Original instructions

Pallet truck

FXH 33

1302

51318011910 EN - 12/2021 - 03

first in intralogistics

Address of manufacturer and contact details

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

Rules for the operating company of industrial trucks

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

This guide provides information for handling industrial trucks:

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

Internet address and QR code

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

1 Foreword

2 Safety

6 Maintenance

7 Technical data

1

Foreword

Your truck

General

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

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

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

Therefore:

– Before commissioning the industrial truck, read the operating instructions and follow the instructions.

– Always follow all the safety information contained in the operating instructions and on the industrial truck.

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.

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

conformity symbols

Declaration that reflects the content of the declaration of conformity

Declaration

STILL GmbH
Berzeliusstraße 10
22113 Hamburg Germany

We declare that the specified machine conforms to the most recent valid version of the directives specified below:

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)]

Personnel authorised to compile the technical documents:

See declaration of conformity

STILL GmbH

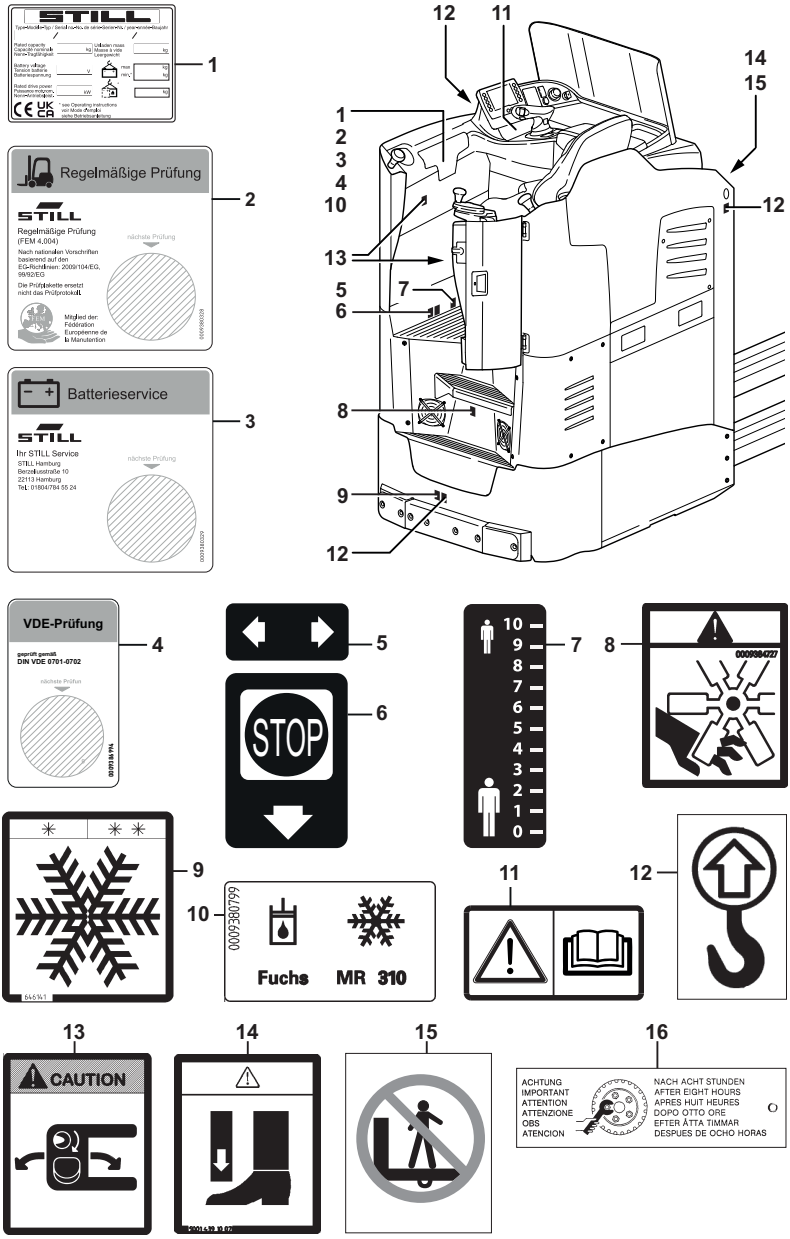
[1)] For the markets of the European Union, the EU candidate countries, the EFTA States and Switzerland.
[2)] For the United Kingdom market.

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.

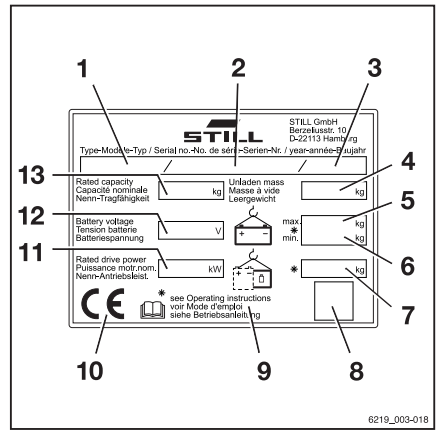
Labelling points



1 Decal information: Nameplate
2 Decal information: Regular testing
3 Decal information: Battery service
4 Decal information: VDE check (on-board charger)
5 Decal information: Driving
6 Decal information: Stop
7 Scale for electrical adjustment of the driver's compartment (variant)
8 Warning sign: Ventilator
9 Decal information: Cold store application (variant)
10 Decal information: Hydraulic oil for cold store application (variant)
11 Decal information: Caution/read the operating instructions
12 Decal information: Lifting point
13 Warning sign: Reverse steering
14 Warning sign: Crushing and shearing zone for feet
15 Warning sign: Do not step on the fork
16 Warning sign: Tighten the wheel bolts after 8 hours

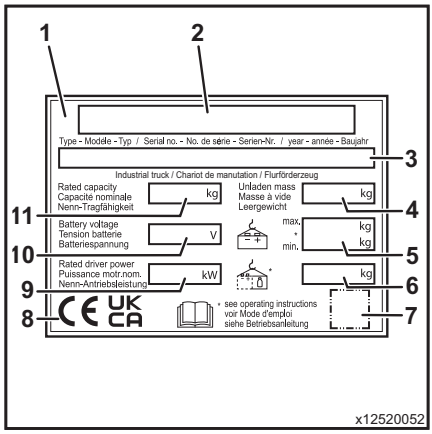
Nameplate

Variant 1: Industrial trucks built up to 12/2021



1 Model
2 Production number
3 Year of manufacture
4 Tare weight in kilograms
5 Maximum permitted battery weight in kilograms (only for electric trucks)
6 Minimum permitted battery weight in kilograms (only for electric trucks)
7 Ballast weight in kilograms (only for electric trucks)
8 Data matrix code
9 For more detailed information, refer to the technical data in the operating instructions
10 CE labelling
11 Nominal drive power in kilowatts
12 Battery voltage V
13 Rated capacity in kilograms

Variant 2: Industrial trucks built after 12/2021

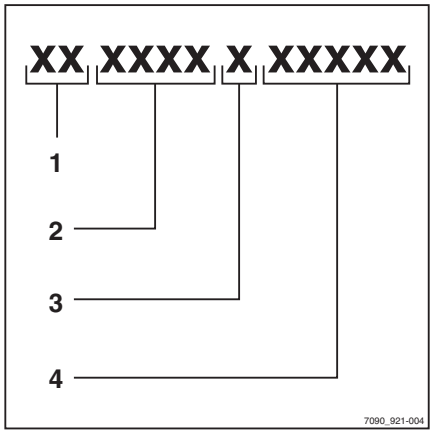


1 Nameplate
2 Manufacturer
3 Model/serial number/year of manufacture
4 Tare weight
5 Max. battery weight/min. battery weight (only for electric trucks)
6 Ballast weight (only for electric trucks)
7 Placeholder for "data matrix code"
8 Conformity marking: CE mark for the markets of the EU, the EU candidate countries, the EFTA States and Switzerland; UKCA mark for the United Kingdom market; EAC mark for the Eurasian Economic Union market
9 Rated drive power
10 Battery voltage (only for electric trucks)
11 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.*

Production number



NOTE

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

The production number contains the following coded information:

(1) Production location

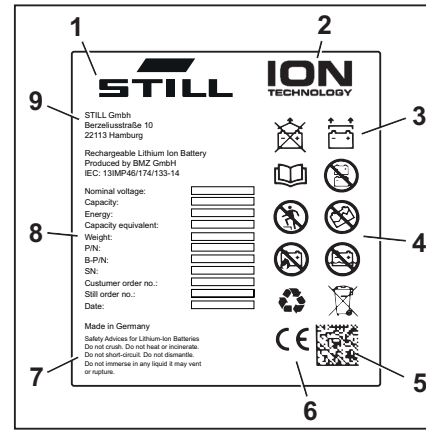
(2) Model

(3) Year of manufacture

(4) Sequential number

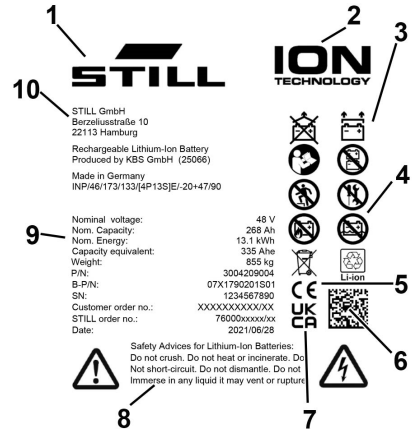
Nameplate for a 48-V lithium-ion battery

Variant 1: Industrial trucks built up to 12/2021



1 Manufacturer
2 Technology
3 Transport information
4 General operating notes
5 Data matrix code for the authorised service centre
6 CE labelling
7 Safety information
8 Data/technical data
9 Address of manufacturer

Variant 1: Industrial trucks built after 12/2021



1 Manufacturer
2 Technology
3 Transport information
4 General operating notes
5 CE labelling
6 Data matrix code for the authorised service centre
7 UKCA labelling
8 Safety information
9 Data/technical data
10 Address of manufacturer

Using the truck

Commissioning

Commissioning is the initial intended use of the truck.

The necessary steps for the commissioning vary depending on the model and equipment of the truck. These steps require preparatory work and adjustment work that cannot be performed by the operating company. See also the chapter entitled "Definition of responsible persons".

– To commission the truck, contact the authorised service centre.

Intended use

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

The industrial truck must only be used for its intended purpose as set out and described in these operating instructions.

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

The maximum load to be lifted (rated capacity) is specified on the nameplate and must not be exceeded; see the chapter entitled "Nameplate".

Improper use

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

NOTE

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

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

⚠ DANGER

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

– It is prohibited to carry passengers on the truck.

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

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

Place of use

The truck is only approved for indoor use.

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

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

The truck is suitable for use in many different countries, ranging from those situated in the tropics to those in Nordic regions (temperature range: -10°C to +40°C).

If the truck will be used in a cold store, the truck must be configured accordingly and, if necessary, approved for such an environment; refer to the chapter entitled "Cold store application".

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

NOTE

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

Parking in temperatures below -10 °C

⚠ CAUTION

Batteries may freeze!

If the truck is parked in an ambient temperature of below -10°C for an extended period, the batteries will cool down. The electrolyte may freeze and damage the batteries. The truck is then not ready for operation.

– At ambient temperatures of below -10°C, only park the truck for short periods of time.

Information about the documentation

Scope of the documentation

- Original operating instructions for the industrial truck
- Operating instructions of the installed variants that are not mentioned in the aforementioned original operating instructions
- "UPA"Operating instructions or inserts (depending on the equipment of the industrial truck)
- DVD with the spare parts list for the industrial truck

These operating instructions describe all measures necessary for the safe operation and proper maintenance of the industrial truck in all possible variants at the time of printing. Special versions to meet customer requirements (UPA) are documented in separate operating instructions. If you have any questions, contact your authorised service centre.

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

Production number	
Year of manufacture	

Please quote the production number in all technical enquiries.

Operating instructions are provided with each industrial truck. These instructions must be stored carefully and must be available to the driver and operating company at all times. The storage location is specified in the section entitled "Overview of the driver's compartment".

If a copy of the operating instructions is lost, the operating company must obtain a replacement from the manufacturer immediately.

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

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

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

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

NOTE

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

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

Supplementary documentation

This industrial truck can be fitted with 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.

Issue date and topicality of the operating instructions

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

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

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

Copyright and trademark rights

Explanation of information symbols used

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTE

For technical requirements that require special attention.

ENVIRONMENT NOTE

To prevent environmental damage.

List of abbreviations

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

Abbreviation	Meaning	Explanation
ArbSchG	Arbeitsschutzgesetz	German implementation of EU occupational health and safety directives
BetrSichV	Betriebssicherheitsverordnung	German implementation of the EU working equipment directive
BG	Berufsgenossenschaft	German insurance company for the company and employees
BGG	Berufsgenossenschaftlicher Grundsatz	German principles and test specifications for occupational health and safety
BGR	Berufsgenossenschaftliche Regel	German rules and recommendations for occupational health and safety
DGUV	Berufsgenossenschaftliche Vorschrift	German accident prevention regulations
CE	Communauté Européenne	Confirms conformity with product-specific European directives (CE labelling)
CEE	Commission on the Rules for the Approval of the Electrical Equipment	International commission on the rules for the approval of electrical equipment
DC	Direct Current	Direct current
DFÜ	Datenfernübertragung	Remote data transfer
DIN	Deutsches Institut für Normung	German standardisation organisation
EG	European Community	
EN	European standard	
FEM	Fédération Européene de la Manutention	European Federation of Materials Handling and Storage Equipment
F_{max}	maximum Force	Maximum power
GAA	Gewerbeaufsichtsamt	German authority for monitoring/issuing regulations for worker protection, environmental protection, and consumer protection
GPRS	General Packet Radio Service	Transfer of data packets in wireless networks
ID no.	Identification number	

Abbreviation	Meaning	Explanation
ISO	International Organization for Standardization	International standardisation organisation
K_{pA}	Uncertainty of measurement of sound pressure levels	
LAN	Local Area Network	Local area network
LED	Light Emitting Diode	Light emitting diode
L_p	Sound pressure level at the workplace	
L_{pAZ}	Average continuous sound pressure level in the driver's compartment	
LSP	Load centre of gravity	Distance of the centre of gravity of the load from the front face of the fork backs
MAK	Maximum workplace concentration	Maximum permissible air concentrations of a substance at the workplace
Max.	Maximum	Highest value of an amount
Min.	Minimum	Lowest value of an amount
PIN	Personal Identification Number	Personal identification number
PPE	Personal protective equipment	
SE	Super-Elastic	Superelastic tyres (solid rubber tyres)
SIT	Snap-In Tyre	Tyres for simplified assembly, without loose rim parts
StVZO	Straßenverkehrs-Zulassungs-Ordnung	German regulations for approval of vehicles on public roads
TRGS	Technische Regel für Gefahrstoffe	Ordinance on hazardous materials applicable in the Federal Republic of Germany
UKCA	United Kingdom Conformity Assessed	Confirms conformity with the product-specific directives that apply in the United Kingdom (UKCA labelling)
VDE	Verband der Elektrotechnik Elektronik Informationstechnik e. V.	German technical/scientific association
VDI	Verein Deutscher Ingenieure	German technical/scientific association
VDMA	Verband Deutscher Maschinen- und Anlagenbau e. V.	German Mechanical Engineering Industry Association
WLAN	Wireless LAN	Wireless local area network

Defining directions

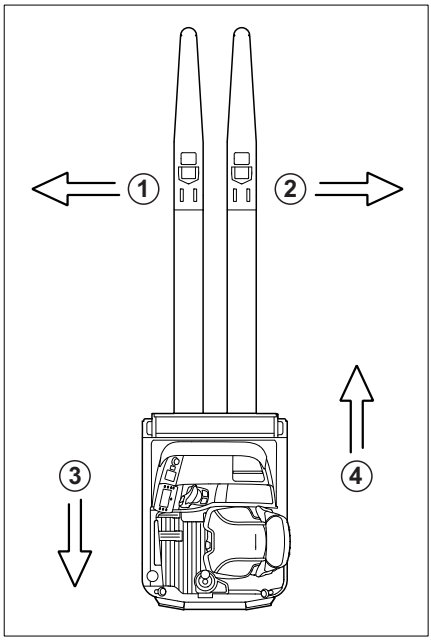
General:

- right (1)
- left (2)

Drive directions:

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

The driver sits crosswise to the drive direction.



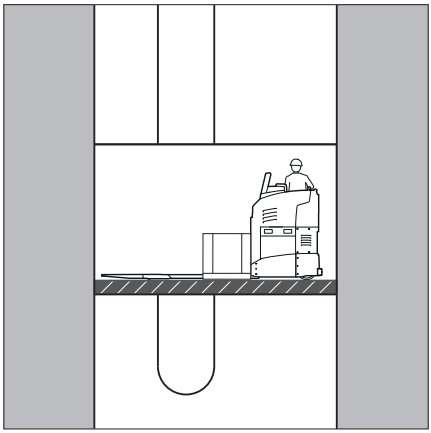
Schematic views

View of functions and operating procedures

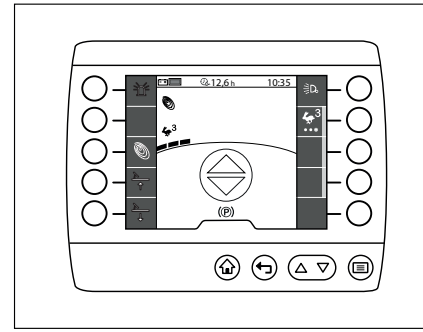
At many points in this documentation, the (mostly sequential) operation of certain functions or operating procedures is explained. Schematic views of an industrial truck are used to illustrate these procedures.

NOTE

These schematic views do not represent the design state of the documented truck. The views are used solely for the purpose of clarifying procedures.



View of the display-operating unit ▷



NOTE

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

Environmental considerations

Packaging

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

ENVIRONMENT NOTE

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

Disposal of components and batteries

The truck is composed of different materials. If components or batteries need to be replaced and disposed of, they must be:

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

NOTE

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

ENVIRONMENT NOTE

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

2

Safety

Definition of responsible persons

Operating company

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

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

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

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

We recommend that the national performance specifications are adhered to.

Additional duties of the operating company of industrial trucks in the field test

Industrial trucks in the field test are industrial trucks of a new design, placed on the market for the purposes of testing.

The operating company has a duty to allow only specially trained drivers to drive these industrial trucks and to inform the employees in the surrounding area about the test.

Specialist

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

- A completed vocational qualification that demonstrably proves their professional expertise. This proof should consist of a vocational qualification or a similar document.
- Professional experience indicating that the qualified person has gained practical experience of industrial trucks over a proven period during their career During this time, this person has become familiar with a wide

range of symptoms that require checks to be carried out, such as based on the results of a hazard assessment or a daily inspection

- Recent professional involvement in the field of the industrial truck test in question and an appropriate further qualification are essential. The qualified person must have experience of carrying out the test in question or of carrying out similar tests. Moreover, this person must be aware of the latest technological developments regarding the industrial truck to be tested and the risk being assessed

Drivers

This truck may only be driven by suitable persons who are at least 18 years of age, have been trained in driving, have demonstrated their skills in driving and handling loads to the operating company or an authorised representative, and have been specifically instructed to drive the truck. Specific knowledge of the truck to be operated is also required.

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

Driver rights, duties and rules of behaviour

The driver must be trained in his rights and duties.

The driver must be granted the required rights.

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

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

The driver must:

- have read and understood the operating manual
- have familiarised himself with safe operation of the truck
- be physically and mentally able to drive the truck safely

⚠ DANGER

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

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

Prohibition of use by unauthorised persons

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

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

Basic principles for safe operation

Insurance cover on company premises

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

NOTE

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

Special features when using lithium-ion batteries (variant)

The following special features apply for the operating company and drivers when this industrial truck is equipped with a lithium-ion battery (variant) in place of a conventional lead-acid battery.

DANGER

Risk of explosion!

Heating to over 80°C, mechanical stress and incorrect use may lead to the battery exploding.

- Never heat the battery to over 80°C or expose it to naked flames.
- Do not subject the battery to excessive mechanical loads.
- Do not climb on the battery.
- Avoid impacts.
- Do not open the battery.
- Never short-circuit the battery connectors.
- Do not connect the battery with the polarity reversed.

Permissible lithium-ion batteries

– Use only lithium-ion batteries that have been approved by the manufacturer of this industrial truck.

Declaring the use of lithium-ion batteries

We recommend that the operating company informs the local fire brigade of the planned use of industrial trucks fitted with lithium-ion batteries.

The health and safety representative and the workforce must also be informed that industrial trucks with lithium-ion batteries are being used.

Hazard assessment

In accordance with §3 of the German Ordinance on Industrial Safety and Health (BetrSichV), the operating company is obliged to perform a separate hazard assessment in order to assess the risks posed to the company by lithium-ion batteries.

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

Driver qualification

In addition to the prerequisites set out in the chapter entitled "Definition of responsible persons", in the section entitled "Driver", please observe the following:

- The driver must be instructed in how to operate the lithium-ion battery.
- Only instructed drivers may drive these trucks.

Procedure in the event of a fire

Damaged lithium-ion batteries pose an increased fire hazard. In the event of a fire, large quantities of water are the best option to cool the battery.

– Evacuate the location of the fire as quickly as possible.

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

Water can be used to cool down an incipient fire.

Transport

In certain circumstances, transporting the lithium-ion battery outside the premises may require a special transport container.

– Contact the authorised service centre for more information.

Product-specific dangers of the 45.7-kWh & 26.1-kWh lithium-ion battery (variant)

⚠ WARNING

Risk of burns due to hot surfaces!

The battery has an integrated brake resistor that can heat up to over 100°C during operation.

It can take several hours for the brake resistor to cool down to a temperature at which it poses no risk.

– Do not touch the hot area (1). Observe the warning sign ⚠.

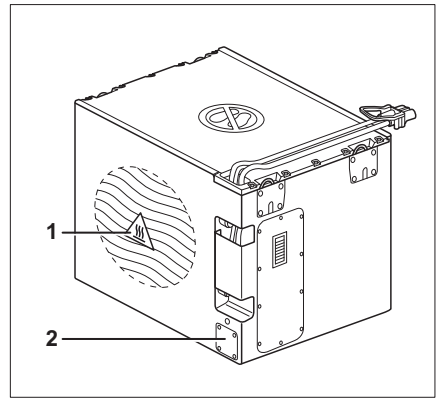
⚠ WARNING

Risk of injury!

If the safety valve (2) trips, there is a risk of injury!

– Exit the area around the battery immediately, retreating to a minimum distance of 5 m.

▷



Lithium-ion battery

1 Hot area on the brake resistor (position depends on the battery group; observe the warning sign ⚠)
2 Safety valve (position depends on the battery group)

NOTE

The brake resistor (1) is installed differently depending on the battery group. The build-up of heat in the area around the brake resistor is harmless. The safety valve (2) opens when the battery is subjected to over pressure or catches fire.

All lithium-ion batteries are essentially associated with the risk of a fire starting, of the battery exploding and of the battery causing chemical burns.

If the batteries are used properly, no hazardous substances escape from the closed tray. No contact with toxic substances is possible. There is a risk of contact only in the event of incorrect use (mechanical, thermal, electrical) that leads to activation of the safety valve (2) or to the housing cracking. As a result, the electrolyte fluid may leak out, the electrode material may react with moisture/water or battery discharge/a fire/or an explosion can occur, depending on the surrounding circumstances.

Touching live components can cause an electric shock, which can have thermal or paralysing effects. The latter can cause ventricular fibrillation, cardiac arrest or respiratory paralysis, leading to death.

If a battery combusts, the resulting smoke or vapours can cause irritation of the eyes, skin and respiratory system.

Modifications and retrofitting

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

Any modifications that adversely affect stability, load capacity and the circumferential view from the industrial truck require written approval by the manufacturer.

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

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

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

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

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

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

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

⚠ DANGER

Risk of explosion from additional holes in the area surrounding the battery!

Explosive gases can escape and can lead to potentially fatal injuries if they explode. Sealing bores with plugs is not sufficient to prevent gas from escaping.

– Do not drill holes in the area surrounding the battery.

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

The operating company must also fulfil the following prerequisites:

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

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

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

Warning regarding non-original parts

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

⚠ CAUTION

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

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

Damage, defects and misuse of safety systems

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

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

Do not remove or deactivate safety systems and switches.

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

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

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

Wheels and tyres

⚠ DANGER

Risk to stability!

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

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

- Wheels not approved by the manufacturer
- Excessive wear to the tyres
- Tyres of inferior quality
- Changes to the wheel rims
- Combination of wheels from different manufacturers

The following rules must be observed to ensure stability:

- Only use wheels with equal and permitted levels of wear to the tyres.
- Only use tyres of the original tyre type.

- Only use wheels approved by the manufacturer.
- Only use high-quality products.

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

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

– Contact your authorised service centre regarding this matter.

Medical equipment

⚠ WARNING

Electromagnetic interference may occur on medical devices!

Only use equipment that is sufficiently protected against electromagnetic interference.

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

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

Exercise caution when handling gas springs and accumulators

⚠ WARNING

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

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

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

⚠ WARNING

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

Before starting work on the accumulator it must be depressurised.

– Contact the authorised service centre.

Length of the fork arms

⚠ DANGER

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

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

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

If the fork arms are too long, they can catch on loading units behind the load that is to be

picked up. These other loading units then fall over when the load is raised.

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

Residual risk

Residual dangers, residual risks

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

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

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

⚠ WARNING

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

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

Risks can include:

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

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

with these regulations either intentionally or carelessly.

Stability

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

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

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

Special risks associated with using the truck and attachments

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

the truck correctly and without the risk of accidents.

Overview of hazards and countermeasures

NOTE

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

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

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

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

Hazard	Course of action	Check note √ done - Not applicable	Notes
	DGUV rule 113-001 and observe the operating instructions		
When parking LPG trucks	German Ordinance on Industrial Safety and Health (BetrSichV), DGUV rule 113-001 and observe the operating instructions	O	German Ordinance on Industrial Safety and Health (BetrSichV) and DGUV rule 113-001
When operating driverless transport systems			
Roadway quality inadequate	Clean/clear roadways	O	German Ordinance on Industrial Safety and Health (BetrSichV)
Loading equipment incorrect/slipped	Reposition load on pallet	O	German Ordinance on Industrial Safety and Health (BetrSichV)
Unpredictable driving behaviour	Employee training	O	German Ordinance on Industrial Safety and Health (BetrSichV)
Routes blocked	Mark routes Keep roadways clear	O	German Ordinance on Industrial Safety and Health (BetrSichV)
Routes intersect	Announce right-of-way rule	O	German Ordinance on Industrial Safety and Health (BetrSichV)
No person detection when placing goods into stock and removing goods from stock	Employee training	O	German Ordinance on Industrial Safety and Health (BetrSichV)

Danger to employees

According to the German Ordinance on Industrial Safety and Health (BetrSichV) and labour protection law (ArbSchG), the operating company must determine and assess hazards during operation, and establish the labour protection measures required for employees (BetrSichVO). The operating company must therefore draw up appropriate operating instructions (§ 6 ArbSchG) and nominate a person who is responsible for these operating instructions. Drivers must be informed of the operating instructions that apply to them.

NOTE

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

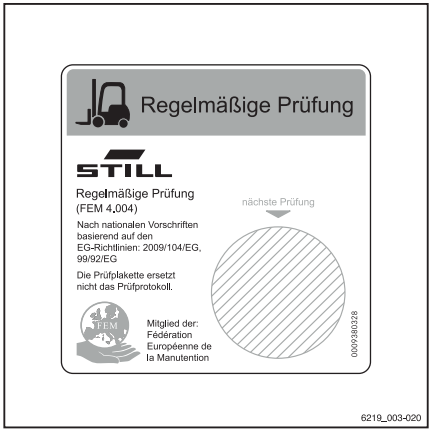
The design and equipment of the truck comply with the standards and directives required for CE conformity. The design and equipment also comply with the standards and directives necessary for the UKCA compliance that is required in the United Kingdom. The design and equipment are therefore not part of the required scope of the hazard assessment. The same applies to attachments with their own CE labelling and UKCA labelling. The operating company must, however, select the type and equipment of the trucks so as to comply with the local provisions for deployment.

The result of the hazard assessment must be documented (§ 6 ArbSchG). In the case of truck applications involving similar hazard situations, the results may be summarised. Refer to the chapter entitled "Overview of hazards and countermeasures", which provides advice on complying with this regulation. The overview specifies the primary hazards that, in the event of non-compliance, are the most frequent causes of accidents. If other major hazards are present as a result of the specific operating conditions, these hazards must also be taken into consideration.

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

Safety tests

Carrying out regular inspections on the truck ▷



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

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

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

– Arrange for the authorised service centre to perform regular testing on the truck.
– Observe the guidelines for tests carried out on the truck in accordance with FEM 4.004.

The operating company is responsible for ensuring that any defects are remedied without delay.

– Notify your authorised service centre.

NOTE

In addition, observe the national regulations for the country of use.

Insulation testing

The insulation of the truck must have sufficient insulation resistance. For this reason, insulation testing in accordance with DIN EN 1175 and DIN 43539, VDE 0117 and VDE 0510 must be conducted at least once yearly as part of the FEM testing.

The insulation testing results must be at least the test values given in the following two tables.

– For insulation testing, contact the authorised service centre.

The exact procedure for this insulation testing is described in the workshop manual for this truck.

NOTE

The truck's electrical system and drive batteries must be checked separately.

Test values for the drive battery

Component	Recommended test voltage	Measurements		Nominal voltage U_{Batt}	Test values
Battery	50 VDC	Batt+ Batt-	Battery tray	24 volts	> 1200 Ω
	100 VDC			48 volts	> 2400 Ω
	100 VDC			80 volts	> 4000 Ω

Test values for the entire truck

Nominal voltage	Test voltage	Test values for new trucks	Minimum values over the duration of the service life
24 volts	50 VDC	Min. 50 kΩ	> 24 kΩ
48 volts	100 VDC	Min. 100 kΩ	> 48 kΩ
80 volts	100 VDC	Min. 200 kΩ	> 80 kΩ

Safety regulations for handling consumables

Permissible consumables

⚠ WARNING

Consumables can be dangerous!

– Observe general information and safety information regarding the use of consumables.

– Refer to the chapter entitled "Safety regulations for handling consumables".

– Note the safety datasheets provided by the manufacturer of the consumables in question.

– Only use consumables that are approved for use with this truck. The permissible consumables can be found in the maintenance data table.

Oils

⚠ DANGER

Oils are flammable!

– Follow the statutory regulations.

– Do not allow oils to come into contact with hot engine parts.

– No smoking, fires or naked flames!

⚠ DANGER

Oils are toxic!

– Avoid contact and consumption.

– If vapour or fumes are inhaled, move to fresh air immediately.

– In the event of contact with the eyes, rinse thoroughly (for at least 10 minutes) with water and then consult an eye specialist.

– If swallowed, do not induce vomiting. Seek immediate medical attention.

⚠ WARNING

Prolonged intensive contact with the skin can result in dryness and irritate the skin!

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

⚠ WARNING

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

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

ENVIRONMENT NOTE

Oil is a water-polluting substance!

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

Hydraulic fluid

⚠ WARNING

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

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

⚠ WARNING

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

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

ENVIRONMENT NOTE

Hydraulic fluid is a water-polluting substance.

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

Battery acid

⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is toxic.

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

⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is corrosive.

- When working with battery acid, use appropriate PSA (rubber gloves, apron, protection goggles).
- When working with battery acid, never wear a watch or jewellery.
- Do not allow any acid to get onto clothing or skin or into the eyes. If this does happen, rinse immediately with plenty of clean water.
- In case of injury, seek medical advice immediately.
- Immediately rinse away spilt battery acid with plenty of water.
- Follow the statutory regulations.

ENVIRONMENT NOTE

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

Disposal of consumables

ENVIRONMENT NOTE

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

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

Commissioning FleetManager™ (variant)

Activating the access control after delivery of the truck

⚠ CAUTION

Danger associated with use by unauthorised persons

The FleetManager™ regulates the access authorisation to the truck. To activate the access control, the FleetManager must be put into operation immediately following delivery. This ensures that only persons authorised by the operating company have access to the truck.

If the FleetManager is not put into operation immediately after delivery, the operator must convert the truck to a different access control.

– Put the FleetManager™ into operation immediately after delivery. Make the truck accessible only to people who are authorised by the operating company.
– In order to convert the truck to a different access control, contact your authorised service centre.

The FleetManager™ regulates the access authorisation to the truck via a PIN code, access chip or access card. This means that the truck is effectively protected against unauthorised access. The system can only be activated at the customer's premises, as it uses essential customer data. Therefore, at the time of delivery, the truck is not protected against unauthorised use.

In order to guarantee protection, the FleetManager™ must be put into operation immediately after delivery. The operating company is responsible for ensuring that only authorised personnel use the truck.

If the operating company decides not to use the FleetManager™ at a later date, the operating company is responsible for the conversion of the truck to a different access control.

Emissions

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

Noise emissions

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

This machine emits the following sound pressure level:

Continuous sound pressure level in the driver's compartment

L_{pAZ}	Measurement uncertainty K_{pA}
≤ 67 dB(A)	4 dB(A)

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

Time proportions:

- Lifting 10%
- Idling 58%
- Driving 32%

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

NOTE

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

Vibrations

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

Frequency-weighted effective value of acceleration on the seat

MSG 65 driver's seat	Uncertainty of measurement
< 0.4 m/s^2	K = 0.3 m/s^2

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

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

NOTE

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

Battery

⚠ DANGER

Risk of explosion due to flammable gases!

During charging, lead-acid batteries release a mixture of oxygen and hydrogen (oxyhydrogen gas). This gas mixture is explosive and must not be ignited.

- Make sure that there is always sufficient ventilation in working areas that are entirely or partially enclosed.
- Keep away from open flames and flying sparks.
- Do not smoke.
- Observe the safety regulations for handling the battery.

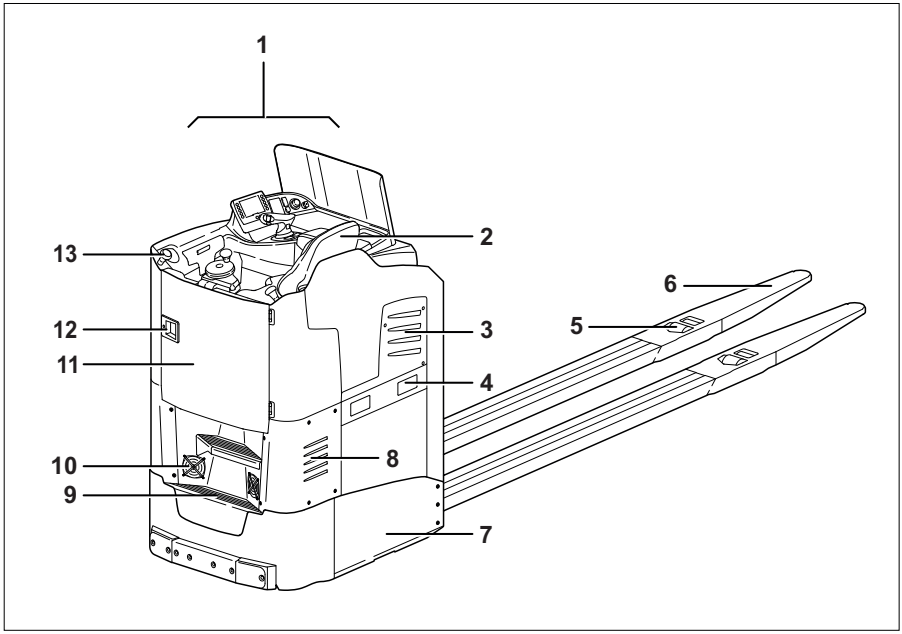
Radiation

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

3

Overviews

Overview

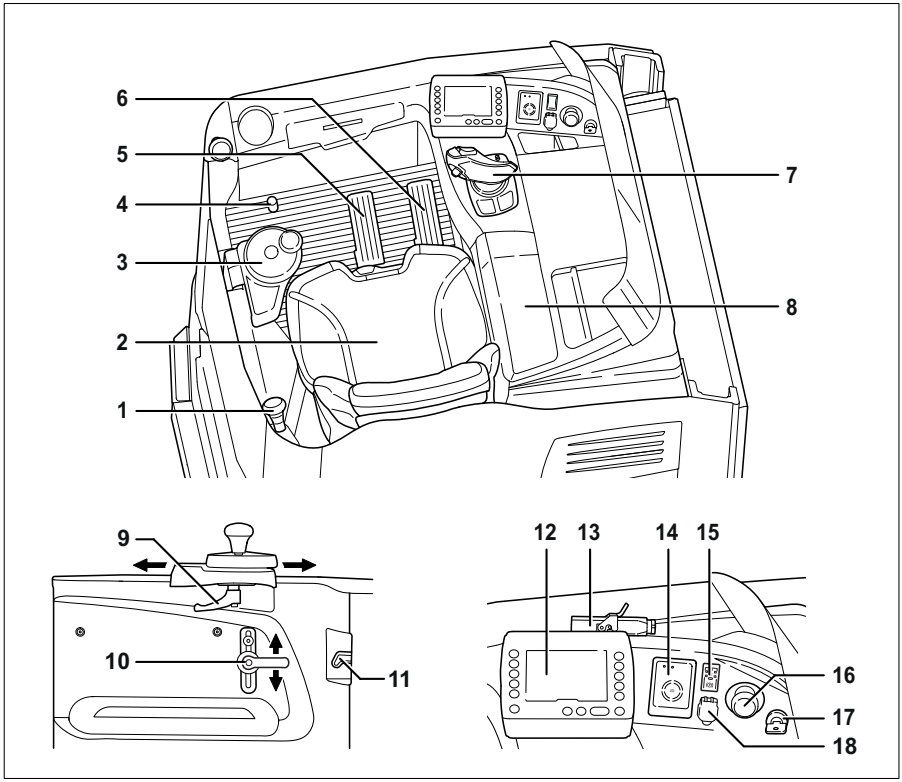


1	Driver's compartment	7	Battery compartment cover plate
2	Driver's seat	8	Control compartment
3	Battery compartment	9	Steps
4	Fork openings for truck forks (for battery replacement)	10	Control compartment ventilation
5	Load castors	11	Cab door
6	Forks	12	Door opener
		13	Handholds, mounting aid

NOTE

The industrial truck equipment may differ from the equipment shown.

Driver's compartment

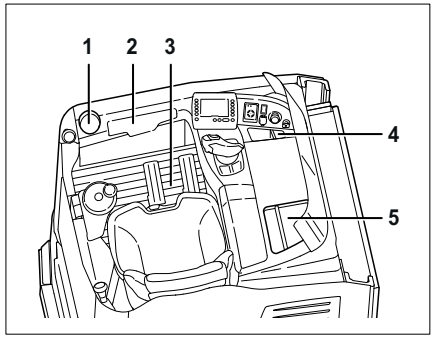


View of driver's compartment*

1 Handhold (mounting aid)
2 Driver's seat
3 Steering wheel
4 Manual footplate adjustment (height adjustment)
5 Brake pedal
6 Accelerator pedal
7 Operating lever Joystick 4Plus
8 Armrest
9 Longitudinal adjustment of the steering wheel
10 Height adjustment of the steering wheel
11 Cab door opener (inner)
12 Display-operating unit
13 12-V / 10-A connection for data terminal (variant)
14 Card reader or keypad for enabling the industrial truck (variant)
15 Seat adjustment (variant)
16 Emergency off switch
17 USB port
18 Key switch or start button (variant)

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

Shelves and cup holders ▷



⚠ WARNING

Objects may fall into the footwell and obstruct the pedals, which poses a risk of accident!

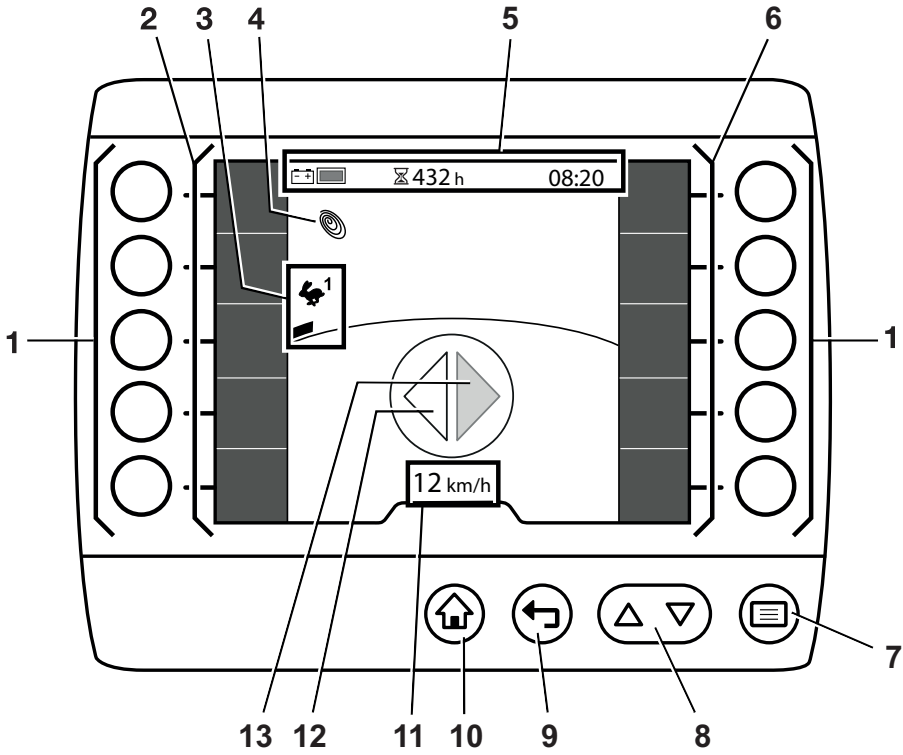
Objects that fall into the footwell during travel as a result of steering or braking may slip between the pedals (3) and prevent them from working correctly. It may then not be possible to brake the industrial truck when necessary.

- Objects to be stored must be of the correct size so that they cannot fall from the cup holder (1) or from the shelves (2, 4, 5).
- Bottles with a maximum size of 1.5 litres may be stored in the cup holder.
- Make sure that stored objects cannot fall from the shelves when the industrial truck is started up, steered and braked.

The industrial truck is equipped with a cup holder (1) and several storage compartments (2 4, 5). The cup holder holds bottles up to 1.5 litres in size.

Operating devices and display elements

Display/control unit



1	Softkeys	7	Menu button
2	Left-hand favourites bar	8	Scrolling buttons
3	Selected drive programme with driving dynamics display	9	Back button
4	Blue-Q symbol	10	Main-display button
5	Status bar*: battery charge, operating hours, time	11	Driving speed or parking brake Ⓟ
6	Right-hand favourites bar	12	Drive direction indicator for "drive direction"
		13	Drive direction indicator for "load direction"

* An example status bar (6) is shown in this figure.

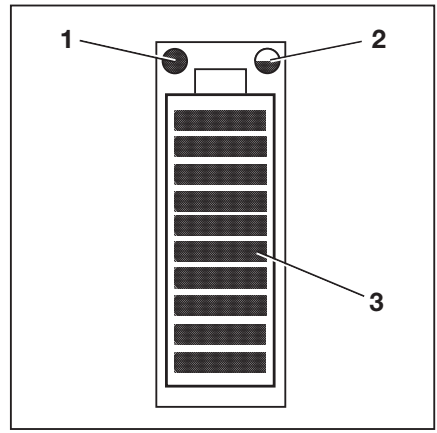
– For the other display options, see the chapter entitled "Display-operating unit".

Lithium-ion battery display

The lithium-ion battery display is located on the side of the battery tray. In addition to the display-operating unit, the lithium-ion battery display also shows the charging status and information relating to the lithium-ion battery.

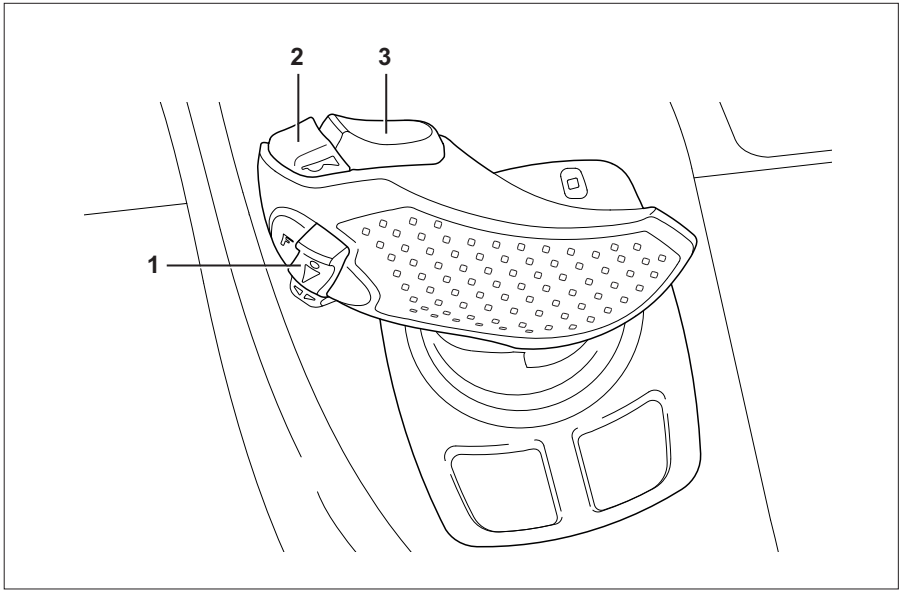
– Observe the chapter entitled "Display elements" in the STILL "Lithium-ion batteries" operating instructions.

▷



1 Service LED (red)
2 Temperature LED (yellow/red)
3 Charging state LEDs (red/green)

Joystick 4Plus



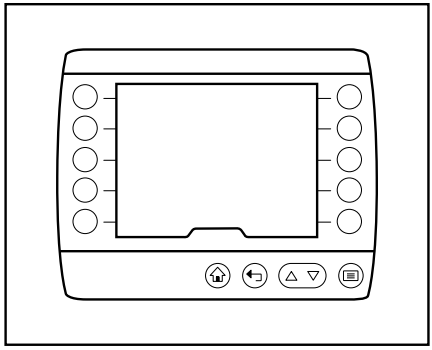
1 Drive direction switch
2 Signal horn button
3 "Lift / lower" rocker button

4

Display-operating unit

Description of the display-operating unit

Display-operating unit



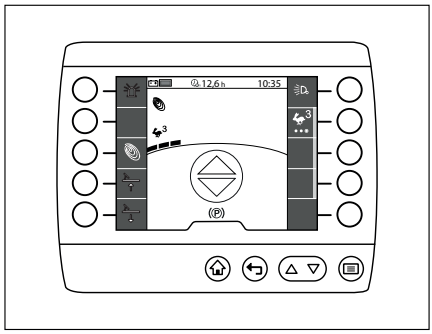
The display-operating unit is an operator / industrial truck interface of the latest generation.

The display-operating unit allows operation of the usual functions of the industrial truck, such as configuring the driving dynamics or operating the lights.

It also shows information about the status of the industrial truck, such as the state of battery charge, error messages and mileage.

The configurable favourite functions allow the operation of the industrial truck to be adjusted to the individual preferences of the driver. Additional assistance systems also facilitate operation and lead to greater safety and satisfaction in daily work.

Main display

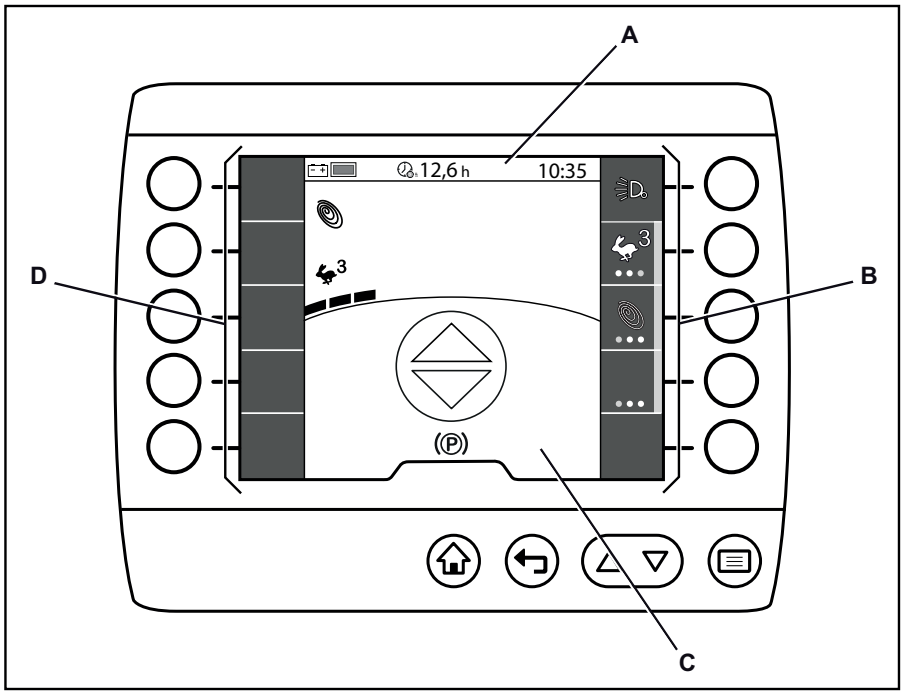


After switching on the industrial truck using the key switch, the industrial truck is ready for operation. The main display appears on the display.

NOTE

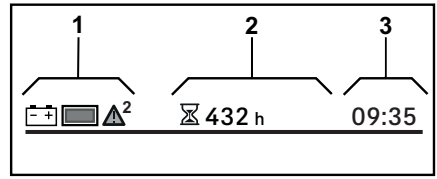
Depending on the configuration of the industrial truck, you may have to enter the PIN code first.

Overview of the main display



A	Status bar	C	Display area
B	Right-hand favourites bar / menu bar	D	Left-hand favourites bar

Status bar



NOTE

The symbols and values shown in the status bar are examples.

The status bar provides the driver with information relevant to the truck, such as the battery charging status, daily operating hours and the time, similarly to an on-board computer.

Description of the display-operating unit

The status bar is divided into three fields, each of which can be configured individually:

1 Left field
2 Centre field
3 Right field

For more information, see the chapter entitled "Setting the status bar".

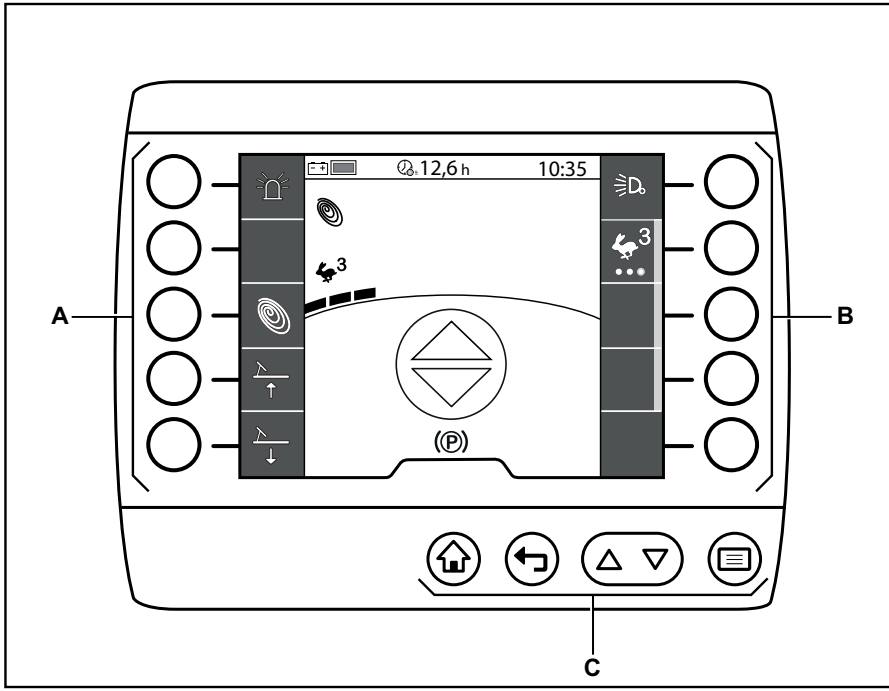
The following table gives an overview of possible information and values available for the display area of the status bar.

Description of the display	Display format	Symbol
Filling level	Graphical %	
Range	h	
Operating hours	h	
Daily operating hours	h	
Distance	km mi	
Daily distance	km mi	
Time	hh:mm hh:mm am hh:mm pm	
Date	dd.mm.yy mm/dd/yy	
Next maintenance interval	h	
Current consumption	kW	
Average consumption	kW	

Special features

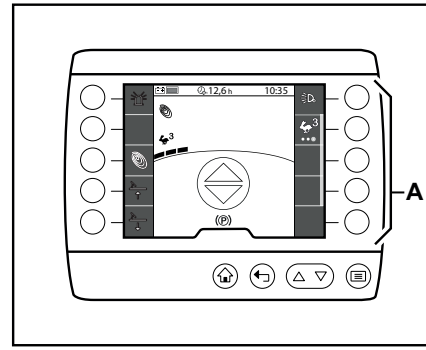
In the event of a message, the symbol ⚠ is always displayed in the left-hand field of the status bar. For more information, see the chapter entitled "Messages".

Keypad assignment



A Softkeys on the left
B Softkeys on the right
C Control and input keys

Softkeys on the right



Five Softkeys (A) are arranged on the right-hand side of the display.

These softkeys always relate directly to the functions shown on the display.

You push a Softkey to execute the respective function.

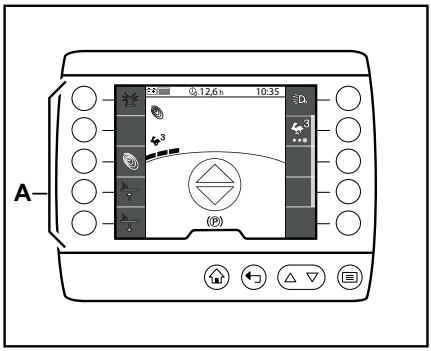
In addition to switching functions on and off, the Softkeys can also be used to navigate within the menu structure and to select actions.

Softkeys on the left

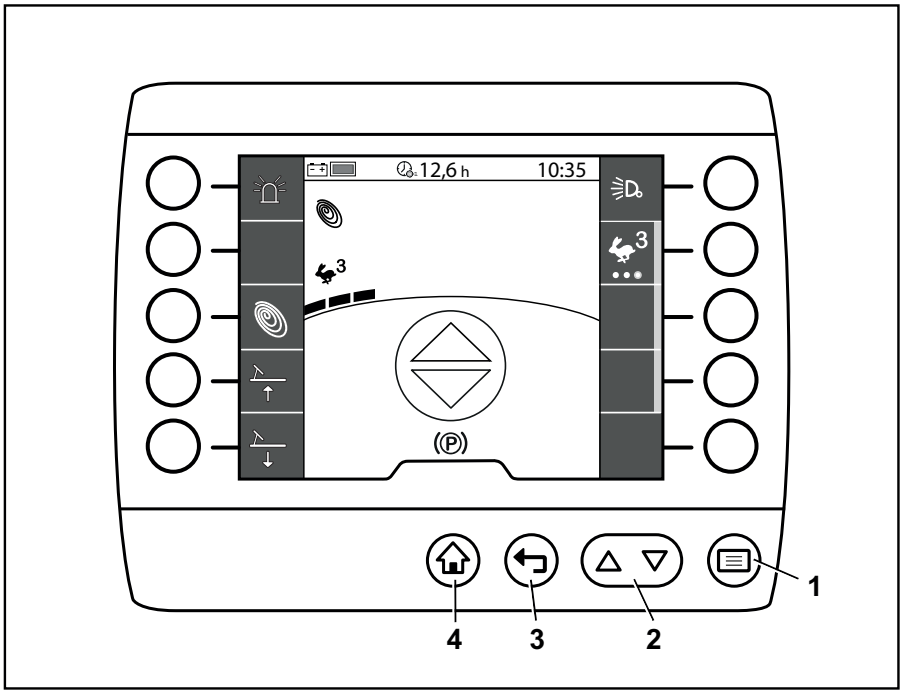
Five Softkeys (A) are arranged on the left-hand side of the display.

These softkeys always relate directly to the functions shown on the display.

You push a Softkey to execute the respective function.



Control and input keys



1 Menu button
2 Scroll button
3 Back button
4 Main-display button

The control and input keys on the display-operating unit are used to enter control and input commands.

Menu button

Button (1) opens the first level of the menu. If the driver is a lower navigation level, pressing the button will return to the top menu level.

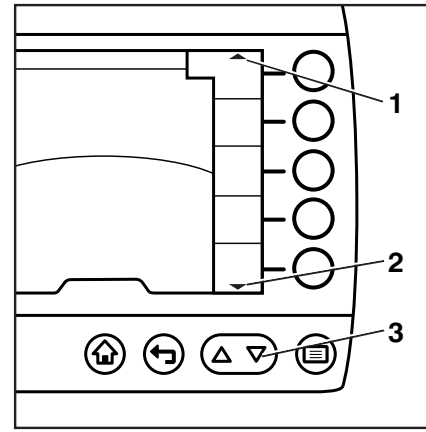
In the settings menus, the button is used to save the input.

Scroll button

The "scroll" button △▽(3) can be used to scroll up and down within a menu level (1,2).

Press the right-hand button △ to scroll up. Press the left-hand button ▽ to scroll down.

The △ button is used to delete input in the settings menus.



Back button

If the button is pressed, the display changes to the next menu level up.

The button is used to abort input in the settings menus.

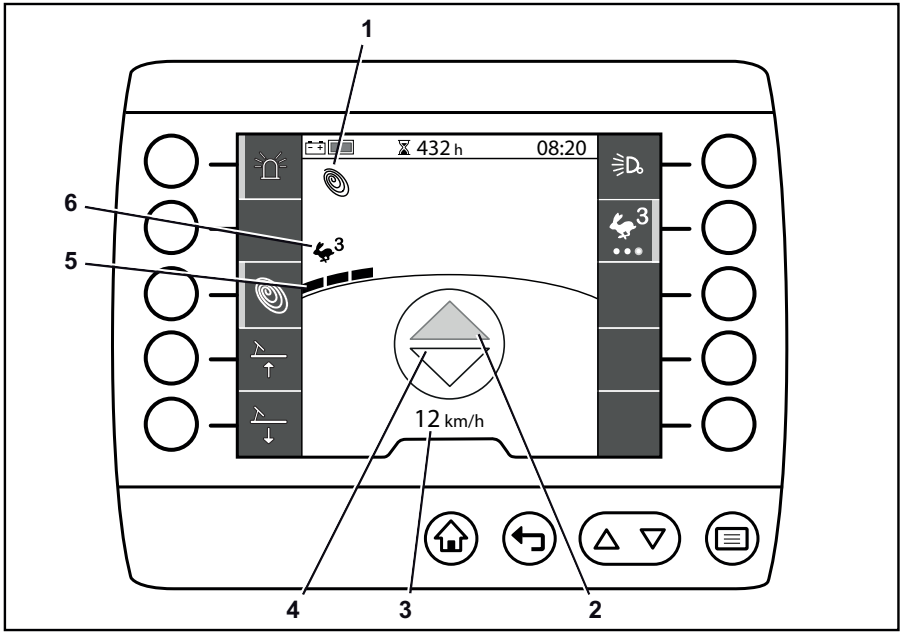
Main-display button

The button returns directly to the main display regardless of the current menu level.

NOTE

The specific functions of the control and input keys are explained in the corresponding chapters.

Display area



1	Power mode	4	"Reverse" drive direction indicator
2	"Forwards" drive direction indicator	5	Driving dynamics display
3	Speed indicator	6	Drive programme display

The display of the display-operating unit shows control commands and input commands, as well as information about the active drive programmes and load programmes.

The assignment shown here is an example and may differ from the assignment actually programmed. Buttons may be assigned multiple functions that are called up according to the menu navigation. For more information, see the chapter entitled "Favourites".

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

NOTE

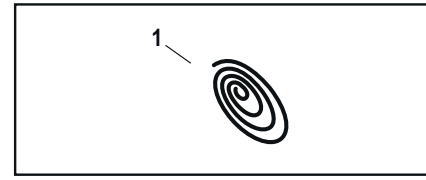
The individual displays and display areas are explained briefly below. More detailed information can be found in these operating instructions and in the operating instructions for the industrial truck.

Power mode

Display of the active power mode:

- Blue-Q (1)
- STILL-Classic

If Blue-Q has not been selected, STILL-Classic is automatically active. No pictogram is displayed for STILL-Classic.

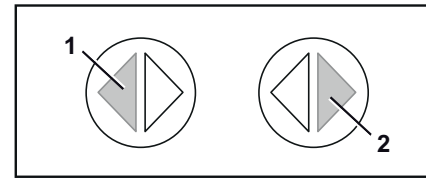


Drive direction indicators / steering angle display

The drive direction indicators show the selected drive direction for "drive direction" (1) or "load direction" (2). The drive direction is selected via the drive direction switch on the Joystick 4Plus. After the selection has been made, the drive direction indicator for the selected drive direction is displayed in orange.

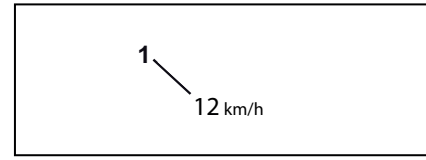
If no drive direction is selected, the arrows in the drive direction indicator have no colour.

The display turns according to the current steering angle.



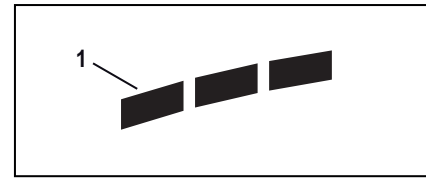
Speed indicator

The speed indicator (1) displays the driving speed of the industrial truck in numbers.



Driving dynamics display

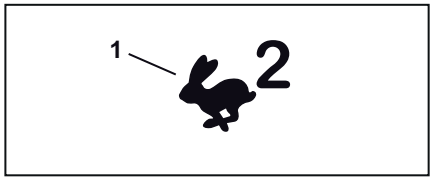
Using individual bars, the driving dynamics display (1) shows the acceleration dynamics and deceleration dynamics of the drive programme selected.



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

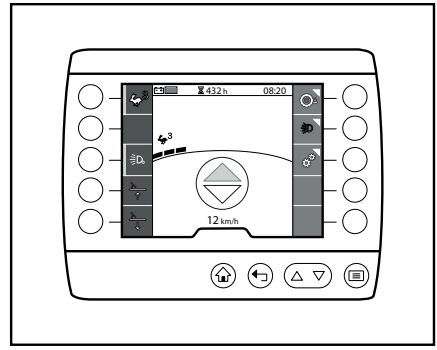
Drive programme display

The pictogram (1) shows the drive programme selected.



Function menus

Function menus



The function menus allow the driver to access all working functions and driving functions of the industrial truck. These functions represent a group of sub-menus that can be accessed via the "menu".

In addition to the "function menus", the driver can access frequently used functions via the "favourites". For more information about the favourites and how to configure them, see the chapters entitled "Favourites" and "Configure favourites".

Arrangement

The "menu" is divided into the following sub-menus:

- "Driving"
- "Light"
- "Settings"

NOTE

The "Settings" sub-menu does not belong to the function menus as it contains the configuration options for the display-operating unit. For more information about the settings menus; see the chapter entitled "Settings".

Overview

The following table shows an overview of the menu items at the individual menu levels.

Menu level 1	Menu level 2	Menu level 3	Menu level 4
Driving	Drive programmes	1 Drive programme 1	
		2 Drive programme 2	
		3 Drive programme 3	
		A Drive programme A	

Menu level 1	Menu level 2	Menu level 3	Menu level 4
		Drive programme B	
	Power modes	Blue-Q	
	Speed limitation		
Light	Working spotlight (load side)		
	Working spotlight (drive side)		
	Rotating beacon		
	STILL SafetyLight		

NOTE

A precise description of the individual functions can be found in the operating instructions for the industrial truck.

Operating the function menu

The following chapter provides an overview of the operation and navigation within the function menus of the display-operating unit.

Opening the function menu

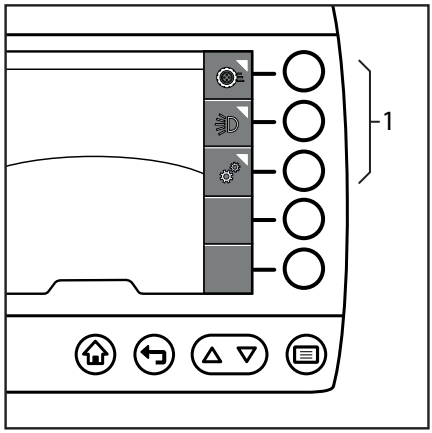
The "menu" provides the driver with access to the function menus and the settings menus of the industrial truck.

– Press the button ☰.

The "menu" opens at the first level.

– Push the Softkey for the desired function menu.

The display changes to the selected function menu.



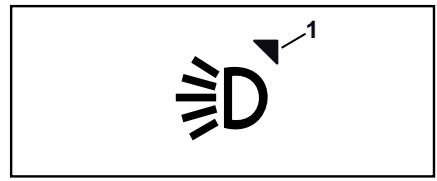
Navigating in the function menu

The "menu" of the display-operating unit is structured in levels. Each sub-menu with its menu items is a deeper level that is opened via the Softkeys.

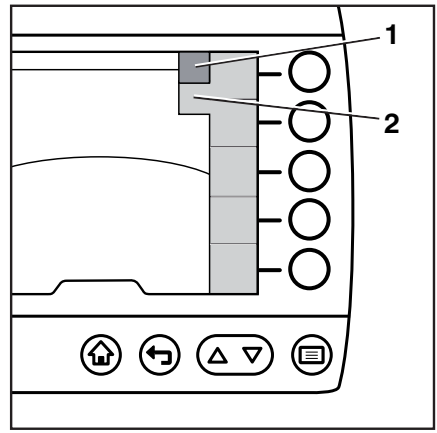
NOTE

You can open the main display at any time via the button ⌂. You can open the first menu level at any time via the button ☰.

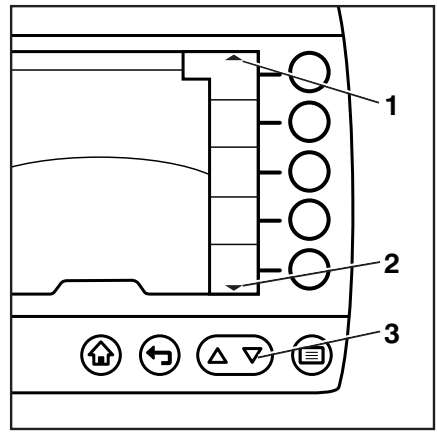
The menu indicator (1) shows whether there is a function or a sub-menu behind a menu item. ▷



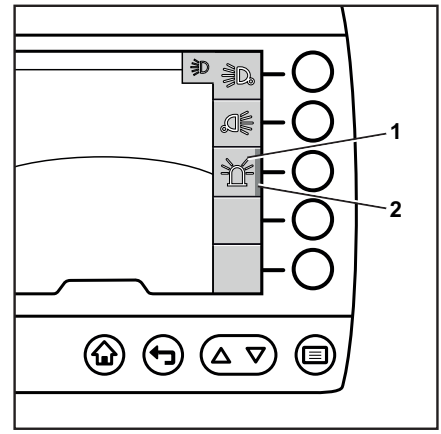
The display of the levels is via tabs (1). Each level is shown with a tab. The last selected sub-menu and thus the last selected level is always identified as the bottom tab and as active. Active tabs (2) are shown in light grey; inactive tabs (3) are shown in dark grey. ▷



The display-operating unit can display a maximum of five menu items simultaneously. If there are more menu items within a menu, the scroll indicator (1,2) appears. This indicator appears only if there are additional menu items. Use push buttons △ and ▽ (3) to scroll. ▷



Single functions



Some functions can only be switched on and off. Of these functions, several can be active at the same time.

This is presented below using the example of the lighting:

– Press the button ☰.

The "menu" opens at the first level.

– Push the "Light" Softkey

The "Light" (1) sub-menu opens.

– Use the Softkeys to select the desired light.

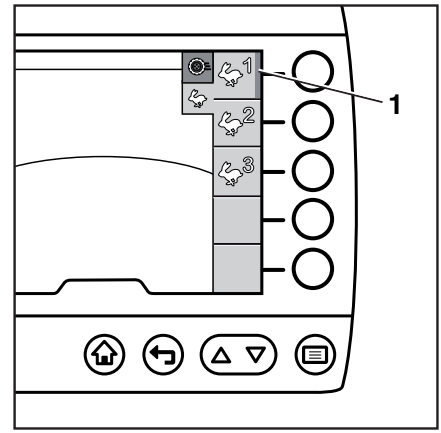
The desired light is activated. The activation bar (2) appears next to the desired light.

– Use the Softkeys to select an additional light.

The selected light is also activated.

To switch off the light, press the corresponding Softkeys again.

Multiple functions



Some functions cannot be switched off. Such functions have several options in their sub-menu, one of which always is active. Selecting a different function option activates this new function option and deactivates the previous selection.

This is presented below using the example of the drive programmes:

– Press the button ☰.

The "menu" opens at the first level.

– Push the "Drive programmes" Softkey.

The "Drive programmes" sub-menu opens.

NOTE

The active drive programme is identified by the orange activation bar.

– Use the Softkeys to select the desired drive programme.

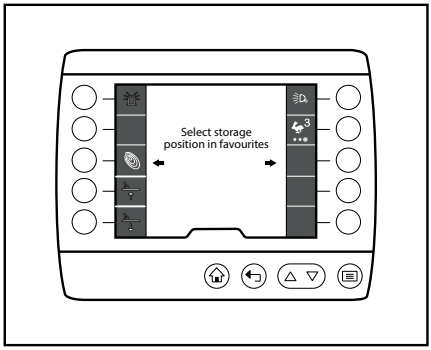
The desired drive programme is activated.
The activation bar (1) for the selected drive programme appears.

Favourites

Favourites

Frequently used functions and assistance functions can be stored in the main display as favourites. These functions can then be accessed directly via the Softkeys and are therefore available more quickly.

You can configure the favourites to meet your requirements via the settings menu and you can change them at any time.



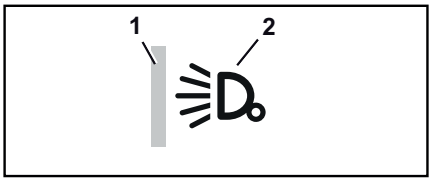
Operating favourites

Single function

A single function is switching a favourites function on or off. The menu contains only one menu entry for the single function.

You push the corresponding Softkey to execute the single function. You always switch a single favourites function "on" and "off" with the same Softkey.

The activation bar (1) indicates that the function of the favourite, e.g. the "working spotlight" (2), is switched on.

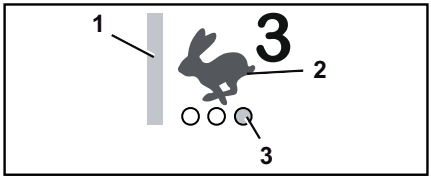


Functions with several stages

Functions with several stages have several functions or function levels. The menu contains a separate menu entry for each function.

Repeatedly pressing the corresponding Softkey, e.g. for the "drive programmes" favourite (2), changes the drive levels in the specified sequence, in this case from 1 to 3.

The activation bar (1) identifies the function that is switched on. The orange activation point (3) indicates the corresponding activated position.



Pressing the Softkey again switches to the next drive level.

Configure favourites

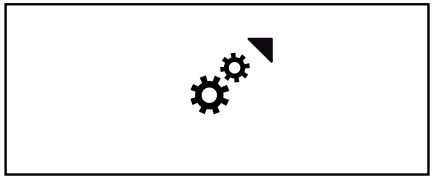
Configure favourites

– Press the button ▭.

The first menu level appears.

– Push the "Settings menu" Softkey. ▷

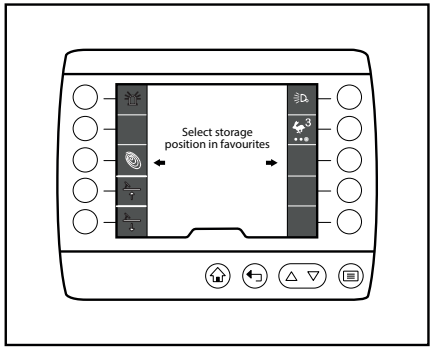
The "Settings menu" appears.



– Push the `Configure favourites` Softkey. ▷

The `Select storage position in favourites` menu level appears. ▷

– Push the Softkey for the desired storage position.



NOTE

Any favourites storage positions that are already occupied can be overwritten in this process. The locations are overwritten directly and without warning.

The function menus appear on the display:

- "Driving"
- "Light"

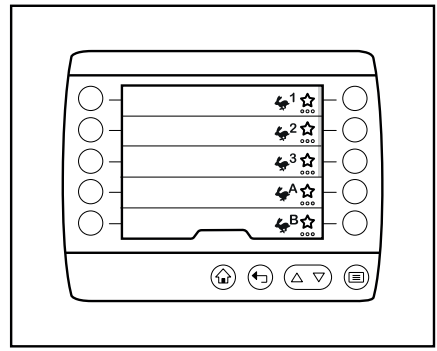
– Push the Softkey for the desired function menu.

The display changes to the selected function menu. If necessary, use the Softkeys to select other sub-menus.

– Select a function by pushing the Softkey.

– If required, you can add further functions by pushing the Softkey.

– To save the selected favourites, press the ⌂ "Main display" button to return to the main display.



Grouping favourites

When assigning the favourites, you can group functions. This grouping supports quick access to multiple operating stages, for example. The function group determines how the functions can be grouped.

Functions that cannot be grouped

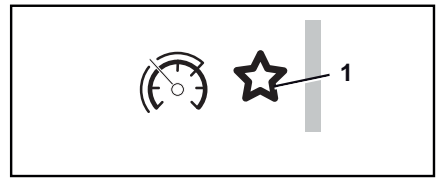
Some functions can be saved as a favourite, but cannot be grouped with other functions.

These functions are recognisable as follows:

- The asterisk (1) indicates that the function can be saved as a favourite
- Beneath the asterisk, there are no further activation points

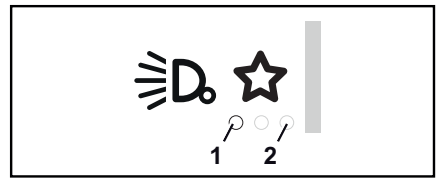
– Select a function by pushing the Softkey.

The activation bar appears. The function is saved as a favourite.



Switching functions on and off simultaneously

Single functions, e.g. functions in the "light" group, can be grouped on a Softkey so that they can be switched on and off simultaneously.



These functions are recognisable as follows:

- The asterisk indicates that the function can be saved as a favourite
- Beneath the asterisk, there are three transparent activation points (2)
- When you select the function, one activation point is shown in white (1)

– Select a function by pushing the Softkey.

The activation bar appears and an activation point is shown in white. The function is saved as a favourite. If required, add more functions. You can group up to three functions.

Grouping operating stages for switching through ▷

You can group multiple functions on one Softkey. Pushing the Softkey switches through the functions one by one.

These functions are recognisable as follows:

- The asterisk indicates that the function can be saved as a favourite
- Beneath the asterisk, there are three transparent activation points
- When you select the function, one activation point is shown in orange (1). This point also displays the position on the Softkey
- If you select a further function, this additional function is also shown in orange at the appropriate point. For the other functions, a white activation point (2) shows that the storage position is occupied

– Select a function by pushing the Softkey.

The activation bar appears and an activation point is shown in orange. The function is saved as a favourite. If required, add more functions. You can group up to three functions.

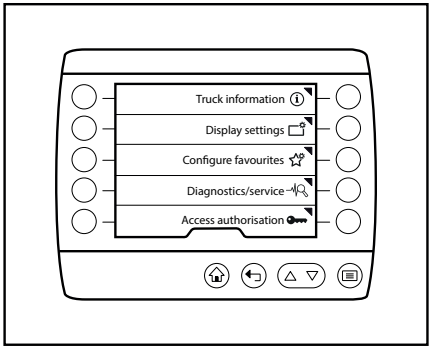
Favourites overview

The following functions can be displayed as favourites in the main display. Associated functions can be grouped together as a favourites group. However, individual functions cannot be assigned to a favourites group.

Picto-gram	Designation	Type
Power modes		
	Blue-Q	Single function
Drive programmes		
	Drive programme 1	Multiple function
	Drive programme 2	Multiple function
	Drive programme 3	Multiple function
	Drive programme A	Multiple function
	Drive programme B	Multiple function
Light		
	Working spotlight (drive side)	Single function
	Working spotlight (load side)	Single function
	Rotating beacon	Single function
	STILL Safety Light	Single function
Individual functions		
	Electric footplate adjustment (up)	Single function
	Electric footplate adjustment (down)	Single function

Settings menu

Settings menu



Via the settings menu, the driver can access truck information such as operating hours, maintenance intervals etc.

The settings menu can also be used to configure the display and some other functions of the industrial truck.

NOTE

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

Arrangement

Using the settings menu, you can access the following sub-menus:

- "Truck information"
- "Display settings"
- "Configure favourites"
- "Truck settings"
- "Service"
- "Access authorisation"

Overview

The following table shows an overview of the "Settings" menu, its sub-menus and its configuration options. The greyed-out menus are available at the "fleet manager" authorisation level. For more information, see the operating instructions for the industrial truck.

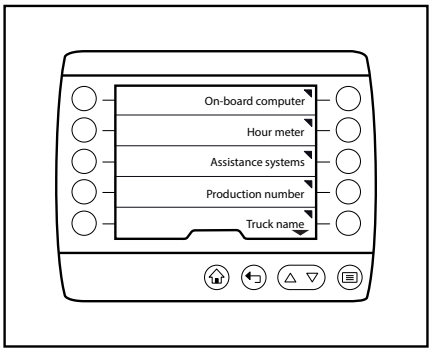
Menu level 1	Menu level 2	Menu level 3	Menu level 4
Settings	Truck information	On-board computer	
		Hour meter	
		Production number	
		Truck name	
		Battery name	
	Display settings	Time	
		Date	
		Language	
		Units	Distance
			Temperature
			Weight
			Pressure
			Volume
			Time
			Date
		Status bar	Left field
			Centre field
			Right field
	Configure favourites		
	Truck settings	Blue-Q	
		Drive programmes	Drive programme A
			Drive programme B
		Speed limitation	Permanently/button
			Max. speed
		Battery	Battery type
			Capacity
		Change PIN codes	PIN code 1
			...
			PIN code 50
		Electric footplate adjustment	

Menu level 1	Menu level 2	Menu level 3	Menu level 4
	Service	Message list	
		Maintenance interval	
		Shock sensor	Reset
		Changing the password	
	Access authorisation		

Truck information

Description

The "Truck information" menu provides information about the industrial truck, such as consumption, operating hours and the factory number.



Operation

– Press the button ☰.

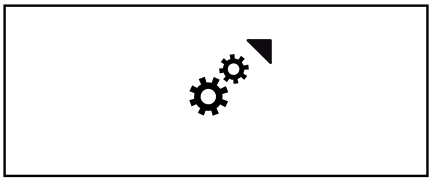
The first menu level appears.

NOTE

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

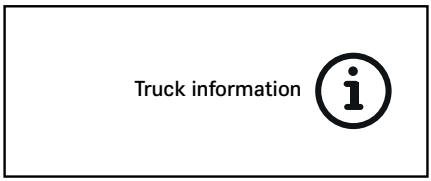
– Push the "Settings" Softkey. ▷

The "Settings" menu appears.



– Push the `Truck information` Softkey. ▷

The "Truck information" menu appears.



Depending on the equipment of the industrial truck, the following menus can be accessed:

- "On-board computer"
- "Hour meter"
- "Assistance systems"

- "Production number"
- "Truck name"
- "Battery name"
- "On-board charger"

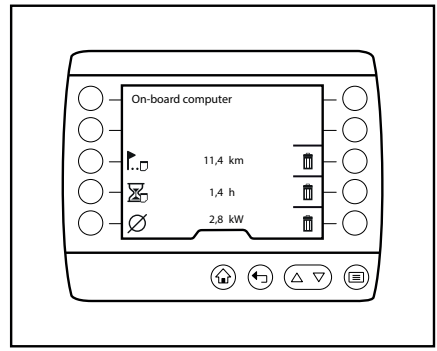
On-board computer

– Push the `On-board computer` Softkey.

The "On-board computer" menu appears.

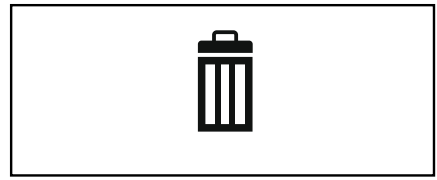
The `on-board computer` displays three values:

- `Daily distance` in km or miles
- `Daily operating hours`
- `Consumption` in kW



– To reset a value, press the "Clear" Softkey.

The value is set to "zero".



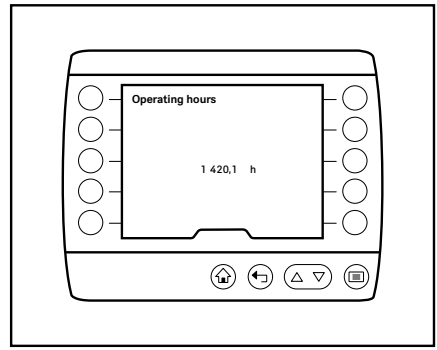
NOTE

Deleted values cannot be recovered. The deletion is performed immediately and without warning.

Hour meter

– Press the `Hour meter` Softkey.

The "Operating hours" menu appears and displays the total operating hours of the industrial truck.



Assistance systems

– Press the `Assistance systems` Softkey.

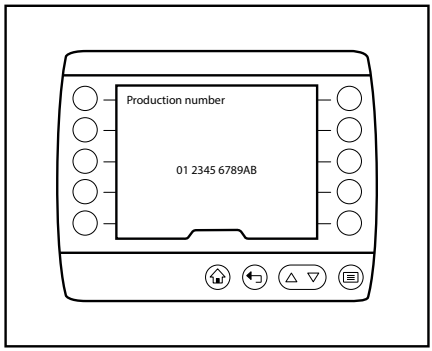
The "Assistance system" menu appears and displays the available assistance systems of the industrial truck.

– Press the corresponding Softkey to open the settings menu for the individual assistance systems.

Production number

– Push the `Production number` Softkey.

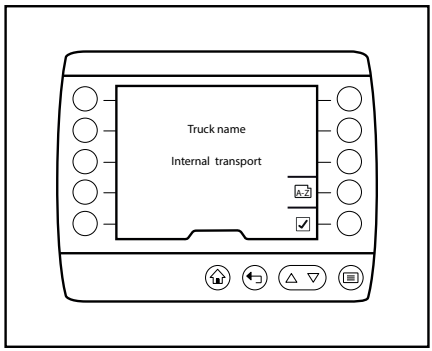
The "Production number" menu appears and displays the production number of the industrial truck.



Truck name

– Push the `Truck name` Softkey.

The "Truck name" menu appears and displays the name of the industrial truck. In this example, the name is "Internal transport".

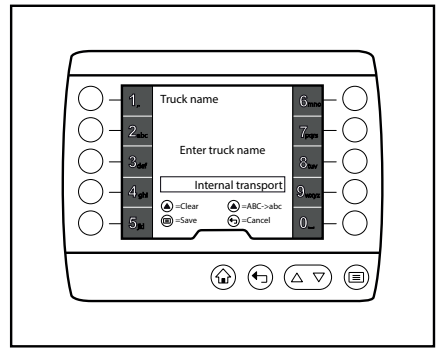


– To enter or change the name, press the `A-Z` Softkey.

The "Enter truck name" menu opens.

– Use the Softkeys to enter the truck name. ▷
– Push the button ☰ to save the entry.

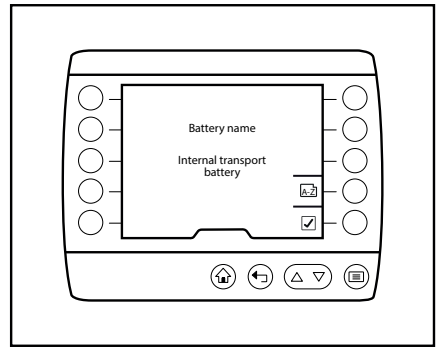
The truck name is saved and the "Truck name" menu opens.



Battery name ▷

– Press the `Battery name` Softkey.

The "Battery name" menu appears and displays the name of the batteries in the industrial truck. In this example, the name is "Internal transport battery".

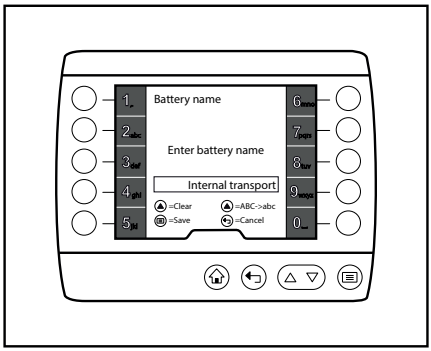


– To enter or change the name, press the `A-Z` Softkey. ▷

The "Enter battery name" menu opens.

– Use the Softkeys to enter the battery name. ▷
– To save the entry, press the button ☰.

The battery name is saved and the "Battery name" menu opens.



On-board charger ▷

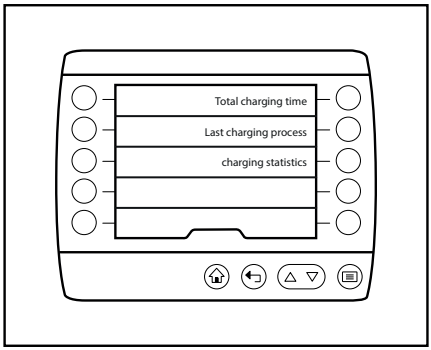
– Press the `On-board charger` Softkey.

The "On-board charger" menu appears.

The following menus are available:

- `Total charging time`
- `Last charging process`
- `Charging statistics`

– Press the respective Softkey to open the menus.



Display settings

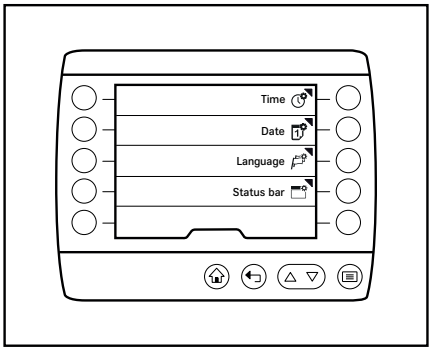
Description ▷

The "Display settings" menu allows you to set, for example, the language, units and the status bar.

Operation

– Press the button ☰.

The first menu level appears.

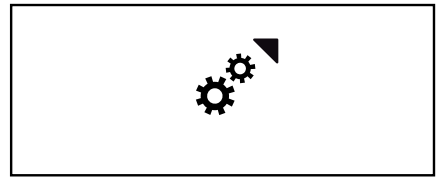


NOTE

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

– Push the "Settings" Softkey. ▷

The "Settings" menu appears.



– Push the `Display settings` Softkey. ▷

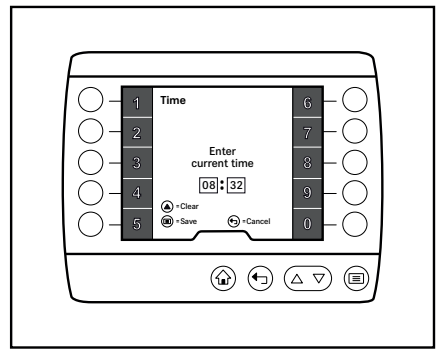
The "Display settings" menu appears.

The following menus can be accessed:

- "Time"
- "Date"
- "Language"
- "Status bar"

Time

– Press the `Time` Softkey ▷.



The "Time" menu appears.

– Use the Softkeys to enter the time in the input field.

– Press the button ☰.

The time is saved.

Date

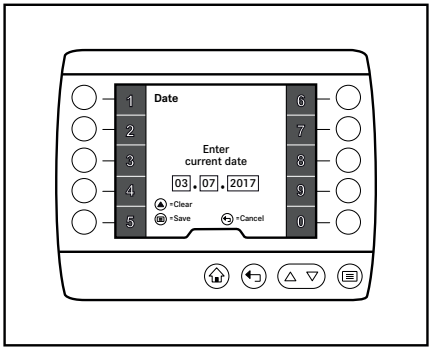
– Press the Date Softkey .

The "Date" menu appears.

– Use the Softkeys to enter the date in the input field.

– Press the button .

The date is saved.



Language

– Press the Language Softkey .

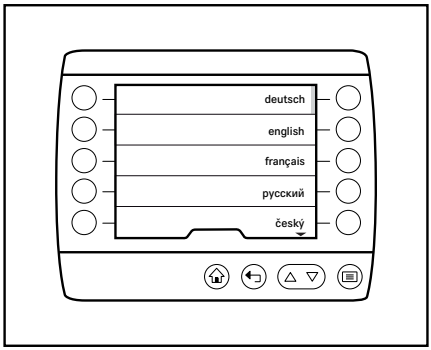
The "Lang." menu appears.

– If necessary, use the buttons △ and ▽ to scroll to the desired language.

– Use the Softkeys to select the required language.

The language selection is saved and the texts are displayed in the selected language.

The following languages are available:



List of available languages				
Deutsch	English	Français	Русский	český
Dansk	Español	Magyar	Italiano	Nederlands
Polski	Svenska	Suomi	Norsk	Português
Íslenska	Eesti	Lietv	Latviu	Slovenský
Slovenski	Български	Românesc	Türkçe	Ελληνικά

NOTE

Country-specific units, such as km/h, are not changed by the language selection and must be adjusted separately if required.

Status bar

– Press the `Status bar` Softkey.

The "Status bar" menu appears.

The following menus can be accessed:

- "Left field"
- "Centre field"
- "Right field"

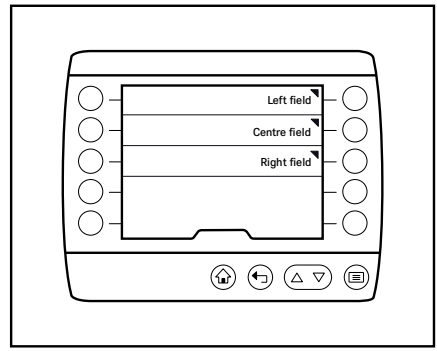
– Use the Softkeys to select the desired field.

The sub-menu of the selected field appears. The activation bar shows the active display.

– Use the Softkeys to select the required display.

The display is saved. The "Status bar" menu appears.

The following displays are possible in the fields:



Left field	Centre field	Right field
Filling level (graphical)	Display no information	Display no information
Filling level (numerical)	Operating hours	Daily operating hours
Range	Daily operating hours	Daily distance
	Distance	Time
	Daily distance	Date
	Time	Next maintenance interval
	Date	Current consumption
	Next maintenance interval	Average consumption
	Current consumption	Filling level (numerical)
	Average consumption	Range
	Filling level (numerical)	
	Range	

Service

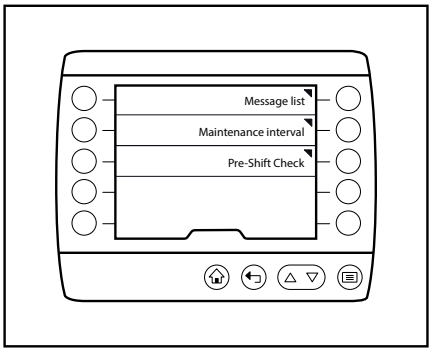
Description

The "Service" menu provides information about the maintenance intervals and the active messages.

Operation

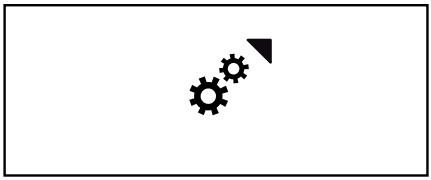
– Press the button ☰.

The first menu level appears.



– Push the "Settings" Softkey.

The "Settings" menu appears.



– Push the `Service` Softkey.

The "Service" menu appears.

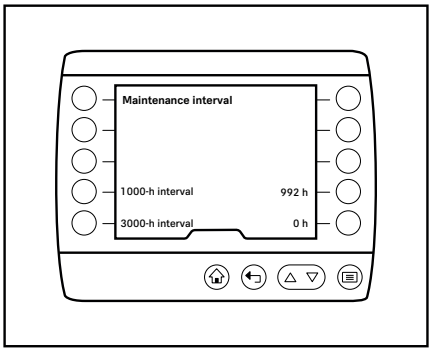
The following menus can be accessed:

- "Maintenance interval"
- "Message list"

Maintenance interval

– Push the `Maintenance interval` Softkey.

The "Maintenance interval" menu appears and displays the remaining operating hours until the next scheduled maintenance intervals.



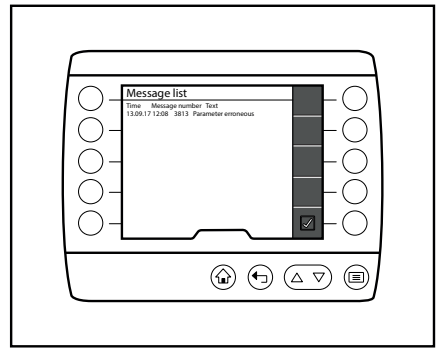
Message list

– Press the `Message list` Softkey.

The "Message List" menu appears. The driver can view the messages that have arisen.

– Press the "Confirm" Softkey ☑.

The "Service" menu appears.



NOTE

For more information about the messages, see the chapter entitled "Messages".

Access authorisation

Description

The "Access authorisation" menu enables further settings options to be released.

NOTE

This menu is important for personnel with the corresponding access authorisation, such as the fleet manager.

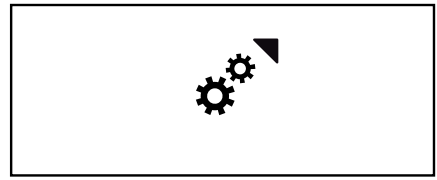
Operation

– Press the button ☰.

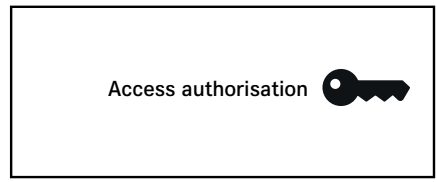
The first menu level appears.

– Push the "Settings" Softkey.

The "Settings" menu appears.



– Push the `Access authorisation` Softkey.



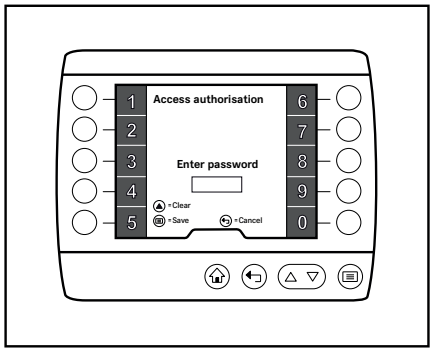
The "Access authorisation" menu appears. ▷

– Enter the password using the Softkeys.

– Press the button ☰.

The password is checked.

In the event of an incorrect entry, the message `The code entered was not correct` appears and the symbol ! is displayed.



NOTE

If the password is entered incorrectly three times, the password entry is locked for five minutes.

If the correct password is entered, a message appears stating that you have switched to the "fleet manager" authorisation level. The display changes to the "Settings" menu.

Messages

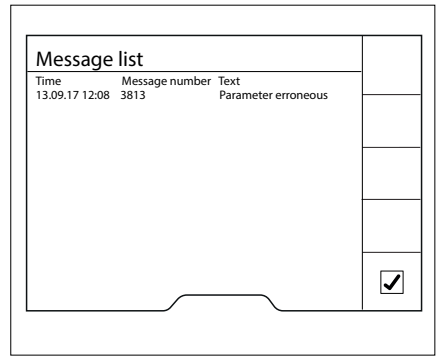
Message types

Messages provide the driver with information about the status of the industrial truck.

During the operation of the industrial truck, two different message types may appear:

- Messages about the industrial truck
- Messages about operation

The message list shows all of the received messages. ▷



The following information is displayed for each message:

- Date
  Displays the date on which the message was received.
- Error number
  Shows the error number of the message.
- Error text
  Shows the error text of the message.

NOTE

For more information about opening the message list, refer to the "Service" chapter.

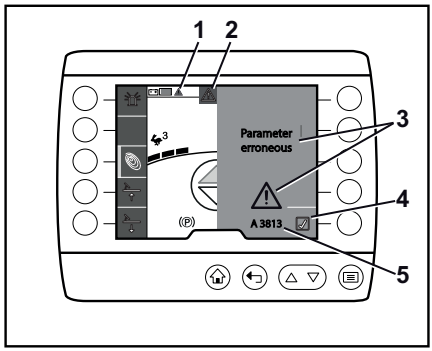
Messages about the industrial truck

These messages are displays that occur due to defects on the industrial truck.

Display format

If an error occurs, the display-operating unit reacts as follows:

- Message indicator (1) appears in the status bar
- A message with a red tab (2) appears
- Display of an advice text and a supporting graphic (3), as well as the error number (5)



NOTE

Messages about the industrial truck are given an entry in the message list. Messages that occur are stored in the message list until they are resolved. The operator can look at the message here with the text and error number. Once the cause of the message is resolved, the message is removed from the message list. For further information about the message list, see the chapter entitled "Service".

Message indicator

When a message occurs, the message indicator appears in the status bar.

Symbol	Meaning
⚠	Display for a message
⚠^{2}	The number corresponds to the number of active messages. This message is displayed for up to 9 messages.
⚠$^{+}$	Display from the tenth message

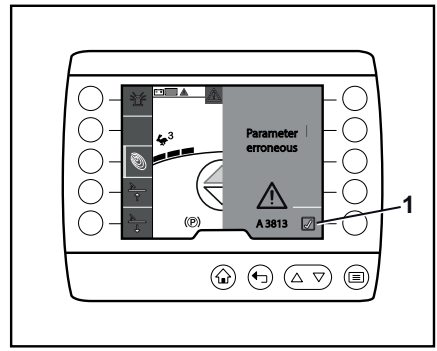
Operation

When a message is opened, there is no access to the right-hand favourites. The industrial truck can still be operated.

– Push "Confirm" (1) to close the message. ▷

The message disappears. The message is stored and accessible in the message list until the error is resolved; see the chapter entitled "Service".

The message indicator also remains in the status bar until the error is resolved.



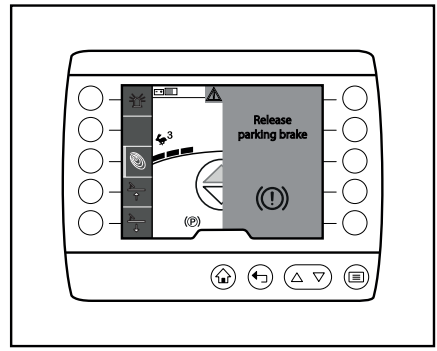
Messages about operation

These messages are notes to the operator to draw the operator's attention to an action or behaviour.

Display format ▷

If the industrial truck is operated incorrectly, the display-operating unit reacts as follows:

- A message with a grey tab appears
- Display of advice text and a supporting graphic
- The message disappears as soon as the requested action has been performed or is no longer necessary



NOTE

There is no entry in the message list for messages about operation and these messages are therefore not displayed in the status bar.

5

Operation

Checks and tasks before daily use

Visual inspections and function checking

⚠ DANGER

Risk of explosion if hydrogen builds up in the cab (variant)!

If the industrial truck is equipped with a cab, hydrogen from the battery compartment can enter the cab through unsealed holes. A build-up of hydrogen can lead to an explosion.

There must be no unsealed bores in the cab wall. Sealing bores with plugs is not sufficient to prevent gas from entering.

– Have unused bores in the cab wall sealed by the authorised service centre.

⚠ CAUTION

Risk of component damage!

A deformed or damaged battery male connector can cause overheating and related consequential damage.

– Check the battery male connector for damage.
– If necessary, have the battery male connector replaced by the authorised service centre.

⚠ WARNING

Risk of injury from falling off the industrial truck!

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

– Use only the steps provided to climb onto the industrial truck.
– Use equipment such as stepladders or platforms to reach inaccessible areas.

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

To ensure that the industrial truck is operated safely, the visual inspections and function checking must be carried out before daily use.

The components that must be checked and the aspects of these components that require checking are listed in the following table.

If damage or other defects are identified on the industrial truck during the following inspections, do not use the industrial truck until these have been repaired properly. Damage or other defects must be reported to the supervisor or the responsible fleet manager immediately so that repairs by the authorised service centre can be arranged.

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).
Roller tracks of the lift chassis	Make sure that there is a film of grease.
Underside	Check the area under the truck for leaking consumables.
Wheels, tyres	Perform a visual inspection for wear, damage and correct attachment. Check that no foreign objects (wires, nails, screws, adhesive tape, etc.) can obstruct the operation of the wheels and rollers. Wheels and load castors must rotate freely.
Weather protection cab, cold store cab	Perform a visual inspection for integrity. Check for secure mounting. Visual inspection for unsealed holes in the cab wall through which hydrogen from the battery compartment could enter.
Steps	Make sure they are clean (free of ice, not slippery).
Washers	Perform a visual inspection for integrity. Make sure they are clean (also free of ice).
Handholds	Check for secure mounting.
Battery compartment cover plate (battery lock)	The battery compartment cover plate must be installed correctly and secured with screws
Battery connection assembly	Perform a visual inspection for integrity and deformation. Visual inspection for damage caused by heat. Check the contacts. Inspect the battery male connector and the plug connection for foreign objects that may have become lodged and for moisture. Remove such deposits, for example with compressed air. Have damaged battery male connectors replaced by the authorised service centre.

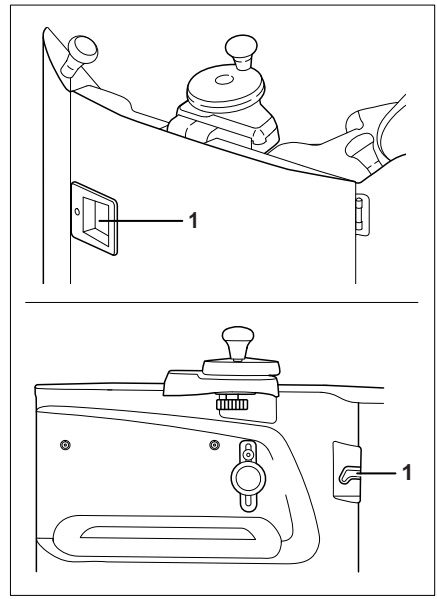
Component	Course of action
Covers and hoods	Visual inspection: all covers and must be fitted and secured.
Labelling, adhesive labels	Check that labels are present, undamaged and legible. Replace damaged or missing adhesive labels in accordance with the section entitled "Labelling points".
Lighting, warning units (e.g. signal horn)	Check the integrity and function.
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.
Gearbox	Make sure that no consumables are escaping from the gearbox.
Entire industrial truck	There must be no objects on the industrial truck that could impair visibility. There must be no objects on the industrial truck that could impair actuation of the operating devices (pedals, joystick, emergency off switch, etc.).

– Do not use the truck if there is any damage or defects.

– In this case, contact your authorised service centre.

Any other necessary tasks are summarised under their own headings, e.g. adjusting the driver's seat.

Opening and closing the driver's compartment door ▷



Opening the driver's compartment door

– Operate the door opener (1) and swing the door open fully.

Closing the driver's compartment door

– Sit down on the driver's seat and pull the door closed completely.

– Before starting to drive, check that the door is securely closed and the door lock is engaged.

NOTE

The functions of the truck are enabled only once the driver's compartment door is closed correctly.

After exiting the industrial truck, close the driver's compartment door from the outside. The door lock must engage securely.

Climbing into and out of the truck

⚠ WARNING

Risk of injury when climbing into and out of the truck due to slipping, striking parts of the truck or becoming stuck!

If the footwell cover is very dirty or smeared with oil, there is a risk of slipping. There is a risk of getting caught by your clothing when climbing out of the industrial truck.

– Ensure that the footwell cover is not slippery.

– When climbing into and out of the industrial truck, hold onto the handholds.

– Do not jump into or out of the industrial truck.

– Ensure that you have a secure hold.

⚠ WARNING

Risk of injury when jumping out of the industrial truck!

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

– Do not jump out of the industrial truck.
– Do not wear jewellery at work.
– Do not wear loose-fitting workwear.

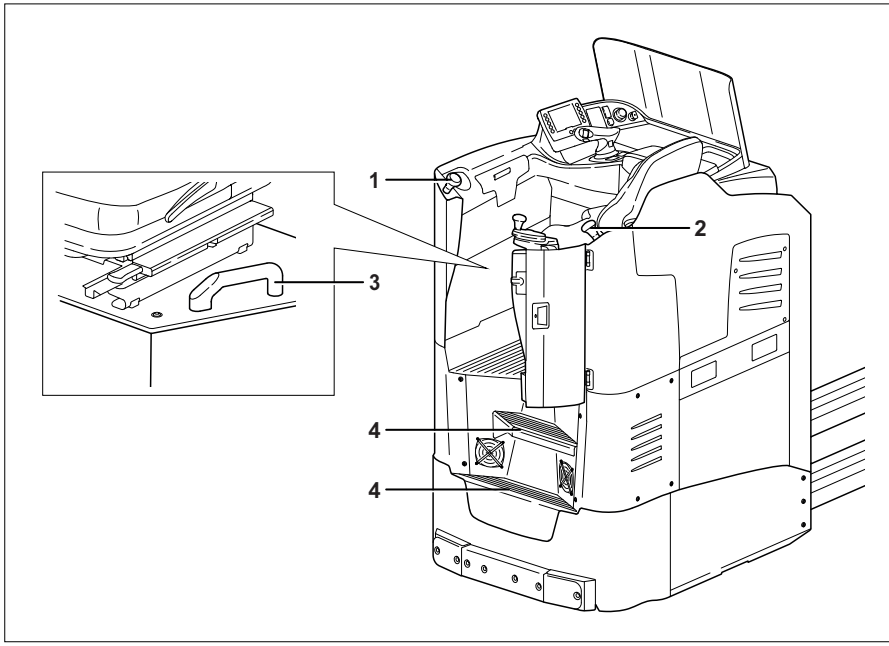
⚠ CAUTION

Components may become damaged through incorrect use!

Industrial truck components such as the driver's seat, steering wheel, etc. are not designed to be used for climbing into and out of the industrial truck and may be damaged due to misuse.

– Use only the fittings specifically designed for the purpose of climbing into and out of the industrial truck.

Safely climbing in and out



- Always **climb forwards onto** the industrial truck. Always **climb backwards off** the industrial truck.
- When climbing onto and off the industrial truck, always hold the handholds (1, 2, 3) with both hands. Never use the steering wheel as a climbing aid.
- When climbing onto and off the industrial truck, always use both steps (4).

Electrical footplate adjustment (variant)

⚠ WARNING

Risk of accident and of crushing

During adjustment, the footplate and seat bracket will move.

– Make adjustments only when the industrial truck is at a standstill and you are sitting on the driver's seat.
– During adjustment of the footplate, keep your fingers away from moving parts.
– Make sure that there are no objects in the vicinity of the moving parts. Objects could become trapped and damage the mechanism. Remove trapped objects only when the footplate adjustment is at a standstill.

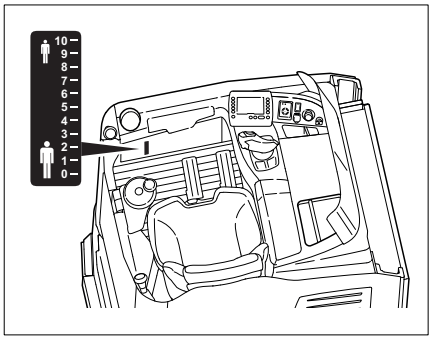
⚠ CAUTION

Risk of overloading the adjustment mechanism

Adjustment of the footplate must only be carried out by persons seated on the driver's seat. They should weigh no more than 150 kg.

The electrical footplate adjustment mechanism together with the adjustment mechanisms for the seat and steering column form a system that allows optimal adjustment of the driver's compartment. The positions of the driver's seat and the pedal plate are adjusted in proportion to one another.

A scale in the footwell of the driver's compartment gives an indication of the setting to help you remember it. ▷

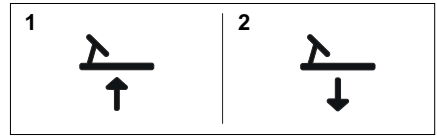


Before operating the footplate adjustment mechanism, make sure that there is sufficient clearance between the driver's seat and the side wall. This will ensure that the driver's seat is not damaged when it is raised.

– Stop the industrial truck. Apply the parking brake.
– Sit on the driver's seat. For safety reasons, place your right hand on the joystick. With your left hand, configure the settings on the display-operating unit.
– Press the button ☰.

– Press the `Settings` softkey .
– Press the `Truck settings` softkey .
– Continue pressing the softkeys (1) or (2) until the optimum working position is reached.

▷



Adjusting the 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. The steering or the operating devices can then be actuated unintentionally. This may cause uncontrolled movements of the industrial truck or of the load.

– **Do not** move 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.

⚠ WARNING

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

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

NOTE

Observe any separate operating instructions for the seat.

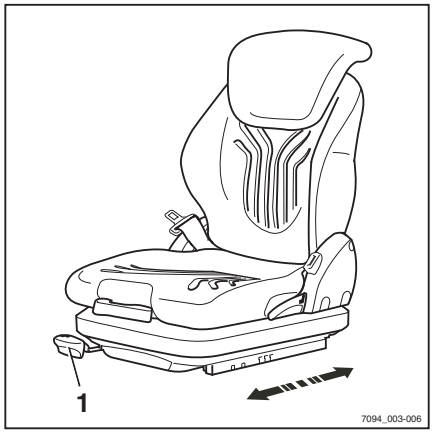
⚠ WARNING

To obtain optimum seat cushioning, you must adjust the seat suspension to your own body weight. This course of action is better for your back and protects your health.

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

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.

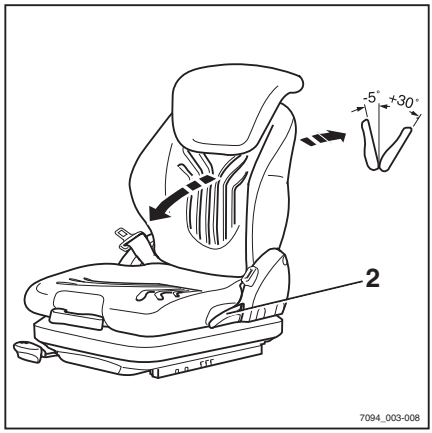


Adjusting the seat backrest ▷

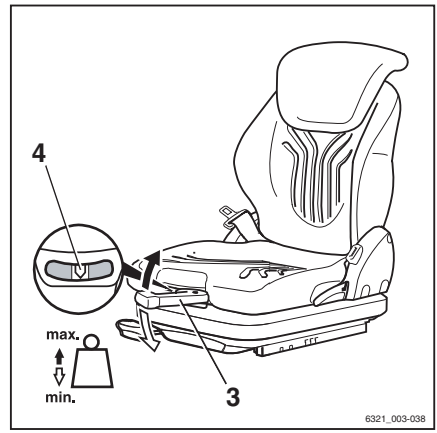
– Raise the lever (2) and hold it in position.
– Push the seat backrest into the required position.
– Release the lever.
– Ensure that the seat backrest is securely engaged.

NOTE

The backwards tilt angle of the seat backrest may be restricted by the design of the industrial truck.



Adjusting the MSG 65/MSG 75 seat suspension ▷



NOTE

The MSG 65/MSG 75 driver's seat is designed for people weighing between 45 kg and 170 kg. The driver's seat can be adjusted to suit the weight of the individual driver. To obtain optimal settings for the seat suspension, the driver must perform the adjustment whilst sitting on the seat.

NOTE

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

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

NOTE

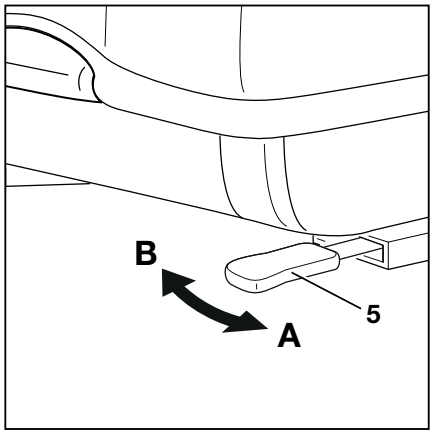
The correct driver's weight has been selected when the arrow (4) is in the centre position in the inspection window. Once the minimum or maximum weight setting is reached, the seat will not move any further even when you pump the weight adjusting lever.

Adjusting the longitudinal horizontal suspension (variant) ▷

If the driver's seat is equipped with the "longitudinal horizontal suspension" variant, impacts in the drive direction are damped by additional seat suspension. The locking lever (5) on the left-hand side of the driver's seat activates and locks the longitudinal horizontal suspension.

– To lock the longitudinal horizontal suspension, move the locking lever (5) to the left (A).

– To activate the longitudinal horizontal suspension, move the locking lever (5) to the right (B).



A Longitudinal horizontal suspension activated
B Longitudinal horizontal suspension blocked

NOTE

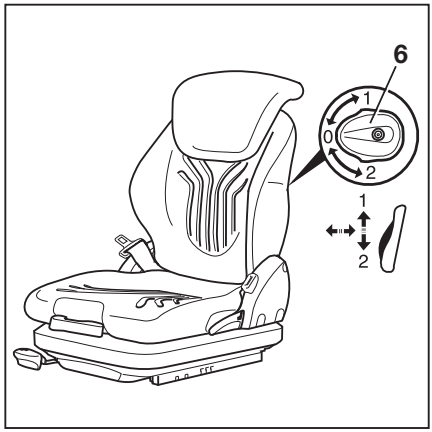
If the longitudinal horizontal suspension is blocked, the suspension comfort is significantly lower. Impacts are much more noticeable.

Adjusting the lumbar support (variant) ▷

NOTE

The lumbar support can be adjusted to suit the contours of the individual driver's spine. Adjusting the lumbar support moves a convex support cushion into the upper or lower part of the backrest.

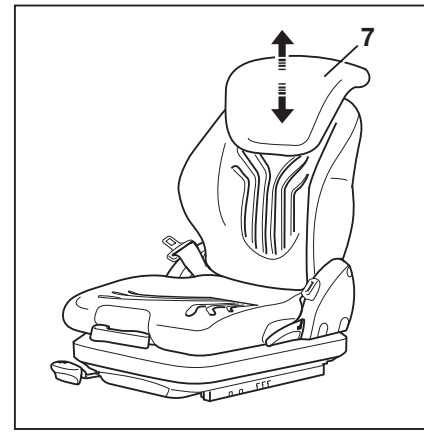
– Turn the turning knob (6) up or down until the lumbar support is in the required position.



Adjusting the backrest extension (variant) ▷

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

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

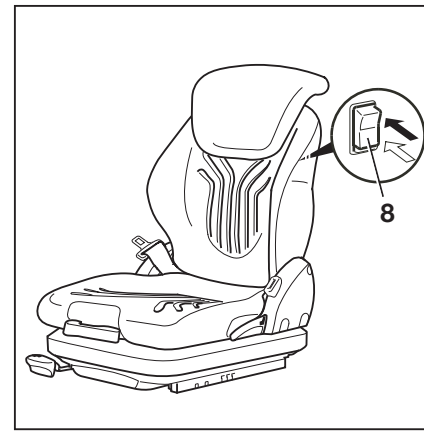


Switching the seat heater (variant) on and off ▷

NOTE

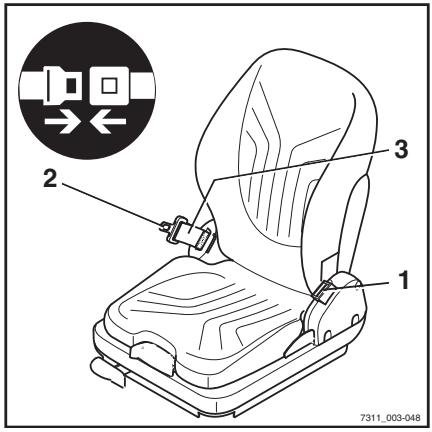
The seat heater only works if the driver is sitting on the driver's seat.

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



Seat belt

Fastening the seat belt ▷



⚠ DANGER

Risk to life when driving without a seat belt!

If the seat belt is not fastened and the industrial truck tips over or collides with an obstacle, the driver may be thrown out of the industrial truck. The driver may fall under the industrial truck or collide with an obstacle.

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

NOTE

The buckle has a buckle switch. If the belt has not been fastened or is unfastened, the following occurs:

- *The message* `Close seat belt` *appears on the display-operating unit.*
- *The industrial truck does not move faster than 4 km/h or brakes to 4 km/h.*
- *The hydraulic functions are blocked.*

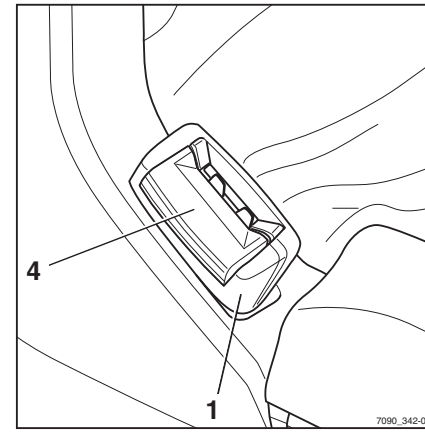
– Sit as far back as possible so that your back is leaning against the seat backrest. The automatic blocking mechanism permits sufficient freedom of movement on the seat.
– Pull the seat belt (3) smoothly out of the belt retractor and fasten closely around the body over the thighs.
– Click the belt tongue (2) into the buckle (1).
– Check the tension of the seat belt. The belt should fit closely around your body.

NOTE

For industrial trucks of the relevant configuration (variant), the message "Close seat belt" appears on the display-operating unit. The speed is limited to 4 km/h.

Releasing the seat belt

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



NOTE

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

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

Malfunction due to cold weather conditions

– If the buckle or belt retractor are frozen, thaw the buckle or the belt retractor and dry the parts to prevent them from refreezing.

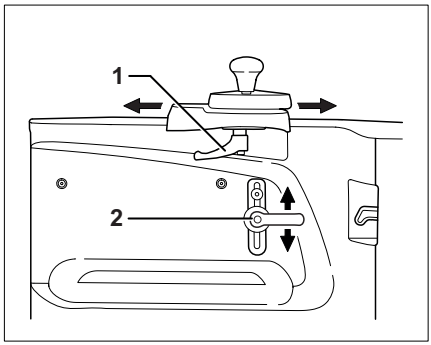
⚠ CAUTION

The seat belt may be damaged by heat!

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

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

Adjusting the position of the steering wheel ▷



⚠ DANGER

Risk of accident!

- Ensure that the steering wheel unit is positioned securely!
- Never adjust the position of the steering wheel while driving!

Adjusting the longitudinal position

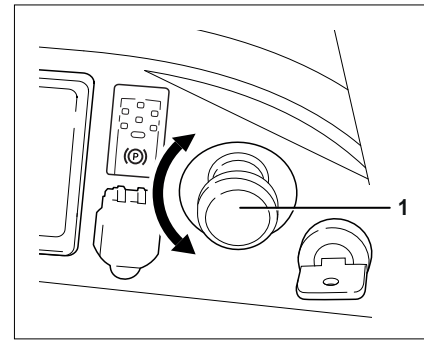
- Loosen the adjusting lever (1) in an anti-clockwise direction.
- Move the steering wheel unit to the desired longitudinal position.
- Tighten the adjusting lever (1) in a clock-wise direction to lock the steering wheel unit in position.

Adjusting the height position

- Loosen the adjusting lever (2) in an anti-clockwise direction.
- Move the steering wheel unit to the desired height position.
- Tighten the adjusting lever (2) in a clock-wise direction to lock the steering wheel unit in position.

Unlocking the emergency off switch

– Turn the emergency off switch (1) clockwise ▷ until it unlocks.



Checking the emergency off function ▷

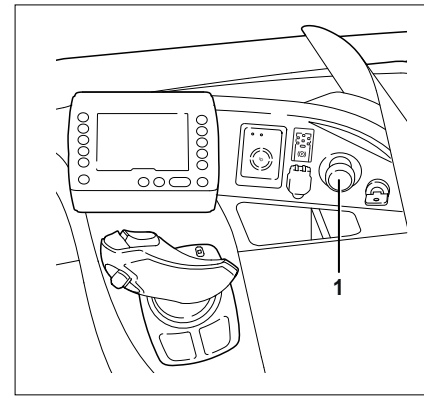
– Accelerate the industrial truck to creep speed (1 to 2 km/h).

– Ensure that you have a secure grip in the industrial truck. Hold tightly on to the steering wheel with your left hand.

– Press the emergency off switch (1).

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

The display-operating unit shows the symbol and the message `EMERGENCY OFF active`.



– Unlock the emergency off switch again.

The industrial truck performs an internal self-test and is then ready for operation again.

NOTE

Avoid unnecessary wear to the brakes.

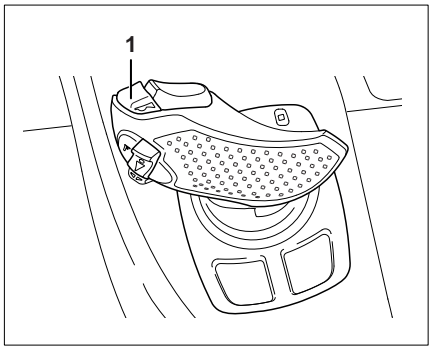
- *Only check the emergency off function once when starting work.*
- *Actuate the emergency off switch in emergencies only.*

Operating the signal horn

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

– Press the signal horn button (1).

The signal horn sounds.



Checking the brake system for correct function

⚠ DANGER

Risk of accident in the event of failure of the brake system!

If the brake system fails, the industrial truck will be insufficiently braked.

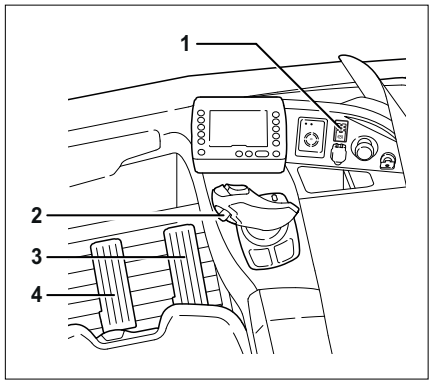
– Do **not** operate the industrial truck if the brake system is faulty.

– Perform all braking tests in a clear area and without a load.

– Ensure you have a secure grip in the industrial truck. Hold on tightly to the steering wheel with your left hand before braking is triggered.

Checking the parking brake

- Accelerate the industrial truck to walking speed.
- Apply the parking brake (1).
- The parking brake is applied. The industrial truck must brake to a standstill with a sharp deceleration.



Checking the reverse brake

- Accelerate the industrial truck to walking speed.
- Actuate the drive direction switch (2) on the joystick to reverse the drive direction.
- The braking and subsequent acceleration processes in the opposite direction must be gentle and not subject to jerky movements.

Checking the generator brake

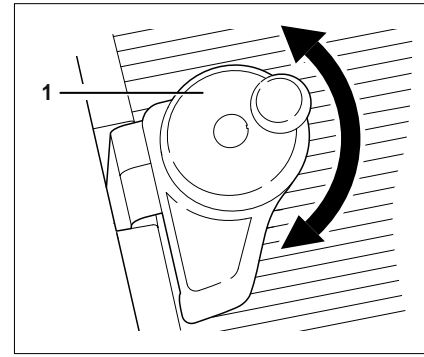
- Accelerate the industrial truck to walking speed.
- Release the accelerator pedal (3).
- The industrial truck must decelerate slightly.

Checking the service brake

- Accelerate the industrial truck to walking speed.
- Press the brake pedal (4).
- As the pedal travel increases, the industrial truck decelerates more sharply until it comes to a standstill.

Checking the function of the steering system

▷



– Turn the steering wheel (1). The steering wheel and steering system must turn smoothly.

– Check that the steering wheel position is adjusted to the driver's body size and seat position.

– Check the longitudinal adjustment and height adjustment of the steering wheel unit. The steering wheel unit must be held securely in position.

Switching on

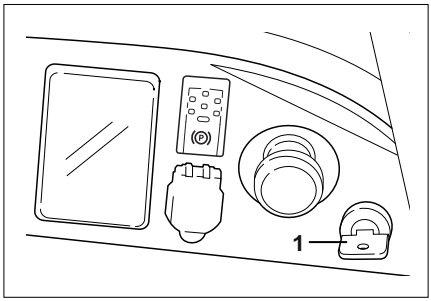
Switching on the key switch

⚠ WARNING

Before switching on the industrial truck, all checks and tasks required before daily use must have been performed without any defects being identified.

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

- Insert the switch key (1) into the key switch and turn it clockwise into the operating position I. ▷



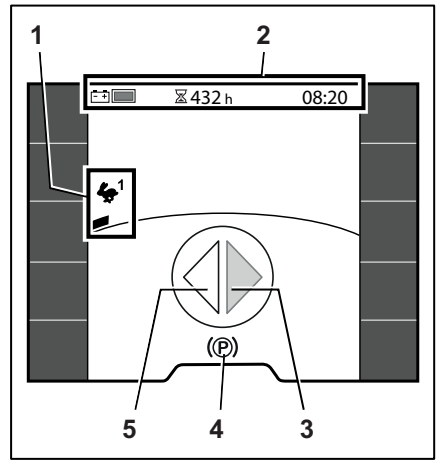
Self testing is initiated. All symbols on the display-operating unit are displayed briefly until the industrial truck controllers have started up completely.

Once the industrial truck is ready for operation, the main screen is shown on the display. If the industrial truck is equipped with the "Access authorisation with PIN code" variant, the display initially changes to the input menu for access authorisation.

NOTE

The switch key, FleetManager card (variant), FleetManager transponder chip (variant) or FleetManager PIN code (variant) must not be passed to unauthorised persons unless explicit instructions to this effect have been given.

Main display



1 Selected drive programme with driving dynamics display
2 Status bar: battery charge, operating hours, time
3 Drive direction indicator / steering angle display for the "load side"
4 Driving speed or parking brake (P)
5 Drive direction indicator / steering angle display for the "drive side"

Additional information may appear on the display.

– Refer to the chapter entitled "Display messages".

NOTE

After connecting the battery, the correct charge state may not be displayed until the battery is placed under load by driving or lifting operations.

Switching on via push button (variant)

⚠ WARNING

Before switching on the industrial truck, all checks and tasks required before daily use must have been performed without any defects being identified.

– Perform the "visual inspections and function checks".

– **Do not** operate the industrial truck if defects have been detected; contact the authorised service centre.

The "Switch on via push button" variant is available only in conjunction with the "Fleet-Manager" or "Access authorisation with PIN code" variants. In place of the key switch, the industrial truck has a push button that is used to switch it on and off.

– Press the (1) push button to switch on the industrial truck.

A message appears on the display-operating unit and requests input of a valid access authorisation.

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

B For the variant "Fleetmanager with transponder chip", the transponder chip must be placed on the reading device (2).

C For the variant "Fleetmanager with a keypad", a valid FleetManager PIN code must be entered via the FleetManager keypad (3).

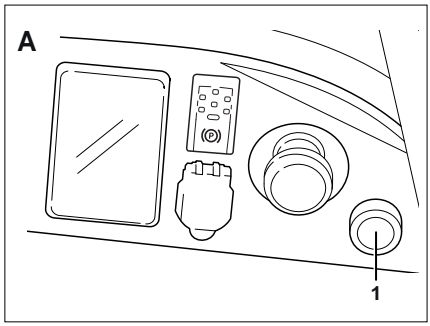
The access authorisation must be entered within a specified period of time:

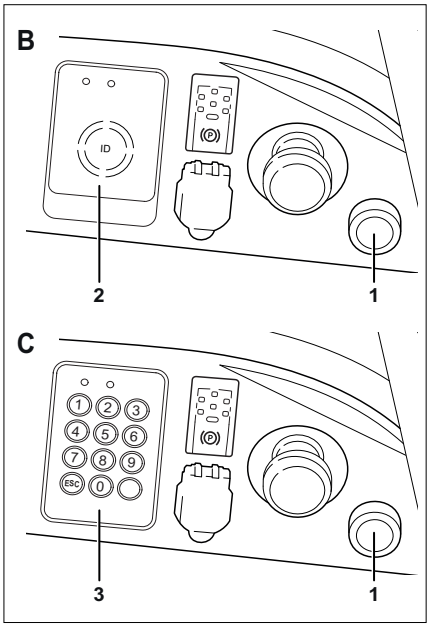
- Within 30 seconds if the driver's seat is not occupied
- Within 60 seconds if the driver's seat is occupied

If this does not happen, the industrial truck switches off again.

If authorisation was successful, the industrial truck is ready for operation. The main screen is shown on the display.

– To switch off the industrial truck, press and hold the push button (1) for 1 second.





Variants

A Access authorisation with PIN code (via the display-operating unit)
B Fleetmanager with transponder chip
C Fleetmanager with keypad

NOTE

For the variants with

- *"Access authorisation with PIN code", see the relevant section.*
- *"FleetManager", see the "original operating instructions for FleetManager".*

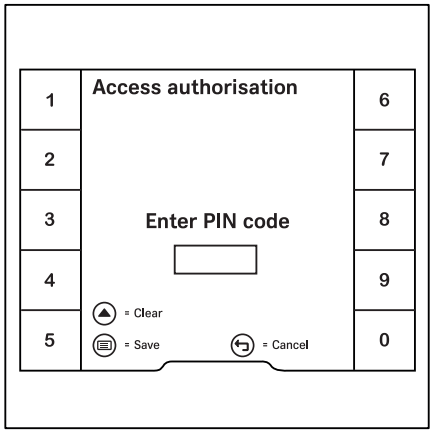
Access authorisations

Access authorisation with PIN code (variant)

Industrial trucks equipped with the "Access authorisation with PIN code" variant are protected against unauthorised use by a PIN code. Individual PIN codes can be specified so that the same industrial truck can be used by different drivers.

An initial PIN code of "11111" is preset at the factory for the first use. We recommend that the fleet manager changes this PIN code using their access authorisation. See the following sections "Access authorisation for the fleet manager (variant)" and "PIN codes set by the fleet manager (variant)".

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



All hydraulic functions and drive functions of the industrial truck are blocked.

– To activate the blocked functions, use the softkeys to enter the PIN code.

– To confirm, push the ☰ button.

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

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

NOTE

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

When the driver's seat is occupied again, the message `Log in` 🔒 appears. The display then changes to the "Access authorisation" input menu.

Access authorisation for the fleet manager (variant)

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

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

NOTE

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

– Stop the truck.

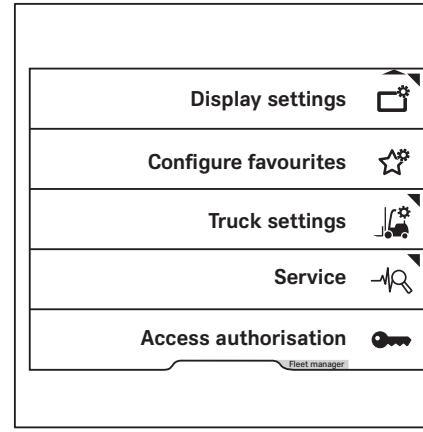
– Actuate the parking brake.

– Press the button ▤.

– Press the "Settings" softkey ⚙.

The first menu level appears.

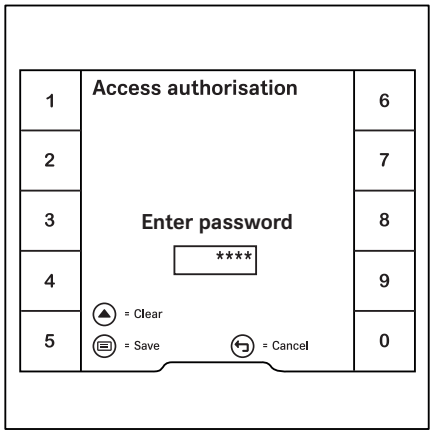
– Press the `Access authorisation` softkey 🔑.



The display changes to the `Access authorisation` menu. ▷

– Enter the fleet manager password using the softkeys.

– To confirm, press the ☰ button.



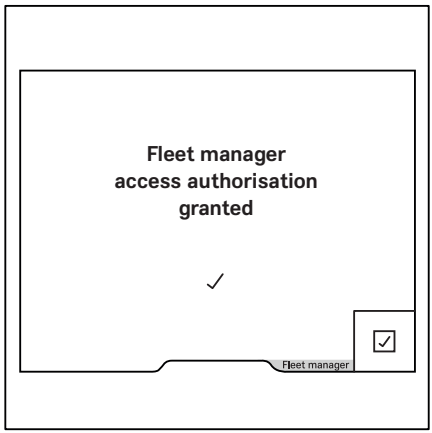
The message `Access authorisation fleet manager granted` ✓ appears. ▷

– To confirm, press the ✓ softkey.

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

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

– If this happens, enter the password again.



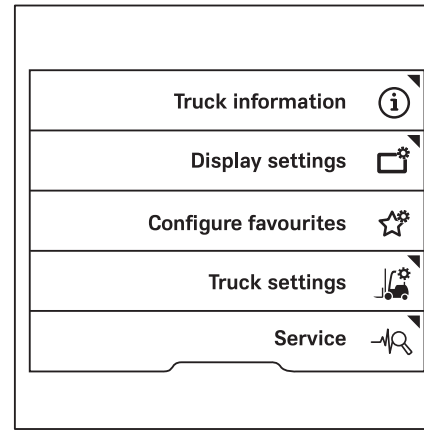
NOTE

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

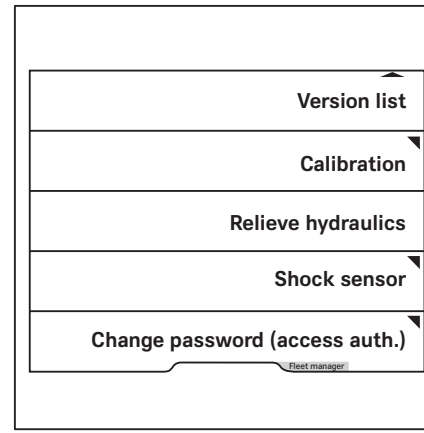
Changing the fleet manager password

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

– Press the `Service` softkey. ▷



– Press the scroll buttons △ ▽ until the `Change password (access auth.)` menu appears. ▷
– Press the `Change password (access auth.)` softkey.
– Follow the instructions on the display.



PIN codes set by the fleet manager (variant)

NOTE

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

– Stop the industrial truck.

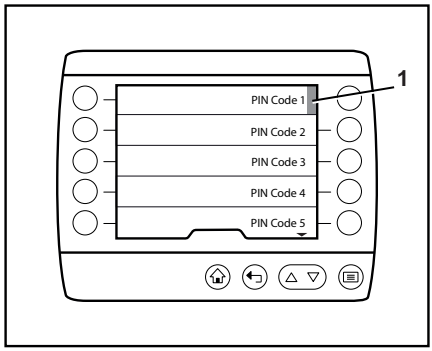
– Apply the parking brake.

– Log in to the display-operating unit as the "fleet manager " with the access authorisation. See also the section entitled "Access authorisation for the fleet manager (variant)". While the access authorisation is activated, `Fleet manager` is displayed in an orange bar at the bottom of the screen.

– Press the `Truck settings` softkey .

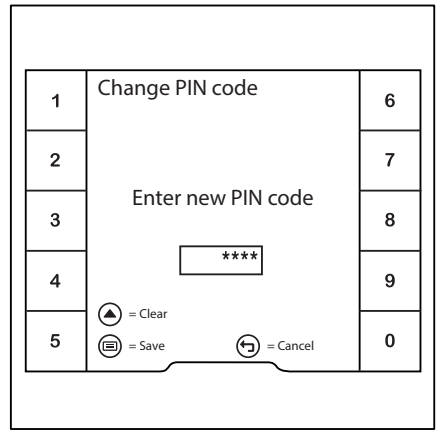
– Press the `Change PIN codes` Softkey.

This menu displays the storage locations of the PIN codes. Occupied storage locations are marked with an orange bar (1). For the first use, the "PIN code 1" storage location is preset to an initial PIN code of "11111".



– Press the softkey for a storage location to create or overwrite a PIN code for this storage location.

The display changes to the "Change PIN code" menu. ▷

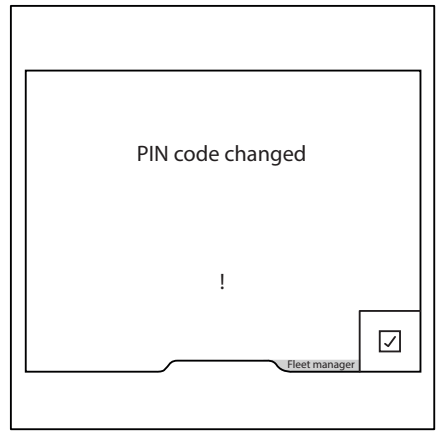


– Use the Softkeys 0...9 to enter a 5-digit PIN code.
– To confirm, press the ☰ button.

The input prompt `Please repeat PIN code` appears.

– Enter the PIN code again.
– To confirm, press the ☰ button. If the PIN code was not repeated correctly, the message `Entered PIN codes do not match` appears. In this case, the PIN code for this storage location must be entered again.

The message `PIN code changed!` is displayed. ▷



– To confirm, press the Softkey ✓.

The new PIN code is now set.

Pre-Shift Check

Description of the Pre-Shift Check (variant)

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

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

To commission the truck, the authorised service centre can compile the Pre-Shift Check from a question catalogue in consultation with the fleet manager. If a question catalogue has not been compiled, the only question stored by default is "Truck ready for operation?"

There are fixed responses:

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

In addition, the fleet manager has the following options:

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

  If the truck is equipped with "FleetManager", the shifts are defined on the FleetManager interface. See the relevant operating instructions.
- If, due to a negative test result, truck functions are restricted, the fleet manager can reset these restrictions.
- The fleet manager can specify the question sequence.

Process

– Switch on the industrial truck.

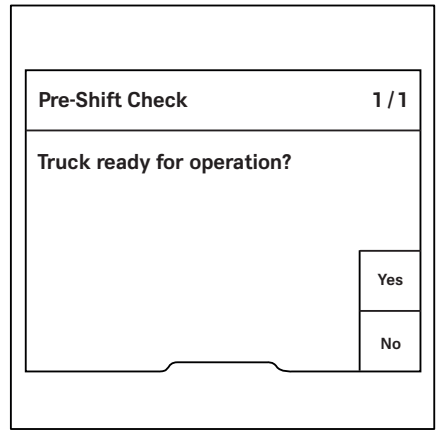
The first question appears. ▷

– If the industrial truck is ready for use, press the `Yes` softkey.

NOTE

If the `No` softkey is pressed, the driving speed is limited to 1 km/h ex works.

The next question appears.



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

NOTE

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

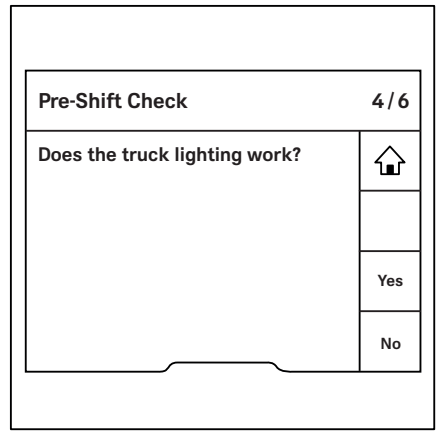
– To access the main display, press the main display button ⌂ or the softkey ⌂.

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

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

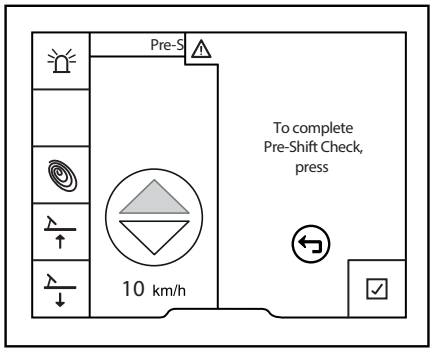
– To acknowledge the message, press the ☑ softkey.

– Switch on and check the function to be tested, e.g. lighting.



– Press the back button ⮌ to go back to the Pre-Shift Check.
– Answer the question based on the result of the function check.

The next question appears.



NOTE

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

If the industrial truck has to be moved for a test, e.g. for a brake test, the parking brake can easily be released. The message `To complete Pre-Shift Check, press` ⮌ is displayed. The industrial truck can be moved at reduced speed. When the parking brake is applied again, the view returns to Pre-Shift Check.

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

All questions

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

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

Are the wheels damaged? Are they worn beyond permissible limits?
Is the tyre pressure correct?
Is the overhead guard visibly damaged?
Is the entry area or footwell dirty or slippery?
Are the windows clean, free of ice and undamaged?
Are the maintenance lids securely closed?
Is the battery door/hood undamaged and securely closed?
Is the battery lock present, undamaged and closed?
Is the battery connection assembly dirty or damaged (e.g. housing deformed, contacts corroded)?
Is the towing device damaged?
Is the capacity rating plate present, undamaged, and legible?
Is the driver restraint system damaged?
Does the horn work?
Does the truck lighting work?
Do the warning lights work?
Is the antistatic belt present and does it have sufficient contact with the floor?
Is the corona electrode present and clean?
Does the parking brake work properly?
Does the service brake work properly?
Does the steering work properly?
Does the emergency off work?
Is the battery dirty or obviously damaged?
Are all decal information and adhesive labels present and legible?
Is the load backrest undamaged?
Does the accelerator pedal work properly?
Is the engine compartment dirty or does it contain foreign objects?
Are the lift mast or the fork carriage obviously damaged?
Do the working hydraulics work properly according to the labelling?
Are the mirrors dirty or damaged?
Is the gas tank or its mounting obviously damaged?
Can unusual noises be heard when the industrial truck is used?
Is there any other obvious damage to the truck?
Does the washer system work?
Is the bonnet undamaged and securely closed?

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

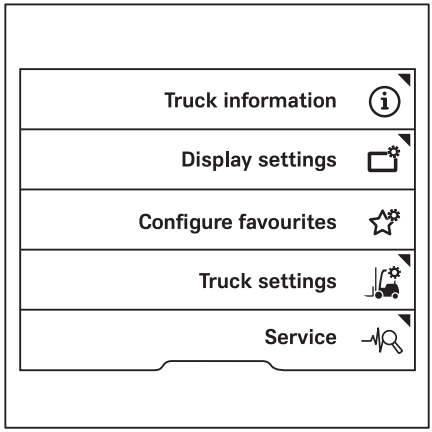
Defining the question sequence

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

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

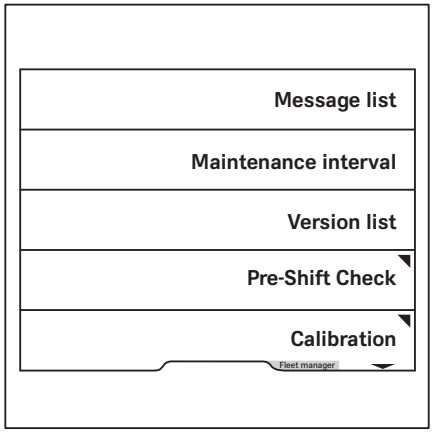
– Activate the "Access authorisation for the fleet manager".

– Press the `Service` softkey. ▷



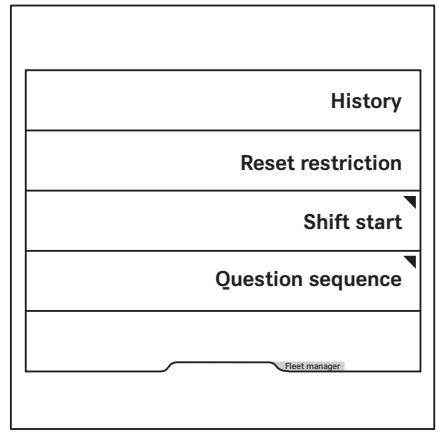
– Press the scroll keys △ ▽ until the `Pre-Shift Check` menu appears. ▷

– Press the `Pre-Shift Check` softkey.



The `Pre-Shift Check` menu appears. ▷

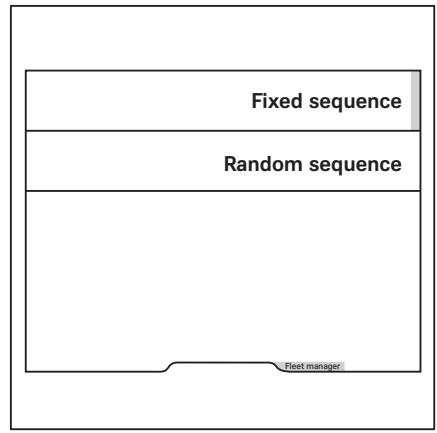
– Press the `Question sequence` softkey.



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

The orange activation bar displays the current selection.

– To access the main display, press the main display button ⌂.

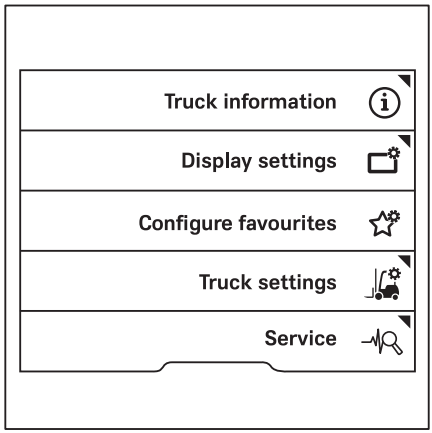


Displaying the history

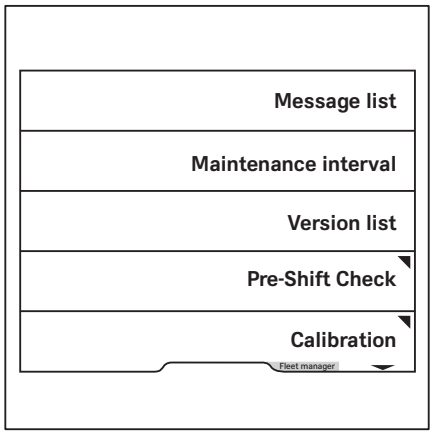
The fleet manager can display a Pre-Shift Check history.

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

– Press the `Service` softkey. ▷

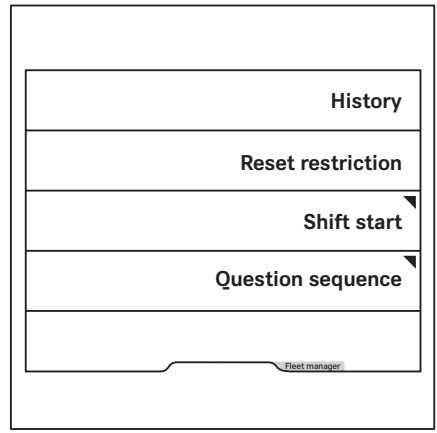


– Press the scroll keys △ ▽ until the `Pre-Shift Check` menu appears. ▷
– Press the `Pre-Shift Check` softkey.



The Pre-Shift Check menu appears. ▷

– Press the History softkey.



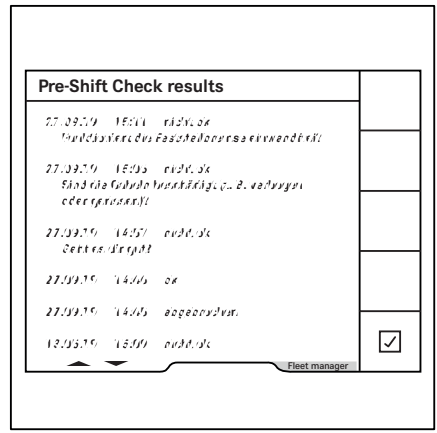
The Pre-Shift Check results display opens. ▷

This display shows all checks and questions that have been answered with the date and time.

To see more results, press the scroll buttons △ ▽.

– To go back to the previous menu, press the ☑ softkey.

– To access the main display, press the main display button ⌂.



Defining the shift start

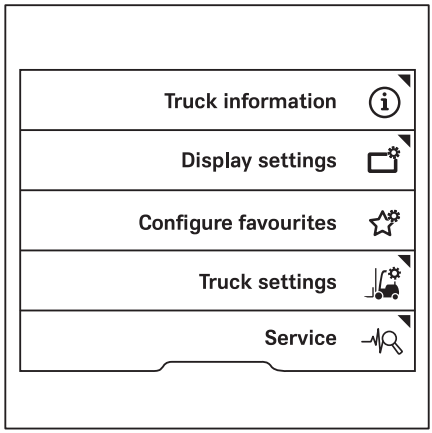
As a standard setting after commissioning, the Pre-Shift Check is always requested 24 hours after the last check was performed. The fleet manager can define up to three shifts and their start times. The Pre-Shift Check is then always requested at this time.

NOTE

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

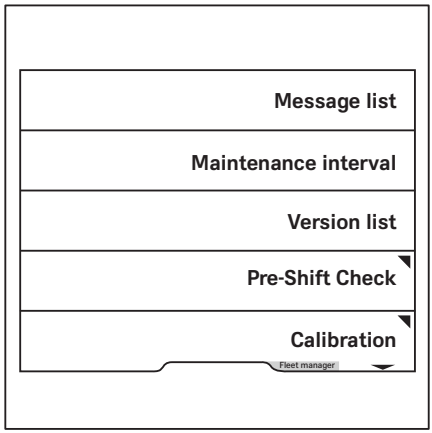
– Activate the "Access authorisation for the fleet manager".

– Press the `Service` softkey. ▷



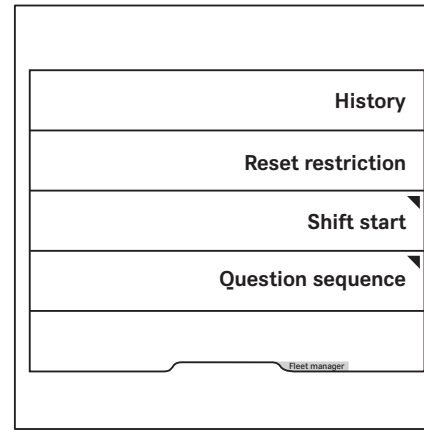
– Press the scroll keys △ ▽ until the `Pre-Shift Check` menu appears. ▷

– Press the `Pre-Shift Check` softkey.



The `Pre-Shift Check` menu appears. ▷

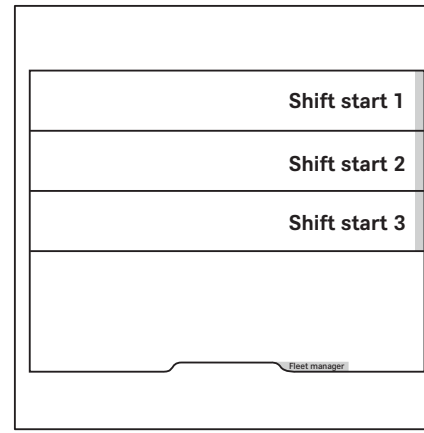
– Press the `Shift start` softkey.



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

The orange activation bar indicates which shifts are activated.

– To edit a shift, press the corresponding softkey.



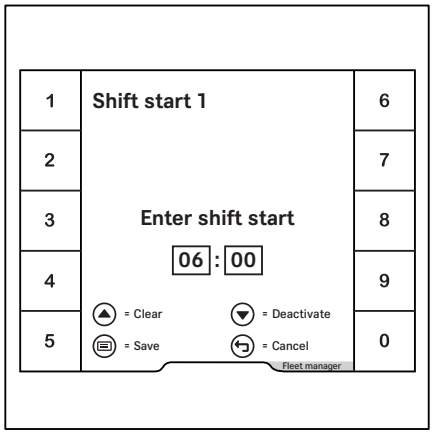
In this menu you can define the shift start. ▷

– Enter the time using softkeys `0 to 9`.

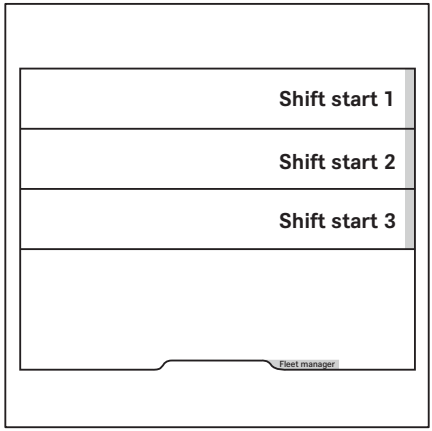
– To `save`, press the ☰ button.

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

The display reverts to the previous menu.



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



– Press the ▽ scroll button to deactivate the shift.

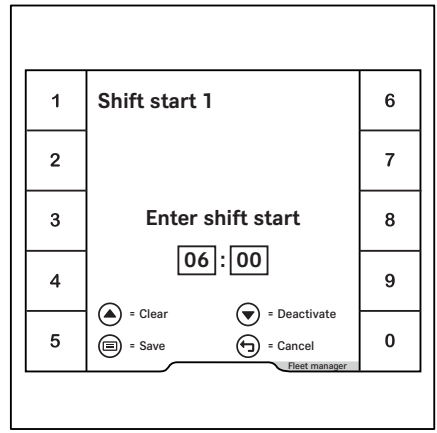
– To confirm, press the ☰ button.

The time is shown in grey.

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

– To `cancel`, press the back button ⮌.

– To access the main display, press the main display button ⌂.

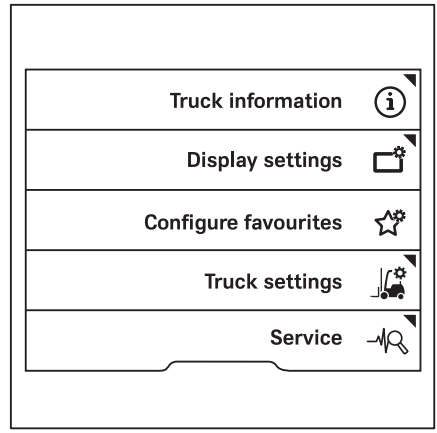


Resetting the truck restrictions

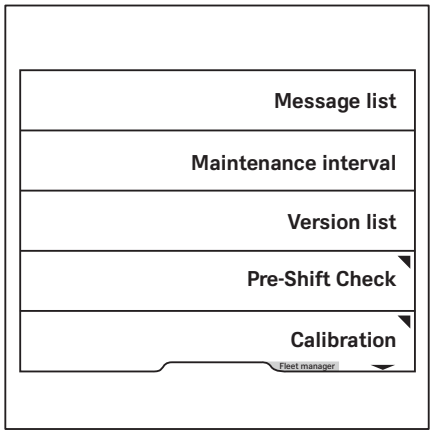
If truck functions are restricted due to checks with a bad result, the fleet manager can reset these restrictions. The fleet manager can also do this if a previously detected problem has been rectified.

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

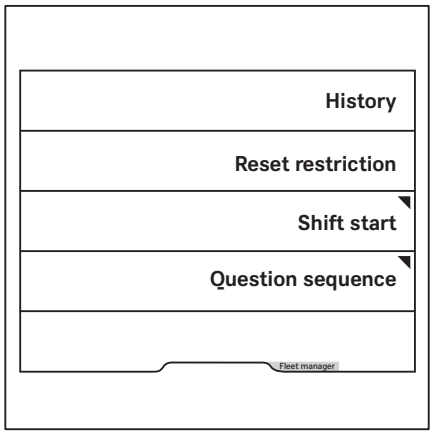
– Press the `Service` softkey.



– Press the scroll keys △ ▽ until the `Pre-Shift Check` menu appears. ▷
– Press the `Pre-Shift Check` softkey.



The `Pre-Shift Check` menu appears. ▷
– Press the `Reset restriction` softkey.



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

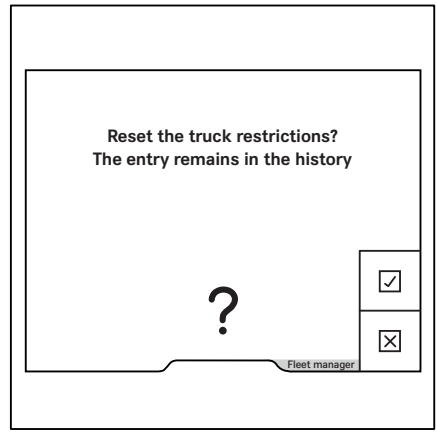
– To confirm, press the ☑ softkey.

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

– To cancel, press the ☒ softkey.

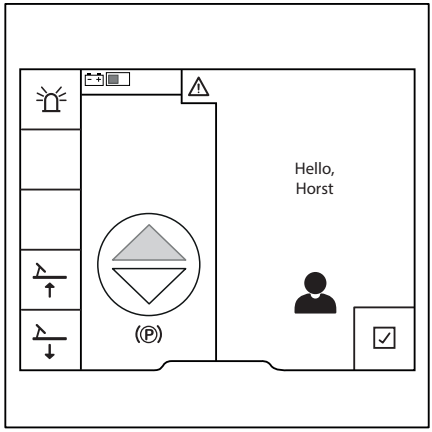
The truck functions remain restricted. The display reverts to the previous menu.

– To access the main display, press the main display button ⌂.



Driver profiles

Driver profiles (variant)



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

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

The driver profile allows the following settings to be saved:

- Language
- Favourites
- Configuration of the status line

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

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

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

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

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

Selecting driver profiles

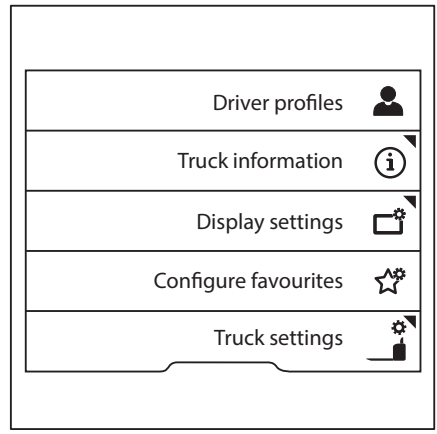
If the truck is equipped with the "Access authorisation with PIN code" or "FleetManager"

variants, the corresponding driver profile is active after logging in. If the truck is not equipped with these variants, drivers must select their profiles manually.

NOTE

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

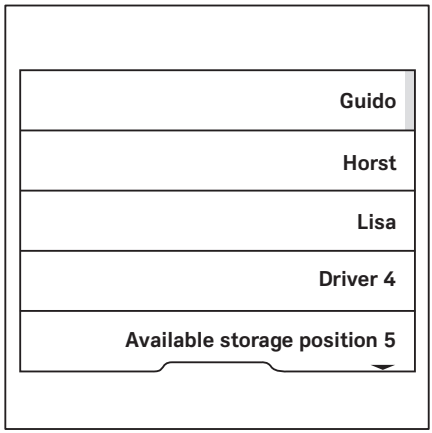
– Stop the industrial truck.
– Apply the parking brake.
– Press the button.
– Press the "Settings" softkey .
– Press the `Driver profiles` softkey . ▷



The orange activation bar displays the current selection. ▷

– Press the softkey for the required driver profile.

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



Creating driver profiles

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

NOTE

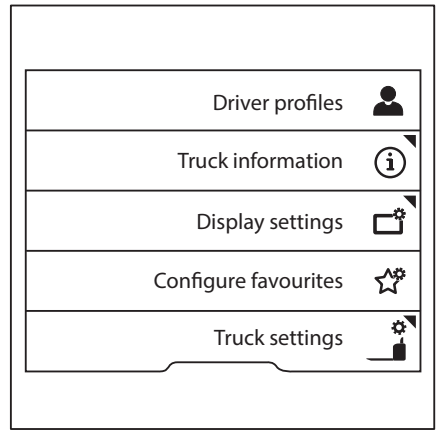
If the industrial truck is equipped with the "Access authorisation with PIN code" or "Fleet-Manager" variants, the driver profile is generated automatically when logging in for the first time.

– Apply the parking brake.

– Press the ▭ button.

– Press the "Settings" softkey ⚙.

– Press the `Driver profiles` softkey .

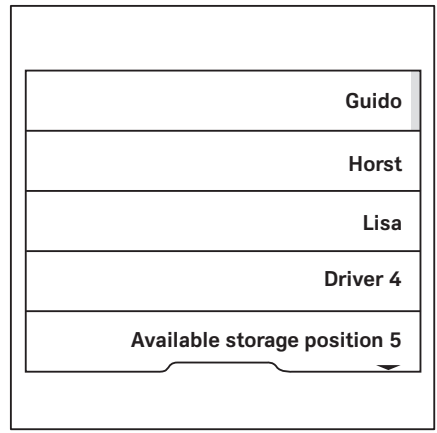


This menu provides storage space for saving ten driver profiles.

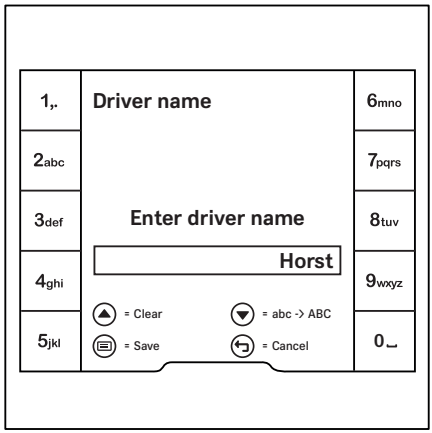
– Press the softkey for the required storage location.

NOTE

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



The `Driver name` menu is displayed. ▷



– Use the softkeys to enter the desired name.

– To confirm, press the button.

The driver profile is active. The driver is greeted with the selected name after the next log-in.

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

Renaming driver profiles

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

Renaming by the driver

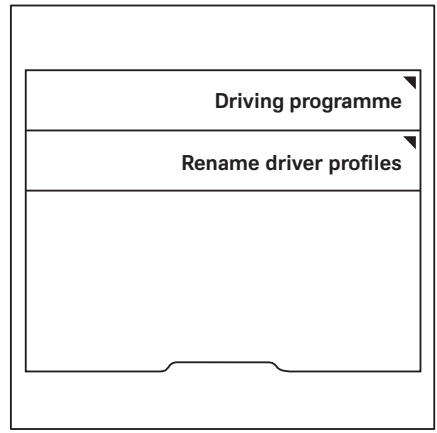
– Apply the parking brake.

– Press the button .

– Press the "Settings" softkey .

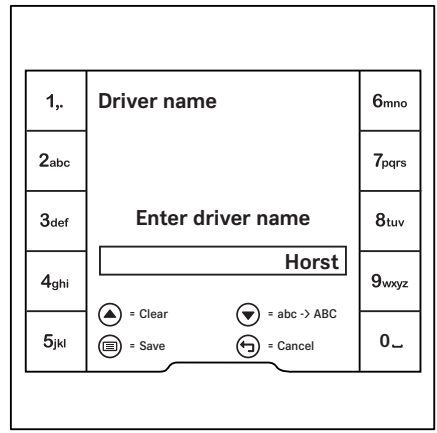
– Press the `Truck settings` softkey .

– Press the `Rename driver profiles` ▷ softkey.



The `Driver name` menu is displayed. ▷

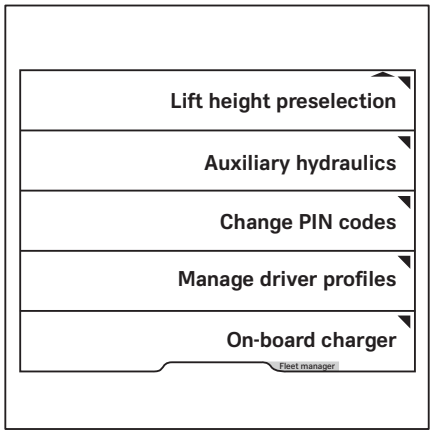
– Use the softkeys to enter the desired name.
– To confirm, press the ▤ button.



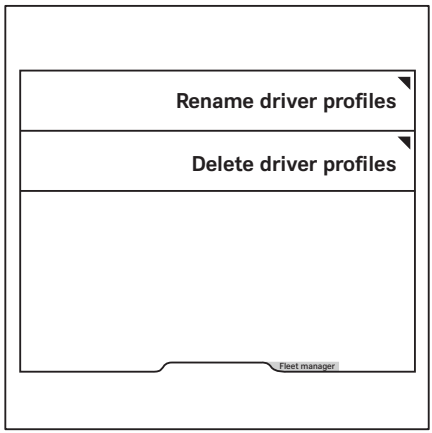
Renaming by the fleet manager

– Activate the "Access authorisation for the fleet manager".
– Press the `Truck settings` softkey ⚙.

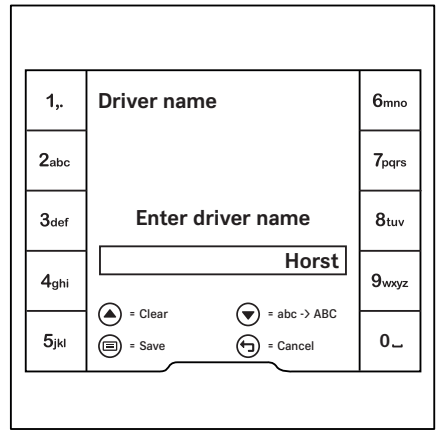
– Press the `Manage driver profiles` ▷ softkey.



– Press the `Rename driver profiles` ▷ softkey.



The `Driver name` menu is displayed. ▷

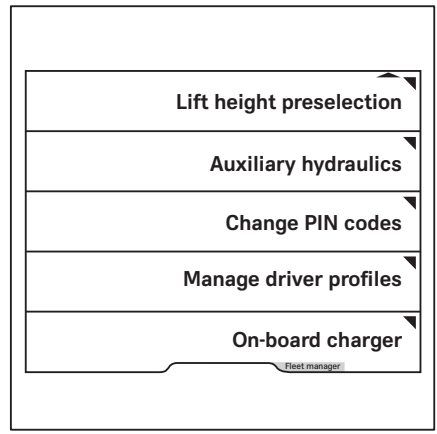


– Use the softkeys to enter the desired name.
– To save, press the ☰ button.

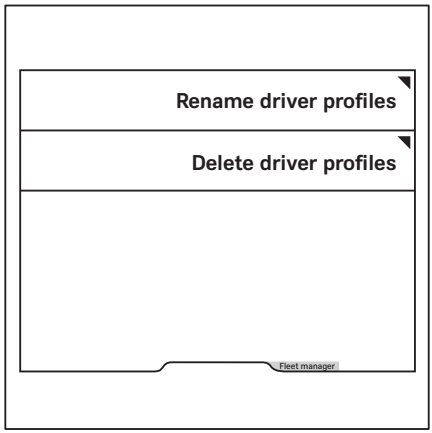
Deleting driver profiles

The fleet manager has access authorisation to delete driver profiles.

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

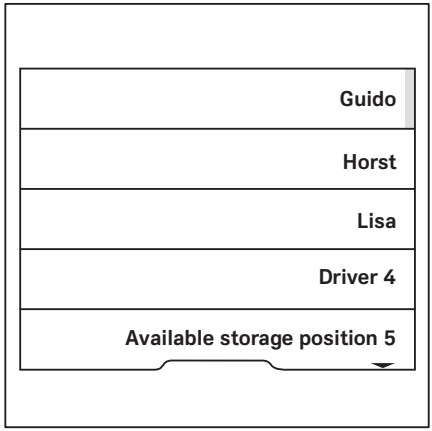


– Press the `Delete driver profiles` ▷ softkey.



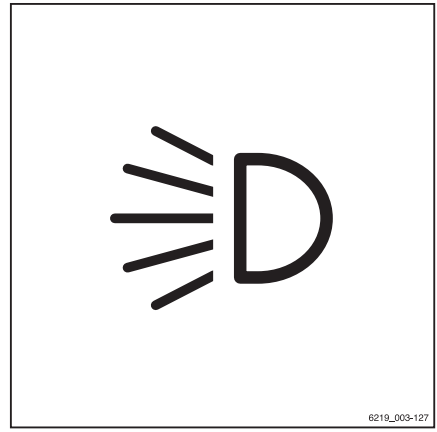
– Press the softkey for the driver profile to be ▷ deleted.

The driver profile is deleted.



Lighting

Meaning of the symbols ▷



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

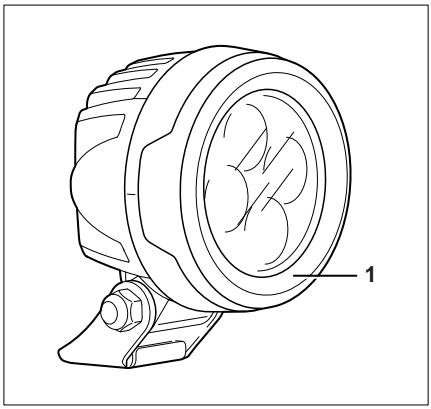
– To access this sub-menu, push the button .

Symbols for the lighting and their meanings

	Rotating beacon
	Drive-side working spotlight
	Load-side working spotlight

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

Working spotlight (variant) ▷



In this equipment variant, one or more working spotlights (1) are fitted in order to provide optimal illumination of the roadway in the drive direction.

– To switch on the drive-side working spotlights (2), press the associated Softkey on the display-operating unit.

  The drive-side working spotlights light up.

– To switch off the drive-side working spotlights (2), press the Softkey again.

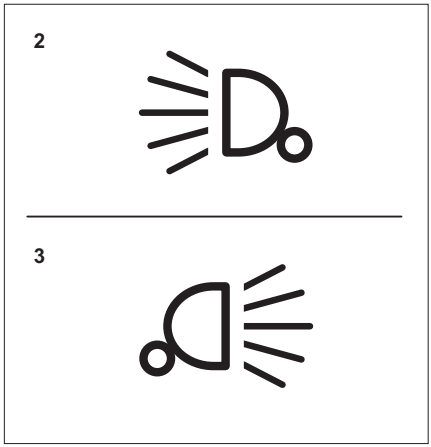
  The drive-side working spotlights go out.

– To switch on the load-side working spotlights (3), press the associated Softkey on the display-operating unit.

  The load-side working spotlights light up.

– To switch off the load-side working spotlights (3), press the Softkey again.

  The load-side working spotlights go out.



Working spotlight for reverse travel (variant)

In this equipment variant, one or more working spotlights are fitted in order to provide optimal illumination of the roadway in the load direction.

– Press the softkey.

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

– Set the drive direction to "Reverse".

The working spotlight for reverse travel lights up.

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

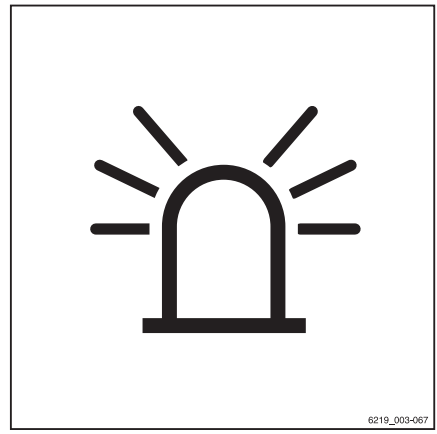
Rotating beacon (variant) ▷

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

The rotating beacon is switched on.

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

The rotating beacon goes out.



STILL SafetyLight (variant) ▷

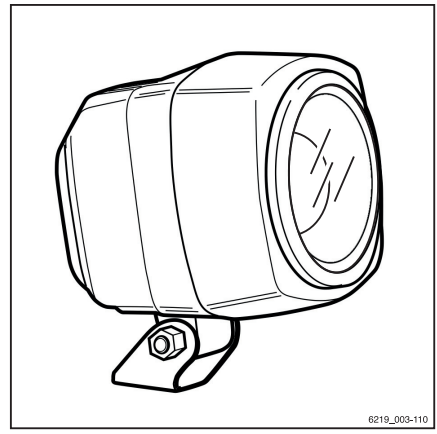
⚠ WARNING

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

Do not look into the STILL SafetyLight.

The STILL SafetyLight is a visual warning unit designed to enable early detection the industrial truck in driving areas with low visibility (such as drive lanes, high racks) and at junctions. It projects one or more light blue light spots in front of or behind the industrial truck and thus warns others of the approaching industrial truck. Several light spots are projected as a run of lights that point towards the industrial truck. The STILL SafetyLight is mounted on a support so that it is not affected by jolts and vibrations.

Depending on the configuration of the industrial truck, the STILL SafetyLight automatically switches itself on when the industrial truck is moving. The STILL SafetyLight can also be

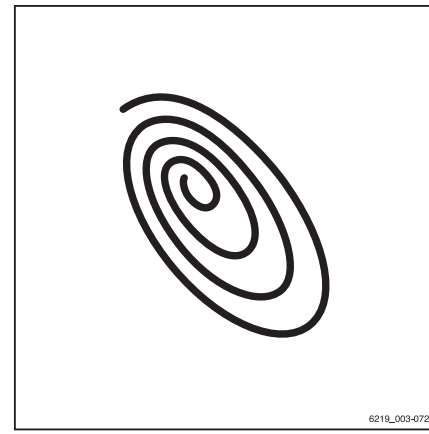


switched on and off on the display-operating unit.

– To do so, push the Softkey .

Efficiency and drive modes

Blue-Q (variant) ▷



Functional description

The Blue-Q efficiency mode affects both the drive unit and the activation of the additional consumers and reduces the industrial truck's energy consumption. Blue-Q can be switched on and off via a softkey.

If efficiency mode is switched on, the acceleration behaviour of the industrial truck changes to make acceleration more moderate.

When travelling at low speeds, normally when manoeuvring, no reduction is noticeable even if efficiency mode is switched on. At medium speeds, acceleration is more moderate. Therefore, over shorter distances lower speeds are reached than would be the case if efficiency mode were not activated.

Blue-Q has no influence on:

- Maximum speed
- Climbing capability
- Pulling force
- Braking characteristics

Effects on additional consumers

The following table shows the specific conditions that cause certain auxiliary devices to shutdown when Blue Q is activated. The additional consumers available depend on the industrial truck equipment.

Shut-off	Seat switch	Industrial truck is stationary	Drive direction
Drive-side working spotlight	X	X	In the load direction > 3 km/h
Rear working spotlight	X	X	In the drive direction
Seat heater	X	-	-

Switching Blue-Q on and off

– Press the button .
– Press the `Settings` softkey .
– Press the `Truck settings` softkey .
– To switch on Blue-Q efficiency mode, push the associated softkey.

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

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

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

Configuring Blue-Q

The fleet manager can specify via a softkey whether Blue-Q can be switched on and off or whether Blue-Q is continuously active. A prerequisite for this is that the truck with the variant "Switch on via push button" was delivered.

Procedure

– Apply the parking brake.
– Switch on the truck.
– Press the button .
– Press the "Settings" Softkey .
– Activate the "Access authorisation for the fleet manager".
– Press the `Truck settings` softkey .
– Press the `Blue-Q` softkey.

The "Blue-Q" menu appears.

– If Blue-Q should be continuously active, press the `Permanently` softkey.
– If Blue-Q should be switchable, press the `Button` softkey.

Driving

Safety regulations when driving

Driving conduct

The driver must comply with the highway code when driving within the plant.

The speed must be appropriate to the local conditions. The driver must drive slowly in certain situations, such as on bends, at narrow points in the roadway, at blind spots, on uneven roadways and when driving through swing-doors.

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

– When driving, raise the forks far enough that they do not scrape along the ground.

– 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.

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

The following are forbidden when driving:

- Allowing arms and legs to hang outside the truck
- Leaning the body over the outer contour of the industrial truck
- Climbing out of the industrial truck
- Moving the driver's seat
- Adjusting the steering unit with the steering wheel
- Releasing the seat belt
- Disabling the restraint system (including the seat belt)
- Operating electronic devices such as radios, mobile phones, etc.

⚠ WARNING

The driver's attention is adversely affected by operating multimedia and communication devices or listening to these devices at an excessive volume during travel or when handling loads. Risk of accident!

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

⚠ WARNING

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

– Switch off the devices.

Visibility when driving

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

The driver's view may be particularly limited by the load. If the driver cannot see the roadway ahead, a second person must walk ahead of the industrial truck and give the driver instructions. The driver must drive only at walking pace and take extra care. The driver must stop the industrial truck immediately if eye contact with the guide is lost.

Any windows must be clean and free of ice.

Driving on ascending and descending gradients

⚠ DANGER

Driving on ascending and descending gradients carries special dangers.

– Always follow the instructions below.

– Ensure that the ground to be traversed is clean and provides a good grip.
– Do not turn on ascending and descending gradients.
– Do not drive onto or along ascending and descending gradients at an angle.
– Do not park the industrial truck on ascending or descending gradients.

– In case of emergency, secure the industrial truck with wedges so that the industrial truck does not roll away.
– Reduce the driving speed on descending gradients.
– On ascending and descending gradients, the load must be carried facing uphill.
– Always place loads into stock and remove loads from stock on a horizontal plane. The process of placing loads into stock and removing loads from stock is not permitted while on an ascending or descending gradient!

Roadways

Dimensions of roadways and aisle widths

Within the EU, Directive 89/654/EEC (minimum safety and health requirements for the workplace) must be observed. The respective national guidelines apply for areas outside the EU. In each case, it must be checked whether a larger aisle width is necessary, e.g. with deviating load dimensions.

The industrial truck may only be used on roadways that have no bends that are too sharp, no gradients that are too steep and no entrances that are too narrow or low.

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 industrial 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:

Max. permissible gradient in %	
With load	Without load
8.0	10.0

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

Warning when components protrude beyond the truck contour

Industrial trucks are often required to drive through very narrow or very low spaces such as aisles or containers. The dimensions of the industrial trucks are designed for this purpose. However, movable parts may protrude beyond the contour and be damaged or torn off. Examples of such components include:

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

Condition of the roadways

Roadways must be sufficiently firm, smooth and even. The surface must be free from dirt and fallen objects. Drainage channels, level crossings and similar obstacles must be evened out and, if necessary, ramps must be provided so that trucks can drive over these obstacles with as few bumps as possible.

Ensure that manhole covers, drain covers etc. offer a sufficient load capacity.

The permitted area load and point load of the roadways must not be exceeded. There must be sufficient distance between the highest points of the industrial truck or the load and the fixed points of the surroundings.

Rules for roadways and the working area

It is only permitted to drive on routes authorised for traffic by the operating company or its responsible persons (see the chapter entitled "Definition of responsible persons"). Traffic routes must be free from obstacles. The load must only be set down and stored in the designated locations. The operating company and

its representatives must ensure that unauthorised third parties do not enter the working area.

Hazardous areas

Hazardous areas on roadways must be indicated by standard traffic signs or, if necessary, by additional warning signs.

Selecting drive programmes 1 to 3 ▷

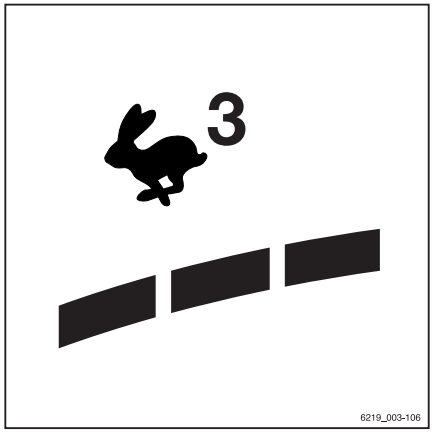
The truck has three drive programmes with different preset driving and braking characteristics. The basic principle is that the higher the number of the drive programme selected, the greater the driving dynamics.

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

– Press the 1... softkey to select the desired drive programme. 3

– If the drive programmes are saved as a favourite on a softkey, press the softkey until the number of the desired drive programme is shown on the display. ▷

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

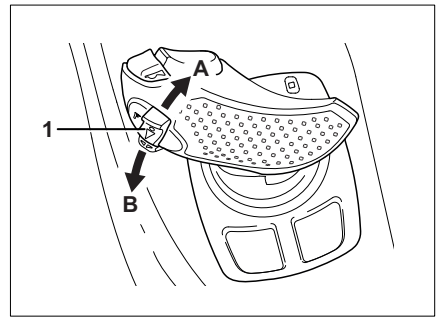


Selecting the drive direction

The desired drive direction of the industrial truck must be selected using the drive direction switch before attempting to drive.

– For the "load direction", push the drive direction switch (1) upwards (A).

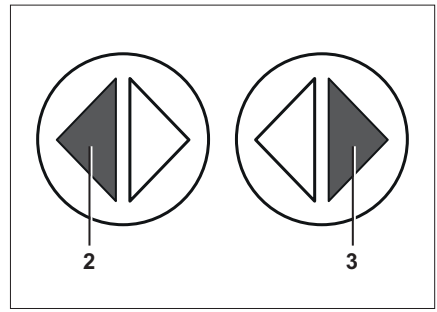
– For the "drive direction", push the drive direction switch (1) downwards (B).



NOTE

The drive direction can also be changed during travel. Your foot can remain on the accelerator pedal while you do so. The industrial truck then decelerates, and accelerates again in the opposite direction (reversing).

The indicator arrow for "drive direction"(2) or "load direction"(3) is shown in orange on the display-operating unit. The display turns according to the current steering angle.



Neutral position

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

– Briefly select the drive direction switch for the direction opposite to the current drive direction.

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

NOTE

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

Starting drive mode

Enabling the drive functions using the door lock switch, seat switch and buckle switch

A door lock switch checks that the door is closed. If the door is not closed, the drive functions of the industrial truck are disabled. The message `Driver's compartment door` appears on the display-operating unit.

NOTE

If the door is opened while driving, the regenerative brake is activated, and the industrial truck is braked perceptibly until it comes to a standstill. The parking brake is activated until the door is closed again and the accelerator pedal is actuated.

A seat switch in the driver's seat checks that the driver's seat is occupied. If the driver's seat is unoccupied, the industrial truck cannot be moved and all lifting functions are disabled. The message `Sit on the driver's seat` appears on the display-operating unit.

NOTE

If the driver stands up while driving, the regenerative brake is activated and the industrial truck is braked perceptibly until it comes to a standstill. The parking brake is activated until the driver returns to his seat and the accelerator pedal is actuated.

The seat belt must be fastened before every trip. The buckle has a buckle switch.

NOTE

If the belt has not been fastened or is unfastened while driving, the following occurs:

- *The message* `Close seat belt` *appears on the display-operating unit.*
- *The industrial truck does not move faster than 4 km/h or brakes to 4 km/h.*
- *The hydraulic functions are blocked.*

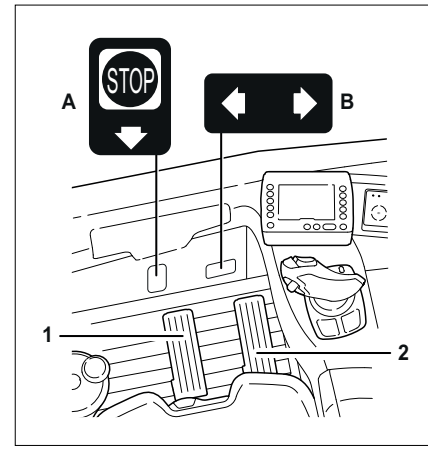
Starting drive mode

DANGER

Being trapped under a rolling or tipping industrial truck risks fatal injuries!

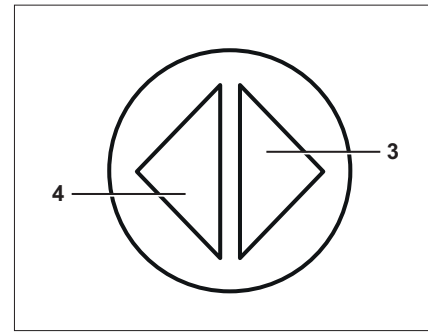
- Firmly close the driver's compartment door or the cab door (variant) and do not open it while driving.
- Sit on the driver's seat.
- Fasten the seat belt.

The adhesive labels in the footwell for braking (A) and driving (B) mark the positions of the brake pedal (1) and accelerator pedal (2).



- Observe the information in the chapter entitled "Safety regulations when driving".
- Sit on the driver's seat. Fasten the seat belt.
- Lift the forks until the necessary ground clearance is achieved.
- Release the parking brake.
- Select the desired drive direction.

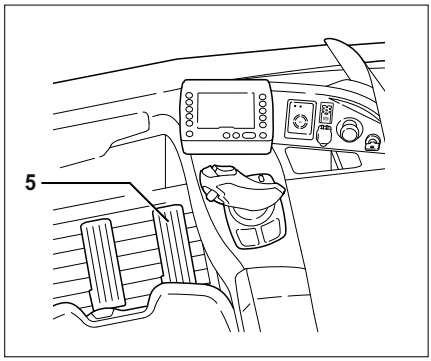
The indicator for "load direction" (3) or "drive direction" (4) lights up on the display-operating unit.



NOTE

Depending on the equipment, an acoustic signal (variant) may sound as a warning for reverse travel.

– Press the accelerator pedal (5). ▷



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

Changing the drive direction

– Take your foot off the accelerator pedal.

– Select the desired drive direction.

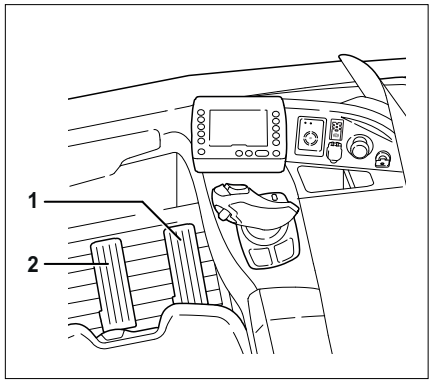
– Press the accelerator pedal.

The industrial truck will travel in the selected drive direction.

NOTE

The drive direction can also be changed during travel. Your foot can remain on the accelerator pedal while you do so. The industrial truck then decelerates, and accelerates again in the opposite direction (reversing).

Operating the service brake ▷



When your foot is lifted off the accelerator pedal (1), the regenerative brake converts the acceleration energy of the industrial truck into electrical energy. This causes the industrial truck to brake. The braking energy is fed back into the battery and the operating time available before the battery must be charged is increased.

In addition, the truck can also be braked with the electric operating brake (2). The braking effect increases the more the brake pedal is pressed down.

⚠ DANGER

If the service brake fails, the industrial truck cannot be braked sufficiently. Risk of accident!

If the driver notices that the electrical braking effect has reduced by 50% and that the drive torque has decreased to 50% of the normal level, a component failure may have occurred.

– Brake the industrial truck to a standstill. If necessary, push the emergency off switch to bring the industrial truck to a standstill using the parking brake.
– Notify the authorised service centre.
– Do not operate the industrial truck again until the service brake has been repaired.

⚠ DANGER

At excessive speeds, there is a danger that the industrial truck could skid or overturn!

The braking distance of the industrial truck depends on the ground conditions and the level of contamination on the roadway.

– Adapt your driving and braking style to suit the ground conditions and the level of contamination on the roadway.
– Always choose a driving speed that will provide a sufficient stopping distance.

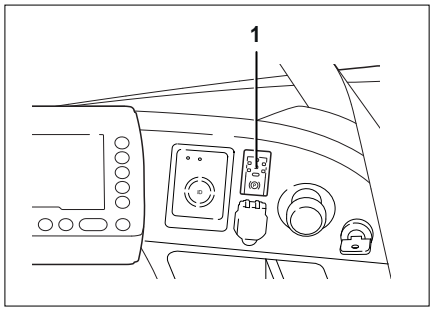
– Brake the industrial truck by releasing the accelerator pedal (1).
– If the braking effect is inadequate, use the brake pedal (2) in addition to the electric operating brake.

Symbols for the parking brake on the display-operating unit

If the parking brake is activated, this is indicated by a symbol in the display-operating unit in place of the driving speed.

Symbol	Description
(Ⓟ)	The parking brake is applied. Actuating the accelerator pedal automatically releases the parking brake.
(Ⓟ)	The parking brake is applied. Pressing the push button is the only way to release the parking brake.

Functions of the parking brake when the industrial truck is stationary



⚠ DANGER

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

- Do not leave the industrial truck until the parking brake has been applied.
- The industrial truck must not be parked on a slope.
- In emergencies, secure the truck using wedges on the side facing downhill.

The electromagnetic parking brake helps the driver park the industrial truck safely. It is applied and released manually or automatically. Despite these automatic aids, it is always the driver's responsibility to park the industrial truck safely. The safety information about parking the industrial truck safely is applicable.

NOTE

The parking brake can be released only if the battery male connector is connected and the industrial truck is switched on.

Release of the parking brake by the driver

When the industrial truck is ready for operation, the driver can release the parking brake at any time by pushing the button.

- Sit in the driver's seat.
- Press the push button (1) to release the parking brake.

The parking brake is released audibly and the symbol Ⓟ on the display-operating unit disappears. The LED on the push button goes out.

Application of the parking brake by the driver

- Press the push button (1) to apply the parking brake.

The parking brake is applied audibly and the symbol Ⓟ is shown on the display and operating unit. The LED on the push button lights up continuously.

Automatic release of the parking brake when the driver sets off

The parking brake is released automatically when the driver sets off provided that the parking brake has been manually released once since the industrial truck was switched on.

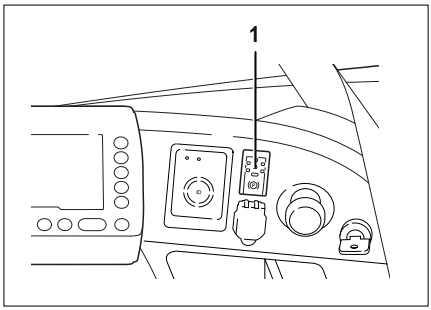
– Sit in the driver's seat.
– Select the drive direction (single-pedal version only).
– Press the accelerator pedal.

The parking brake is released automatically and audibly, and the symbol on the display-operating unit disappears. The LED on the push button goes out. The industrial truck sets off.

Automatic application of the parking brake

Cause	Effect
When the driver leaves the driver's seat:	After 3 seconds, the parking brake is applied audibly. The symbol Ⓟ is shown in the display-operating unit. The LED on the push button lights up continuously.
If the industrial truck is switched off:	The parking brake is applied immediately and audibly. The symbol Ⓟ is shown briefly on the display and operating unit until the control units switch off. The LED on the push button lights up briefly.
If the emergency off switch is actuated or as a result of an emergency off function:	The parking brake is applied immediately and audibly. The symbol Ⓟ is shown in the display-operating unit. The LED on the push button lights up continuously.

Functions of the parking brake on the moving industrial truck



Application of the parking brake by the driver

NOTE

Braking with the parking brake while the industrial truck is in motion will result in heavy wear of the brake linings. Therefore, always use regenerative braking while driving. Use the parking brake while driving only in the event of an emergency.

– Ensure you have a secure grip in the industrial truck. Hold tightly on to the steering wheel with your left hand.

– Press the push button (1) to apply the parking brake.

The parking brake is applied immediately and audibly, and brings the industrial truck to a standstill. The symbol (Ⓟ) is shown on the display-operating unit. The LED on the push button lights up continuously.

Automatic application of the parking brake

Cause	Effect
If the industrial truck is switched off:	The parking brake is applied immediately and audibly. The symbol (Ⓟ) is shown briefly on the display and operating unit until the control units switch off. The LED on the push button lights up briefly.
If the emergency off switch is actuated or as a result of an emergency off function:	The parking brake is applied immediately and audibly, and the symbol (Ⓟ) is shown on the display-operating unit. The LED on the push button lights up continuously.

NOTE

If the driver's seat is vacated while driving, the parking brake is not applied. In this case, the industrial truck is brought to a standstill by regenerative braking.

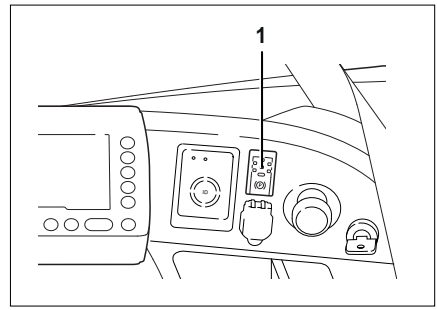
Malfunctions in the parking brake

DANGER

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

- Do not park the industrial truck on a slope.
- Do not leave the industrial truck until the parking brake has been applied.
- In an emergency, secure the industrial truck with wedges on the downhill-facing side so that the industrial truck does not roll away.

If the truck control unit detects a malfunction of the parking brake, the LED on the push button (1) for the parking brake flashes. The flashing indicates to the driver that the parking brake has not been applied. ▷



The display-operating unit shows the message: `Apply parking brake via button.` or `Parking brake cannot be applied.`

- To apply the parking brake manually, push the push button for the parking brake.
- If the parking brake is still not applied, push the emergency off switch. The parking brake is de-energised and is applied.
- Switch the industrial truck off. Unlock the emergency off switch again and switch the industrial truck on again.
- If the malfunction persists, the industrial truck must not be used until the parking brake has been repaired. Have the parking brake repaired by the authorised service centre.
- If necessary, use wedges to prevent the industrial truck from rolling away.

Steering

NOTE

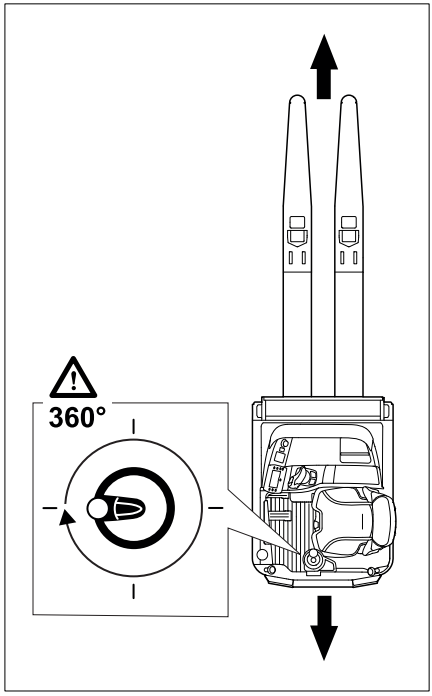
Please do not steer when the truck is at a standstill, as this causes the drive wheel to be put under extreme pressure and therefore increases wear.

360° steering (standard)

The steering wheel has no mechanical stops and can be continuously turned.

Starting in the straight-ahead position, the steered wheel reaches the 90° position after 2, 2½ or 3 revolutions (configurable) of the steering wheel. This position corresponds to the smallest turning radius of the industrial truck. At this position, the steering can be turned further, which reverses the drive direction.

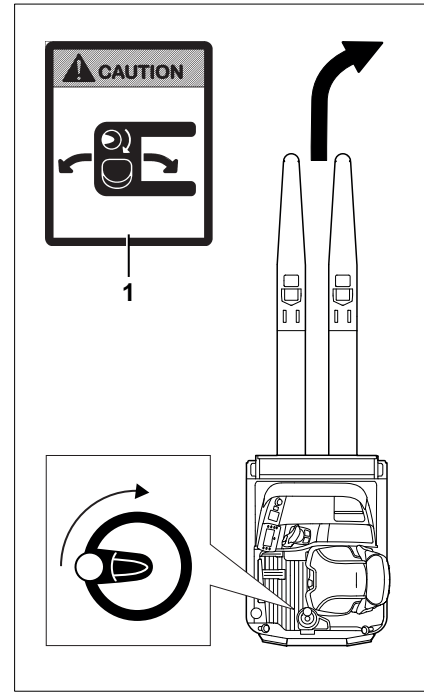
The drive direction indicator on the display-operating unit shows the actual drive direction.



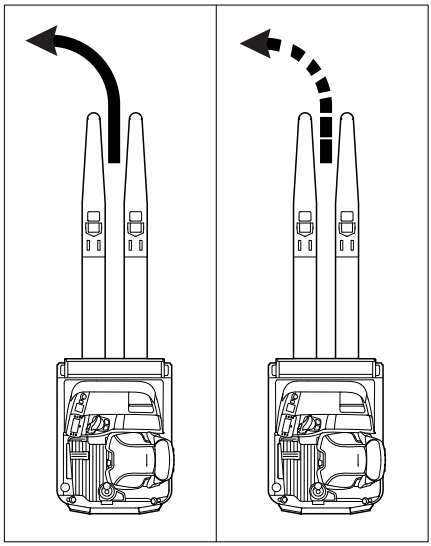
Reverse steering (variant)

If the steering wheel is turned clockwise when travelling in the load direction, the industrial truck will turn to the right. If the steering wheel is turned anticlockwise when travelling in the load direction, the industrial truck will turn to the left.

Industrial trucks with inverted steering are marked with an adhesive label (1) in the driver's compartment.



Reduction of speed when turning (Curve Speed Control) ▷



This function reduces the speed of the industrial truck as the steering angle increases, regardless of the amount to which the accelerator has been actuated. If the steering angle is reduced again as the industrial truck exits the curve, the industrial truck will accelerate according to how far the accelerator has been actuated.

However, the function does not release the driver from the duty to approach a curve at a speed according to the following factors:

- The load being carried
- The condition of the roadway
- The radius of the curve

⚠ DANGER

The Curve Speed Control function does not overcome the physical limits of stability. Despite this function, there still is a risk of tipping!

– Before using this function, familiarise yourself with the change to the driving and steering characteristics of the industrial truck.

⚠ DANGER

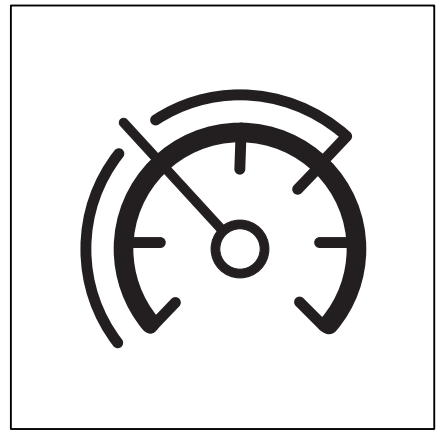
Increased risk of tipping if the Curve Speed Control function is disabled! If the controller fails or is disabled while driving, the industrial truck will no longer automatically brake when steering.

– Always adapt your driving style to the conditions.

In the following situations, the industrial truck may still tip over in extreme cases despite the Curve Speed Control function:

- 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.

Speed limitation (variant) ▷



The speed limitation (variant) is a function that can be configured by the fleet manager. It sets a maximum speed that can either be permanent or be called up by the driver. This function helps the driver to comply with speed restrictions, e.g. in storage areas or specific areas.

Switching the speed limitation on and off

– Press the button ☰.

The first menu level appears.

– Press the "Drive" softkey.

The "Drive" menu appears.

– Press the "Speed limitation" softkey.

The activation bar appears next to the symbol. The speed limitation is switched on.

– To switch off the speed limitation, press the softkey again.

Configuring the speed limitation

NOTE

Access to the settings menu is only available if the truck is at a standstill and the parking brake is applied. If the parking brake is released prematurely, the settings menu will close. Access is only granted when the password is entered by the fleet manager.

– Stop the truck.

– Actuate the parking brake.

– Press the button ☰.

– Press the "Settings" softkey.

The first menu level appears.

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

The "Settings menu" opens on the display.

– Press the `Truck settings` softkey.

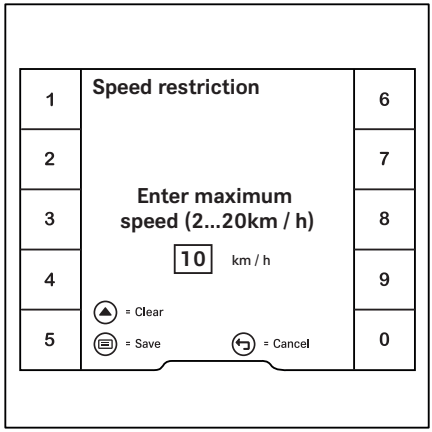
– Press the `Speed limitation` softkey.

The menu that opens offers the following functions:

- `Permanent`
  Enabling this function limits the speed until the fleet manager disables this function.
- `By pressing a button`
  If this function is activated, the driver may switch the speed limitation on and off by pressing the softkey.
- `Entering the maximum speed`
  This menu can be used to set the maximum truck speed when speed limitation is active.

– To adjust the maximum speed, press the `Enter max. speed` softkey.

The `speed limitation` menu opens. ▷



– Using the softkeys, set a maximum speed between 2 km/h and 20 km/h.

The maximum speed is dependent on the truck equipment and may be restricted by a factory setting.

– To `save`, press the button.

The maximum speed is entered.

– To `delete`, press the scroll button.

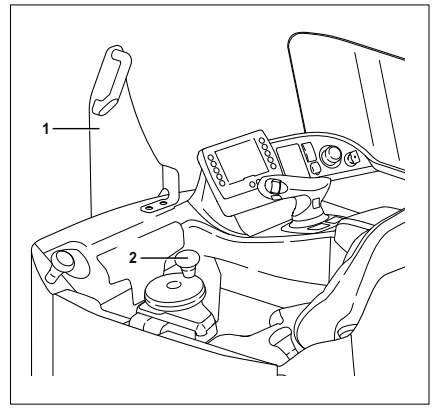
The entry is deleted.

– To `cancel`, press the back button.

The display reverts to the previous menu.

The main display button takes you to the main display.

Stand-up slow speed mode (variant) ▷



The "stand-up slow speed" drive mode makes it easier to manoeuvre the industrial truck in confined spaces or when picking up pallets. If this drive mode is active, the industrial truck can be driven at a slow speed for a short period with the driver standing. This gives the driver a better overview. An additional handhold (1) increases safety for the driver.

Using the "stand-up slow speed" drive mode

⚠ DANGER

Risk of injury from falling off the moving industrial truck

If standing, the driver may lose grip and be thrown out of the industrial truck in the event of an emergency stop or a sharp braking action.

- Drive on roadways and transport routes only when seated.
- While driving in the "stand-up slow speed" drive mode, always grip the steering wheel firmly and hold onto the additional handhold. Make sure that you are standing securely.
- Do not open the driver's compartment door while driving. The industrial truck will immediately brake to a standstill.
- Watch out for people, other industrial trucks and any obstacles. Drive carefully.

- Remain seated until you are as close as possible to the situation you cannot see, e.g. the pick-up/set-down position for a pallet.
- Bring the industrial truck to a standstill.
- Do not actuate the accelerator pedal.
- Release the seat belt.
- Stand up from the driver's seat and stand in a stable position. Grip the additional handhold (1) and the steering wheel (2).
- Press the accelerator pedal. The industrial truck travels at a maximum speed of 2 km/h.
- To exit the "stand-up slow speed" drive mode, sit on the driver's seat again and

release the accelerator pedal once. Fasten the seat belt again.

Parking

Parking the industrial truck securely and switching it off

⚠ DANGER

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

- Do not park the industrial truck on a slope.
- In emergencies, secure the truck using wedges on the side facing downhill.
- Do not leave the industrial truck until the parking brake has been applied.

⚠ DANGER

Never leave the industrial truck with the forks raised, whether loaded or not.

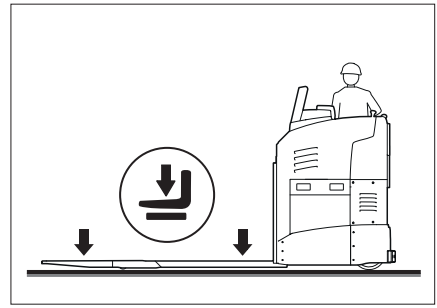
⚠ CAUTION

Batteries may freeze!

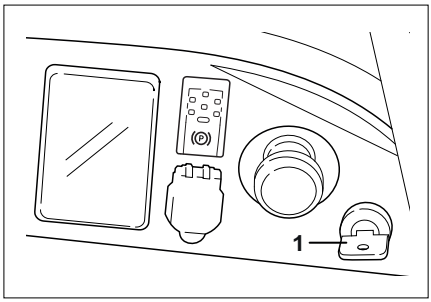
If the industrial truck is parked in an ambient temperature of below -10°C for an extended period, the batteries will cool down. In lead-acid batteries, the electrolyte can freeze and damage the batteries. The industrial truck will not be ready for operation.

- When the ambient temperature is below -10°C, park the industrial truck only for short periods of time.

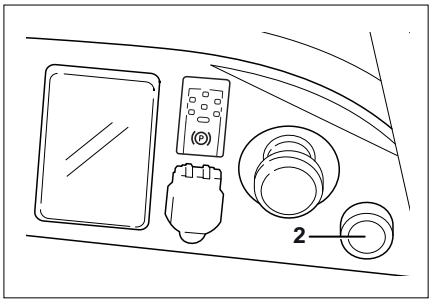
- Apply the parking brake.
- Lower the forks to the ground. ▷



– Turn the switch key (1) to position "0" and remove the switch key. ▷



– In the "Switch on via push button" variant, press the push button (2). ▷



NOTE

Switch keys, FleetManager cards (variant), FleetManager transponder chips (variant) and the PIN code for access authorisation (variant) must not be handed over to other persons unless explicit instructions to this effect have been given by the responsible fleet manager.

Lifting

Lifting and lowering forks with Joystick 4Plus

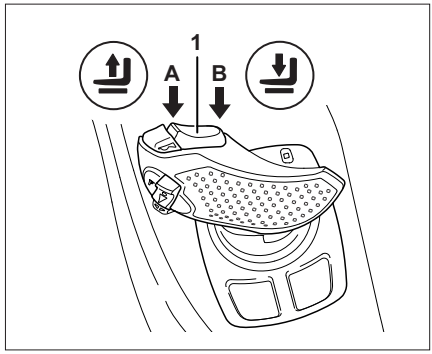
⚠ DANGER

Reaching into or climbing between moving parts of the industrial truck (e.g. lift mast, sideshifts, working equipment, load carrying devices, etc.) can lead to serious injury or death and is therefore prohibited.

– Observe the safety regulations for handling loads.
– Operate the lifting system from the driver's seat only.

Lifting, lowering forks

▷



Lifting forks:

– Tilt the rocker button (1) to the left (A).

Lowering forks:

– Tilt the rocker button (1) to the right (B).

Handling loads

Safety regulations for handling loads

Observe the following safety regulations when working with loads.

⚠ DANGER

Risk of injury when stepping onto the fork

– Do not step on the fork. Do not lift people.

⚠ DANGER

Never leave the industrial truck with the fork raised, whether loaded or not.

– Before exiting the industrial truck, lower the fork to the ground.

⚠ WARNING

Risk of crushing!

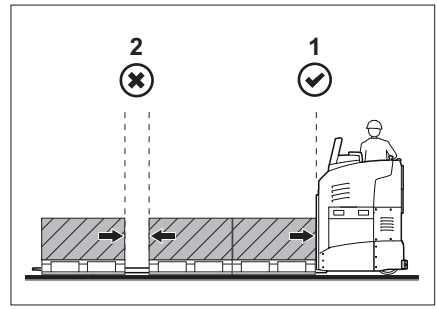
– Never grab or climb onto moving parts of the industrial truck.
– Do not stand with your feet under the raised forks.
– Take care not to trap hands or feet when operating the industrial truck.

As a rule, single loads (e.g. pallets) must be transported individually. Transporting multiple loads at the same time is permitted only:

- when instructed by the supervisor.
- when the technical requirements have been met.

Picking up multiple load carriers behind one another ▷

To ensure the load is securely supported, the load must be against the stop on the lift chassis (1) when the load is picked up. If multiple load carriers are transported behind one another, there must be no space (2) between the load carriers.



Danger area

The danger area is the area in which people are at risk due to the movements of the industrial truck, its lifting accessories or the goods that are being carried. One such area is that which can be affected by falling goods or by lowering the lifting accessories.

⚠ DANGER

People may be injured in the danger area of the industrial truck!

The danger area of the industrial truck must be completely clear of all personnel, except the driver in his normal operating position. If persons fail to leave the danger area despite warnings:

– Immediately stop working with the industrial truck.
– Secure the industrial truck against use by unauthorised parties.

Before picking up a load

The driver must ensure that the load is in the proper condition. Only stable and carefully positioned loads may be transported. Damaged load carriers and improperly arranged loads must not be transported.

The load must be uniformly distributed and securely fastened centrally on the load carrier. The load must be secured so that it cannot shift or fall during transport.

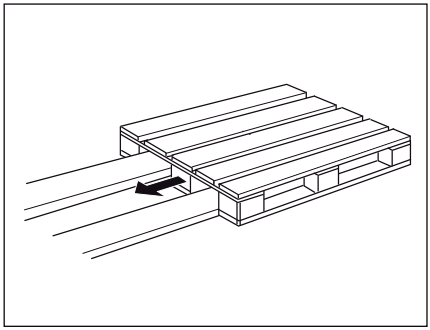
The width of the load must be compatible with the width of the forks. The load must not exceed the specified maximum dimensions.

Picking up a load ▷

⚠ DANGER

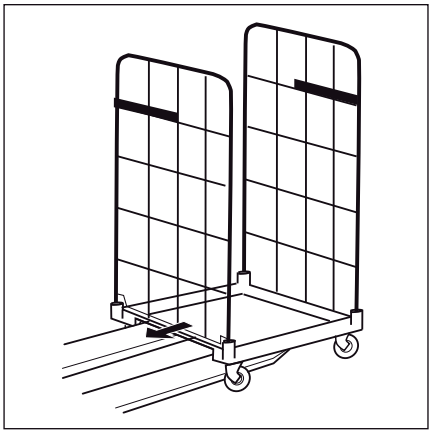
Danger of instability!

The total weight of the load being picked up must not exceed the rated capacity of the industrial truck. The rated capacity is indicated on the nameplate of the industrial truck; see the chapter entitled "Nameplate".



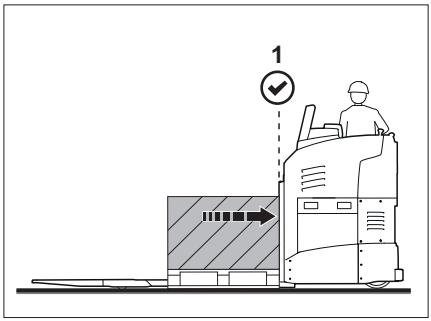
Loads must be picked up and transported as close as possible to their centre.

The forks must be inserted sufficiently far under the load to ensure stability. When the load is being lifted, it must not protrude too far beyond the fork tips. Oversize loads must not be lifted or transported using two industrial trucks at once.



– Approach the load as carefully and precisely as possible.
– Lower the forks so that they can be easily inserted into the load carrier (e.g. pallet).
– Push the forks slowly into the middle of the load carrier without impacting either the load carrier or nearby objects. The load centre of gravity should be centred between the forks.

– When the load is picked up, it must be against the stop on the lift chassis (1) to ensure it is securely supported. ▷
– Lift the load off the ground to the upper end of the lift travel range.



Transporting loads

NOTE

Observe the information in the chapters entitled "Safety regulations when driving", "Steering" and "Operating the service brake".

⚠ CAUTION

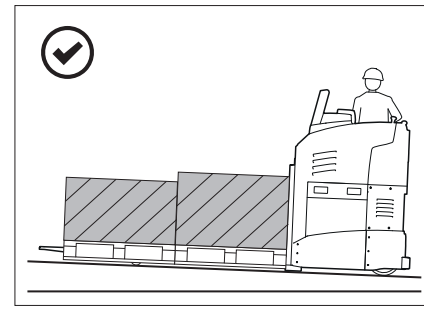
Risk that loads may tip over

Drive slowly and carefully around corners.

Always accelerate and brake gently.

Observe the following instructions when travelling with loads:

- When transporting loads (transport routes), drive in the drive direction. Always drive in the drive direction for optimum visibility.
- When driving in the load direction, the view may be restricted by the load. Drive at creep speed. In particular, watch out for people and obstacles in the roadway.
- On slopes, always drive with the load facing uphill. Never drive crosswise on gradients or descents, or do U-turns on them. Reduce the speed. ▷
- Never drive with an unstable load. Stop immediately if a load becomes unstable while driving.
- If visibility is poor, always let someone guide you.
- Take particular care when passing through passageways, doorways, scaffolding, etc. where there is restricted overhead clearance.
- Observe the ground clearance. When driving over uneven roadways, lift the fork arms.
- Make sure that the load is no wider than the width of the aisle.



Setting down a load

⚠ DANGER

The process of placing loads into stock and removing loads from stock is not permitted while on an ascending or descending gradient! Always place loads into stock and remove loads from stock on a horizontal plane.

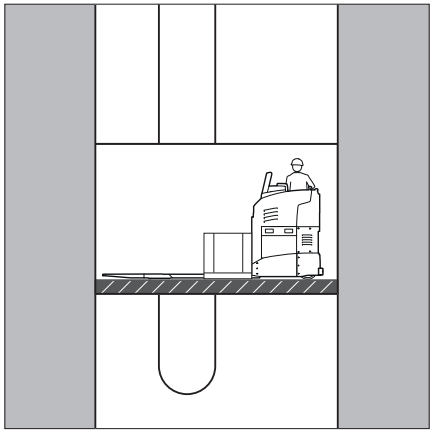
⚠ WARNING

During the entire load depositing operation, maintain a sufficient distance from obstacles (such as other pallets, projecting objects, racks, etc.).

– Drive to the position where the load is to be set down.
– Carefully move the load into the desired position. The load must be placed into storage so that the specified aisle width is not reduced by protruding parts.
– Lower the load slowly until the fork arms are free. Make sure that the load is stable on the ground.
– Before moving the industrial truck in reverse, look to the rear. Make sure that there are no people or obstacles in the roadway.
– Drive the industrial truck out of the load carrier in a straight line.

Driving onto lifts

▷



The driver may only use this industrial truck on lifts that have a sufficient load capacity and for which the operating company has been granted authorisation (refer to the section entitled "Definition of responsible persons").

⚠ DANGER

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

– There must not be any persons already in the lift when the industrial truck is driven into the lift.
– Persons are permitted to enter the lift only once the industrial truck is secure, and must exit the lift before the industrial truck is driven out.

Determining the total actual weight ▷

– Park the industrial truck securely and switch it off.

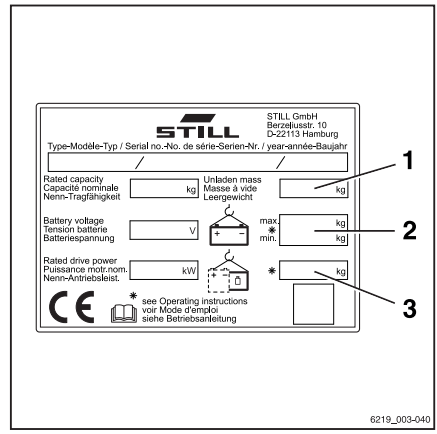
– Determine the unit weights by reading the industrial truck nameplate and if necessary weighing the load that is to be carried.

– Add together the determined unit weights to obtain the total actual weight of the industrial truck:

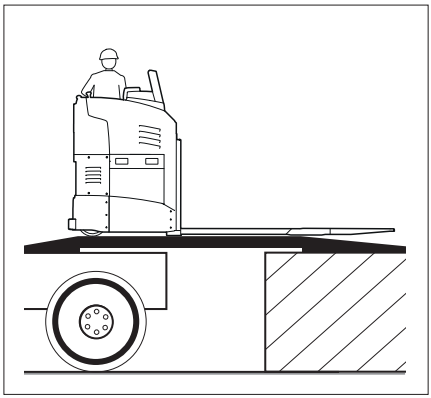
Net weight (1)
\+ Max. permissible battery weight (2)
\+ Ballast weight (variant) (3)
\+ Net weight of attachment (variant)
\+ Weight of the load to be lifted
\+ 100 kg allowance for driver
= Total actual weight

– Drive the industrial truck onto the lift with the forks forwards and without touching the shaft walls.

– Park the industrial truck securely in the lift and switch it off to prevent uncontrolled movements of the load or the industrial truck.



Driving on loading bridges ▷



⚠ DANGER

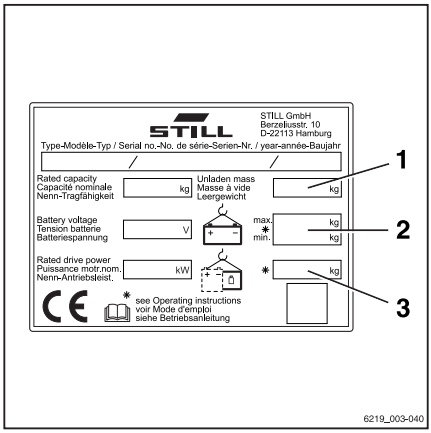
Risk of accident due to the industrial truck crashing!

Steering movements can cause the tail end to veer off the loading bridge towards the edge. This can cause the industrial truck to crash.

The lorry driver and the driver of the industrial truck must agree on the departure time.

– Establish the departure time of the lorry.
– Determine the total actual weight of the industrial truck.
– Before driving over a loading bridge, observe the company directive for the loading bridge.
– Make sure that the loading bridge is properly attached and secured and has a sufficient load capacity (e.g. lorry, bridge).
– Ensure that the lorry onto which you will be driving is secured to prevent it shifting and that it can support the load of the industrial truck.

Determining the total actual weight ▷



– Park the industrial truck securely.
– Determine the unit weights by reading the industrial truck nameplate and if necessary weighing the load that is to be carried.
– Add together the determined unit weights to obtain the total actual weight of the industrial truck:

Net weight (1)
\+ Max. permissible battery weight (2)
\+ Ballast weight (variant) (3)
\+ Net weight of attachment (variant)
\+ Weight of the load to be lifted
\+ 100 kg allowance for driver
= Total actual weight

– Drive slowly and carefully on the loading bridge.

Auxiliary equipment

FleetManager (variant)

FleetManager is an equipment variant and can be fitted to the truck in different versions. The description and operation information can be found in the separate operating instructions for the corresponding FleetManager versions.

Shock recognition (variant)

The shock recognition is an equipment variant of the FleetManager (variant) in which an acceleration sensor is installed in the truck. The acceleration sensor records data arising from rapid accelerations or decelerations of the truck, e.g. in the event of an accident. This data can be electronically read out and evaluated.

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

Footwell heating (variant)

⚠ DANGER

The effects of heat can cause gases to expand considerably or to ignite. There is a risk of explosion!

– Do not expose spray cans or gas cartridges to the flow of hot air.

⚠ DANGER

The heating system can overheat if the hot air cannot escape from it. Risk of fire!

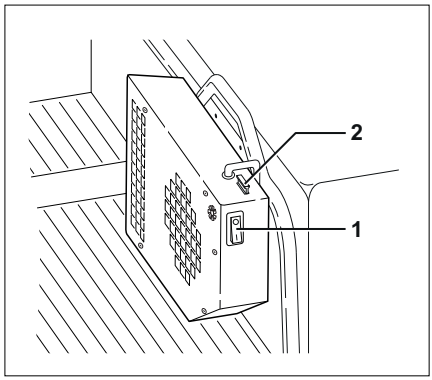
The heating system may only be switched on if the blower is running and the heating system is not covered by objects (such as a jacket or cover).

– Always switch the blower on first.

– Do not switch the heating system on until the blower is switched on.

– Move any objects away from the heating system or air distributors.

Switching on the footwell heating



– Press the switch (1) down (position I) to switch on the heating system and the blower.

The heating system and the blower are now switched on.

Switching off the footwell heating

– Press the switch (1) up (position O) to switch off the heating system and the blower.

The heating system and the blower are now switched off.

Checking and replacing the fuse

DANGER

Using the wrong fuses can result in short circuits. Risk of fire!

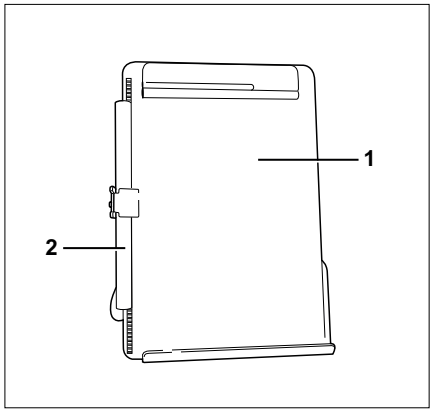
– Use only fuses with the prescribed nominal current.

Park the industrial truck safely and switch it off.

– Pull out the fuse (2) upwards by hand and check it.

– Replace a blown fuse. Do not leave the slot for the fuse unoccupied.

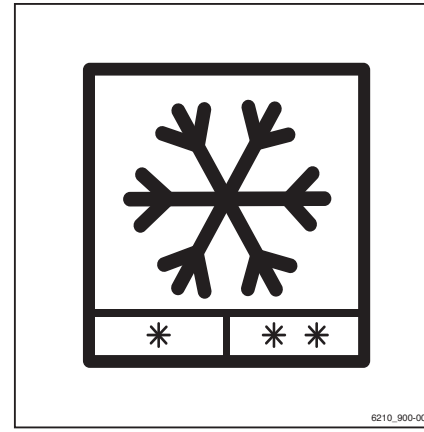
Clipboard (variant)



The clipboard (1) with reading lamp (2) is an equipment variant.

Cold store application

Cold store application (variant) ▷



An industrial truck for use in a cold store must be fitted with additional cold store equipment. Because of this additional equipment, the operational behaviour, maintenance intervals and maintenance tasks differ from those of standard industrial trucks.

Industrial trucks with cold store equipment are marked with the cold store symbol.

Main features of the cold store equipment:

- Heating fans and heating resistors throughout the industrial truck to keep the components at operating temperature.
- Precautions to allow any condensation water to drain off without it penetrating into the electrics.
- Special seals on the lift cylinder, the hoses and other hydraulic components
- Hydraulic oil grades suitable for cold store use
- Lubricants for moving parts suitable for cold store use

⚠ WARNING

Risk of accident due to icy roadways

Icy roadways can make it impossible to brake and steer the industrial truck.

– Keep roadways free of ice at all times.

– Do not drive on icy roadways.

Areas of application

The industrial truck is approved for use in cold store application areas 1 - 3. The following specifications for the areas of application must be strictly observed:

Temperature range	Length of stay	Mode of operation	Cold store equipment
Area of application 1			
Down to −10 °C	For short periods	• Typical application for trucks that take loads from a refrigerated lorry into the cold store, where the load is handled by storage and retrieval trucks.	Not required
Area of application 2			
Down to −30 °C	Continuous	• Alternating indoor and outdoor use. • Time spent outdoors should be at least long enough for the condensation to drain off (generally at least 30 minutes) or so short that no condensation can form (generally max. 10 minutes). • The industrial truck is parked outside the cold area.	Required
Area of application 3			
Down to −30 °C	Continuous	• The industrial truck is parked outside the cold store area only for maintenance or repair work, or only for max. 10 minutes.	Required

Warming up the industrial truck

The industrial truck must be warmed up before it is used for normal operations in the cold store. The warm-up phase is necessary to ensure that the hydraulic oil and the electronic control systems have reached their operating temperature.

– In order to guarantee operational safety, warm up the industrial truck at half speed for around 5 minutes. Press the brake pedal several times to test the brake system.

– Actuate all lifting functions several times. Valves and seals will work correctly only

after this warm-up phase has been completed.

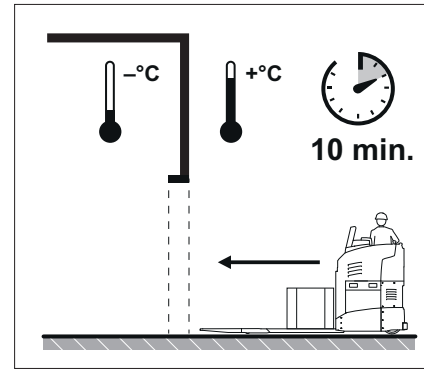
Alternating between the normal area and the cold-store area

⚠ CAUTION

Changing from a cold internal temperature to a warm outside temperature may result in the formation of condensation water. This water may freeze on re-entry to the cold store and block moving parts of the industrial truck.

The specifications for the four areas of application must be observed (see the chapter entitled "Areas of application").

Before re-entering the cold store, any condensation water on the industrial truck must be dried off. The industrial truck should not leave the cold store area for more than 10 minutes. By adhering to this rule, condensation water will not have time to form. ▷



After more than 10 minutes in an outside area, the condensation water must be allowed to drain and dry off before entering the cold store. This could take up to 12 hours.

An industrial truck used in a cold store should always maintain its operating temperature.

- Therefore, when the industrial truck is in the cold store, switch it off only for brief periods.
- If the industrial truck is to be switched off and parked for longer periods, first drive it out of the cold store.

⚠ WARNING

Risk of injury!

If condensation water freezes in the cold store, do not try to free parts that have become stuck with your hands.

NOTE

In exceptional cases, the industrial truck may be driven into the cold store even if it is carrying a small amount of condensation. When doing so, prevent the condensation water on the industrial truck from freezing. Water droplets on the sensor system and on the mechanical components must be removed by actuating the lift functions.

- *Before entering the cold store, raise the forks once and lower them again.*
- *Repeat the operation after entering the cold store.*

Using batteries in the cold store

The drive batteries of industrial trucks must under no circumstances reach the temperature of the cold store (-30°C). They must either be in operation or charging.

The battery charger must always be operated outside the cold store. The charging station and parking area for industrial trucks with batteries should be at normal room temperature (not below 10 °C). At temperatures below 10 °C, the battery cannot be fully charged with the normal charging parameters.

⚠ CAUTION

Depending on the temperature, the charging time of the battery may increase and the available capacity of the battery may be reduced.

The lower the temperature at which the battery is used, the longer the charging time and the lower the available capacity. The standard capacity is reached at 30°C. If the temperature is reduced by 1°C, this capacity is reduced by approximately 1%.

⚠ CAUTION

Reduced power output if batteries have remained unused in the cold store!

The batteries must not remain in the cold store for a long time (more than 4 hours) without power being drawn from them or being charged.

⚠ CAUTION

Damage to lead-acid batteries by topping up with freezing water

In the cold store, distilled water must be added during the gassing phase so that it immediately mixes in with the remaining acid. If the top-up water is not mixed in, it may freeze.

Water top-up systems must not be used at temperatures below 0°C, as this could cause the systems and the standing water in the hose lines to freeze.

Display messages

Messages

Certain truck conditions may cause event-related messages to be shown on the display of the display-operating unit.

There are messages about operation and messages about the truck. If a message about operation appears, the display-operating unit will prompt you to perform an action. A message about the truck means that the truck control unit has detected a fault.

The following types of message may appear individually or in combination:

- A graphic symbol
- The message
- A code consisting of a letter and a four-digit number

The message is displayed until either the cause has been corrected or the message has been acknowledged.

In the case of successive events, the respective messages are displayed one after another on the display.

Messages about operation

If messages about operation appear on the display-operating unit, an action must be carried out.

Shown on display	Cause/action
Log in	The access authorisation (variant) is preventing the use of the industrial truck. - Enable the access authorisation.
Battery empty	The battery charge state is too low for the use of the industrial truck. - Charge the battery.
Battery: Emergency mode	The battery charge state is low. Power in the industrial truck is reduced. - Charge the battery.
Check battery acid level	The acid level of the lead-acid battery is too low. - Check the acid level of the battery. Correct if necessary.

Shown on display	Cause/action
Battery too cold	The lithium-ion battery is too cold. - Move the industrial truck to a warmer environment.
Release the brake pedal !	The desired action is only possible after releasing the brake pedal. - Release the brake pedal.
Curve Speed Control Active !	Curve Speed Control reduces the curve speed. - No action is required.
Data transmission required !	If the industrial truck is equipped with this variant, data transmission must be carried out. - See the associated instructions.
Diagnostic mode active	This message is not displayed during normal operation. - Contact the authorised service centre.
Development mode active	This message is not displayed during normal operation. - Contact the authorised service centre.
Drive unit blocked !	This message follows earlier messages, e.g. overtemperature. It is not possible to drive the truck. - Wait until the message disappears. If necessary, switch the industrial truck off and on again. - If the message continues to appear, please contact the authorised service centre.
Sit on driver's seat	The industrial truck is equipped with a seat contact switch. If the driver's seat is not occupied, the drives are disabled. - Sit on the driver's seat.
Truck stop: Access system	The access authorisation (variant) is preventing the use of the industrial truck. This can be caused by entry of an incorrect code. - Enable the access authorisation.
Fault: Battery	The truck control unit detects an error in the lithium-ion battery. - Switch the industrial truck off and on again. - If the message continues to appear, please contact the authorised service centre.
Apply parking brake	If the industrial truck control unit detects a movement of the industrial truck without the accelerator pedal being actuated, this message appears. - Apply the parking brake.
Release parking brake	The desired action is only possible after releasing the parking brake. - Release the brake pedal.

Shown on display	Cause/action
Check parking brake ⚠	The truck control unit detects that the braking force of the electric parking brake is reducing. - Secure the industrial truck with wedges so that it cannot roll away. - Contact the authorised service centre.
Parking brake cannot be applied Ⓟ	The parking brake cannot be applied due to a technical fault. - Apply the parking brake according to the section entitled "Malfunctions in the electric parking brake". - Secure the industrial truck with wedges so that it cannot roll away.
Apply parking brake via button Ⓟ	The electric parking brake is not applying automatically. - Apply the parking brake by pressing the button.
Release parking brake via button Ⓟ	The electric parking brake cannot be released automatically. - Release the parking brake by pressing the button.
Close cab door or seat belt !	If the seat belt is not fastened and the cab door (variant) is not closed, the driving speed is limited to 4 km/h and this message appears. - Close the cab door or fasten the seat belt.
Close cab door !	If the cab door is opened while driving, the industrial truck will brake to a standstill. - Close the cab door.
Configuration: Please wait	This message is not displayed during normal operation. - Contact the authorised service centre.
Remove charging cable	If the industrial truck is equipped with an integrated charger (variant) and charging is complete, this message appears. - Disconnect the charger plug from the plug connection on the industrial truck.
Start charging?	If the industrial truck is fitted with an integrated charger (variant) and the industrial truck control unit detects that a charger plug is inserted, this message appears. - Press the relevant softkey to start charging.
Unsent data will be overwritten !	If the industrial truck is equipped with this variant, data transmission must be carried out. - See the associated instructions.
Emergency off active	If the industrial truck is switched on and an operating device is actuated when the emergency off switch is pressed, this message appears. The desired action is only possible once the emergency off switch is unlocked. - Unlock the emergency off switch.

Shown on display	Cause/action
Emergency operation !	If the industrial truck experiences a power reduction, for example due to a battery charge state that is too low, this message appears. - Observe the previous message.
Parameter calibration	This message is not displayed during normal operation. - Contact the authorised service centre.
Close restraint system	If, for example, the industrial truck is equipped with a bracket as a restraint system and the accelerator pedal is actuated, this message appears. The industrial truck will not move. - Close the restraint system.
Switch on switch lock !	If the hazard warning system (variant) is switched on when the industrial truck is switched off, the display-operating unit remains active. Then, when a function is called up, this message appears. - Switch on the industrial truck.
Shock event detected !	If the truck control unit detects a very strong acceleration or deceleration, e.g. in the event of an accident, this message appears.
Service required	If the maintenance interval has been reached, this message appears. - Contact the authorised service centre.
Service mode active	This message is not displayed during normal operation. - Contact the authorised service centre.
Close seat belt	If the seat belt is not fastened, the driving speed is limited to 4 km/h and this message appears. - Fasten the seat belt.
Are you sure? ?	If the display-operating unit is expecting confirmation from the driver, this message appears. - Continue with or cancel the input prompt.
Dead man switch	If the industrial truck is equipped with a foot switch, and a function is called up when the foot switch is not actuated, this message appears. - Actuate the foot switch.
Overtemp.: Battery	If the truck control unit detects an excessive battery temperature, this message appears. - Allow the industrial truck to cool down.
Factory mode active	This message is not displayed during normal operation. - Contact the authorised service centre.
Access expired !	If the industrial truck is equipped with this variant, this message may appear. - See the associated instructions.
Access denied !	

Shown on display	Cause/action
Access expires in < 1 month !	
Access expires in < 1 day !	
Access expires in < 1 week !	
Access expires in < 2 days !	
Access expires in < 3 days !	

Messages about the truck

If messages with a code appear on the display-operating unit, the truck control unit has detected a fault. The message with a code is stored in the message list until the cause of the message is corrected. The saved messages can be called up from the "message list".

If, for example, the reflector or the lift-height sensor is contaminated, it usually helps to clean these components.

– Switch the truck off and on again.

– If the message still appears, please contact the authorised service centre.

The messages are sorted in ascending order according to their code:

Code	Shown on display	Description/possible solution
A2103	Parameter faulty ⚠	Collective fault of the parameters
A2305	Fault: Control unit ⚠	Collective fault on the control unit
A2545	Actuator error 9: ⚠	Actuator breakdown If no attachment is fitted, this message can be ignored. - If there is an attachment fitted, contact the authorised service centre.
A2801	Monitoring ⚠	Process monitoring, proc 1
A2802	Monitoring ⚠	Process monitoring, proc 2
A2803	Monitoring ⚠	Process monitoring, proc 3
A2804	Monitoring ⚠	Process monitoring, proc 4
A2805	Monitoring ⚠	Process monitoring, proc 5
A2806	Monitoring ⚠	Process monitoring, proc 6
A2807	Monitoring ⚠	Process monitoring, proc 7

Code	Shown on display	Description/possible solution
A2808	Monitoring ⚠	Process monitoring, proc 8
A2809	Monitoring ⚠	Process monitoring, proc 9
A2810	Monitoring ⚠	Process monitoring, proc 10
A2811	Monitoring ⚠	Process monitoring, proc 11
A2899	Monitoring ⚠	Collective fault of the process monitoring
A3015	Fault: Brake sensor ⓘ	Collective fault on the brake sensor
A3027	Fault: Seat switch	The seat switch does not open - Stand up from the driver's seat and sit down again.
A3035	Fault: Brake fluid ⓘ	Brake fluid switch
A3143	Check lift height sensor and reflector ⚠	Lift-height sensor measurement error
A3151	Plausibility of shift function hydraulics ⚠	If no attachment is fitted, this message can be ignored. - If there is an attachment fitted, contact the authorised service centre.
A3230	Fault: Monitoring of steering	Collective fault on the steering
A3340	Monitoring: Electrics ⚠	Collective fault on the additional electrical installation
A3345	Monitoring: Electrics	Collective fault on the powertrain
A3346	Monitoring: Drive unit ⚠	Collective fault on the drivetrain
A3347	Hydraulics	If no attachment is fitted, this message can be ignored. - If there is an attachment fitted, contact the authorised service centre.
A5090	Overtemp.: Drive unit	Drive unit overtemperature collective fault - Switch off the truck and leave it to cool down.
A5091	Overtemp.: Hydraulic drive	Hydraulic drive overtemperature collective fault - Switch off the truck and leave it to cool down.
A5934	Fault: Internal charger	Error on the charging connector detection - Disconnect the connection assembly and reconnect it.
A5961	Battery overtemperature	Overtemperature of the lithium battery - Switch off the truck and leave it to cool down.
A5962	Battery too cold	Insufficient lithium battery temperature - Move the truck to a warmer environment.
A5986	Fault: Control unit ⚠	General battery current measurement
A5993	Fault: Internal charger	On-board charger collective fault
A6210	Fault: Battery	Lithium battery collective fault
A6502	Overtemp.: Parking brake ⓘ	Electric parking brake detects overtemperature

Code	Shown on display	Description/possible solution
A6510	Fault: Parking brake (!)	Electric parking brake detects fatal fault
A6511	Fault: Parking brake (!)	Brake cannot release
A6512	Fault: Parking brake (!)	Brake cannot apply
A6701	Fault: Monitoring of assistance system ⚠	Collective fault on the assistance systems
None	Error ⚠	General fault

Procedure in emergencies

Emergency shutdown ▷

⚠ CAUTION

Actuating the emergency off switch (1) or disconnecting the battery male connector (2) shuts down the electrical functions of the industrial truck.

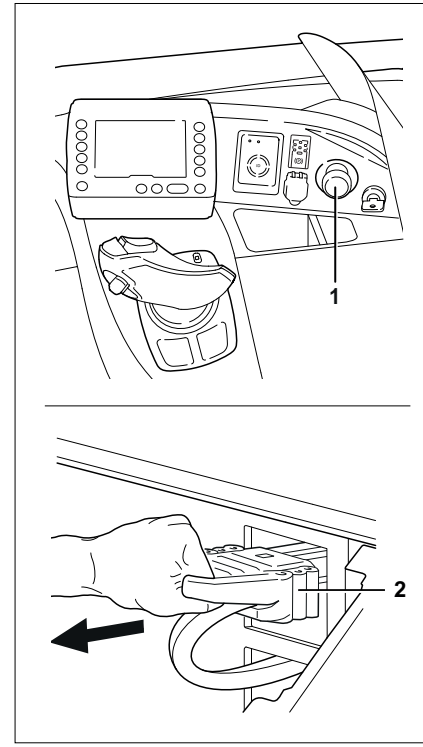
This safety system may only be used in an emergency or for safely parking the industrial truck.

⚠ CAUTION

Risk of component damage!

If you remove the battery male connector when the key switch is switched on (under load), an arc will be produced. This can lead to erosion at the contacts, which considerably shortens the service life of the contacts.

– Switch off the key switch before disconnecting the battery male connector.
– Do not disconnect the battery male connector while the key switch is switched on, except in an emergency.



Switching off the industrial truck in an emergency while it is moving

In an emergency, all functions of the industrial truck can be shut down.

– Ensure that you have a secure grip on the industrial truck; hold onto the steering wheel with your left hand.
– Push the emergency off switch (1).

The parking brake is applied and the industrial truck brakes until it comes to a standstill. All of the functions are now unavailable.

Switching off the industrial truck in an emergency while stationary

In an emergency, all functions of the industrial truck can be shut down.

– Disconnect the battery male connector (2); refer to the chapter entitled "Disconnecting the battery male connectors".

None of the truck functions are now available.

Procedure if the industrial truck tips over

⚠ DANGER

If the industrial truck tips over, the driver could fall out and slide under the industrial truck with potentially fatal consequences. There is a risk to life.

Failure to comply with the limits specified in these operating instructions, such as driving on unacceptably steep gradients or failing to adjust speed when cornering, can cause the industrial truck to tip over. If the industrial truck is tipping over, do not leave the industrial truck under any circumstances. This increases the danger of being hit by the industrial truck as it tips over.

– Do not release the seat belt
– Never jump off the industrial truck
– Follow the rules of behaviour if the industrial truck is tipping over.

Rules of behaviour if the industrial truck is tipping over

– Hold onto the steering wheel with your hands.
– Brace your feet in the footwell.
– Lean your body away from the direction in which the industrial truck is falling, and brace your body.

Towing

⚠ DANGER

Risk of accident as a result of improper towing!

Only "competent persons" may perform towing of the industrial truck.

Towing of the industrial truck may be performed only by "competent persons"; see the chapter entitled "Definition of responsible persons".

The necessary tasks before towing, the towing process and the safety measures to be observed are described in the workshop manual for the industrial truck.

– Follow the instructions and safety information given in the workshop manual.

Connecting and disconnecting the battery male connector

Connecting the battery male connector

– The plug connection on the industrial truck is located on the chassis above the lifting chassis.

⚠ CAUTION

Risk of damage to the battery male connector!

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

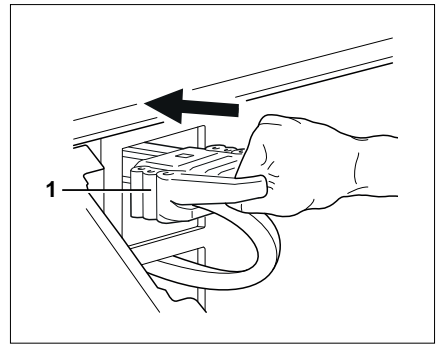
– Do not connect the battery male connector with the key switch switched on.
– Make sure that the key switch is switched off before connecting the battery male connector.

– Make sure that the battery male connector and the plug connection on the industrial truck are dry, clean and free of foreign objects.
– Insert the battery male connector (1) fully into the plug connection. ▷

⚠ CAUTION

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

The battery male connector must be routed to the plug connection in such a way that the battery cables do not become crushed.



NOTE

The battery male connector of a lithium-ion battery has additional contacts to allow the battery to communicate with the industrial truck control unit. However, the connection procedure is the same.

Disconnect the battery male connector

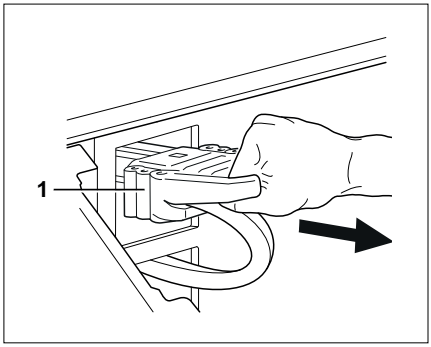
⚠ CAUTION

Risk of damage to the battery male connector!

If the battery male connector is disconnected while the key switch is switched on (under load), an arc will be produced. This can lead to erosion at the contacts, which considerably shortens the service life of the contacts.

- Switch off the key switch before disconnecting the battery male connector.
- Do not disconnect the battery male connector while the key switch is switched on, except in an emergency.

- Pull out the battery male connector (1) from the plug connection on the industrial truck and set it aside safely. ▷



NOTE

The battery male connector of a lithium-ion battery has additional contacts to allow the battery to communicate with the industrial truck control unit. However, the disconnection procedure is the same.

Handling the lead-acid battery

Safety regulations for handling the battery

– National statutory provisions for the country of use must be followed when setting up and operating battery charging stations.

⚠ CAUTION

Risk of component damage!

Incorrect connection or incorrect operation of the charging station or battery charger may result in damage to components.

– Follow the operating instructions for the charging station or battery charger and for the battery.

– Observe the following safety regulations when maintaining, charging and changing the battery.

Maintenance personnel

– When charging and maintaining the battery, observe the manufacturer's maintenance instructions for the battery and the battery charger. These activities can be carried out by properly trained personnel.

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

– Observe the following safety rules when maintaining, charging and changing the battery.

⚠ WARNING

Risk of crushing or shearing!

The battery is very heavy. If limbs are crushed between the battery and truck chassis or under the battery, there is a risk of serious injury.

Safety shoes must always be worn when replacing the battery.

Fire protection measures

⚠ DANGER

Risk of explosion due to flammable gases!

During charging, the battery releases a mixture of oxygen and hydrogen (oxyhydrogen gas). This gas mixture is explosive and must not be ignited.

There must be no flammable materials or spark-forming operating materials within 2 m of either the truck when it is parked for charging or the battery charger.

– When working with batteries, take the following safety precautions.

– Keep away from open flames and do not smoke.
– Ensure that work areas are adequately ventilated.
– If fitted, open the door of the driver's cab (variant) fully.
– Disconnect the battery male connector before charging and only when the truck and battery charger are switched off.
– Expose the surfaces of the battery cells.
– Do not place any metal objects on the battery.
– Have fire extinguishing equipment ready.

Battery weight and dimensions

⚠ DANGER

Risk of tipping due to change in battery weight!

The battery weight and dimensions affect the stability of the truck. When replacing the battery, the weight ratios must not be changed. The battery weight must remain within the weight range specified on the nameplate.

– Do not remove or change the position of ballast weights.
– Note the battery weight.

Performing battery maintenance

The cell covers of the battery must be kept dry and clean.

Terminals and cable shoes must be clean, lightly coated with battery grease and screwed on tightly.

– Neutralise any spilt battery acid immediately.
– Observe the safety regulations for handling battery acid (see the chapter entitled "Battery acid").

Damage to cables and battery male connectors

⚠ CAUTION

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

Do not crush the battery cable when retracting the reach carriage with the battery.

– Check the battery cable for damage.
– When removing and installing the battery, ensure that the battery cables are not damaged.

⚠ CAUTION

Potential for damage to the male battery connector.

If the battery male connector is disconnected or connected while the key switch is switched on or the battery charger is under load, an arc is 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 key switch or battery charger before the battery male connector is disconnected or connected.
– Do not disconnect the battery male connector while under load, except in an emergency.

Maintaining the battery

⚠ DANGER

Danger to life and limb!

– Observe the instructions in the chapter entitled "Safety regulations when handling the battery".

⚠ WARNING

Battery acid is toxic and corrosive!

– Observe the safety regulations in the chapter entitled "Battery acid".

NOTE

Battery maintenance is carried out in accordance with the battery manufacturer's operating instructions. The operating instructions for the battery charger must also be followed. Only the instructions that came with the battery charger are valid. If any of these instructions are missing, request the relevant instructions from the dealer.

The battery maintenance information is composed of the following sections: "Checking the status, acid level and acid density of the battery", "Checking the battery charge status", "Charging the lead-acid battery" and "Equalising charge to maintain the battery capacity".

Checking the battery condition, acid level and acid density

⚠ WARNING

The electrolyte (dilute sulphuric acid) is poisonous and caustic!

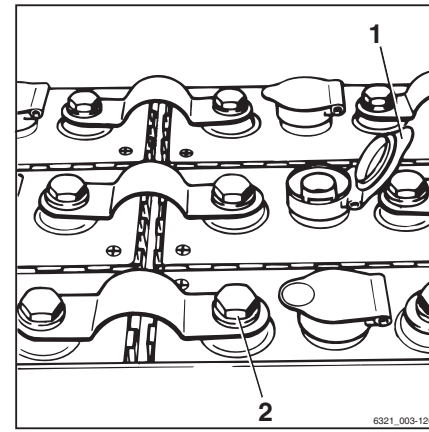
- Observe safety regulations for handling battery acid; see chapter "Battery acid".
- Wear personal protective equipment (rubber gloves, apron and protection goggles).
- Rinse away spilt battery acid immediately with plenty of water!

⚠ CAUTION

Risk of damage!

- Heed the information in the operating instructions for the battery.

- Remove the battery from the truck.
- Inspect battery for cracked housing, raised plate sand acid leaks.
- Have defective batteries repaired by the authorised service centre.
- Open filler cap (1) and check the acid level. ▷



For batteries with "caged cell plugs", the liquid must reach the bottom of the cage.

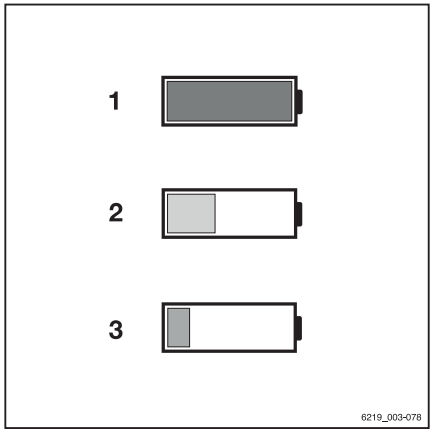
For batteries without "caged cell plugs", the liquid must reach a height of approx. 10 to 15 mm above the lead plates.

- Top up missing fluid with distilled water only.
- Clean the battery cell cover and dry if necessary.
- Remove any oxidation residues on the battery terminals and then apply acid-free grease to the terminals.
- Tighten the battery-terminal clips (2) to a torque of 22–25 Nm (depending on the size of the terminal screws used).
- Check acid density with an acid siphon.

After charging, the acid density must be between 1.28 and 1.30 kg/l.

For a discharged battery, the acid density must be **no lower** than 1.14 kg/l.

Checking the battery charge status ▷



⚠ CAUTION

Deep discharges shorten the service life of the battery.

Deep discharge begins when the battery charge display is red (3) (0% of the available battery capacity, i.e. approx. 20% of the nominal capacity).

- Deep discharge must be avoided (see the section entitled "Equalising charge to prevent a deep discharge of the battery").
- Stop working with the truck immediately.
- Charge the battery immediately.
- Do not leave batteries in a discharged or partly discharged state.

- Apply the parking brake.
- Switch on the truck.
- Read the charge status on the display of the display/operating unit.
- Charge a discharged or partly discharged battery.

Meaning of the colours in the display

1 Green:
The battery is sufficiently charged

2 Yellow:
Charge the battery soon.

3 Red:
Stop working. Charge the battery immediately. The battery is at risk of deep discharge.

Charging the lead-acid battery

⚠ DANGER

Explosive gases are generated during charging.

– Ensure that work areas are adequately ventilated.

– For industrial trucks with a cab, ensure that the cab (variant) is adequately ventilated.

⚠ DANGER

Risk of explosion due to old batteries!

Old and inadequately maintained batteries can cause excessive gas emissions and excessive heating during charging.

The increased production of explosive gas can lead to an explosion.

– If an increased build-up of heat or a sulphurous odour is detected, stop the charging process immediately.

– Ensure that there is adequate ventilation.

– Inform the authorised service centre so that it can determine the condition of the battery.

⚠ DANGER

There is a risk of damage, short circuiting and explosions!

– Do not place any metal objects or tools on the battery.

– Keep away from naked flames.

– Do not smoke.

⚠ WARNING

Battery acid is toxic and corrosive!

– Observe the safety regulations in the chapter entitled "Battery acid".

⚠ CAUTION

Risk of damage to the battery charger!

Incorrect connection or incorrect operation of the charging station or the battery charger may result in damage to components.

– Follow the operating instructions for the charging station or battery charger and for the battery.

⚠ CAUTION

Potential for damage to the battery male connector!

If the battery male connector is disconnected while the key switch is switched on (under load), an arc will be produced. This can lead to erosion at the contacts, which considerably shortens the service life of the contacts.

– Switch off the industrial truck before disconnecting the battery male connector.
– Do not disconnect the battery male connector while the industrial truck is switched on, except in an emergency.

– Park the industrial truck securely.
– Ensure that work areas are adequately ventilated.
– Make sure that the external ventilation openings on the industrial truck are unobstructed and are not blocked.
– If fitted, open the door of the driver's cab (variant) fully.
– Disconnect the battery male connector.
– Do not place any metal objects or tools on the battery.
– Keep away from naked flames. Do not smoke.
– Check the battery cables for damage. If necessary, have the battery cables replaced by the authorised service centre.
– Connect the battery male connector to the plug on the battery charger.
– Start the battery charger.

NOTE

Observe the information in the operating instructions for the battery and the battery charger.

After charging

⚠ CAUTION

Risk of danger to components!

– Switch off the battery charger before disconnecting the charging cable.

– Switch off the battery charger.

– Disconnect the battery male connector from the plug for the battery charger.

– Insert the battery male connector fully into the plug connection on the industrial truck.

⚠ DANGER

Risk of explosion!

Do not disconnect the plug and socket until the industrial truck and the battery charger are switched off.

⚠ CAUTION

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

– Ensure that the battery cable does not become crushed between the battery and the industrial truck chassis.

Equalising charging to preserve the battery capacity

Equalising charges ensure that unevenly charged battery cells are evenly charged again. This preserves the service life of the battery and the battery capacity.

An equalising charge should be carried out in accordance with the battery manufacturer's instructions several times a month after the normal charging process.

NOTE

Depending on the battery charger used, the equalising charge may not begin until 24 hours have elapsed. A period when no shifts are running, such as the weekend, is therefore ideal for performing the equalising charge.

– Observe the information in the operating instructions of the battery charger regarding how to perform an equalising charge.

Starting the equalising charge

– Charge the battery.

– After charging, leave the battery in the charger.

The battery charger remains switched on. Depending on the type of battery charger, the equalising charge begins between 6 and 24 hours after the end of the actual charging process. The equalising charge takes up to 2 hours.

– Please refer to the operating instructions from the manufacturer of the battery charger.

Ending the equalising charge

The equalising charge ends automatically. If the battery is required during this process, you can interrupt the equalising charge by pushing the "stop button" on the battery charger.

– Please refer to the operating instructions from the manufacturer of the battery charger.

⚠ CAUTION

Damage to the connection assembly is possible!

If you disconnect the charging cable while the battery charger is switched on, an arc will be produced. This can lead to erosion at the contacts, which considerably shortens the service life of the contacts.

– Switch off the battery charger before you disconnect the charging cable.

– Switch off the battery charger.

– Disconnect the battery male connector from the plug for the battery charger.

– Insert the battery male connector fully into the plug connection on the truck.

Handling the lithium-ion battery

Safety regulations for handling the lithium-ion battery

First-aid measures

⚠ WARNING

Risk of injury!

Escaping gases can lead to breathing difficulties.

Course of action required if gases or liquids escape

– Immediately ventilate the area or go out into the fresh air; in more serious cases, call a doctor immediately.

Skin irritation can occur in the event of contact with the skin.

– Thoroughly wash the skin with soap and water.

Eye irritation can occur in the event of contact with the eyes.

– Immediately rinse eyes thoroughly with water for 15 minutes, then consult a doctor.

Maintenance personnel

The lithium-ion battery is virtually maintenance-free and can be charged by the driver.

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

– The handling instruction for the battery and the operating instructions for the battery charger must be followed.

– Observe the following safety regulations when maintaining, charging and changing the battery.

⚠ WARNING

Risk of crushing/shearing!

The battery is very heavy. There is a risk of serious injury if any parts of the body are caught under the battery.

If parts of the body are wedged between the battery door and the edge of the chassis when the battery door is closed, this could lead to injuries.

– Always wear safety shoes when replacing the battery.
– Only close the battery door if there is no part of the body between the battery door and the edge of the chassis.

The battery must only be replaced in accordance with the directions in these operating instructions.

– When charging and maintaining the battery, observe the manufacturer's maintenance instructions for the battery and battery charger.

Fire protection measures

⚠ DANGER

There is a risk of damage, short circuiting and explosion!

– Do not place any metal objects or tools on the battery.
– Keep away from naked flames and do not smoke.

⚠ DANGER

Increased risk of fire!

Damaged lithium-ion batteries pose an increased fire hazard.

In the event of a fire, large quantities of water are the best option to cool the battery.

– Evacuate the location of the fire as quickly as possible.
– 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.

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

Battery weight and dimensions

⚠ DANGER

Risk of tipping due to change in battery weight!

The battery weight and dimensions affect the stability of the truck. When replacing the battery, the weight ratios must not be changed. The battery weight must remain within the weight range specified on the nameplate.

– Do not remove or change the position of ballast weights.

– Observe the battery weight.

General safety regulations for lithium-ion batteries

The following safety regulations generally apply to operating lithium-ion batteries.

– Comply with the specifications stated in the safety data sheets of the battery manufacturer.

– Protect the battery against mechanical damage to prevent internal short circuits.

– If batteries have even the slightest external damage, dispose of them in accordance with national regulations for the country in which they are being used.

– Do not expose batteries directly to continuously high temperatures or heat sources, such as direct sunlight.

– Train employees in how to handle lithium-ion batteries correctly.

Approved lithium-ion batteries

⚠ DANGER

Risk of tipping if the truck is operated with an incorrect battery

Installation of an incorrect battery reduces the stability of the truck.

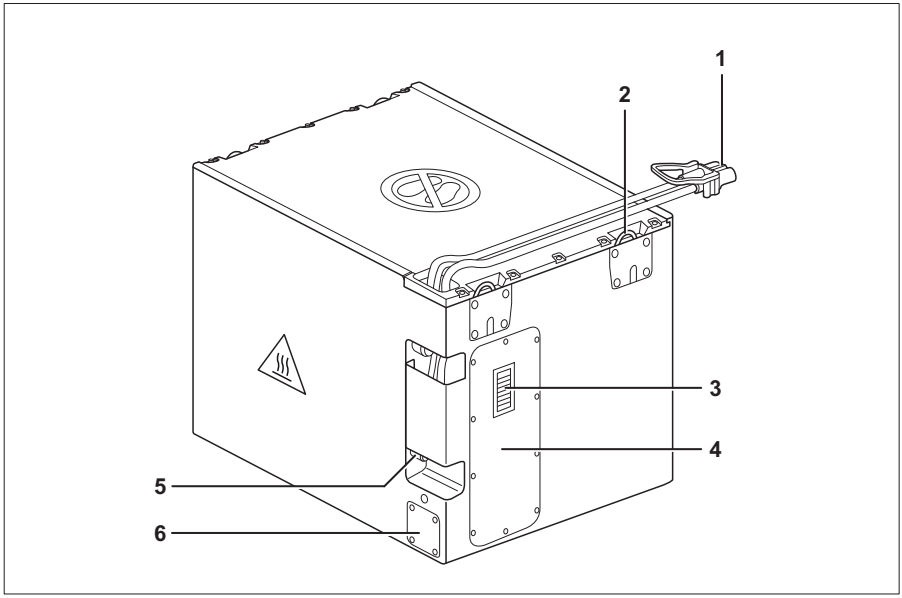
The batteries approved for this truck vary in terms of their size, weight and capacity.

The truck may only be operated with a battery that is approved for its battery tray.

Only use lithium-ion batteries that have been approved by STILL for use with this truck. The dimensions and the weight of the replacement battery must precisely match the dimensions and the weight of the original battery. The truck may only be operated with a battery that is approved for its battery tray. The installation of an incorrect battery poses a risk to the stability of the truck.

– If you have any questions regarding the batteries approved for this type of truck, contact your authorised service centre.

Lithium-ion batteries "Li-ion 48 V (BG8)" 45.7 kWh and 26.1 kWh



1	Battery male connector	4	Technology compartment
2	Lifting eyes	5	Diagnostic connector
3	Display	6	Safety valve

⚠ WARNING

Risk of accident due to weakened lifting eyes.

If bent lifting eyes are straightened, they lose their rigidity. The lifting eyes are then no longer able to support the weight of the battery. The battery may fall.

– **Do not** straighten bent lifting eyes.

– Have bent lifting eyes replaced by the authorised service centre.

NOTE

When switching to lithium-ion batteries, have the industrial truck electronics adapted by the authorised service centre.

Regulations for storing lithium-ion batteries

NOTE

Lithium-ion batteries are classified as dangerous goods according to class 9.

The following recommendations apply:

- Wherever possible, store batteries at ground level so that they cannot be damaged by falling
- Store the batteries in a segregated area suitable for fire protection (container or safety cabinet)
- Store the batteries at a temperature between +15°C and +30°C and air humidity from 0% to 80%

Observe the following regulations for safe storage of the batteries:

– Store batteries fixed onto pallets and secured against overturning.

– Observe the floor load capacity of the storage area; refer to the manufacturer's specifications regarding battery weight

– To protect batteries against moisture, do not store them directly on the floor

– Due to the fire risk, store batteries outside buildings

– Store in a cool, dry and well-ventilated area

– Never subject the battery to temperatures below -35°C and above 80°C.

Long-term storage below -10°C or above 50°C has a negative impact on the service life of the battery.

– After three months, check the charge state of the battery and recharge if necessary

– Cordon off the relevant area of the warehouse

– Only persons who are aware of the risks and safety regulations may access this area

– Protect against direct sunlight

– Protect against precipitation

- Store in a way that protects the batteries against short circuits
- Store batteries at a safe distance from flammable materials
- Do not store batteries together with metallic objects
- Store lithium-ion batteries separately from other types of batteries (no mixed storage)
- Maintain a safety margin of at least 2.5 m from other goods
- To avoid a deep discharge, observe the specifications of the battery manufacturer regarding the maximum permissible storage period
- If you have any questions, contact your authorised service centre.

Checking the battery charge status

The charge state of the lithium-ion battery can be read on the display-operating unit of the truck and on the display of the lithium-ion battery.

Reading the display-operating unit

▷

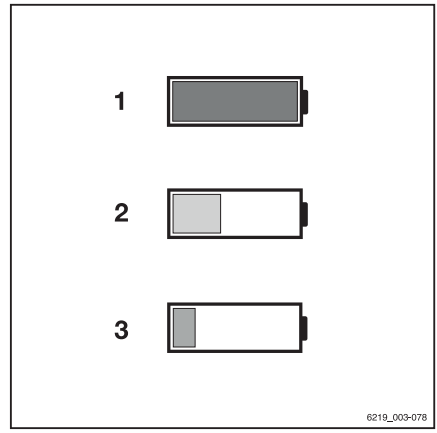
– Apply the parking brake.
– Switch on the key switch.
– Read the charge state from the display.
– Charge a discharged or partly discharged battery.

Meaning of the colours in the display

1 Green:
The charge state is > 10%.
The battery is sufficiently charged

2 Yellow:
The charge state is ≤ 10%.
Charge the battery soon.

3 Red:
Stop working. Charge the battery immediately. The battery is at risk of deep discharge.



Reading from the battery indicator

The battery indicator is located at the side of the battery tray. Like the display-operating unit, the battery indicator shows the charge state of the lithium-ion battery. Warnings are issued only on this battery indicator.

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

Charging state LEDs

When the battery is connected to the truck and the truck is switched on, the charge state LEDs (3) display the charge state in 10% increments. The charge state LEDs can light up in green and red.

- A charge state of 0% to 20% is indicated by a red bar.
  If this bar flashes, the charge state is < 2%.
  The truck can no longer be moved.
- A charge state of > 20% to 30% is indicated by yellow bars
- A charge state of > 30% to 100% is indicated by green bars

When charging, the charge state LEDs (3) light up green as a chase light.

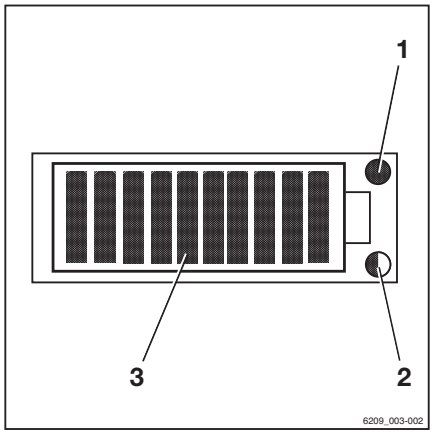
Service LED

The service LED (1) lights up red if the battery function is significantly restricted or if operation is not possible.

– Contact your authorised service centre.

Temperature LED

The temperature LED (2) indicates an increased temperature. The power of the battery is reduced. The LED remains lit until the temperature drops to within the normal range. The LED goes out as soon as the temperature drops into the normal range.



1 Service LED (red)
2 Temperature LED (yellow/red)
3 Charge state LEDs (red/green)

Colour of LED	Cause	Consequence
Flashing yellow	Slightly increased temperature (> 60°C)	Power reduction
Solid yellow	Increased temperature (> 65°C)	Shut-off

Colour of LED	Cause	Consequence
Flashing red	Greatly increased temperature (> 70°C)	Shut-off
Solid red	Greatly increased temperature (> 75°C)	Shut-off

Procedure if a lithium-ion battery has a low charge state

To prevent deep discharge of the lithium-ion battery, performance limitations are imposed once the charge state of the battery is ≤ 10%.

– If the charge state drops below 15%, drive to the charging station and charge the battery.

⚠ WARNING

No electric brake assistance when the battery is switched off!

The drives are de-energised when the battery is automatically switched off.

The truck will not be held on a slope by the electric brake.

– To brake, actuate the service brake.

– If the battery switches off, tow the truck to the charging station.

– Charge the battery.

Charging the lithium-ion battery

⚠ CAUTION

Risk of component damage!

Incorrect connection or incorrect operation of the charging station or battery charger may result in damage to components.

– Follow the operating instructions for the charging station or battery charger and for the battery.

⚠ CAUTION

Risk of component damage!

Battery male connectors and battery charger connectors from different manufacturers are not compatible and may cause damage.

– Use battery male connectors and battery charger connectors produced by the same manufacturer.
– If the connectors are from different manufacturers, please contact the authorised service centre.

NOTE

To prevent deep discharge of the lithium-ion battery, performance limitations of the industrial truck come into force once the charge state of the battery drops to a certain level. Charge the battery before the charge state drops below 15%.

To read the battery charge status, see the section entitled "Checking the battery charge status".

– Park the industrial truck securely.
– Disconnect the battery male connector.
– Keep away from open flames and do not smoke.
– Check the battery cables for damage and have them replaced by the authorised service centre if necessary.

⚠ DANGER

There is a risk of damage, short circuiting and explosions!

– Do not place any metal objects or tools on the battery.
– Keep away from open flames and do not smoke.

– Connect the battery male connector to the plug on the battery charger.
– Start the battery charger.

The charging process starts automatically. The display signals the charging process by illuminating the LEDS as a chase light.

The battery charger will indicate when the battery is fully charged. Only disconnect the battery from the charger if no current is flowing.

The battery has no memory effect. Therefore, it can be charged in any charge state without the capacity of the battery being impaired.

At ambient temperatures below 0°C, the charging process will take much longer.

NOTE

Observe the information in the operating instructions for the battery and the battery charger.

After charging

The battery charger will switch off automatically.

– Disconnect the battery male connector from the plug on the battery charger.

– Fully insert the battery male connectors into the plug connector on the industrial truck.

⚠ CAUTION

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

Ensure that the battery cable does not become crushed between the battery and the industrial truck chassis.

Replacing and transporting the battery

Commissioning batteries that are delivered separately

Proper commissioning must be performed if the truck was ordered without a battery or if it was supplied with a dry pre-charged battery (only lead-acid batteries). In this situation, note the information and guidelines from the battery manufacturer.

If the battery was procured separately to the truck, the following must be checked by the authorised service centre:

- Nominal voltage
- Required minimum weight
- Fitted battery male connector
- Characteristic curve for battery discharge (lead acid batteries)
- Battery approved for this truck by STILL

General information on replacing the battery

⚠ CAUTION

Risk of components being damaged by the lifting accessory and battery rolling away!

The lifting accessory and battery may roll away in an uncontrolled manner if the battery is not removed on a level, smooth floor with sufficient load-bearing capacity.

– Follow the operating instructions for the lifting accessories used.

– Always remove the battery on a level, smooth floor with sufficient load capacity.

The battery must be removed and inserted with a suitable forklift truck.

The load capacity of the forklift truck must at least match the battery weight (see the battery nameplate).

Incompatibility of battery male connectors from different manufacturers

⚠ WARNING

Risk of fire from using battery connectors from different manufacturers!

The battery male connectors on the industrial truck and on the battery must be from the same manufacturer. Poor contact pairing between battery male connectors from different manufacturers can result in overheating.

– Check the manufacturer of the battery connector before replacing the battery.

– Connect battery connectors from this manufacturer only.

Changing to a different battery type

The authorised service centre can convert the industrial truck to a different battery type and capacity.

Observe the following points regarding lead-acid batteries:

- The new battery capacity and new battery type must be set in the display-operating unit. See the following section "Setting the battery type and battery capacity (lead-acid batteries)".

  If this is not done, the actual battery discharge status cannot be determined. The battery charge level is not displayed correctly. In the worst case scenario, deep discharge can damage the battery.

– Contact the authorised service centre regarding this matter.

– Use only lithium-ion batteries that have been approved by STILL for use with this industrial truck.

Setting the battery type and battery capacity (lead-acid batteries)

– Stop the industrial truck.

– Apply the parking brake.

– Press the button ☰.

– Press the "Settings" softkey .

The first menu level appears.

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

The "Settings menu" opens on the display.

– Press the `Truck settings` softkey .

– Press the `Battery` softkey.

– Press the `Battery type` softkey.

– Set the battery type.

– Press the Back button .

– Press the `Capacity` softkey.

– Press the corresponding softkey for the battery capacity according to the nameplate of the battery.

– Set the battery capacity and confirm it.

The main display button takes you to the main display.

Converting to lithium-ion batteries

If the truck is fitted with a lead-acid battery at the factory, the truck can be converted to a lithium-ion battery. The conversion must be performed by the authorised service centre.

The authorised service centre adapts the truck electrics so that they will work with the lithium-ion batteries.

This includes:

- The cable harness
- The battery male connector and the plug connection
- Adjusting the display-operating unit

– Only use lithium-ion batteries that have been approved by STILL for use with this truck.

NOTE

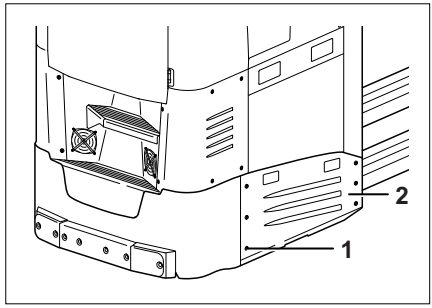
The use of lead-acid batteries is only possible after the conversion to lithium-ion batteries if the truck is converted back again.

Removing the side battery compartment cover

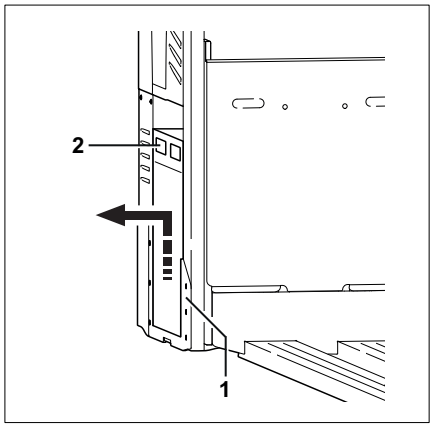
If the industrial truck is not equipped with the variant "Side battery removal with an industrial truck", the side battery compartment cover must be removed before installation and removal of the battery. This work may be performed only by a competent person (see the chapter entitled "Definition of responsible persons").

– Park the industrial truck securely and switch it off.

– Remove six screws (1)(2) and the side battery compartment cover. ▷



Side battery removal with an industrial truck



NOTE

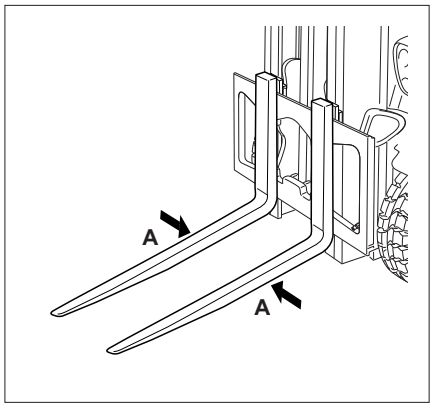
If the industrial truck is not equipped with the variant "Side battery removal with an industrial truck", the side battery compartment cover must be removed before installation and removal of the battery. This work may be performed only by a competent person (see the chapter entitled "Definition of responsible persons").

- *To remove the side battery compartment cover, see the chapter entitled "Removing the side battery compartment cover".*
- *For lithium-ion batteries, also observe the instructions in the chapter entitled "Transporting lithium-ion batteries with an industrial truck".*

When changing the battery, the instructions from the manufacturers of the battery, battery charger and industrial truck must be observed.

The battery is lifted out via the side battery holder (1) using a truck. The battery has four insertion lugs (2) to allow it to be lifted by the fork arms of the truck.

Preparation



WARNING

Risk of accident!

The load capacity of the truck in use must at least match the battery weight (see the battery nameplate).

– Observe the nameplate of the battery.

Observe the dimensions of the fork arms:

- Required length
- Required distance
- Maximum cross-section

The dimensions of the fork arms must be suitable for safely lifting the battery from the industrial truck.

– Push the fork arms (A) of the truck together centrally so that they fit into the insertion lugs of the battery.

Raising the footplate to its highest position

NOTE

For industrial trucks with electric footplate adjustment (variant), the height of the footplate is set via the display-operating unit.

- *Raise the footplate to its highest position via the display-operating unit (see the chapter entitled "Electric footplate adjustment").*

Before changing the battery, the adjustable footplate in the driver's compartment must be raised to its highest position.

The manually adjustable footplate can be set to two different height positions.

– Park the industrial truck securely.

– Make sure that there are no objects in the vicinity of the moving parts. Objects could become trapped and damage the mechanism. Remove any jammed objects only when the footplate adjustment mechanism is locked in place.

⚠ WARNING

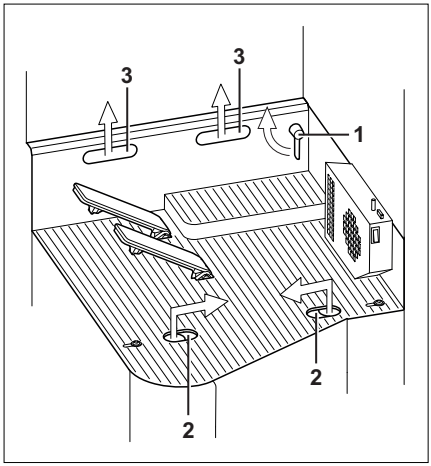
Risk of crushing

The footplate moves during adjustment. Do not put your fingers between the footplate and the truck chassis.

– Make adjustments only when the industrial truck is at a standstill.

– Release the lock on the side wall of the pedal plate. To do this, move the lever (1) upwards 180°.
– Release the locks (2) on the front edge of the footplate. To do this, grasp the front edge by inserting a finger into each of the openings and pull the two bars towards the middle to unlock.
– Allow the footplate to slide downwards.
– Grasp the footplate at the two grip holes (3) on the rear edge. Bring the footplate to the required height and insert at this position.
– Bring the front edge of the footplate to the required position and lock the two bars (2) again.
– Latch the lock on the side wall of the pedal plate. To do this, move the lever (1) downwards 180°.

▷



Removing the battery

– Park the industrial truck securely and switch it off.

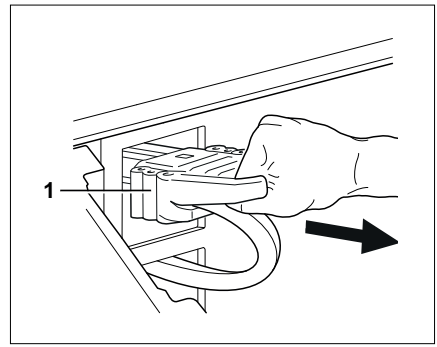
⚠ CAUTION

Risk of damage to the battery male connector!

If the battery male connector is disconnected while the key switch is switched on (under load), an arc will be produced. This can lead to erosion at the contacts, which considerably shortens the service life of the contacts.

– Switch off the key switch before disconnecting the battery male connector.
– Do not disconnect the battery male connector while the key switch is switched on, except in an emergency.

– Disconnect the battery male connector (1). ▷



⚠ WARNING

Risk of crushing or shearing!

There must be no persons directly next to the battery or between the battery and the industrial truck when removing and inserting the battery.

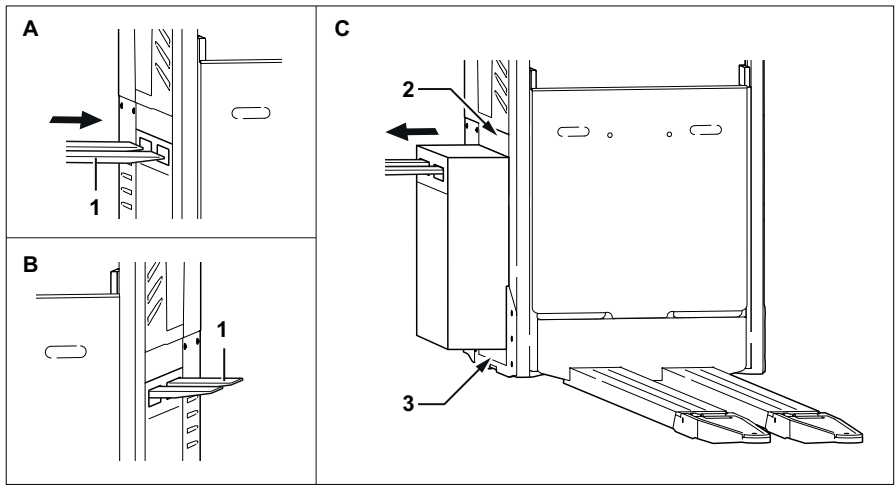
⚠ CAUTION

Risk of damage!

– Position the battery cable on the battery in such a way that it will not be crushed when the battery is removed or inserted.

– Drive the truck up to the battery.

– Position the fork arms horizontally.



A Carefully insert the fork arms (1) into the insertion lugs.

B Drive the industrial truck forwards until the fork arms protrude significantly out of the insertion lugs on the opposite side of the battery. When the battery is being

transported, it must not slip off the fork arms.

C Carefully lift the battery so that it has sufficient clearance from the chassis above (2) and the battery holder (3). Slowly remove the battery from the battery compartment.

Transporting and setting down the battery

⚠ WARNING

Risk of crushing or shearing!

The battery must be transported very carefully at a low speed using slow steering movements and careful braking.

– Do not use the methods described here to transport the battery over long distances.

– Transport the battery to the intended storage space.

⚠ CAUTION

Risk of damage!

The battery must be stored on a suitable beam support or on suitable racking.

The battery must not be stored on a wooden beam or any similar object.

– Set down the battery.

Installing the battery

– Use a truck to pick up the battery and transport it to the industrial truck.

– Carefully insert the battery into the battery compartment and set it down.

When doing so, observe the following points:

- The battery must be exactly parallel when being inserted into the battery compartment. Observe the correct insertion depth.
- Insert the battery into the battery compartment at a safe distance from the chassis above and from the side battery holder.
- After the battery has been set down, it must rest stably on the bottom plate of the battery compartment.

⚠ DANGER

Risk of crushing or shearing!

While inserting the battery, avoid putting your hands between the battery and the chassis.

⚠ CAUTION

Risk of damage!

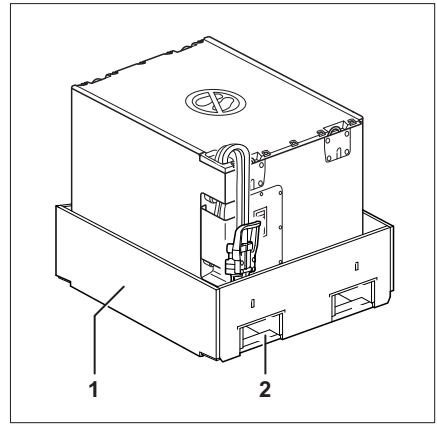
– Position the battery cables on the battery in such a way that they will not be crushed when the battery is removed or inserted.

Once the battery is correctly positioned in the battery compartment:

– Set the battery down carefully.

– Carefully withdraw the fork arms from the insertion lugs on the battery and remove the fork arms from the battery compartment.

Transporting the lithium-ion battery with an industrial truck ▷



The lithium-ion battery is equipped with a battery plate (1). The battery plate has four insertion lugs (2) to allow the battery to be lifted by the fork arms of the industrial truck. Transportation must be carried out using only an industrial truck that is suitable in terms of its size and load capacity.

Preparation

⚠ WARNING

Risk of accident!

The load capacity of the industrial truck that is used must at least match the battery weight (see the battery nameplate).

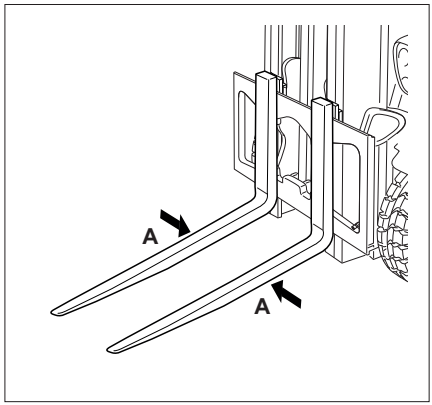
– Observe the nameplate of the battery.

Observe the dimensions of the fork arms:

- Required length
- Required distance
- Maximum cross-section

The dimensions of the fork arms must be suitable for safely lifting the battery from the industrial truck.

– If necessary, push the fork arms (A) of the industrial truck together centrally so that they fit into the insertion lugs of the transport plate. ▷



Lifting the battery

⚠ WARNING

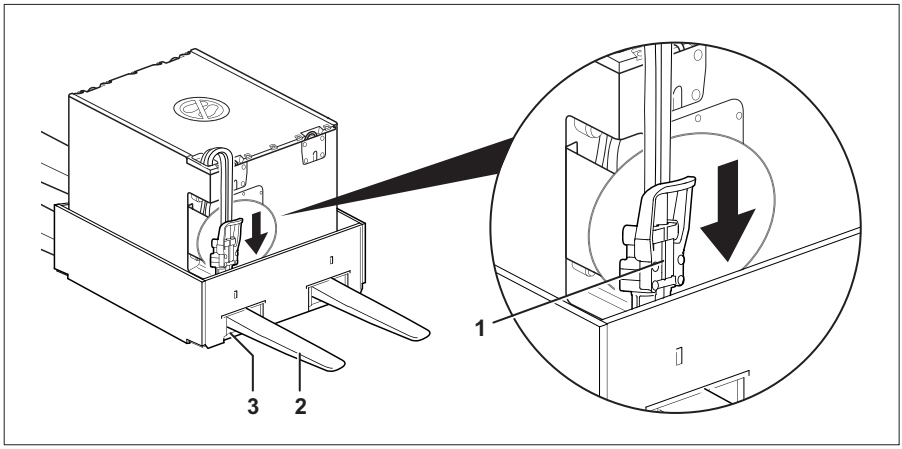
Risk of crushing or shearing!

When it is being lifted and transported, maintain a safety distance from the battery.

⚠ CAUTION

Risk of damage to the battery harness!

There is a dummy plug (1) on the battery plate to protect the battery harness. When the battery is being transported using the battery plate, the battery male connector must always be inserted into this dummy plug.



– Insert the battery male connector of the battery into the dummy plug (1) on the battery plate.

– Drive the industrial truck up to the battery.

– If necessary, position the fork arms horizontally.

A Carefully insert the fork arms into the insertion lugs.

B Drive the industrial truck forwards until the fork arms (2) protrude significantly out of the insertion lugs (3) on the opposite side of the battery plate. When the battery is being transported, it must not slip off the fork arms.

C Carefully lift the battery.

Transporting and setting down the battery

⚠ WARNING

Risk of crushing or shearing!

The battery must be transported very carefully, i.e. at a low speed, using a slow steering movement and careful braking.

– Do not use the methods described here to transport the battery over long distances.

– Transport the battery to the intended storage space.

⚠ CAUTION

Risk of damage!

The battery must be stored on a suitable beam support or on suitable racking.

The battery must not be stored on a wooden beam or any similar object.

– Set the battery down carefully.

Transporting the lithium-ion battery by crane ▷

⚠ DANGER

There is risk of fatal injury from being struck by falling loads!

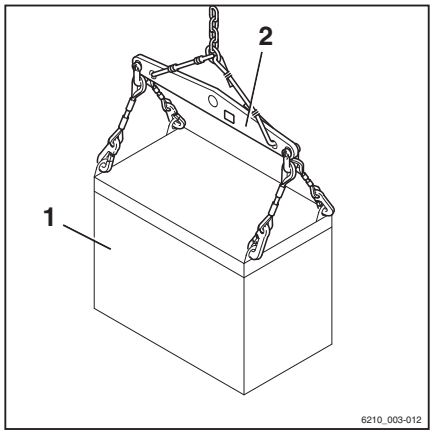
– Never walk or stand underneath suspended loads.

⚠ WARNING

Risk of accident due to weakened lifting eyes.

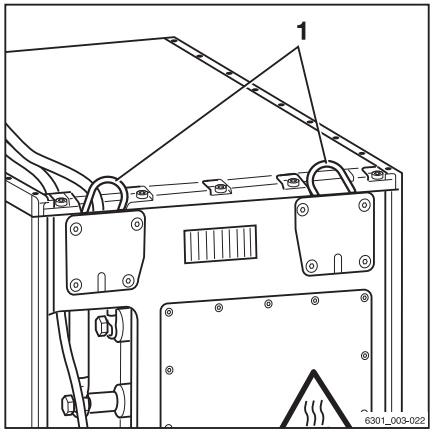
If bent lifting eyes are straightened, they lose their rigidity. The lifting eyes are then no longer able to support the weight of the battery. The battery may fall.

– **Do not** straighten bent lifting eyes.
– Have bent lifting eyes replaced by the authorised service centre.



The lithium-ion battery (1) is equipped with four extendible lifting eyes. The battery may only be transported by crane using a lifting gear and bridge piece (2) that are suitable in terms in size and load capacity.

– Pull out the two lifting eyes (1) on each side and tilt them towards each other. ▷



The lifting eyes are locked in this position.

– Observe the operating instructions for the lifting gear.
– Attach the lifting gear to the four lifting eyes.
– Lift the battery carefully and ensure that it hangs straight on the lifting gear.

The lifting gear must be vertical when lifting, so that no lateral pressure is applied to the tray.

– Set the battery down carefully.
– Remove the lifting gear after the battery has been set down. Lift up and release the lifting eyes to lower them.

Cleaning the industrial truck

Cleaning the industrial truck

⚠ WARNING

Risk of injury from falling off the industrial truck!

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

– Use only the steps provided to climb onto the industrial truck.
– Use equipment such as stepladders or platforms to reach inaccessible areas.
– To clean the roof panel on industrial trucks with cab, use a step ladder. Make sure the ladder is stable.

⚠ CAUTION

High-pressure cleaners, excessive water pressure or water and steam that are too hot can damage components. If water penetrates the electrical system, there is a risk of a short circuit occurring!

– Do not use high-pressure cleaners for cleaning.
– Strictly adhere to the following steps.

⚠ WARNING

Risk of fire due to flammable cleaning materials!

Flammable cleaning materials can be ignited by hot components.

– Do not use any flammable cleaning materials.

⚠ WARNING

Risk of fire due to flammable materials!

Deposits and solids can be ignited by hot components, e.g. drive units.

– Remove deposits and solids.

⚠ CAUTION

Abrasive cleaning materials can damage the surfaces of components!

Using abrasive cleaning materials that are unsuitable for plastics can cause plastic parts to dissolve or become brittle. The screen on the display-operating unit could become cloudy.

– Strictly adhere to the following steps.

– Park the industrial truck securely.

– Switch off the key switch.

⚠ CAUTION

Risk of damage to the battery male connector when disconnecting!

If the battery male connector is disconnected while the key switch is switched on under load, an arc will be produced. The arc can damage the contacts and considerably shorten the service life of the contacts.

– Switch off the key switch.

– Only disconnect the battery male connector while the key switch is switched off.

– Disconnect the battery male connector.

– Do not use high-pressure cleaners for cleaning.

– Do not clean electric motors and other electrical components or their covers directly with water.

– Remove all deposits and accumulations of foreign materials in the vicinity of hot components.

– Use only non-flammable fluids for cleaning.

– Observe the manufacturer's guidelines for working with cleaning materials.

– Clean plastics only with cleaning materials intended for plastics.

– Observe the manufacturer's guidelines for working with cleaning materials.

– Clean the industrial truck exterior using water-soluble cleaning materials and water. Cleaning with a sponge or a cloth is recommended.

– Clean all accessible areas.

– Before lubrication, clean the oil filling openings and the area around the oil filling openings, as well as the lubricating nipples.

Cleaning the electrical system

⚠ WARNING

Danger of electric shocks due to residual capacity!

– Never reach into the electrical system with your bare hands.

⚠ CAUTION

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

Cleaning electrical system parts with water is forbidden!

– Do not remove covers etc.

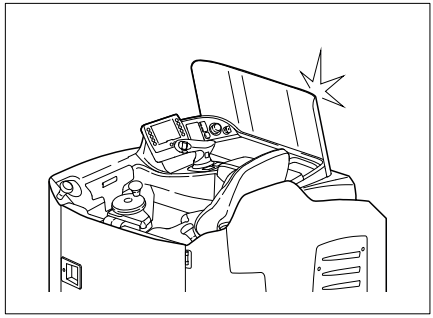
– Use only dry cleaning materials according to the specifications in the section "Cleaning the industrial truck".

The components of the electrical system are installed, among other locations, under the covers of the control compartment and battery compartment.

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

Cleaning the windows

▷



Any glass, for example cab windows (variant), must always be kept clean and free of ice. This is the only means of guaranteeing good visibility.

⚠ CAUTION

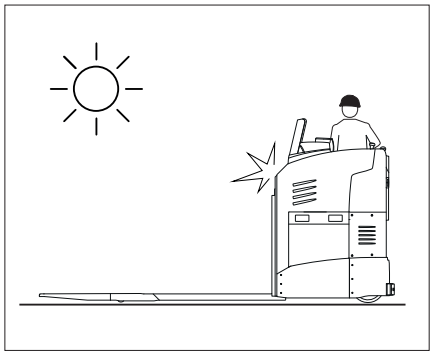
Do not damage the screen heating (inside).

– Take great care when cleaning heatable windows and do not use any objects with sharp edges.

– Clean the windows with a soft cloth and commercial window cleaner.

– To clean the roof panel on industrial trucks with cab, use a step ladder. Make sure the ladder is stable.

After cleaning



⚠ CAUTION

Risk of short circuit!

Ingress of moisture or dirt into the battery male connector and 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.

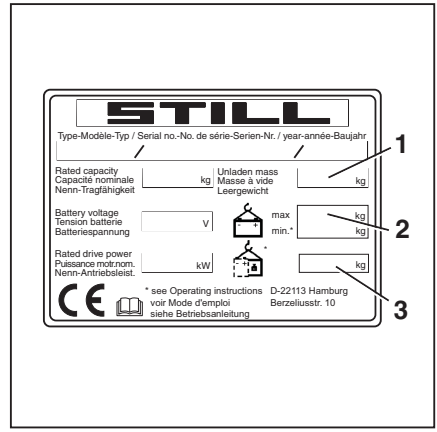
Transporting the industrial truck

Climatic conditions for transport and storage

The industrial truck must be protected from the effects of the weather during transport and storage.

Transport

Determining the total actual weight



⚠ DANGER

Danger due to overloading of the means of transport!

The load capacity/lifting capacity of the means of transport, the ramps and the loading bridges must be greater than the total actual weight of the industrial truck. Components can be permanently deformed or damaged due to overloading.

– Determine the total actual weight of the industrial truck.

– Load the industrial truck only if the load capacity/ lifting capacity of the means of transport, ramps and loading bridges is greater than the total actual weight of the industrial truck.

Before transport, the total actual weight of the industrial truck must be determined:

– Determine individual weights by reading the nameplate of the industrial truck.

– The unit weights are added to give the total actual weight of the industrial truck.

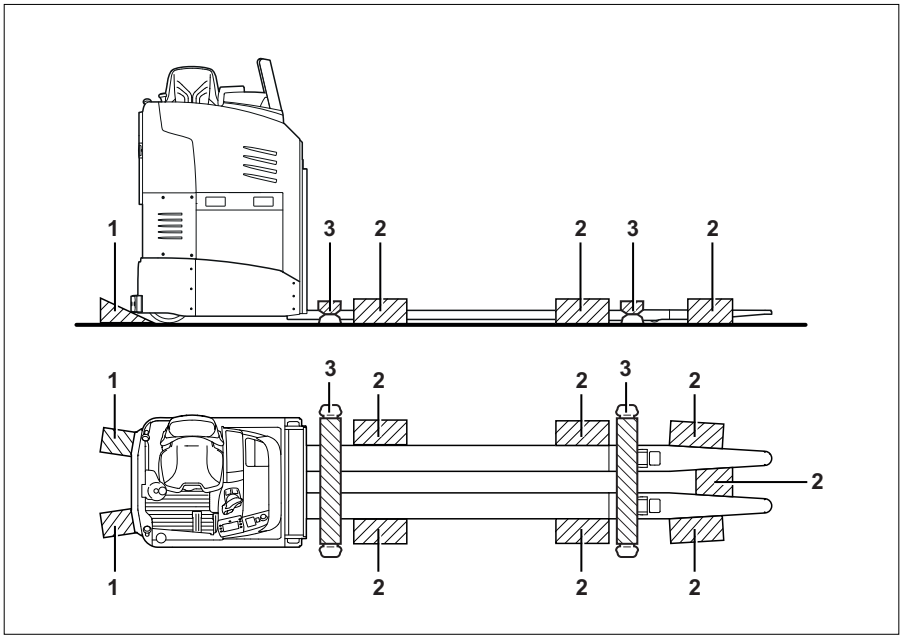
Net weight (1)
\+ Max. permissible battery weight (2)
\+ Ballast weight (variant) (3)
\+ Net weight of attachment (variant)
\+ 100 kg allowance for driver
= Total actual weight

Securing the industrial truck with tension belts and wedges

⚠ DANGER

Risk of accident from the industrial truck falling off the loading bridge!

- 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.
- Maintain a safety distance from other loading bridges, ramps, working platforms and similar objects.
- Drive slowly and carefully onto the transport vehicle.



For transportation by lorry or goods wagon, the industrial truck must be secured with wedges and tension belts.

– Park the industrial truck securely (refer to the chapter entitled "Parking the industrial truck securely").

– Ensure that the key switch is switched off.

⚠ CAUTION

Risk of damage to the battery male connector!

If the battery male connector is disconnected while the key switch is switched on (under load), an arc will be produced. This can lead to erosion at the contacts, which considerably shortens the service life of the contacts.

– Switch off the key switch before disconnecting the battery male connector.

– Do not disconnect the battery male connector while the key switch is switched on, except in an emergency.

– Disconnect the battery male connector.

– Secure the industrial truck on both sides with wedges (1) so that it does not roll away. Secure the industrial truck on both sides with wooden blocks (2) to prevent slipping.

– Attach the lashing straps (3) in accordance with the illustration. The industrial truck must be lashed securely so that it cannot move during transportation.

⚠ CAUTION

Abrasive lashing straps may damage the surface of the industrial truck.

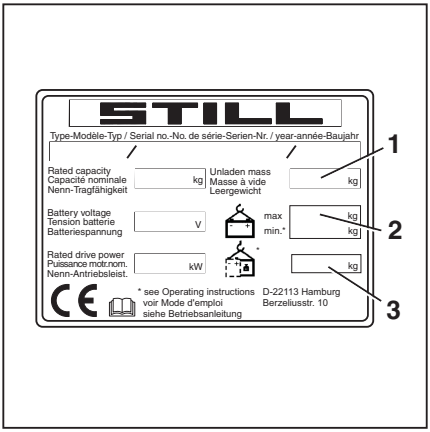
– Position slip-resistant pads (e.g. rubber mats or foam) at the attachment points to protect the industrial truck.

Crane loading

Crane loading is only intended for transporting the complete industrial truck for its initial commissioning. For application conditions that require frequent loading or that are not presented here, please contact the manufacturer with regard to particular variants.

Industrial trucks may only be loaded by persons with sufficient experience in the suitable harnesses and hoists.

Determining the loading weight



⚠ DANGER

Danger due to overloading the lifting gear!

The load capacity of the hoists and harnesses must be greater than the loading weight of the industrial truck.

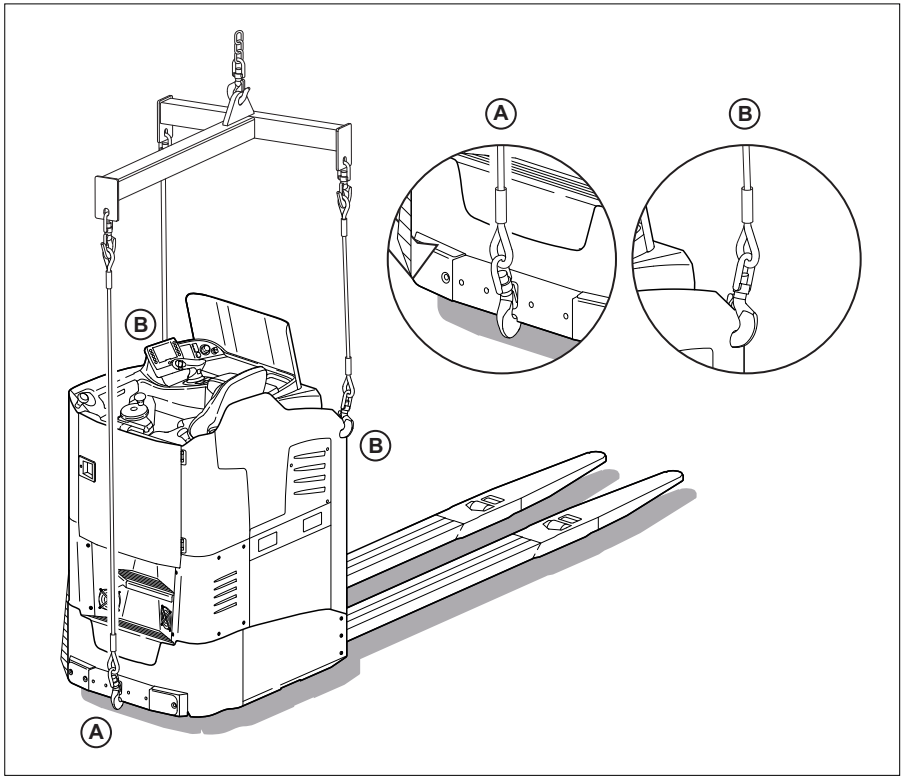
– Determine the loading weight of the industrial truck.
– Load the industrial truck by crane only if the load capacity of the hoists and harnesses is greater than the loading weight of the industrial truck.

Before transport, the total actual weight of the industrial truck must be determined:

– Determine individual weights by reading the nameplate of the industrial truck.
– Add the determined unit weights together to obtain the loading weight of the industrial truck:

Net weight (1)
\+ Max. permissible battery weight (2)
\+ Ballast weight (variant) (3)
= Loading weight

Attaching hoists and harnesses



A Lifting point (drive side)

B Lifting points (load side)

⚠ DANGER

There is a risk of fatal injury from being hit by the industrial truck if the hoists and harnesses fail and cause the truck to fall!

- Use only hoists and harnesses with sufficient load capacity for the loading weight of the industrial truck.
- Use only the industrial truck's designated lifting points.
- Make sure that harness parts (hooks, shackles, straps and similar items) are used only in the indicated load direction.
- The harnesses must not be damaged by parts of the industrial truck. Use suitable edge protection.

– Park the industrial truck securely; refer to the chapter entitled "Parking the industrial truck securely".

– Ensure that the key switch is switched off.

⚠ CAUTION

Risk of damage to the battery male connector!

If the battery male connector is disconnected while the key switch is switched on (under load), an arc will be produced. This can lead to erosion at the contacts, which considerably shortens the service life of the contacts.

– Switch off the key switch before disconnecting the battery male connector.

– Do not disconnect the battery male connector while the key switch is switched on, except in an emergency.

– Disconnect the battery male connector.

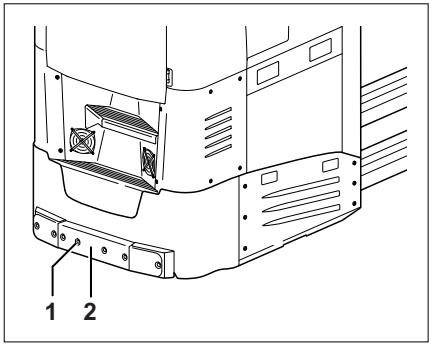
⚠ CAUTION

Harnesses may damage the paintwork on the industrial truck!

Harnesses may damage paintwork by pressing and chafing on the surface of the industrial truck. Hard or sharp-edged harnesses, such as wire ropes or chains, can quickly damage the surface.

– Use edge protectors or similar protective devices.

– Remove four screws (1) and the central protective strip (2) to gain access to the rear lifting point (A). ▷

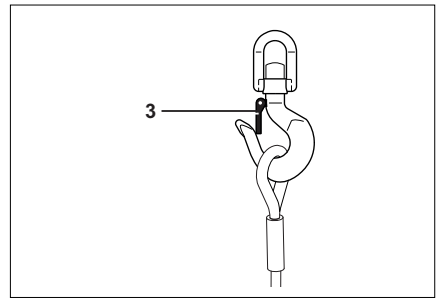


The industrial truck may only be crane-loaded with a suitable bridge piece.

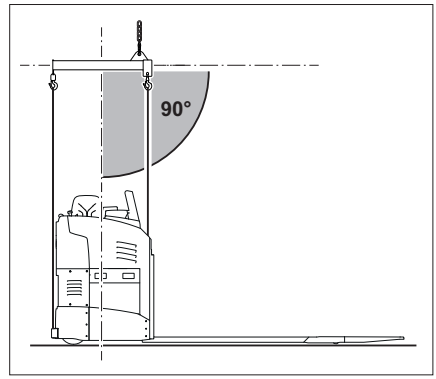
Hooking on the lifting straps:

- The lifting points on the industrial truck are marked with corresponding adhesive labels.
- Run the harnesses upwards from the three attachment points on the chassis.

– Attach the harnesses to the crane lifting eyes. Insert the safety devices for the lifting eyes (3). ▷



– Adjust the length of the harnesses so that the bridge piece is vertically above the centre of gravity of the industrial truck. This will ensure that the industrial truck remains level when it is being lifted. ▷



⚠ CAUTION

Incorrectly fitted harnesses may damage attachment parts!

Pressure from the harnesses can damage or destroy attachment parts when the industrial truck is lifted. If attachment parts (lighting etc.) constitute an obstruction, they must be removed before loading. If you have any questions about this, please contact your authorised service centre.

– Secure harnesses in such a way that they do not touch any attachment parts.

Lifting and transporting the industrial truck

⚠ DANGER

If the raised industrial truck swings in an uncontrolled manner, it may crush people. There is a risk of fatal injury!

– Never walk or stand underneath suspended loads.
– Do not allow the industrial truck to bump into anything while it is being lifted, or allow it to move in an uncontrolled manner.
– If necessary, restrain the industrial truck using guide ropes.

– Carefully lift the industrial truck and take care when setting it down at the intended location.

Decommissioning

Decommissioning and storing the industrial truck

⚠ CAUTION

Damage to components due to incorrect storage!

Improper storage or decommissioning for a period of more than two months can result in corrosion damage to the industrial truck. If the industrial truck is parked in an ambient temperature of below -10°C for an extended period, the batteries will cool down. The electrolyte may freeze and damage the batteries.

– Store the industrial truck in a dry, clean, frost-free and well-ventilated environment.
– Implement the following measures before decommissioning.

Measures to be implemented before decommissioning

– Clean the industrial truck thoroughly; see the chapter entitled "Cleaning the industrial truck".
– Lift the forks to the stop several times.
– To relieve the strain on the lifting mechanism, lower the forks onto a suitable supporting surface, e.g. a pallet.
– Check the hydraulic oil level.
– Apply a thin layer of oil or grease to all uncoated moving parts.
– Lubricate the joints and actuators.

⚠ CAUTION

Potential for damage to the battery male connector!

If the battery male connector is disconnected while the key switch is switched on (under load), an arc will be produced. This can lead to erosion at the contacts, which considerably shortens the service life of the contacts.

– Switch off the industrial truck before disconnecting the battery male connector.
– Do not disconnect the battery male connector while the industrial truck is switched on, except in an emergency.

– Disconnect the battery male connector.

– Check the battery condition, acid level and acid density.

– Service the battery.

NOTE

Only store batteries that are fully charged.

– Spray all exposed electrical contacts with a suitable contact spray.

⚠ CAUTION

Tyre deformation as a result of continuous loading on one side!

Have the industrial truck raised and jacked up by the authorised service centre so that all wheels are off the ground. This prevents permanent deformation of the tyres.

– Have the industrial truck raised and jacked up only by the authorised service centre.

⚠ CAUTION

Risk of corrosion damage due to condensation on the industrial truck!

Many plastic films and synthetic materials are watertight. Condensation water on the industrial truck 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.

– Cover the industrial truck to protect it against dust.

– If the industrial truck needs to be decommissioned for even longer periods, contact the authorised service centre to find out about additional courses of action.

Use after storage or decommissioning

If the industrial truck has been decommissioned for longer than six months, it must be checked carefully before being used again. As with the annual safety inspection, this inspection must also include all safety-related aspects of the industrial truck.

– Clean the industrial truck thoroughly; see the chapter entitled "Cleaning the industrial truck".
– Lubricate the joints and actuators.
– Check the condition of the battery. Check the acid level and the acid density (lead-acid battery).
– Check the hydraulic oil for condensation water. Change the hydraulic oil if necessary.
– Arrange for the authorised service centre to perform the same inspections and tasks that were carried out before initial commissioning.
– Have the authorised service centre carry out explosion-protection checks on explosion-protected industrial trucks.
– Perform the "visual inspections and function checks".

The following points in particular must be checked:

- Drive
- Controller
- Steering
- Brakes (service brake, parking brake)
- Lifting system (lifting accessories, lifting mechanism, mounting)

NOTE

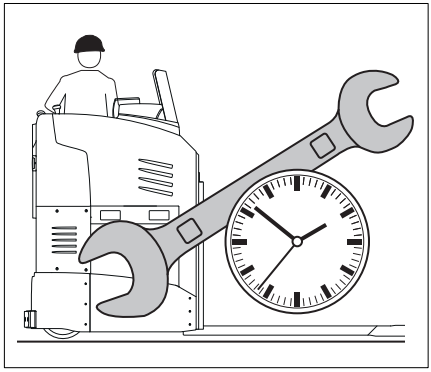
For further information, see the workshop manual for the industrial truck or contact the authorised service centre.

6

Maintenance

Safety regulations for maintenance

General information



To prevent accidents during maintenance and repair work, all necessary safety measures must be taken, e.g.:

– Switch off the key switch and remove the key.

– Disconnect the battery male connector.

– Ensure that the industrial truck cannot move unintentionally or start up inadvertently.

– If required, have the industrial truck jacked up by the authorised service centre.

Working on the hydraulic equipment

The hydraulic system must be depressurised prior to all work on the system.

Working on the electrical equipment

Work may only be performed on the electrical equipment of the truck when it is in a voltage-free state. Function checks, inspections and adjustments on energised parts must only be performed by trained and authorised persons, taking the necessary precautions into account. Rings, metal bracelets etc. must be removed before working on electric components.

To prevent damage to electronic systems with electronic components, such as an electronic driving regulator or lift control, these components must be removed from the truck prior to the start of electric welding.

Work on the electrical system (e.g. connecting a radio, additional headlights etc.) is only permitted with approval from the authorised service centre.

Safety devices

After maintenance and repair work, all safety devices must be reinstalled and tested for operational reliability.

Set values

The device-dependent set values must be observed when making repairs and when changing hydraulic and electrical components. These are listed in the appropriate sections.

Lifting and jacking up

⚠ DANGER

There is a risk to life if the truck tips over!

If not raised and jacked up properly, the truck may tip over and fall off. Only the hoists specified in the workshop manual for this truck are allowed and are tested for the necessary safety and load capacity.

- Only have the truck raised and jacked up by the authorised service centre.
- Only jack the truck up at the points specified in the workshop manual.

The truck must be raised and jacked up for various types of maintenance work. The authorised service centre must be informed that this is to take place. Safe handling of the truck and the corresponding hoists is described in the truck's workshop manual.

General maintenance information

Personnel qualifications

Only qualified and authorised personnel are allowed to perform maintenance work. Regular safety checks and checks after unusual incidents must be performed by a competent person. The competent person must conduct their evaluation and assessment from a safety standpoint, unaffected by operational and economic conditions. The competent person must have sufficient knowledge and experience to be able to assess the condition of a truck and the effectiveness of the protective devices in accordance with technical conventions and the principles for testing trucks.

Maintenance personnel for batteries

Batteries must only be charged, serviced, and replaced by personnel who have received appropriate training in accordance with the instructions from the manufacturers of the battery, battery charger and truck.

– Follow the handling instructions for the battery and the operating instructions for the battery charger.

Maintenance work without special qualifications

Simple maintenance work, such as checking the hydraulic oil level, may be carried out by untrained personnel. A qualification of the type held by a competent person is not required to carry out this work. The required tasks are described in the chapter entitled "Preserving operational readiness".

Information for carrying out maintenance

This section contains all the information required to determine when your industrial truck must be serviced. Carry out maintenance work within the time limits according to the hour meter and using the maintenance check lists

below. This ensures that the industrial truck remains ready for operation and provides optimal performance and service life. It is also a precondition for any warranty claims.

Maintenance timeframe

If maintenance is needed, the message `Service required` appears on the display.

– Arrange for the authorised service centre to perform the maintenance work on the industrial truck.

– The maintenance check lists indicate the maintenance work that is due.

The intervals are defined for standard use. Shorter maintenance intervals can be defined in consultation with the operating company depending on the application conditions of the industrial 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 and extreme changes in temperature
- Multi-shift operation with a high duty cycle
- Specific national regulations for the industrial truck or individual components

Service menu

The date when the industrial truck requires maintenance is stored in the Service menu.

NOTE

Access to the settings menu is available only if the industrial truck is at a standstill and the parking brake is applied. If the parking brake is released prematurely, the settings menu will close. Access is only granted when the password is entered by the fleet manager.

– Stop the industrial truck.

– Apply the parking brake.

– Press the button .

– Press the "Settings" softkey .

The first menu level appears.

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

The "Settings menu" opens on the display.

– Press the `Service` softkey.

The "Service menu" opens on the display.

– Press the `Maintenance interval` softkey.

This menu shows the operating hours remaining until the next scheduled maintenance interval or the latest date of the next scheduled maintenance interval.

NOTE

The maintenance interval can also be configured in the status line.

Maintenance - 1000 hours / half-yearly

At operating hours										Carried out	
1000		2000		3000		4000		5000			
6000		7000		8000		9000				✓	✖
Drive units											
Check the tightness of the screw connection to the drive units (note the torque).											
Check the condition of the drive wheels and check for wear.											
Check that the drive wheels, wheel nuts (195 Nm) and cushion tyres are securely attached.											
Check the operating noise from the drive unit and repair defective parts if necessary.											
Only for cold store trucks: lubricate the steering turntable bearing with multi-purpose grease.											
Steering											
Check the steering turntable bearing for ease of movement and wear											
Check that the steering motors are securely attached.											
Check the condition of the steering gears and steering pinion and check that they are sufficiently lubricated.											
Check the play of the gears (including the sensor gearbox).											
Check the operating noises from the steering and repair defective parts if necessary											
Function checking for the electric steering system											
Adjustment of the steering wheel module: Check the condition of the latch and check that it functions correctly.											
Gearbox											
Visually inspect the gearbox for leak tightness, secure attachment and external damage. Remove any foreign objects.											
Electromagnetic parking brake											
Blow out the brake lining with oil-free air (caution: brake lining dust is hazardous to health; use a protective mask).											
Check the thickness and condition of the brake linings; replace them if necessary.											
Check the brake clearance. Adjust the brake clearance if necessary.											
Undercarriage											
Check the condition and ease of movement of the doors, flaps and covers, and grease them if necessary.											
Check the mounting of the handhold for short-term driving in a standing position ("stand-up slow speed" drive mode, variant).											

At operating hours										Carried out	
1000		2000		3000		4000		5000			
6000		7000		8000		9000				✓	✖
Examine the chassis and the frame for damage.											
Visual inspection and function checking of the electric footplate adjustment (variant).											
Lifting system											
Visually inspect the forks for cracks and bends.											
Check the guide rails of the lift chassis for wear.											
Check the condition of the guide rollers of the lift chassis and check for ease of movement.											
Check the angled lever mechanism for play and ease of movement.											
Check the condition of the lift cut-out and check that it functions correctly.											
Load castors											
Check the condition, mounting and wear of the load castors and mechanism.											
Check for cleanliness and ease of movement. Clean if necessary.											
Electrical system											
Check the condition of the battery cables, battery connectors and battery male connectors and check that they are securely attached.											
Measure the battery voltage under load.											
Measure the tray for short circuits											
Check the electrolyte level (only in batteries with liquid electrolyte).											
Check that all connections and plugs are securely attached.											
Check the condition of the contactors and check for erosion. Replace if necessary.											
Check the fuse values and check the condition of the fuses.											
Perform a function check for driving, accelerating, reversing and using the service brake and regenerative brake.											
Check the function of the parking brake.											
Check optional lighting.											
Cooling system (converter, traction motors)											
Check that the fans and the air ducts are working correctly and check for damage.											
Clean the fans and the air ducts.											
Clean the cooling fins in the cooling section.											
Hydraulic system											
Check all hydraulic screw joints and lift cylinders for leak tightness. Tighten or replace if necessary.											

At operating hours										Carried out	
1000		2000		3000		4000		5000			
6000		7000		8000		9000				✓	✘
Remove carbon brush dust from the pump motor (caution: carbon brush dust is hazardous to health; wear a protective mask!).											
Check the oil level in the tank and top up if necessary.											
Check that the hydraulic system is working correctly (also check the pump motor for operating noise and check the lift cut-out).											
Lubrication											
Lubricate the gearbox, load castors and guide tracks for the lift chassis with approved lubricants.											
Lubricate the door hinges and closing mechanism of the door.											
Operating devices and protective devices											
Check the protective devices (e.g. seat belt, belt switch) depending on the equipment and repair them if necessary.											
Check the function and condition of all operating devices.											
Check the condition of the driver's seat, also check the adjustment mechanisms, suspension and mounting.											
Labels											
Check that all nameplates, decal information, warning signs and load capacity diagrams are present and legible. Replace any missing or illegible labels.											
Cleaning											
Clean the industrial truck with a cloth, compressed air or vacuum cleaner. Do not use high-pressure cleaners or solvents.											

Maintenance - 3000 hours / yearly

At operating hours										Carried out	
3000		6000		9000		12000		15000			
18000		21000								✓	✖
Note											
Perform all 1000-hour maintenance work											
Gearbox											
Oil change (gearbox)											
Lubricate the shaft stub gearing between the gearbox and traction motor											
Hydraulic system											
Change the oil in the hydraulic system.											

Additional maintenance guidelines for cold store application - 500 hours or every 12 weeks (or more frequently depending on application conditions)

At operating hours										Carried out	
500		1000		1500		2000		2500			
3000		3500		4000		4500				✓	✖
Truck components											
Perform all 1000-hour maintenance work											
Perform function checking of the entire industrial truck including all special equipment (special heating system, switch-off thermostat, etc.)											

Ordering spare parts and wearing parts

Spare parts are provided by our spare parts service department. The information required for ordering parts can be found in the spare parts list.

Only use spare parts as per the manufacturer's instructions. The use of unapproved spare parts can result in an increased risk of accidents due to insufficient quality or incorrect assignment. Anyone using unapproved spare parts shall assume unlimited liability in the event of damage or harm.

Quality and quantity of the required operating materials

Only the operating materials specified in the maintenance data table may be used.

– The required consumables and lubricants can be found in the maintenance data table.

Oil and grease types of a different quality must not be mixed. This negatively affects the lubricity. If a change between different manufacturers cannot be avoided, drain the old oil thoroughly.

Before carrying out lubricating work, filter changes or any work on the hydraulic system, carefully clean the area around the part involved.

When topping up working materials, use only clean containers!

Maintenance data table

⚠ CAUTION

Risk of damage to property

Trucks for cold store operation must be lubricated using different lubricants; refer to the chapter entitled "Cold store application".

General lubrication points

Unit	Device/consumable	Specifications	Dimension
Lubrication	Grease	STILL high-pressure lubricating grease ID no. 0170761	As required

Battery

Unit	Device/consumable	Specifications	Dimension
System filling	Distilled water	–	As required
Insulation resistance	–	DIN 43539 VDE 0510	For further information, refer to the workshop manual for the truck

Electrical system

Unit	Device/consumable	Specifications	Dimension
Insulation resistance of the electrical system	–	DIN EN 1175 VDE 0117	For further information, refer to the workshop manual for the truck

Actuators / joints

Unit	Device/consumable	Specifications	Dimension
Lubrication	High-pressure grease	ID no. 0147873	As required
	Oil	SAE 80 MIL-L2105 API-GL4	As required

Hydraulic system

Unit	Device/consumable	Specifications	Dimension
System filling	Hydraulic oil	HLP DIN 51524/T2 ID no. 8036912	Tank volume approx. 5 l
	Hydraulic oil (cold store variant)	Fuchs Renolin MR 310, ID no. 8036239 (factory filling cannot be mixed with other hydraulic oils)	
	Hydraulic oil (foodstuffs)	Food-grade oil in accordance with NSFH1 7327400020 (46 grade oil - 10 l) 7327400024 (68 grade oil - 10 l)	
Lift cylinder	Thread-release agents, anti-seize agents and lubricants	Rivolta G.W.F. spray ID no. 8050078	As required
When changing to a different type of hydraulic oil, the authorised service centre must adjust the truck control unit.			

Wheel nuts / screws

Unit	Device/consumable	Specifications	Dimension
Drive wheel	Torque wrench	–	195 Nm

Drive axle

Unit	Device/consumable	Specifications	Dimension
Wheel gear	Gearbox oil	Castrol Alphasyn EP 150 ID no. 7326000022 (20 l) ID no. 7326000029 (5 l)	Approx. 2.9 l

Lift mast

Unit	Device/consumable	Specifications	Dimension
Lift mast	Super-pressure adhesive lubricant	SKD 3400 ID no. 0147873	As required
Bearings, sliding surfaces (cold store variant)	High-pressure grease	Almetyn SF2 ID no. 8052346	As required
Levers, push-rod switches of limit switches, turning handles, etc. (cold store variant)	Oil	Kompranol N74 ID no. 8050077	As required

Steering

Unit	Device/consumable	Specifications	Dimension
Steering gears	Lubrication	Rivolta S.K.D. 4002	As required

Preserving operational readiness

Lubricating the joints and controls

– Oil or grease the bearings and joints according to the "maintenance data table".

- Driver's seat guide
- Cab door hinges (variant)

Maintaining the seat belt

⚠ DANGER

Risk of injury in an accident if the seat belt fails!

If the seat belt is faulty, it may tear or open during an accident and no longer keep the driver in the driver's seat. The driver may therefore be thrown against the industrial truck components or out of the industrial truck.

– Ensure operational reliability by continually testing.

– A faulty belt must only be replaced by your service centre.

– Only use genuine spare parts.

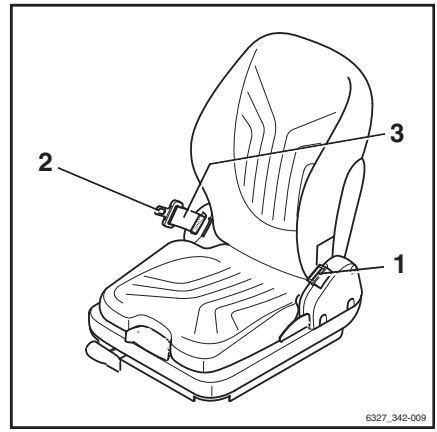
– Do not make any changes to the belt.

NOTE

Carry out the following checks on a regular basis (monthly). In the case of significant strain, a daily check is necessary.

Checking the seat belt

– Pull out the belt (3) completely and check it for wear. ▷



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

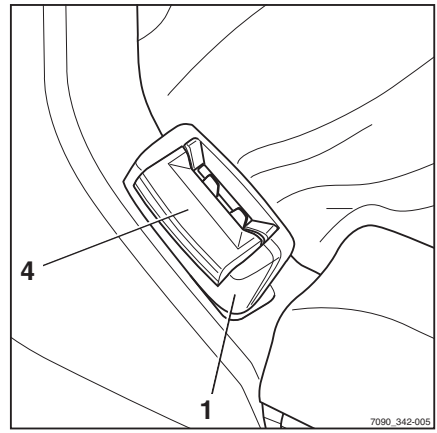
– Check whether the belt is dirty.

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

– Check the buckle (1) to ensure that it locks into place properly.

When the belt tongue (2) is inserted, the belt must be held securely.

– The belt tongue (2) must release when the red button (4) is pressed. ▷



– The automatic blocking mechanism must be tested at least once a year:

– Park the industrial truck on level ground.

– Pull out the belt with a jerk.

The automatic blocking mechanism must block the extension of the belt.

– Tilt the seat at least 30° (if necessary, remove the seat).

– Slowly extend the belt.

The automatic blocking mechanism must block the extension of the belt.

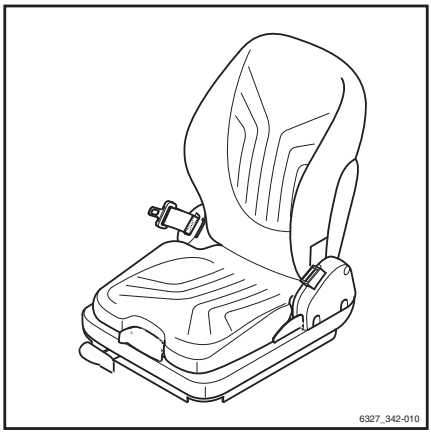
Cleaning the seat belt

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

Replacing after an accident

We recommend that the seat belt must always be replaced after an accident.

Checking the driver's seat ▷



⚠ WARNING

Risk of injury!

– After an accident, check the driver's seat with attached restraining belt and fastening.

– Check the controls for correct operation.

– Check the condition of the seat (e.g. wear on the upholstery) and secure fastening to the hood.

⚠ WARNING

Risk of injury!

– Have the seat repaired by the service centre if you identify any damage during the checks.

Maintaining wheels and tyres

⚠ WARNING

Risk of accident!

Uneven wear reduces the stability of the truck and increases the braking distance.

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

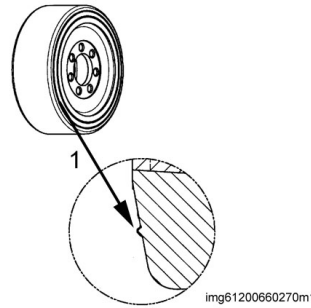
⚠ WARNING

Risk of tipping!

Tyre quality affects the stability of the truck.

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

Checking the condition and wear of the tyres ▷



⚠ WARNING

Tyre quality affects the stability and handling of the truck.

Changes must only be made following consultation with the manufacturer.

When changing wheels or tyres, ensure that this does not cause the truck to tilt to one side (e.g. always replace right-hand and left-hand wheels at the same time).

NOTE

The wear of the tyres must be approximately the same.

- *Polyurethane tyres can be worn down to the wear mark (3)*

The tyres must be replaced if:

- Large cracks have formed in the tread This can be detected by a "whirring sound" when driving
- The tread has broken away significantly
- The tyre diameter has reduced by approx. 9%

A wear mark (1) in the lateral flank of the lining serves as a visual indication of the wear limit.

Checking the wheel fastenings

– Check the wheel screws (drive wheel) and load wheel nuts (load wheel) are securely seated and tighten them as necessary.

– Comply with the specified torques; refer to the chapter entitled "Maintenance data table"

Checking the battery

– For information on checking the battery, see the chapter entitled "Checking the battery condition, acid level and acid density".

Replacing the fuses

⚠ DANGER

Danger from electrical current!

High voltages are present in the fuse box. There is a risk of electric shock.

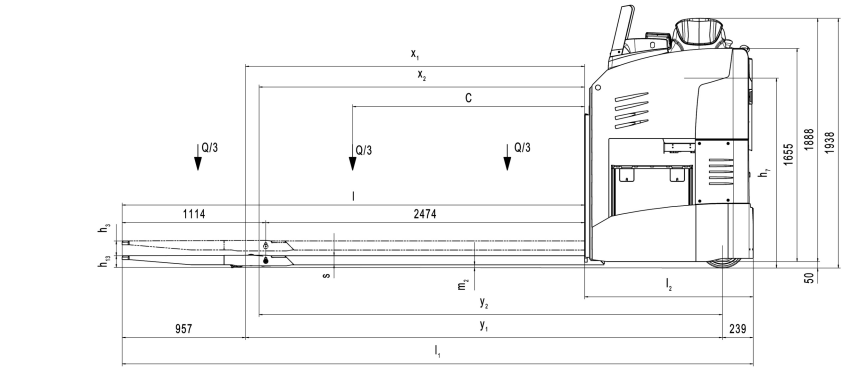
- **Do not** open the fuse box.
- The fuses must be replaced only by the authorised service centre.

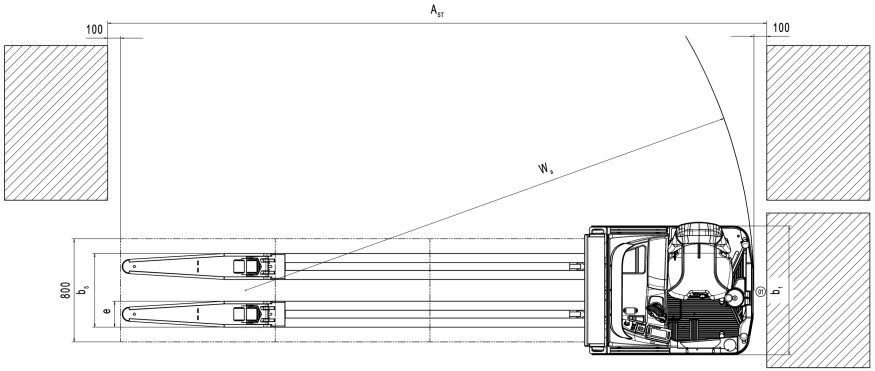
– To change the fuse for the footwell heating, see the chapter entitled "Footwell heating (variant)". All other fuses may be replaced only by the authorised service centre.

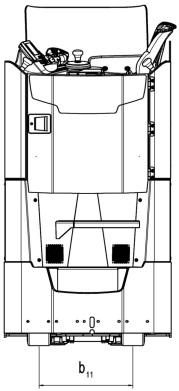
7

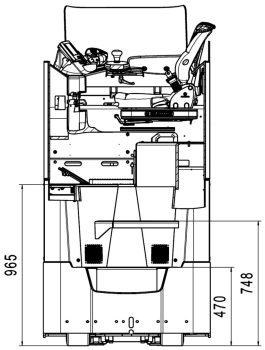
Technical data

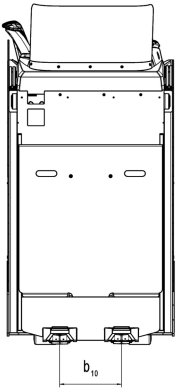
Dimensions


x1
x2
C
Q/3
Q/3
Q/3
l
1114
2474
h3
h13
s
m2
y2
y1
l2
l1
957
239
50
1655
1868
1938
h1


Ast
100
100
Wa
800
b5
e
b1


b11


965
470
748


b10

VDI datasheet FXH 33

Subject to change

Key data

1.1	Manufacturer		STILL
1.2	Manufacturer's type designation		FXH 33/ Li-ion
1.3	Drive		Electric
1.4	Operation		Seat
1.5	Load capacity/load	Q (kg)	3300
1.6	Load centre of gravity	c (mm)	1800
1.8	Load distance (lowered/raised)	x^1/X^2 (mm)	2634/2528
1.9	Wheelbase (lowered/raised)	$y^1/Y2$ (mm)	3700/3595

Weights

2.1	Net weight (including battery)	kg	3560
2.2	Axle load laden (drive side/load side)	kg	3440/3420
2.3	Axle load unladen (drive side/load side)	kg	2790/770

Wheels, chassis frame

3.1	Tyres (drive side/load side)		Vulkollan
3.2	Tyre size (drive side) Diameter/width	mm	360 x 130
3.3	Tyre size (load side) Diameter/width	mm	90x95
3.5	Number of wheels (drive side/load side) (x = driven)		2x/4
3.6	Track width (load side)	b_{10} (mm)	370
3.7	Track width (drive side)	b_{11} (mm)	562

Basic dimensions

4.4	Min. lift.	h_3 (mm)	115
4.8	Seat height/standing height	h_7 (mm)	1474
4.15	Height (lowered)	h_{13} (mm)	91
4.19	Overall length	l_1 (mm)	4893
4.20	Length (including fork back)	l_2 (mm)	1305
4.21	Overall width	b_1 (mm)	1000
4.22	Fork arm dimensions	s/e/l	70/200/3590

4.25	Width over forks	b_5 (mm)	571
4.32	Ground clearance (centre of wheelbase)	m_2 (mm)	20
4.34.1	Aisle width (for 800x1200 pallets lengthwise) raised	A_{st} (mm)	5289
4.35	Turning radius	W_a (mm)	3944
4.8	Seat height	h_7	1474

Performance data

5.1	Driving speed (with/without load)	km/h	20.0/20.0
5.1.1	Reverse driving speed (with/without load)	km/h	20.0/20.0
5.2	Lifting speed (with/without load)	m/s	0.04/0.05
5.3	Lowering speed (with/without load)	m/s	0.05/0.04
5.8	Maximum climbing capability (forks raised) (with/without load)	%	8.0/10.0
5.9	Acceleration time over 10 m (with/without load)	s	4.1
5.10	Service brake		Generator

Electric motor

6.1	Traction motor power at S2 = 60 min.	kW	2x6.5
6.2	Lift motor, power at S3	kW	2.0
6.4	Battery voltage/nominal capacity K_5	V/Ah	48/930
6.5	Battery weight ±5% (manufacturer-dependant)	kg	1000/1317
6.6	Energy consumption in accordance with the VDI cycle	kWh/h	4.17

Other

8.1	Type of traction controller		AC controller
8.4	Noise level (at the driver's ear)	dB(A)	≤67

Battery specifications for lithium-ion batteries

– For more information, please refer to the nameplate and the operating instructions for the lithium-ion battery.

GGS Li-Ion 48 V (BG 8)
45.7 kWh and 26.1 kWh

	Battery group 8.2	Battery group 8.3
Nominal voltage [V]	48	48
Nominal capacity [Ah]	938	536
Nominal energy [kWh]	45.7	26.1
Cell connections	13 serial, 14 parallel	13 serial, 8 parallel
Length [mm]	830	830
Width [mm]	630	630
Height [mm]	627	627
Weight [kg]	856	856

Battery specifications for lead-acid batteries

⚠ CAUTION

Observe the correct battery weight and dimensions!

The battery weight must remain within the weight range specified on the nameplate.

- Use batteries that meet DIN standards.
- Do not change the position of ballast weights.
- Check the battery weight against the information on the nameplate.

NOTE

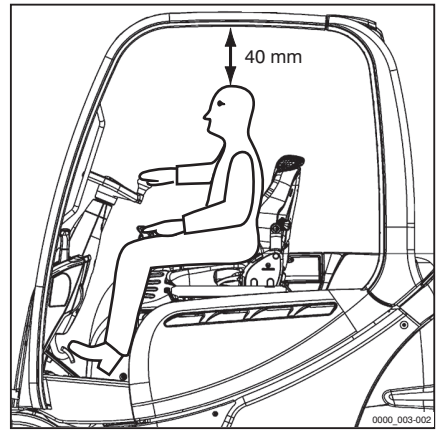
Battery specifications according to DIN 43531; cells in accordance with DIN EN 60254-2, 48 V circuit A or 48 V circuit B

- The battery weight can be found on the nameplate of the battery.

Lead-acid batteries

Battery designation	Capacity [Ah]	Circuit	Weight/ ballast weight [kg]	Battery compartment dimensions [mm]			Tray
				Length	Width	Height	
6 PzS 930	930	Special	1375	988	660	925	82
6 PzS 750	750	A	1064	988	660	765	83

Ergonomic dimensions



⚠ WARNING

Danger of impact injuries to the head!

If the head of the operator is located too close to the underside of the roof, the suspension of the driver's seat or an accident may cause the head to strike the overhead guard.

To avoid head injuries, a minimum distance of **40 mm** must be ensured between the underside of the roof and the head of the tallest operator.

To determine the actual head clearance, the operator must sit in the driver's seat and the seat suspension must be set to this driver's requirements.

Due to the individual nature of height and body weight as well as the wide variety of types of driver's seat and overhead guard, the minimum head clearance must be ensured in every truck.

The driver's compartment has been designed taking ergonomics in the workplace into account and in accordance with EN ISO 3411. In general, from the seat position, the operator has sufficient space to reach the operating devices safely, to operate the truck and to view the outline of the truck. Operators whose body size deviates from the specified dimensions on which EN ISO 3411 is based must be individually considered by the operating company.

Numbers and Symbols

A

B

C

D

E

F

G

H

I

J

L

M

N

O

P

R

S

T

U

V

W

Y

STILL GmbH

51318011910 EN - 12/2021 - 03