Original instructions

Reach truck
FXR C
Pilot series

FXR 14 C
FXR 16 C



14C 16C

first in intralogistics

11218011501 EN - 12/2025 - 01

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:

- Definitions and abbreviations
- Selection of suitable industrial trucks for the specific application
- Prerequisites for the safe operation of industrial trucks
- Employers guide for the safe use of industrial trucks
- Transport, initial commissioning and storage
- Example structure for a hazard assessment

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.

1 Introduction

The reach truck . . . 2
General description . . . 2
General information . . . 4
Conformity marking . . . 5
Declaration that reflects the content of the declaration of conformity . . . 6
Declarations of conformity in accordance with directive RED 2014/53/EU . . . 7
Labelling . . . 8
- Overview . . . 8
- Nameplate . . . 9
- Position of the nameplate . . . 11
- Serial numbers . . . 12
- Truck configuration . . . 13

Taking delivery of the industrial truck . . . 14

Operating conditions . . . 15
Intended use . . . 15
- Damage and faults . . . 15
- Danger area . . . 15
- Working area . . . 15
- Roadways . . . 15
- Driving onto lifts . . . 16
- Fire protection . . . 16
- Attachments . . . 16
- Roof panels made of safety glass . . . 17
- Attachments and conversions . . . 17
- Using working platforms . . . 17

Improper use . . . 17
Hazard assessment . . . 17
Description of use and climatic conditions . . . 19

Information about the operating instructions . . . 20
Documentation . . . 20
Digital operating instructions . . . 20
Supplementary documentation . . . 20
Defining directions . . . 21
Information symbols used . . . 22

Environmental notes . . . 23
Packaging material for transport . . . 23
Disposing of components and batteries . . . 23

2 Safety

Responsible persons . . . 26
Operating company . . . 26
Drivers . . . 26
Competent person . . . 27

Operating safely . . . 28
Basic principles . . . 28
Safety information for assistance systems . . . 29
Accidents involving lithium-ion batteries . . . 29
Stability . . . 30
Wheels and tyres . . . 31
Procedure if the industrial truck tips over . . . 31
Side chassis supports . . . 32
Data security . . . 32
Residual risks . . . 32

Emissions . . . 34
Noise emission values . . . 34
Vibration characteristics for body vibrations . . . 34
Medical devices . . . 34

Working on the industrial truck . . . 36
Basic principles . . . 36
Handling the lithium-ion battery . . . 38
Handling consumables . . . 38
Fitting attachments . . . 38

Regular testing . . . 42

3 Overviews

Overall view of the reach truck . . . 44

Overview of the driver's compartment . . . 45

Overview of the display-operating unit . . . 46

Push buttons and switches . . . 47

4 Operation

Initial commissioning . . . 50
Checks before initial commissioning . . . 50
Information on running-in . . . 50

Pre-operation checks and tasks 52
Checks and tasks before daily use 52
Checking the emergency off function 55
Checking the brake system for correct function 55
Checking the steering system for correct function. 57

Driver's compartment. 58
Entering and exiting the truck 58
Minimum distance between head and overhead guard. 59
Adjusting the KL 10 driver's seat 60
Adjusting the MSG 65 driver's seat 62
Adjusting the steering column 65
Seat belt (variant) 66
Actuating the horn 68
Working spotlights (variant). 69
Warning zone light (variant). 70
STILL SafetyLight® and STILL SafetyLight 4Plus® (variants) 71
Rotating beacon/flashing beacon (variant) 73
Emergency off switch 74

Display-operating unit 75
General operation of the display-operating unit. 75
Using function buttons and favourites 76
"Settings" menu 78
`Drive` menu 80
`Lift` menu. 82
`Truck` menu 85
`System` menu 86
Assigning function buttons and favourites. 87
`Display settings` menu 90
`System settings` menu 93
`Diagnostics/service` menu 96
Switching off the industrial truck via the display-operating unit (optional) 99

Switching on 100
Connecting and disconnecting the battery male connector. 100
Switching the industrial truck on and off 101
Access authorisation with PIN code (variant) 102

Efficiency modes and drive modes 104
Setting the **`Drive Program`**. 104

Drive 105
Safety regulations when driving. 105
Driving – single-pedal operation (variant). 107
Driving – two-pedal operation (variant) 110

Speed limitation while driving . . . 112
Speed limitation in the main lift . . . 113

Steering . . . 114
Steering – 360° steering (variant) . . . 114
Steering – 180° steering (variant) . . . 114
Switching between 180°/360° steering (variant) . . . 114
Steering – reverse steering (variant) . . . 116

Braking . . . 117
Parking brake . . . 117
Service brake . . . 119

Actuating the working hydraulics . . . 121
Lift mast version . . . 121
Joystick 4Plus (variant) . . . 122
Fingertip (variant) . . . 125
Reach-lower lock (variant) . . . 128
Fork wear protection (variant) . . . 128
Depressurisation . . . 129

Before leaving the truck . . . 130
Briefly leaving the truck . . . 130
Parking the truck securely . . . 130

Assistance systems . . . 132
Speed reduction when steering (Curve Speed Control) . . . 132
Lift height restriction (variant) . . . 132
Assistance system"Presence detection of a foot on the right accelerator pedal" . . . 134

Working with a load . . . 135
Capacity rating plate . . . 135
Length of the fork arms . . . 138
Adjusting the fork arm distance . . . 138
Changing the fork arms . . . 139
Load backrest (variant) . . . 141
Picking up a load . . . 141
Driving with a load . . . 145
Setting down a load . . . 146
Transporting suspended loads . . . 148
Transporting liquid containers . . . 149
Fork wear protection (variant) . . . 151
Quick-release couplings for auxiliary hydraulics . . . 152

Emergency operation . . . 155
Emergency lowering . . . 155
Towing . . . 156

Drive batteries . . . 158
Handling the lithium-ion battery . . . 158
Charging the lithium-ion battery upon delivery . . . 158
Checking the battery state of charge . . . 158
Charging the lithium-ion battery . . . 160
Replacing the lithium-ion battery . . . 162

Loading/transporting . . . 164
Removing/attaching the lift mast . . . 164
Driving without the lift mast . . . 164
Transporting the truck using a lorry or flat bed trailer . . . 164
Crane loading . . . 169

5 Service and maintenance

Safety information regarding servicing work . . . 172

Regular maintenance . . . 173

Lifting and jacking up . . . 174

Checking and topping up consumables . . . 174

Maintenance instructions . . . 175

Maintenance - 1000 hours/year . . . 177

Maintenance - 3000 hours/every two years . . . 183

Overview of filling quantities and set values . . . 183

Recommendations for consumables . . . 184

Cleaning the truck . . . 186

Checking the wheels and tyres . . . 188

Checking the roof panel (variant) for damage . . . 189

Decommissioning . . . 191
Extended parking/decommissioning of the industrial truck . . . 191
Lithium-ion battery: Storing the battery . . . 193
Disposal of old trucks . . . 194

6 Technical data

Product overview: Reach trucks . . . 198

Dimensions . . . 200

VDI datasheet . . . 201

Lift mast data . . . 206

Tyre variants and rim sizes 207

Eco-design requirements for electric motors and variable speed drives 207

Battery specifications 209

Information on the datasheet for lithium-ion batteries 209

Battery group 26 210

Battery group 26 211

1

Introduction

The reach truck

General description

Introduction

This reach truck complies with all applicable EU directives. It has been developed on the basis of the strictest application requirements. Its design features are based on the analysis of state-of-the-art warehouse logistics with the aim of maximum productivity. The overall design concept ensures exceptional comfort for the driver and a high level of efficiency with minimum fatigue.

Running gear and drive train

The powerful drive motor is combined with a live-ring gearbox unit that transmits the power to the drive wheel.

The required energy is supplied by 48 V lithium-ion batteries or 48 V lead-acid batteries.

Steering

The electrical "fly by wire" steering reduces operator fatigue, ensures excellent manoeuvrability and improves the handling of work materials. The feedback between the steering system and the steering wheel ensures that the operator can always rely on the system. The reach truck is optionally available with 180° or 360° steering.

Brake system

Reach trucks have three independent braking systems.

- The hydraulic operating brake acts on the load wheels. It is actuated with the brake pedal.
- The magnetic parking brake acts directly on the drive motor. It is activated automatically or by the driver using a switch.
- The electric regenerative braking is operated automatically when the accelerator pedal is progressively released or when the opposite drive direction is selected.

Driver's compartment and operating devices

The driver's compartment has been designed specifically with the operator in mind. To increase the productivity of both operator and machine, the operating situation was analysed and optimised in terms of form and function. The result is an ergonomic arrangement of all operating devices, combining optimal comfort with maximum efficiency. The specially designed suspension seat supports every movement of the driver. Thanks to full lateral, height and lumbar adjustments and automatic weight adjustment (comfort equipment only), the seat meets the needs of every operator. Easy-to-operate joysticks or single levers provide precise control of all load-handling functions.

Chassis

The chassis has been designed for maximum strength and rigidity. It effectively protects the driver's compartment, motors and electronics and is easily accessible for service purposes. With its low centre of gravity, the chassis provides stability and excellent residual capacity at high lift heights.

Electrical system

The truck is equipped with a digital high-frequency control system for driving, steering and handling loads. This electric reverse current braking reacts progressively to commands from the operator and performs braking processes extremely smoothly. Its technology ensures maximum efficiency from the truck and enables many work cycles to be performed without the need to replace the battery.

By adjusting the parameters, the authorised service centre can tailor the truck to any individual work situation.

The integrated diagnostics ensure rapid maintenance and maximum operating time.

Mast, hydraulics and reach system

The low-deflection lift mast ensures excellent visibility through the mast at all lift heights for fast and safe load handling. The unique design uses two asymmetrically mounted hydraulic cylinders that balance the forces acting on them.

The tilt mechanism with integrated sideshift reduces load movements to a minimum and thus ensures excellent residual capacities.

Through-the-mast reeving for up to four hydraulic functions eliminates the need for hose reels. Maintenance-free angled rollers ensure smooth and rapid lifting movements and lowering movements.

The integral outer mast and the reach carriage allow excellent visibility of the forks and load at low lift heights.

A powerful pump motor enables fast lifting movements. End position damping at the end of the lift path ensures smooth, fast, safe and precise load manoeuvring.

Comprehensive mast damping measures ensure seamless mast performance under all conditions. The control system automatically compensates for any abrupt joystick movements made by the operator.

General information

The industrial truck described in these operating instructions conforms with the applicable standards and safety regulations.

The industrial truck offers optimum efficiency, safety and driving comfort. By complying with the specifications in these operating instructions, the functionality and the approved features of the industrial truck will be retained.

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:

– Read the operating instructions before commissioning the industrial truck and follow the instructions during operation.

– Follow all of the safety information contained in the operating instructions and on the industrial truck.

NOTE

In the event of repairs, use only genuine spare parts from the manufacturer. This guarantees that the industrial truck will remain in the same technical condition as when it was received.

- *Please address all queries relating to the industrial truck and orders for spare parts to the authorised service centre only, stating the delivery address.*

Operating on public roads

When operating the industrial truck on public roads , the national regulations applicable to the driver and to the industrial truck in the country of use must be observed. The required operating permit must be obtained from the relevant authorities.

Observe country-specific restrictions for winter road conditions.

Insurance cover on company premises

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

It is therefore advisable to review the company liability insurance to check that the industrial truck is insured with respect to third parties in the event of damage caused in restricted public traffic areas.

Conformity marking

The manufacturer uses the conformity marking to document the conformity of the industrial truck with the relevant directives at the time of placing on the market:

- CE: in the European Union (EU)
- UKCA: in the United Kingdom (UK)
- EAC: in the Eurasian Economic Union

The conformity marking is applied to the nameplate. A declaration of conformity is issued for the EU and UK markets.



conformity symbols

Declaration that reflects the content of the declaration of conformity

Declaration

STILL GmbH
Berzeliusstraße 10
22113 Hamburg Germany

We declare that the machine

Industrial truck type	**Corresponding to these operating instructions**
Model	**Corresponding to these operating instructions**

– "Machinery Directive 2006/42/EC" [1)]
– "Supply of Machinery Safety Regulations 2008, 2008 No. 1597" [2)]
conforms to the latest valid versions of the above.

Person authorised to compile the technical documents:

See declaration of conformity

STILL GmbH

1) For the markets of the European Union, the EU candidate countries, the EFTA States and Switzerland
2) For the United Kingdom market

The declaration of conformity document is supplied with the industrial truck. The declaration shown explains the conformity with the provisions of the EC Machinery Directive and the Supply of Machinery Safety Regulation 2008, 2008 No. 1597.

An unauthorised structural change or addition to the industrial truck can compromise safety, thus invalidating the Declaration of Conformity.

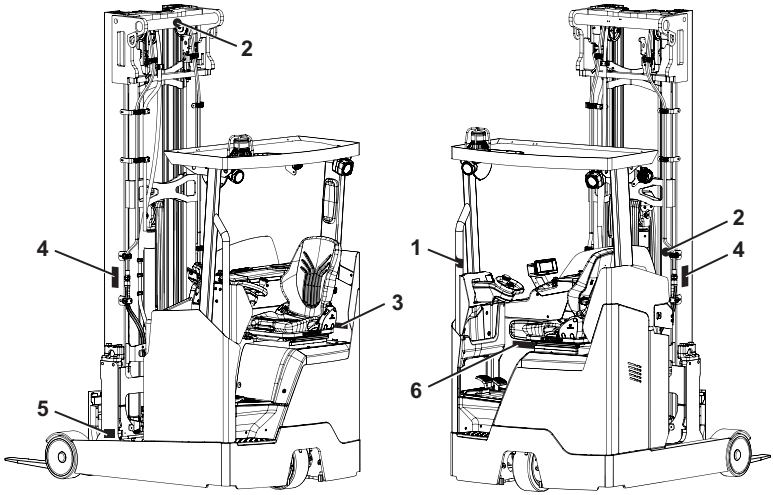
The declaration of conformity must be carefully stored and made available to the responsible authorities if necessary. It must also be handed over to the new owner if the industrial truck is sold on.

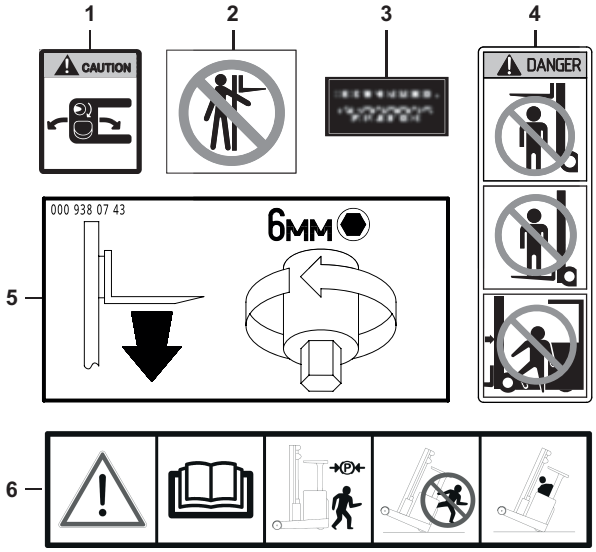
Declarations of conformity in accordance with directive RED 2014/53/EU

The manufacturers of the radio equipment installed in the industrial truck declare that the radio equipment corresponds to the Directive RED 2014/53/EU.

Labelling

Overview





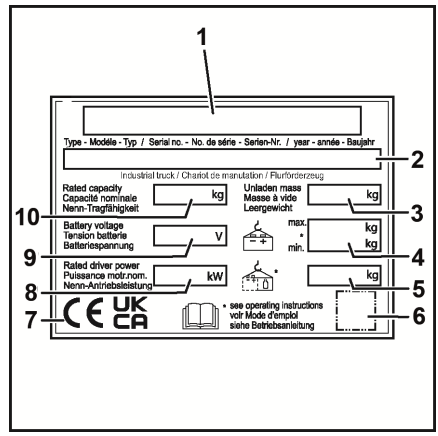
1 Warning sign: Reverse steering
2 Warning sign: Do not touch or reach into the lift mast (position depends on lift mast)
3 Information sign: Importer
4 Warning sign: Do not stand under the fork / Do not stand on the fork / Do not enter or reach into the danger area of the reach carriage
5 Information sign: Emergency lowering position
6 Warning sign: Read the operating instructions / Activate the parking brake before leaving the truck / Risk of fatal injury if the industrial truck tips over

NOTE

For the complete overview of all labelling, see the spare parts catalogue.

Nameplate

▷



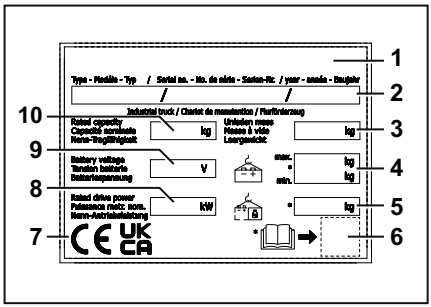
Variant 1: Industrial trucks built up to 10/2025

1 Manufacturer/manufacturer address
2 Model/serial no./year of manufacture
3 Tare weight
4 Max. battery weight/min. battery weight (only for electric trucks)
5 Ballast weight (only for electric forklift trucks)
6 Data matrix code (contains the factory number of the industrial truck)
7 Conformity mark: CE mark for the markets of the EU, the EU candidate countries, the EFTA states and Switzerland. UKCA mark for the United Kingdom market. EAC mark for the Eurasian Economic Union market
8 Rated drive power
9 Battery voltage
10 Rated capacity

NOTE

- *It is possible for there to be multiple conformity markings on the nameplate.*
- *The EAC mark may also be located in the immediate vicinity of the nameplate.*

Variant 2: Industrial trucks built after 10/2025



1 Manufacturer/manufacturer address
2 Model/serial no./year of manufacture
3 Tare weight
4 Max. battery weight/min. battery weight (only for electric trucks)
5 Ballast weight (only for electric forklift trucks)
6 QR code for digital operating instructions (contains the Internet address for the customer portal and the factory number of the industrial truck)*
7 Conformity mark: CE mark for the markets of the EU, the EU candidate countries, the EFTA states and Switzerland. UKCA mark for the United Kingdom market. EAC mark for the Eurasian Economic Union market
8 Rated drive power
9 Battery voltage
10 Rated capacity

*: Scan the QR code or enter the address **still-smart.com/QR/ms/XXXXXXXXXXXX** in an Internet browser.

XXXXXXXXXXXX is a placeholder for the serial number.

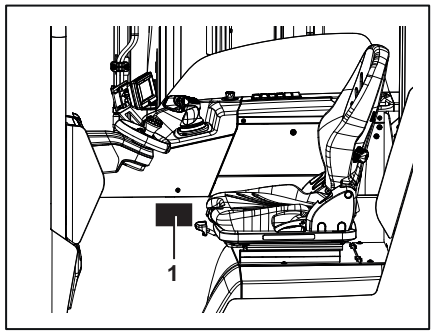
NOTE

- *It is possible for there to be multiple conformity markings on the nameplate.*
- *The EAC mark may also be located in the immediate vicinity of the nameplate.*

Position of the nameplate

The nameplate of the industrial truck is located next to the driver's seat beneath the armrest.

▷



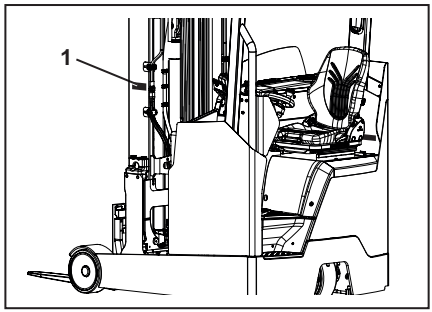
1 Position of the nameplate

Serial numbers

"Lift mast number" label

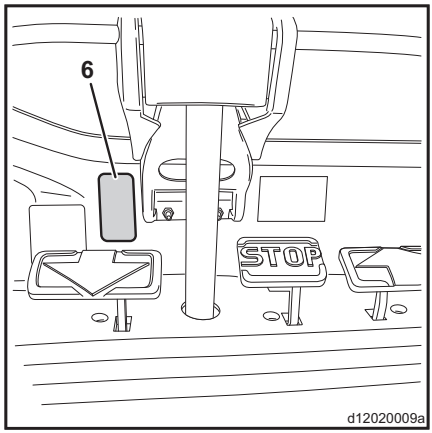
1 Lift mast number (adhesive label)

The label with the lift mast number is located on the side of the lift mast.



"Truck configuration" label

1 "Truck configuration" label (for a description, see "Truck configuration")



Truck configuration

"Truck configuration" label

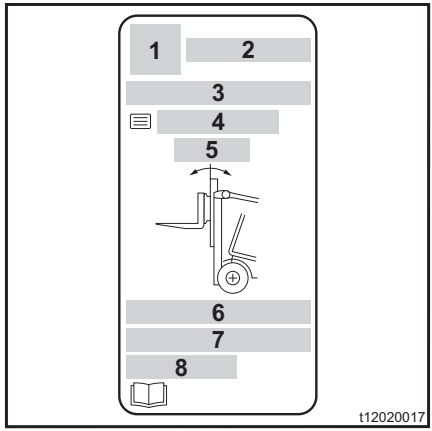
The "truck configuration " label shows the truck's configuration.

Attachments and conversions to the truck must be recorded on the "truck configuration" label. In this case, a new "truck configuration" label must be created and attached to the truck by the authorised service centre.

⚠ DANGER

Risk to stability due to attachments and conversions on the truck

The capacity rating plate and the additional capacity rating plate must also be checked and replaced if necessary.



1	Placeholder for "**data matrix code**"
2	**Serial number**
3	**Identification plate designation for lift mast** with: Lift mast series – lift mast version – lift height in cm or Identification: "ohne / CO"***** **Lift mast version — variants:** "S" means standard lift mast "D" means duplex lift mast "T" means triplex lift mast (For lift mast variants, see the "Technical description section")
4	**Number of capacity rating plate**
5	Maximum permissible forwards/backwards **tilt angle**
6	**Drive axle tyres:** "SE" means solid rubber tyres "Luft" means pneumatic tyres "ZW" means twin tyres "Band" means bandage tyres
7	**Attachment:** "GTR" means fork carriage "iSS" means integrated sideshift "iZVG" means integrated fork prong positioner "iZVG View" means integrated fork prong positioner with optimised visibility "ohne / CO" means customised option
8	**Restrictions where relevant to the load capacity:** Details regarding reducing the driving speed
"ohne / CO"*****	means customised option (without lift mast or with approved non-original lift mast)

Taking delivery of the industrial truck

Before the industrial truck leaves the manufacturer's plant it undergoes a thorough inspection process. This ensures that the truck is in perfect condition and that it is fully equipped.

In order to prevent future complaints, the exact condition of the industrial truck and the scope of equipment must be checked and confirmed to the authorised service centre.

– When the industrial truck is accepted, the data must be copied from the nameplate to the following table.

This information is necessary for technical questions and spare part orders.

Industrial truck type:	
Serial number/year of manufacture:	
Hand-over date:	

The number from the identification plates must also be specified for parts from the following units: lift mast, drive axle and steering axle:

Lift mast number:	
Lift mast lift height:	
Drive axle number:	
Steering axle number:	

NOTE

The driving speed is reduced on industrial trucks that are delivered without a lift mast. See the section entitled "Driving without the lift mast" for details of how to proceed.

Operating conditions

Intended use

The industrial truck may be used only for its intended purpose.

The industrial truck is intended for moving and lifting the loads specified on the capacity rating plate while observing the instructions given in these operating instructions.

Damage and faults

Report damage or other faults on the industrial truck or the attachment to supervisory personnel immediately. Industrial trucks and attachments that are not operationally safe must not be used until they are properly repaired.

Do not remove or deactivate safety systems and switches. Fixed set values may only be changed with the approval of the manufacturer.

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

Danger area

The danger area is the area within which people may be at risk due to the movements of the industrial truck, its working equipment, its lifting accessories (e.g. attachments) or the goods that are carried. This also includes the area that can be affected by falling cargo or by lowering or falling working equipment.

People must not stand in the danger area of an industrial truck.

Working area

It is only permitted to drive on routes authorised for traffic by the operating company or its representatives. Traffic routes must be free from obstacles. Loads may only be set down and stored in the designated areas provided for this purpose.

Roadways

Roadways must be sufficiently firm, level and free from objects. Drainage channels, level crossings and similar obstacles must be evened out so that trucks can drive over these obstacles without impacts.

Industrial trucks may only be used on roadways that do not have bends that are too sharp, gradients that are too steep or entrances that are too narrow or low.

Gradients may not exceed the values given in the operating instructions and must have a sufficiently rough surface. The top and bottom of the gradient must feature smooth and gradual transitions to prevent the load from scraping the ground and the undercarriage from being damaged.

Industrial trucks must not be parked on surfaces with a gradient. If this cannot be avoided, the industrial truck must be secured using wheel chocks in addition to the engaged parking brake.

Do not exceed the permitted area load and point load of the roadway. There must be sufficient distance between the highest points of the industrial truck or the load and the fixed elements of the surrounding area.

Within the EU, the current version of directive 89/654/EEC (minimum safety and health requirements for the workplace) must be observed. The respective national guidelines apply to areas outside the EU.

Hazardous areas on roadways must be safeguarded or indicated by the standard road traffic signs and, if applicable, by additional warning signs.

When driving on public roads, the national regulations pertaining to drivers and industrial trucks must be observed. Observe country-specific restrictions for winter road conditions.

Driving onto lifts

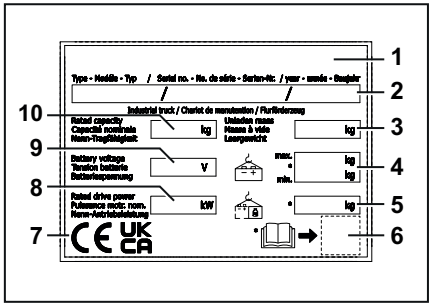
Do not drive the industrial truck into a lift without specific authorisation. The driver may only use this industrial truck on lifts with a sufficient load capacity and for which the operating company has been granted authorisation (refer to the section entitled "Responsible persons").

⚠ DANGER

There is a risk of fatal injury from being run over or crushed by the industrial truck.

- There must not be any persons already in the lift when the industrial truck is driven into the lift.
- Persons must not enter the lift until the industrial truck is stationary and secure. Persons must leave the lift prior to the industrial truck.

- Park the industrial truck securely before driving onto the lift.
- Determine the unit weights by reading the industrial truck nameplate (1) and, if necessary, the attachment (variant) nameplate and/or by weighing the load to be lifted.



- Add the determined net weights to obtain the total actual weight of the industrial truck:

  Tare weight (2)
+ Max. permissible battery weight (3)
+ Ballast weight (variant) (4)
+ Net weight of attachment (option)
+ Weight of the load to be lifted
+ 100-kg allowance for driver
= Total actual weight

- Make sure that the total actual weight determined is below the maximum load capacity of the lift.
- Drive the industrial truck onto the lift with the fork arms or the attachment (option) facing forwards and without touching the shaft walls.
- Park the industrial truck securely in the lift to prevent uncontrolled movements of the load or of the industrial truck.

Fire protection

The operating company must ensure that suitable fire protection is available for the relevant application in the surroundings of the industrial truck. Depending on the application, additional fire protection on the industrial truck may be necessary. If in doubt, the responsible fire brigade can be contacted.

Attachments

Attachments may only be used for their intended purpose. Drivers must be taught how to operate the attachments.

Operating instructions for the attachment are enclosed for industrial trucks that are delivered from the factory with an attachment. Before commissioning an industrial truck with an attachment, check that loads are handled safely. Depending on the type of attachment, it may be necessary to make adjustments, e.g. pressure settings, or to adjust stops and operating speeds. Corresponding instructions can be found in the operating instructions for the attachment.

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

Mounting the attachment and connecting the energy supply for power-driven attachments must only be performed by competent persons in accordance with the information provided by the manufacturers. After each installation, the attachment must be checked for correct function prior to initial commissioning.

The permissible load capacity of the attachment and the permissible load (load capacity and load moment) of the industrial truck must not be exceeded by the combination of attachment and payload, see additional capacity rating plate.

Roof panels made of safety glass

It is the responsibility of the operating company to adapt the design of the additional protection to the loads to be transported. Industrial trucks with a damaged roof panel must be taken out of service until repaired.

Attachments and conversions

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

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.

Improper use

⚠ DANGER

Risk of fatal and non-fatal injury.

Only use the industrial truck in line with the intended use.

The industrial truck must only be used as described in these operating instructions.

The operating company or driver is liable if the industrial truck is used in a manner that is not permitted.

The following list serves by way of example and does not claim to be exhaustive.

The following uses of the industrial truck are not permitted:

- Transporting persons using the industrial truck if the industrial truck is not designed for this purpose
- Using the industrial truck in potentially explosive areas
- Stacking/unstacking on slopes
- Standing on the fork arms when raised
- Exceeding the maximum load capacity
- Increasing the truck's load capacity, e.g. by attaching an additional weight

Hazard assessment

In accordance with health and safety regulations, the employer is responsible for the safety and health of employees at work.

In Europe, Directive 89/391/EEC and the individual directives based thereon stipulate the minimum level of health and safety requirements. The directives are transposed into national law in the EU Member States. These can be expanded on a country-specific basis.

Countries outside the European Union also have regulations governing occupational health and safety. It is therefore essential to also observe national laws for health and safety.

For companies that operate industrial trucks, the hazard assessment is a key element in defining measures to eliminate or minimise the dangers connected with the operation of industrial trucks.

Operating conditions

If the application conditions or the equipment on industrial trucks change, the hazard assessment must be adjusted.

Important points for the hazard assessment include:

- Roadways
- Poor visibility for the driver when the industrial truck is laden
- Working areas with hazardous materials
- Danger areas
- Fire protection
- Physical strain on the driver
- Attachments used with the industrial truck

Detailed information is also available in the VDMA (Verband Deutscher Machinen- und Anlagenbau — German Mechanical Engineering Industry Association) guideline "Employer's Guide for the Safe Use of Industrial Trucks", see the chapter entitled "Foreword".

Description of use and climatic conditions

Normal use:

- Indoor and outdoor use
- Ambient temperature in Nordic and tropical regions ranging from -10°C to 40°C
- Use at up to 2000 m above sea level.

Use with special measures:

- Ambient temperature in tropical regions up to +40°C
- For use with abrasive dust (such as AL203), lint, acids, alkaline solutions, salts, aluminium oxide and incombustible substances, among others
- Use at up to 3500 metres above sea level (with power restrictions).

Cold store versions

Cold store mixed use

- Ambient temperatures: "area 2" from -32°C to +25°C

Cold store Stay-In use

- Ambient temperatures: "area 3" from -32°C to -5°C

Information about the operating instructions

Documentation

The following technical documents come with each industrial truck:

- Operating instructions for the industrial truck
- Operating instructions for the attachment (optional)
- Declaration of conformity

These operating instructions describe all measures necessary for the safe operation and proper service of the industrial truck.

The persons responsible for operation of industrial trucks and servicing work on industrial trucks must be familiar with the operating instructions. The operating instructions must be accessible to the driver and operating company at all times.

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

The complete documentation must be stored carefully. The documentation must be handed over to the next operating company if the industrial truck is transferred or sold.

Up-to-dateness

Industrial trucks are constantly being developed. These instructions are subject to change.

For this reason, no claims can be made on the basis of the data, illustrations and descriptions in these operating instructions.

Copyright

These operating instructions must not be reproduced, translated or made accessible to third parties, even in part, except with the express written approval of the manufacturer.

Digital operating instructions

According to the latest revision of the guidelines for the application of machinery directive 2006/42/EC, the original operating instructions no longer have to be supplied in paper form.

The operating instructions for the industrial truck and other relevant documents (e.g. spare parts catalogue) are available in the customer portal.

Procedure:

- Scan the QR code on the nameplate of the industrial truck, or
- Enter the address **still-smart.com/QR/ms/XXXXXXXXXXX** in an Internet browser.

NOTE

XXXXXXXXXXX is a placeholder for the serial number.

NOTE

To locate the QR code, see the section entitled "Nameplate".

Supplementary documentation

This industrial truck can be fitted with a **C**ustomer **O**ption (**CO**) that deviates from the standard equipment and the variants.

This CO may consist of:

- Special sensors
- A special attachment
- A special towing device
- Customised attachments

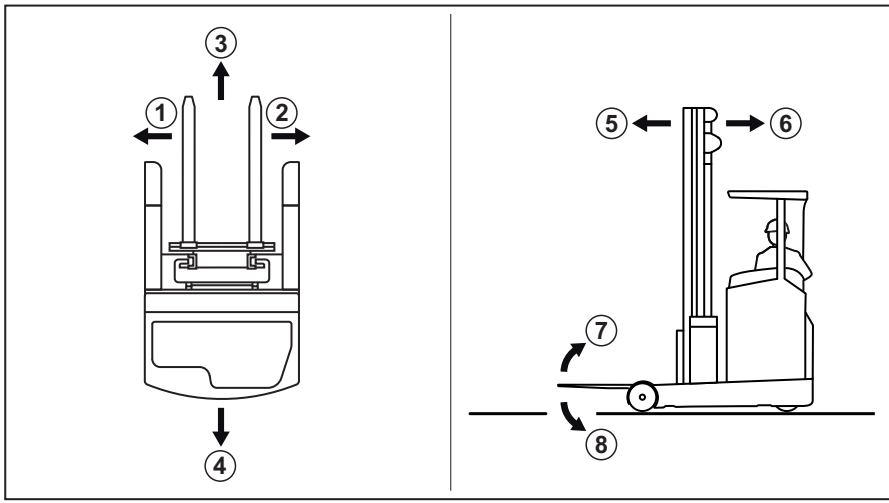
When fitted with a CO, the industrial truck is provided with additional documentation. This may take the form of an insert or separate operating instructions.

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.

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, contact your authorised service centre.

Defining directions



General:

- left (1)
- right (2)

Drive directions:

- Driving in the load direction (backwards) (3)
- Driving in the drive direction (forwards) (4)

Movements of the reach carriage:

- Extending the reach carriage (in the load direction) (5)
- Retracting the reach carriage (in the drive direction) (6)

Tilting the lift mast or fork:

- Tilting backwards (7)
- Tilting forwards (8)

The driver sits crosswise to the drive direction.

Information symbols used

The signal terms DANGER, WARNING, CAUTION, NOTE and ENVIRONMENTAL NOTE are used in these operating instructions for notes on particular hazards or for unusual information that needs to be highlighted:

⚠ DANGER

Means that failure to comply may result in fatal injury.

⚠ WARNING

Means that failure to comply may result in serious injury.

⚠ CAUTION

Means that failure to comply may result in damage to or destruction of materials.

NOTE

Means that attention is drawn to combinations of technical factors that may not be evident even to a specialist.

ENVIRONMENT NOTE

The information listed here must be observed to prevent environmental damage.

Environmental notes

Packaging material for transport

When the industrial truck is delivered, certain components are wrapped in packaging material to protect them during transport. This packaging material must be removed before first commissioning.

ENVIRONMENT NOTE

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

Disposing of components and batteries

The industrial truck is made of different materials. If components or batteries need to be replaced and disposed of, the national regulations must be observed with regard to:

- disposal or
- treatment or
- recycling.

NOTE

Observe the battery manufacturer documentation when disposing of batteries.

ENVIRONMENT NOTE

We recommend working with a waste management company for disposal requirements.

2

Safety

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.

Drivers

Industrial trucks must be driven only by persons who:

- Are at least 18 years of age
- Have been trained in performing this task
- Have demonstrated their ability to perform this task, e.g. driver's licence

Specific knowledge of the industrial truck to be operated is also required.

The contract for driving an industrial truck must be provided in writing. Observe the national regulations for your country.

NOTE

A driver's licence for public roads is required in order to drive industrial trucks on public roads. Observe the national regulations for your country.

Rights, duties and rules of behaviour for the driver

Drivers must:

- Be informed of their rights and duties
- Wear sturdy footwear to ensure safe driving and braking
- Wear protective equipment appropriate to the application conditions (protection suit, safety shoes, safety helmet, protection goggles, gloves)
- Have read and understood the operating instructions
- Have familiarised themselves with safe operation of an industrial truck,
- Be physically and psychologically able to drive an industrial truck safely.

⚠ DANGER

Risk of fatal injury due to impaired reactions!

Do not perform any work on or with the industrial truck while under the influence of drugs, alcohol or medication that impair your reactions.

Prohibition of use by unauthorised persons

The driver is responsible for the industrial truck during working hours. They may not allow unauthorised persons to operate the industrial truck.

When leaving the industrial truck, the driver must secure it against unauthorised use, e.g. by removing the key.

Competent person

A competent person is a specialist in the field of industrial trucks who has:

- Successfully completed training, as at least a service engineer for industrial trucks
- Many years of professional experience with industrial trucks
- Knowledge of the accident prevention regulations
- Knowledge of the relevant national technical regulations

The competent person is able to assess the condition of industrial trucks in terms of health and safety.

Operating safely

Basic principles

The operating company or its authorised representative must ensure that the driver understands all safety information and that all guidelines and safety regulations are observed.

During training, drivers must familiarise themselves with the following:

- The operating conditions of the working area
- The specific technical characteristics of the industrial truck
- The operation of attachments

Driving, control and steering operations must be practised with an unladen industrial truck until they are completely mastered. Only then may a laden industrial truck be used for practice.

⚠ DANGER

Risk of fatal injury due to unauthorised use.

Only persons who are trained, authorised and commissioned to operate the industrial truck may have access to the industrial truck.

Controlled access is possible via the switch key or an input unit with a keypad or with a transponder.

⚠ DANGER

Risk of fatal injury due to manipulation of safety systems.

Safety systems on the industrial truck, e.g. seat switches, must not be disabled.

⚠ DANGER

Risk of fatal injury due to insufficient visibility.

Industrial trucks may only be operated if the driver has sufficient visibility.

– Ensure that there is sufficient light in the working area or use working spotlights.

– Avoid glare caused by lighting (e.g. clipboard lighting). If necessary, adjust or switch off the lighting accordingly.

– The windscreen, rear window, roof panel and side windows as well as the rear-view mirror and lighting must be cleared of misting and, if necessary, dirt, ice and snow before driving off.

– For industrial trucks with a driver's cab without a heating system and without air conditioning, the driver must ensure a clear view by ventilating the cab during operation.

– Use additional mirrors (e.g. mirrors on the lift mast) or additional cameras (e.g. fork carriage camera).

⚠ WARNING

Risk of accident caused by blocked pedals.

Objects may fall into the footwell during travel as a result of steering or braking. Any such objects may slide between and under the pedals and block the pedals. It may then not be possible to brake the industrial truck when necessary.

– Do not transport loose objects on the driver's compartment or inside the driver's cab.

– Only store objects that fit in the storage compartments.

– Place drinks bottles in the cup holder.

– Make sure that objects cannot fall out of the storage compartments when the industrial truck sets off, is steered or braked.

Safety information for assistance systems

⚠ WARNING

Risk due to unauthorised use.

Assistance systems help the driver to operate the truck safely.

The driver must be aware of the limits of the assistance system. They must not rely exclusively on the assistance system. Responsibility for the safe handling of loads in accordance with the information on the load capacity diagram remains with the driver.

This also applies in the event of a possible failure of an assistance system. A failed assistance system must be repaired immediately by the authorised service centre.

When the truck is used for its intended purpose, assistance systems serve exclusively to assist or inform the driver.

Hazard assessment

Assistance systems influence the driving behaviour and operation of the industrial truck. It may therefore be necessary to adapt the hazard assessment in accordance with national health and safety directives. The operating company must instruct the driver in how to operate the truck with the available assistance systems. The driver must become familiar with the operation of the truck and the function of the assistance systems.

Application conditions

Assistance systems are not suitable for applications in which the system components may be at frequent risk of damage from exposure to dirt, chemicals or bulky loads. This instruction applies to the sensors of the assistance systems in particular.

NOTE

Where applicable, any restrictions on the application conditions must be taken from the descriptions of the assistance systems.

Accidents involving lithium-ion batteries

⚠ DANGER

Risk of fire for industrial trucks with a lithium-ion battery.

If the battery is damaged or deformed after an accident, a strange smell, an abnormal temperature increase to more than 80°C, a change in shape or another unusual change may occur.

– Observe the following courses of action!

– Evacuate the location of the fire as quickly as possible.
– Secure a safety zone of five metres around the battery.
– Ventilate the location of the fire well, as the resulting combustion gases are corrosive if inhaled.
– Inform the fire brigade that lithium-ion batteries are affected by the fire.
– Contact the authorised service centre. 1In the event of an emergency, call the emergency services and inform them that there has been an accident involving a lithium-ion battery.
– **To cool down an incipient fire, use water to cool the battery tray from the outside.**

Depending on the hazard situation, the battery can be moved to a safe area by a person wearing respiratory protection that is independent of the ambient air (5 m distance from buildings).

– Observe the information provided by the battery manufacturer regarding the procedure in the event of a fire.

⚠ DANGER

Risk of poisoning, breathing problems and irritation to skin and eyes due to escaping fumes.

– Immediately ventilate the area or go out into the fresh air; use respiratory protection if necessary.

– Always contact a doctor.

– In the event of contact with the skin, wash the skin thoroughly with soap and water.

– In the event of contact with the eyes, immediately wash the eyes thoroughly with water for 15 minutes.

Stability

Stability is guaranteed if your industrial truck is used according to its intended use.

The following actions may jeopardise stability:

- Driving with a raised load
- Cornering at excessive speeds
- Driving with a load that is protruding to the side (e.g. sideshift)
- Turning on and driving diagonally across descending or ascending gradients
- Driving on descending or ascending gradients with the load on the downhill side
- Loads that are too wide
- Driving with a swinging load
- Driving over ramp edges or steps
- Damage to tyres or rims
- Different degrees of wear on tyres on the same axle.

⚠ DANGER

Stability is dependent on the truck equipment.

To guarantee stability, the permissible load capacity is limited depending on the truck equipment.

The maximum permissible load capacity must be determined from the data on the capacity rating plate.

The details on the capacity rating plate refer to the correctly adjusted clearance between the fixed stop buffer and the ground.

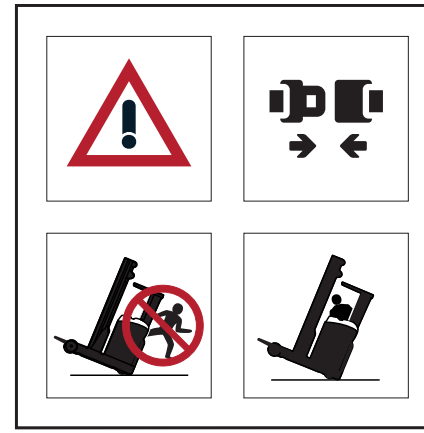
Wheels and tyres

⚠ DANGER

Risk to stability due to impermissible tyres.

- Always change the wheels on the left and right at the same time to prevent the truck from tilting.
- Only use wheels and tyres approved by the manufacturer.
- Do not combine wheels from different manufacturers. Only use high-quality products.
- Ensure even and permissible tyre wear.
- Replace the wheels in good time if they are worn.
- Only use tyres of the original tyre type.
- Do not make any modifications to the rims.

Procedure if the industrial truck tips over ▷



⚠ DANGER

Risk of fatal injury if the industrial truck tips over

Strictly observe the rules of conduct if the industrial truck tips over:

- Do not release your seat belt.
- Never jump off the industrial truck.
- Hold onto the steering wheel with both hands.
- Brace your feet in the footwell.
- Bend your upper body over the steering wheel.
- Lean in the opposite direction to which the truck is tipping.

Side chassis supports

Side chassis supports (1) on the rear left and right of the truck support the truck if it tips to the side.

The permissible distance "X" for the ground clearance of the chassis supports (2) is noted on the load capacity diagram on the truck. The distance must be adhered to.

The size of this distance depends on following factors:

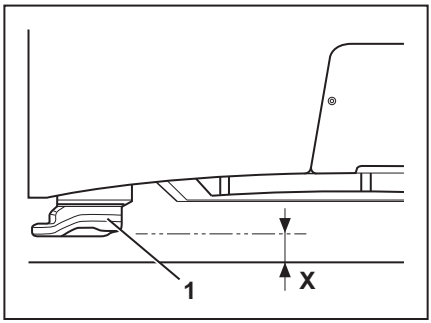
- Height of the lift mast
- Load capacity of the truck
- Size of the battery tray

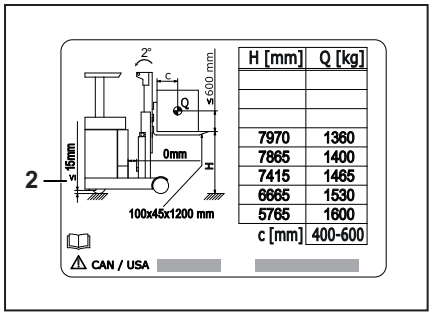
⚠ WARNING

Risk of accident due to limited residual load capacity of the truck.

The side chassis supports have an important impact on the residual load capacity of the truck.

– If the truck frequently bottoms out, check the support distance "X" regularly. Have it adjusted by the authorised service centre if necessary.





Data security

Input unit with a transponder

For input units with a chip or a chip card, the access code is transmitted wirelessly.

The wireless technology for the transponder is not protected against manipulation. It is therefore possible that the access code could be read out without authorisation when commissioning the industrial truck.

Communication unit

The communication unit allows the position of the industrial truck to be determined via wireless communication with a global navigation satellite system.

Communication with a global navigation satellite system, such as GPS, can theoretically be interrupted or manipulated. As a result, the location data for the industrial truck could be unavailable or incorrect.

Residual risks

Despite working carefully and complying with all applicable standards and regulations, the possibility of further dangers when using the industrial truck cannot be entirely excluded.

The industrial truck and its possible attachments comply with current safety regulations. Nevertheless, even when the truck is used for its proper purpose and all instructions are observed, some residual risk cannot be excluded.

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

⚠ DANGER

Risk of accident!

Persons in the vicinity of the industrial truck must be informed of the dangers that can arise through use of the industrial truck.

The safety information in these operating instructions must be observed.

Residual dangers can include:

- Escape of consumables due to leakages or the rupture of lines, hoses or containers
- Risk of accident when driving over difficult ground such as gradients, smooth or irregular surfaces, or poor visibility
- Risk of falling, tripping, slipping etc. during movement of the industrial truck, especially in wet conditions, in case of leaking consumables or on icy surfaces
- Risk of fire and explosion from the battery and electrical voltages
- Human error
- Disregarding the safety regulations
- Risk caused by unrepaired damage
- Risk caused by insufficient maintenance or testing
- Risk caused by using the wrong consumables

Emissions

Noise emission values

Calculated in the test cycle in accordance with EN 12053 from the weighted values for the DRIVING, LIFTING and IDLING operating statuses.

Sound pressure level in the driver's compartment			
E 20 - E 35	L_{PAZ}	=	66 dB (A)
Uncertainty	K_{PA}	=	4 dB (A)

NOTE

Lower or higher noise emission values may occur when using industrial trucks, for instance due to the method of operation, ambient factors and other sources of noise.

Vibration characteristics for body vibrations

The values were determined according to EN 13059 using trucks with standard equipment as per the type sheet (driving over test course with humps).

Specified vibration characteristic in accordance with EN 12096			
Measured vibration characteristic	$a_{W.ZS}$	=	0.5 m/s^2

Specified vibration characteristic for hand-arm vibrations	
Vibration characteristic	< 2.5 m/s^2

NOTE

The vibration characteristic for body vibrations cannot be used to determine the actual vibration load during operation. The vibration load depends on the application conditions (state of roadway, method of operation etc.) and must therefore be determined on site where necessary. The hand-arm vibrations must be specified even if the values do not indicate any hazard, as in this case.

Medical devices

⚠ WARNING

Electromagnetic interference may occur on medical devices.

Only use devices that are sufficiently protected against electromagnetic interference.

Medical devices, 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 device to confirm that the medical device is sufficiently protected against electromagnetic interference.

Electromagnetic compatibility

⚠ WARNING

In operating areas with magnetic fields that have a magnetic flux density greater than five mT, unintentional truck movements and lift mast movements cannot be entirely excluded in unfavourable circumstances.

In magnetic fields with a magnetic flux density greater than five mT, components developed especially for this purpose must be used.

If you have any questions, contact the authorised service centre.

Magnetic flux densities greater than five mT can occur in induction furnaces for metal smelting (e.g. aluminium), with resistance welders for seam welding or spot welding, or on strong demagnetisation coils, for example. However, as the flux densities reduce to a fraction as the distance increases by e.g. 50 cm, actual influences are not known to occur in practice.

Electromagnetic radiation emitted by the industrial truck is far below the permissible limit values in Europe. The immunity to electromagnetic radiation is above the minimum legal values.

⚠ WARNING

Risk due to electromagnetic radiation when devices are retrofitted.

– Follow the information provided by the respective device manufacturer regarding electromagnetic radiation.
– If necessary, fit a notice warning about non-ionising radiation within the field of vision of the driver.

Working on the industrial truck

Basic principles

Modifying and retrofitting

⚠ DANGER

Risk of fatal injury if the overhead guard fails due to a falling load or due to the truck tipping over.

Welding and drilling on the overhead guard changes the material characteristics and the structural design of the overhead guard.

– Do not perform welding on the overhead guard.

– Do not perform drilling on the overhead guard.

Roof loads affect the stability of the overhead guard. Roof loads must only be mounted after approval from the manufacturer.

⚠ DANGER

Risk of accident due to the use of non-approved spare parts.

Only use original spare parts.

⚠ DANGER

Risk of fatal and non-fatal injury due to the disabling of safety systems.

After completing work on the industrial truck, all safety systems must be reactivated and checked for correct function.

⚠ DANGER

Risk of fatal and non-fatal injury due to removed roof panels.

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

⚠ CAUTION

Risk of overloading the battery female connector.

For trucks that are supplied from the factory without batteries, a battery female connector for increased current resistance up to 320 A is also required.

For safety reasons, only the embedded battery female connector that has been approved by the manufacturer must be used.

After replacing the battery, ensure that the correct battery female connector is connected.

Contact the authorised service centre.

Behaviour on the truck

⚠ WARNING

Risk of injury from falling off the truck.

When climbing onto the truck, there is a risk of getting caught or slipping and falling.

– To climb onto the truck, use only the steps provided for this purpose.

– Use equipment such as stepladders or platforms to reach inaccessible areas.



⚠ WARNING

Components carrying exhaust air may become hot.

– Protective equipment must be worn when working on the truck.

⚠ WARNING

In trucks with an accumulator, serious injuries may occur if the accumulator is handled incorrectly.

– Before starting work on the accumulator, it must be depressurised.

Contact the authorised service centre.

⚠ WARNING

Risk of injury.

Various functions are supported by gas springs. Gas springs are subjected to a high internal pressure of up to 300 bar.

Gas springs must be removed only when they are not under pressure, and must never be opened without prior instruction. Any damage, lateral forces, buckling, temperatures over 80°C and severe contamination must be avoided.

Damaged or defective gas springs must be replaced immediately.

Contact the authorised service centre.

⚠ CAUTION

Welding work on the truck can damage the electronics.

Contact the authorised service centre.

– Always disconnect the battery and all connections to the electronic controls when performing any welding work.

NOTE

Observe the safety instructions for servicing work.

Handling the lithium-ion battery

Special safety regulations must be observed for industrial trucks equipped with a lithium-ion battery. A lithium-ion label is attached to the industrial truck.

– Observe all known information relating to lithium-ion technology.

– Please refer to and follow the safety instructions for lithium-ion batteries as stated in the battery operating instructions.

– Only persons who have been trained in how to work with lithium-ion technology may work on the batteries. Contact the authorised service centre.

Handling consumables

ENVIRONMENT NOTE

Consumables must be handled properly and in accordance with the manufacturer's instructions.

- Consumables must be stored only in containers that comply with the applicable regulations and at the locations stipulated
- Do not allow flammable consumables to come into contact with hot objects or naked flames
- When topping up consumables, use only clean containers
- Observe the manufacturer's instructions relating to safety and disposal
- Avoid spillages
- Clean up spilled liquids immediately using suitable binders; dispose of these in accordance with regulations
- Old and contaminated consumables must be disposed of in accordance with the applicable regulations
- Comply with the statutory provisions
- Before performing lubrication work, filter changes or any work on the hydraulic system, carefully clean the area around the relevant part
- Dispose of used spare parts in an environmentally responsible manner

⚠ WARNING

Pressurised hydraulic fluid penetrating the skin, e.g. due to leakage, is dangerous. If an injury of this type occurs, consult a doctor.

– Wear protective equipment.

⚠ WARNING

The improper handling of coolant and coolant additives presents a risk to health and the environment.

– Observe the manufacturer's instructions.

Fitting attachments

If the truck is equipped with an integrated attachment (variant) at the factory, observe the specifications in the STILL operating instructions for integrated attachments.

If attachments are fitted at the place of use, observe the specifications in the operating instructions from the attachment manufacturer.

If an attachment is not delivered together with the truck, observe the specifications from the manufacturer and the operating instructions from the attachment manufacturer.

Before initial commissioning, have the function of the attachment and the visibility from the driver's position with and without a load checked by a competent person. If the visibility is deemed insufficient, use visual aids, such as mirrors, a camera, a monitor system etc.

– Observe the following warning notices.

⚠ DANGER

Risk of death from falling load!

If attachments that hold the load by clamping it or exerting pressure on it do not have a second operating function (lock) to be activated, the load can work loose and fall off.

– Ensure that the second operating function (lock) to be activated is available.
– When retrofitting such attachments, also retrofit a second operating function (lock) to be activated.

⚠ DANGER

Risk of death from falling load!

When installing a clamp with an integrated sideshift function, ensure that the clamp does not open when the sideshift is actuated.

– Notify your authorised service centre before installation.
– Never reach into or climb on moving parts of the truck.

⚠ WARNING

Risk of accident due to incorrect labelling!

The use of attachments can cause accidents if the labelling is incorrect or missing.

If the truck is not fitted with an attachment-specific residual load capacity rating plate and if the operating devices are not marked with the relevant pictograms, the truck must not be used.

– Use only CE-certified attachments that have operating instructions and the required labels.
– In the United Kingdom, the attachments must also be UKCA certified and have the required labelling.
– Arrange for an attachment-specific residual load capacity rating plate to be fitted to the truck.
– Arrange for the operating devices to be re-labelled.
– Arrange for the authorised service centre to adjust the hydraulic system to the requirements of the attachment (e.g. adjust the pump motor speed).

⚠ WARNING

Risk of accident in the event of a steering failure!

Every time attachments are changed, some hydraulic oil can be lost.

If attachments are changed frequently, the hydraulic oil level can become too low.

With the lift mast extended, this low hydraulic oil level can lead to steering failures.

– If attachments are changed frequently, check the hydraulic oil level regularly and top up the hydraulic oil when necessary.

NOTE

If the required labelling is not provided with the attachment, contact the authorised service centre promptly.

Alternating operation using an electrical switch valve

If non-integrated attachments for alternating operation are used in conjunction with an electrical switch valve for the fifth and sixth hydraulic function, the electrical switch valve must operate at 12 V.

– Contact the authorised service centre if necessary.

Plug connectors on the lift mast

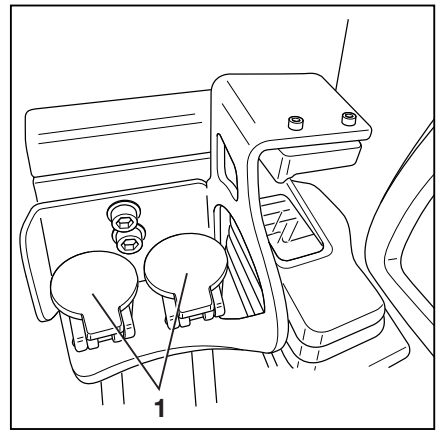
– Before fitting the attachment, depressurise the hydraulic system; see the chapter entitled "Depressurising the hydraulic system".

⚠ CAUTION

Risk of damage to components!

Open connections on the plug connectors (1) can become dirty. Dirt can enter the hydraulic system. The plug connectors can become stiff.

– Once the attachment has been disassembled, seal the plug connectors using the protective caps.



Mounting attachments

Only competent persons are permitted to mount and connect the energy supply to the attachment.

– Observe the information provided by the manufacturer and supplier or sub-supplier of the attachment when doing so.

NOTE

Please observe the definition of the following responsible person: "competent person".

– Switch off the truck.

– Install the attachment.

– Switch on the truck.

– Check and ensure that all functions of the installed attachment are working properly.

Load capacity with attachment

The permissible load capacity of the attachment and the permissible load (load capacity and load moment) of the truck must not be exceeded by the combination of the attachment and the payload. Adhere to the specifications of the manufacturer and supplier or sub-supplier of the attachment.

– Observe the residual load capacity rating plate; see the chapter entitled "Picking up a load using attachments".

Regular testing

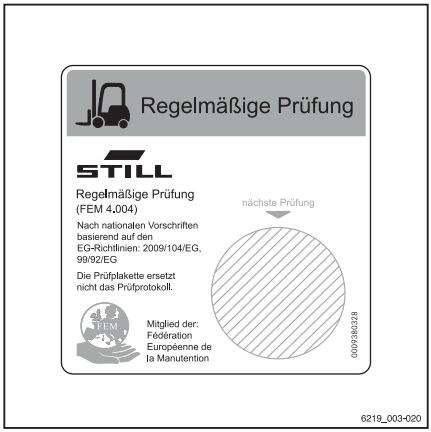
Regular testing is required in order to maintain the function and safety of the industrial truck.

The national regulations must be observed without fail.

In Europe, national laws are based on directives 2009/104/EG and 1999/92/EG. These stipulate that the industrial truck must be regularly tested by competent persons to ensure that the truck is in the proper condition.

The scope of the testing is specified by the directive FEM 4.004 of the European Materials Handling Federation. This directive defines a test log for documenting the on-going testing and an inspection sticker for the next testing. The next testing is indicated via an adhesive label on the label, featuring colours that change each year and stating the year.

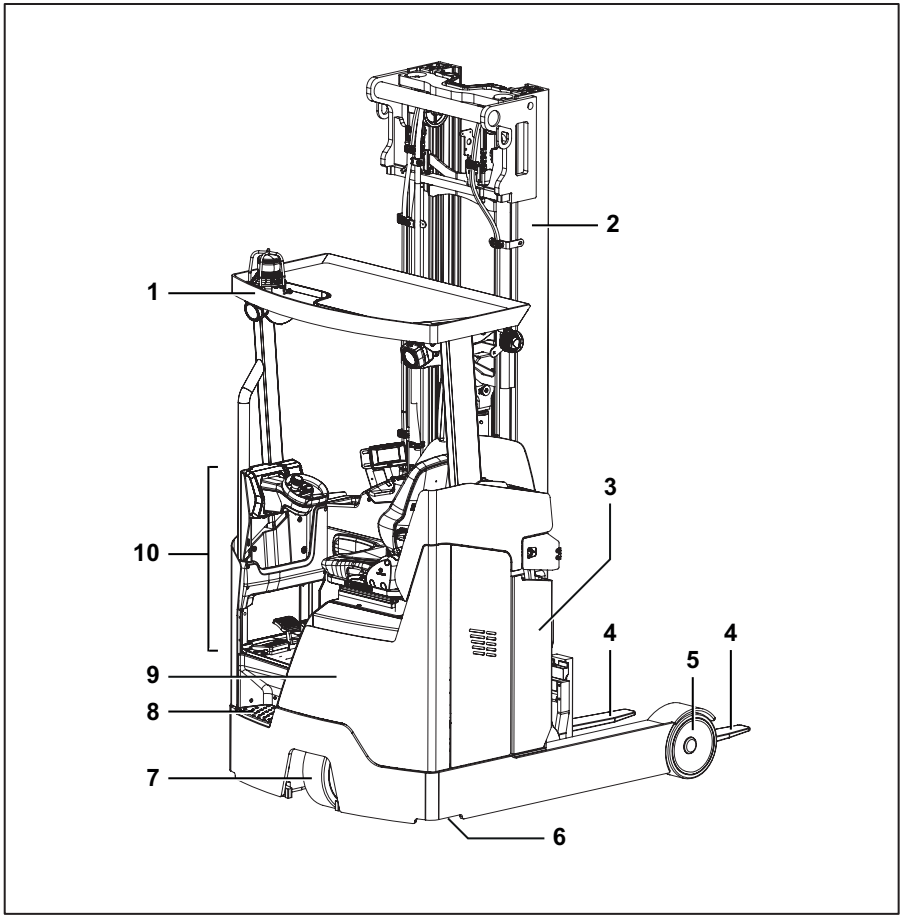
The scope of the inspection is expanded by the manufacturer depending on the industrial truck. Please contact the authorised service centre regarding this work.



3

Overviews

Overall view of the reach truck

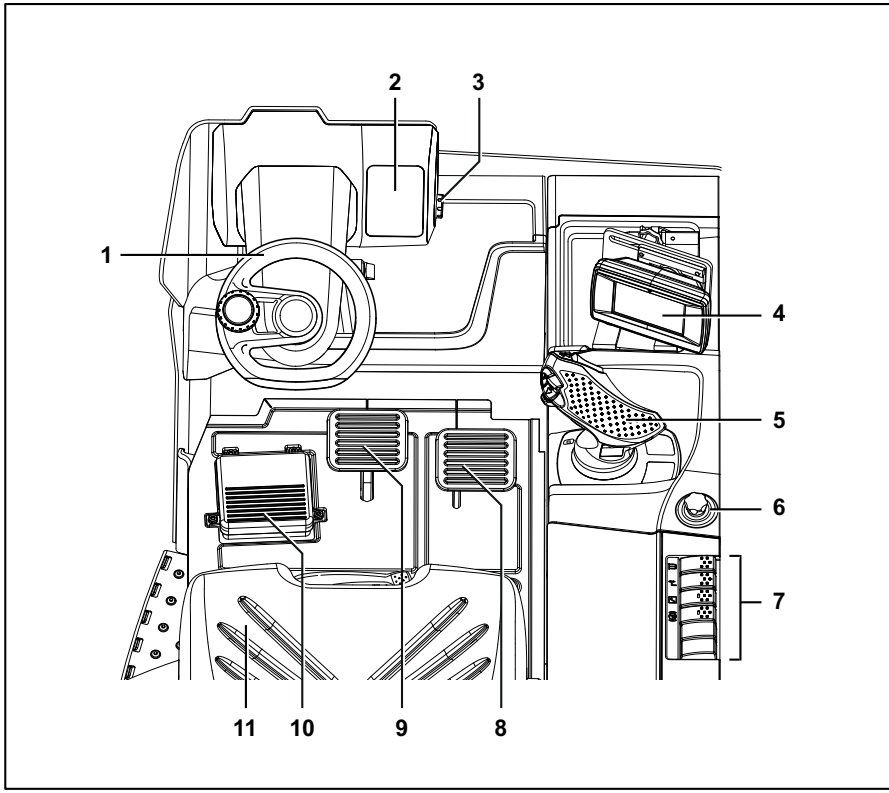


1	Overhead guard	6	Side support (tilt protection)
2	Lift mast	7	Drive wheel
3	Battery	8	Step
4	Fork arms	9	Control compartment
5	Load wheel	10	Driver's compartment

NOTE

The industrial truck equipment may differ from the equipment shown.

Overview of the driver's compartment



1	Steering wheel	6	Emergency off switch
2	Card reader or keypad for enabling the truck (variant)	7	Switch panel for hydraulic functions and driving functions
3	Key switch or push button (variant)	8	Accelerator pedal
4	Display-operating unit	9	Brake pedal
5	Operating devices for hydraulic and driving functions	10	Foot switch
		11	Driver's seat

NOTE

The industrial truck equipment may differ from the equipment shown.

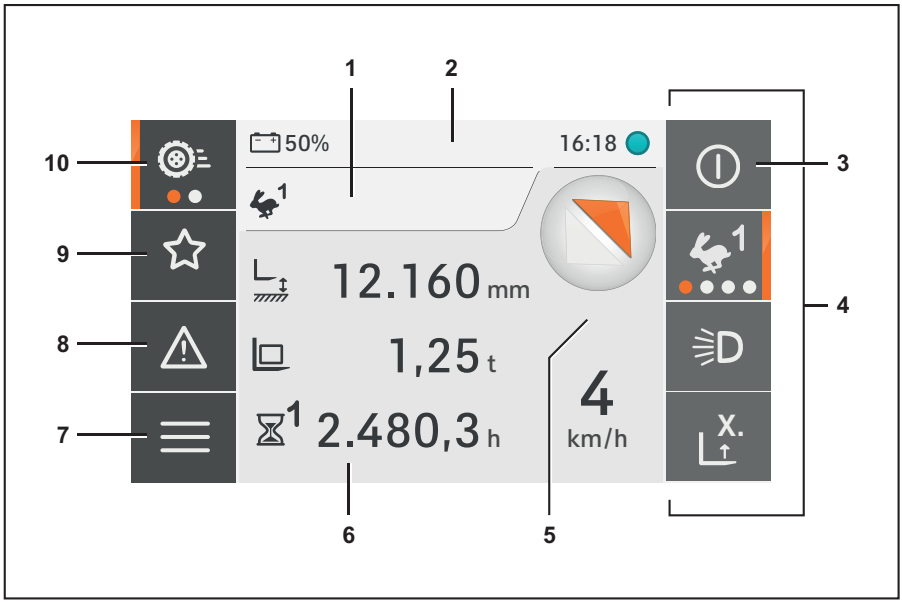
Overview of the display-operating unit

After switching on, the industrial truck is ready for operation when the main menu appears on the display-operating unit. All other settings options and information are accessible from the main menu.

NOTE

Depending on the configuration of the industrial truck, you may have to enter the PIN code first.

Overview of the main menu

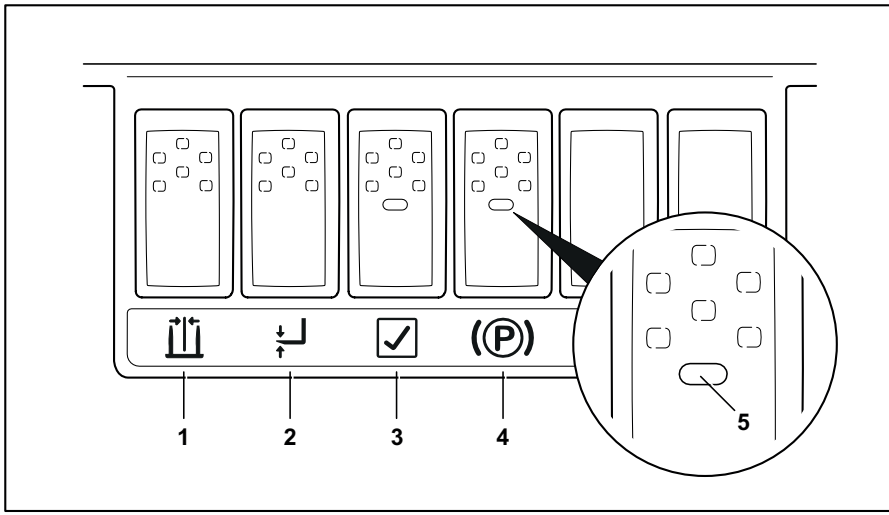


Overview of the main menu

1 Toolbar
2 Status bar (battery charge, time, operating status symbols)
3 Switching off the industrial truck via the display-operating unit (optional)
4 Favourites bar (configurable)
5 Driving display
6 Main display (lift height, load weight, operating hours)
7 Select `System` menu
8 Select `Diagnostics` menu
9 Select "Function button"
10 Select "Main menu"

Push buttons and switches

Push buttons and switches in the switch panel



1 Push button for transverse shift centre position
2 Push button for tilt centre position
3 Acknowledge button for enabling hydraulic functions
4 Push button for the parking brake
5 Indicator LED: "Function active"

NOTE

Depending on the equipment, not all of the functions shown in the pictograms may be available. The corresponding buttons are replaced by dummy caps.

4

Operation

Initial commissioning

Checks before initial commissioning

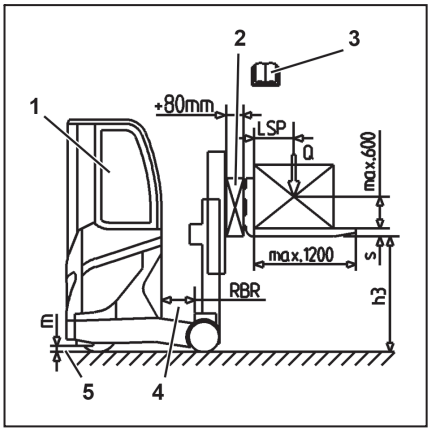
Running gear and drive train
Check and tighten the wheel fastenings.
Check the brake system.
Check the steering system.
Check the oil level in the planetary transmission and check for leak tightness.
Electrics/electronics
Check the cable and the male connector of the drive battery, connect if necessary.
Check the condition of the wiring and check that it is attached securely.
Check the emergency off switch.
Hydraulics
Check the oil level in the hydraulic system.
Lifting system
Check the lifting system and the attachments.

Checking the capacity rating plate ▷

The truck's capacity rating plate shows the maximum permissible load capacity depending upon the equipment. If the load capacity is exceeded, this impairs the stability of the truck.

Before the initial commissioning, check whether the capacity rating plate corresponds to the truck equipment:

- With/without driver's cab (1)
- With/without fork carriage front end (2)
- With/without return limitation (4)
- Distance between the fixed stop buffer and the ground (5).



Information on running-in

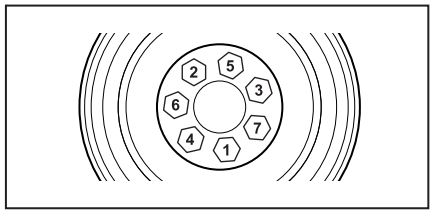
The industrial truck does not need to be run in. It can be operated with maximum load and at maximum speed immediately after delivery.

Checking the wheel screws on the drive wheel ▷

– After taking delivery of the truck, or after removing the drive wheel, a check must be carried out within 50 operating hours to ensure that the wheel screws are securely attached.

– Tighten the wheel screws crosswise to a tightening torque of **195 Nm**.

– Observe the tightening sequence.



Tightening sequence

NOTE

If it is necessary to re-tighten the wheel screws to the correct tightening torque, the wheel screws must be checked again after 50 hours. Repeat the tightening procedure every 50 hours until the correct torque is consistently maintained.

Pre-operation checks and tasks

Checks and tasks before daily use ▷

⚠ WARNING

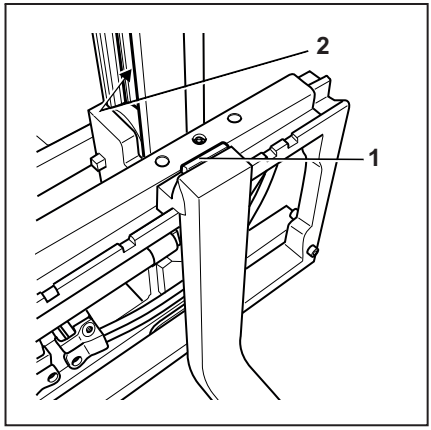
Risk of falling when working on high parts of the truck.

- Use only the steps provided on the truck.
- Do not use any truck components as mounting aids or platforms.
- Use suitable equipment.

Visual inspections and functional checks are required before daily use to ensure safe operation. The following table lists the components that must be checked and the inspection points of these components.

If damage or defects are detected on the truck or attachments, do not use the truck until it has been properly repaired.

Report any damage or defects immediately to the supervisor or fleet manager so that they can arrange for the authorised service centre to carry out the repairs.



Inspection points: fork arms and roller tracks

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 safety devices for the fork arms (1) to prevent lifting out or shifting.
Roller tracks	Make sure that a film of grease is present on the roller tracks (2).
Load chains	Perform a visual inspection to ensure that the chains are intact and have adequate and even tension.
Slide tracks of the reach carriage	Make sure that a film of grease is present on the slide tracks of the reach carriage.

Component	Course of action
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 that the attachments are working correctly.
Load measurement (variant)	Perform the load measurement once for testing purposes.
Lift and tilt cylinders, tank, valve block, hoses, pipes, connections	Perform a visual inspection for damage and leakages. Have damaged components replaced.
Gearbox	Make sure that no consumables are escaping from the gearbox.
Underside	Check the area under the truck for leaking consumables.
Wheels, tyres	Perform a visual inspection for wear and damage. Make sure that only approved tyre types are used (see the chapter entitled " Technical data/Wheels and tyres"). In the event of uneven tyre wear on the load wheels, change both tyres. Observe the safety regulations in the "Wheels and tyres" chapter.
Side chassis supports	Check the side chassis supports for wear. Read off the permissible distance to the ground from the capacity rating plate; see the chapter entitled "Side chassis supports".
Antistatic belt, corona electrode	Perform a visual inspection for integrity. Ensure cleanliness. Make sure that the antistatic belt is still long enough to touch the ground. The discharge wires of the corona electrode must not touch the ground. The wires discharge the energy to the air.
Battery lock (variant)	Check the condition and function of the battery lock with internal roller channel (variant). Close the battery lock.
Battery frame	Perform a visual inspection for integrity (e.g. cracks or breaks). Check that the battery frame is fully retracted towards the drive side and is securely locked in this position.

Component	Course of action
Battery connection assembly	Perform a visual inspection for integrity and deformation. Check the contacts. Inspect the battery male connector and the plug connection for foreign objects that may have become lodged and for moisture. Remove foreign objects, e.g. using compressed air. Have damaged battery male connectors replaced.
Covers	Visual inspection: all covers must be fitted and closed.
Labelling, adhesive labels	Check that labels are present and intact/legible. Replace damaged or missing adhesive labels in accordance with the chapter entitled "Labelling points".
Overhead guard, guard grille (variant)	Perform a visual inspection for integrity. Check for secure mounting.
Steps	Make sure that they are clean (free of ice, not slippery).
Windows, overhead guard with optimised visibility (variant)	Perform a visual inspection for integrity. Ensure cleanliness (also free of ice).
Handholds	Check for secure mounting.
Display-operating unit	Carry out a visual inspection for integrity and proper function.
Lighting, warning units (e.g. horn)	Check the integrity and function.

– Do not use the truck if any damage or defects are present. Contact the authorised service centre.

Further required activities are summarised below under separate headings.

Checking the emergency off function

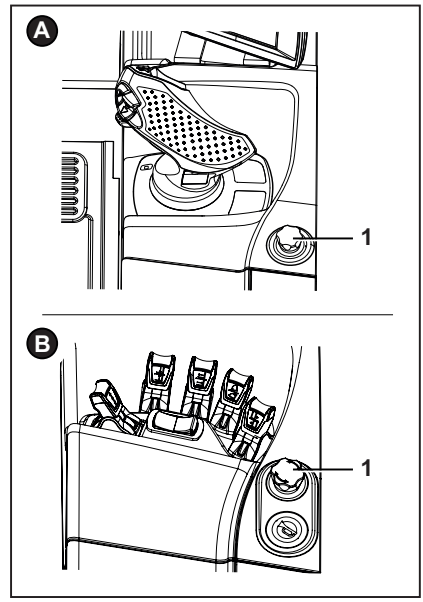
– Accelerate the truck to walking speed.

– Ensure that you have a secure grip on the truck; hold onto the steering wheel with your left hand.

– Push the emergency off switch (1).

The parking brake is applied. The truck must decelerate noticeably and be braked to a standstill.

– Pull the emergency off switch (1) upwards until it is unlocked. The truck performs an internal self-test and is then ready for operation again.



A Joystick 4Plus variant
B Fingertip variant

Checking the brake system for correct function

⚠ DANGER

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

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

Checking the service brake

There must be a distance of at least 60 mm between the pressure point and the brake pedal stop.

– Accelerate the unladen truck in a clear area.

– Depress the brake pedal firmly.

The truck must decelerate noticeably.

Checking the regenerative brake

– Accelerate the unladen truck in a clear area.

– Release the accelerator pedal.

The truck must decelerate slightly.

Checking the reverse brake

– Accelerate the unladen truck in a clear area.

– Reverse the drive direction in inching mode using the drive direction switch.

The braking and subsequent acceleration processes in the opposite direction must be gentle and not subject to jerking movements.

Checking the electromagnetic parking brake

⚠ DANGER

There is a risk of fatal injury from being run over if the truck rolls away.

– The truck must not be parked on a slope.

– In emergencies, secure the truck using wedges on the side facing downhill.

– Only leave the truck once the parking brake has been applied.

– Accelerate the truck to walking speed.

– Ensure that you have a secure grip on the truck; hold onto the steering wheel with your left hand.

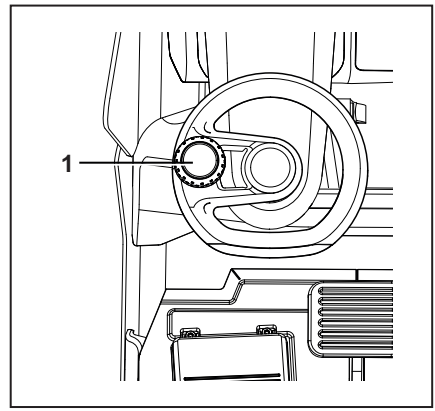
– Apply the parking brake.

The parking brake is applied. The truck must decelerate noticeably and be braked to a standstill.

– Drive off again. The parking brake must release automatically when the vehicle is driven off.

Checking the steering system for correct function ▷

– Operate the steering wheel (1). The steering must be continuous and move freely.



NOTE

In the "180° steering" variant, the drive's maximum steering angle is ±90°.

Driver's compartment

Entering and exiting the truck

⚠ DANGER

If the driver jumps out the truck while it is moving, he or she could fall under the truck or be crushed by an obstacle.

– Only enter or exit the truck when the truck is at a standstill.

⚠ WARNING

Risk of injury when entering and exiting the truck

Risk of slipping if the footwell of the truck is heavily contaminated with dirt, oil or ice.

– Make sure that the step and the footwell of the driver's compartment have a non-slip surface and are not iced over.

Risk of injury when entering and exiting the truck due to clothing or jewellery getting caught.

– Wear close-fitting workwear and no jewellery.

Risk of injury when jumping in or out.

– Always use the fittings for climbing into and out of the truck. Ensure that you have a secure grip on the truck.

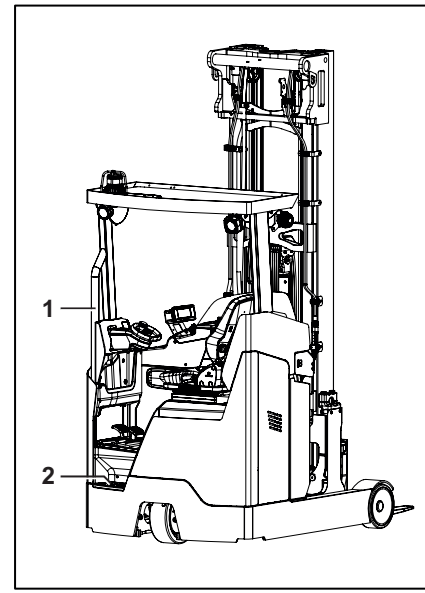
⚠ CAUTION

Component damage due to use as an entry or exit aid.

Components of the truck (e.g. steering wheel, joy-sticks, driver's seat, switches) are not intended to be used as an aid for entering or exiting the truck. They can be damaged if they are misused.

– Only use the fittings specifically designed for the purpose of climbing into and out of the truck.

The truck must be at a standstill when climbing into or out of the truck. The post of the overhead guard (1) and the step must (2) be used as entry and exit aids.



Entering

Always enter the truck facing forwards.

– Grip and hold the post of the overhead guard with your left hand.
– Put your left foot on the step.
– Enter the truck with your right foot first and sit down on the driver's seat.

Exiting

The parking brake of the truck must be applied.

Always exit the truck facing backwards.

– Grip and hold the post of the overhead guard with your left hand.
– Stand up from the driver's seat and place your left foot on the step.
– Climb out of the truck right foot first.

Minimum distance between head and overhead guard

As a rule, the operator has sufficient headroom and enough space in the seated position.

With certain versions of the industrial truck, the distance between the seat and the overhead guard is reduced.

⚠ WARNING

Risk of head injuries.

To avoid head injuries, always ensure that there is a distance of at least 24 mm between the driver's head and the overhead guard.

The operating company must ensure that the minimum distance between the driver's head and the overhead guard is observed, depending on the driver's height and body weight and the variant of the driver's seat.

Adjusting the KL 10 driver's seat

⚠ WARNING

Risk of accident from sudden adjustment of the seat or of the seat backrest!

The inadvertent adjustment of the seat or of the seat backrest can lead to uncontrolled movements by the driver. In such cases, the steering or operating devices may be actuated unintentionally. This may cause uncontrolled movements of the industrial truck or of the load.

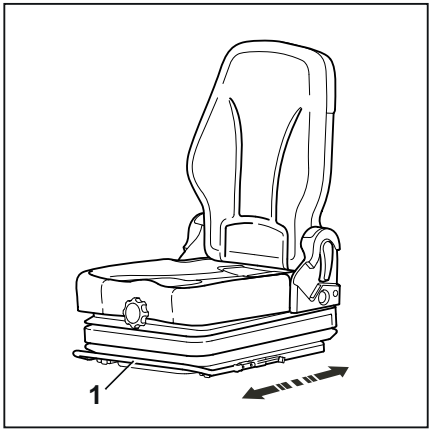
- **Do not** adjust the seat or the seat backrest while the truck is in motion.
- Adjust the seat and the seat backrest so that all operating devices can be actuated safely.
- Ensure that the seat and the seat backrest are securely engaged.

NOTE

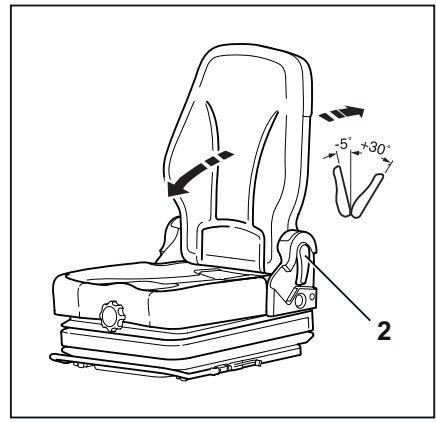
Observe any separate operating instructions for the seat.

Moving the driver's seat

- Sit on the seat.
- Raise the lever (1) and hold it in position.
- Push the driver's seat into the required position.
- Push the lever downwards.
- Ensure that the driver's seat is securely engaged.



Adjusting the seat backrest

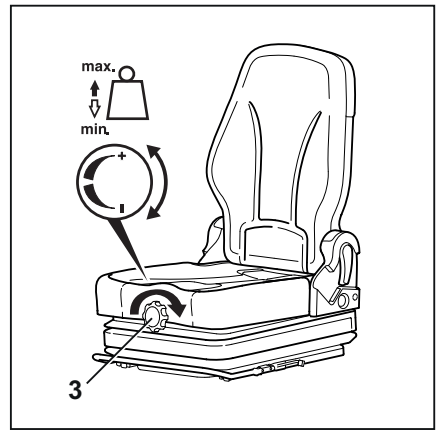


- Sit on the seat.
- Raise the lever (2) and hold it in position.
- Lean back to push the seat backrest into the required position.
- Push the lever downwards.
- Ensure that the seat backrest is securely engaged.

NOTE

Due to space limitations, the tilt angle of the seat backrest may be restricted.

Adjusting the seat suspension



⚠ WARNING

The seat suspension must be adjusted to the driver's body weight.

This is better for your back and protects your health.

- To avoid injuries, keep the swivel area of the seat clear of objects.

The KL 10 driver's seat is designed for people weighing between 50 kg and 130 kg.

- Sit on the seat.
- Turn the turning knob (3) to adjust the suspension to the body weight.

The maximum or minimum suspension is set when the turning knob reaches its stop point.

Adjusting the MSG 65 driver's seat

⚠ WARNING

Risk of accident from sudden adjustment of the seat or of the seat backrest!

The inadvertent adjustment of the seat or of the seat backrest can lead to uncontrolled movements by the driver. In such cases, the steering or operating devices may be actuated unintentionally. This may cause uncontrolled movements of the industrial truck or of the load.

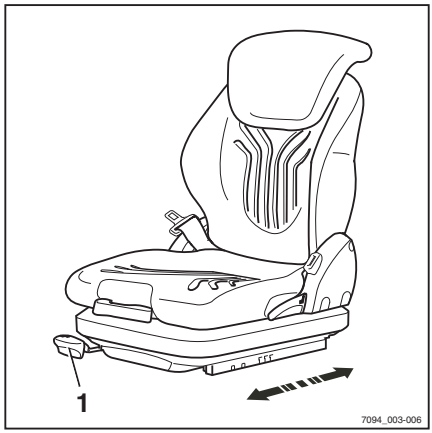
– **Do not** adjust the seat or the seat backrest while the truck is in motion.
– Adjust the seat and the seat backrest so that all operating devices can be actuated safely.
– Ensure that the seat and the seat backrest are securely engaged.

NOTE

Observe any separate operating instructions for the seat.

Moving the driver's seat

– Raise the lever (1) and hold it in position.
– Push the driver's seat into the required position.
– Release the lever.
– Ensure that the driver's seat is securely engaged.

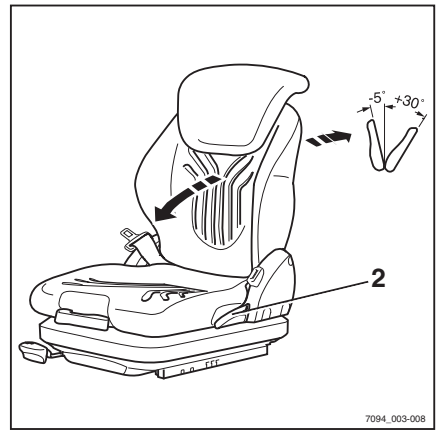


Adjusting the seat backrest

- Release the seat backrest.
- Raise the lever (2) and hold it in position.
- Push the seat backrest into the required position.
- Release the lever.
- Ensure that the seat backrest is securely engaged.

NOTE

Due to space limitations, the tilt angle of the seat backrest may be restricted.



Adjusting the MSG 65 seat suspension

WARNING

The seat suspension must be adjusted to the driver's body weight.

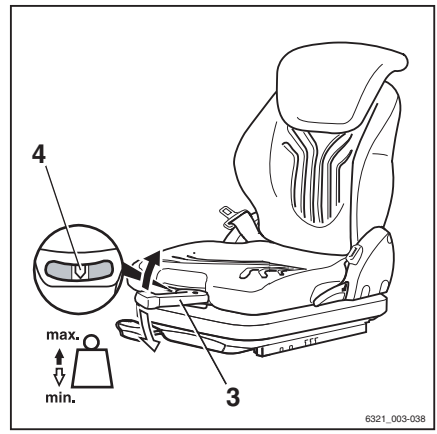
This is better for your back and protects your health.

- At the start of work or when the driver changes, set the individual weight of the driver.
- To avoid injuries, keep the swivel area of the seat clear of objects.

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

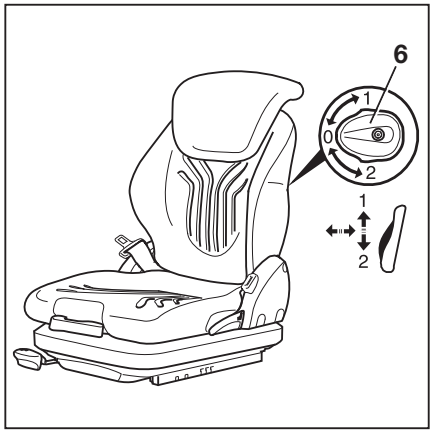
- Sit on the seat to adjust the seat suspension.
- Fold out the weight-adjusting lever (3).
- Pump the lever up or down to set the driver's weight.
- Return the weight-adjusting lever to the initial central position each time before raising it again (a click can be heard when this position is reached).

The correct driver's weight has been selected when the arrow (4) is in the centre position in the inspection window. Once the minimum or maximum weight setting is reached, the seat will not move any further even when you pump the weight-adjusting lever.



– Retract the weight-adjusting lever once the adjustment is complete.

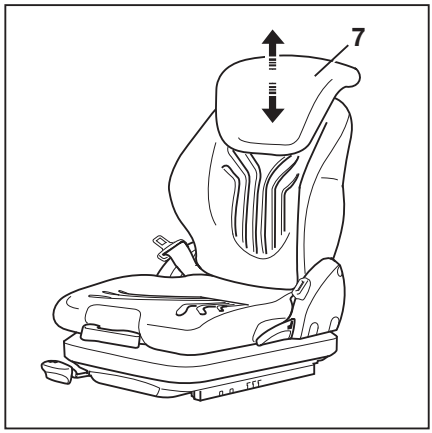
Adjusting the lumbar support (variant) ▷



The lumbar support is a supportive arch in the backrest of the seat. It can be individually adjusted in height for the driver.

– Turn the turning knob (6) up or down until the lumbar support is in the required position.

Adjusting the backrest extension (variant) ▷



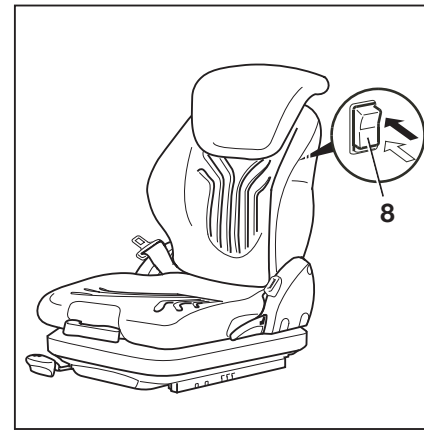
– Adjust the backrest extension (7) by pulling it out and pushing it into the desired position.

To remove the backrest extension, move it past the end stop by firmly pushing it upwards.

Switching the seat heater (variant) on and off

The seat heater only works when the driver is sitting on the driver's seat.

– Switch the seat heater (8) on or off using the switch.



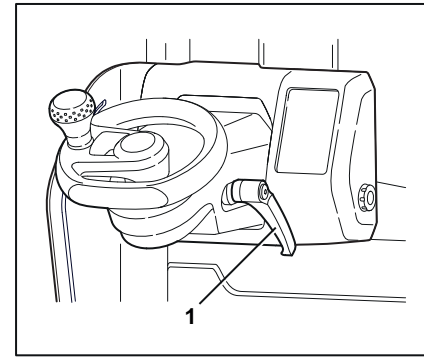
Adjusting the steering column

⚠ DANGER

Risk of accident!

– Never adjust the steering column while driving.
– Ensure that the steering column is firmly locked.

– Push the locking lever (1) forwards to release the steering column lock. The lever can be moved back if it interferes with the panelling in front during adjustment.
– Move the steering column horizontally and vertically into the desired position.
– Tighten the locking lever (1). Make sure that the steering column is locked securely.



Seat belt (variant)



⚠ DANGER

Risk of injury if the industrial truck is involved in an accident!

- Fasten the seat belt before every trip.
- Do not twist the seat belt when fastening it.
- Do not route the seat belt over hard or sharp objects in the driver's pockets.
- Only use the seat belt to secure one person.
- Have any malfunctions rectified by the authorised service centre.

Even with the seat belt fastened, a residual risk remains for the driver if the industrial truck overturns or collides with an obstacle.

- During work, ensure that you have a secure grip on the truck and a stable seat position.
- Hold on tight to the steering wheel with your left hand.

Seat belt monitoring

The driver's seat must be occupied before the belt is fastened.

The buckle is monitored. If the belt has not been fastened, the following will occur:

- The message `Close seat belt` appears on the display-operating unit.
- Speed limitation of 2 to 4 km/h (adjustable).
- The hydraulic functions are locked.
- The driving functions are locked (variant).

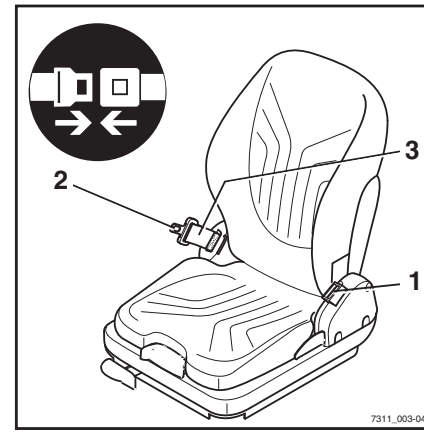
Fastening the seat belt

- Sit on the driver's seat. Sit back as far as possible so that your back is resting on the seat backrest.

The seat switch is activated. When the industrial truck is switched on, the display-operating unit shows the "Seat belt not fastened symbol". ▷

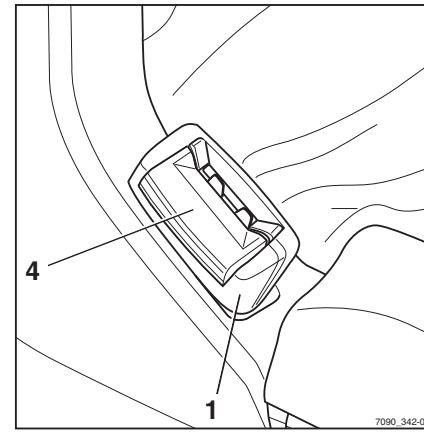


– Pull the seat belt (3) smoothly out of the belt retractor and place over the thighs close to the body.
– Click the belt tongue (2) into the buckle (1).
– Check the tension of the seat belt. The belt must fit closely around your body.



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

Slowly allow the seat belt to retract. The automatic blocking mechanism may be triggered if the belt tongue strikes the housing. It will then no longer be possible to pull out the seat belt with the usual force.

– Pull the seat belt sharply out of the retractor by around 10 to 15 mm 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 conditions

– If the buckle or belt retractor are frozen, thaw and dry the components. Drying the components will prevent them from freezing again.

⚠ CAUTION

The buckle or the belt retractor may be damaged by heat during thawing!

– Do not use warm air above 60 °C for thawing.

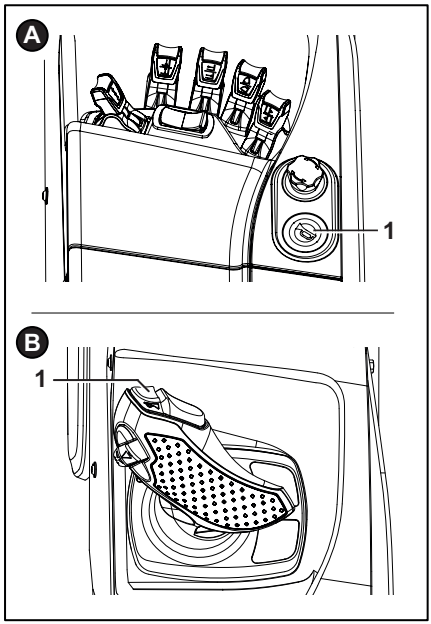
Actuating the horn

NOTE

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

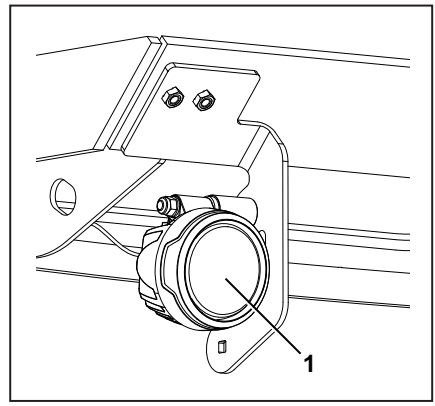
– Press the horn button (1).

The horn sounds.



A Fingertip variant
B Joystick 4Plus variant

Working spotlights (variant) ▷



There is an option to have the truck fitted with one or several working spotlights (1) to improve illumination of the working area.

Switching the working spotlights on and off

Depending on the equipment, there are three different options. The authorised service centre sets the desired option using the service diagnostics.

Option 1

– Select field ☰ on the display-operating unit.

  The display changes to the "Settings" menu.

– Navigate to the `Working Lights` menu item.

Menu navigation

`Settings`			
	`Truck`		
		`Lighting`	
			`Working spotlights`

– Select the `Working Lights` field.

Action	Result	Display
Select the field once	Light "on"	The selection field is highlighted in colour
Select the field again	Light "automatic" (activated during reverse travel)	The selection field is marked with "A"
Select the field again	Light "off"	The selection field is unmarked

Option 2

– Switch on the key switch.

  The light is permanently switched on.

Option 3

– Switch on the key switch and actuate the reverse pedal.

  The light is switched on during reverse travel only.

Warning zone light (variant)



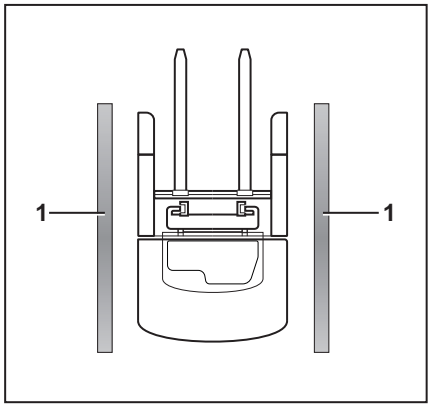
⚠ WARNING

Danger of damage to eyes from looking into the warning zone light.

- Do **not** look into the warning zone light.
- Adjust the warning zone light so as not to dazzle bystanders or the driver when climbing in and out of the truck.

The warning zone light is mounted on supports on the overhead guard such that it is not affected by jolts and vibrations. Depending on the version, the light projects either a red or a blue light.

The warning zone light projects a light bar (1) next to or behind the truck. This light bar indicates the danger areas to the sides or to the rear of the truck. ▷



- Before using the truck, make sure that the warning zone light is working and has been adjusted correctly.

The distance from the light bar to the truck must be between 70...75 cm.

Switching the warning zone light on and off

Depending on the equipment, there are three different options. The authorised service centre sets the desired option using the service diagnostics.

Option 1

- Select field ☰ on the display-operating unit.

  The display changes to the "Settings" menu.

- Navigate to the `Warning Zone Light` menu item.

Menu navigation

`Settings`		
	`Truck`	
		`Lighting`
		`Warning zone light`

– Select the `Warning Zone Light` field.

Action	Result	Display
Select the field once	Light "on"	The selection field is highlighted in colour
Select the field again	Light "automatic" (activated during reverse travel)	The selection field is marked with "A"
Select the field again	Light "off"	The selection field is unmarked

Option 2

– Switch on the key switch.

The light is permanently switched on.

Option 3

– Switch on the key switch and actuate the reverse pedal.

The light is switched on during reverse travel only.

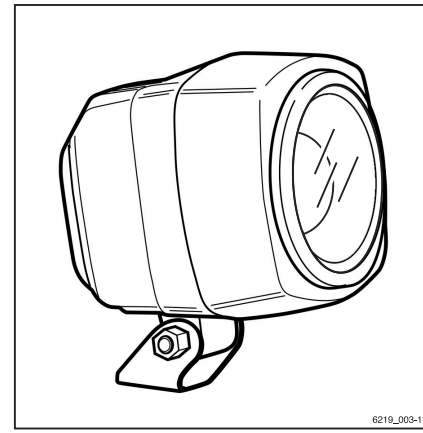
STILL SafetyLight® and STILL SafetyLight 4Plus® (variants) ▷



⚠ WARNING

Danger of damage to eyes from looking into the STILL SafetyLight® and STILL SafetyLight 4Plus®.

Do **not** look into the STILL SafetyLight® or STILL SafetyLight 4Plus®.



STILL SafetyLight® and STILL SafetyLight 4Plus® are visual warning units 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® or STILL SafetyLight 4Plus® 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. With the STILL SafetyLight 4Plus®, several light-blue light spots are projected as a chase

light. The chase light indicates the location of the truck with its direction of travel.

Switching the working spotlights on and off

Depending on the equipment, there are three different options. The authorised service centre sets the desired option using the service diagnostics.

Option 1

– Select field ☰ on the display-operating unit.

  The display changes to the "Settings" menu.

– Navigate to the `Safety Light` menu item.

Menu navigation

`Settings`			
	`Truck`		
		`Lighting`	
			`Safety light`

– Select the `Safety Light` field.

Action	Result	Display
Select the field once	Light "on"	The selection field is highlighted in colour
Select the field again	Light "automatic" (activated during reverse travel)	The selection field is marked with "A"
Select the field again	Light "off"	The selection field is unmarked

Option 2

– Switch on the key switch.

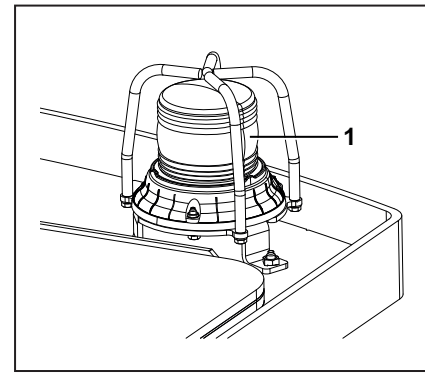
  The light is permanently switched on.

Option 3

– Switch on the key switch and actuate the reverse pedal.

  The light is switched on during reverse travel only.

Rotating beacon/flashing beacon ▷ (variant)



Rotating beacons/flashing beacons (1) increase safety for the driver and persons in the working area of the truck.

Switching the rotating beacon/flashing beacon on and off

Depending on the equipment, there are three different options. The authorised service centre sets the desired option using the service diagnostics.

Option 1

– Select field ☰ on the display-operating unit.

  The display changes to the "Settings" menu.

– Navigate to the `Warning Lights` menu item.

Menu navigation

`Settings`		
	`Truck`	
		`Lighting`
		`Warning lights`

– Select the `Warning Lights` field.

Action	Result	Display
Select the field once	Light "on"	The selection field is highlighted in colour
Select the field again	Light "automatic" (activated during reverse travel)	The selection field is marked with "A"
Select the field again	Light "off"	The selection field is unmarked

Option 2

– Switch on the key switch.

  The light is permanently switched on.

Option 3

– Switch on the key switch and actuate the reverse pedal.

  The light is switched on during reverse travel only.

Emergency off switch ▷

⚠ CAUTION

Risk of accident in the event of an emergency shut-down of the truck whilst the load is raised.

In the event of an emergency shutdown of the truck whilst the load is raised, the fork carriage must be fully lowered once and the reach carriage must be fully retracted once. This ensures that the electronic support systems, which prevent the truck from tip-ping over with a raised load, are recalibrated.

– Before continuing to drive the truck, fully lower the load and fully retract the reach carriage.

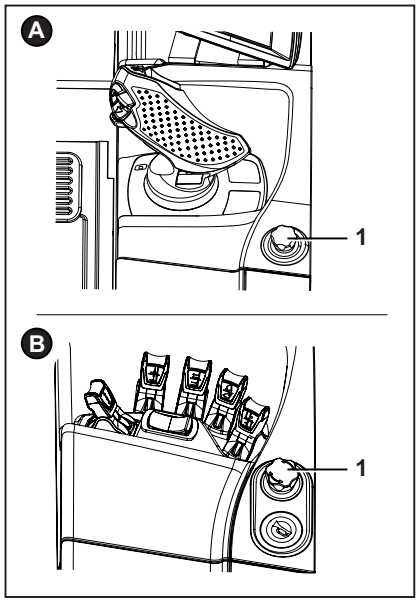
In an emergency, all truck functions can be switched off using the emergency off switch.

– Ensure that you have a secure grip on the truck; hold onto the steering wheel with your left hand.

– Push the emergency off switch (1).

The parking brake is applied immediately. The truck brakes to a standstill abruptly. None of the truck functions are now available.

– Use the emergency off switch only in an emergency or to park the truck safely.



A Joystick 4Plus variant
B Fingertip variant

Display-operating unit

General operation of the display-operating unit

The display-operating unit has no mechanical buttons. It is operated only via the touch-sensitive screen.

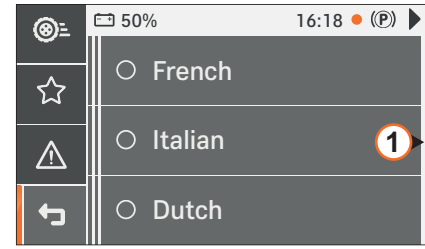
– Touch a field on the screen to select the content of the field.

Display: "Multiple pages"

Some displays contain extensive information, so the content is shown across multiple pages.

Displays with multiple pages are indicated by the coloured filled dots (1) at the edge. ▷

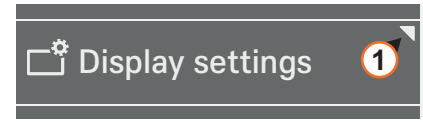
Swipe across the page content to move the displayed area and reach the next page.



Display: "Further selection fields"

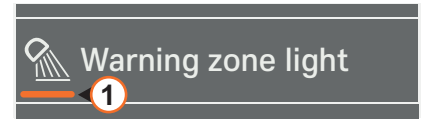
A triangle (1) in the upper right corner indicates that further menu levels follow. ▷

– Select the field to display the next menu level.



Display: Function switched on

A coloured marker bar indicates that an industrial truck function is switched on. ▷



NOTE

Display: Function switched on automatically

- *An "**A**" in the selection field indicates that a function is switched on automatically. The lighting can, for example, switch on depending on the drive direction or the lift height.*
- *Contact the authorised service centre to set up the automatic switch-on function.*

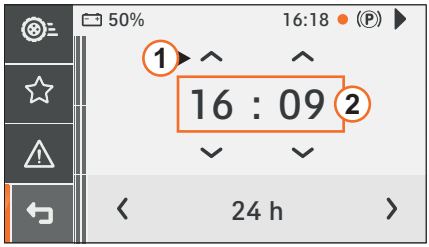
Display: Option selected

A filled option field indicates which option in a selection list is switched on.



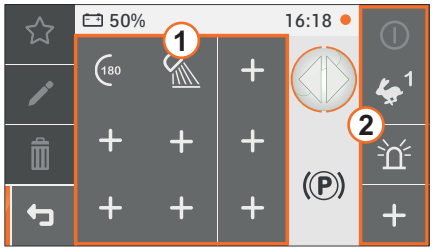
Making settings: "Arrow fields"

Set values with arrow fields (1) can also be adjusted by "swiping" the display (2).



Using function buttons and favourites

Function buttons and favourites increase the operating comfort of the display-operating unit. Frequently used functions can be arranged according to requirements so that they are always quickly accessible.



1 Function buttons can be selected via the ☆ field in the main menu.

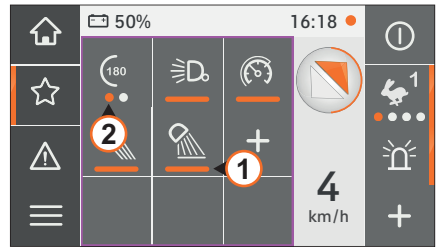
2 Favourites can be selected at any time on the top level of the display-operating unit without needing to switch to a menu.

– Select the field with the function button or favourite to activate or deactivate the function.

The orange marker (1) indicates which functions are activated.

Functions with multiple selection options are indicated by a corresponding number of dots (2). By selecting the field repeatedly, the next selection option is called up each time.

▷



Assigning function buttons and favourites

Function buttons and favourites can be set up here in the selection menu or in the `Function Button Assignment` menu. To start the setup, select a field with the ⊞ symbol.

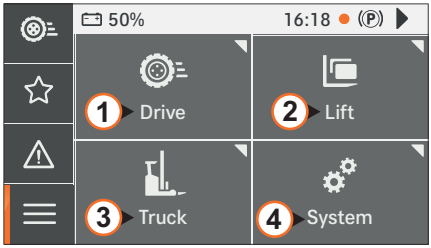
– For the procedure, see the chapter entitled "Display-operating unit/Assigning function buttons and favourites"

"Settings" menu

– Select the field ☰.

The "Settings" menu is selected. The settings for the configuration and operation of the industrial truck are made here: ▷

1 Drive
2 Lifting
3 Truck
4 System



Overview of the "Settings" menu

Drive menu		
	Speed limitation (on/off)	
	Drive programme	
		Drive mode 1, 2, 3, 4
	180/360° steering	
		180° steering
		360° steering

Lift menu		
	Lift height restriction	
		Select lift heights
		Set/clear lift heights

Truck menu		
	Lighting	
		Working spotlights
		Warning zone light
		Safety light
		Warning lights

System menu		
	Function button assignment	
		Set up favourites
	Display settings	
		Time
		Date
		Remaining operation time format
		Language
		Units
		Brightness
	System settings	
		Service interval
		Battery ID
		System information
		Restore factory settings

Drive menu

In the Drive menu, the following settings can be made:

Drive menu		
	Speed limitation	
	Drive programme	
		Drive mode 1, 2, 3, 4
	180/360° steering	
		180° steering
		360° steering

Switching the speed limitation on/off

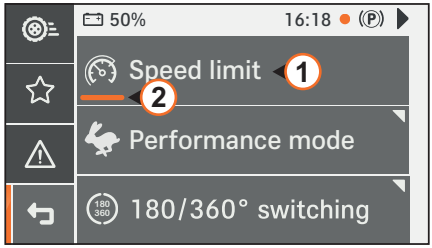
The authorised service centre sets the maximum driving speed using the service diagnostics. The driver can only switch the limit on or off.

In the Drive menu, select the field: ▷

1 Speed limitation

The orange marker (2) indicates that the speed limitation is activated.

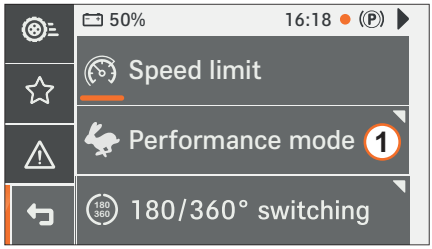
– Select the field ↩ to return to the previous menu level.



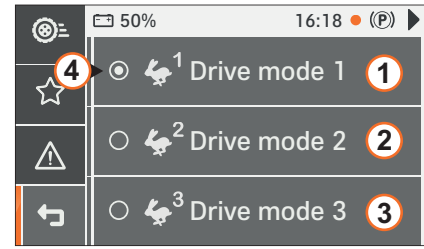
Select Drive Program

In the Drive menu, select the field: ▷

1 Drive programme



The display switches to the selection menu: ▷



Page 1

1 `Drive mode 1`
2 `Drive mode 2`
3 `Drive mode 3`

Page 2

4 `Drive mode 4` (customised)

– Select a drive mode from the list. Additionally, a user-defined drive mode may be available.

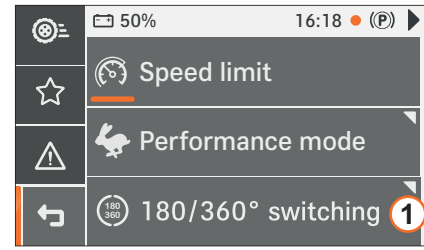
The marked option field (4) indicates which drive mode is activated.

– Select the field ↩ to return to the previous menu level.

Switching between 180°/360° steering

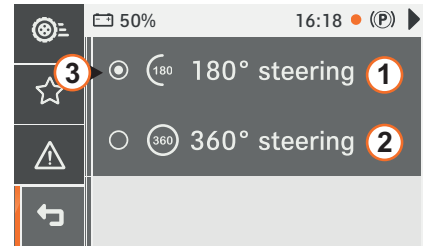
In the `Drive` menu, select the field: ▷

1 `180/360° steering`



The display switches to the selection menu: ▷

1 `180° steering`
2 `360° steering`



– Select a steering mode from the list.

The marked option field (3) indicates which steering mode is activated.

– Select the field ↩ to return to the previous menu level.

Lift menu

In the Lift menu, the following settings can be made:

Lift menu		
	Lift height restriction	
		Select lift heights
		Set/clear lift heights

Lift height restriction - Selecting lift heights

In the Lift menu, select the field:

1 Lift height restriction

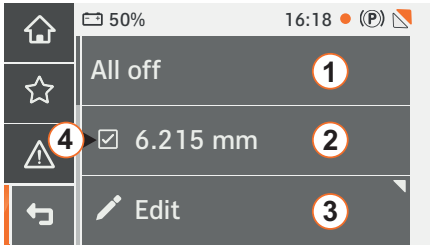
▷



The display switches to the selection menu:

1 All Off / All On
2 Stored lift heights
3 Edit

▷



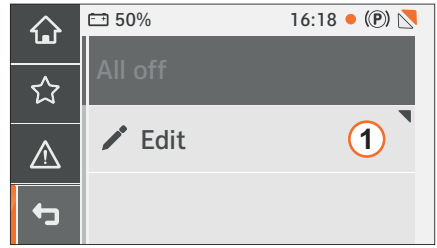
One, several or no lift heights may be activated for the lift height limitation. The marked option field (4) shows which lift heights are activated.

– Select All Off / All On to deactivate or activate all lift heights.
– Select stored lift heights from the list to activate or deactivate them.
– Select Edit to delete or add lift heights in the list. See the following section.
– Select the field ↩ to return to the previous menu level.

Lift height restriction - Setting or clearing lift heights

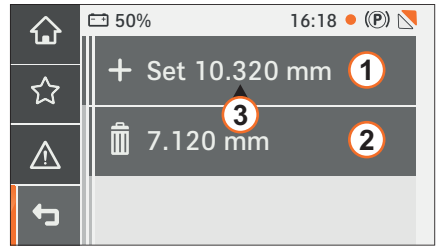
In the `Lift height limitation` menu, ▷ select the field:

1 `Edit`



The display switches to the editing menu. ▷

1 `Set`
2 Stored lift heights



In the editing menu, lift heights can be set or stored lift heights can be deleted.

If no lift heights are stored, only the `Set` field is displayed.

Setting lift heights

In the `Set` field, the current lift height (3) of the industrial truck is displayed.

– Select the `Set` field to store the displayed lift height in the list.

If the current lift height is already in the list, the field is greyed out and locked. As soon as the current lift height changes, the field becomes selectable again.

– Select the field ↩ to return to the previous menu level. The stored lift height can now be selected in the list.

NOTE

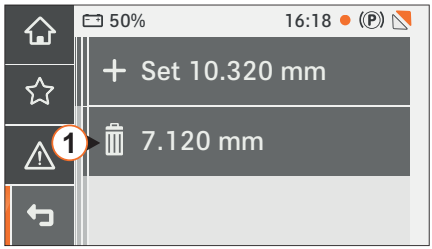
A maximum of five lift heights can be stored.

If five lift heights are already stored, the display switches to `All slots used`. Before new lift heights can be stored, old entries must be deleted.

Clear lift heights

Clearable lift heights in the list show the symbol (1) for clearing the entry.

– Select the lift height to clear the stored lift height.



Truck menu

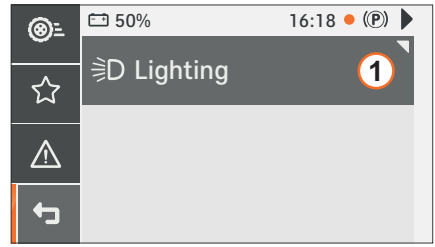
In the Truck menu, the following settings can be made:

Truck menu	
Lighting	
	Working spotlights
	Warning zone light
	Safety light
	Warning lights

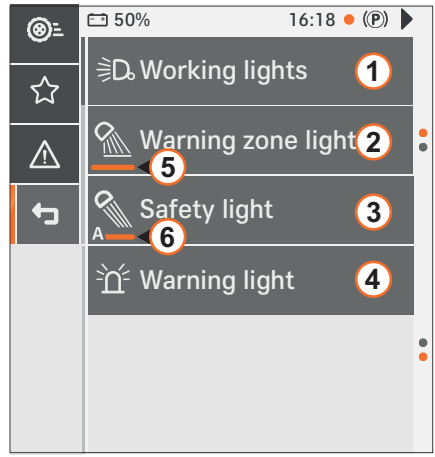
Adjusting the lighting

In the Truck menu, select the field:

1 Lighting



The display switches to the selection menu:



Page 1

1 Working spotlights
2 Warning zone light
3 Safety light

Page 2

4 Warning lights

– Select the required lighting from the list to switch it on or off.

The orange marker (5) indicates which lighting is switched on.

An "A" next to the marker (6) indicates that the lighting is automatically switched on. The lighting can, for example, switch on depending on the drive direction or the lift height.

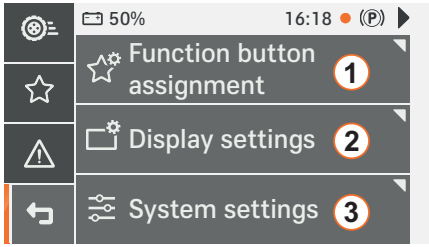
– For details on the lights, see the corresponding sections in the "Lighting" chapter.

System menu

In the "Settings" menu, select the System field.

The display switches to the selection menu: ▷

1 Function Button Assignment
2 Display settings
3 System settings



Overview of the System menu

System menu		
	Function button assignment	
		Set up favourites
	Display settings	
		Time
		Date
		Remaining operation time format
		Language
		Units
		Brightness
	System settings	
		Service interval
		Battery ID
		System information
		Restore factory settings

Assigning function buttons and favourites

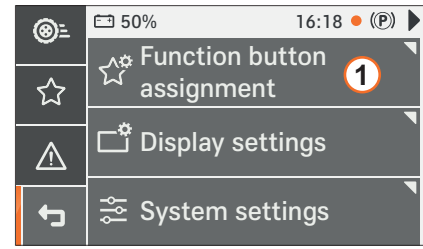
The positions for function buttons and favourites on the display-operating unit can be assigned in the `Function Button Assignment` menu.

NOTE

Function buttons and favourites can only be assigned when the accelerator is not actuated.

In the `System` menu, select the field:

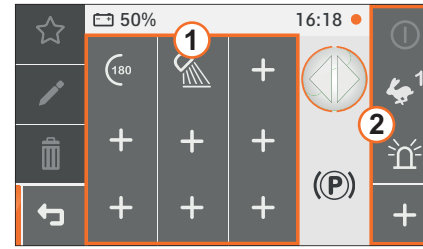
1 `Function button assignment`



The display switches to the selection menu:

1 Fields for assignment of function buttons (maximum of 18)

2 Fields for the assignment of favourites (maximum of 4)



The procedure for assigning function buttons and favourites is the same.

Assigning function buttons and favourites

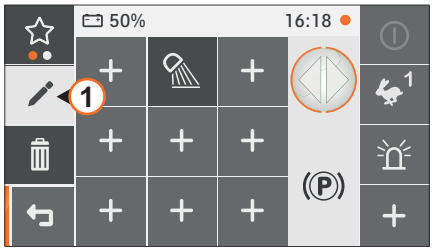
Fields that are not yet assigned show the symbol ⊞. If the symbol is not displayed, no assignable functions are available.

Fields that are already assigned show the corresponding function symbol. Greyed-out fields cannot be changed by the driver.

– To assign a function, select the desired field. ▷

The field is highlighted.

– Select the "Edit" (1) field.

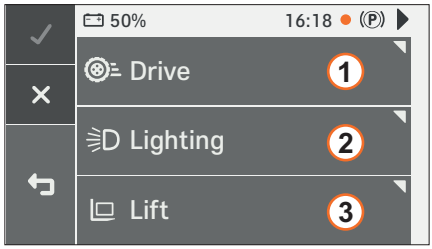


The display changes to the selection menu for a function group: ▷

1 Driving
2 Lighting
3 Lifting

– Select a group to assign a function from this group.

The display switches to the selection menu for the functions.

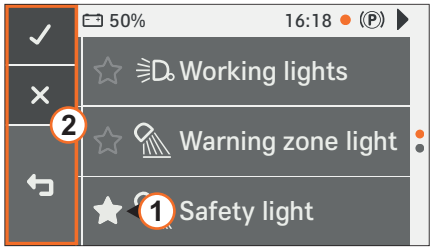


Assignable functions - function buttons and favourites

Group	Function
Driving	Speed limitation
	Drive programme
	180/360° steering
Lighting	Working spotlights
	Warning zone light
	Safety light
	Warning lights
Lifting	Lift height restriction

– Select the field with the desired function. ▷

The favourite star (1) indicates that the function is selected.



– In the editing bar on the left (2), select the action for the function:

- Select the ☑ field to assign the function. The display returns to the starting point of the assignment.
- Select the ☒ field to cancel the assignment without saving. The display returns to the starting point of the assignment.
- Select the ⮌ field to return to the previous menu level without saving.

Clearing the assignment of function buttons and favourites

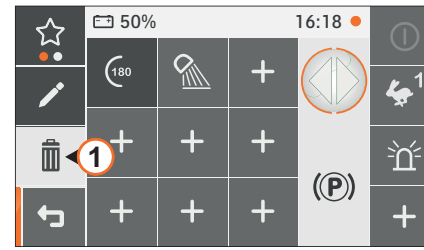
– In the `Function Button Assignment` menu, select the field whose assignment is to be cleared.

  The field is highlighted.

– Select the field (1) to clear the assignment.

  The assignment is cleared. The field is available for a new assignment and displays the + symbol.

▷



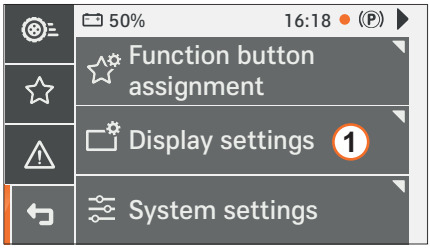
Display settings menu

In the Display settings menu, the following settings can be made:

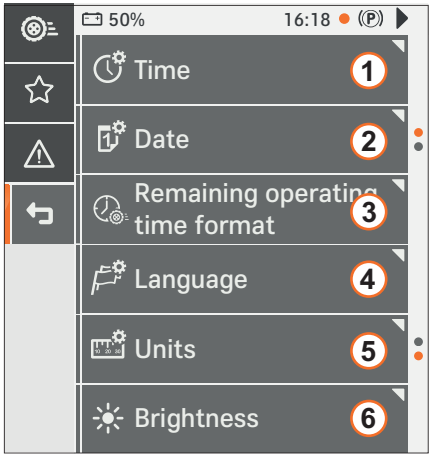
Display settings menu	
	Time
	Date
	Remaining operation time format
	Language
	Units
	Brightness

– In the System menu, select the field: ▷

1 Display settings



The display switches to the selection menu: ▷



Page 1

1 Time
2 Date
3 Remaining operation time format

Page 2

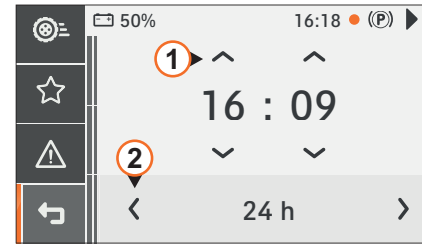
4 Language
5 Units
6 Brightness

Setting the time

– In the selection menu, select the field:

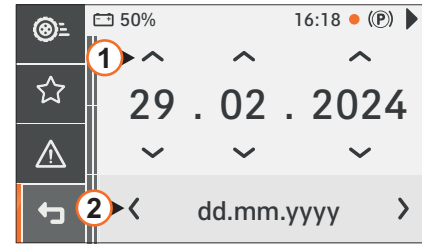
• Time

– Use the arrows (1) to set the current time.
– Use the arrows (2) to change the time display format (12/24 hours).
– Select the field ↩ to return to the previous menu level. The entered values are saved.



Setting the date

– In the selection menu, select the field:
• `Date`
– Use the arrows (1) to set the current date.
– Use the arrows (2) to set the date display format.
– Select the field ↩ to return to the previous menu level. The entered values are saved.



An invalid date is shown in red shortly after it is entered. When exiting the menu, the message `Invalid date not saved` appears. The date that was originally saved remains valid.

Setting the remaining operation time format

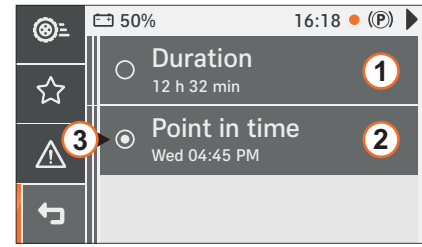
The remaining operation time reflects the expected remaining operation time with the current battery charge level.

– In the selection menu, select the field:
• `Remaining operation time format`

Two formats are available:

1 `Duration`
Remaining time (hours / minutes)
2 `Point In Time`
Time (day of the week / time)

– Select the field with the desired format.



The marked option field (3) shows which format is activated.

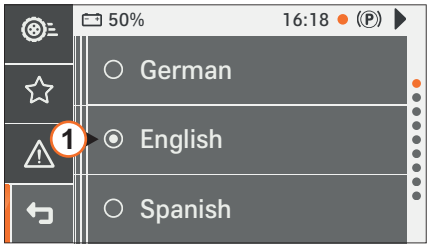
– Select the field ↩ to return to the previous menu level. The selected format is saved.

Setting the language

– In the selection menu, select the field:

• `Language`

– Select the field with the desired language. ▷



The marked option field (1) shows which language is activated.

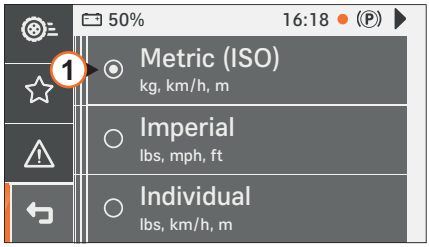
– Select the field ↩ to return to the previous menu level. The selected language is saved.

Setting the units

– In the selection menu, select the field:

• `Units`

– Select the field with the required units. ▷



The marked option field (1) shows which units are activated.

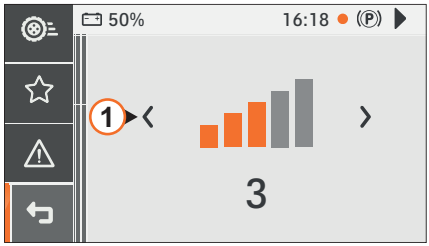
– Select the field ↩ to return to the previous menu level. The selected units are saved.

Adjusting the brightness

– In the selection menu, select the field:

• `Brightness`

– Use the arrows (1) to set the desired brightness. ▷



The number of highlighted bars (0 to 5) indicates the selected brightness level. Changes made with the arrow keys are immediately implemented and saved.

In addition, a light sensor controls the brightness of the display-operating unit. This ensures that the display remains easy to read even with strong changes in lighting (entering the hall).

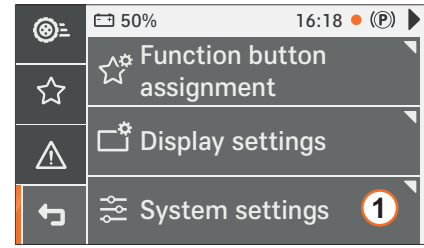
System settings menu

In the System settings menu, information can be read and the factory settings can be restored:

System settings menu	
	Service interval
	Battery ID
	System information
	Restore factory settings

– In the System menu, select the field: ▷

1 System settings



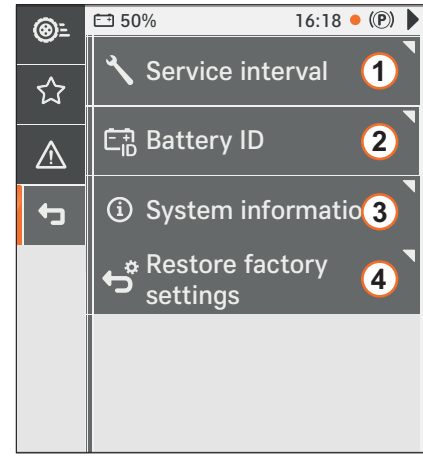
The display switches to the selection menu: ▷

Page 1

1 Service interval
2 Battery ID
3 System information

Page 2

4 Restore factory settings



Displaying the service interval

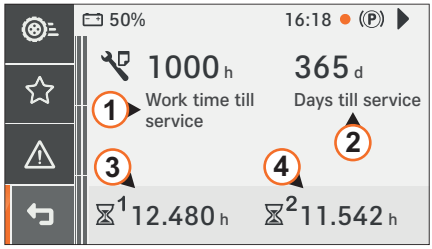
The service interval is the period until the next service of the industrial truck. The authorised service centre sets the next due date in the service diagnostics.

– In the selection menu, select the field:

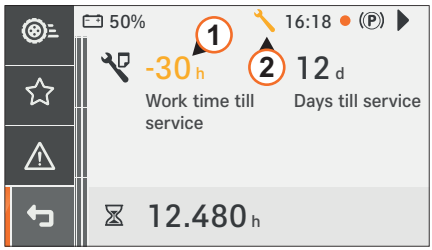
- Service interval

The menu displays the following service information: ▷

1 Operating hours to service
2 Days till service
3 Operating hours
4 Operating hours (secondary), optional



When a service interval has been exceeded, the corresponding time value (1) becomes negative and is highlighted in colour. The "Service" symbol (2) appears in the status bar. ▷



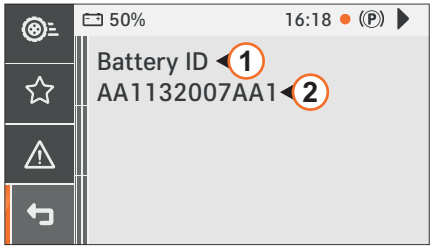
Displaying the battery ID

– In the selection menu, select the field:

- Battery ID

The menu displays the serial number of the battery: ▷

1 Battery ID
2 Serial number

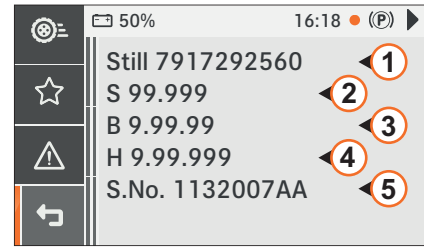


Displaying system information

– In the selection menu, select the field:

- System information

The menu displays the following system information: ▷



1 Part number of the display-operating unit
2 Version number of the industrial truck software
3 Version number of the bootloader
4 Serial number of the display-operating unit
5 Serial number of the industrial truck (VIN Vehicle Identification Number)

Restore factory settings

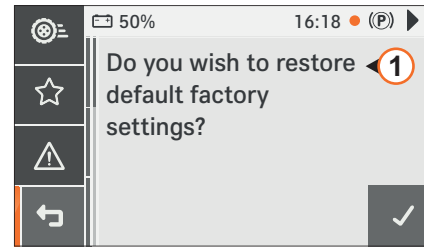
The following factory settings for the display-operating unit are restored:

- Brightness of the display-operating unit
- Language of the display-operating unit
- Time display format (12/24 hours)
- Units of the display-operating unit

– In the selection menu, select the field:

1 `Restore factory settings`

The confirmation menu opens: ▷



1 Do you wish to restore default factory settings?

– Select the field ↩ to return to the previous menu level without making any changes.

– Select the field ☑ to restore the factory settings.

The display-operating unit confirms with an information window that the factory settings have been restored.

Diagnostics/service menu

The Diagnostics/service menu displays information on the diagnostics of the industrial truck:

Diagnostics/service menu	
	Error messages
	Error codes
	Contact (contact address of authorised service)
	User Manual

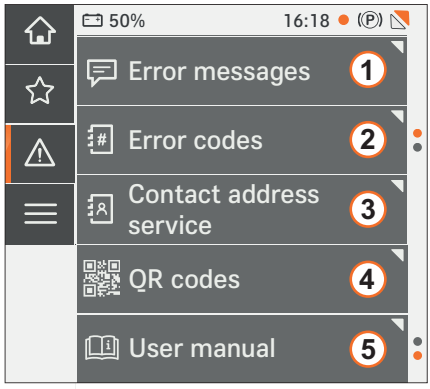
The Diagnostics/service menu is only accessible when the industrial truck is at a standstill. All selection fields in the menu are greyed out when the accelerator is actuated.

– Bring the industrial truck to a standstill.

– Take your feet off the pedals.

– Select the field ⚠.

The display switches to the selection menu: ▷



Page 1

1 Error messages
2 Error codes
3 Contact (contact address of authorised service)

Page 2

4 User manual

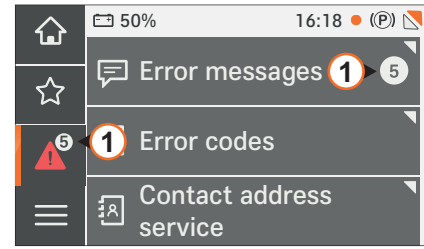
Error messages and error codes are messages that indicate a malfunction or incorrect operation of the industrial truck:

- Error messages are text messages relating to the ongoing operation of the industrial truck.
- Error codes are numbers used for diagnosing the industrial truck by the authorised service centre. Each number represents a specific malfunction event.

If current messages are present, the display of the symbols changes in the Diagnostics/service menu:

The colour of the ⚠ symbol changes from the standard colour to red.

If more than one message is present, a circle displayed on the symbol (1) shows the number.



Displaying error messages

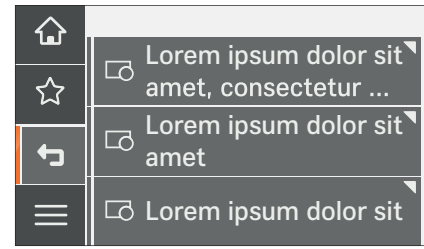
To view the error messages, in the `Diagnostics/service` menu, select the field:

- `Error messages`

The display switches to the list of the error messages currently present.

In the list, error messages are sorted at the top, with warning messages below them.

– Select a field with a message.

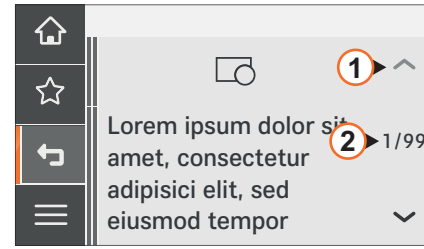


The content of the message is displayed.

– If necessary, move the content using the arrow fields (1) or by swiping across the display.

  If several messages are present, the total number and the sequential number (2) of the message currently shown are displayed.

– Select the field ↩ to return to the previous menu level.

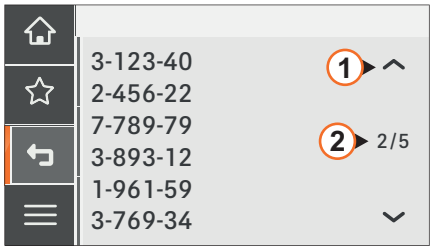


Displaying error codes

To view the error codes, in the `Diagnostics/service` menu, select the field:

- `Error codes`

The display switches to the list of the error codes currently present. ▷



– If necessary, move the content using the arrow fields (1) or by swiping across the display.

  If several pages are present, the total number and the sequential number (2) of the pages are displayed.

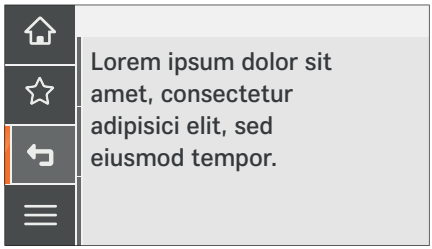
– Select the field ↩ to return to the previous menu level.

Displaying the contact address of the authorised service centre

To display the contact address of the authorised service centre, in the `Diagnostics/service` menu, select the field:

- `Contact`

The display changes to the contact address of the authorised service centre. ▷



Displaying the user manual (QR code)

The `User Manual` menu displays a QR code. The QR code opens a link to the operating instructions of the industrial truck, which are available online.

To display the QR code for the user manual, in the `Diagnostics/service` menu, select the field:

- `User manual`

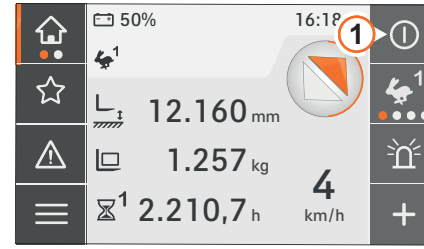
The display switches to the QR code for the user manual. ▷



– Scan the QR code with a mobile device to access the user manual online.

Switching off the industrial truck via the display-operating unit (optional)

The industrial truck can be switched off using the field "Switch off" (1) on the display-operating unit. The field can be selected at any time on the top level of the display-operating unit without needing to switch to a menu. ▷

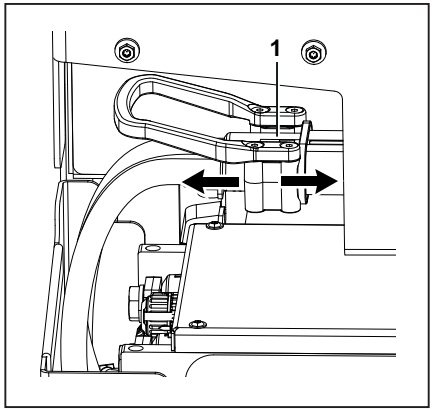


– Take your feet off the pedals.
– Switch the drive direction switch to the neutral position.
– Apply the parking brake as described in the "Parking brake" section of the "Brake system" chapter.
– Select the "Switch off" field.

The industrial truck is switched off

Switching on

Connecting and disconnecting the battery male connector



⚠ CAUTION

Potential for damage to the battery male connector.

If the battery male connector is connected or disconnected while the key switch is switched on (under load), a jump spark will be produced. This can damage the contacts and considerably shorten their service life.

– Do not connect or disconnect the battery male connector while the key switch is switched on.

⚠ CAUTION

There is a risk of short circuit if the cables are damaged.

The cable must not be pinched when disconnecting or connecting it.

Connecting the battery male connector

– Ensure that the battery male connector and the plug connection are dry, clean and free of foreign objects.

– Insert the battery male connector (1) fully into the plug connection on the truck, holding it by the handle.

Disconnecting the battery male connector

– Disconnect the battery male connector (1) from the plug connection on the truck by pulling the handle.

– Lay the battery cable on the battery.

Switching the industrial truck on and off

NOTE

For the variant "Access authorisation with PIN code", a valid PIN code must be entered via the display-operating unit.

- *See the chapter entitled "Display operating unit / Access authorisation with PIN code".*

Switching on the industrial truck

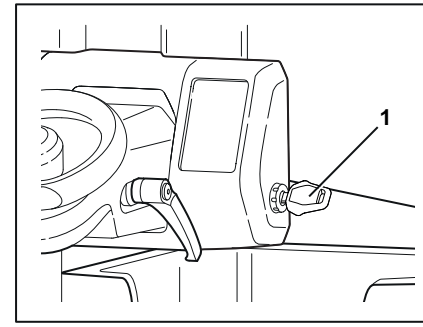
– Sit on the driver's seat.

– Unlock the emergency off switch, if necessary.

– Fasten the seat belt (variant).

– If necessary, switch the drive direction switch to the neutral position. Do not operate the accelerator pedals and operating devices.

– Insert the key (1) into the key switch. Turn the key clockwise from the zero position to switch setting "I".

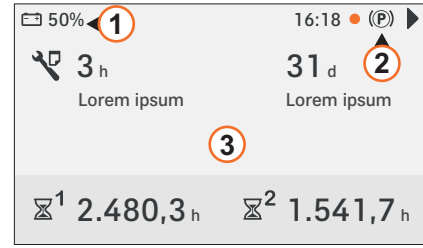


The display-operating unit briefly shows a service screen (configurable):

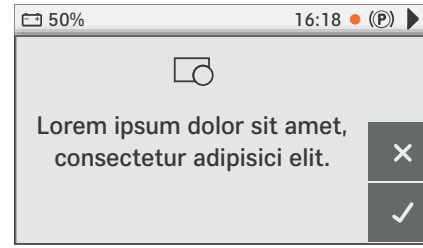
1 State of charge of the drive battery in the status bar

2 "Parking brake applied" symbol in the status bar

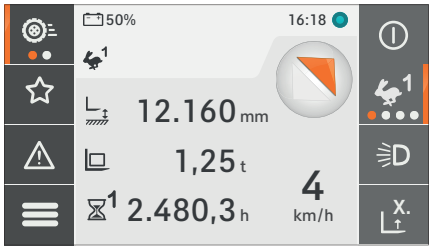
3 Display of the operating hours and the next service interval (depending on configuration)



In addition, the display-operating unit shows an information window if information or error messages are present at start-up. Select the ☑ or ☒ field to close the information window.



The industrial truck is switched on and ready for operation when the display-operating unit shows the main menu.



NOTE

The starting procedure stops if accelerator pedals or operating devices are actuated during the starting procedure. The industrial truck must be switched off and switched on again.

Switching off the industrial truck

– Take your feet off the pedals.

– Switch the drive direction switch to the neutral position.

– Apply the parking brake as described in the "Parking brake" section of the "Brake system" chapter.

– Turn the switch key anticlockwise to the zero position "0".

The industrial truck is switched off

Access authorisation with PIN code (variant)

The "Access authorisation with PIN code" variant protects industrial trucks against unauthorised use. After switching on the truck, the driver must enter a PIN code on the display-operating unit. PIN codes may consist of four, five or six digits.

To allow different drivers to use an industrial truck, the authorised service centre can set up additional PIN codes.

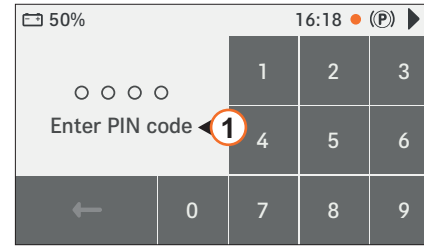
NOTE

For first-time use, a PIN code of 1 1 1 1 1 is pre-set at the factory.

- *It is recommended that you change this PIN code.*

Logging in with PIN code

After the industrial truck is switched on, all hydraulic functions and driving functions are locked. The input menu appears on the display-operating unit:



1 `Enter PIN code`

– Enter a valid PIN code on the numeric keypad. Each number entered is briefly displayed in its position and then hidden.

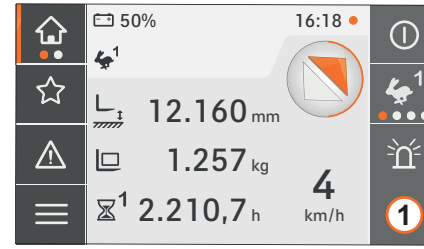
– To correct an entry, select the field ←.

If the entry is correct, the display switches to the main menu. The industrial truck is ready for operation.

If the entry is incorrect, the message `Incorrect PIN code` appears for two seconds. The PIN code must be entered again.

Logging off with PIN code

If the Access authorisation with PIN code variant is active, the driver can log out on the industrial truck using the "Logout" field (1) The position of the field is predefined. It cannot be assigned to other functions.



Logging off is possible only when the industrial truck is at a standstill.

– Bring the industrial truck to a standstill.

– Take your feet off the pedals.

– Switch the drive direction switch to the neutral position.

– Apply the parking brake as described in the "Parking brake" section of the "Brake system" chapter.

– Select the "Logout" field.

  The driver is logged off from the industrial truck. The display changes to the `Enter PIN code` input menu.

If the industrial truck is not at a standstill, the message `Unable to switch off` appears. The entry must be repeated when the industrial truck is at a standstill.

Efficiency modes and drive modes

Setting the Drive Program

Under the Drive Program function, four different drive programmes are available for selection. The drive programme influences the maximum speed, acceleration and braking behaviour of the truck.

The authorised service centre can adjust the characteristics of the individual drive programs.

Four different drive programs are available:

Drive mode 1	Reduced top speed, reduced acceleration
Drive mode 2	Average top speed, average acceleration
Drive mode 3	Maximum top speed, strong acceleration
Drive mode 4	Customer-specific (set up by the authorised service centre)

Setting the Drive Program

The driver can select the Drive Program via the display-operating unit.

– Select the field ☰.

  The display changes to the "Settings" menu.

– Navigate to the Drive Program menu item.

Menu navigation

Settings		
	Drive	
		Drive programme
		Drive mode 1
		Drive mode 2
		Drive mode 3
		Drive mode 4

– Select a Drive Program from the list.

A marked option field next to the selection indicates which Drive Program is activated.

Drive

Safety regulations when driving

⚠ WARNING

Risk of accident!

- Do not use any electrical devices (e.g. mobile phones) while driving.
- Adapt the driving style to distances, working areas and to the load.
- Maintain a safe braking distance from stationary and moving objects.

The following are forbidden when 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
- Disabling the restraint system (where present)

⚠ WARNING

Objects may fall into the footwell and obstruct the pedals.

- Do not allow loose parts to lie around in the footwell or use the footwell to transport any objects.
- Make sure that stored objects cannot fall from the shelves when the truck is started up, steered or braked.

Driving conduct

The driver must comply with the rules for driving on public roads when driving within the plant.

The speed must be appropriate for the local conditions.

For example, the driver must drive slowly around corners, in and around tight passageways, swing doors, blind spots or on uneven roadways.

The driver must always maintain a safe braking distance from trucks and persons in front, and must always have the truck under control. The driver must avoid stopping suddenly, turning at speed and overtaking in dangerous places or in blind spots.

- When driving, ensure that you have a secure grip on the industrial truck and a stable seat position.
- To avoid unintended steering movements, always hold the steering wheel with your left hand when driving.
- Do not drive on gradients that exceed the maximum climbing capability of the truck; see technical datasheet. If necessary, consult with the service partner. The maximum climbing capability is a value determined from the pulling force. It relates to overcoming obstacles on the roadway and to short differences in level.

⚠ DANGER

Risk of fatal injury due to incorrect or unsafe operation.

Always keep your left hand on the steering wheel while driving.

Visibility when driving

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

In a reach truck, the driver's visibility may be restricted by the lift mast or the load in particular. The driver must be sure that the route is clear, particularly when travelling in the load direction.

If they impair visibility, loads may only be transported in the drive direction of the truck. If this is not possible, a second person must walk ahead of the truck as a guide. Drive only at walking pace. Stop the truck immediately if eye contact with the guide is lost.

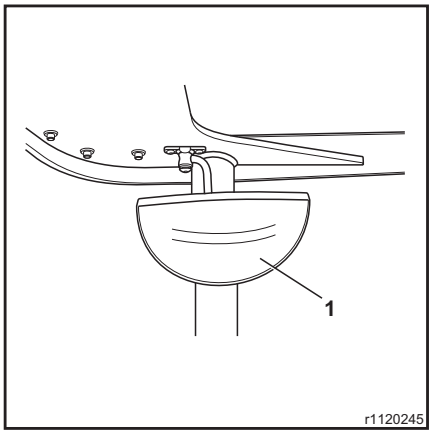
Additional rear-view mirrors are used exclusively to observe the traffic area on the load side. Driving using only a rear-view mirror is not sufficient.

If visual aids (camera, monitor) are required for adequate visibility, driving with these aids must be practised beforehand. Extra care

must be taken when driving in the load direction if you are using visual aids.

Any glass and mirrors must always be clean and free of ice.

Panoramic mirror (variant)



The panoramic mirror is used exclusively to observe the traffic area on the load side. It should not be used for driving in the load direction, as distances may be incorrectly judged due to the distorted image.

The panoramic mirror must always be clean and free of ice.

Any damage to the panoramic mirror that could restrict the driver's visibility must be rectified immediately.

The position of the panoramic mirror may only be changed in such a way that the area behind the lift mast remains visible.

⚠ WARNING

Risk of accident!

Travel is permitted only when looking directly in the drive direction. Driving using only the panoramic mirror is not sufficient.

Warning in the event that components project beyond the truck contour

Industrial trucks are designed to drive through very narrow or very low spaces such as aisles or containers. However, movable parts may protrude beyond the contour and be damaged or torn off. Examples of these components are:

- Additional attachments (mirrors, monitors, etc.)
- Cab doors, driver's compartment doors

Driving on ascending and descending gradients

⚠ WARNING

Driving up and down longer gradients may result in the drive unit overheating or the minimum specified braking values being exceeded.

Do not drive up or down longer gradients

Do not exceed the maximum permissible gradients for roadways (refer to table below)

The truck is designed for normal operation on smooth, even roadways without major gradients, up to a maximum of 3 %.

The following gradients (e.g. on ramps) must not be exceeded under any circumstances when using the truck:

Maximum permissible gradient in %	
With a load	Without a load
10	10

Picking up a load, putting down a load, stacking or unstacking is only permitted on a horizontal, level surface.

Driving – single-pedal operation (variant)

Selecting the drive direction

The drive direction of the truck must be selected using the drive direction switch before starting to drive.

– Actuate the drive direction switch (1).

  The drive direction indicator (2) shows the selected drive direction on the display-operating unit.

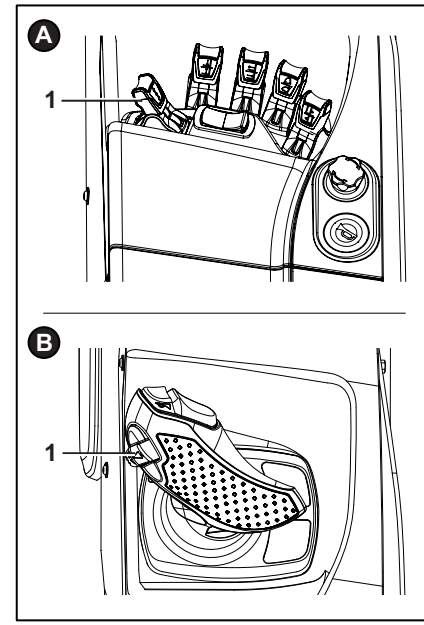
When the truck is first switched on, no drive direction is initially selected. The drive direction indicator shows the "neutral position" symbol (3).

The neutral position must always be selected during longer stops to prevent the truck from moving unexpectedly if the accelerator pedal is inadvertently pressed.

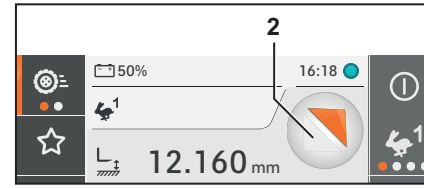
– To switch to the neutral position, lightly move the drive direction switch in the opposite direction to the current drive direction.

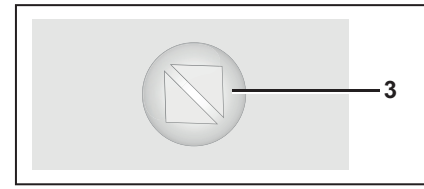
  The drive direction indicator on the display-operating unit changes to show the "neutral position" symbol.

– Operate the drive direction switch again to select a drive direction.

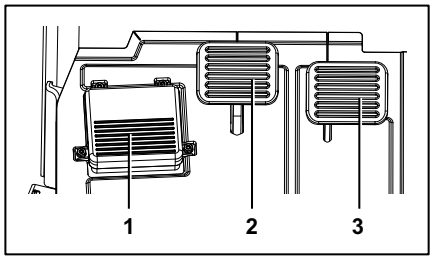


A Fingertip variant
B Joystick 4Plus variant





Starting drive mode



– Sit on the driver's seat.
– Switch on the truck.
– Actuate the foot switch (1) and the brake pedal (2). Do not actuate the accelerator pedal (3).
– Raise the fork arms until the required ground clearance is reached.
– Tilt the lift mast backwards.
– Switch the drive direction switch in the direction of the desired drive direction.

  The drive direction indicator on the display-operating unit shows the selected drive direction.

– Press the push button for the parking brake.

  The LED on the push button begins to flash. The parking brake remains applied and switches to automatic release mode. Pressing the accelerator pedal releases the parking brake.

– Press the accelerator pedal.

  The truck will travel in the selected drive direction. The speed is controlled by the accelerator pedal position. When the accelerator pedal is released, the truck brakes regeneratively.

⚠ WARNING

Risk of accident!

Driving in the load direction (reversing) is permitted only with a direct view in the reverse direction of travel. Driving using only a rear-view mirror is not sufficient.

Changing the drive direction

– Release the accelerator pedal.

  The truck is braked regeneratively.

– Operate the drive direction switch for the opposite drive direction.

  When the accelerator pedal is pressed, the truck accelerates in the selected drive direction.

The drive direction switch can also be switched directly. The electric drive brakes the truck until it comes to a standstill and then accelerates in the new drive direction.

Stopping

– Release the accelerator pedal slowly.

The truck is braked regeneratively.

– If necessary, also apply the hydraulic foot brake.

– When the truck is stationary, the automatic parking brake engages after a short time.

Starting on gradients

The truck is at a standstill. The automatic parking brake is applied.

– Press the push button for the parking brake.

  The LED on the push button begins to flash. The parking brake remains applied and switches to automatic release mode.

– Move the drive direction selection lever to the direction in which you wish to drive.

– Press the accelerator pedal.

Pressing the accelerator pedal releases the automatic parking brake. The truck will now move without rolling backwards.

NOTE

"Hill-hold brake" comfort feature

- *If the truck is brought to a standstill and the driver remains seated on the driver's seat (the foot switch remains actuated), the drive unit holds the truck in place for a short time.*
- *The parking brake engages after an adjustable time X. The LED on the push button for the parking brake flashes. When the accelerator pedal is pressed, the parking brake releases the drive unit.*
- *The time X can be set between 2 and 30 s. Contact the authorised service centre.*

Driving – two-pedal operation (variant)

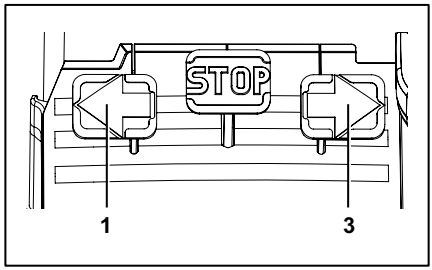
NOTE

When accelerating, driving and braking regeneratively, both feet must remain on the two accelerator pedals at all times. At all times, pressure on one pedal must be perceptible as counter-pressure on the second pedal via the rocker function of the pedal group. The hydraulic operating brake is actuated with the right foot.

With dual pedal operation, any drive direction switches on the operating devices will not function.

Starting drive mode

▷



– Sit on the driver's seat.
– Switch on the truck.
– Raise the fork arms until the required ground clearance is reached.
– Tilt the lift mast backwards.
– Press the push button for the parking brake.

  The LED on the push button begins to flash. The parking brake remains applied and switches to automatic release mode. Pressing the accelerator pedal releases the parking brake.

– To drive in the drive direction, actuate the left accelerator pedal (1).
– To drive in the load direction, actuate the right accelerator pedal (2).

  The truck will travel in the selected drive direction. The speed is controlled by the accelerator pedal position. When the accelerator pedal is released, the truck brakes regeneratively.

⚠ WARNING

Risk of accident!

Driving in the load direction (reversing) is permitted only with a direct view in the reverse direction of travel. Driving using only a rear-view mirror is not sufficient.

Changing the drive direction

– Leave both feet on the accelerator pedals. This allows the truck to be easily controlled in any direction.

– Release the actuated accelerator pedal.

  The truck brakes regeneratively.

– Actuate the accelerator pedal for the opposite direction.

  The electric drive brakes the truck until it comes to a standstill and then accelerates in the opposite drive direction.

Stopping

– Release the accelerator pedal slowly.

The truck is braked regeneratively.

– If necessary, also apply the hydraulic foot brake.

– When the truck is stationary, the automatic parking brake engages after a short time.

Starting on gradients

The truck is at a standstill. The automatic parking brake is applied.

– Press the push button for the parking brake.

  The LED on the push button begins to flash. The parking brake remains applied and switches to automatic release mode.

– Press the accelerator pedal.

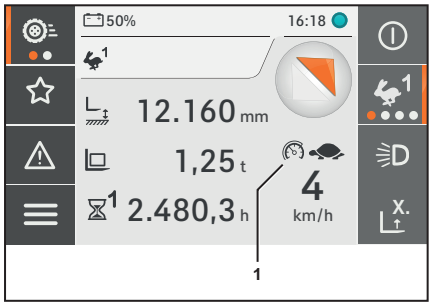
Pressing the accelerator pedal releases the automatic parking brake. The truck will now move without rolling backwards.

NOTE

"Hill-hold brake" comfort feature

- *If the truck is brought to a standstill and the driver remains seated on the driver's seat, the drive unit holds the truck in place for a short time.*
- *The parking brake engages after an adjustable time X. The LED on the push button for the parking brake flashes. The parking brake can be released for driving by pressing the accelerator pedal.*
- *The time X can be set between 2 and 30 s. Contact the authorised service centre.*

Speed limitation while driving



Switching on the speed limitation restricts the maximum speed of the truck.

The authorised service centre can set the maximum speed to a value between 1 and 6 km/h.

The speed limitation is switched on via the display-operating unit.

While the maximum speed is being limited, the symbol (1) appears on the display-operating unit.

Switching on the speed limitation

– Select field ☰ on the display-operating unit.

  The display changes to the "Settings" menu.

– Navigate to the `Speed Limit` menu item.

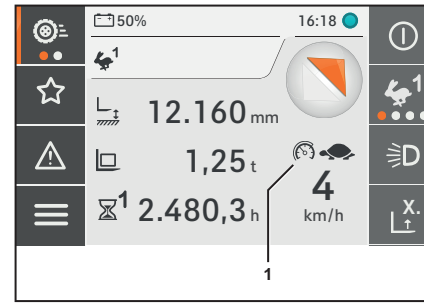
Menu navigation

`Settings`		
	`Drive`	
		`Speed limitation`

– Select the `Speed Limit` field to switch it on or off.

  The orange marker bar in the selection field indicates whether the speed limitation is activated.

Speed limitation in the main lift ▷



⚠ WARNING

There is always an increased risk of the truck tipping if it is driven with a raised load.

The responsibility for safe operation and complying with safety regulations remains with the driver.

The truck can accelerate to a maximum of 6 km/h when the lift mast is in the main lift. If the current driving speed is already above this maximum speed, the truck brakes regeneratively to the set maximum speed. The speed limitation is removed as soon as the current lift height is lowered to below the specified value.

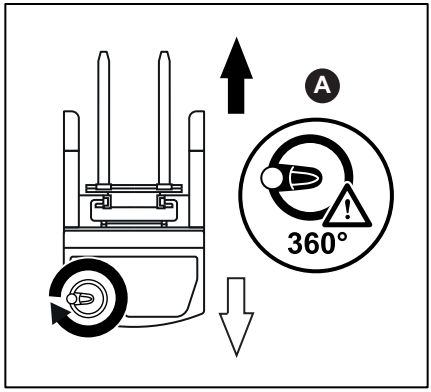
The authorised service centre can set the maximum speed to a value between 1 and 6 km/h.

The speed limitation cannot be deactivated.

While the maximum speed is being limited, the symbol (1) appears on the display-operating unit.

Steering

Steering – 360° steering (variant) ▷

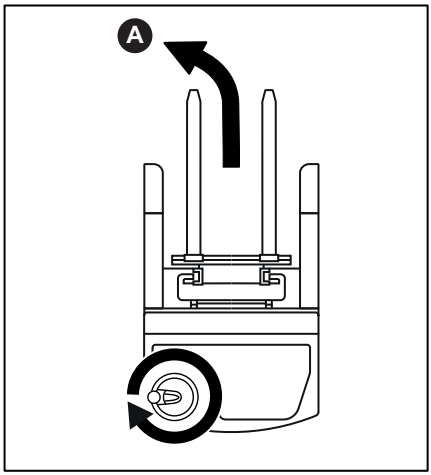


With 360° steering, the steering wheel has no mechanical stops. It can be rotated endlessly.

Starting in the straight-ahead position, the steered wheel reaches the 90° position after 2, 2½ or 3 revolutions (can be configured) of the steering wheel. In this position (A), the truck has the smallest turning radius.

If the steering wheel is turned further beyond this point, the drive direction of the truck is reversed. The drive direction indicator on the display-operating unit shows the actual drive direction.

Steering – 180° steering (variant)



With 180° steering, the steering wheel has no mechanical stops. It can be rotated endlessly. ▷

The path of travel (A) is determined by turning the steering wheel. The maximum steering angle of the steered wheel is 90° to each side. If the steering wheel is rotated further beyond this point, the steering angle does not change any further.

To reverse the drive direction, the drive direction switch must be actuated. The drive direction indicator on the display-operating unit shows the actual drive direction.

Switching between 180°/360° steering (variant)

On trucks with "180 /360° switchable steering" (variant), the driver can set their preferred steering setting.

When the truck is at a standstill, the driver can switch directly between 360° and 180° steer-

ing. The active steering setting remains stored even after the truck is switched off.

The switching function can be activated or deactivated by the authorised service centre.

Safety

⚠ CAUTION

When switching the steering setting, the drive wheel turns according to the new setting and the current steering wheel position. The drive wheel and the truck may move briefly during this process.

– Only switch the steering setting when the truck is at a standstill.
– Only switch the steering setting while sitting in the driver's seat.
– Prioritise switching the steering setting during set-up or at shift start.

The driver must switch the steering setting only when the truck is at a standstill.

If the driver switches the steering setting while driving, the truck brakes to creep speed (5 km/h).

- The switch is executed as soon as the driver brings the truck to a standstill from creep speed. The error message disappears. The driving speed restriction ends. The new steering setting is effective.

Switching between 180°/360° steering

– Bring the truck to a standstill.
– Sit on the driver's seat.
– Actuate the foot switch.

The driver can select the steering setting via the display-operating unit.

– Select the field ☰.

  The display changes to the "Settings" menu.

– Navigate to the `180/360° steering` menu item.

Menu navigation

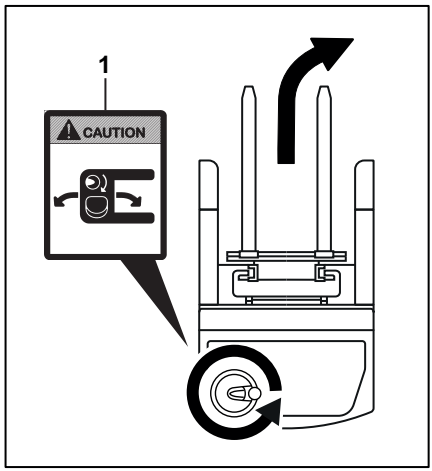
Settings			
	Drive		
		180/360° steering	
			180° steering
			360° steering

– Select the steering setting `180° steering` or `360° steering` from the list.

  A marked option field next to the selection indicates which steering setting is activated.

The steering controller turns the drive wheel according to the new setting and the current steering wheel position. The new setting is effective.

Steering – reverse steering (variant) ▷



On trucks with reverse steering, the direction of rotation of the steering wheel and the steering direction of the truck are reversed compared with standard steering.

- If the steering wheel is turned clockwise when driving in the load direction, the truck will move to the right.
- If the steering wheel is turned anticlockwise when driving in the load direction, the truck will move to the left.

Trucks with reverse steering are identified by the information sign (1) on the profile of the overhead guard near the steering column.

Drivers who do not have experience with reverse steering must familiarise themselves with the steering during training.

The reverse steering can be activated or deactivated by the authorised service centre.

⚠ DANGER

The handling characteristics of this truck may differ from other trucks on site.

Observe the "reverse steering" information sign on the truck.

Braking

Parking brake

⚠ DANGER

Risk of accident or fatal injury if the brake system is faulty.

The truck must not be driven if the brake system is faulty.

If there are any faults in the brake system, contact the authorised service centre.

⚠ DANGER

There is a risk of fatal injury from being run over if the truck rolls away.

– Only leave the truck once the parking brake has been applied.
– The truck must not be parked on a slope.
– In emergencies, secure the truck using wedges on the side facing downhill.

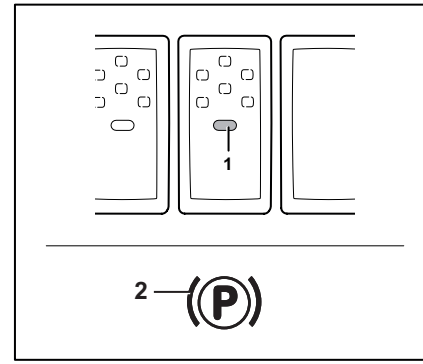
⚠ WARNING

Risk of accident in the event of an emergency shut-down of the truck while driving.

In the event of a vehicle-related power failure, the parking brake engages immediately.

– If the braking effect of the parking brake is insufficient, use the brake pedal of the hydraulic operating brake to provide additional braking.

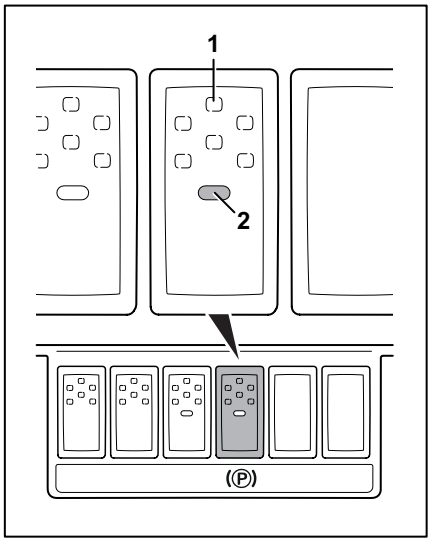
The parking brake helps the driver to park the truck safely. Despite the automatic assistance, the responsibility for parking the truck safely lies with the driver. The safety information about parking the truck safely applies. ▷



The parking brake is opened or closed automatically or by manual actuation.

The current status of the parking brake is indicated by the LED on the brake push button (1) and by the symbol (2) on the display-operating unit.

Automatic release of the parking brake ▷



– Sit on the driver's seat. Actuate the drive direction switch. Actuate the foot switch.

The parking brake cannot be released directly by pressing a button. It is automatically released by starting to drive.

The LED (2) on the push button (1) indicates the release status.

When the parking brake is closed, the LED on the push button is ON.

Pressing the push button allows the driver to switch to automatic release mode.

The LED on the push button starts to flash.

When the driver then actuates the accelerator pedal, the parking brake is released automatically and the truck starts to move.

The LED on the push button turns OFF.

On the display-operating unit, the symbol (Ⓟ) in the "Driving display" area shows the current release status. If the "Driving display" area is covered by another menu, the symbol is shown in the status bar instead.

Display of release statuses on the display-operating unit

Symbol visualisation	Release status
(Ⓟ) ON	Parking brake applied, no automatic release.
(Ⓟ) Flashes	Parking brake applied, automatic release activated. Ready to start.
(Ⓟ) OFF	Parking brake released.

Actuating the parking brake manually

Actuating the parking brake while driving

Symbol visualisation	Operation	Result
(Ⓟ) OFF	Press the brake button.	The truck uses regenerative braking; the parking brake is immediately applied when the truck comes to a standstill. ▸ Symbol ON.
	Release the foot switch, seat switch or accelerator.	The truck uses regenerative braking; the parking brake is applied once the truck has been at a standstill for 10 s. ▸ Symbol flashes.

Actuating the parking brake while the truck is at a standstill

Symbol visualisation	Operation	Result
(Ⓟ) ON	Press the brake button.	The truck is ready to start. ▸ Symbol flashes.
(Ⓟ) Flashes	Press the brake button.	Brake is applied. The truck is not ready to start. ▸ Symbol ON.
(Ⓟ) Flashes	Actuate the accelerator pedal (Foot switch, seat switch and drive direction switch actuated).	Brake releases automatically. The truck moves off. ▸ Symbol goes out.
(Ⓟ) Flashes	After a few seconds (configurable) without operation	Brake is applied. The truck is not ready to start. ▸ Symbol ON.

Service brake

⚠ DANGER

Risk of accident or fatal injury if the brake system is faulty.

The truck must not be driven if the brake system is faulty.

If there are any faults in the brake system, contact the authorised service centre.

⚠ DANGER

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

If there is a sudden loss of braking effect, press the emergency off switch to bring the truck to a standstill.

Braking

The service brake is the interaction between the electric brake of the drive unit and the hydraulic operating brake with the brake pedal.

As soon as the accelerator pedal is released, the electric brake decelerates the truck effectively.

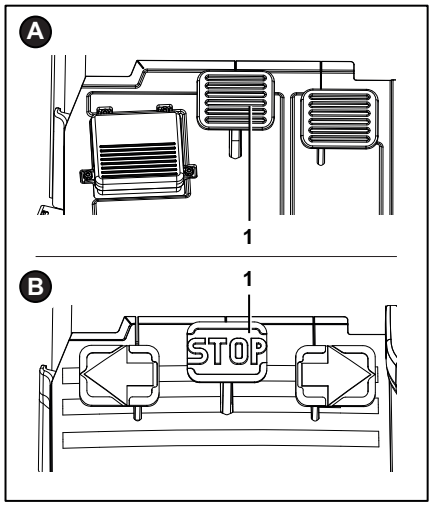
The kinetic energy is converted and fed back into the battery as electrical energy. This results in a longer operating time between the charging processes and less wear to the brakes.

Slowly or quickly releasing the accelerator pedal allows the braking effect to be sensitively controlled. When the accelerator pedal for the opposite drive direction is actuated, the braking effect is increased.

The truck can also be braked using the hydraulic brake. Actuating the brake pedal (1) acts on the hydraulic drum brakes at the load wheels. With increased pressure on the pedal, the combined braking effect of the two brake systems is intensified. ▷

– Brake the truck by releasing the accelerator pedal.
– If the braking effect is inadequate, use the brake pedal as well to apply the mechanical brake.

The braking distance of the truck is influenced by the weather conditions and the level of contamination on the roadway. The braking effect of the electric brake of the drive unit may vary depending on the charge state of the battery.



A Single pedal operation variant
B Dual pedal operation variant

Actuating the working hydraulics

Lift mast version

⚠ DANGER

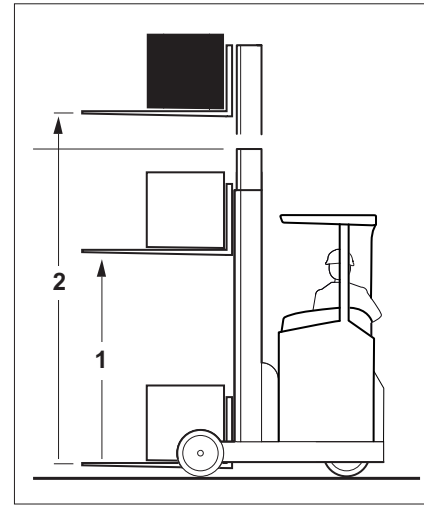
Risk of accident due to collision of the lift mast or load with low ceilings or entrances.

– Note that the inner lift mast or load may be higher than the fork carriage.

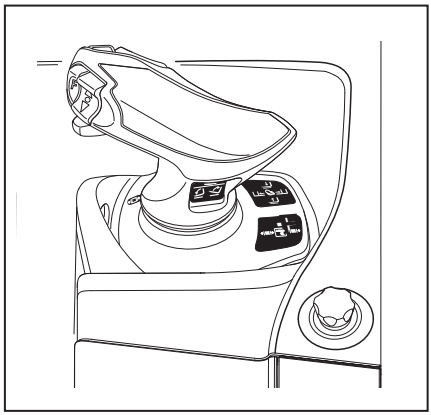
– Observe the heights of ceilings and entrances.

Triplex lift mast

When lifting, the inner lift cylinder raises the fork carriage up to the free lift (1). Then the outer lift cylinders raise the inner lift mast directly to the maximum height (2).



Joystick 4Plus (variant) ▷



⚠ DANGER

Reaching into or climbing between moving parts of the truck can lead to serious injury or death.

– Keep away from moving parts (e.g. lift mast, side-shifts, work equipment, load carrying devices).
– Observe the safety regulations for handling loads.
– Operate the lifting system from the driver's seat only.

⚠ WARNING

Risk of short circuit if the working hydraulics are operated continuously (e.g. lifting, tilting, transition shift, shifting, auxiliary hydraulics).

– Operate the working hydraulics up to the stop/end position for a maximum of 1 minute.
– Afterwards, the working hydraulics must not be operated up to the stop/end position for at least 3 minutes.

⚠ WARNING

Risk of accident as a result of an operating error.

These operating instructions describe how to operate the lifting system in the factory configuration. The configuration can only be changed by the authorised service centre.

If the configuration is changed, the modified pictograms must be observed to ensure safe operation. The operating company must make all drivers aware of the fact that a different configuration has been configured.

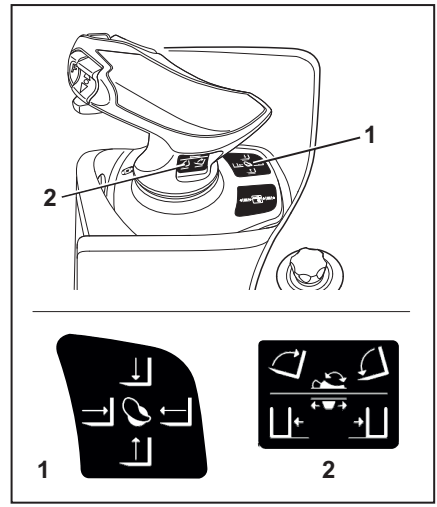
– Observe the pictograms on the operating levers.
– Before use, check that the hydraulic functions are working correctly.

Lifting, lowering and tilting the lift mast, as well as shifting the reach carriage, are carried out using the Joystick 4Plus.

The pictogram (1) shows the basic hydraulic functions and how they are controlled using the joystick. The pictogram (2) shows the 3rd and 4th functions and their operation. The pictograms are arranged in line with the direction of movement of the operating device. ▷

Meanings of the pictograms

- Lowering
- Lifting
- Tilting forwards
- Tilting backwards
- Transition shift, left
- Transition shift, right
- Extending the reach carriage
- Retracting the reach carriage



NOTE

Additional operating devices are available for operating additional attachments.

- *The configuration of the operating devices may vary depending on the equipment.*
- *Observe the pictograms with directional arrows.*

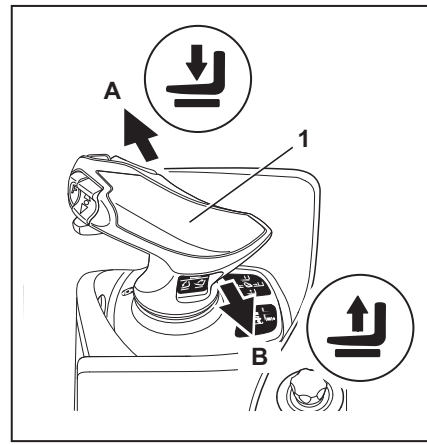
Lifting/lowering the fork carriage ▷

To lower the fork carriage:

– Push the Joystick 4Plus(1) forwards (A).

To lift the fork carriage:

– Pull the Joystick 4Plus(1) backwards (B).



Tilting the lift mast or fork carriage

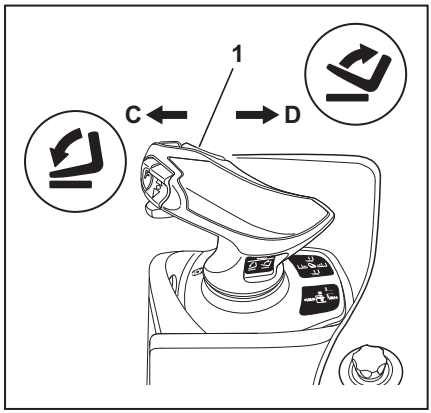
Depending on the truck equipment, either the entire lift mast is tilted or just the fork carriage (fork tilter).

To tilt the lift mast forwards:

– Tilt the rocker button (1) towards (C).

To tilt the lift mast backwards:

– Tilt the rocker button (1) towards (D).



Transition shift

⚠ CAUTION

Do not use the transition shift to push loads along the floor.

– Use the transition shift only when the load is raised clear of the floor or the racking.

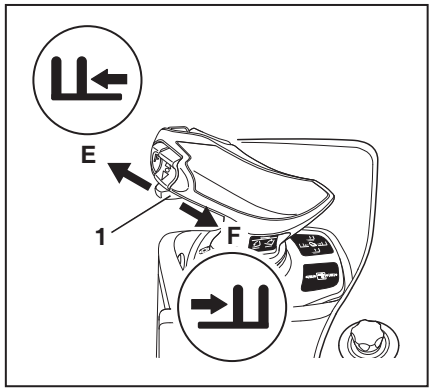
Depending on the truck equipment, either the entire lift mast is shifted to the side or just the fork carriage (fork sideshifter).

Transition shift to the left:

– Slide the slider (1) towards (E).

Transition shift to the right:

– Slide the slider (1) towards (F).



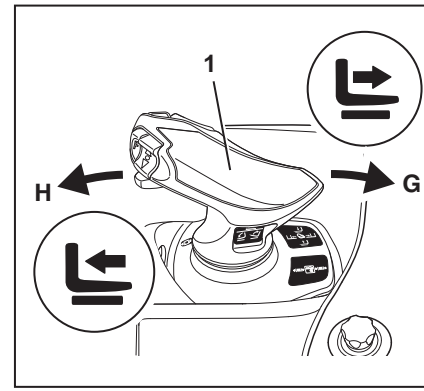
Shifting the reach carriage

To extend the reach carriage:

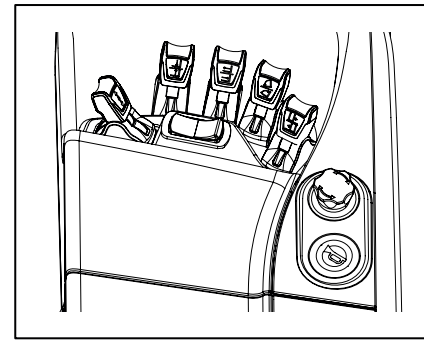
– Push the joystick (1) towards (G).

To retract the reach carriage:

– Push the joystick (1) towards (H).



Fingertip (variant)



⚠ DANGER

Reaching into or climbing between moving parts of the truck can lead to serious injury or death.

– Keep away from moving parts (e.g. lift mast, side-shifts, work equipment, load carrying devices).

– Observe the safety regulations for handling loads.

– Operate the lifting system from the driver's seat only.

⚠ WARNING

Risk of short circuit if the working hydraulics are operated continuously (e.g. lifting, tilting, transition shift, shifting, auxiliary hydraulics).

– Operate the working hydraulics up to the stop/end position for a maximum of 1 minute.

– Afterwards, the working hydraulics must not be operated up to the stop/end position for at least 3 minutes.

⚠ WARNING

Risk of accident as a result of an operating error.

These operating instructions describe how to operate the lifting system in the factory configuration. The configuration can only be changed by the authorised service centre.

If the configuration is changed, the modified pictograms must be observed to ensure safe operation. The operating company must make all drivers aware of the fact that a different configuration has been configured.

– Observe the pictograms on the operating levers.
– Before use, check that the hydraulic functions are working correctly.

Lifting, lowering and tilting the lift mast, as well as shifting the reach carriage, are carried out using the Fingertipps. The pictograms on the operating levers show the direction of movement for the corresponding hydraulic function.

Meanings of the pictograms

- Lowering
- Lifting
- Tilting forwards
- Tilting backwards
- Transition shift, left
- Transition shift, right
- Extending the reach carriage
- Retracting the reach carriage

NOTE

Additional operating devices are available for operating additional attachments.

- *The configuration of the operating devices may vary depending on the equipment.*
- *Observe the pictograms with directional arrows.*

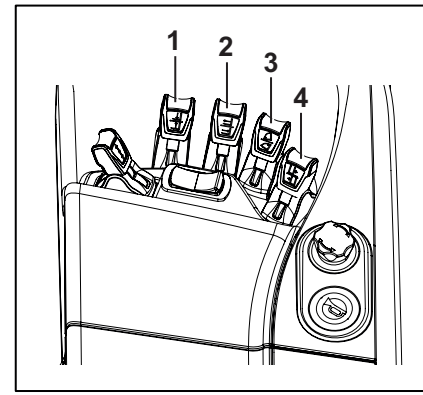
Lifting/lowering the fork carriage

To lift the fork carriage:

– Pull the "lift-lower" operating lever (1) backwards.

To lower the fork carriage:

– Push the "lift-lower" operating lever (1) forwards.



Shifting the reach carriage

⚠ CAUTION

Do not use the transition shift to push loads along the floor.

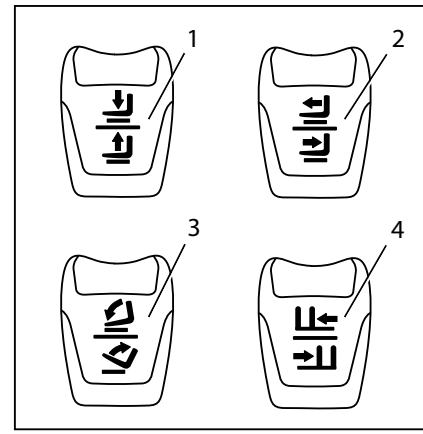
– Use the transition shift only when the load is raised clear of the floor or the racking.

To extend the reach carriage:

– Push the "shift" operating lever (2) forwards.

To retract the reach carriage:

– Pull the "shift" operating lever (2) backwards.



Tilting the lift mast or fork carriage

Depending on the truck equipment, either the entire lift mast is tilted or just the fork carriage (fork tilter).

To tilt the lift mast forwards:

– Push the "tilt" operating lever (3) forwards.

To tilt the lift mast backwards:

– Pull the "tilt" operating lever (3) backwards.

Transition shift

Depending on the truck equipment, either the entire lift mast is shifted to the side or just the fork carriage (fork sideshifter).

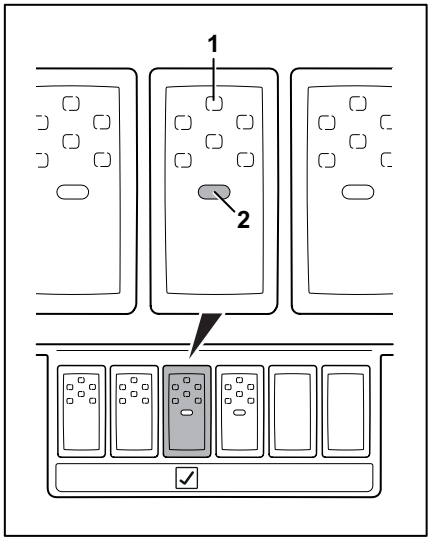
Transition shift to the left:

– Push the "transition shift" operating lever (4) forwards.

Transition shift to the right:

– Pull the "transition shift" operating lever (4) backwards.

Reach-lower lock (variant) ▷



When the reach carriage is retracted, the reach-lower lock prevents the load forks from being lowered between the running wheel beams. As a result, wide loads cannot accidentally be lowered onto the running wheel beams and become unstable. The driver can release the lock by pressing the release button.

– Press the release button (1) to release the lock.

Setting a load down on the ground

When the reach carriage is fully extended, the fork carriage can be lowered fully without the lock.

It is not then possible to retract the reach carriage. This prevents the load from being "stripped". The driver must first lift the load "free" again (to a height greater than 400 mm) or override the reach-lower lock by pressing the release button.

– Lower the fork carriage down to the lock.

– Extend the reach carriage in the load direction to the stop.

– Lower the fork carriage to the ground.

Fork wear protection (variant)

The fork wear protection prevents the fork from touching the ground when the fork is positioned horizontally.

The fork arms are protected against wear and the building floor is protected against damage.

Electronic fork wear protection (variant)

NOTE

This variant is only available for trucks with lift height measurement (variant).

The lowering procedure is stopped electronically by the truck controller.

By pressing the release button, the driver can continue to lower the fork to the stop in the lift cylinder.

The function is active immediately after the truck is switched on. The driver cannot manually switch them on or off.

The stop height can be set by the authorised service centre.

Mechanical fork wear protection (variant)

NOTE

The mechanical fork wear protection is also available for trucks without lift height measurement.

A mechanical device on the lift mast stops the lowering process 20 mm above the ground. It is not possible to continue lowering the fork by pressing a button.

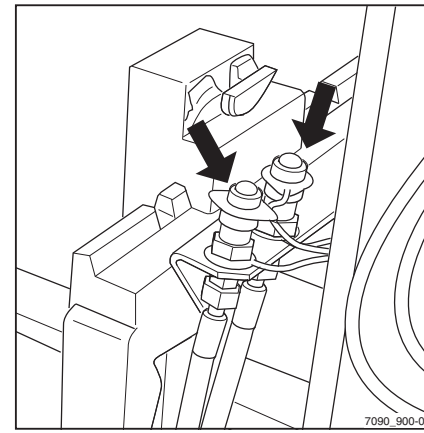
The stop height cannot be adjusted.

Depressurisation

Prior to installing attachments, the pressure must be released from the plug-in couplings (arrows) on the fork carriage.

The installation must be carried out in accordance with the specifications of the manufacturer and the supplier of the attachments. After each installation, the attachment must be checked for correct function prior to initial commissioning.

– Contact the authorised service centre to depressurise the hydraulic system.



Before leaving the truck

Briefly leaving the truck

⚠ DANGER

There is a risk of fatal injury if the truck rolls away

– Do not park the truck on ascending or descending gradients. In an emergency, secure the truck using wedges on the side facing downhill.
– Apply the parking brake.
– Check that the truck is at a standstill before leaving the truck.

If you briefly leave the truck when it is switched on in order to carry out minor jobs in the direct vicinity, e.g. picking work, opening doors or coupling trailers, observe the following:

– Lower the load support to the ground.
– Tilt the lift mast forwards slightly.
– Apply the parking brake; see chapter "Parking brake".

NOTE

When leaving the truck briefly, the truck must always be supervised.

Parking the truck securely

⚠ DANGER

Risk of fatal injury.

Parking and leaving the truck with a raised load or with a raised lifting accessory poses a risk of fatal injury and is strictly forbidden.



⚠ WARNING

Risk of accident if the truck rolls away.

– The truck must not be parked on a slope. If this is unavoidable, the truck must also be secured on the downhill-facing side (e.g. using wheel chocks).
– Apply the parking brake.
– Switch off the truck using the switch key.
– Check that the truck is at a standstill before leaving the truck.

– Set down the load and lower the fork carriage.
– Fully retract the reach carriage.
– Tilt the lift mast or fork tilter forwards until the tips of the fork arms rest on the ground.
– If attachments (variant) are fitted, retract the working cylinders.
– Apply the parking brake; see chapter "Parking brake".
– Switch off the truck. If the switch key is present, pull it out (variant).
– If a fleet management system is used, log off the truck.

Switch keys, access media (fleet management) or PIN codes must not be passed on to other persons unless explicit instructions to this effect have been given.

⚠ CAUTION

Battery discharge possible.

After the truck has been switched off, battery voltage is still present at the components in the electrical system.

To de-energise additional components, the emergency off switch must be actuated, e.g. when leaving the truck for several days.

⚠ CAUTION

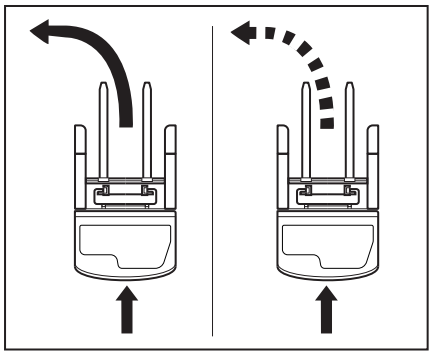
Batteries may freeze.

At an ambient temperature of below –10°C for a prolonged period, the batteries cool down. This can damage the battery.

– At ambient temperatures of below -10°C, only park the truck for short periods of time.
– Observe the permissible temperature ranges in the operating instructions for the battery.

Assistance systems

Speed reduction when steering (Curve Speed Control)



Curve Speed Control reduces the speed of the truck as the steering angle increases. This assists the driver in handling the truck.

The assistance is active immediately after switching on the truck. It cannot be switched on or off manually.

⚠ DANGER

There is a risk of tipping. Curve Speed Control does not override the physical limits of stability.

– Before using the truck, familiarise yourself with the change to the driving and steering characteristics of the truck.

– Always adapt your speed to the driving situation.

⚠ DANGER

Risk of tipping if cornering speed is too high.

If the truck is switched off or the controller fails while driving, the driving speed will no longer be reduced when steering.

– Do not switch off the truck while driving.

– Actuate the emergency off switch in emergencies only.

In extreme cases, the truck may overturn in the following situations:

- Cornering too fast on uneven or sloping roadways
- Turning the steering wheel sharply while driving.
- Cornering with an inadequately secured load.
- Cornering too fast on a smooth or wet roadway.

Lift height restriction (variant)

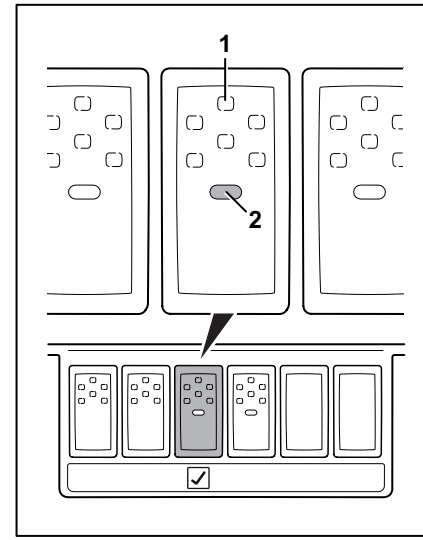
The lift height limitation assists the driver when storing or retrieving loads at regularly repeated lift heights.

When the lift height limitation is activated for a specific lift height, the fork carriage stops au-

tomatically and smoothly at the corresponding height.

To reach a desired lift height, it must be saved and activated in the `Lift` menu on the display-operating unit. A maximum of 5 lift heights can be stored and activated.

Using the lift height limitation



⚠ CAUTION

If the load support is tilted there is a risk of collision with the pallet or the rack!

For correct height positioning, the fork arms must be in the horizontal "0° position".

– Before storing or retrieving loads, bring the fork arms into the horizontal "0° position".

– Set or clear the desired lift heights on the display-operating unit; see the chapter entitled "Lift height restriction - Setting or clearing lift heights".

– Activate or deactivate the desired lift heights on the display-operating unit; see the chapter entitled "Lift height restriction - Selecting lift heights".

– Lift the fork carriage from below an activated lift height.

  The fork carriage stops automatically and smoothly at the corresponding height. Further lifting is blocked.
  When the lift height is reached, the display-operating unit displays the message `Lift height reached`. The message disappears as soon as the lift height changes.

– To cancel the limitation for the current lift height, press the release button (1).

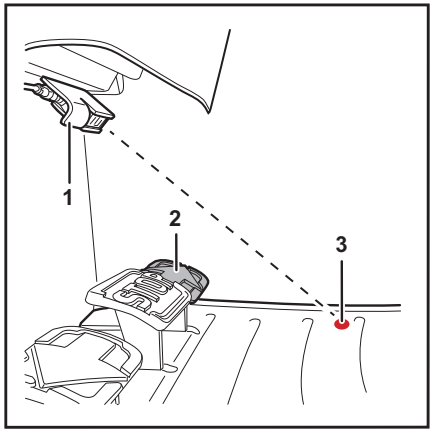
  The LED (2) on the release button starts to flash for 3 seconds.
  While the LED is flashing, the driver can override the lift height limitation by continuing to lift.

Further lift height limitations located at higher lift heights may be saved and activated. The fork carriage only travels up to the next activated lift height limitation.

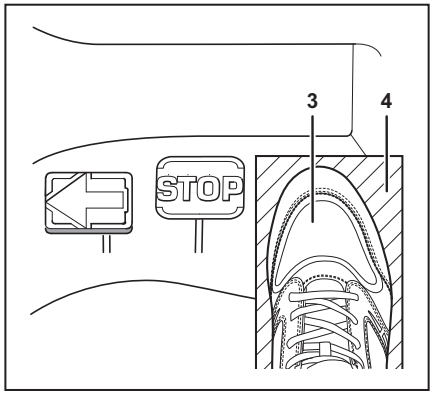
Assistance system "Presence detection of a foot on the right accelerator pedal"

The "presence detection of a foot on the right accelerator pedal" assistance system is only available for trucks with dual pedal operation. It protects the driver from unintentionally actuating the right accelerator pedal. The risk of unintentional driving movements while getting on or off the truck is reduced.

An LED sensor (1) above the right accelerator pedal monitors whether the driver's right foot is within the area of the right accelerator pedal (2). A red light spot (3) from the sensor helps with correct foot positioning.



After the truck has been switched on, the right foot (3) must be moved once from outside into the detection area (4) of the sensor. The driving functions remain enabled as long as the foot stays within the detection area.



The system monitors the footwell only up to a driving speed below 5 km/h. If the foot is no longer detected, the truck applies regenerative braking until it comes to a standstill. The message `Press left foot switch first` appears on the display-operating unit.

> If the foot is moved back into the detection area during the braking process, the driving functions are enabled again. The message on the display-operating unit disappears.

At a driving speed above 5 km/h, the system is not active. As soon as the driving speed falls below 5 km/h, the foot must be back within the detection area of the sensor.

Working with a load

Capacity rating plate

The load capacity indicated for the truck on the capacity rating plate must not be exceeded.

– Before picking up a load, note the information on the capacity rating plate on the top left of the overhead guard.

⚠ DANGER

Risk to stability.

The values specified on the capacity rating plate apply to compact, homogeneous loads. Exceeding these values impairs the stability of the truck and the strength of the fork arms and the lift mast.

– Never exceed the load capacity indicated on the capacity rating plate.

– It is prohibited for persons to climb onto the truck to increase the load capacity.

– The placement of additional weights to increase load capacity is prohibited.

– Take special care when transporting fluid containers, as the weight distribution in the container may shift.

The load capacity of a truck depends on:

- The type of lift mast (standard, duplex, triplex)
- The lift height of the installed lift mast
- The tyres on the front axle
- Whether attachments or additional equipment are used
- The maximum permissible backwards tilt of the lift mast
- The dimensions and load capacity of the fork arms
- The dimensions, the centre of gravity and the centre offset of the load

If one of these parameters is changed, this can have a significant impact on the load capacity.

In the event of conversions, the new load capacity of the truck must be determined and the capacity rating plate must be changed as necessary.

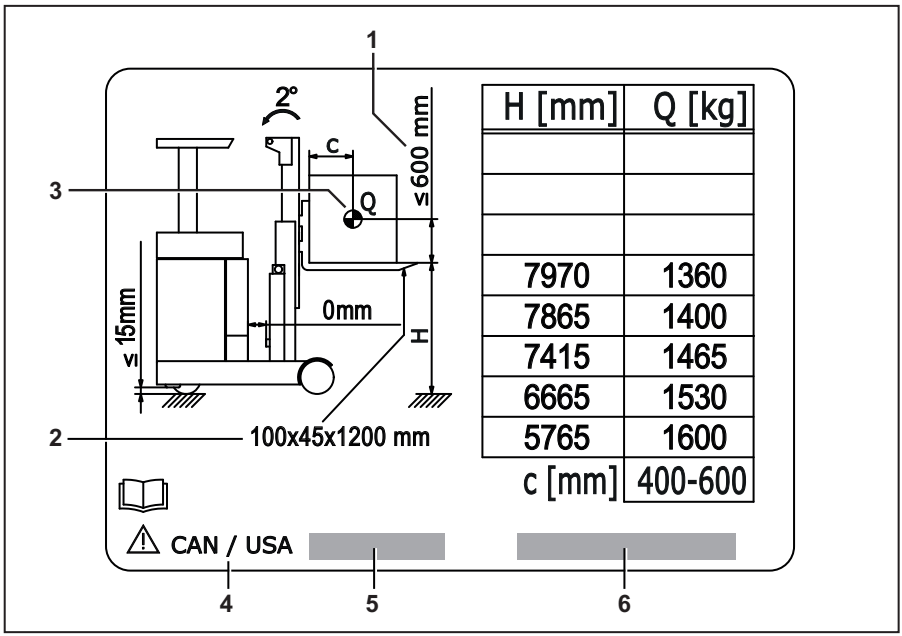
– Contact the authorised service centre.

The maximum permissible load is determined by the distance between the load centre of gravity and the back of the fork arms, the height of the load centre of gravity and the lift height.

Only the capacity rating plates on the truck are valid.

Attachments have their own additional capacity rating plate. Observe the reduced overall load capacity of the combination of attachment and truck. Observe the information on the additional capacity rating plate.

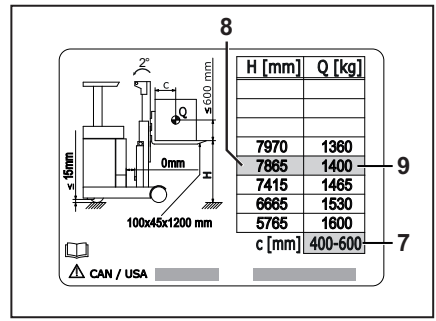
Capacity rating plate (example)



H	Lift height in mm
c	Distance between the load centre of gravity and the fork back in mm
Q	Maximum load in kg
1	Height of the load centre of gravity from the bottom edge of the load in mm

2	Fork arm dimensions: maximum width, maximum thickness and maximum length in mm If larger fork arms are used, an additional capacity rating plate is required. Contact the authorised service centre.
3	Load centre of gravity symbol
4 (optional)	The capacity rating plate is not valid for Canada / USA. For these markets, the authorised service centre must create a new capacity rating plate and attach it to the truck.
5	Serial number of the industrial truck
6	Identification number of the capacity rating plate

Example for reading the load capacity: ▷



Load centre of gravity distance: 400 mm - 600 mm (7).

Determine the maximum load

- Lift height required: 7800 mm.
- If the desired lift height is not listed on the capacity rating plate, look for the next higher value in column "H": 7865 mm (8).
- Read off the corresponding value in column "Q". The maximum load in this example is 1400 kg (9).

Determine the maximum lift height

- Load to be lifted: 1380 kg.
- If the desired load is not listed on the capacity rating plate, look for the next higher value in column "Q": 1400 kg (9).
- Read off the corresponding value in column "H". The maximum lift height here is 7865 mm (8).

Determining the load capacity more precisely in boundary cases / special cases

It is permissible to calculate (linearly interpolate) values between two consecutive lift heights or load weights.

The linear interpolation must be carried out correctly from a mathematical point of view. Only rounding down of the values is permitted.

Responsibility for complying with the load capacity values lies with the operating company / driver of the truck.

Length of the fork arms

⚠ DANGER

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

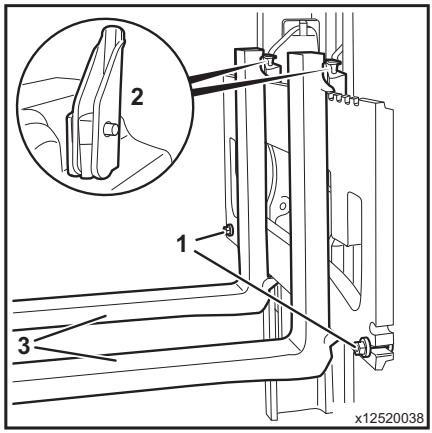
– The fork arms must match the depth of the load.

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.

Adjusting the fork arm distance ▷



⚠ DANGER

Danger to life due to the fork falling.

– Tighten the locking screws (1) each time a fork is changed.

– It is not permitted to drive or to transport loads without the locking screws (1) in place.



⚠ WARNING

Risk of injury from heavy fork arms.

Use aids.

To make sure that the load is securely supported, the fork arms must be as far apart as possible.

Pick up the load such that the load centre of gravity is positioned centrally between the fork arms.

Ensure that the fork arms are each at an identical distance from the centre of the truck.

– Lift the locking lever (2).

– Adjust the fork arms (3) inwards or outwards according to the load to be lifted.

– Allow the locking lever to engage in one of the grooves of the fork carriage.

Changing the fork arms

⚠ DANGER

There is a risk of fatal injury from being run over if the truck rolls away.

– Do not park the truck on a slope.

– Apply the parking brake.

– Change the fork arms in a cordoned-off, safe location on a level surface.

⚠ 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 shoes when changing the fork arms.

– Ensure that no one stands in the danger area!

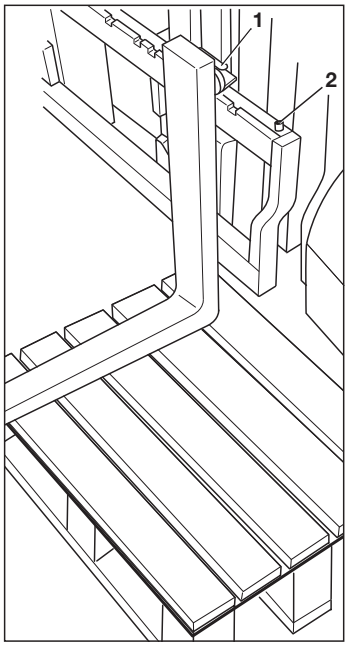
– Do not pull the fork arms.

– The fork arms must always be carried by two people; if necessary, use a hoist.

NOTE

- *It is recommended that a transport pallet is used to support the fork arms when they are being installed or removed. The pallet size depends on the size of the fork arms used and must be selected so that the fork arms protrude as little as possible when the load is set down on the pallet. This means that the fork arms can be safely lowered and transported.*
- *Both fork arms can be pushed over onto one side.*

Removing



- Fully extend the reach carriage.
- Select a pallet corresponding to the fork arm size.
- Position the pallet to the left or right of the fork carriage.

  If the freedom of movement at the fork carriage is restricted by the load wheel supports of the reach truck: stack several pallets on top of each other until the fork arms can be set down on the pallets above the load wheel supports.
- Raise the fork carriage until the lower edges of the fork arms are approx. 3 cm higher than the height of the pallet.
- Switch off the truck.
- Undo the locking screw (2) on the right or left.
- Pull the locking lever (1) upwards and push the fork arms outwards onto the pallet.

Installing

- Position the fork arms on a pallet to the left or right of the fork carriage.
- Pull the locking lever (1) upwards.
- Push the fork arms onto the fork carriage from the outside towards the centre.
- Move the fork arms into the desired position. Ensure that the locking lever snaps into place.
- Fit and tighten the locking screw (2).

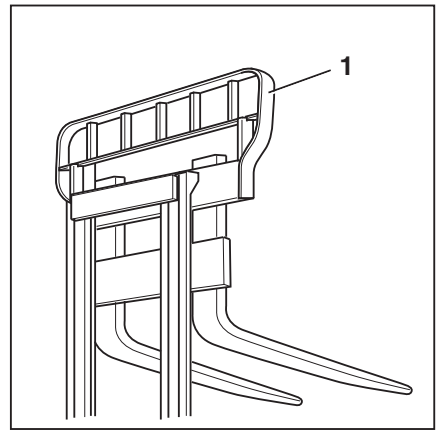
⚠ DANGER

Risk of fatal injury from a falling load or fork.

- Tighten the locking screw each time a fork is changed.
- It is not permitted to drive or to transport loads without the locking screw in place.

Load backrest (variant) ▷

The load backrest (1) prevents individual packages from falling backwards when stacking high loads.



Picking up a load

⚠ DANGER

Danger due to falling load.

- Never walk underneath a raised load.
- There must be no-one in the danger area when loads are being picked up or set down.
- Only store and retrieve secure loads. Loads must not slip, tip over or fall.

⚠ DANGER

Never lift persons on the forks or on a pallet.

Use an approved working platform (variant) to lift persons.

- Contact the authorised service centre.

⚠ DANGER

Risk of crushing in the area of the reach carriage and the lift mast.

- Do not enter or reach into the danger area of the reach carriage and the lift mast.

⚠ DANGER

Risk of accident if unsuitable fork arms are used.

The fork arms must be designed for the application and the load.

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

⚠ DANGER

Risk of accident when transporting small parts.

Fit the load backrest (variant) to prevent the load from falling onto the driver.

A closed roof covering (variant) should also be used.

Removable roof panels must not be removed.

Loads may only be picked up and set down on flat surfaces.

To ensure the load is supported stably, the fork arms must be spaced sufficiently far apart.

– To pick up the load, drive the fork arms as far under the load as possible. Pick up and transport the load with it resting as directly as possible against the back of the fork.
– Pick up and transport loads as centrally as possible. Do not transport damaged loading equipment or incorrectly arranged loads.
– Observe the maximum size of pallets or loads. Loads must not protrude too far over the fork tips.

Removing the load from the rack

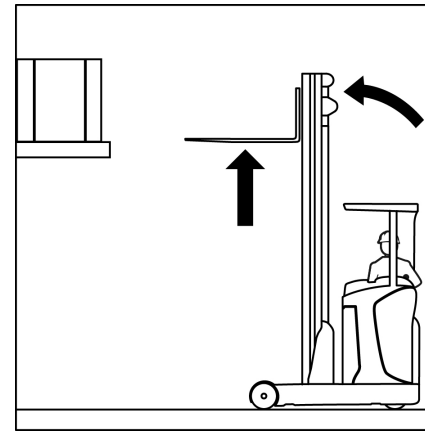
⚠ DANGER

Risk of accident due to collision.

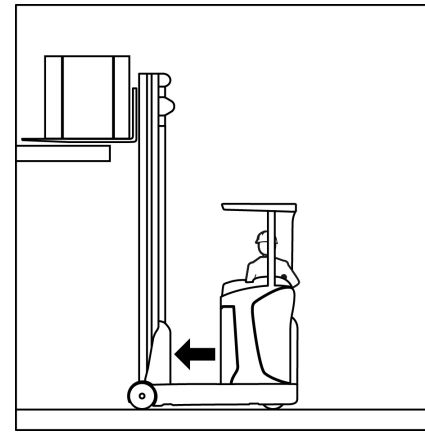
– Watch out for people and objects during reverse travel.

– Approach the rack carefully, brake gently and stop just in front of the rack.

– Tilt the fork arms to the horizontal position. ▷
– Raise the fork carriage until it can be inserted into the pallet or load without obstruction.
– If necessary, operate the sideshift to position the fork arms centrally.
– Drive up to the rack until the truck chassis is as close as possible.
– Actuate the hydraulic brake.



– Extend the reach carriage until the back of the fork is resting against the load. The load centre of gravity must be midway between the fork arms. ▷
– Slowly raise the fork carriage until the load is lifted clear of the rack.
– Tilt the fork tips or lift mast towards the drive side only as far as necessary to stabilise the load.



⚠ WARNING

Risk of accident from falling loads.

If the fork or the load becomes caught while lowering, the load may fall.

– When removing a load from the rack, move the truck back far enough for the load and the fork to be lowered freely.

⚠ DANGER

On trucks with mast tilt, the raised load changes the moment of tilt.

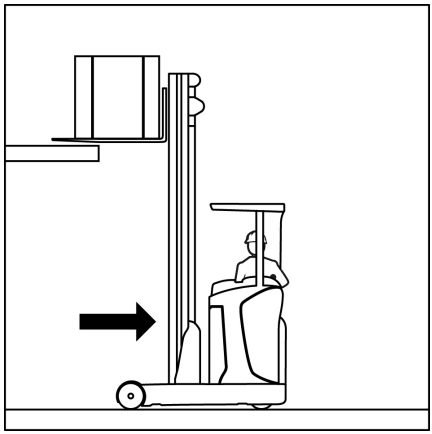
When the reach carriage is extended, the lift mast can be tilted forwards far enough for the truck to tip over.

A shifting load can further change the load centre of gravity and the moment of tilt.

– 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.
– Only tilt the lift mast forwards with a raised load when it is directly above the single pallet position.

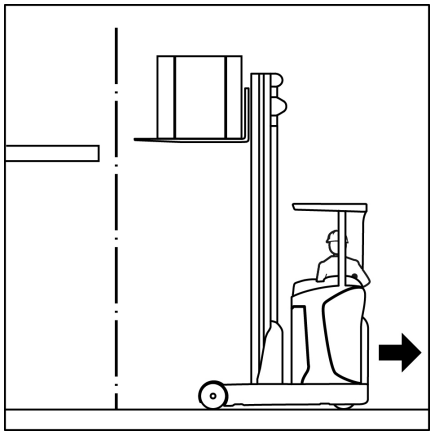
– Fully retract the reach carriage.
– Release the hydraulic brake.
– Check the travel path is clear.

▷

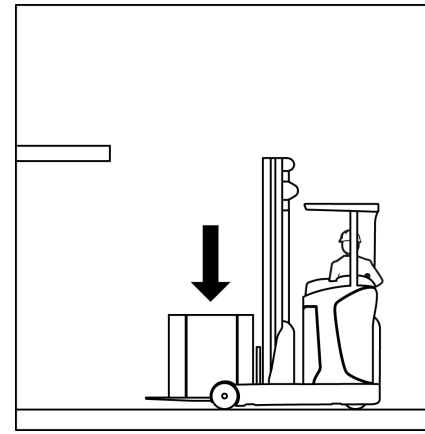


– Reverse slowly until the load is clear of the rack.
– Actuate the hydraulic brake.

▷

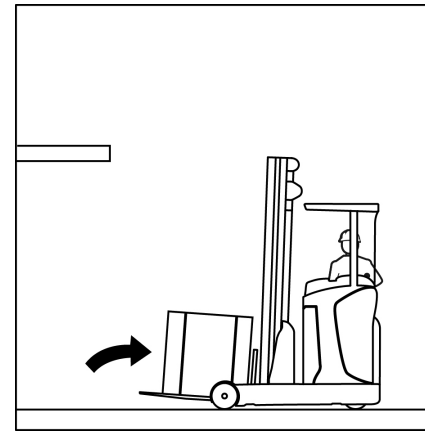


– Lower the load until the necessary ground clearance is reached. For wider loads, lower only far enough to ensure they do not rest on the load wheel supports. ▷



– Tilt the fork tips or the lift mast fully towards the drive side until the driving position is reached. ▷
– Release the hydraulic brake.

The load can be transported.



Driving with a load

⚠ DANGER

Risk of tipping!

The higher a load is lifted, the greater the risk of tipping.

– Only drive with the load lowered and the lift mast tilted backwards.

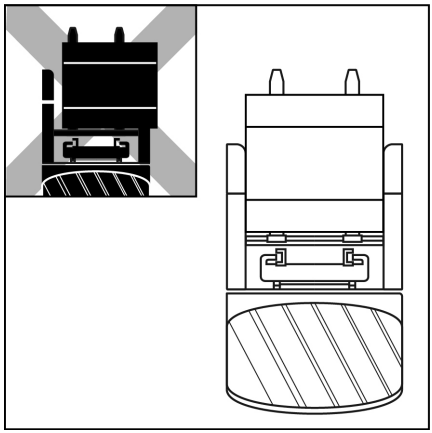
The driver must ensure that the load is in the proper condition. Individual loads must only be transported when safely and carefully positioned.

Carrying several individual loads simultaneously is only permitted on the instruction of a supervisor and if technical conditions are met.

When driving, the reach carriage must be fully retracted.

The fork carriage must be lowered to just above the load wheel legs (lift height less than 500 mm).

- Do not drive with a load protruding on one side or with a load shifted to the side (sideshift). Centre the load against the fork carriage or the load backrest.
- Wherever possible, travel in the direction of the drive side. Visibility in the direction of the load side is restricted by the lift mast and the load. If visibility is poor, let someone guide you.
- The driving speed must be adapted to the condition of the roadways and to the load being transported.
- Navigate curves carefully and adapt your driving speed accordingly.
- Speed must be reduced on uneven or wet surfaces or when visibility is restricted.
- On descent or ascents, always travel with the load facing uphill; never travel diagonally or turn.



Setting down a load

⚠ DANGER

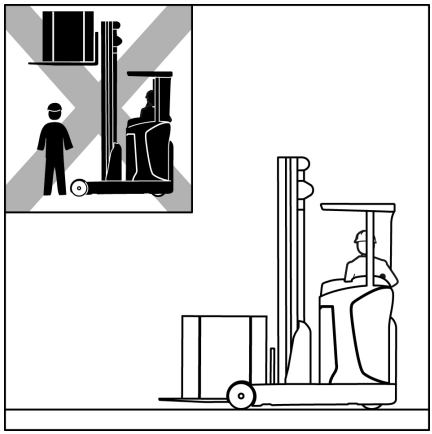
Risk of crushing in the area of the reach carriage and the lift mast.

- Do not enter or reach into the danger area of the reach carriage and the lift mast.

⚠ DANGER

Danger due to falling load.

- Never walk underneath a raised load.
- There must be no-one in the danger area when loads are being picked up or set down.
- Only store and retrieve secure loads. Loads must not slip, tip over or fall.



⚠ DANGER

On trucks with mast tilt, the raised load changes the moment of tilt.

When the reach carriage is extended, the lift mast can be tilted forwards far enough for the truck to tip over.

A shifting load can further change the load centre of gravity and the moment of tilt.

– 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.
– Only tilt the lift mast forwards with a raised load when it is directly above the single pallet position.

Storing the load in the rack

– With the load lowered in accordance with regulations, approach the rack and align the load as accurately as possible.
– Actuate the hydraulic brake.
– Tilt the fork arms to the horizontal position.

⚠ WARNING

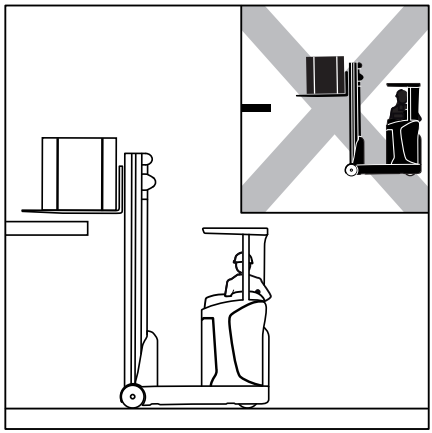
Risk of accident from falling loads.

If the fork or the load remains suspended during lifting, the load may fall.

– Raise the load to just above the required height.
– If necessary, position the load centrally with the sideshift.
– Extend the reach carriage fully.
– Release the hydraulic brake.

– Drive up to the rack so the truck chassis is as close as possible until the load can be lowered into its final position.
– Actuate the hydraulic brake.
– Slowly lower the fork carriage until the load is positioned on the rack.
– Fully retract the reach carriage.
– Ensure that the roadway on the drive side is clear. Move the truck back carefully and slowly until the fork arms can be lowered without touching the rack.
– Lower the fork carriage until the necessary ground clearance is achieved.
– Tilt the fork tips or lift mast fully to the drive side into the driving position.

▷



Transporting suspended loads

The transport of suspended loads is only permitted with the approval of the truck manufacturer.

National regulations may restrict the transport of suspended loads. In this case, contact the relevant authorities.

If there are no country-specific regulations for suspended loads in the country of use, the following instructions must be observed.

⚠ DANGER

Suspended loads can begin to swing.

Swinging loads can result in the following risks:

- Poor braking conditions and steering conditions
- Tipping forwards over the drive wheels
- Tipping over crosswise to the drive direction
- Risk of crushing of accompanying persons
- Poor 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:

- When transporting suspended loads, never perform or end driving and load movements abruptly. Swinging of the load must be prevented by correctly selecting the driving speed and driving style (careful steering, braking).
- Never drive on ascending or descending gradients with a suspended load.
- Suspended loads must be securely attached to the truck. The harness must not shift, come loose or become damaged.
- If necessary, have accompanying persons secure the load against swaying and swinging. Suitable aids must be available (e.g. guide ropes and guide poles).
- Take particular care to ensure that there is no one ahead in the drive direction in the driving lane
- There must be no persons placed at risk if the load begins to swing.
- Transporting containers holding fluids as suspended loads is not permitted.

Transporting liquid containers

The transport of liquid containers requires special precautions and compliance with safety guidelines.

- Legal regulations for the transport and handling of liquids and liquid containers must be followed.
- The requirements of the manufacturers of liquid containers and liquids must be observed.

It is the responsibility of the operating company to ensure safety when transporting liquid containers. Suitable safety measures may include:

- Using special containers
- Limiting transport to full containers only to prevent the liquid from surging
- Limitations on driving speed during transport
- Limitation of the lift height for storage and removal from storage

Liquids must be transported in the container without excessive movement or surging. The load capacity diagram of the truck does not

take into account the forces generated by liquids in motion.

Hazards when transporting liquid containers

⚠ DANGER

If the liquid in the container starts to surge, there is a risk of losing stability or the truck tipping over. Liquid containers may slip, or may leak following a fall.

– Carefully lift, lower and transport the load. Avoid surging of the liquid.

– In case of danger, interrupt the activity until the liquid has settled again.

Depending on the fill level and viscosity, liquids may start to move when the load is being handled. This can generate significant forces that affect the truck and the liquid container.

The driver must be aware of the following hazards:

- Impairment of the braking characteristics and steering movement of the truck
- Tilting over the front axle or laterally to the drive direction
- Liquid spillage in the event of damage to the container or the container falling over
- Risk of crushing of accompanying persons
- Reduced visibility

Before transport

– Ensure that the truck and the liquid container are suitable for transport.

– Observe the load capacity diagram.

– Check that the liquid container is undamaged and properly closed.

– If necessary, take precautions to protect against leakage.

Picking up and setting down liquid containers

⚠ CAUTION

As the lift height increases, the forces acting on the truck also increase when the liquid in the container begins to move.

– Wait until the liquid has settled before picking up and setting down.

– Take special care when picking up the liquid container and setting it down. Move the load slowly (lifting/lowering, forwards/backwards) to minimise movement of the liquid.

– When picking up the load, ensure that the liquid container is securely positioned on the fork.

During transport

– Make sure that the path of travel is free of people and obstacles.

– Lower the fork with the load to the ground clearance level before transport.

– Accelerate and brake slowly.

– Adapt your driving speed. Reduce the speed significantly before curves or before turning.

– If the liquid in the container starts to surge, reduce the speed. Avoid sudden load changes until the load has settled. Prevent danger to people.

– Exercise particular caution on ascending and descending gradients and transitions.

Fork wear protection (variant)

The fork wear protection prevents the fork from touching the ground when the fork is positioned horizontally.

The fork arms are protected against wear and the building floor is protected against damage.

Electronic fork wear protection (variant)

NOTE

This variant is only available for trucks with lift height measurement (variant).

The lowering procedure is stopped electronically by the truck controller.

By pressing the release button, the driver can continue to lower the fork to the stop in the lift cylinder.

The function is active immediately after the truck is switched on. The driver cannot manually switch them on or off.

The stop height can be set by the authorised service centre.

Mechanical fork wear protection (variant)

NOTE

The mechanical fork wear protection is also available for trucks without lift height measurement.

A mechanical device on the lift mast stops the lowering process 20 mm above the ground. It is not possible to continue lowering the fork by pressing a button.

The stop height cannot be adjusted.

Quick-release couplings for auxiliary hydraulics

⚠ CAUTION

Attachments alter the load capacity and stability of the truck.

Attachments that are not supplied with the truck may only be used if the authorised service centre has confirmed that the arrangement ensures safe operation in terms of load capacity and stability.

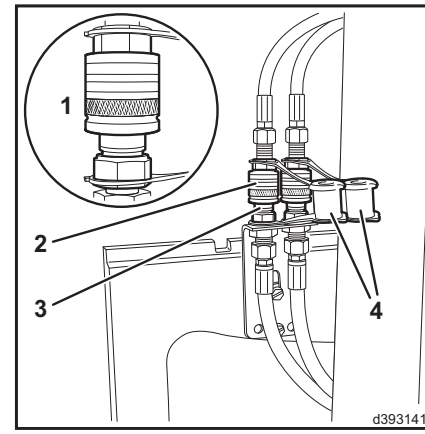


⚠ WARNING

Risk of injury.

Never reach into or enter the lift mast or the area between the lift mast and the truck.

Quick-release couplings (1) must only be used in conjunction with the depressurisation function. If your truck does not offer the depressurisation function, please contact the authorised service centre.



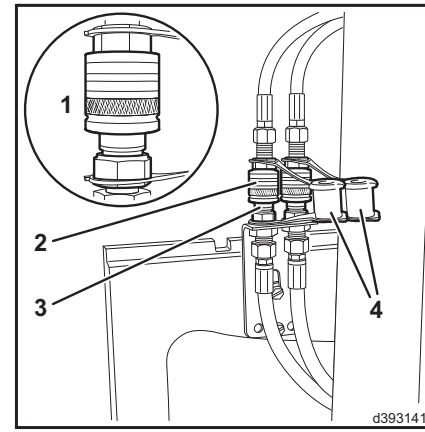
⚠ CAUTION

Risk of damage to the hydraulic system through contamination.

When disconnecting and connecting hydraulic lines with quick-release couplings, ensure all components are clean.

After disconnecting, fit the red caps.

Disconnecting the quick-release couplings



⚠ WARNING

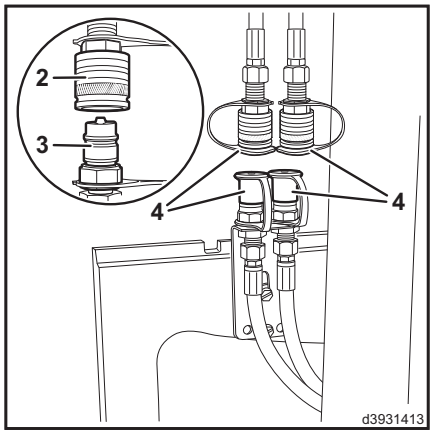
The hydraulic system is pressurised. Risk of injury.

Use the depressurisation function.

– Depressurise the hydraulic lines as described in the "Depressurisation" section in the operating instructions.
– Thoroughly clean the quick-release couplings (1) and red caps (4).
– Pull back the mobile part of the connector tube (2) and remove the connector tube (2) from the plug (3).
– Disconnect the red caps and connect them to the quick-release couplings.

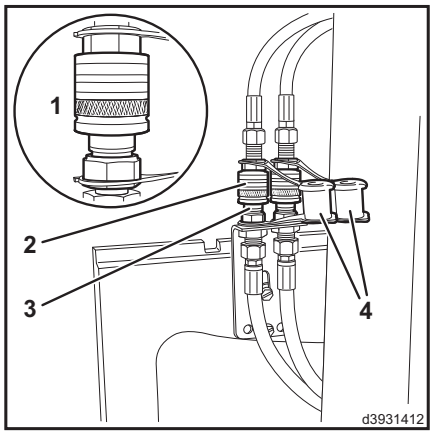
Connecting the quick-release couplings ▷

– Thoroughly clean the quick-release couplings and red caps.
– Remove the red caps (4).
– Pull back the mobile part of the connector tube (2) and connect the connector tube (2) to the plug (3).



– Connect the red caps (4). ▷
– Carry out a functional test of the attachment.

Make sure the directions of the attachment match the symbol sticker on the joystick. Also check the operating speed of the attachment. Note the operating instructions for the attachment when doing so. If you have any questions, please contact the authorised service centre.



Emergency operation

Emergency lowering

⚠ DANGER

Risk of accident or danger to life when lowering the fork.

When lowering, there must be no one in the area below the fork or the load.

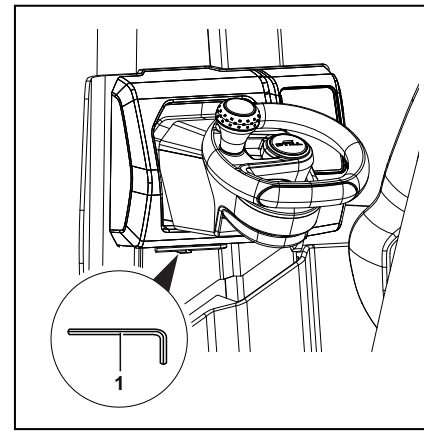
– To ensure that lowering can be interrupted at any time, leave the hexagon socket wrench on the emergency lowering valve during the lowering process.

Do not actuate the emergency lowering if the lifting accessory is resting on a surface (e.g. in the rack).

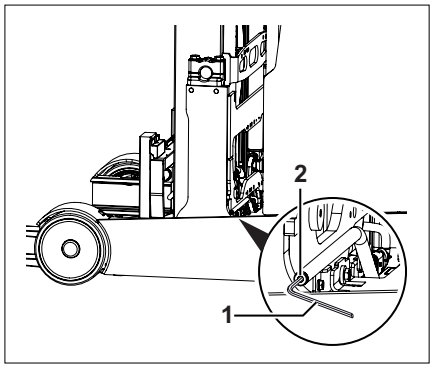
– Mark the defective truck and decommission it. Contact the authorised service centre.

In the event of a malfunction, the fork can be lowered manually so that the truck can be brought into a safe condition.

The emergency lowering valve is opened and closed via a flexible shaft. The required hexagon socket wrench (1) is located in the support mounting below the steering column. ▷



The emergency-lowering actuation element is located on the reach carriage near the mast mounting area. ▷



– Make sure that no persons are in the immediate vicinity of the truck.
– Use the hexagon socket wrench (1) to slowly open the emergency lowering valve (2) in order to lower the fork.

⚠ DANGER

If the fork lowers too quickly, there is a risk of fatal injury!

– Do not step under the raised forks.
– Control the lowering speed by turning the hexagon socket wrench.
– With only a small amount of rotation: the fork lowers slowly.
– With more rotation: the fork lowers quickly.

– After lowering, close the emergency lowering valve again using the hexagon socket wrench.
– Notify the authorised service centre.

Towing

⚠ DANGER

Danger to life in the area between the truck and the towing vehicle.

People can be crushed between the truck and the towing vehicle during manoeuvring.

The towing vehicle may only be manoeuvred and the tow ropes may only be attached with a second person acting as a guide. The presence of this guide ensures that both the driver of the towing vehicle and the mechanic attaching the tow ropes are made aware of possible risks.

– Only manoeuvre with a guide.

⚠ DANGER

The brake system on the towing vehicle may fail.

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 able to absorb the pulling and braking forces from the unbraked towed load (total actual weight of the truck).

– Check the pulling and braking forces of the towing vehicle.

⚠ DANGER

The truck could drive into the towing vehicle when the towing vehicle brakes.

When towing the truck, do not exceed the maximum recommended speed of 2.5 km/h.

When towing on gradients, reduce the speed to an absolute minimum and keep wheel chocks readily available.

If necessary, for example in the event of a failure of the driving functions or braking functions, the truck must be towed by the authorised service centre.

Towing is permitted only with suitable equipment (tow bar, towing eye on the truck).

– Lower the load completely.
– Park the truck securely; refer to the chapter entitled "Parking the truck securely".
– Disconnect the battery male connector.
– Contact the authorised service centre.

Drive batteries

Handling the lithium-ion battery

The lithium-ion battery is firmly integrated into the industrial truck. It can only be removed from the industrial truck using special tools and lifting devices.

Safe use, storage and disposal of the battery are described in the original operating instructions of the battery.

– Follow the instructions and regulations in the original operating instructions of the battery.

– or the permissible temperature ranges for use and for technical data, see the "Battery specifications" chapter and the original operating instructions of the battery.

All servicing, diagnostic and repair work must be carried out by the authorised service centre.

– Contact the authorised service centre.

Charging the lithium-ion battery upon delivery

The lithium-ion battery may not be fully charged at the time of delivery.

The battery management system for lithium-ion batteries remains active even if the battery is in a quiescent state. Therefore, the battery continues to discharge even when the industrial truck is switched off or during storage.

To prevent deep discharge of the battery when it is stored for long periods, fully charge the battery once directly after delivery.

Checking the battery state of charge

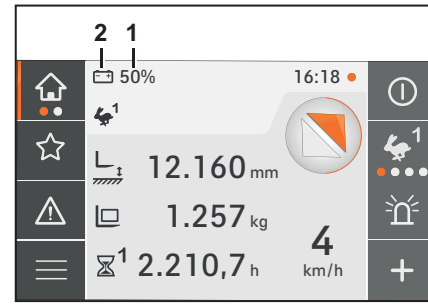
The state of charge of the battery is shown in the status bar of the display-operating unit.

Reading the display-operating unit of the truck

– Switch on the truck.

After a short time, the state of charge is displayed as a percentage (1).

In addition, the battery symbol (2) indicates a decrease in the state of charge by changing colour.



State of charge (percent)	Battery symbol
100% to 21%	Black
20% to 16%	Red
15% and less	Red, flashing

If the state of charge drops below 20%, the display-operating unit shows the message `Please charge the battery`. The message is displayed for 10 seconds. The driver can close the message.

At a state of charge of 15% or less, the display-operating unit shows the message `Shut down truck immediately and charge battery`. The driver can close the message. In addition, the hydraulic power and the driving speed of the truck are reduced. The authorised service centre can set the performance limitations in the service diagnostics.

Procedure if a lithium-ion battery has a low state of charge

⚠ CAUTION

Battery damage due to deep discharge.

Deep discharge can permanently damage a lithium-ion battery or render the battery unusable.

– Always charge the battery in good time and do not allow the state of charge to drop below 10%.

– If the state of charge drops below 15%, drive to the charging station and charge the battery.

If the battery shuts down due to deep discharge, the authorised service centre must tow the truck to the charging station.

– For towing the truck, contact the authorised service centre; see the chapter entitled "Towing".

Charging the lithium-ion battery

⚠ CAUTION

Component damage due to incorrect handling of the battery charger.

Components of the truck may be damaged if the battery charger is connected or operated incorrectly.

– Observe the operating instructions both for the battery charger and for the battery.

⚠ CAUTION

Component damage caused by defective or contaminated connection assemblies.

– Check both sides of the connection assembly between the battery charger and the battery (plug and socket) before charging.
– Remove any contamination immediately.
– Do not continue to use damaged connection assemblies. Arrange for the authorised service centre to repair any damaged connection assemblies.

⚠ CAUTION

Damage to the battery male connector caused by connecting or disconnecting under load.

If the battery connection assembly is connected or disconnected under load, an electrical arc or a transition spark will be produced at the battery male connector. This can lead to erosion at the contacts and can considerably shorten the service life of the contacts.

– Switch off the battery charger or the key switch of the truck before disconnecting or connecting the battery male connector.
– Do not disconnect the battery male connector while under load, except in an emergency.

Before charging

The battery may only be charged using a battery charger for lithium-ion batteries that has been approved by the manufacturer.

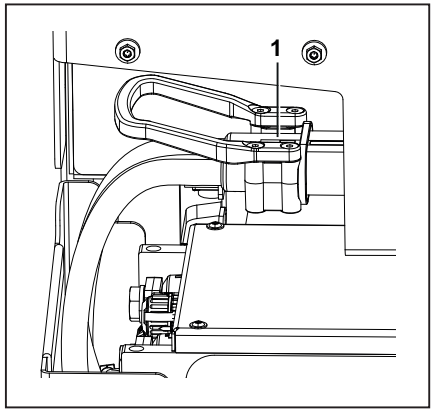
– Fully lower the fork carriage before charging. The fork arms must be resting on the ground.

– Switch off the truck and press the emergency off switch.

Charging via the battery male connector

– Check the battery cables for damage. Have damaged cables replaced by the authorised service centre.

– Remove the battery male connector (1) and connect it to the battery charger. ▷



– Start the battery charger.

  The charging process starts automatically.
  If the truck is switched on during the charging process, the battery charger will interrupt the charging process. When the truck is switched off again, the battery charger will resume the charging process.
  The battery charger indicates when the battery is fully charged. The charging process is complete.
  Only disconnect the plug of the battery charger when no current is flowing.

– Disconnect the plug of the battery charger from the battery male connector.

– Reconnect the battery male connector to the truck.

Charging via the quick charge access (variant)

NOTE

- *The connection assemblies of the battery and the quick charge access are different. A suitable battery charger must be used for each charging method.*

If the truck is equipped with a quick charge access (variant), the battery charger is connected directly to the quick charge access.

To charge the battery, the access flap (1) must be opened.

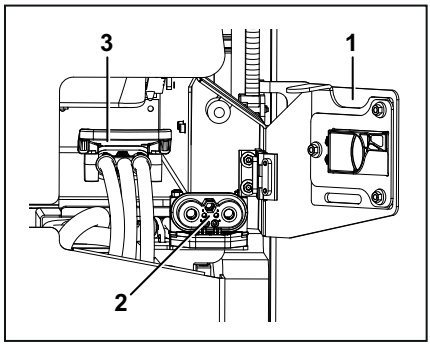
– Connect the battery charger to the quick charge access of the truck (2). The battery male connector (3) remains in the connection assembly on the truck.

– Start the battery charger.

  The charging process starts automatically.
  If the truck is switched on during the charging process, the battery charger will interrupt the charging process. When the truck is switched off again, the battery charger will resume the charging process.
  The battery charger indicates when the battery is fully charged. The charging process is complete.
  Only disconnect the plug of the battery charger when no current is flowing.

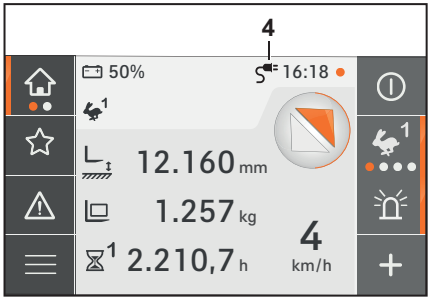
– Disconnect the plug of the battery charger from the quick charge access of the truck.

– Close the access flap.



1 Battery male connector
2 Quick charge access (variant)

Even when the truck is switched on, all driving functions and hydraulic functions are locked while the flap is open. The symbol (4) appears on the display-operating unit. If operating devices are actuated, the message `Check the charge connector detection` appears.



Replacing the lithium-ion battery

The lithium-ion battery is firmly integrated into the industrial truck. It can only be removed and installed by the authorised service centre.

– For technical data, see the chapter entitled "Battery specifications" and the original operating instructions for the battery.

– To replace the lithium-ion battery, contact the authorised service centre.

⚠ DANGER

Risk of tipping if the industrial truck is operated with an incorrect battery

The installation of an incorrect battery reduces the stability of the industrial truck.

The industrial truck may only be operated with a battery approved by the manufacturer for this industrial truck.

The dimensions and the weight of the replacement battery must precisely match the dimensions and the weight of the original battery.

Loading/transporting

Removing/attaching the lift mast

Special tools and specialist knowledge are required to remove and attach the lift mast.

Contact the authorised service centre.

Driving without the lift mast

Driving without the lift mast is permitted only for loading or transferring the industrial truck.

– Contact the authorised service centre.

Transporting the truck using a lorry or flat bed trailer

Drivers are responsible for their means of transport, securing the truck for transport and for the transportation of the truck.

– Observe the national regulations for your country.

Loading

⚠ DANGER

Risk of accident from the truck falling.

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.

– Maintain a safe distance from loading bridges, ramps, working platforms and similar objects.

Requirements for loading:

- The loading surface of the transport vehicle must be dry and swept clean
- The tyres on the truck must be dry and clean

– Before loading, determine the total actual weight of the truck; see the section entitled "Determining the total actual weight".

The load capacity of the means of transport, the ramps and the loading bridges must be ensured.

– 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 to prevent it from shifting.
– Drive slowly and carefully onto the transport vehicle.
– Drive the truck in the middle of the loading surface.
– Park the truck securely; refer to the chapter entitled "Parking the truck securely".

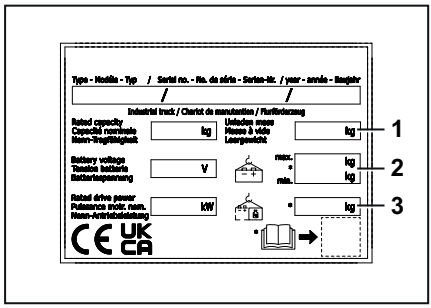
Determining the total actual weight

⚠ DANGER

Risk of fatal injury caused by overloading and material damage.

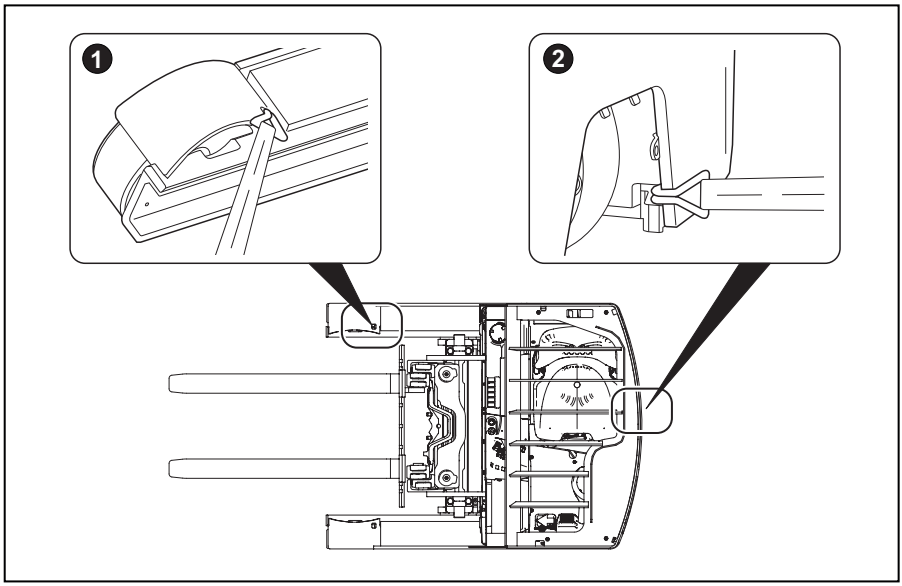
– Only load the truck if the load capacity of the means of transport, ramps and loading bridges is greater than the total actual weight of the truck.

– Park the truck securely; refer to the chapter entitled "Parking the truck securely".
– Determine the unit weights by reading the truck nameplate and, if necessary, the attachment nameplate (variant).
– Add the determined unit weights to obtain the actual total weight of the truck: ▷



Tare weight (1)
\+ Max. permissible battery weight (2)
\+ Ballast weight (variant) (3)
\+ Attachment net weight (variant)
\+ 100 kg allowance for driver
= Total actual weight

Lashing points on the truck



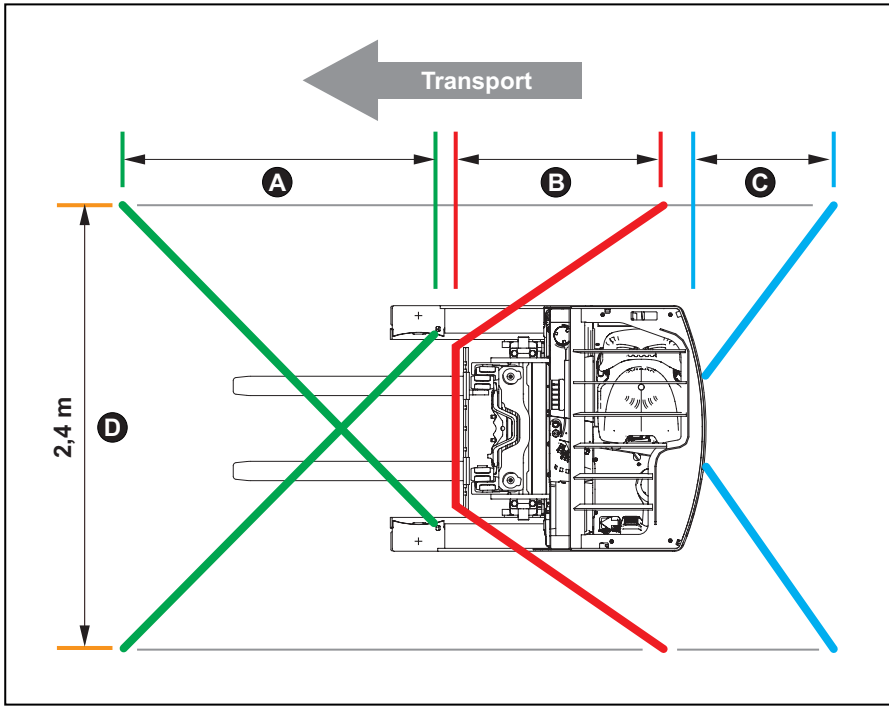
The four lashing strap mounts on the truck are located on the covers near the load wheels (1) and the drive wheel (2) (left and right respectively).

NOTE

To access the lashing strap mounts at the drive wheel (2), the cover above the drive wheel must be removed.

- *Remove the two countersunk head screws (M8x30) and take off the cover above the drive wheel.*

Lashing down



Observe the drive direction of the means of transport (arrow)

Prescribed lengths of transport straps

Position	Truck transport	Rail / sea transport
A	75 cm ± 20 cm	200 cm ± 20 cm
B	100 cm ± 20 cm	
C	50 cm ± 20 cm	75 cm ± 20 cm

⚠ DANGER

If the lashing straps slip, the load can move.

The truck must be lashed securely so that it cannot move during transportation.

– Make sure that the lashing straps are tightened securely and that the pads cannot slip off.

The transport vehicle must be equipped with lashing points with a load capacity of at least

2000 daN in accordance with DIN EN 12640. Make sure that the lashing points used are suitable for an application of force from 0–90°.

50-mm polyester lashing straps in accordance with DIN EN 12195-2 LC with a load capacity of at least 2500 daN must be used to secure the load.

⚠ CAUTION

The reach carriage must be secured against movement in the truck during transport.

– Fully retract the reach carriage before transport.
– If necessary, wrap an appropriate strap firmly around the reach carriage (at the height of the mast mounting area) and the overhead guard.

– Hook the four lashing straps (blue / green) into the lashing strap mounts on the truck.
– Position the additional lashing strap (red) in front of the fork carriage on the truck.
– Hook the lashing straps into the lashing strap mounts of the transport vehicle. Maintain distances (A, B, C, D) as shown. Observe the drive direction of the transport vehicle (arrow).
– Attach the lashing straps to the truck symmetrically on the left-hand side and the right-hand side.

A sufficiently high pre-tensioning force of at least 210 daN must be applied to the lashing straps.

⚠ CAUTION

Abrasive lashing straps may damage the surface of the truck.

– If necessary, position slip-resistant pads underneath the lashing straps (e.g. rubber mats or foam).

Crane loading

⚠ DANGER

There is a risk of fatal injury if the industrial truck falls.

If the crane loading is carried out incorrectly, the industrial truck can become unstable or fall. Only the harnesses specified in the workshop manual for this industrial truck are permitted and have been tested for safety and load capacity.

– Have the industrial truck loaded using a crane only by the authorised service centre.

– Only attach the industrial truck to the points specified in the workshop manual.

Crane loading is only intended for transporting the complete industrial truck, including the lift mast, for its initial commissioning. This may only be carried out by the authorised service centre using the designated and approved harnesses.

– For crane loading of the industrial truck, contact the authorised service centre.

5

Service and maintenance

Safety information regarding servicing work

Servicing work and regular tests may only be carried out by competent persons; see the chapter entitled "Competent person". The manufacturer must authorise the competent person for these activities.

The work specified in the maintenance schedule must be performed at the stated service intervals and using the consumables intended for this purpose.

Specialist knowledge and special tools are required for servicing work not described here. Contact the authorised service centre.

– Whenever servicing work is performed, the industrial truck must be parked on a level surface and secured so that it cannot roll away.

– Park the industrial truck safely, disconnect the battery male connector and remove the switch key.

⚠ DANGER

Risk of accident when working on the lift mast.

– Secure the raised fork carriage or lift mast to prevent accidental lowering.

– Whenever work is carried out at the front of the industrial truck, secure the lift mast to prevent it from tilting backwards.

– Following all servicing work, complete function checking and a test run with the industrial truck.

⚠ CAUTION

The industrial truck must always be properly labelled.

Missing or damaged identification plates and/or adhesive labels must be replaced. For the location or order number, see the spare parts catalogue.

ENVIRONMENT NOTE

Observe the information regarding the use of consumables.

Service intervals

The specified service intervals depend on the operating conditions and application conditions, and on the consumables used. In certain circumstances, the service intervals can be changed. **In all cases, the "Regular Service tasks" must be performed once per year.**

When operating in extreme conditions (e.g. heat, cold or dust), the service intervals must be reduced.

– Contact the authorised service centre.

Regular maintenance

Performing the maintenance tasks listed will increase the availability of the truck and help maintain its value.

Carry out this work as frequently as possible in accordance with the application conditions.

- Clean the truck.
- Check the driver's seat
- Check the wheels and tyres.
- Check the hydraulic system for leak tightness.
- Grease the lift mast roller tracks.

Lithium-ion battery

NOTE

If batteries are permanently integrated into the truck, regular maintenance is not necessary to maintain operational readiness.

- ***Fully** charge the battery once a month*

Regular maintenance

Performing the maintenance tasks listed will increase the availability of the truck and help maintain its value.

Carry out this work as frequently as possible in accordance with the application conditions.

- Clean the truck.
- Check the driver's seat
- Check the wheels and tyres.

- Check the hydraulic system for leak tightness.
- Grease the lift mast roller tracks.

Lithium-ion battery

NOTE

If batteries are permanently integrated into the truck, regular maintenance is not necessary to maintain operational readiness.

- ***Fully** charge the battery once a month*

Lifting and jacking up

⚠ DANGER

There is a risk to life if the industrial truck tips over!

If not lifted and jacked up properly, the industrial truck may tip over and fall off. Only the hoists specified in the workshop manual for this industrial truck are approved and tested for safety and load capacity.

– Have the industrial truck lifted and jacked up only by the authorised service centre.

– Jack up the truck only at the points specified in the workshop manual.

The industrial truck must be lifted and jacked up for various types of maintenance work. This may only be carried out by the authorised service centre using the designated and approved hoists.

– For lifting and jacking up the industrial truck, contact the authorised service centre.

Checking and topping up consumables

The access points for hydraulic oil, gearbox oil and brake fluid are located beneath covers. Appropriate tools are required to remove the covers.

– To check and top up the levels of consumables, contact the authorised service centre.

Maintenance instructions

Maintenance work must be carried out in accordance with the following maintenance intervals. 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:

- Dirty, poor quality roadways
- 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

For maintenance tasks, only use original spare parts, and only use consumables that have been prescribed in the overview of consumables.

Additional maintenance instructions in the event that the truck is used in cold store applications

NOTE

Where maintenance and repair work has been carried out outside the cold store, care must be taken to ensure the truck is only driven into the cold store when it is dry.

In one-shift operation, the maintenance interval is 12 weeks or 500 operating hours. In multi-shift operation, the interval is reduced accordingly.

For extreme use in the cold store, normal maintenance must be carried out on a regular basis by means of a weekly inspection of the truck by the operating company.

The checks detailed in the "Additional maintenance instructions in the event that the truck is used in cold store applications" checklist must be carried out in addition to the normal maintenance tasks on the basic truck.

Maintenance - 1000 hours/year

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000		10000		11000		13000		14000		✓	✗
Chassis, bodywork and fittings											
Visually inspect the chassis, covers, support elements and mast mounting for cracks or damage											
Visually inspect the cab mounting/driver's compartment mounting on the drive side and the load side. Test point valid for: – **1)** Vehicles with a cab (cold store cab, weather protection cab, full cab) – **2)** Vehicles with standard overhead guard up to and including 05/2015; see service information 5120200003											
Check the overhead guard/cab and windows for damage; check the visibility through the windows											
Check the controls and joints for damage, and apply grease and oil											
Check the driver's seat, seat adjustment and protective covers for correct function and for damage											
Check and clean the driver restraint system (option) for correct function and for damage											
Check the battery tray, interlock and sensor for correct function and for damage											
Check the reach carriage guides, rollers and stops, and adjust if necessary											
Check the reach travel measuring system and limit stops											
Check the drive and brake actuations (single and dual pedal) for correct function and for damage Clean dust and dirt from the mechanisms											
Load wheels											
Check the wheels for damage, wear and ease of movement											
Check the wheel mountings for operating noise and play											
Tighten the wheel screws using a torque wrench (tightening torque: 195 Nm)											
Adjust the side chassis supports											
Drive wheel											
Check the drive wheel and tyres for damage and wear											
If necessary, replace the drive wheel											
Check the wheel screws and tightening torques											
Gearbox											
Visually inspect the gearbox for leak tightness, secure attachment and external damage. Check for operating noise.											
Oil level check on the gearbox											

Maintenance - 1000 hours/year

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000		10000		11000		13000		14000		✓	✖
Traction motor, steering motor, pump motor											
Visually inspect the components for secure attachment and external damage. Check for operating noise. Clean the external fans. Perform a functional test											
Steering											
Check that the steering wheel is securely attached and check the turning handle for damage											
Check the steering column for the level of play											
Check the adjustment mechanism of the steering for functionality											
Check the function of the steering system											
Check the steering turntable bearing for ease of movement and wear											
Check the steering gears for play and lubricate the steering gears											
Hydraulic brake system											
Check the condition of all mechanical and hydraulic brake parts, check for correct function and clean											
Check the brake linings and replace if necessary											
Check the brake clearance											
Check the brake retardation values after each adjustment											
Check the brake fluid level											
If present, check the switch for the brake fluid											
Perform a brake test											
Electric parking brake											
Clean and check the rotor											
Check the brake clearance											
Check the brake retardation values											
Electrical system											
Check the function of the drive and pump controller for driving, acceleration, braking and reversing											
Check the cable connections and plug contacts for secure positioning and corrosion											
Check the electrostatic discharge (ESD) devices											
Check the main fuses and control fuses Check the contacts of the main contactor											
Check the switch lock and emergency off switch for correct function											
Check all operating and display functions (switches, transmitters)											

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000		10000		11000		13000		14000		✓	✖
Check the lighting, indicator lights, instruments and seat contact switch											
Converter											
Use air to blast dust from the surfaces											
Remove dirt and dust from the heat sinks											
Check the fans for correct function and for damage, and clean											
Lead acid battery and accessories											
Check the battery for damage and check the acid density; follow the manufacturer's maintenance instructions											
Check the battery male connector and cables for damage											
Perform insulation testing											
Measure the tray for short circuits											
Lithium-ion battery and accessories											
NOTE: Lithium-ion batteries are charged using high currents. Minor damage to the contact surfaces can therefore damage the battery plug. Replace the battery male connector in good time.											
Visually inspect the battery for damage; observe the manufacturer's maintenance instructions.											
Visually inspect the battery male connector, contacts and cable for damage; replace if necessary.											
Check that the terminal screws of the battery are securely fitted.											
Visually inspect labels and signs for completeness and damage.											
Perform insulation testing											
Hydraulic system											
Check the condition of the hydraulic system, check that it is working correctly, check for damage and check for leak tightness											
Check the hydraulic pump for leak tightness											
Check the hydraulic oil level											
Check the oil filter (visual inspection; replace if contaminated)											
Check the oil tank for leak tightness											
Clean the breather filter and replace if necessary											
Lift mast											

Maintenance - 1000 hours/year

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000		10000		11000		13000		14000		✓	✖
Visual inspection of the lift mast crossmembers (lift masts with an overall height > 3700 mm only). Test point valid for trucks built between 02/2019 and 06/2020, see Service Information 512020010.											
Check the mast mounting for damage and check the tightening torques. During mast traversing movement, check and lubricate the sliding surface											
Check the mast profiles for damage and wear. Lubricate the mast profiles											
Check the load chains for damage and wear. Adjust and lubricate the load chains. Replace the main lift chains after 5000 operating hours (recommendation)											
Check the lift cylinders and connections for damage and check for leak tightness											
Check the guide pulleys for damage and wear											
Check the mast rollers and chain rollers for damage and wear											
Check the tilt cylinders and connections for damage and check for leak tightness											
Check the joints of the tilting equipment for play and ease of movement											
Check the reach cylinders and connections for damage and check for leak tightness											
Check the joints of the reach cylinder for play and ease of movement, and lubricate											
Check the fork carriage for damage and wear											
Check the fork height setting and adjust the chain length if necessary											
Check the fork arm interlock for damage and correct function											
Check the fork arms for wear and deformation											
Check that there is a safety screw on the fork carriage or on the attachment											
Check the hydraulic hoses, re-adjust and replace if necessary											
Lubricate the fork tilter/sideshift											
Special equipment											
Replace the filter mat for the heating system											
Check the heating system for damage; follow the manufacturer's maintenance instructions											
Check the optical height measuring system (visual inspection); clean the sensor and reflector											
Check the attachments for wear and damage; follow the manufacturer's maintenance instructions											
Clean excessive dirt from the battery change frame and check the frame for deformation/damage. Check the freedom of movement of the rollers and keep the surface of the rollers free of corrosion by applying a film of oil											
Lubrication											

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000		10000		11000		13000		14000		✓	✗
Lubricate using approved lubricants in accordance with the lubrication plan											
General											
Check that the labelling is complete											
Perform a test drive											
Read out and check the error numbers and clear the list											
Reset the maintenance interval											

Maintenance - 1000 hours/year

Maintenance - 3000 hours/every two years

At operating hours											Carried out	
3000		6000		9000		12000		15000			✓	✖
Note												
Perform all 1000-hour maintenance work												
Gearbox												
Oil change (gearbox)												
Lubricate the shaft stub gearing between the gearbox and traction motor												
Hydraulic brake system												
Changing the brake fluid												
Hydraulic system												
Change the hydraulic oil												
Replace the oil filter												

Overview of filling quantities and set values

NOTE

Special training is required to work on lithium-ion batteries.

- *Contact the authorised service centre*

Assembly	Additives/consumables	Filling quantity/set values
Lithium-ion battery	No action required	
Lead-acid battery	Distilled water	As required
	Acid-free grease	As required
Electric motors: Traction motor Steering motor Hydraulic motor	Electrics cleaner	As required
Planetary transmission	Gearbox oil	Max. 2.9 l
Hydraulic system	Hydraulic oil	Initial filling: 33.7 l
Hydraulic operating brake	Brake fluid	Min. mark: 75 ccm Max. mark: 136 ccm
Wheel fastenings	Tightening	Drive wheel: 195 Nm
		Load wheels: 120 Nm
Lift mast chains/lift mast guides	STILL chain spray	As required

Recommendations for consumables

Hydraulic oil

STANDARD

Hydraulic oil, HLP class in accordance with DIN 51524
Hydraulic oil, HLP46-D class
Viscosity ISO VG 46
(ambient temperatures of -10°C to +30°C)

Permissible varieties:

Fuchs - Titan-H46
BP

Cold store versions

HVLP32 hydraulic oil for cold store mixed use
(Ambient temperatures: "area 2" from -32°C to +25°C)

ISO VG 32
Permissible varieties:
Fuchs - Renolin - MR520
Shell Tellus - Arctic 32

HVLP32 hydraulic oil for cold store mixed use, food-grade
(Ambient temperatures: "area 2" from -32°C to +25°C)

Permissible varieties:
Rivolta F.L.50

HVLP15 hydraulic oil for cold store Stay-In use
(Ambient temperatures: "area 3" from -32°C to -5°C)

Permissible varieties:
Fuchs - Renolin - MR310

HVLP15 hydraulic oil for cold store Stay-In use, food-grade
(Ambient temperatures: "area 3" from -32°C to -5°C)

Permissible varieties:
Rivolta F.L.20

Gearbox oil

Synthetic hydrocarbon lubricant

Permissible varieties:
Fuchs Renolin Unisyn CLP 150; Castrol Alphasin EP 150

Chain spray for leaf chains

Ambersil chain spray 2
Klueber Structovis FHD
Fuchs Anticorit LBO-160 chain spray
Rocol forklift truck chain spray

Cold store version

Klueber - Synthesco
Fuchs - Anticorit TT160

Brake fluid

Original ATE brake fluid in accordance with DOT4
Classification in accordance with FMVSS 116 or SAE J 1703

Permissible varieties:

BP - brake fluid or brake disc fluid
Girling - universal brake fluid and clutch fluid
ELF - Frelub 550
Gulf - super HD HBP brake fluid
Mobil - universal brake fluid
Texaco - brake fluid
Lockheed - Super 105
ATE - SL / SL.6
Shell - Donax YB
Esso - DOT4 brake fluid
Agip - DOT4 brake fluid

NOTE

For use at other temperatures, please contact the manufacturer.

Lubricating grease

Universal lithium-saponified lubricating grease
NLGI no. 2, stress category 265-295
in accordance with DIN 51825, KP2K-20

NOTE

Mixing with soap-based types of lubricating grease other than lithium-saponified grease is not permitted.

Permissible varieties:

BP - Energrease L2
Castrol - Spheerol AP2 or APT2
Esso - Beacon 2
ELF - Multi 2
Gulf - Gulfcrown EP no. 2
Mobil - Mobilgrease MP
Texaco - Multifak EP2 (all-purpose)
Shell - Retinax LX2

Cold store version

Low-temperature fatty synthetics

Shell - Aeroshell grease 22 (ASG22)

Multi-purpose grease

Shell Aeroshell 33M3

Special lubricating grease

Special lubricating grease for demanding conditions

Klüberplex - BEM34-132-ME-S

High-temperature, high-performance grease

Special lubricating grease for demanding conditions

Rivolta - S.K.D. 4002

Heat-conducting paste

Silicone-based heat-conducting paste

Dow Corning - DC 340 silicone heat-conducting paste

Anti-corrosion paste

Dow Corning - Molykote TP42 or Gn PLUS

Electrics cleaner

S.L.X. electrics cleaner from Rivolta©

Screw locking varnish

Fast-drying nitrocellulose compound for securing and sealing screws – yellow.

Liquid glue

Medium-strength FK5 liquid glue, blue
Loctite© 243™
High-strength FK2 liquid glue, green
Loctite© 270™ or improved Loctite© 2701™
Non-soluble FK3 liquid glue
Loctite© 648™

Cleaning the truck

Cleaning the exterior of the truck



⚠ WARNING

Risk of falling due to climbing onto the truck.

When climbing onto the truck, there is a risk of catching on components or slipping and falling.

– Make higher areas of the truck accessible using appropriate aids (e.g. step ladders, platforms).

The frequency with which cleaning is required depends on the application of the truck. If highly abrasive materials, e.g. fertiliser, chemicals or cement are used, the industrial truck must be thoroughly cleaned after each assignment. Deposits and accumulations of combustible materials on or in the vicinity of hot parts must be removed immediately.

– Park the truck securely. Never wash the industrial truck when it is switched on.
– Disconnect the battery male connector.
– Use only the steps provided for this purpose to climb onto the truck.
– Use equipment such as stepladders or platforms to reach inaccessible areas.
– Clean the truck exterior using water-soluble cleaning materials and water (sponge, cloth).
– Clean all accessible areas, the oil filling openings and their surroundings, and clean the lubricating nipples before lubricating.
– Regularly remove all deposits/accumulations of foreign materials in the vicinity of hot components.

NOTE

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

Chemical cleaning agents



⚠ DANGER

Flammable fluids and materials can be ignited by hot components on the truck.

– Use non-flammable fluids for cleaning.
– Observe the manufacturer's guidelines for working with cleaning agents.

⚠ CAUTION

Abrasive cleaning agents can damage component surfaces!

Using aggressive cleaning agents that are unsuitable for plastics can cause plastic parts to dissolve or become brittle. The screen on the display and operating unit may become cloudy.

– Clean plastic parts only with cleaning agents intended for plastic parts.
– Observe the manufacturer's guidelines for working with cleaning agents.

Using high-pressure cleaners

⚠ CAUTION

Excessive water pressure or water and steam that are too hot can damage truck components.

– Only use high-pressure cleaners with a maximum output power of 50 bar and at a maximum temperature of 85°C.

– When using high-pressure cleaners, maintain a nozzle distance of at least 20 cm. Do not use high-pressure cleaners on the battery, electric motors and other electrical components or their covers.

– Do not aim the cleaning jet directly at adhesive labels or information signs.

– Do not clean the battery, electric motors and other electrical components or their covers with a high-pressure cleaner or spray these components with water.

Cleaning the electrical system

⚠ WARNING

Danger of electric shocks due to residual capacity.

– Never reach into the electrical system with your bare hands.



⚠ CAUTION

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

Cleaning parts of the electrical system with water is forbidden.

– Do not remove covers.

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

After cleaning

⚠ CAUTION

Moisture or dirt in the battery male connector and the plug connection can lead to an electrical short circuit.

– Use compressed air to dry the battery male connector and the plug connection before connecting them.

– Use compressed air to remove any foreign objects that may be lodged in the battery male connector and the plug connection.

– Dry the industrial truck carefully, e.g. with compressed air.

– Lubricate the joints and actuators.

NOTE

The more often the industrial truck is cleaned, the more frequently it must be lubricated.

Checking the wheels and tyres

⚠ DANGER

Risk to stability due to impermissible tyres.

- Always change the wheels on the left and right at the same time to prevent the truck from tilting.
- Only use wheels and tyres approved by the manufacturer.
- Do not combine wheels from different manufacturers. Only use high-quality products.
- Ensure even and permissible tyre wear.
- Replace the wheels in good time if they are worn.
- Only use tyres of the original tyre type.
- Do not make any modifications to the rims.

Before installing a tyre type or a tyre from a manufacturer that has not been approved by the truck manufacturer, approval must be obtained from the truck manufacturer.

Changing the wheel

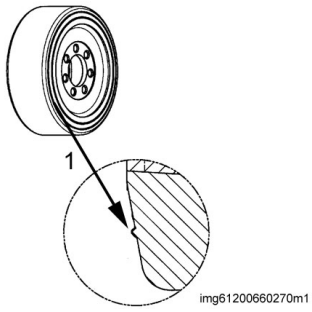
To change the tyres, the truck must be jacked up by the authorised service centre.

- To change the tyres, contact the authorised service centre.

Checking the condition and wear of the tyres ▷

A wear mark (1) in the lateral flank of the lining serves as a visual indication of the wear limit.

Polyurethane tyres can be worn down to the wear mark (1)



NOTE

The wear of the tyres must be approximately the same.

Changing the tyres is also necessary if any of the following conditions are present:

- Large cracks have formed in the tread This can be detected by a "whirring sound" when driving
- The tread is severely damaged.
- The tyre diameter has decreased by approx. 9%.

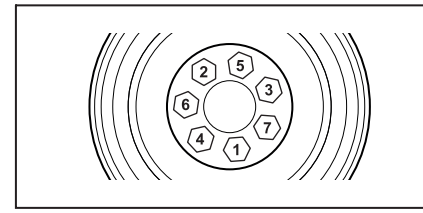
Checking wheel fastenings

– Check the wheel screws (drive wheel) and load wheel nuts (load wheel) are securely seated and tighten them as necessary. Observe the tightening torques.

Tightening torques	
Drive wheel	195 Nm
Load wheels	120 Nm

– After removing the drive wheel, a check must be carried out within 50 operating hours to ensure that the wheel screws are securely attached. Tighten the wheel screws (1...7) crosswise to a tightening torque of **195 Nm**.

– Observe the tightening sequence.



NOTE

If it is necessary to re-tighten the wheel screws to the correct tightening torque, the wheel screws must be checked again after 50 hours. Repeat the tightening procedure every 50 hours until the correct tightening torque is consistently maintained.

Checking the roof panel (variant) for damage

DANGER

Risk of fatal injury in the event of a damaged roof panel.

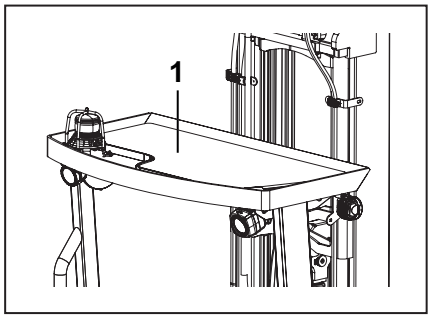
If the roof panel becomes damaged in any way (cracks, chips), the truck must be taken out of service immediately. The roof panel must then be replaced (safety-related component).

Checking the roof panel (variant) for damage

– Carry out a visual inspection of the roof panel (1) for cracks and chipping. Report any damage or defects immediately to the supervisor or fleet manager.

– If any damage or defects are present, take the truck out of service until it has been repaired.

▷



NOTE

Replacing the roof panel:

- *A special tool and specialist knowledge is required for this work.*
- *Contact the authorised service centre.*

Decommissioning

Extended parking/decommissioning of the industrial truck

Course of action before parking for a period of between two days and two months

– Raise the fork carriage up to the end stop a few times.

– Tilt the lift mast forwards and backwards a few times. If fitted, move the attachment (variant) a few times.

– To relieve the strain on the load chains, lower the fork carriage onto a suitable supporting surface, e.g. a pallet.

Course of action before decommissioning for more than two months

⚠ CAUTION

Component damage due to incorrect storage.

Corrosion damage is possible if the industrial truck is not stored correctly or is decommissioned for more than two months. Long-term storage below -10°C or above 40 °C has a negative impact on the service life of the battery

– Store the industrial truck in a dry, clean, frost-free and well-ventilated environment.

– Take the following course of action before decommissioning.

NOTE

Only store batteries that are fully charged.

– Thoroughly clean the industrial truck.

– Fully extend and retract the reach carriage a few times.

– Lift the fork carriage to the end stop a few times.

– Tilt the lift mast forwards and backwards a few times. If fitted, move the attachment (variant) a few times.

– To relieve the strain on the load chains, lower the fork carriage onto a suitable supporting surface, e.g. a pallet.

– Bring all pistons and cylinders of the industrial truck into the retracted state.
– Apply a thin layer of oil or grease to all uncoated moving parts.
– Lubricate the industrial truck.
– Lubricate the joints and actuators.
– Lubricate the battery lock (variant).
– Disconnect the battery male connector.
– Fully charge the lithium-ion battery (variant) (follow the battery manufacturer's operating instructions relating to storage).
– Spray all exposed electrical contacts with a suitable contact spray.
– Have the industrial truck jacked up by the authorised service centre.

⚠ CAUTION

Tyre deformation as a result of continuous loading on one side.

Have the industrial truck jacked up by the authorised service centre so that all wheels are off the ground. This prevents permanent deformation of the tyres.

– Contact the authorised service centre.

– Cover the industrial truck to protect it against dust.

⚠ CAUTION

Corrosion damage caused by condensation water under packaging films.

Many plastic films and synthetic materials are watertight. Any condensation water cannot escape through these covers.

– Do not use plastic film as this facilitates the formation of condensation water.
– Cover with vapour-permeable material, e.g. cotton.

If the industrial truck needs to be decommissioned for an extended period, contact the authorised service centre to find out about additional courses of action.

Recommissioning after decommissioning for six months

If the industrial truck has been decommissioned for longer than six months, it must be checked carefully before being used again.

– Thoroughly clean the industrial truck.

– Lubricate the industrial truck.

– Lubricate the joints and actuators.

– Fully charge the lithium-ion battery (variant).

– Check if there is any condensation water in the hydraulic oil and replace the oil if necessary.

– Change the brake fluid.

– Carry out the checks and activities described in the chapter "Checks before initial commissioning".

– Commission the industrial truck.

During commissioning, the following points must be checked in particular:

- Drive, controller, steering
- Brakes (service brake, parking brake)
- Reach carriage (extension function, retraction function)
- Lifting system (lifting accessories, load chains, mounting)

NOTE

Contact the authorised service centre for more information.

Lithium-ion battery: Storing the battery

The storage of the lithium-ion battery is described in the original operating instructions of the battery.

– Follow the instructions and regulations in the original operating instructions of the battery.

– If you have any questions, contact the authorised service centre.

Disposal of old trucks

The disposal of old trucks is regulated by international guidelines and national regulations.

It is recommended to have the disposal of old trucks carried out at an approved recycling facility.

– Observe national and international regulations.

– If you have any questions, contact the authorised service centre.

NOTE

The operating company is responsible for complying with the directives and national regulations.

Minimum requirements

The following minimum requirements must be met:

Storage locations for old trucks prior to their dismantling must be suitable areas with an impermeable surface. The locations must be equipped with collection devices and separators for escaping fluids and grease-dissolving cleaning agents.

Suitable storage areas must be available for dismantled parts, partially oil-contaminated parts and for tyres. Fire protection measures must be taken.

Suitable storage tanks for liquids must be provided. The substances must be removed, collected and stored separately, e.g.:

- Gearbox oil
- Hydraulic oil
- Coolant
- Brake fluid
- Liquids from air conditioning systems

The following materials can be collected and recycled separately:

- Copper-containing metal components
- Aluminium-containing metal components

- Large plastic components (e.g. consoles, liquid containers)
- Glass

To eliminate hazardous substances, the batteries must be removed from the old trucks.

6

Technical data

Product overview: Reach trucks



Type designation	Series	Load-bearing capacity	Overall width (b1)	Width between load wheel supports/loading areas (b4)
FXR 14C (value)	1121	1400 kg	1270 mm (standard)	1070 mm
FXR 16C (value)	1121	1600 kg	1270 mm (standard)	1070 mm
FXR 18C	1121	1800 kg	1270 mm (standard)	920 mm
FXR 12NC	1121	1200 kg	1140 mm (narrow)	920 mm
FXR 14NC	1121	1400 kg	1140 mm (narrow)	920 mm
FXR 16NC	1121	1600 kg	1140 mm (narrow)	920 mm
FXR 18NC	1121	1800 kg	1140 mm (narrow)	790 mm

Overview of traction batteries

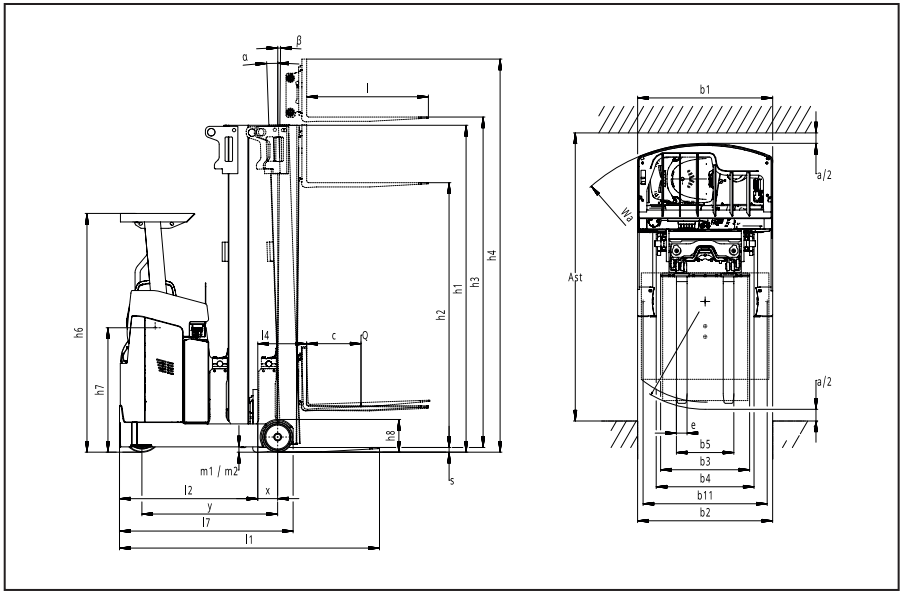
Model designation	Lithium-ion battery
FXR 14C (value)	BG26.1 (14.3kWh) / BG26.2 (14.3kWh) / BG26.3 (21.4kWh) / BG26.4 (21.4kWh)
FXR 16C (value)	BG26.1 (14.3kWh) / BG26.2 (14.3kWh) / BG26.3 (21.4kWh) / BG26.4 (21.4kWh)
FXR 18C	BG26.1 (14.3kWh) / BG26.2 (14.3kWh) / BG26.3 (21.4kWh) / BG26.4 (21.4kWh)
FXR 12NC	BG26.1 (14.3kWh) / BG26.2 (14.3kWh) / BG26.3 (21.4kWh) / BG26.4 (21.4kWh)
FXR 14NC	BG26.1 (14.3kWh) / BG26.2 (14.3kWh) / BG26.3 (21.4kWh) / BG26.4 (21.4kWh)
FXR 16NC	BG26.1 (14.3kWh) / BG26.2 (14.3kWh) / BG26.3 (21.4kWh) / BG26.4 (21.4kWh)
FXR 18NC	BG26.1 (14.3kWh) / BG26.2 (14.3kWh) / BG26.3 (21.4kWh) / BG26.4 (21.4kWh)

Special features of the series

- **Chassis, bodywork, interior:**
  Operating devices such as parking brake buttons and light switches are located on the armrest
  Driver's workstation with improved ergonomics and improved circumferential view
- **Load arms:**
  Additional model with a width of 790 mm between the two load wheel supports.
- **Electrics/electronics, controllers:**
  Integration of the EE architecture
  Control units such as KBC, KMC, KAE and the KTPC converter
  KSRC steering control unit (ES24)
  LIN push buttons and LPP interfaces
- **Energy supply:**
  Lithium-ion battery integrated into the reach truck as standard.
  On-board charger OBC and intermediate charging are available as an option.

  Lift mast:
  1504 series with a maximum lifting height of 9 m

Dimensions



Measurements h_1, h_3, h_4, h_6 and b_1 are customised and can be taken from the order confirmation.

VDI datasheet

Technical data

Characteristics

1.1	Manufacturer		STILL	STILL
1.2	Manufacturer's type designation		FXR 14 C	FXR 16 C
1.3	Drive: electric (battery type, mains supply, …), diesel, petrol, LPG		Electric	Electric
1.4	Operation: manual, accompanied, standing, seated, order picker		Seated	Seated
1.5	Rated capacity/ load	Q (t)	1.4	1.6
1.6	Load centre of gravity distance	c (mm)	600	600
1.8	Load distance	x (mm)	256	357
1.9	Wheelbase	y (mm)	1275	1381

Weights

			FXR 14 C	FXR 16 C
2.1	Net weight	kg	3015 [1)]	3059 [1)]
2.3	Front/rear axle load without load	kg	1748/1267	1846/1213
2.4	Front/rear axle load with fork forwards and with load	kg	490/3925	466/4193
2.5	Front/rear axle load with fork backwards and with load	kg	1370/3045	1565/3094

Wheels/chassis frame

			FXR 14 C	FXR 16 C
3.1	Tyres: solid rubber, super elastic (SE), pneumatic, polyurethane		Polyurethane	Polyurethane
3.2	Tyre size,front		Ø 360 x 130	Ø 360 x 130
3.3	Tyre size,rear		Ø 285 x 100	Ø 285 x 100
3.5	Number of wheels, front/rear (X = drive)		1x/2	1x/2
3.7	Track width, rear	b_{11} (mm)	1167	1167
3.9	Wheels braked: service brake, number		2	2
3.10	Wheels braked: parking brake, number		1	1

Basic dimensions

			FXR 14 C	FXR 16 C
4.1	Lift mast/fork carriage tilt, forwards/backwards	a/b (°)	1°/2° (h3<6200mm) 0.5°/2° (h3>6200mm)	1°/2° (h3<6200mm) 0.5°/2° (h3>6200mm)
4.2	Height with lift mast retracted	h_1 (mm)	2685	2685
4.3	Free lift	h_2 (mm)	2130	2130
4.4	Lift	h_3 (mm)	6470	6470
4.5	Height with lift mast extended	h_4 (mm)	7025	7025
4.7	Height of overhead guard (cab)	h_6 (mm)	2245	2245
4.8	Seat height in relation to SIP/ standing height	h_7 (mm)	1183	1183
4,10	Load wheel support height	h_8 (mm)	307.5	307.5
4.19	Overall length	l_1 (mm)	2381[1)]	2386[1)]
4.20	Length including fork back	l_2 (mm)	1231	1236
4.21	Overall width	b_1/b_2 (mm)	1270	1270
4.22	Fork arm dimensions, DIN ISO 2331	s / e / l (mm)	40/80/1150	45/100/1150
4.23	Fork carriage to ISO 2328, class/ model A, B		2A	2A
4.24	Fork carriage width	b_3 (mm)	840	840
4.26	Width between load wheel supports/loading areas	b_4 (mm)	920	920
4.28	Reach forward	l_4 (mm)	439	545
4.31	Ground clearance below lift mast with load	m_1 (mm)	75	75
4.32	Ground clearance at the middle of the wheelbase	m_2 (mm)	50	50
4.34.1	Aisle width for pallets 1000 x 1200 crosswise	A_{st} (mm)	2653[1) 2) 3)]	2675[1) 2) 3)]

4.34.2	Aisle width for pallets 800 x 1200 lengthwise	A_{st} (mm)	2723[1) 2) 3)]	2728[1) 2) 3)]
4.35	Turning radius	W_a (mm)	1498	1596
4.37	Length across the load wheel supports	l_7 (mm)	1632.7	1738.7

Performance data

			FXR 14 C	FXR 16 C
5.1	Driving speed with/without load	km/h	10 / 10	10 / 10
5.1.1	Driving speed with/without load when reversing	km/h	10 / 10	10 / 10
5.2	Lifting speed with/ without load	m/s	0.55/0.56	0.55/0.56
5.3	Lowering speed with/without load	m/s	0.57/0.55	0.57/0.55
5.4	Reach speed with/without load	m/s	0.17/0.17	0.17/0.17
5.7	Climbing capability with/without load	%	10 / 10	10 / 10
5.8	Max. climbing capability with/without load	%	10 / 10	10 / 10
5.9	Acceleration time with/without load	s	5.5 / 5.5	5.5 / 5.5
5.10	Service brake		Hydr. / mech.	Hydr. / mech.

Electric motor

			FXR 14 C	FXR 16 C
6.1	Traction motor, power rating at S2: 60 min	kW	5.7	5.7
6.2	Lift motor, power rating at S3: 15%	kW	12	12
6.3	Battery, in accordance with DIN 43 531/35/36 A, B, C, no		Li-ION	Li-ION
6.4	Battery voltage/ nominal capacity K5	(V)/(Ah) or kWh	(48)/(414)	(48)/(414)
6.5	Battery weight (± 5%)	kg	269	269
6.6	Energy consumption in accordance with DIN EN 16796	kWh/h	2.7	2.9
6.7	Handling performance in accordance with VDI 2198	t/h	53	59
6.8	Handling efficiency in accordance with VDI 2198	t/kwh	21	22

Other

			FXR 14 C	FXR 16 C
10.7	Sound pressure level LpAZ (driver's compartment)	dB (A)	65	65

1)	Alternative batteries affect the overall length l1, the aisle width and the net weight
2)	Including a = 200 mm safety distance
3)	Some truck configurations require a return limitation. If necessary, increased aisle width (Ast)

Lift mast data

Overview of lift mast variants with lift heights

Industrial truck	Lift mast variant (Cylinder diameter D1/ D2)	Lift height h3 [mm]
FXR 12NC - 1.2 t (Narrow load wheel supports)	1504 (60/43)	4520 - 9020
FXR 14NC - 1.4 t	1505 (60/43)	4595 - 10970
FXR 16NC - 1.6 t	1505 (60/43)	4595 - 6770
FXR 16NC - 1.6 t	1505 (63/46)	6995 - 10970
FXR 18NC- 1.8 t	1505 (60/43)	4595 - 6770
FXR 18NC- 1.8 t	1505 (63/46)	6995 - 10970
FXR 14C - 1.4 t	1504 - MQV[1)] (60/43)	4520 - 9020
FXR 14C - 1.4 t	1505 (60/43)	4595 - 10970
FXR 14C - 1.4 t	1505 - MQV[1)] (60/43)	4970 - 9170
FXR 16C - 1.6 t	1504 MQV[1)] (60/43)	4520 - 9020
FXR 16C - 1.6 t	1505 (60/43)	4595 - 6770
FXR 16C - 1.6 t	1505 (63/46)	6995 - 10970
FXR 16C - 1.6 t	1505 - MQV[1)] (60/43)	4970 - 6770
FXR 16C - 1.6 t	1505 - MQV[1)] (63/46)	7070 - 9170
FXR 18C - 1.8 t	1505 (60/43)	4595 - 6770
FXR 18C - 1.8 t	1505 (63/46)	6995 - 10970
FXR 18C - 1.8 t	1505 - MQV[1)] (60/43)	4970 - 6770
FXR 18C - 1.8 t	1505 - MQV[1)] (63/46)	7070 - 9170

[1)] Lift mast with mast traversing / mast tilter

Tyre variants and rim sizes

Permissible tyres

⚠ DANGER

Risk to stability due to impermissible tyres.

- Always change the wheels on the left and right at the same time to prevent the truck from tilting.
- Only use wheels and tyres approved by the manufacturer.
- Do not combine wheels from different manufacturers. Only use high-quality products.
- Ensure even and permissible tyre wear.
- Replace the wheels in good time if they are worn.
- Only use tyres of the original tyre type.
- Do not make any modifications to the rims.

It is recommended that you consult your authorised service centre before carrying out any modifications.

Drive wheel

Polyurethane – direct bond

Model	Tyres
FXR 14 C (standard versions)	∅ 360 x 130
FXR 16 C (standard versions)	∅ 360 x 130

Load wheels

Polyurethane – direct bond

Model	Tyres
FXR 14 C (standard versions)	∅ 285 x 100
FXR 14 C (standard versions)	∅ 285 x 100

Eco-design requirements for electric motors and variable speed drives

All motors in this industrial truck are exempt from Regulation (EU) 2019/1781 because these motors do not meet the description given in Article 2 "Scope", Item (1) (a) and because of the provisions in Article 2 (2) (h)

"Motors in cordless or battery-operated equipment" and Article 2 (2) (o) "Motors designed specifically for the traction of electric vehicles".

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

Battery specifications

Information on the datasheet for lithium-ion batteries

NOTE

To identify the battery in the tables, see the operating instructions for the battery.

The capacity (kWh) specified for the batteries is the minimum level. The actual capacity of the battery may be higher.

The batteries are permanently integrated into the truck.

Battery group 26

Li-Ion Standard

Battery group	Installed energy (kWh)	Available energy (kWh)	Weight (kg)	Dimension (mm)
26.1	14,3	11,4	268	1013 / 211 / 552
26.2	14,3	11,4	268	1013 / 211 / 552
26.3	21,4	17,2	268	1013 / 211 / 552
26.4	21,4	17,2	268	1013 / 211 / 552

Battery group 26

Li-Ion Standard

Battery group	Installed energy (kWh)	Temperature ranges		
		Operation	Charging	Storage
26.1	14,3	-10°C...+40°C [1) 2)]	-5°C...+45°C [1) 3)]	-40°C...+50°C [4) 6)]
26.2 [5)]	14,3	-35°C...+40°C	-35°C...+40°C	-40°C...+50°C [4) 6)]
26.3	21,4	-10°C...+40°C [1) 2)]	-5°C...+45°C [1) 3)]	-40°C...+50°C [4) 6)]
26.4 [5)]	21,4	-35°C...+40°C	-35°C...+40°C	-40°C...+50°C [4) 6)]

1) Full performance at negative temperatures requires low-temperature protection.
2) Full performance at 15°C...+40°C.
3) Full charging performance between 0°C...+40°C. Further limitation by charger possible.
4) Long-term storage below -10°C or above 40°C adversely affects the service life of the battery. A temperature of between 15°C and 40°C is ideal Storage outside the optimum temperature range may take place once for a period of up to one month. In general, storage outside the optimum temperature range results in the battery ageing more quickly.
5) Battery with integrated heating system
6) The battery must be connected to the battery charger when the truck is at a standstill for extended periods in cold store applications.

A

Access authorisation with PIN code. . . . 102
Actuating the horn. 68
Adjusting the brightness. 92
Adjusting the lighting. 85
Adjusting the steering column. 65
Assistance system
Presence detection of a foot on the right accelerator pedal. 134
Speed reduction when steering. 132
Attaching the lift mast. 164
Attachments
Alternating operation. 40
Connection. 41
Fitting. 38
Load capacity. 41
Mounting. 41
Safety information. 39

B

Battery male connector
Connecting and disconnecting. 100
Braking
Parking brake. 117
Service brake. 119
Briefly leaving the truck. 130

C

Capacity rating plate. 135
Changing wheels
Checking the condition and wear of the tyres. 188
Checking the brake fluid level. 174
Checking the brake system for correct function. 55
Checking the emergency off function. . . . 55
Checking the gearbox oil level. 174
Checking the hydraulic oil level. 174
Checking the roof panel for damage. . . . 189
Checking the wheels and tyres. 188
Checking wheel fastenings. 189
Checks and tasks before daily use. 52
Checks before initial commissioning. 50
Cleaning
After cleaning. 187
Chemical cleaning agents. 186
Electrical system. 187
High-pressure cleaners. 187
Truck. 186
Climatic conditions. 19
Competent person. 27
Conformity marking. 5
Consumables. 38
Checking levels and topping up. 174
Contact address of the authorised service centre. 98
Crane loading. 169
Curve Speed Control. 132

D

Data security. 32
Declaration of conformity. 7
Explanation of contents. 6
Decommissioning the industrial truck
Course of action before decommissioning. 191
Course of action before extended parking. 191
Recommissioning. 193
Defining directions. 21
Depressurisation. 129
Dimensions. 200
Directive RED 2014/53/EU. 7
Display-operating unit
180°/360° steering menu. 81
Assigning favourites. 87
Battery ID menu. 94
Brightness menu. 92
Contact menu. 98
Date menu. 91
Diagnostics/service menu. 96
Display settings menu. 90
Display: Function switched on. 75
Display: Function switched on automatically. 75
Display: Further selection fields. 75
Display: Multiple pages. 75
Display: Option selected. 76
Drive menu. 80
Drive Program menu. 80
Error codes menu. 97
Error messages menu. 97
Function button assignment. 87
General operation. 75

Language menu. 92
Lift menu. 82
Lighting menu. 85
Make settings: Arrow fields. 76
Overview. 46
Remaining Operation Time Format menu. 91
Restore Factory Settings menu. 95
Service interval menu. 93
Settings menu. 78
Speed Limit menu. 80
Switching off the industrial truck. 99
System Information-menu. 94
System menu. 86
System settings menu. 93
Time menu:. 90
Truck menu. 85
Units menu. 92
User manual menu (QR code). 98
Displaying system information. 94
Displaying the battery ID. 94
Displaying the service interval. 93
Display settings. 90
Disposal of old trucks. 194
Disposing of components and batteries. . . 23
Documentation. 20
Drive
Changing the drive direction. . . . 108, 111
Dual pedal operation. 110
Single pedal operation. 107
Starting on gradients. 109, 111
Drive programmes. 104
Drivers. 26
Driving
Safety regulations. 105
With a load. 145
Without the lift mast. 164
Dual pedal operation. 110

E

Electromagnetic compatibility. 35
Emergency lowering. 155
Emergency off switch. 74
Emissions
EMC. 34
Vibration characteristics. 34
Entering and exiting the truck. 58
Error codes. 97
Error messages. 97

F

Favourites
Assigning. 87
Using. 76
Filling quantities and set values
Overview. 183
Fingertip switch. 125
Fork carriage transition shift. 127
Lifting/lowering the fork carriage. 127
Shifting the reach carriage. 127
Tilting the lift mast. 127
Fitting attachments. 38
Flashing beacon. 73
Fork arms
Adjusting the distance. 138
Changing. 139
Length. 138
Fork wear protection
Electronic. 128, 152
Mechanical. 129, 152
Function button
Assigning. 87
Using. 76

G

General description. 2
General information. 4

H

Handling consumables. 38
Hill-hold brake. 109, 111

I

Improper use. 17
Information on running-in. 50
Insurance cover on company premises. . . . 4
Intended use. 15

J

Jacking up. 174
Joystick 4Plus. 122
Shifting the reach carriage. 125

Joystick 4Plus
Fork carriage transition shift. 124
Lifting/lowering the fork carriage. 123
Tilting the fork carriage. 124

K

KL 10 driver's seat. 60
Adjusting the seat backrest. 61
Adjusting the seat suspension. 61
Moving. 60

L

Labelling
Overview. 8
Serial numbers. 12
Lift height restriction
Select lift heights. 82
Set/clear lift heights. 83
Using during lifting. 132
Lifting. 174
Fingertip switch. 125
Joystick 4Plus. 122
Lift mast data. 206
Lift mast version. 121
Lighting
Flashing beacon. 73
Rotating beacon. 73
STILL SafetyLight®. 71
Still Safety Light® 4Plus. 71
Warning zone light. 70
Working spotlights. 69
Lint filter. 206
Liquid containers. 149
Lithium-ion battery
Accident. 29
Charging. 160
Charging upon delivery. 158
Checking the state of charge. 158
Handling. 158, 193, 194
Replacing the battery. 162
Storage. 193
Technical data. 209
Load backrest. 141
Lubricants
Brake fluid. 185
Gearbox oil. 184
High-performance grease. 185
Hydraulic oil, specification. 184
Multi-purpose grease. 185
Special lubricating grease. 185
Lubricants and operating materials
Chain spray. 185
Electrics cleaner. 186
Heat-conducting paste. 185
Liquid glue. 186
Lubricating grease. 185
Screw locking varnish. 186

M

Medical devices. 34
Minimum distance between head and overhead guard. 59
MSG 65 driver's seat. 62
Adjusting the backrest extension. 64
Adjusting the lumbar support. 64
Adjusting the seat backrest. 63
Adjusting the seat suspension. 63
Moving. 62
Switching the seat heater on and off. . 65

N

Nameplate. 9, 11
Position. 11
Noise emission values. 34

O

Operating company. 26
Operating permit. 4
Operating safely
Basic principles. 28
With lithium-ion batteries. 29
Overall view. 44
Overview
Filling quantities. 183
Set values. 183
Overviews
Driver's compartment. 45
Overall view of the truck. 44
Push buttons and switches. 47

P

Packaging material for transport. 23
Panoramic mirror. 106
Parking brake. 117

Parking the truck
Briefly leaving. 130
Parking the truck securely. 130
Parking the truck securely. 130
Picking up a load. 141
PIN code. 102
Presence detection of a foot on the right accelerator pedal. 134
Push buttons and switches. 47

Q

QR code (user manual). 98
Quick-release couplings for auxiliary hydraulics. 152

R

Reach-lower lock. 128
Recommendations for consumables. . . . 184
Recommissioning after decommissioning. 193
Regular maintenance. 173
Regular Service. 173
Regular testing. 42
Removing the lift mast. 164
Residual risks. 32
Restore factory settings. 95
Rotating beacon. 73
Rules for the operating company VDMA. I

S

Safety information for assistance systems. 29
Safety information regarding servicing work. 172
Safety regulations when driving. 105
Scope of the documentation CO solutions. 20
Seat belt. 66
Fastening. 66
Malfunction due to cold conditions. . . . 67
Monitoring. 66
Releasing. 67
Serial numbers. 12
Service brake. 119
Service intervals. 173
Setting down a load. 146
Settings menu Overview. 78
Setting the date. 91
Setting the drive programme. 104
Setting the language. 92
Setting the remaining operation time format. 91
Setting the time. 90
Setting the units. 92
Side chassis supports. 32
Signal terms. 22
Single pedal operation. 107
Speed limitation in the main lift. 113
Speed limitation while driving. 112
Speed reduction when steering. 132
Stability. 30
Side chassis supports. 32
Steering. 114
180° steering. 114
360° steering. 114
Reverse steering. 116
Steering system Checking for correct function. 57
STILL SafetyLight®. 71
Switched on automatically (display-operating unit). 75
Switching between 180°/360° steering. . 114
Switching off. 102
Switching on. 101
Symbols. 22
System menu Overview. 86
System settings. 93

T

Taking delivery of the industrial truck. . . . 14
Technical data
Dimensions. 200
Tyres. 207
VDI datasheet. 201
Towing. 156
Transporting liquid containers. 149
Transporting suspended loads. 148
Transporting the truck using a lorry or flat bed trailer. 164
Truck configuration label. 13

U

User manual (QR code). 98

V

VDMA
Rules for the operating company. I
Vibration characteristics. 34

W

Warning zone light. 70
Wheels
Checking wheel screws. 51
Wheels and tyres
Checking wheel fastenings. 189
Working on the industrial truck
Lithium-ion battery. 38
Working on the truck
Basic principles. 36
Working spotlights. 69

STILL GmbH

11218011501 EN - 12/2025 - 01