

Any deviating technical information in these operating instructions takes precedence over the information in the original engine operating instructions.

- If you have any questions, please contact your authorised service centre.

## Maintenance - 1000 hours/annually

At operating hours								Carried out			
1000		2000		4000		5000		7000			
8000		10000		11000		13000		14000			
										✓	✗
<b>Chassis, bodywork and fittings</b>											
Check the chassis for cracks.											
Check the overhead guard, plus the cab and glass panes where relevant, for damage.											
<b>Variant:</b> Check that the cab door sensor is working correctly and check for damage.											
Check the controls, switches and joints for damage, and apply grease and oil.											
Check that the driver's seat is working correctly and check for damage.											
Check that the driver restraint system is working correctly and check for damage, and clean.											
Check the signal horn.											
<b>Variant:</b> Check the dual-pedal variant for damage and that it is working correctly, and lubricate.											
<b>Tyres and wheels</b>											
Check tyres for wear and check the air pressure if necessary.											
Check the wheels for damage and check the tightening torques.											
<b>Internal combustion engine</b>											
Check the condition of the internal combustion engine (visual inspection).											
Check the V-belt.											
Change the engine oil and replace the oil filter.											
Replace the air filter (main cartridge).											
Check the cooling system for leak tightness and correct function.											
Check the coolant and top up if necessary.											
<b>Fuel system</b>											
Check the fuel system for leak tightness and correct function.											
Replace the fuel filter (yearly).											
<b>LPG system</b>											
Check the LPG system for damage.											
Check the solenoid shut-off valve.											
Check the gas cylinder valve for cleanliness and correct function; check the over-pressure safety device (30 bar).											
Replace the LPG filter.											

## General maintenance information

At operating hours								Carried out			
1000		2000		4000		5000		7000		✓	✗
8000		10000		11000		13000		14000			
Check the screw joints for secure attachment and perform a leak test.											
<b>Exhaust system</b>											
Check the exhaust system.											
Remove the particle filter and perform ash cleaning every 10,000 operating hours.											
<b>Drive axle</b>											
Check the mounting of the drive axle and check the drive axle for leak tightness.											
Check the power cable and sensor cable for damage.											
Check the oil level in the drive wheel units.											
Change the gearbox oil in the drive wheel units (once after the first 1000 operating hours).											
<b>Steering systems</b>											
Check the steering system for leaks and check that it is working correctly.											
Check that the steering wheel is securely attached and check the rotary handle for damage.											
Check the mounting of the steering axle and check the steering axle for leak tightness.											
Grease all lubricating nipples on the steering axle.											
Check the steering stop.											
<b>Brake system</b>											
Check the condition of all mechanical brake parts and check that they are working correctly.											
Check the actuation distance of the brake pedal and adjust if necessary.											
Check the filling level in the brake reservoir.											
Check that the electrical filling level monitoring function is working correctly.											
Check that the emergency actuation of the parking brake is working correctly.											
Perform a brake test.											
<b>Electrical system</b>											
Check all power cable connections.											
Check that the switches, transmitters and sensors are working correctly.											
Check the lighting and indicator lights.											
<b>Cooling system (converter)</b>											
Check the cooling system for leak tightness and correct function.											

At operating hours								Carried out			
1000		2000		4000		5000		7000		✓	✘
8000		10000		11000		13000		14000			
Check the coolant and top up if necessary.											
Clean the fan and the water cooler.											
<b>Starter battery</b>											
Measure the cold-start current; recharge or replace the battery if necessary.											
<b>Hydraulics</b>											
Check the condition of the hydraulic system, check that it is working correctly and check for leak tightness.											
Check the hydraulics blocking function (ISO valve).											
Check the oil level.											
<b>Lift mast</b>											
Check the mast fixation for damage. Lubricate the mast fixation and check the tightening torque.											
Check the mast profiles for damage and wear. Lubricate the mast profiles.											
Check the guide in the lower (load reversal) mast profile for damage and for wear.											
Check the load chains for damage and wear. Adjust and lubricate the load chains.											
Check the lift cylinders and connections for damage and for leak tightness.											
Check the guide pulleys for damage and for wear.											
Check the support rollers and chain rollers for damage and for wear.											
Check the play between the fork carriage stop and the run-out barrier.											
Check the tilt cylinders and connections for damage and for leaks.											
Check the fork carriage for damage and for wear.											
Check the fork arm interlock for damage and check that it is working correctly.											
Check the fork arms for wear and deformation.											
Check that there is a safety screw on the fork carriage or on the attachment.											
<b>Special equipment</b>											
Check the condition of the antistatic belt or antistatic electrode.											
Check the filter mat in the heating system or air conditioning, and replace if necessary.											
Check that the heating system is working correctly; observe the manufacturer's maintenance instructions.											
Check that the air conditioning is working correctly; observe the manufacturer's maintenance instructions.											

## General maintenance information

At operating hours								Carried out			
1000		2000		4000		5000		7000		✓	✘
8000		10000		11000		13000		14000			
Check the attachments for wear and for damage; observe the manufacturer's maintenance instructions.											
Check the trailer coupling for wear and for damage; observe the manufacturer's maintenance instructions.											
<b>General</b>											
Read out the error numbers and clear the list.											
Reset the maintenance interval.											
Check that the labelling is complete.											
Perform a test drive.											

## Maintenance - 3000 hours/every two years

At operating hours							Carried out				
3000		6000		9000		12000		15000	✓	✘	
<b>Note</b>											
Perform all 1000-hour maintenance work											
<b>Internal combustion engine</b>											
Replace the air filter (safety cartridge).											
Replace the V-belt.											
Replace the coolant every 6000 operating hours or every 3 years.											
LPG: Replace the spark plugs.											
<b>LPG system</b>											
Replace all hoses on the LPG system.											
Replace the evaporator. Replace the sticker. Every 3000 operating hours or every 3 years.											
<b>Drive axle</b>											
Change the gearbox oil in the drive wheel units.											
<b>Brake</b>											
Change the actuation oil for the foot brake.											
<b>Hydraulics</b>											
Change the hydraulic oil											
Replace the return line filter and the breather filter.											
Replace the high-pressure filter.											

## Ordering spare parts and wearing parts

Spare parts are provided by our spare parts service department. The information required for ordering parts can be found in the spare parts list.

Only use spare parts as per the manufacturer's instructions. The use of unapproved spare parts can result in an increased risk of accidents due to insufficient quality or incorrect assignment. Anyone using unapproved spare parts shall assume unlimited liability in the event of damage or harm.

## General maintenance information

### Quality and quantity of the required operating materials

Only the operating materials specified in the maintenance data table may be used.

- The required consumables and lubricants can be found in the maintenance data table.

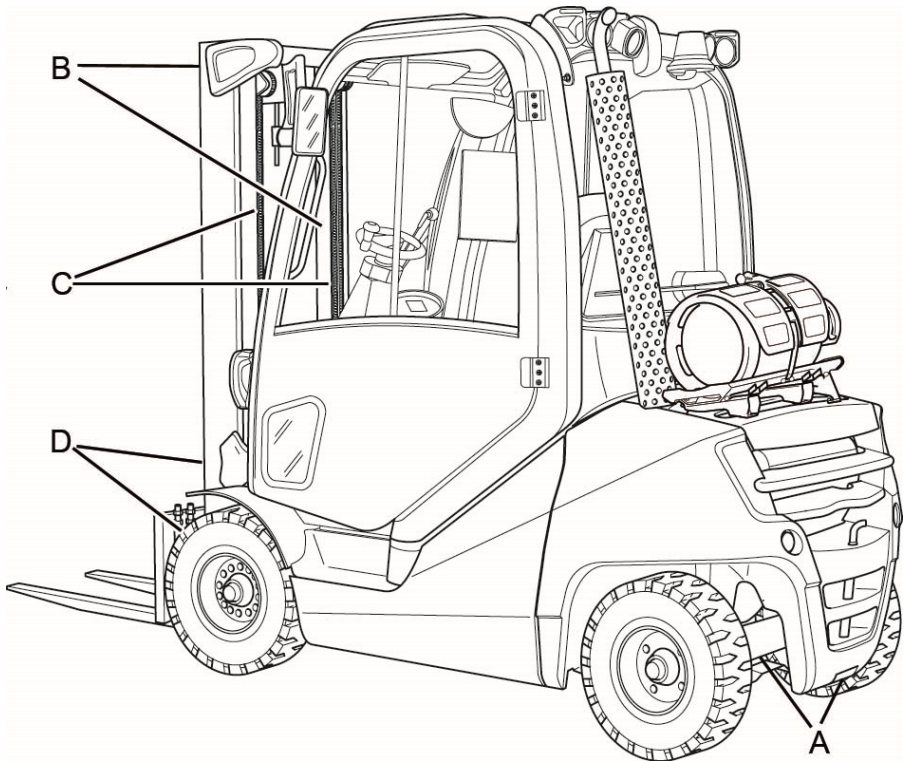
Oil and grease types of a different quality must not be mixed. This negatively affects the lubricity. If a change between different manufacturers cannot be avoided, drain the old oil thoroughly.

Before carrying out lubricating work, filter changes or any work on the hydraulic system, carefully clean the area around the part involved.

When topping up working materials, use only clean containers!



## Lubrication plan



Code <sup>1</sup>	Lubrication point
(A)	Four lubricating nipples on each side of the steering axle for the axle stub bearing and track rod arm
(B)	Sliding surfaces on the lift mast
(C)	Load chains

## General maintenance information

<b>Code<sup>1</sup></b>	<b>Lubrication point</b>
<b>(D)</b>	One lubricating nipple each on both lift mast bearings
<sup>1</sup> See the following chapter, "Maintenance data table", under this Code. for the respective lubricant specification This lubrication plan describes the series-production truck with standard equipment. For maintenance points on variant trucks, see the relevant chapter and/or instructions provided by the manufacturer.	

## Maintenance data table

### General lubrication points

Code	Unit	Operating materials	Specifications	Dimension
	Lubrication	Multi-purpose grease	DIN 51825 KPF2	As required

### Controls/joints

Code	Unit	Operating materials	Specifications	Dimension
	Lubrication	Multi-purpose grease	DIN 51825 KPF2	As required
		Oil	SAE 80 MIL-L2105 API GL-4	As required
	Dual-pedal operation	Multi-purpose grease	DIN 51825 KPF2	As required

### Battery

Code	Unit	Operating materials	Specifications	Dimension
	System filling	Distilled water		As required
	Insulation resistance		For further information, refer to the workshop manual for the truck in question.	

### Electrical system

Code	Unit	Operating materials	Specifications	Dimension
	Insulation resistance		For further information, refer to the workshop manual for the truck in question.	

### Hydraulic system

Code	Unit	Operating materials	Specifications	Dimension
	System filling	Hydraulic oil	HVLP 68 DIN 51524, Part 3	Max. 58 l
		Hydraulic oil for the food industry (variant)	USDA H1 DIN 51524	

### Tyres

Code	Unit	Operating materials	Specifications	Dimension	
	Superelastic tyres	Wear limit		To wear mark	
	Solid rubber tyres	Wear limit		To wear mark	
	Pneumatic tyres	Minimum tread depth			1.6 mm
		Air pressure			See information on truck

## General maintenance information

## Steering axle

Code	Unit	Operating materials	Specifications	Dimension
	Wheel nuts/screws	Torque wrench		For further information, refer to the workshop manual for the truck in question.
	Axle stub nuts	Torque wrench		For further information, refer to the workshop manual for the truck in question.
(A)	Axle stub bearings, track rod bearings	Grease	Aralub 4320 DIN 51825- KPF2N20 ID no. 0148659	Fill with grease until a small amount of fresh grease escapes

## Drive axle

Code	Unit	Operating materials	Specifications	Dimension
	Wheel nuts/screws	Torque wrench		For further information, refer to the workshop manual for the truck in question.
	Wheel gear	Mineral oil	FUCHS TITAN GEAR HYP LD SAE 80W-90 API GL-5	
	Brake	Mineral oil	ARAL HGS FLUID 127830	

## Lift mast

Code	Unit	Operating materials	Specifications	Dimension
(B)	Lubrication	Multi-purpose grease	DIN 51825 KPF2	As required
	Stop	Play		Min. 2 mm
	Screws for the lift mast bearing	Torque wrench		For further information, refer to the workshop manual for the truck in question.
(D)	Lift mast bearing	Grease	Aralub 4320 DIN 51825- KPF2N20 ID no. 0148659	Fill with grease until a small amount of fresh grease escapes

**Load chains**

Code	Unit	Operating materials	Specifications	Dimension
(C)	Lubrication	High-load chain spray	Fully synthetic Temperature range: -35°C to +250°C ID no. 0156428	As required

**Cooling system**

Code	Unit	Operating materials	Specifications	Dimension
	System filling	Corrosion inhibitor and cooling system protecting agent/ water	G12 plus TL-VW 774 F	approx. 12 l

**Air conditioning**

Code	Unit	Operating materials	Specifications	Dimension
	System filling	Refrigerant	ID no. 7449600005	Standard cab: 800 g

**LPG cylinder**

Code	Unit	Operating materials	Specifications	Dimension
	System filling	LPG	DIN 51622 EN 589	11 kg

**Brake system**

Code	Unit	Operating materials	Specifications	Dimension
	System filling	Brake fluid	ARAL HGS FLUID 127830	0.25 l

**Engine**

Code	Unit	Operating materials	Specifications	Dimension
	System filling	Engine oil	API C14 SAE10-W40 Low ash	With filter change 8.6 l
	Air filter	Filter cartridge and safety cartridge		
	Ignition system	Spark plugs	14L-NGK	Electrode gap: 1.0 ± 0.1 mm Tightening torque: 20 Nm

**Washer system**

Code	Unit	Operating materials	Specifications	Dimension
	System filling	Screen wash	Winter, ID no. 172566	As required

## Providing access to maintenance points

### Providing access to maintenance points

#### Opening the bonnet

##### **⚠ WARNING**

Risk of injury!

- Switch off the engine before opening the bonnet!

##### **⚠ CAUTION**

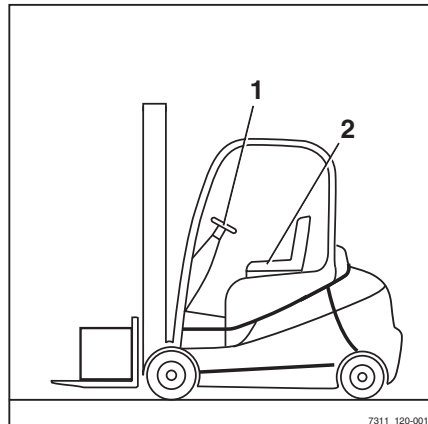
When opening the bonnet, the driver's seat may be damaged if it is not in its forwardmost position.

- Slide the driver's seat all the way forwards.

##### **⚠ CAUTION**

If the right-hand door of the cab (variant) is closed, door fittings can be damaged when the bonnet is opened.

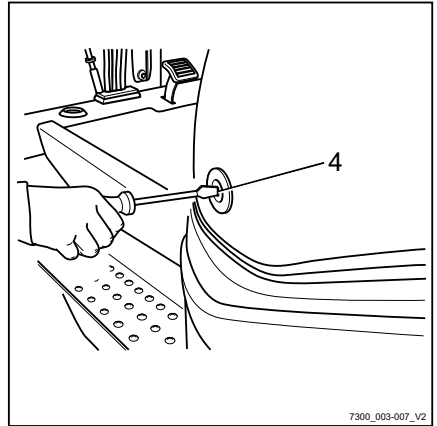
- Make sure that the right-hand cab door is open.
- On forklift trucks equipped with a cab (variant), open the right-hand cab door.
- Remove all loose objects from the right-hand shelf.
- Move the steering column (1) as far forwards as possible and secure; see section entitled "Adjusting the steering column".
- Slide the driver's seat (2) all the way forward; see section entitled "Adjusting the MSG 65/MSG 75 driver's seat".
- On trucks equipped with a rear window (variant), push the seat backrest forwards; see section entitled "Adjusting the MSG 65/MSG 75 driver's seat".



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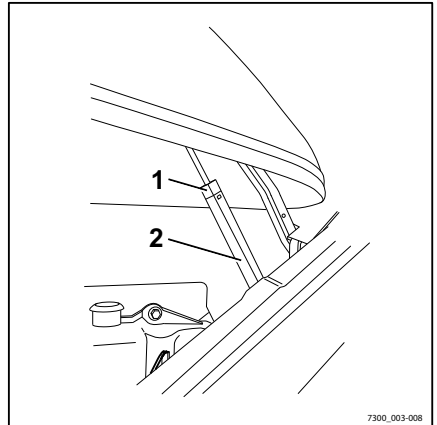
## Providing access to maintenance points

- Firmly insert a narrow screwdriver into the slot (4) of the bonnet release until the inter-lock opens. ▷
- Use the handle to open the bonnet fully.



7300\_003-007\_V2

- If the gas spring is equipped with a position lock (variant), open the bonnet until the latch (1) of the gas spring (2) snaps into place. ▷



7300\_003-008

**⚠ WARNING**

Risk of injury from the bonnet lowering!

The bonnet is fitted with a gas spring that holds the bonnet in the open position. When additional load is present, for example heavy objects, strong wind or other persons, the bonnet can lower suddenly. Cold weather and ageing can also reduce the performance of the gas spring and cause the bonnet to lower.

- If the force of the gas spring is deteriorating, replace the gas spring.
- If the gas spring has a position lock (variant), make sure that the latch is engaged.
- To replace the gas spring, contact the authorised service centre.

## Providing access to maintenance points

### Closing the bonnet

#### ⚠ WARNING

When closing the bonnet, there is a risk of crushing!

When closing the bonnet, nothing must come between the bonnet and the edge of the chassis.

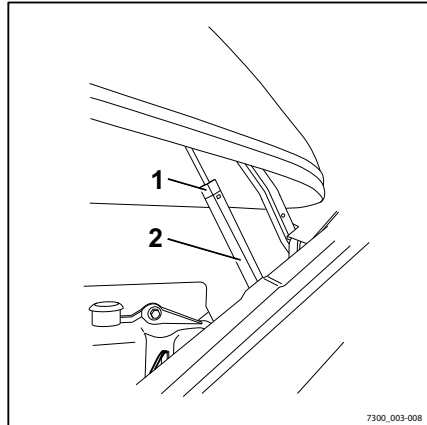
- Do not grasp any edges. Always close the bonnet by grasping one of the handles in each hand.

#### ⚠ CAUTION

Risk of damage!

The bonnet can be equipped with a gas spring (2) with a prop (variant). This prevents the gas spring from being compressed. Exerting force when closing the bonnet will damage the gas spring or bonnet suspension.

- Before closing the bonnet, make sure that the gas spring is equipped with a prop (variant).
- For gas springs with props (variant), release the latch (1) before closing the bonnet.



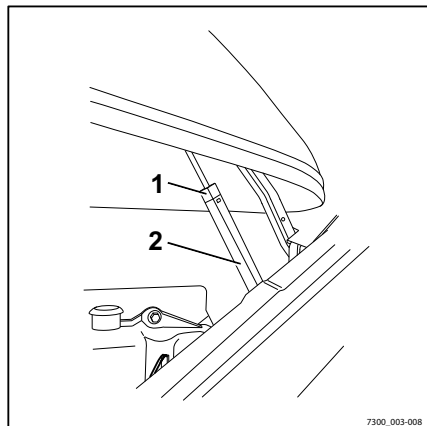
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### Releasing the prop latch (variant)

- Press the latch (1) at the marking **PRESS** and lower the bonnet slightly.
- Release the latch.

### Closing the bonnet

- Holding it by the handle, pull down the bonnet until the lock audibly engages.

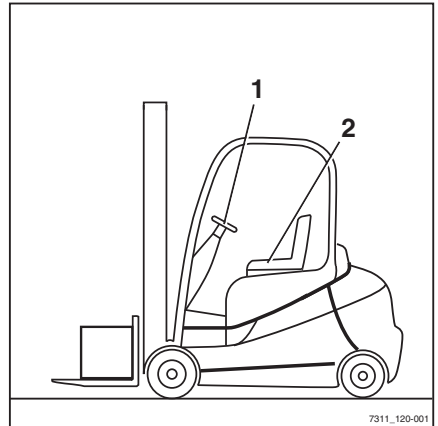


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## Providing access to maintenance points

- Adjust the seat (2); see section entitled "Adjusting the MSG 65/MSG 75 driver's seat".
- Adjust the steering column (1); see section entitled "Adjusting the steering column".
- On forklift trucks equipped with a cab (variant), close the right-hand cab door.



## Providing access to maintenance points

### Removing and attaching the rear cover

#### ⚠ CAUTION

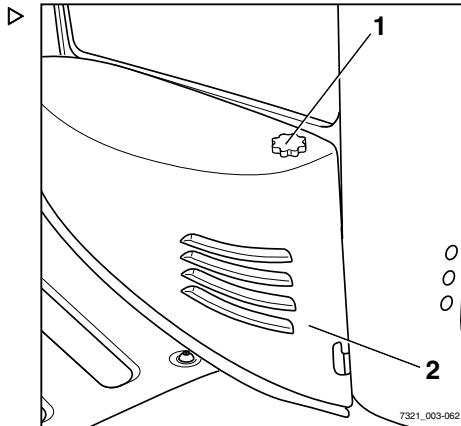
Risk of damage to components!

Improper handling can cause the surface or the cover itself to be damaged.

- Always remove and install covers carefully, and safely place to one side after removal.

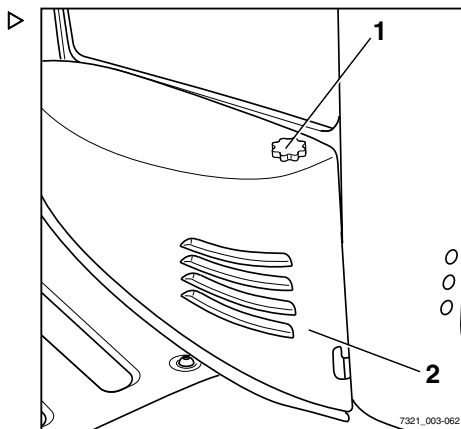
#### Removing the cover

- Unscrew the star-grip screws (1) on the right and left.
- Fold back the cover (2).
- Lift up and remove the cover.



#### Attaching the cover

- Fit the cover (2) from above.
- Fold the cover forwards.
- Securely tighten the star-grip screws (1) on the right and left.



## Installing and removing the bottom plate

### Removing the bottom plate

#### **⚠ CAUTION**

Risk of short circuit if cables are damaged!

- Check the connection cables for damage.
- When removing and reinstalling the bottom plate, make sure that the connecting cables are not damaged.

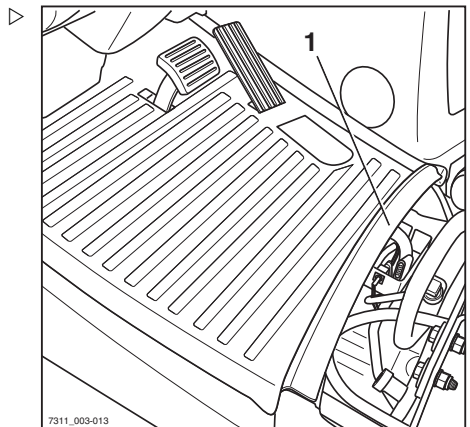
#### **i NOTE**

*The bottom plate has a recess into which the operator can insert their fingers in order to lift it. The recess is beneath the rubber mat.*

#### **i NOTE**

*The accelerator pedal is attached to the bottom plate and is removed with the bottom plate. The connecting plug for the accelerator is located underneath the bottom plate.*

- Open the bonnet.
- Remove the rubber mat.
- Grasp the recess in the bottom plate (1).
- Raise the bottom plate slightly.
- Pull out the bottom plate under the brake pedal and set it down upright.



## Providing access to maintenance points

- Disconnect the plug connection from the accelerator pedal (2).
- Remove the floor plate and place it in a secure location.

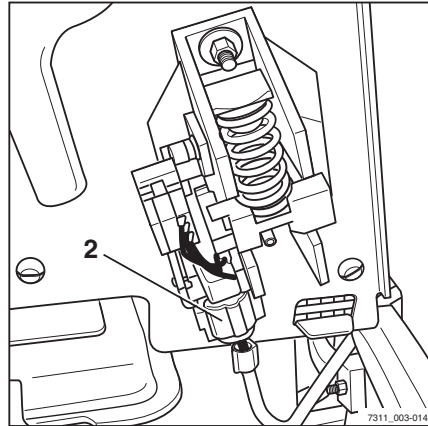
## Installing the bottom plate

### **⚠ WARNING**

Risk of crushing between the bottom plate and the frame edge!

If limbs or objects are between the bottom plate and frame edge when the bottom plate is closed, they can be crushed.

- Make sure that, when you close the bottom plate, there is nothing between the bottom plate and the frame edge.
- 
- Set down the bottom plate upright in the footwell.
  - Connect the connection assembly to the accelerator pedal.
  - Position the bottom plate at the front.
  - Carefully guide the bottom plate down and close.
  - Insert the rubber mat.
  - Close the bonnet.



## Maintenance after the first 50 operating hours

### Maintenance during the break-in period

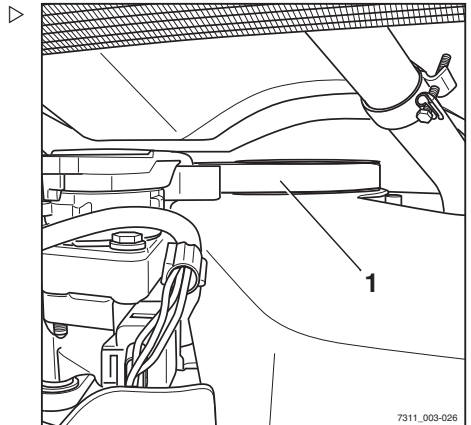
**i** NOTE

*Some of the following checks require special tools. Notify your authorised service centre.*

- Have the LPG system checked for leakages using leak spray.
- Have the screw joints of the LPG system checked for tightness.
- Check the condition and tension of the V-ribbed belt (1).

**i** NOTE

*If the V-ribbed belt is damaged, have it replaced by the authorised service centre.*



## Preserving operational readiness

## Preserving operational readiness

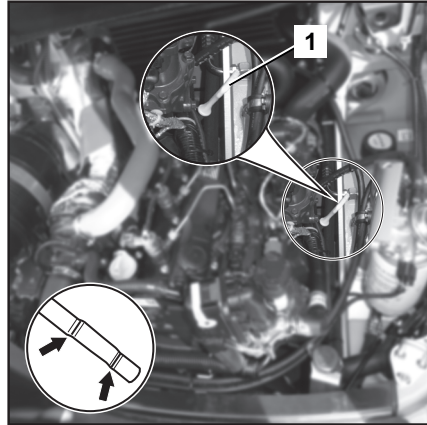
## Checking the engine oil level

**i** NOTE

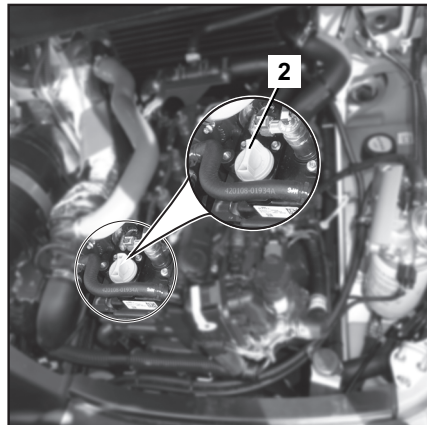
*The truck must be positioned on level ground for this test.*

- Open the bonnet.
- Pull out the oil dipstick (1) and wipe it. ▷
- Insert the oil dipstick as far as it will go and pull it out again.

The oil level must be between the marks (arrows).



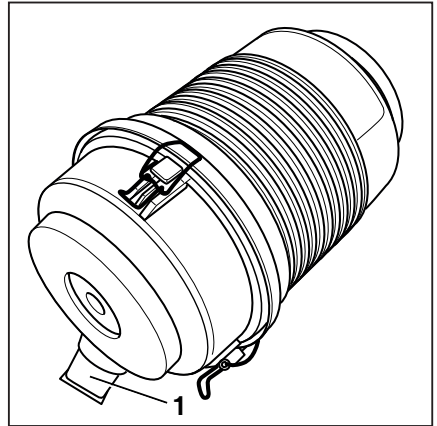
- If the oil level reaches only up to the lower mark, unscrew the filler cap (2) and top up the oil. Do not top up beyond the upper mark. ▷
- Observe the information regarding the quantity and specification of the motor oil in the chapter entitled "Maintenance data table".
- Insert the oil dipstick as far as it will go.
- Screw the filler cap back on tightly.
- Close the bonnet.

**i** NOTE

*Remove spilt oil immediately using oil binding agent and dispose of the oil in accordance with the applicable regulations.*

### Cleaning the dust valve

- Press the dust valve (1) on the air filter housing between your fingers until no more dust is emitted.



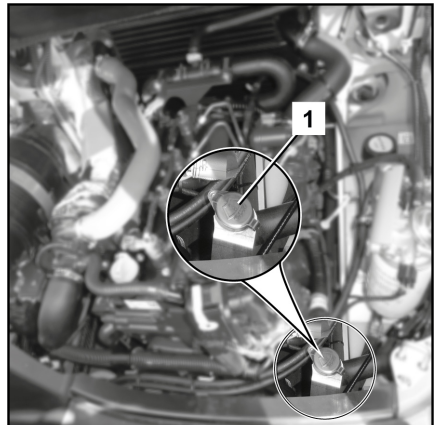
### Filling the washer system

#### ⚠ CAUTION

Components may become damaged due to the effects of frost!

Water expands when it freezes. If there is no anti-freeze in the washer system (variant), the screen wash can freeze at temperatures below freezing and damage the washer system.

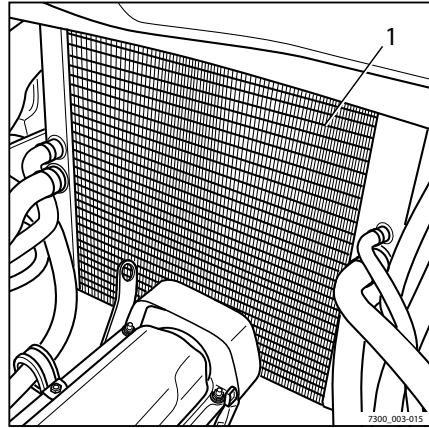
- Always use screen wash that contains anti-freeze.
- Open the bonnet.
- Open the filler cap (1) on the screen wash reservoir. ▷
- Fill the screen wash reservoir with screen wash and anti-freeze in accordance with the maintenance data table.
- Close the filler cap.
- Close the bonnet.
- Operate the washer system until washer fluid is discharged from the spray nozzles.



## Preserving operational readiness

### Cleaning the radiator, checking for leaks

- Park the truck securely.
- Open the bonnet.
- Clean the radiator (1).
- Clean the radiator fins using a suitable brush and blow them out using compressed air (max. 2 bar).
- Check the radiator and coolant hoses for leaks and tighten the clips if necessary.



#### **⚠ CAUTION**

Risk of engine damage!

If the cooling fluid level is low, this indicates a leak in the cooling system.

- Check whether the leakage has been eliminated.
- If not, notify the authorised service centre.

- Close the bonnet.

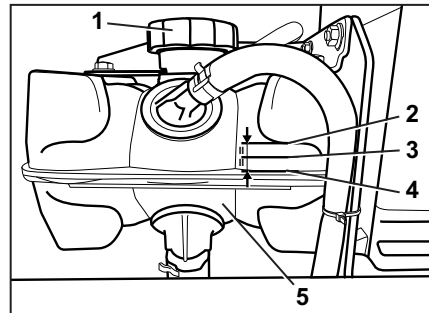
### Check the cooling fluid level

#### **⚠ WARNING**

Risk of scalding due to hot cooling fluid!

The cooling system is pressurised! Cooling fluid may escape if the cooling fluid tank (5) is opened while the engine is hot.

- Switch off the engine and allow it to cool down before opening the filler cap (1).



#### **⚠ WARNING**

Coolant and cooling fluid can pose a hazard to health and the environment!

- Observe the safety regulations set out in the section entitled "Coolant and cooling fluid".

#### **⚠ CAUTION**

Risk of engine damage!

If the cooling fluid level is low, this indicates a leak in the cooling system.

- Check the cooling system for leaks.

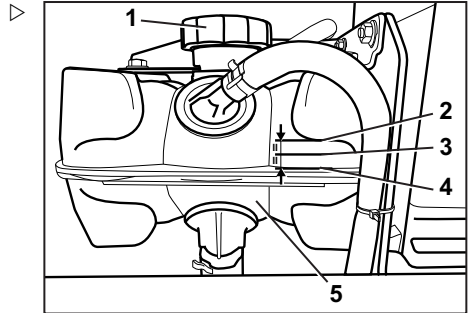


The cooling fluid level is monitored by a sensor. As soon as the **COOLANT LEVEL** message appears on the display, proceed as described below:

- Switch off the engine and let it cool down.
- Remove the rear cover.
- Slowly open the filler cap (1) of the cooling fluid tank (5) and release the excess pressure.
- Unscrew further and remove the filler cap.
- Check the cooling fluid level.

The cooling fluid level must be between (3) the upper marking (2) and the lower marking (4), at an equal distance from each marking.

- Top up the cooling fluid to no higher than the upper marking, if necessary.
- Make sure that the tank cap (1) is screwed on and is tightly sealed.
- Check the leak tightness of the cooling system; see the section entitled "Cleaning the radiator, checking for leaks".
- Replace the rear cover.



### Topping up the cooling fluid and checking the coolant concentration

#### **⚠ WARNING**

Risk of scalding due to hot cooling fluid!

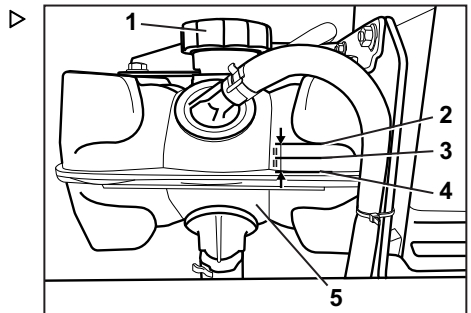
The cooling system is pressurised! Cooling fluid may escape if the cooling fluid tank (5) is opened while the engine is hot.

- Switch off the engine and allow it to cool down before opening the filler cap (1).

#### **⚠ WARNING**

Coolant and cooling fluid can pose a hazard to health and the environment!

- Observe the safety regulations set out in the section entitled "Coolant and cooling fluid".



## Preserving operational readiness

### ⚠ CAUTION

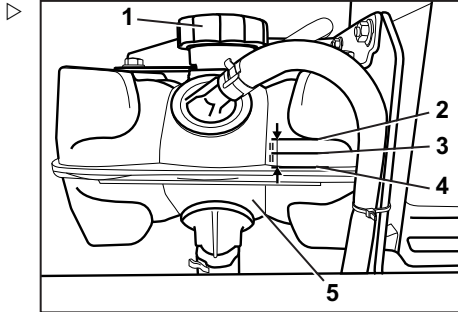
Risk of engine damage!

If the cooling fluid level is low, this indicates a leak in the cooling system.

- Check the cooling system for leaks.

---

- Switch off the engine and let it cool down.
- Remove the rear cover.
- Slowly open the filler cap (1) of the cooling fluid tank (5) and release the excess pressure.
- Unscrew further and remove the filler cap.
- Check the concentration of the coolant.



### Concentration of the coolant

### ⚠ CAUTION

Risk of corrosion!

The percentage of coolant must always be at least 40%, even if frost protection is not needed in warmer climates.

If greater frost protection is required for climatic reasons, the percentage of coolant additive can be increased to up to 60%.

The percentage of coolant must not exceed 60%, otherwise the frost protection is reduced. In addition, the cooling effect is also reduced.

- Only use clean, softened water for the water percentage.

Frost protection up to °C	Water percentage %	Coolant percentage %
-25	60	40
-30	55	45
-35	50	50
-40	40	60

For information about the filling quantity in the cooling system, see the "Maintenance data table".

**⚠ CAUTION**

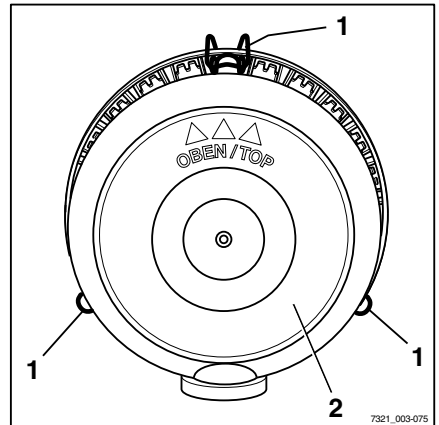
Coolant with a different specification must not be mixed in!

- Only use the coolant specified in the maintenance data table to top up the cooling system.
  - Only use coolant according to the manufacturer's instructions.
- 
- Make sure that the tank cap (1) is screwed on and is tightly sealed.
  - Check the leak tightness of the cooling system; see the section entitled "Cleaning the radiator, checking for leaks".
  - Replace the rear cover.

**Replacing the air filter cartridges****i NOTE**

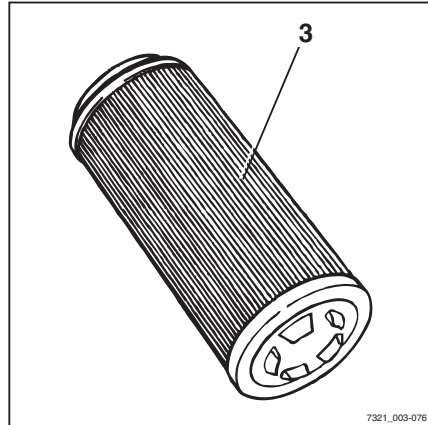
*The air filter cartridges must be replaced if the Change the air filter message appears on the display-operating unit or at least every 3000 hours or every two years.*

- Open the bonnet.
- Release the three clamps (1) on the air filter housing and remove the air filter cover (2).



**Preserving operational readiness**

- Remove the filter cartridge (3).

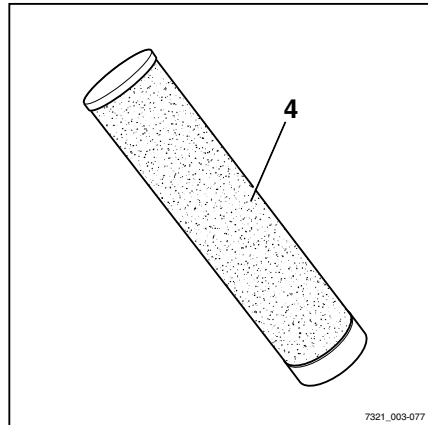
**⚠ CAUTION**

Risk of engine damage!

The safety cartridge must remain in the air filter housing until all residual dirt has been removed from the housing so that no dirt enters the intake system!

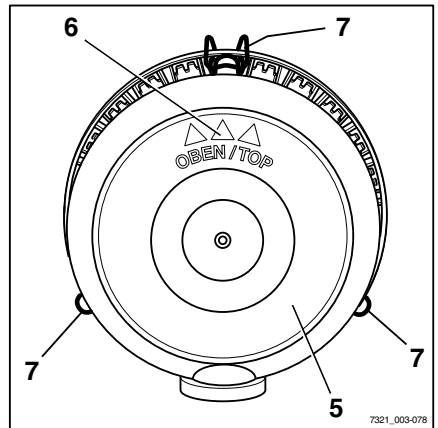
- Wipe out the air filter housing using a damp cloth.

- Remove the safety cartridge (4), check for contamination and replace the safety cartridge if necessary.



- Refit the safety cartridge.
- Insert a new filter cartridge (3).

- Fit the air filter cover (5) with the mark (6) facing upwards. ▷
- Lock the clamps (7) on the air filter.
- Close the bonnet.



### Lubricating the joints and controls

- Oil or grease other bearing points and joints according to the maintenance data table; see ⇒ Chapter "Maintenance data table", Page 351 .
- Driver's seat guide
- Lubricate bonnet hinges at the lubricating nipple
- Control linkage for valves
- In the cab, lubricate door hinges at the lubricating nipple (variant)
- Lubricate shafts and joints in dual-pedal operation (variant)

## Preserving operational readiness

## Maintaining the seat belt

**⚠ DANGER**

**There is a risk to life if the seat belt fails during an accident!**

If the seat belt is faulty, it may tear or open during an accident and no longer keep the driver in the driver's seat. The driver may therefore be hurled against the truck components or out of the truck.

- Ensure operational reliability by continually testing.
- Do not use a truck with a defective seat belt.
- Have any defective seat belts replaced by your authorised service centre.
- Only use genuine spare parts.
- Do not make any changes to the seat belt.

**NOTE**

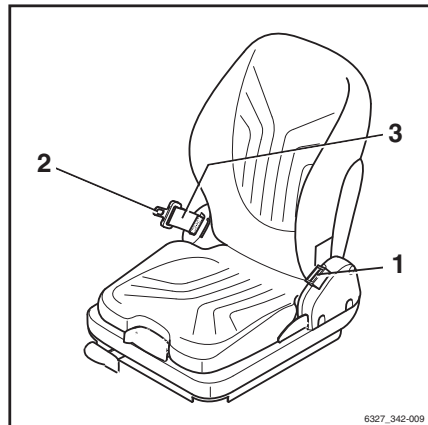
*The checks below must be carried out on a regular basis (monthly). In the case of significant strain, a daily check is necessary.*

## Checking the seat belt

- Pull out the seat belt (3) completely and check for fraying.

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

- Check that the seat belt is not dirty.
- Check whether parts are worn or damaged (including the anchor points).



- Check the buckle (1) for proper locking. ▷

When the belt tongue (2) is inserted, the seat belt must be held securely. The belt tongue (2) must release when the red button (4) is pressed.

- The automatic blocking mechanism must be tested at least once a year.
- Park the forklift truck on level ground.
- Pull out the seat belt using a jerking movement.

The automatic blocking mechanism must block extension of the belt.

- Tilt the seat at least 30°; to do this, tilt the bonnet.
- Slowly pull out the seat belt.

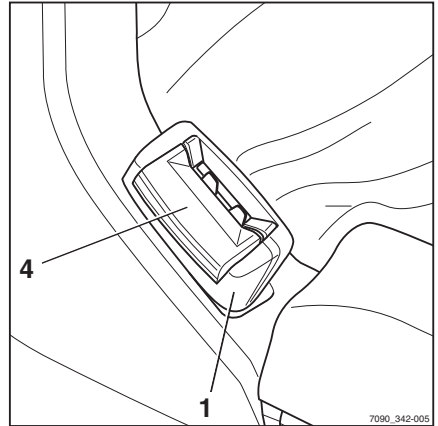
The automatic blocking mechanism must block extension of the belt.

### Cleaning the seat belt

- Clean the seat belt if it is dirty but without using chemical cleaning materials (a brush will suffice).

### Replacement after an accident

The seat belt must always be replaced by the authorised service centre after an accident.



## Preserving operational readiness

### Checking the driver's seat



#### **⚠ WARNING**

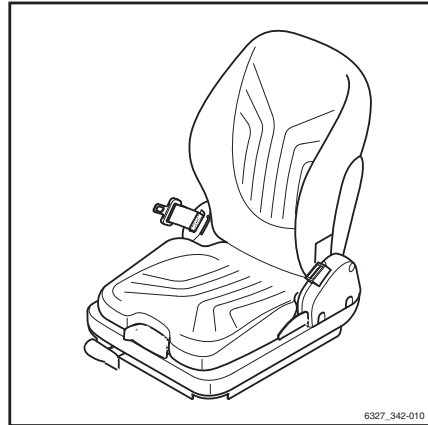
Risk of injury!

- After an accident, check the driver's seat with attached restraining belt and fastening.
- Check the controls for correct operation.
- Check the condition of the seat (e.g. wear on the upholstery) and secure fastening to the hood.

#### **⚠ WARNING**

Risk of injury!

- Have the seat repaired by the service centre if you identify any damage during the checks.



### Checking the door latch

- Inspect the condition of the catch bolt and check for wear.
- Check the lock mechanism for easy operation.

### Maintaining wheels and tyres

#### **⚠ WARNING**

Risk of accident!

Uneven wear reduces the stability of the truck and increases the braking distance. The level of wear exhibited by tyres on the same axle must be approximately the same.

- Worn or damaged tyres (left or right) must be replaced immediately.
- When changing wheels or tyres, ensure that this does not cause the truck to tilt to one side (e.g. always replace right-hand and left-hand wheels at the same time).
- Changes must only be made following consultation with the manufacturer.



**⚠ WARNING**

Risk to stability!

Tyre quality affects the stability of the truck. There is a risk of tipping!

When using pneumatic tyres or solid rubber tyres, rim parts must never be changed and rim parts from different manufacturers must not be mixed.

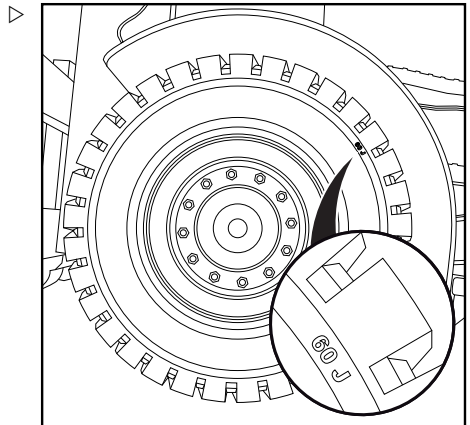
- Obtain approval from the truck manufacturer before using a different type of tyre or a different tyre manufacturer.

**Checking the condition and wear of the tyres****Superelastic tyres (variant)**

- Check the remaining distance between the tyre tread and the wear mark (60 J).

Superelastic tyres (variant) can be worn down to the wear mark (60 J).

- Remove any foreign bodies embedded in the tyre.



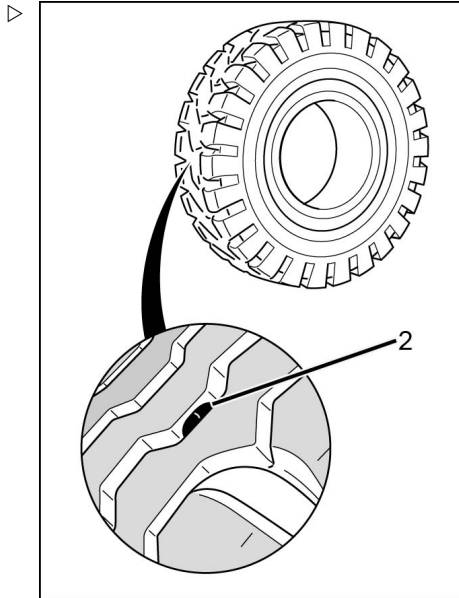
## Preserving operational readiness

### Pneumatic tyres (variant)

- Check the tread depth on all four tyres.

The tread depth for pneumatic tyres (variant) must be **at least 1.6 mm** at every point on the tread. If the tread is worn down to the wear mark (2) at any point on the tyre, replace the tires on one axle.

- Remove any foreign bodies embedded in the tyre.



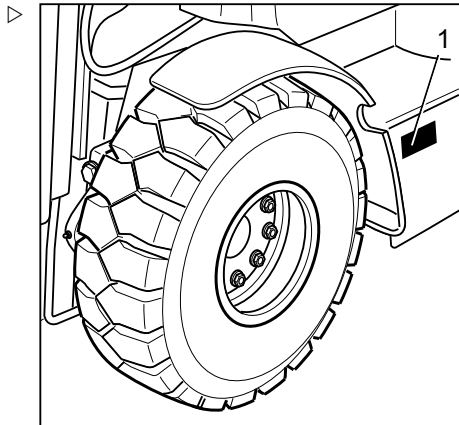
### Checking the air pressure



#### NOTE

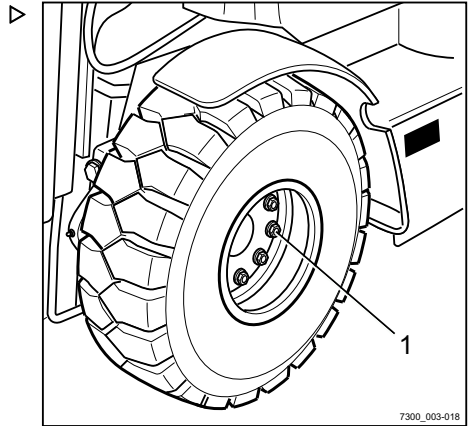
*The correct air pressure for pneumatic tyres (variant) is determined by the type of tyre used. The air pressure measured must correspond to the manufacturer's information.*

- See the air pressure values stated on the adhesive label (1) on the truck.
- Check the air pressure of all four tyres and compare with the air pressure values stated on the adhesive labels.
- Add or release air as required if the air pressure deviates from the values stated.



### Checking the wheel fastenings

- Check that all wheel fastenings (1) are securely fastened and retighten as necessary.
- Observe the relevant torques; see section entitled "Maintenance data table".



### Maintaining the battery

#### NOTE

*Battery servicing is carried out in accordance with the battery manufacturer's operating manual.*



#### WARNING

Risk of short circuit and explosion!

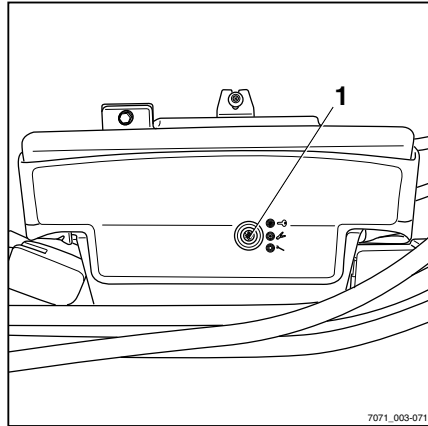
- Do not place any metal objects or tools on the battery.
- Keep away from naked flames and fire. Smoking is forbidden.

### Checking the battery charge state

- Remove the rear cover.

## Preserving operational readiness

- With maintenance-free batteries, check the charge state at the inspection window (1):
  - **Green**  
The battery is fully charged.
  - **Black**  
The charge state of the battery is no longer optimal. The battery must be recharged. After recharging, the indicator changes back to green.
  - **Transparent (light-coloured)**  
The charge state is no longer sufficient to ensure reliable starting. The battery must be replaced.



## Charging the battery



### ⚠ WARNING

The electrolyte (diluted sulphuric acid) is poisonous and corrosive!

- Observe the safety regulations for handling battery acid.
- Observe the safety information from the battery manufacturer.

- With batteries that are not maintenance-free, check the level of the battery acid.

The battery acid must come up to the lower edge of the insert in the battery housing or 5 mm above the upper edge of the plates.

### ⚠ CAUTION

The battery can be damaged!

- Only fill up missing fluid with distilled water.

- Unscrew the battery cell covers and check the acid density with an acid siphon.

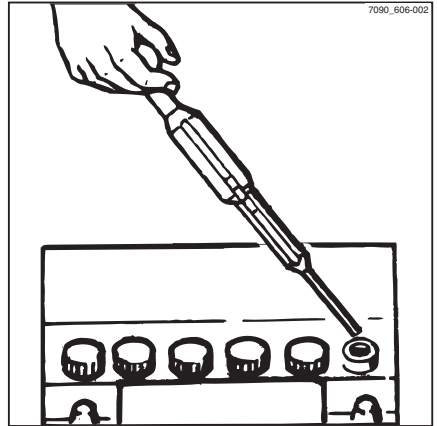


### ⚠ WARNING

Risk of explosion!

Charging releases gases that are explosive. During the charging process, the surface of the battery cells must be kept exposed to ensure sufficient ventilation.

- Expose the surface of the battery cells before charging the battery.
- Ensure effective ventilation during charging.
- Keep the engine compartment open during charging.
- Avoid the formation of sparks in the vicinity of the battery.



The acid density must reach the values in the table. The listed acid densities refer to an acid temperature of 27°C.

Charge state	Battery charge (%)	Acid density (kg/l)
Full	100%	approx. 1.28
Normal	75%	approx. 1.21
Weak	50%	approx. 1.16
Discharged	25%	approx. 1.13
Deep discharged	0-10%	< 1.06

### **i** NOTE

*Temperature fluctuations can cause the measurement results to change. In the event of a difference in temperature of 35°C, the values deviate from each other by approx. 0.05 kg/l.*

- Charge discharged batteries immediately until they are fully charged again.

The charging current shall not exceed 1/10 of capacity.

The cell covers of the batteries must be kept dry and clean.

Any spillage of battery acid must be neutralised immediately.

## Preserving operational readiness

Terminals and cable shoes must be clean, lightly coated with battery grease and screwed on tightly.

- After charging, screw the battery cell covers back on.
- Reattach the covering on the back.

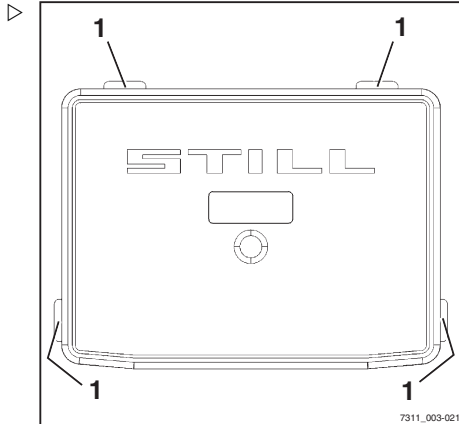
## Replacing fuses

### **⚠ DANGER**

#### **Risk of fire!**

Using the wrong fuses can result in short circuits.

- Use only fuses with the prescribed nominal current, see the section entitled "Fuse assignment".
- Remove the cover at the back.
- Open the cover fastenings (1) and remove the cover.
- Replace the defective fuse with one that is rated for the nominal current according to "Fuse assignment".
- Close the cover to secure the fuse box.
- Install the back covers.
- Perform a function check. If the error persists or if the fuse is still defective, notify your authorised service centre.



## Checking the hydraulic system for leak tightness



### **⚠ WARNING**

Hydraulic oil is hazardous to health!

Hydraulic oil under pressure can escape from leaking pipes and lines, and cause injuries.

- Wear suitable protective gloves, protection goggles etc.

**⚠ CAUTION**

Hydraulic hoses become brittle!

- Do not store hydraulic hoses for more than two years.
- Do not use hydraulic hoses for more than six years if they are subject to normal wear.
- Do not use hydraulic hoses for more than two years if they are subject to a high level of wear.
- Comply with the specifications of DGUV 113-020 in Germany.
- Outside of Germany, observe the national regulations for the country of use.

- Check pipe and hose connection screw joints for leaks (traces of oil).

Replace hose lines if they display the following abnormalities:

- Outer layer has been damaged, or is brittle or cracked
- Leaking
- Deformation (e.g. with blisters or kinks)
- A fitting has come loose
- A fitting is badly damaged or corroded

Replace pipes if they display the following abnormalities:

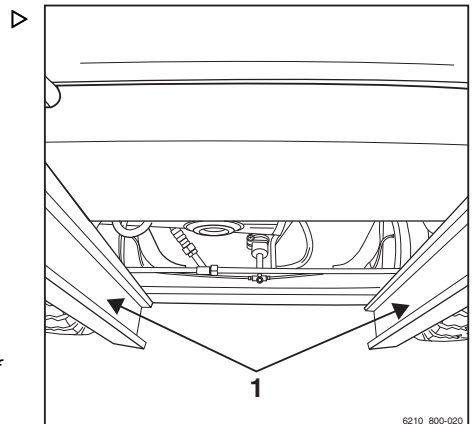
- Abrasion
- Deformation and bending
- Leaking

**Lubricating the lift mast and roller track**

- Remove dirt and lubricant residue from the roller track.
- Lubricate the roller tracks (1) of the outside, middle, and inside mast with a super-pressure adhesion lubricant to reduce wear. See → Chapter "Maintenance data table", Page 351 .

**i NOTE**

*Spray the roller track evenly from a distance of approx. 15-20 cm. Wait approx. 15 minutes until the equipment is ready to use again.*



6210\_800-020

## Preserving operational readiness

## Greasing the automatic tow coupling

 NOTE

*Wear to moving parts can be significantly reduced by appropriate servicing and regular lubrication of the coupling.*

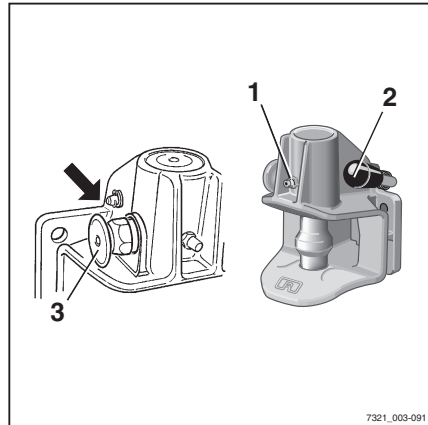
- Avoid over-greasing!

 NOTE

*Close the coupling before cleaning with a high-pressure cleaner. After cleaning, lubricate the coupling pin, tow bar eye and its supporting surface again.*

**Model RO\*243**

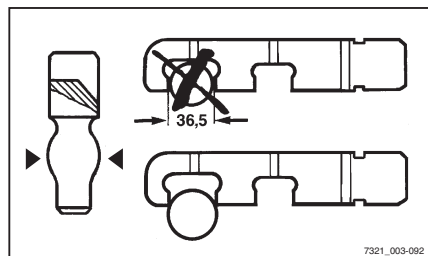
- Pull out the safety handle (3).
- Push the hand lever (2) upwards.
- Grease using the lubricating nipple(1) in accordance with the maintenance data table; see => Chapter "Maintenance data table", Page 351 .
- Close the coupling by raising the coupling pin with a suitable tool.
- For journeys with a rigid drawbar trailer, lubricate the underside of the tow bar eye and the supporting surface on the coupling.



7321\_003-091

- Determine the wear on the coupling pin.

The diameter of the spherical part must not be less than 36.5 mm.



7321\_003-092

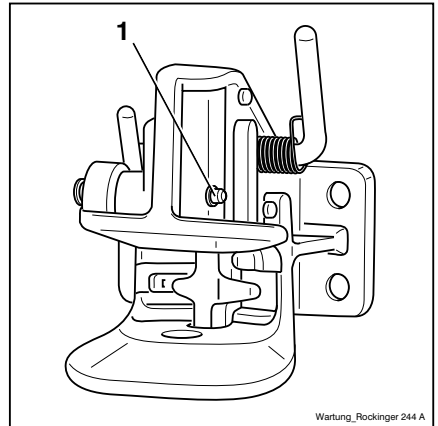
**Model RO\*244 A**

- Open coupling.

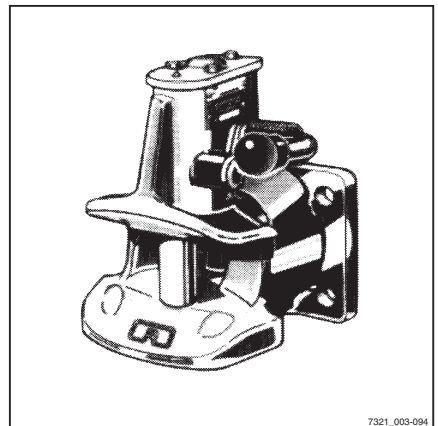


## Preserving operational readiness

- ▷ – Grease using the lubricating nipple(1) in accordance with the maintenance data table; see ⇒ Chapter "Maintenance data table", Page 351 .
- Grease coupling pin, tow bar eye and its supporting surface.

**Model RO\*245**

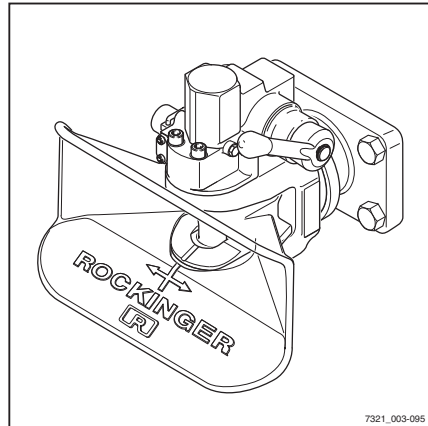
- ▷ – Lubricate via the points provided for this purpose (lubricating nipple, opened coupling) in accordance with the maintenance data table; see ⇒ Chapter "Maintenance data table", Page 351 .
- Grease the supporting surface for the tow-bar eye.



## Preserving operational readiness

### Model RO\*841

- Lubricate via the points provided for this purpose (lubricating nipple, opened coupling) in accordance with the maintenance data table; see ⇒ Chapter "Maintenance data table", Page 351 .
- Grease the supporting surface for the tow-bar eye.



## Check the hydraulic oil level

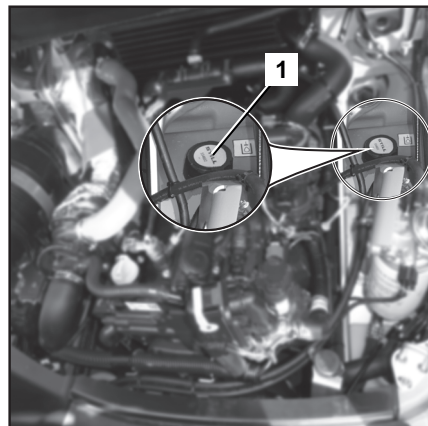
### ⚠ CAUTION

Hydraulic oils are hazardous to health and are pressurised during operation.

- Observe the safety regulations for working with hydraulic oils; see ⇒ Chapter "Hydraulic fluid", Page 47 .
- Park the truck securely; see ⇒ Chapter "Parking the truck securely and switching it off", Page 183 .
- Open the bonnet; see ⇒ Chapter "Opening the bonnet", Page 354 .
- Unscrew the breather filter with the oil dipstick (1) in an anti-clockwise direction and remove.



The breather filter with the dipstick is located on the left-hand side of the truck chassis when viewed in the drive direction.



- Keep the dipstick in a horizontal position and check the oil level. The oil level must be at least up to the mark (2) on the dipstick.
- If the oil level does not reach the specified level, pour hydraulic oil of the corresponding specification (see ⇒ Chapter "Maintenance data table", Page 351 ) into the filler neck until it reaches the upper marking as a maximum.

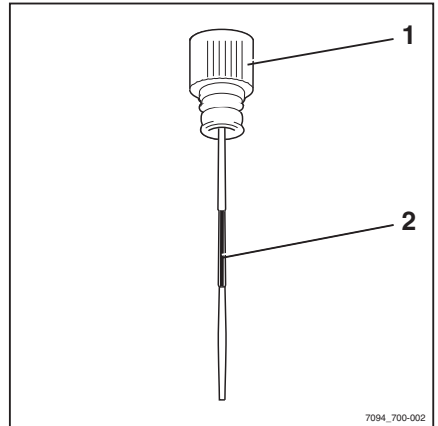
**NOTE**

*Use a funnel.*

- Screw in the breather filter with oil dipstick.
- Close bonnet again.

**ENVIRONMENT NOTE**

*Carefully collect any spilled oil. Dispose of these substances in an environmentally friendly manner.*



Preserving operational readiness

## 1000-hour maintenance/yearly maintenance

### Other work that must be carried out

- Perform all tasks required to maintain full operability; see the chapter entitled "Remaining ready for operation".

### Checking the exhaust gas system

- Inspect the exhaust gas system for external damage, secure fit, and leaks.

### Changing the LPG filter

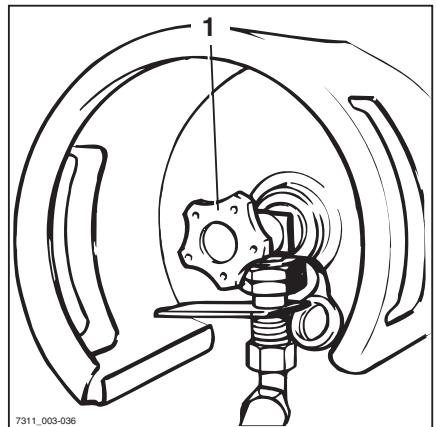


#### **⚠ DANGER**

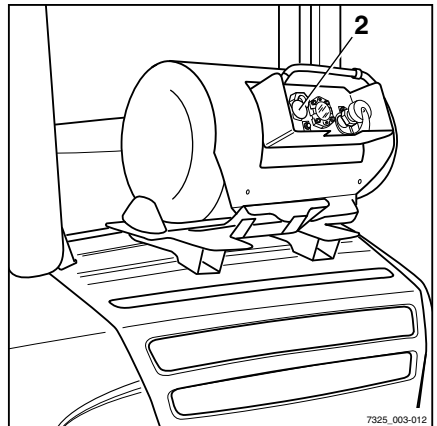
**There is a risk of explosion if LPG escapes.**

- Note safety regulations for working with LPG ⇒ Chapter "LPG", Page 49 .

- Switch off the engine.
- For trucks with LPG cylinders, close the cylinder valve (1).

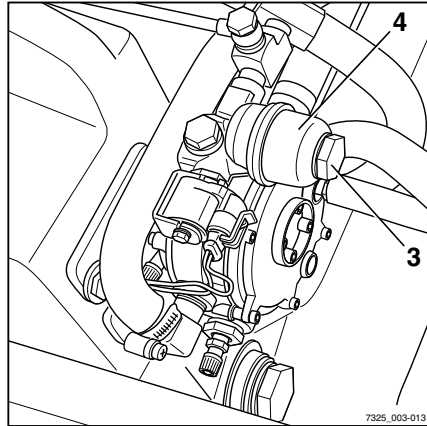


- For trucks with an LPG tank (variant), close the shut-off valve (2).
- Open the bonnet; see ⇒ Chapter "Opening the bonnet", Page 354 .

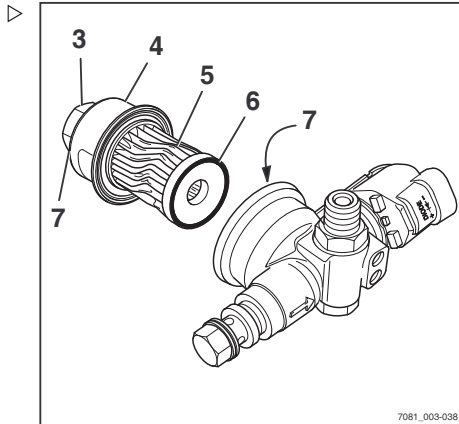


## 1000-hour maintenance/yearly maintenance

- Unscrew the mounting screw (3) on the filter housing. ▷



- Remove the filter housing (4).
- Remove the filter insert (5).
- Carefully remove any dirt inside the housing.
- Fit a new filter insert (5) with new sealing ring (6).

**⚠ CAUTION**

There may be a malfunction.

- Ensure that the sealing ring is properly seated in the recess of the filter insert and that the filter is correctly installed.
- 
- Check the seals (7) for damage and change if necessary.
  - Screw filter housing back on.
  - Open the cylinder valve (1) or the shut-off valve (2).
  - Check all connections for leakages using leak spray.
  - Close the bonnet.

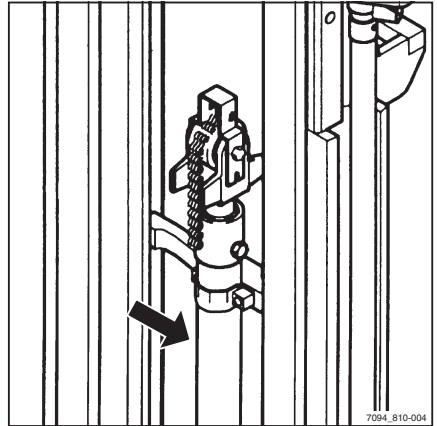
## Checking the lift cylinders and connections for leaks

### ⚠ WARNING

Risk of injury

Observe safety regulations for working on the lift mast, see the "Working at the front of the truck" chapter.

- Check hydraulic connections and lift cylinders for leaks (visual inspection).
- Have leaking screw joints or leaking hydraulic cylinders repaired by the authorised service centre.



## Checking the fork arms

### ⚠ CAUTION

Fork arms must not be uneven!

- Always replace both fork arms.
- Check the fork arms (1) for visible deformation and excessive wear.

No cracks or deformations must be visible on the fork arms in the area around the fork bend. Wear must not amount to more than 10% of the original thickness.

- Check that the locking screws (2) are present and securely attached.
- Replace any worn or deformed fork arms.

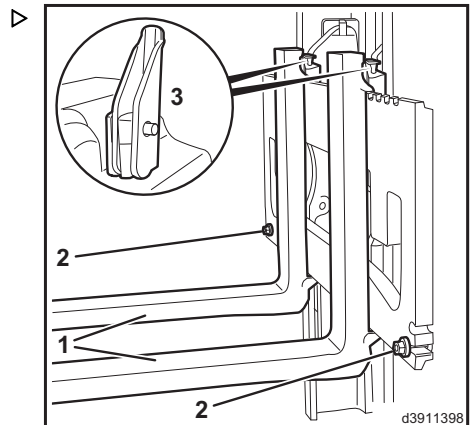
### Check the condition and correct operation of the fork latch:

- Move the locking lever (3) into a vertical position.

It must be possible to move the fork arm.

- Move the locking lever into a horizontal position.

The latch must engage in a recess on the fork carriage. It must not be possible to move the fork arm.



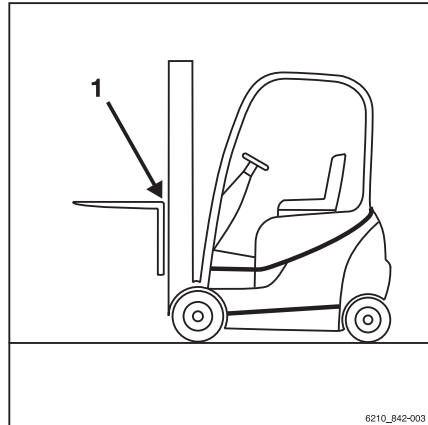
## 1000-hour maintenance/yearly maintenance

- Replace faulty fork latches.

**Checking the reversible fork arms** ▷**NOTE**

*This check is only required for reversible fork arms (variant).*

- Check the outside of the fork bend (1) for cracks. Contact your service centre.





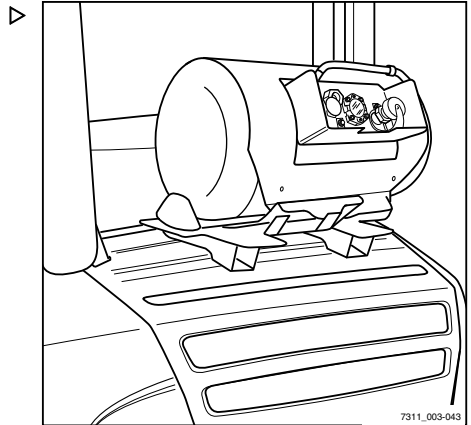
## 10-year maintenance

### Checking the LPG tank (variant)

**i** NOTE

LPG tanks are liquid gas containers. LPG tanks are pressure tanks that must be monitored and that are subject to specific testing and specific inspection intervals. The testing must be conducted only by an approved inspection body and by a competent person. In Germany, testing is conducted by TÜV, for example.

- Have the LPG tank tested by an approved inspection body and by a competent person.
- Observe the national regulations for the country in which the truck is being used.





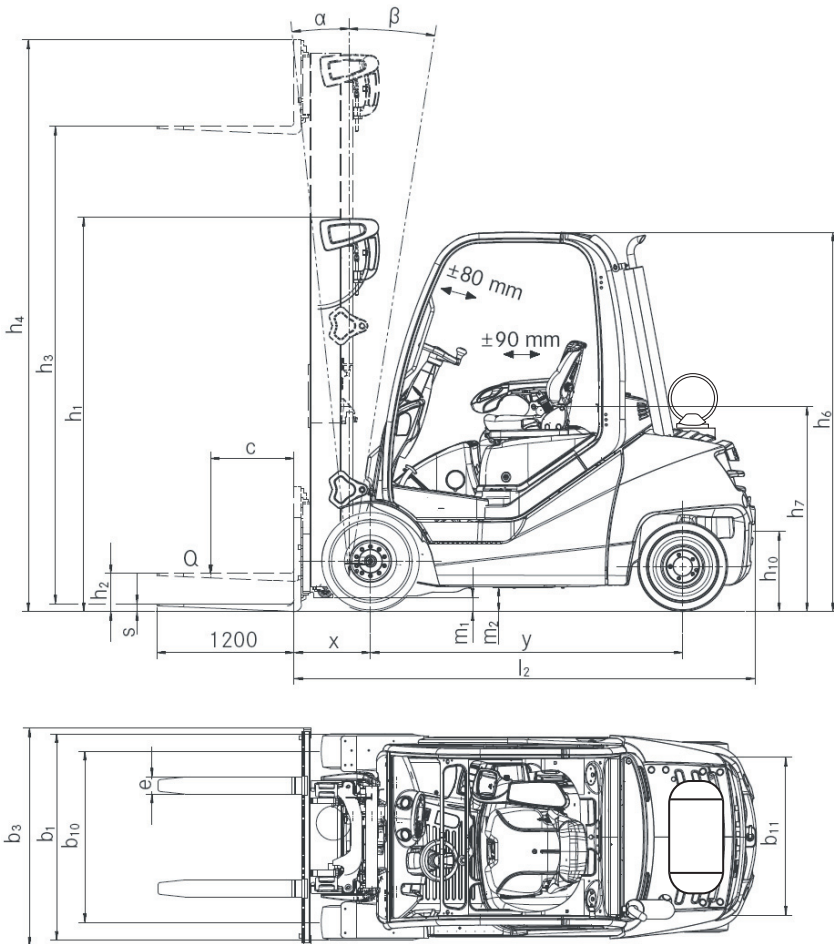
**6**

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## **Technical data**

## Dimensions

## Dimensions



7306\_003-002

- Steering column is adjustable  $\pm 80$  mm
- Seat is adjustable  $\pm 90$  mm
- Fork spacing is adjustable

**i** NOTE

*Measurements  $h_1$ ,  $h_3$ ,  $h_4$ ,  $h_6$  and  $b_1$  are customised and can be taken from the order confirmation.*

**Centre of gravity "S" (distance measured from the front axle)**

Model	Type	Distance (mm)
RX70-20/600	7400	927
RX70-25	7401	954
RX70-25/600	7402	954
RX70-30	7403	1003
RX70-30/600	7404	1003
RX70-35	7405	1068

**i** NOTE

*The specified centre of gravity "S" relates to trucks with standard equipment. If, for example, the truck is equipped with a different lift mast, attachment or driver protection structure, this value is only a guide value. If necessary, the centre of gravity "S" must be determined on an individual basis for each truck.*

## VDI datasheet for RX70-20/600 and RX70-25

VDI datasheet for  
RX70-20/600 and RX70-25 NOTE

*This VDI datasheet specifies only the technical values for trucks with standard equipment. Different tyres, lift masts, additional units etc. can produce different values.*

## Key data

Model		RX70-20/600	RX70-25
Type number		7400	7401
Manufacturer		STILL GmbH	STILL GmbH
Drive		LPG engine/ electrical	LPG engine/ electrical
Operation		Seat	Seat
Load capacity/load	Q (kg)	2000	2500
Load centre of gravity	c (mm)	600	500
Load distance	x (mm)	459	459
Wheelbase	y (mm)	1760	1760

## Weights

Model		RX70-20/600	RX70-25
Type number		7400	7401
Net weight	kg	3834	3834
Front axle load, laden	kg	4993	5652
Rear axle load, laden	kg	841	682
Front axle load, unladen	kg	1790	1790
Rear axle load, unladen	kg	2044	2044

## Wheels, chassis frame

Model		RX70-20/600	RX70-25
Type number		7400	7401
Tyres		SE	SE
Tyre size, front		23x9-10	23x9-10
Tyre size, rear		21x8-9	21x8-9

Model		RX70-20/600	RX70-25
Type number		7400	7401
Number of front wheels (x = driven)		2x	2x
Number of rear wheels (x = driven)		2	2
Track width, front	b10 (mm)	984	984
Track width, rear	b11 (mm)	920	920

**Basic dimensions**

Model		RX70-20/600	RX70-25
Type number		7400	7401
Forwards tilt of lift mast/fork carriage	Degrees	6	6
Backwards tilt of lift mast/fork carriage	Degrees	7	7
Height with lift mast retracted	h1 (mm)	2175	2175
Free lift	h2 (mm)	160	160
Lift height <sup>1</sup>	h3 (mm)	2970	2970
Height with lift mast extended	h4 (mm)	3600	3600
Height above overhead guard	h6 (mm)	2190	2190
Seat height	h7 (mm)	1074	1074
Coupling height	h10 (mm)	340/455	340/455
Overall length	l1 (mm)	3605	3605
Length including fork back	l2 (mm)	2605	2605
Overall width	b1 (mm)	1192	1192
Fork arm thickness	s (mm)	40	40
Fork arm width	e (mm)	100	100
Fork arm length	l (mm)	1000	1000
Fork carriage in acc. with ISO 2328, class / form		II / A	II / A
Fork carriage width	b3 (mm)	1150	1150
Ground clearance with load below lift mast	m1 (mm)	125	125
Ground clearance at the middle of the wheelbase	m2 (mm)	150	140
Aisle width for pallet 1000 x 1200 cross-wise	Ast (mm)	3963	3963
Aisle width for pallet 800 x 1200 length-wise	Ast (mm)	4163	4163

<sup>1</sup> The specified lift takes into account the tyre deflection and the tolerances of the tyre diameter.

## VDI datasheet for RX70-20/600 and RX70-25

Model		RX70-20/600	RX70-25
Type number		7400	7401
Turning radius	Wa (mm)	2313	2313
Smallest pivot point distance		b13 (mm)	611

## Performance data

Model		RX70-20/600	RX70-25
Type number		7400	7401
Driving speed with load	km/h	21	21
Driving speed without load	km/h	21	21
Lifting speed with load	m/s	0.53	0.53
Lifting speed without load	m/s	0.55	0.55
Lowering speed with load	m/s	0.60	0.60
Lowering speed without load	m/s	0.53	0.53
Pulling force with load	N	17500	17,500
Pulling force without load	N	12140	12,140
Climbing capability <sup>1</sup> with load	%	29	29
Climbing capability without load	%	26	26
Acceleration time with load	s	5.1	5.1
Acceleration time without load	s	4.5	4.5
Service brake		Electr./hydr.	Electr./hydr.

**⚠ CAUTION**

To use the truck safely—with or without a load—the maximum permitted ascending or descending gradient for travel is 15%.

- If you have any questions, contact your authorised service centre.

## Engine

Model		RX70-20/600	RX70-25
Type number		7400	7401
Type of engine		P24	P24
Engine power rating in accordance with ISO 1585	kW	37	37

<sup>1</sup> The stated values are used only to compare the performance of trucks in the same category. The gradient values in no way represent the normal daily operating conditions.



Model		RX70-20/600	RX70-25
<b>Type number</b>		<b>7400</b>	<b>7401</b>
Nominal speed	rpm	2600	2600
Number of cylinders		4	4
Displacement	cm <sup>3</sup>	2400	2400
Fuel consumption <sup>1</sup> in accordance with EN 16796	l/h	2.2	2.3
On-board power supply	V	12	12

**Other**

Model		RX70-20/600	RX70-25
<b>Type number</b>		<b>7400</b>	<b>7401</b>
Working pressure for attachments	bar	250	250
Oil flow for attachments	l/min	30	30
Capacity of fuel tank	l/kg	11	11
Sound pressure level L <sub>pAZ</sub> (driver's compartment) <sup>2</sup>	dB (A)	<77	<77
Sound power level L <sub>wAZ</sub> (working cycle)	dB (A)	<97	<97
Human vibration acceleration in accordance with EN 13059	m/s <sup>2</sup>	0.58	0.58
Tow coupling, DIN type/model		Bolt	Bolt

<sup>1</sup> With Blue-Q energy-saving programme

<sup>2</sup> Without cab. Values are different with a cab.

## VDI datasheet for RX70-25/600 and RX70-30

VDI datasheet for  
RX70-25/600 and RX70-30 NOTE

*This VDI datasheet specifies only the technical values for trucks with standard equipment. Different tyres, lift masts, additional units etc. can produce different values.*

## Key data

Model		RX70-25/600	RX70-30
Type number		7402	7403
Manufacturer		STILL GmbH	STILL GmbH
Drive		LPG engine/ electrical	LPG engine/elec- trical
Operation		Seat	Seat
Load capacity/load	Q (kg)	2500	3000
Load centre of gravity	c (mm)	600	500
Load distance	x (mm)	464	469
Wheelbase	y (mm)	1820	1820

## Weights

Model		RX70-25/600	RX70-30
Type number		7402	7403
Net weight	kg	4135	4168
Front axle load, laden	kg	5788	6462
Rear axle load, laden	kg	847	706
Front axle load, unladen	kg	1827	1865
Rear axle load, unladen	kg	2308	2303

## Wheels, chassis frame

Model		RX70-25/600	RX70-30
Type number		7402	7403
Tyres		SE	SE
Tyre size, front		23x9-10	23x9-10
Tyre size, rear		21x8-9	21x8-9

Model		RX70-25/600	RX70-30
Type number		7402	7403
Number of front wheels (x = driven)		2x	2x
Number of rear wheels (x = driven)		2	2
Track width, front	b10 (mm)	984	984
Track width, rear	b11 (mm)	920	920

**Basic dimensions**

Model		RX70-25/600	RX70-30
Type number		7402	7403
Forwards tilt of lift mast/fork carriage	Degrees	6	6
Backwards tilt of lift mast/fork carriage	Degrees	7	7
Height with lift mast retracted	h1 (mm)	2175	2175
Free lift	h2 (mm)	160	160
Lift height <sup>1</sup>	h3 (mm)	2970	2970
Height with lift mast extended	h4 (mm)	3750	3750
Height above overhead guard	h6 (mm)	2190	2190
Seat height	h7 (mm)	1074	1074
Coupling height	h10 (mm)	340/455	340/455
Overall length	l1 (mm)	3705	3705
Length including fork back	l2 (mm)	2705	2705
Overall width	b1 (mm)	1192	1192
Fork arm thickness	s (mm)	45	50
Fork arm width	e (mm)	100	100
Fork arm length	l (mm)	1000	1000
Fork carriage in acc. with ISO 2328, class / form		II / A	III / A
Fork carriage width	b3 (mm)	1150	1150
Ground clearance with load below lift mast	m1 (mm)	125	125
Ground clearance at the middle of the wheelbase	m2 (mm)	150	150
Aisle width for pallet 1000 x 1200 cross-wise	Ast (mm)	4047	4060
Aisle width for pallet 800 x 1200 length-wise	Ast (mm)	4247	4260

<sup>1</sup> The specified lift takes into account the tyre deflection and the tolerances of the tyre diameter.

## VDI datasheet for RX70-25/600 and RX70-30

Model		RX70-25/600	RX70-30
Type number		7402	7403
Turning radius	Wa (mm)	2397	2397
Smallest pivot point distance		b13 (mm)	632

## Performance data

Model		RX70-25/600	RX70-30
Type number		7402	7403
Driving speed with load	km/h	21	21
Driving speed without load	km/h	21	21
Lifting speed with load	m/s	0.53	0.48
Lifting speed without load	m/s	0.55	0.50
Lowering speed with load	m/s	0.60	0.60
Lowering speed without load	m/s	0.53	0.53
Pulling force with load	N	17500	17,500
Pulling force without load	N	12300	12300
Climbing capability <sup>1</sup> with load	%	25	25
Climbing capability without load	%	24	24
Acceleration time with load	s	5.1	5.1
Acceleration time without load	s	4.5	4.5
Service brake		Electr./hydr.	Electr./hydr.

 CAUTION

To use the truck safely—with or without a load—the maximum permitted ascending or descending gradient for travel is 15%.

- If you have any questions, contact your authorised service centre.

## Engine

Model		RX70-25/600	RX70-30
Type number		7402	7403
Type of engine		P24	P24
Engine power rating in accordance with ISO 1585	kW	37	37

<sup>1</sup> The stated values are used only to compare the performance of trucks in the same category. The gradient values in no way represent the normal daily operating conditions.

Model		RX70-25/600	RX70-30
Type number		7402	7403
Nominal speed	rpm	2600	2600
Number of cylinders		4	4
Displacement	cm <sup>3</sup>	2400	2400
Fuel consumption <sup>1</sup> in accordance with EN 16796	l/h	2.4	2.4
On-board power supply	V	12	12

Other

Model		RX70-25/600	RX70-30
Type number		7402	7403
Working pressure for attachments	bar	250	250
Oil flow for attachments	l/min	30	30
Capacity of fuel tank	l/kg	11	11
Sound pressure level L <sub>pAZ</sub> (driver's compartment) <sup>2</sup>	dB (A)	<77	<77
Sound power level L <sub>wAZ</sub> (working cycle)	dB (A)	<97	<97
Human vibration acceleration in accordance with EN 13059	m/s <sup>2</sup>	0.58	0.58
Tow coupling, DIN type/model		Bolt	Bolt

<sup>1</sup> With Blue-Q energy-saving programme

<sup>2</sup> Without cab. Values are different with a cab.

## VDI datasheet for RX70-30/600 and RX70-35

VDI datasheet for  
RX70-30/600 and RX70-35 NOTE

*This VDI datasheet specifies only the technical values for trucks with standard equipment. Different tyres, lift masts, additional units etc. can produce different values.*

## Key data

Model		RX70-30/600	RX70-35
Type number		7404	7405
Manufacturer		STILL GmbH	STILL GmbH
Drive		LPG engine/ electrical	LPG engine/ elec- trical
Operation		Seat	Seat
Load capacity/load	Q (kg)	3000	3500
Load centre of gravity	c (mm)	600	500
Load distance	x (mm)	469	469
Wheelbase	y (mm)	1820	1820

## Weights

Model		RX70-30/600	RX70-35
Type number		7404	7405
Net weight	kg	4460	4460
Front axle load, laden	kg	6652	7253
Rear axle load, laden	kg	808	707
Front axle load, unladen	kg	1890	1890
Rear axle load, unladen	kg	2570	2570

## Wheels, chassis frame

Model		RX70-30/600	RX70-35
Type number		7404	7405
Tyres		SE	SE
Tyre size, front		23x10-12	23x10-12
Tyre size, rear		21x8-9	21x8-9

Model		RX70-30/600	RX70-35
Type number		7404	7405
Number of front wheels (x = driven)		2x	2x
Number of rear wheels (x = driven)		2	2
Track width, front	b10 (mm)	975	975
Track width, rear	b11 (mm)	920	920

### Basic dimensions

Model		RX70-30/600	RX70-35
Type number		7404	7405
Forwards tilt of lift mast/fork carriage	Degrees	6	6
Backwards tilt of lift mast/fork carriage	Degrees	7	7
Height with lift mast retracted	h1 (mm)	2175	2175
Free lift	h2 (mm)	160	160
Lift height <sup>1</sup>	h3 (mm)	2970	2970
Height with lift mast extended	h4 (mm)	3750	3750
Height above overhead guard	h6 (mm)	2195	2195
Seat height	h7 (mm)	1074	1074
Coupling height	h10 (mm)	340/455	340/455
Overall length	l1 (mm)	3770	3770
Length including fork back	l2 (mm)	2770	2770
Overall width	b1 (mm)	1224	1224
Fork arm thickness	s (mm)	50	50
Fork arm width	e (mm)	100	100
Fork arm length	l (mm)	1000	1000
Fork carriage in acc. with ISO 2328, class / form		III / A	III / A
Fork carriage width	b3 (mm)	1150	1150
Ground clearance with load below lift mast	m1 (mm)	125	125
Ground clearance at the middle of the wheelbase	m2 (mm)	150	150
Aisle width for pallet 1000 x 1200 cross-wise	Ast (mm)	4127	4127
Aisle width for pallet 800 x 1200 length-wise	Ast (mm)	4352	4327

<sup>1</sup> The specified lift takes into account the tyre deflection and the tolerances of the tyre diameter.

## VDI datasheet for RX70-30/600 and RX70-35

Model		RX70-30/600	RX70-35
Type number		7404	7405
Turning radius	Wa (mm)	2464	2464
Smallest pivot point distance		b13 (mm)	632

## Performance data

Model		RX70-30/600	RX70-35
Type number		7404	7405
Driving speed with load	km/h	21	21
Driving speed without load	km/h	21	21
Lifting speed with load	m/s	0.48	0.48
Lifting speed without load	m/s	0.50	0.50
Lowering speed with load	m/s	0.60	0.60
Lowering speed without load	m/s	0.53	0.53
Pulling force with load	N	17000	17,000
Pulling force without load	N	13400	13,400
Climbing capability <sup>1</sup> with load	%	24	24
Climbing capability without load	%	20	20
Acceleration time with load	s	5.4	5.4
Acceleration time without load	s	4.8	4.8
Service brake		Electr./hydr.	Electr./hydr.

**⚠ CAUTION**

To use the truck safely—with or without a load—the maximum permitted ascending or descending gradient for travel is 15%.

- If you have any questions, contact your authorised service centre.

## Engine

Model		RX70-30/600	RX70-35
Type number		7404	7405
Type of engine		P24	P24
Engine power rating in accordance with ISO 1585	kW	37	37

<sup>1</sup> The stated values are used only to compare the performance of trucks in the same category. The gradient values in no way represent the normal daily operating conditions.



Model		RX70-30/600	RX70-35
Type number		7404	7405
Nominal speed	rpm	2600	2600
Number of cylinders		4	4
Displacement	cm <sup>3</sup>	2400	2400
Fuel consumption <sup>1</sup> in accordance with EN 16796	l/h	2.7	3.0
On-board power supply	V	12	12

Other

Model		RX70-30/600	RX70-35
Type number		7404	7405
Working pressure for attachments	bar	250	250
Oil flow for attachments	l/min	30	30
Capacity of fuel tank	l/kg	11	11
Sound pressure level L <sub>pAZ</sub> (driver's compartment) <sup>2</sup>	dB (A)	<77	<77
Sound power level L <sub>wAZ</sub> (working cycle)	dB (A)	<97	<97
Human vibration acceleration in accordance with EN 13059	m/s <sup>2</sup>	0.58	0.58
Tow coupling, DIN type/model		Bolt	Bolt

<sup>1</sup> With Blue-Q energy-saving programme

<sup>2</sup> Without cab. Values are different with a cab.

## Ergonomic dimensions

## Ergonomic dimensions

**⚠ WARNING**

Danger of impact injuries to the head!

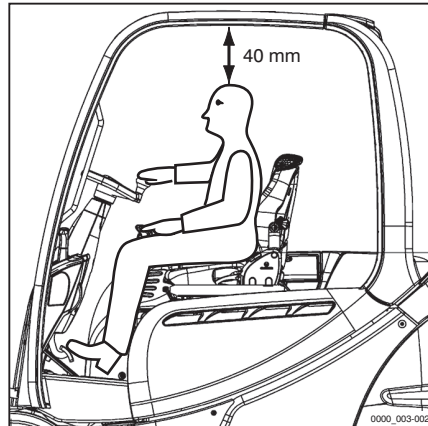
If the head of the operator is located too close to the underside of the roof, the suspension of the driver's seat or an accident may cause the head to strike the overhead guard.

To avoid head injuries, a minimum distance of **40 mm** must be ensured between the underside of the roof and the head of the tallest operator.

To determine the actual head clearance, the operator must sit in the driver's seat and the seat suspension must be set to this driver's requirements.

Due to the individual nature of height and body weight as well as the wide variety of types of driver's seat and overhead guard, the minimum head clearance must be ensured in every truck.

The driver's compartment has been designed taking ergonomics in the workplace into account and in accordance with EN ISO 3411. In general, from the seat position, the operator has sufficient space to reach the operating devices safely, to operate the truck and to view the outline of the truck. Operators whose body size deviates from the specified dimensions on which EN ISO 3411 is based must be individually considered by the operating company.





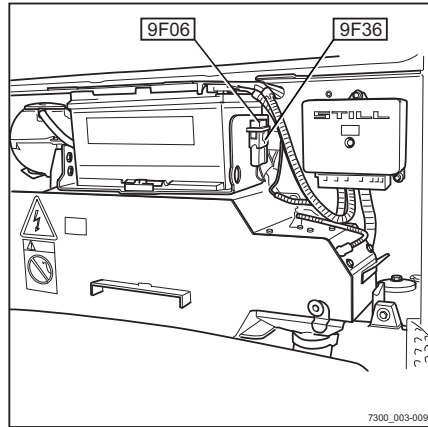
## Fuse assignment

**Additional fuses**

In this truck, additional fuses are located on a fuse holder to the left of the fuse box on the starter battery.

**NOTE**

*Depending on the equipment, not all fuses will be present in the truck.*



9F06 Sheathed-element heater plug (only on diesel trucks), 25 A

9F36 12 V socket, 10 A

**NUMBERS AND SYMBOLS**

12 V socket. . . . . 280

**A**

Access authorisation for the fleet manager. . . . . 130

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