Original instructions

Electric pallet truck

EXH 14C

1132

first in intralogistics

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Made in China

Rules for the operating company of industrial trucks

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

This guide provides information for handling industrial trucks:

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

Internet address and QR code

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

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1

Foreword

Your truck

Technical description

The series 1132 electric pallet trucks, including EXH 14C, have a rated load weight of 1400kg.

Design

The latest ergonomic and practical design, adaptable to all operators and working conditions.

The polyurethane cowling provides superior stability and shock resistance, and has a variety of storage spaces.

The chassis is made of thick steel plate and is suitable for the harshest working conditions.

Steering system

Extremely smooth steering makes the vehicle easier to manoeuvre in tight spaces.

A gas spring enables the tiller to quickly return to the vertical position after it is released.

Tiller

The composite construction tiller head provides excellent impact resistance.

The ergonomic control layout is suitable for left-handed and right-handed operators. The push-buttons for the horn, lifting and lowering and initial lift can be operated using one hand without changing grip.

The crash protection button integrated into the tiller head protects the operator if the truck recoils.

Driving

The MOSFET electronic control unit ensures comfortable use and lower costs.

Precise, load-independent travel.

Jolt-free starting and smooth acceleration to maximum speed.

Simply release or turn the drive direction switch to brake.

Booster circuit prevents the truck rolling back when starting on a gradient.

Hydraulic system

The gear pump is driven by a fully enclosed air-cooled motor.

Safety valve and lowering brake protect the hydraulic system.

Brake system

The electromagnetic brake with dust protection function can be used as a safety brake and parking brake. Braking is controlled by the drive controller: the brake's electromagnet acts on the motor shaft and simultaneously cuts off the power. Automatic braking is activated when the tiller is in the horizontal or vertical position (end stop brake).

Battery

The power supply is provided by the standard lithium-ion battery.

The display unit displays the battery’s remaining charge.

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.

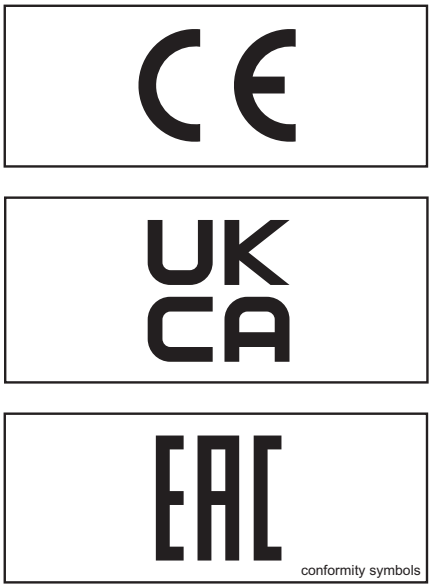
Conformity marking

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

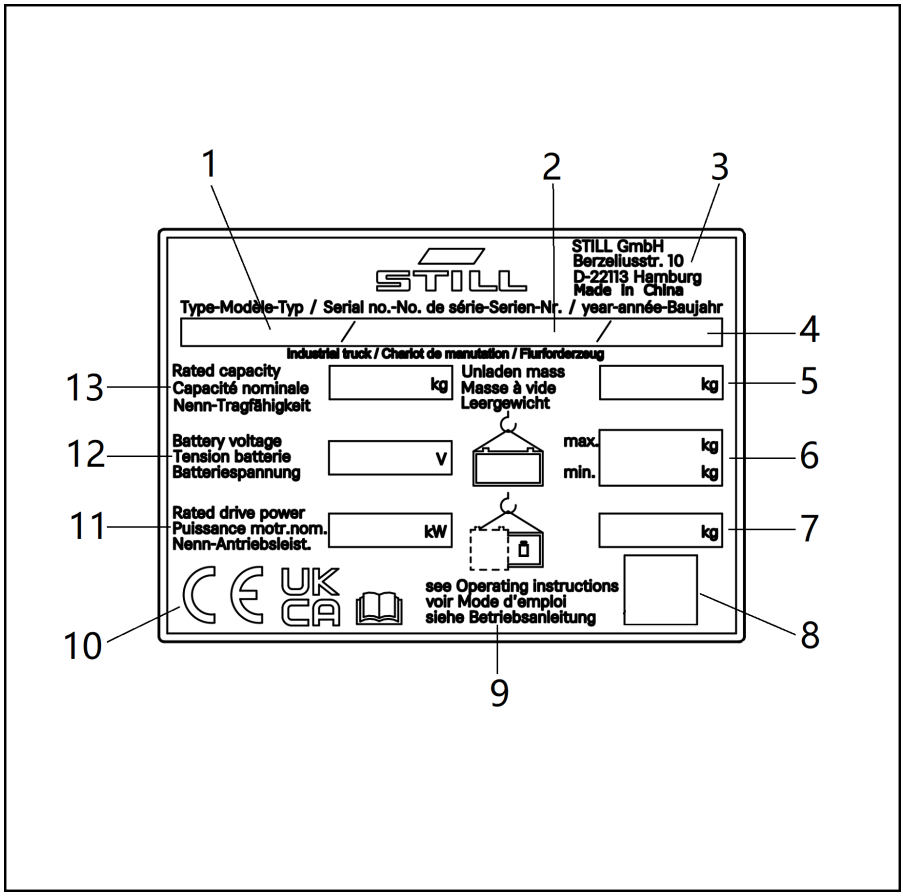
[1)] For the markets of the European Union, the EU candidate countries, the EFTA States and Switzerland.
[2)] For the United Kingdom market.

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.

Identification plate



1	Type	10	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
2	Serial number		
3	Manufacturer		
4	Year of manufacture		
5	Unladen mass in kg		
6	permissible battery weight in kg (for electric trucks only) Max./Min.		
7	Own mass (self weight) in kg without battery	11	Rated drive power in kW
8	Data matrix code	12	Battery voltage in V
9	Refer to technical data listed in this operating instructions for more detailed information	13	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.*

Information about the documentation

Documentation scope

- Operating instructions
- Operating instructions for attachment parts (special equipment)
- Spare parts list
- VDMA rules for the proper use of industrial trucks (EU countries only)

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

Enter the production number and the year of production located on the nameplate in the field provided:

Production no. .....

Year of production .....

Please quote these numbers for all technical enquiries.

Operating instructions are provided with each truck. These instructions must be stored carefully and must be available to the driver and operator at all times.

If the operating instructions are lost, the operator must immediately request a replacement from the manufacturer.

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

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

The operating company (see [Querverweisfehler: Ziel mit ID='VerantwortlichePersonen' nicht gefunden!]) must ensure that all operators have received, read and understood these instructions.

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 faults, please contact your service centre.

Copyright and property rights

This manual - and any excerpts thereof - may not be reproduced, translated or transmitted in any form to third parties without the express written permission of the manufacturer.

Explanation of symbols used

⚠ DANGER

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

⚠ WARNING

Compulsory procedure that must followed to avoid injury.

⚠ CAUTION

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

NOTE

For technical requirements that require special attention.

ENVIRONMENT NOTE

To prevent environmental damage.

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.

List of abbreviations

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

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

Abbreviation	Meaning	Explanation
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

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.

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 of the trucks

⚠ CAUTION

This machine was designed for the transport and storage on racks (pallet stackers only) of loads packed on pallets or in industrial containers designed for this purpose.

The dimensions and capacity of the pallet or container must be adapted to the load being transported and must ensure stability.

The table of characteristics and performance attached to this user manual gives you the information you need to check that the equipment is suitable for the work being carried out.

Any specific usage must be authorised by the site manager; an analysis of the potential risks associated with this usage will enable him to put in place any necessary additional safety measures.

Improper use

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

⚠ WARNING

One of the main causes of accidents is the driver ignoring or being unaware of the basic safe operating practices of the truck.

The following basic safe operating practices must be observed to ensure the safety of operators and others.

⚠ DANGER

High risk of injury, death and property damage.

Avoid the use of prohibited substances.

The list below is merely illustrative and not exhaustive.

Never operate the truck in environments with a potentially explosive atmosphere.

Do not carry another passenger (unless a "two-person seat" is installed).

Do not overload the truck (by exceeding the rated load indicated on the load designation plate). Overloading can affect braking distances, truck stability and the strength of the lift mast.

Do not pick up an off-centre load.

Do not stand on the fork arms when they are lifting.

Do not increase the load capacity of the truck, by adding extra weight, for example.

Do not stack loads or turn when driving on a ramp.

Do not operate the truck on loose or greasy surfaces.

Do not drive on uneven or obstructed surfaces.

Never park the truck in a place that may obstruct fire extinguishers, fire escapes or aisles.

Do not dismount from the truck while it is moving.

Do not leave the truck unattended when the load is raised.

Never leave the vehicle unattended on a ramp.

When driving, do not place any part of your body outside the confines of the truck, lean on the edge of the truck or attempt to jump onto another truck or object.

Do not use the forks or any other part of the truck to push, pull or support items, unless the design permits this.

Operating steps

Adjust your driving style based on the conditions of the route, especially in hazardous work areas and when transferring loads.

Always look in the direction of travel.

Look out for pedestrians, to prevent the possibility of them becoming trapped between the truck and fixed obstacles.

Always sound the horn when approaching blind spots.

The truck and attachments must only be used for authorised applications.

Follow the instructions in the user manual when transporting loads.

On a ramp: Ensure that the truck has sufficient ground clearance to avoid striking the surface of the ramp. • Fully raise the load to avoid striking the surface of the ramp.

Drive a loaded truck forward when going uphill.

Drive a loaded truck in reverse when going downhill.

When raising a spreader, ensure that there is enough clearance.

When working near overhead power lines, observe the safety distances set by the competent authorities.

Only travel on surfaces that can withstand the combined weight of the truck and load.

Before leaving the operator’s driving position, turn off the ignition and make sure you have applied the parking brake.

When driving, maintain a safe stopping distance from any vehicle or pedestrians in front of you.

Drivers should move off, brake, turn and reverse smoothly. Avoid sudden stops, sharp turns and overtaking at dangerous or blind spots.

Ensure that there is adequate ventilation when using the truck in enclosed or partially enclosed areas.

Summary

A safe, competent operator is one who takes pride in the way they operate their truck, respects the goods they handle and follows the correct operating procedures. **They never take risks**.

Correct use

Damage and defects

Any damage or other defects found on the industrial vehicle or its attachments must immediately be reported to a supervisor. Industrial vehicles and attachments that present operat-

ing hazards can only be used after proper maintenance has been carried out.

Do not remove safety devices and switches or render them unusable. Do not alter specific settings without first obtaining permission from the manufacturer.

Danger areas

Danger areas are areas that are hazardous to personnel due to the movement of the industrial truck, its operating devices, loading devices (such as attachments) or loaded cargo. They also include areas for lowering loads or lowering operating devices and equipment.

Non-work personnel must never stand in the danger areas of the industrial vehicle.

Work areas

⚠ DANGER

In operating areas with magnetic fields that have a magnetic flux density greater than 5 mT, unintentional movements of the truck or hydraulics cannot be entirely excluded under unfavourable circumstances.

For magnetic fields with magnetic flux densities greater than 5 mT, components developed especially for this purpose must be used.

Contact your local authorised service partner.

Only areas authorised by the operating company or his representative can be used for transportation purposes. Loads may only be stacked or stored in the specified locations.

Travel routes

Travel routes should be well laid and remain flat and free of obstructions. Deal with drainage channels and rail track intersections, etc. by levelling them, if necessary using a ramp to cover them, so as to minimise the risk of collisions occurring when the vehicle passes over them.

The industrial vehicle can only travel along routes that are free from sharp turns, steep ramps, narrow passages and low ceilings.

The industrial vehicle must not travel on ramps that exceed the maximum gradient specified by the manufacturer, and the driving surface must be sufficiently adherent. Flat and smooth transitions at the upper and lower ends of ramps can prevent the load from contacting the ground or damage being caused to the chassis.

Do not exceed permitted zones and point loads of travel lanes or routes. Maintain a sufficient gap between the highest part of the industrial vehicle or load and fixtures in the surrounding area.

Comply with EU Directive 89/654/EEC (minimum safety and health requirements for the workplace). In non-EU countries/regions, comply with the corresponding national regulations.

If necessary, use conventional road traffic signs or other warning signs to mark danger points along travel lanes or routes.

When driving on public roads, you must comply with the relevant laws and regulations as well as country/region-specific restrictions with regard to winter road conditions.

Fire prevention measures

The operating company is responsible for adopting appropriate fire prevention measures in the vicinity of the industrial truck. The operator is responsible for adopting additional fire prevention measures on the industrial truck, depending on how the industrial truck is used. If you have any questions, please contact the responsible supervisory authority.

NOTE

If the truck is equipped with a fire extinguisher, the driver must be fully aware of how to use it. Instructions for use are provided on the fire extinguisher.

Attachments

Attachments may only be used after obtaining a permit. Drivers must be instructed in the operation of the relevant attachment.

The attachment operating instructions are enclosed for trucks delivered from the factory

with attachments. Before commissioning a truck with an attachment, you must check that loads are handled safely. It may be necessary to make adjustments, depending on the type of attachment, e.g. to pressure settings or adjusting stops and operating speeds. Corresponding instructions can be found in the attachment operating instructions.

If the industrial vehicle is not delivered with attachments, you must comply with the specifications of the industrial vehicle manufacturer and accessory manufacturer.

Power connection of powered attachments must only be carried out by specialists in accordance with the manufacturer's specifications. Whenever an attachment is installed, it should be checked before first use to ensure that it is functioning normally.

Do not exceed the permissible load capacity of the attachment or the permissible load of the industrial vehicle and attachment combination (load capacity and load torque). Refer to the attached load capacity plate for attachments.

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

The fork extension should not exceed 1.5 times the length of the support fork.

Vehicle modifications

If the manufacturer is no longer in business and there is no successor to the business, the user may arrange for a modification or alteration to the truck, provided that the user:

- Arranges for the modification or alteration to be designed, tested and implemented by an engineer who is an expert in industrial trucks and the associated safety considerations
- Maintains a permanent record of the design, testing and implementation stages for the modification or alteration
- Makes appropriate changes to the designation plate, decals, tags and operation and maintenance manuals
- Attaches a permanent and easily visible label on the truck providing information about the manner in which the truck has been modified or altered together with the date of the modification or alteration, and the name of the organisation that completed this work

Removing the assemblies

It is prohibited to change or remove the assemblies of the truck, especially those for the guards and safety devices. If in doubt, contact a service partner authorised by the manufacturer.

Wind load

When lifting, lowering and transporting bulky cargos, strong winds can affect the stability of the truck.

Light cargos must be firmly fastened when it is windy, so that cargos will not be slid or fallen.

Software updates via wireless transmission

Wireless transmission of safety updates, updates to features, or enabling of new features.

Safety updates are related to the safety of the industrial truck. These operations must be executed.

Newly enabled features can only be put into use after you have downloaded and read the operating instructions for the newly enabled feature from the manufacturer portal. If you need any support, please contact your service partner.

Precautions

– Do not drive on steep slopes, to prevent the load from slipping off.

– The truck must be switched off when left unattended. Key (or key code) must be removed when the truck is unattended to prevent unauthorised use.

– When using this truck, pay attention to the surroundings and do not become distracted.

– Please pay attention to the moving parts of the truck to prevent your hands from being crushed.

Description of use and climatic conditions

Normal use

– Indoor use.

– Drive on solid, flat and well-laid surfaces (includes travelling and lifting).

– Ambient temperature of +5°C to +40°C.

– Use at up to 2000 m above sea level.

Residual risks

Residual risks

Despite careful operation and compliance with all applicable standards and regulations, the possibility of other dangers when using the truck cannot be entirely excluded.

The truck and additional equipment comply with applicable safety regulations. However, residual risks cannot be excluded even if the truck is used correctly and instructions are carefully followed.

Even beyond the danger areas of the truck itself, residual risks remain. Persons in the area around the truck must exercise particular caution. They must react immediately in the event of malfunction, incident, breakdown etc.

They must be informed of the risks associated with the use of the forklift.

These operating instructions also contain additional safety instructions.

Residual risks can include:

– Escape of consumables due to leakages or the rupture of lines, hoses or containers.

– Risk of accident when driving over difficult ground such as gradients, smooth or irregular surfaces, or with poor visibility etc.

– Risk of falling, tripping or slipping during movement of the truck, especially on wet or icy surfaces or in the event of consumable leaks.

– Risk of fire and explosion due to the battery and electrical voltages.

– Human error.

– Disregarding the safety regulations.

– Risk caused by unrepaired damage.

– Risk caused by insufficient maintenance and testing.

– Risk caused by using unsuitable consumables.

Special risks associated with using the truck and attachments

The manufacturer's approval is required as soon as:

- The truck is used differently from its normal use
- The driver is not sure if he can use the truck correctly and without risk of accident

Danger to employees

The operating company must identify and evaluate the dangers involved in using the truck. It must also establish which occupational health and safety measures are required to protect employees. Appropriate operating instructions must be drafted and provided for the driver accordingly. A person responsible for health and safety must be appointed.

Construction and equipment of the truck correspond to the Machinery Directive 2006/42/EC and they are therefore identified with the CE symbol. As a result, these factors are not included in the hazard assessment; nor are the attachments, which have their own CE labelling. The operating company must, however, select the type and equipment of the truck so as to comply with the local provisions for deployment.

The results must be published. In the case of truck deployment involving similar hazard situations it is permitted to summarise the results. This overview (see chapter entitled "Overview of hazards and countermeasures") is intended to facilitate compliance with the conditions of these regulations. The overview indicates the main causes of accidents in the

event of non-compliance. If other major operational hazards are involved, they must also be taken into consideration.

The working conditions for the trucks are largely similar for many sites. The dangers can therefore be summarised in a single overview. It is recommended that the information provided by the relevant employers' liability insurance association be observed in this respect.

2

Safety

Safety regulations

The truck operating instructions must be communicated to all those concerned and in particular to personnel responsible for maintenance and driving. The employer must make sure that the forklift operator has properly understood everything, particularly all the safety information.

Please observe the directives and safety regulations attached, in particular:

- Information concerning the operation of industrial trucks
- Regulations concerning traffic lanes and working areas
- Appropriate behaviour, rights and responsibilities of the driver
- Use in particular areas
- Information about the weight and dimensions of pallets or any other container
- Information concerning starting, driving and braking
- Information for maintenance and repair
- Regular checks and technical inspections
- Recycling of lubricants, oils and batteries
- Residual risks.

Care is recommended both for the user and the person in charge (employer) with regard to adhering to all safety rules concerning the operation of industrial trucks.

When instructing forklift operators, we recommend the following points are emphasised:

- The features of the truck
- The special accessories
- The specific features of the working environment.

Train the user in how to drive the truck, until it is under proper control.

Then, and only then, proceed to transferring pallets.

Forklift truck stability is guaranteed when the unit is used correctly.

Definition of responsible persons

Operating company

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

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

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

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

We recommend that the national performance specifications are adhered to.

Specialist

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

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

Drivers

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

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

Driver rights, duties and rules of behaviour

The driver must be trained in his rights and duties.

The driver must be granted the required rights.

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

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

The driver must:

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

⚠ DANGER

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

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

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

The company premises are very often restricted public traffic areas.

NOTE

It is advisable to review the operational liability insurance so that insurance covers the truck with respect to third parties in the event of damage caused in restricted public traffic areas.

Modifications and refitting

If your truck is to be used in specific conditions (e.g. refrigerated warehouse or flameproof protection), it must be specially equipped and approved for this purpose, if applicable.

If your truck is used for work that is not specified in the guidelines or in these instructions, and it must be modified or refitted for this purpose, it is important to remember that any structural modification could affect truck handling while driving as well as the stability of the truck, and could lead to accidents. You should therefore contact the manufacturer before carrying out any modification. Permission from the manufacturer is required for any modification that may affect the truck's stability.

Any constructional modification or transformation of your truck is forbidden without prior written permission from the manufacturer. Authorisation from the relevant authority may also be required.

SPECIAL CASE: if the manufacturer of the truck is no longer in business and its activity is unlikely to be taken over by a successor

In this specific case, you may plan a modification or alteration to your truck provided that:

- The modification or alteration is designed, tested and implemented by one or more engineers who are experts in the field of industrial trucks and their safety
- A record is kept of the design, the different tests and the implementation of the modification or alteration
- Appropriate changes are approved and made to the capacity plate, decals, labels and operating instructions
- a permanent and clearly visible label is attached to the truck indicating the nature of the modification or alteration as well as the date of the modification or alteration, and the name and address of the company that carried out the work.

Warning regarding non-original parts

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

⚠ CAUTION

The installation or use of such products may have a negative impact on the design of the truck and thus impair active or passive driving safety.

We recommend that you obtain approval from the manufacturer and, if applicable, 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 non-original accessories.

Damage, faults

Any damage or faults observed on the truck or the accessories must be reported immediately to the responsible personnel. The truck and accessories must never be used before they are correctly reconditioned as they cannot be guaranteed to be safe for operating or driving.

The safety mechanisms and switches must never be removed or disabled. The predefined setpoint values must not be modified.

Work on the electric installation (e.g. connecting a radio, additional lights or other accessories) is permitted only with the approval of the manufacturer.

Medical devices

The operation of medical devices, for example pacemakers or hearing aids, can be impaired. Check with your doctor or manufacturer if the medical devices are sufficiently protected against electromagnetic interference.

Noise level

This value is calculated during testing cycle according to the EN 12053 standard.

Noise level at the driver's ear:

Model	Noise level	Uncertainty
EXH 14C	L_{pAZ} = 66 dB(A)	K_{PA} = ±4 dB(A)

NOTE

Lower or higher noise levels may occur when using the pallet truck due to differences in the mode of operation, environmental factors and other sources of noise.

Vibration values for upper limbs

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

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

NOTE

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

Residual risk

Residual dangers, residual risks

Despite working with care and complying with the standards and regulations, the possibility of other dangers arising when using the truck cannot be ruled out.

The truck and all other system components comply with current safety requirements. Even when the industrial truck is used in accordance with its intended use and all instructions provided are followed, some residual risk cannot be excluded.

A residual risk cannot be excluded even beyond the narrow limits of the danger area that the truck itself represents. In order to be able to react immediately in the event of a malfunction, an incident, a breakdown etc., persons in the danger area must pay increased attention to the truck.

⚠ WARNING

All persons in the danger area of the truck must be aware of the dangers posed by the truck.

In addition, your attention is drawn to the safety regulations given 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, very smooth or uneven surfaces, or with poor visibility etc.
- Falling, tripping etc. on the truck, especially in wet weather, with leaking consumables or on icy surfaces
- Risk of fire and explosion from the batteries and electrical voltages
- Human error resulting from failure to observe the safety regulations
- Unrepaired damage or faulty and worn components
- Insufficient maintenance and testing
- Use of incorrect consumables
- Exceeding test intervals

If the operating company negligently or intentionally fails to comply with these require-

ments, this can lead to an accident. In this case, the manufacturer is exempt from liability.

Stability

The stability of the truck has been tested to the latest technological standards. If the truck is used in the proper manner and in accordance with its intended use, the stability of the truck is guaranteed. These standards only take into account the dynamic and static tipping forces that can arise when used in accordance with the specified operating rules and intended use. The danger of exceeding the moment of tilt and losing stability due to improper or incorrect operation can never be ruled out.

The loss of stability can be avoided or minimised by complying with following principles:

- 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.
- On trucks fitted with a sideshift, align and transport loads such that the load centre of gravity is positioned centrally to the truck.
- Avoid turning and diagonally driving across slopes or gradients.
- Never have the load facing downhill when travelling on slopes or gradients.
- 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)
	Assessment of LPG exhaust gases	O	German threshold limit values list (MAK-Liste) and the German Ordinance on Industrial Safety and Health (BetrSichV)

Hazard	Course of action	Check note √ done - Not applicable	Notes
Impermissible usage (improper usage)	Provide operating instructions	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), DGUV rule 113-001 and observe the operating instructions	O	German Ordinance on Industrial Safety and Health (BetrSichV) and DGUV rule 113-001
When parking LPG trucks	German Ordinance on Industrial Safety and Health (BetrSichV),	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 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".

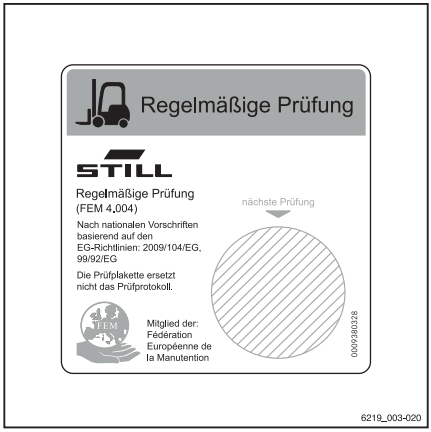
The design and equipment of the truck comply with the standards and directives required for CE conformity. The design and equipment also comply with the standards and directives necessary for the UKCA compliance that is required in the United Kingdom. The design and equipment are therefore not part of 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

Regularly testing the electrical safety

The on-board charger and the associated charging cable must be tested at least once a year. This test must be carried out in accordance with the national regulations for the country of use (e.g. DIN EN 50678 & DIN EN 50699 in Germany).

Contact the authorised service partner regarding this matter. The test sticker is glued to the sticker panel by the testing technician. The due date for the next testing is always at the top of the sticker.

– Before each use, check the charging cable for damage.

– Do not use a damaged charging cable.

Safety regulations for handling consumables

Permissible consumables

⚠ WARNING

Consumables can be dangerous.

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

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

Oils

⚠ DANGER

Oils are flammable!

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

⚠ DANGER

Oils are toxic!

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

⚠ WARNING

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

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

⚠ WARNING

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

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

ENVIRONMENT NOTE

Oils are water pollutants!

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

Avoid spilling oils.

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

Dispose of old oils according to the applicable regulations.

Hydraulic fluid

⚠ WARNING

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

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

ENVIRONMENT NOTE

Hydraulic fluid is a water-polluting substance!

Always store hydraulic fluid in containers complying with the regulations.

Avoid spilling.

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

Dispose of old hydraulic fluid according to regulations.

Disposal of consumables

ENVIRONMENT NOTE

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

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

Use of lubricants

Lubricants must always be used in conformity with the instructions supplied by the manufacturer.

Lubricants must be stored only in the prescribed receptacles in the proper places. They may be inflammable, so do not bring them into contact with a flame or hot object.

Use only the proper receptacles for draining liquids.

Pay attention to the safety and recycling advice of the manufacturer of the ingredient or cleaning product

Avoid any spillage of lubricants. Use absorbent materials to clean any floor spillage, and recycle such materials correctly.

Always dispose of used or contaminated lubricants as specified.

Clean the parts concerned before carrying out lubrication, changing filters or working on the hydraulic system.

Any worn out parts removed must be recycled in conformity with regulations for protection of the environment.

⚠ WARNING

Accidental penetration of hydraulic fluid under the skin is dangerous.

See a doctor immediately if injured.

Safety devices

EMC – Electromagnetic compatibility

Electromagnetic compatibility (EMC) is a key quality feature of the truck.

EMC involves

- limiting the emission of electromagnetic interference to a level that ensures the troublefree operation of other equipment in the environment.
- ensuring sufficient resistance to external electromagnetic interference so as to guarantee proper operation at the planned usage location under the electromagnetic interference conditions to be expected there .

An EMC test thus firstly measures the electromagnetic interference emitted by the truck and secondly checks it for sufficient resistance to electromagnetic interference with reference to the planned usage location . A number of electrical measures are taken to ensure the electromagnetic compatibility of the truck .

⚠ CAUTION

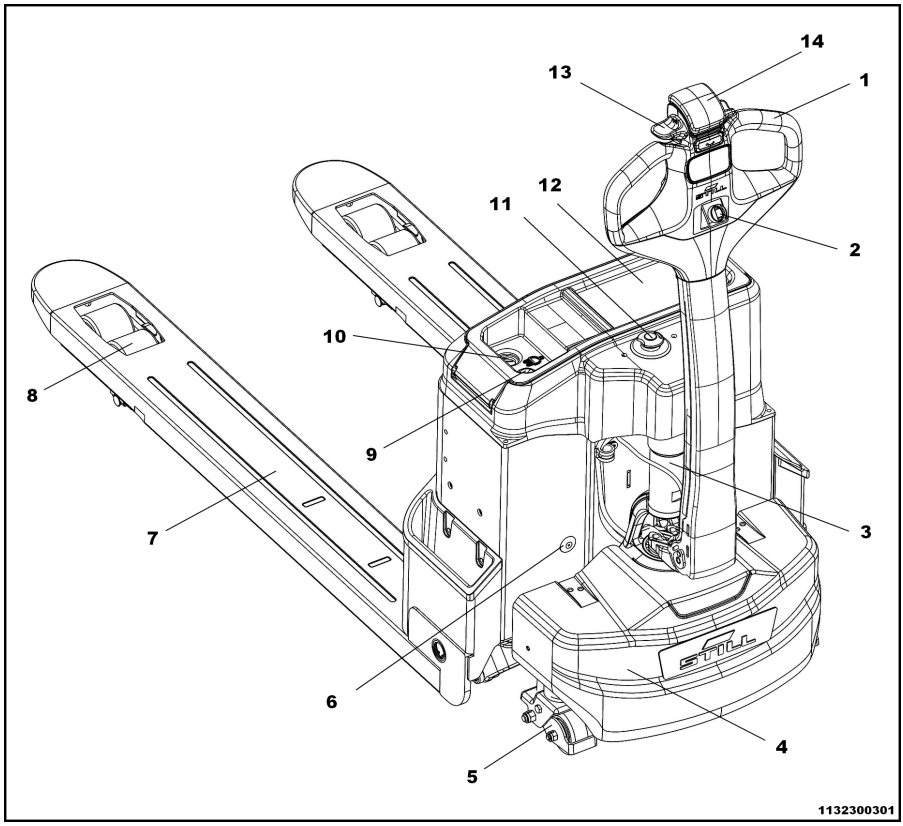
The EMC regulations for the truck must be observed.

When replacing truck components the protective EMC components must be installed and connected again.

3

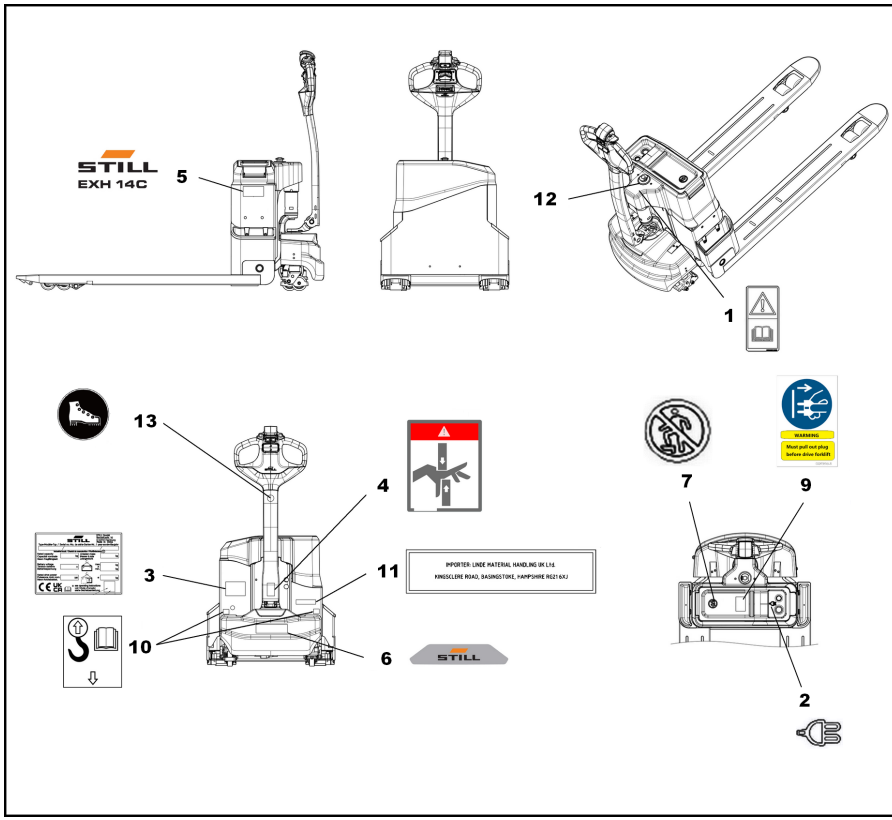
Views

General view



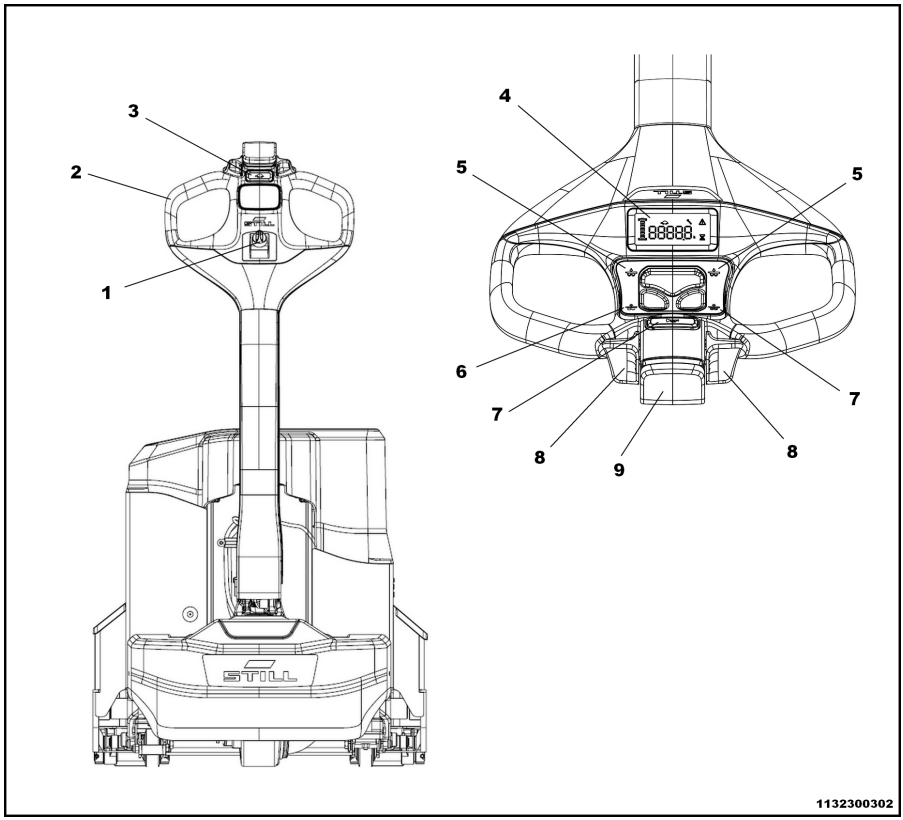
1	Tiller	8	Load wheel
2	Key switch	9	Battery charge indicator
3	Cylinder	10	Battery charging cable
4	Traction motor cover	11	Emergency off switch
5	Caster wheel	12	Outer cowling
6	Pressure regulating hole	13	Drive direction switch
7	Fork	14	Safety reverser

Labels



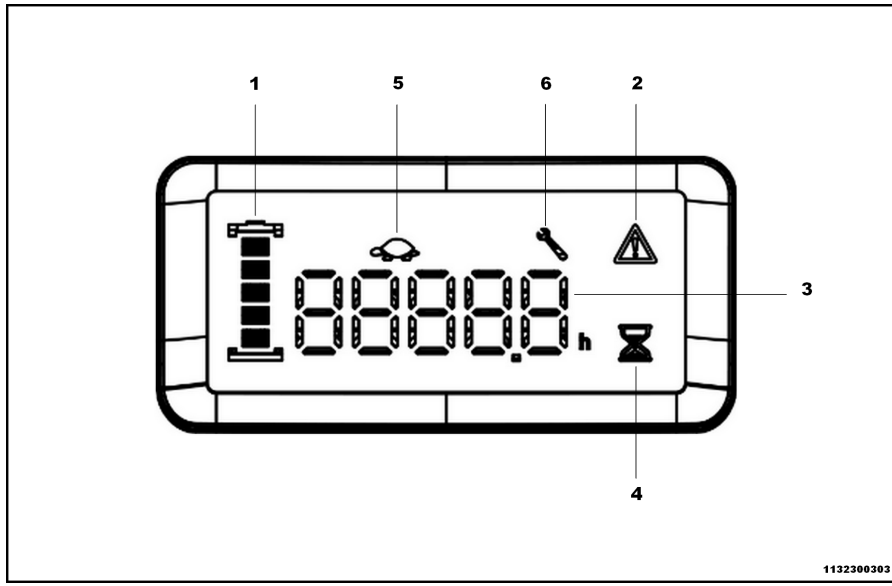
1	Please read user manual label	8	Hazmat label
2	Charging plug symbol	9	Warning label: "The charging plug must be unplugged before driving the truck"
3	Nameplate	10	Hoisting point label
4	Risk of trapping hand label	11	Importer label
5	Model label	12	Emergency off switch Warning label
6	STILL logo	13	Safety shoes required label
7	"No step" symbol		

Operating devices



1	Key switch	6	Fork lowering button
2	Tiller	7	Horn button
3	Creep speed switch	8	Drive direction switch
4	Display unit	9	Safety reverser
5	Fork arm lifting button		

Display unit



No.	Name	Function
1	Battery charging indicator light	5 bars: 85%-100% 4 bars: 68%-84% 3 bars: 52%-67% 2 bars: 36%-51% 1 bars: 20%-35% 1 bars:0-19% (limited lifting function, battery indicator light turn red)
2	Fault indicator light	When the fault indicator lamp (2) and the digits (3) are illuminated simultaneously, this indicates a fault with the truck. The number (3) represents the fault code. The fault code should be used to troubleshoot the fault
3	Figure	The specific operating hours or fault codes are displayed
4	Operating hours indicator	When the operating hours indicator (4) and number (3) light up at the same time, number (3) represents the number of operating hours
5	Creep speed indicator	The truck is in creep mode when the indicator is lit up
6	Maintenance indicator	When the motherboard chip is damaged, the maintenance indicator is lit up

NOTE

In the event of a fault, the operating hours indicator and the error code will light up alternately.

4

Operation

Inspections before first use

Drive mechanism and transmission system
Check the drive direction switch
Check the fork lifting/lowering function
Check the functionality of the emergency off switch
Check that the steering unit is working properly
Check that the brake is working properly
Driver's compartment
Check that the safety reverser is working properly
Check that the horn is working properly
Check that the display unit is working properly
Electrical system
Check the battery charging status
Check that the battery is locked properly
Check that the battery cover is closed correctly
Hydraulic system
Visually inspect the truck for oil leaks

Break-in period precautions

During the initial stage of putting the truck into use, it should be operated with low loads. Within the first 100 hours in particular, the following requirements should also be met:

– Excessive discharge of a new battery during initial use must be prevented.It should generally be charged promptly when at 20%.

– The specified preventive maintenance must be done thoroughly.

– Avoid sudden braking, driving quickly or sharp turns.

– Change oil or lubricant promptly according to the instructions.

– Limit the load weight to 70-80% of the rated load.

⚠ CAUTION

When the truck is in the running-in stage (approx. 100 hours of operation), the equipment user should check the fastening of the wheel nuts and bolts and refasten them if necessary.

Pre-shift checks

Carrying out the following checks as part of your daily routine will help to keep the fork-lift truck in good condition. These checks

are supplemental and do not replace periodic maintenance work.

NOTE

If, when carrying out the daily checks, you discover a defect or you are unsure whether the truck will function properly, do not use the truck and contact the technical service department.

Daily inspection items

Drive mechanism and transmission system
Check the drive direction switch
Check the fork lifting/lowering function
Check the functionality of the emergency off switch
Check that the steering unit is working properly
Check that the brake is working properly
Driver's compartment
Check that the safety reverser is working properly
Check that the horn is working properly
Check that the display unit is working properly
Electrical system
Check the battery charging status
Check that the battery is locked properly
Check that the battery cover is closed correctly
Lifting system
Visually inspect the condition of the fork arms
Hydraulic system
Visually inspect the truck for oil leaks

Operating instructions

This truck is designed for use in indoor environments.

NOTE

See instructions in the section "Description of Use and Climate Conditions".

The location for use of the truck must comply with applicable specifications (ground conditions, lighting etc.).

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

Before using the truck, it is essential to check the working environment. This check can be a visual inspection.

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

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

- A person near the truck
- The driver must not use MP3 players or any other electrical equipment that could impair awareness of their surroundings.
- There must be no signs of oil or grease on the floor.

The driver must take care when transporting loads. Load dimensions can interfere with manoeuvres and restrict field of vision. Truck speed must be reduced, as a truck could tip over when braking or cornering.

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

For uses other than those shown above, please consult an authorised service partner.

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

Truck speed must be reduced when passing obstacles to prevent loss of truck balance and vibrations in the driver's arms.

Trucks can drive across ramps and shallow inclines. Initial lifting can improve ground clearance, enabling the truck to drive over larger obstacles.

⚠ WARNING

There is a risk of destabilisation.

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

NOTE

- *To prevent the bottom of the load lifting system from scraping on the ground, always move the fork arms to the raised position before switching on the truck.*
- *Always remember to switch off the key switch before exiting the truck.*

⚠ WARNING

There is a risk of injury.

Never take your hands off the tiller. Never put your hands near moving components and kits without first lowering the fork arms to the ground and disconnecting the battery.

For effective protection, operators must wear safety shoes.

⚠ WARNING

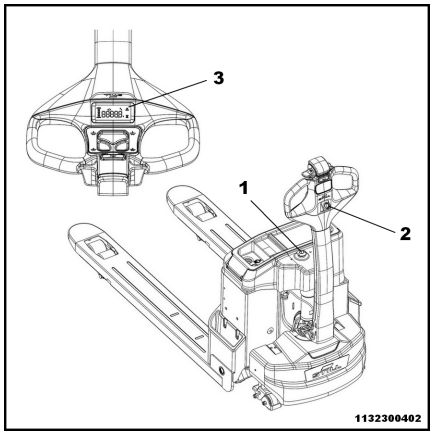
Driving safety guidelines:

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

– Drivers must always maintain a safe braking distance from vehicles or persons in front of them.

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

Starting

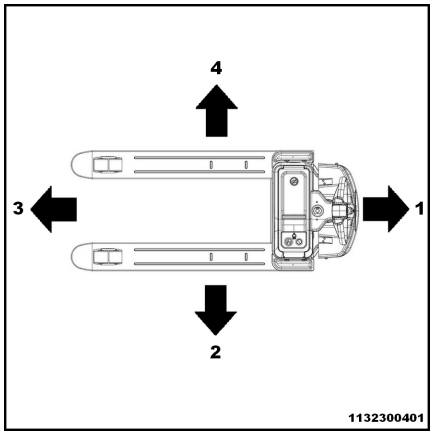


– Pull the emergency off switch (1).
– Insert the key into the switch (2) and turn the key clockwise to switch on the truck.
– The display unit on the tiller (3) is activated and illuminated.
– Raise the fork arms a few centimetres off the ground.

NOTE

Always adjust your speed to suit your route, any hazards and the load. Use the pallet truck on ground that has the correct surface and hardness.

Setting the drive direction



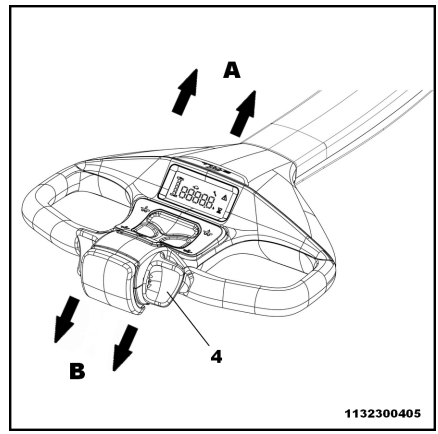
On a pallet truck, the controls for the drive directions include:

- Forward travel (1)
- Reverse travel (3)
- Drive to the left (4)
- Drive to the right (2)

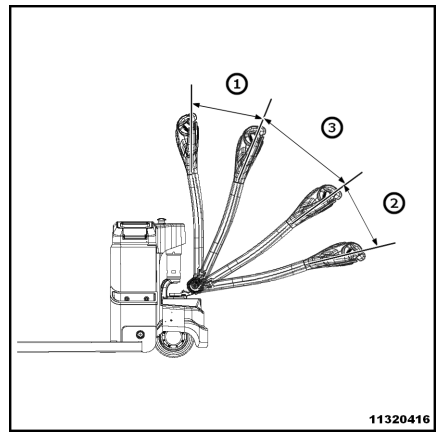
Forward travel/reverse travel

Forward drive

– Pull the emergency off switch and turn on the key switch.



– Push the tiller down into the drive zone (3).
– Gently and slowly push the drive switch (4) in direction (B) with your thumb.
– The truck will slowly move forwards in the same direction as the drive switch.



NOTE

In zones (1) and (2), regenerative braking is applied; when the driving speed is reduced to the set value, electromagnetic braking is applied, and the truck cannot be driven.

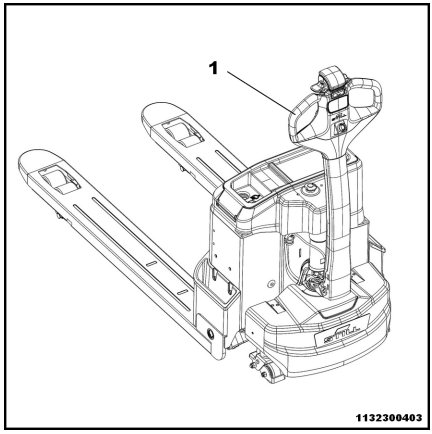
Reverse travel

– Insert the battery male connector.
– Pull up the emergency off switch and turn on the key switch.
– Push the tiller into the drive zone (3).
– Gently and slowly press the drive switch (4) towards direction (A) with the thumb.
– The truck will slowly move backwards in the same direction as the drive switch.

NOTE

In zones (1) and (2), regenerative braking is applied; when the driving speed is reduced to the set value, electromagnetic braking is applied, and the truck cannot be driven.

Steering system ▷



The pallet truck is equipped with a mechanical steering unit that can be controlled with the tiller (1).

The mechanical steering unit enables the tiller to be manoeuvred gently and precisely with only one hand.

The length of the tiller is designed for pedestrian driving.

⚠ WARNING

Risk of damaging the truck

Never use the pallet truck if the steering system is faulty.

⚠ WARNING

There is a risk of tipping.

Approaching a tight corner too fast can cause the truck to overturn.

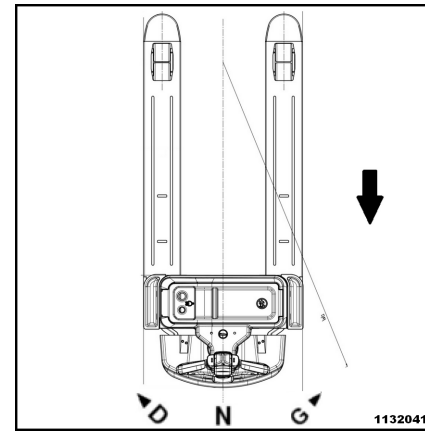
Always slow down before negotiating a corner.

Steering directions in forward travel ▷

– Turn the tiller clockwise: The pallet truck will turn to the right (D).

– Turn the tiller counterclockwise: The pallet truck will turn to the left (G).

The turning radius (Wa) depends on the length of the forks and the position of the platform. (See Technical Datasheet).



Changing the drive direction ▷

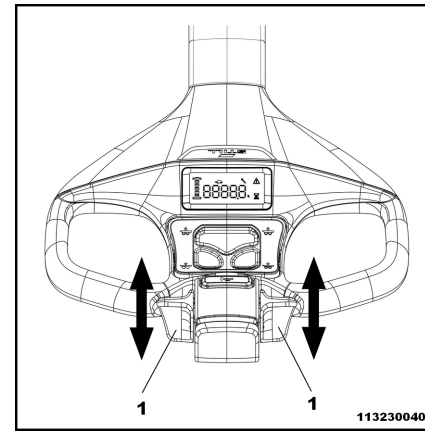
You can change the drive direction when the truck is in operation.

– Release the drive switch (1).

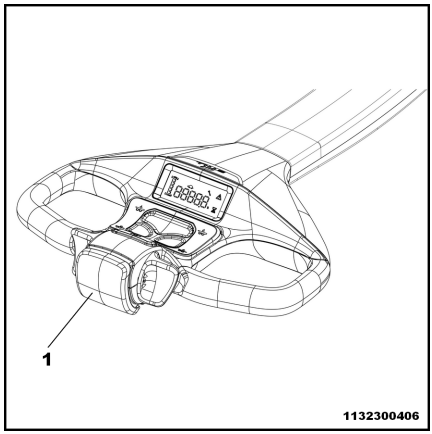
– Push the drive switch in the opposite direction.

When changing the drive direction, the truck is braked electrically until it stops, then drives in the opposite direction.

The maximum speed reduction is controlled by the control module.



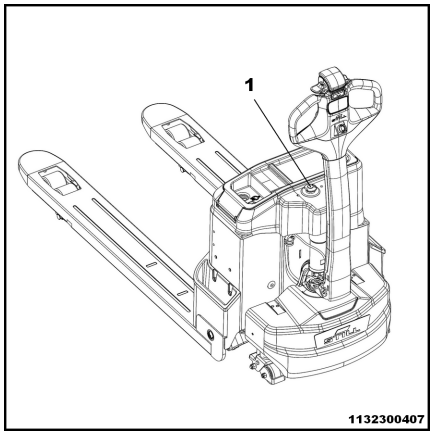
Safety reverser



To protect the driver from any risk of being trapped between an obstacle and the truck, the end of the tiller is fitted with a safety reverser (1).

– Push the safety reverser switch (1) when the truck is driving in the direction of the tiller.
– The truck will stop immediately and then move in the direction of the fork arms at slow speed.
– Release the safety reverser (1) and the truck stops.

Emergency off switch



Push the emergency off switch.

– In the event of an emergency, push the emergency off switch (1), which will fully shut down the truck's electrical system.

⚠ WARNING

To completely disconnect the truck's power supply (e.g. for maintenance work), the battery plug must be unplugged.

Pulling up the emergency off switch

– During normal operation, pulling up the emergency off switch (1) will start the truck's electrical system.

NOTE

The truck is only operational after correctly pulling up the emergency off switch.

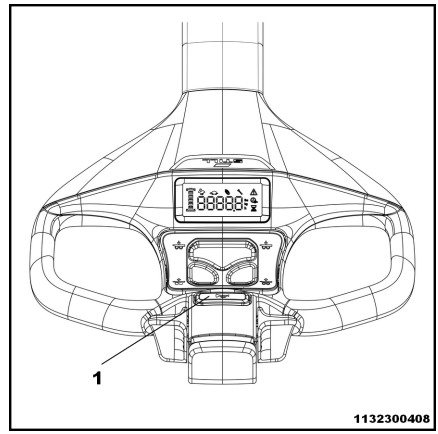
Horn

The horn button (1) is located on the top of the tiller.

Occasions for using the horn:

- On roads where drivers have poor vision
- At the crossroads
- In case of emergencies or dangers

– Press the horn button (1) to sound the horn.



Using the truck on ramps

⚠ CAUTION

Excessive use of the truck on ramps is not recommended. Using the truck on ramps places particular stress on the traction motor and battery.

The truck's working range and safety factor will both be restricted.

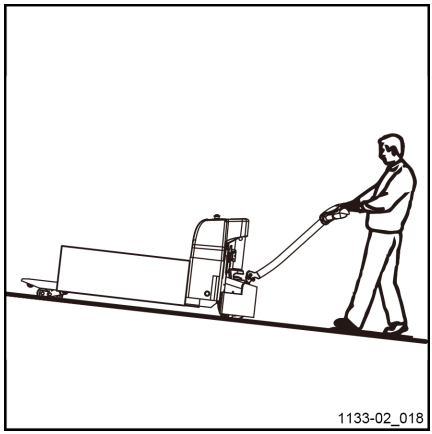
Be particularly careful near slopes:

– Never attempt to drive on a ramp with a slope greater than the maximum slope on which the truck can drive (see technical datasheet).

– Make sure that the ground is clean and has a non-slip surface, and that the route is clear.

– Traverse ramps in one go, and do not stop, turn around or drive diagonally on ramps.

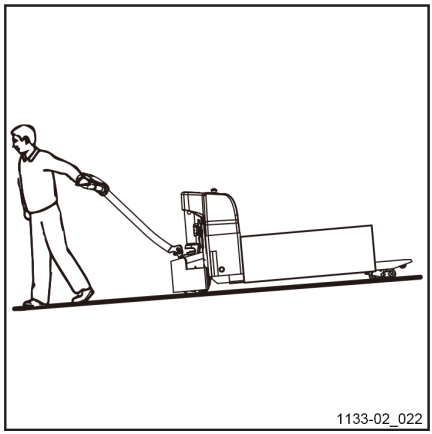
Ascending ramps



– To ascend with a load, you must travel in reverse (the load must be oriented uphill).

If there is no load, you can also ascend in the forward direction.

Descending ramps



⚠ DANGER

Risk to life and/or risk of serious damage to equipment.

Never park the truck on a ramp. Never make a U-turn or take shortcuts on a ramp. The operator must drive very slowly on ramps.

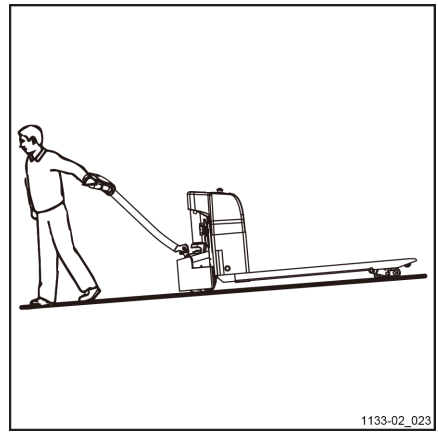
⚠ WARNING

Risk of serious injury and/or serious damage to equipment.

For safety reasons, do not park a loaded truck on a ramp with a slope greater than 10%.

– To descend with a slope, always travel in the forward direction (the load must be oriented uphill).

– If there is no load, descending in the forward direction is recommended.



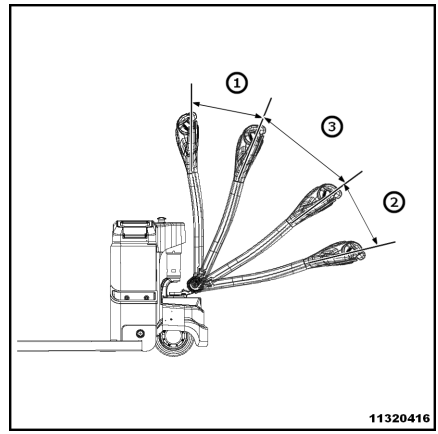
Starting to move on a ramp

If it is necessary to stop and restart the truck on a ramp, follow the procedure below:

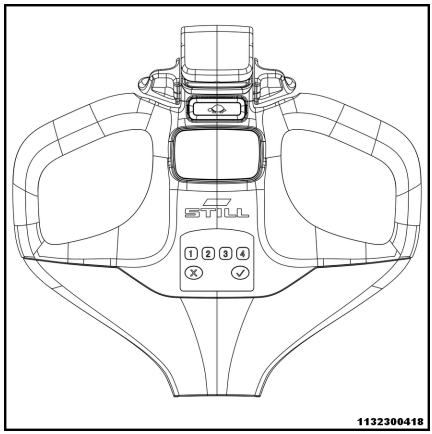
– Move the drive switch back to the neutral position and apply the parking brake to stop the truck.

– When you restart, push the tiller down into the drive zone (3) and push the drive switch in the required direction.

– The truck will start.



Password switch



NOTE

When the truck is powered up, the correct password must be entered before the truck can switch on and operate.

The truck's password switch is located on the tiller.

– After pulling the emergency off switch, enter the password on the tiller password button. The display unit screen will then light up and display the password entered, press the √ key to confirm.

NOTE

The default initial password is 1 2 3 4.

– Once the password has been entered, the buzzer will prompt as follows.

- Short beep sound: Key is valid
- Two consecutive beeps: Password unlock successful
- Long beep sound: Password unlock failure, please re-enter password
- Continuous short beep sound: Malfunction alarm

Change password

NOTE

The login password can be changed when the emergency off switch is pulled up and the truck is switched off.

– Enter 1 3 2 4 4 √. The beeper will beep once to clear the default password.

– Enter the new password, which is 4 digits long.

– Press the √ button to confirm.

NOTE

If you do not enter a new password for an extended period of time, the default login password will be restored.

Sleep and wake up

NOTE

The truck stops working continuously for 60 minutes and the tiller switches off automatically.

– Re-enter the password to unlock the truck before you can use it.

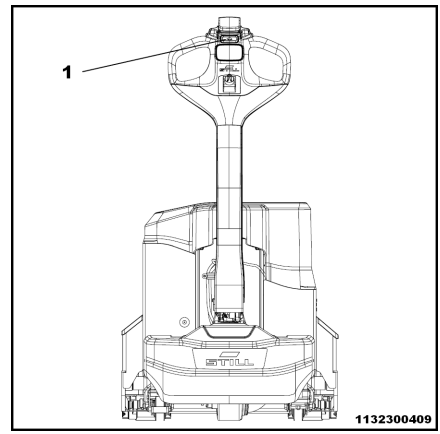
Creep speed function

Using the creep speed function, the truck can manoeuvre in confined spaces.

Creep speed driving with tiller in upright position (upright driving function)

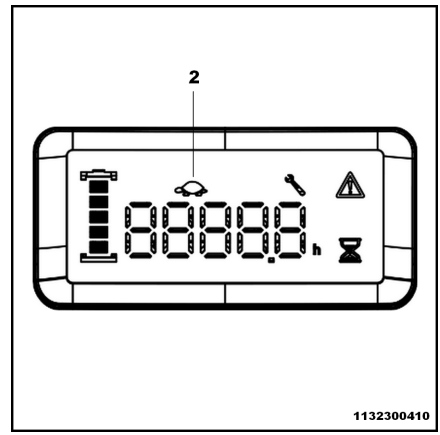
Keep the tiller in a vertical position.

– Push the creep speed button (1) (tortoise icon) on the tiller. Keep pushing the button.



– The creep speed indicator light (2) will be illuminated on the display unit.

– Gradually push the forward or reverse drive direction switches based on the operations that need to be performed.



NOTE

- *The driving speed is approximately 1.5 km/h. If you need to change the settings, contact your authorised service partner.*
- *When the tiller is in the driving position, the creep speed function is automatically invalidated.*

– Release the turtle speed button (1) on the tiller, the creep speed indicator (2) on the display unit will turn off, exiting creep speed driving mode.

⚠ CAUTION

Danger of operator entrapment.

Adjust the truck speed by gradually pushing the drive direction switch. This can prevent the truck from moving towards the operator too quickly.

NOTE

If the operator releases the creep speed button and/or the drive direction switch, the tiller reapplies the brake when in the vertical position.

NOTE

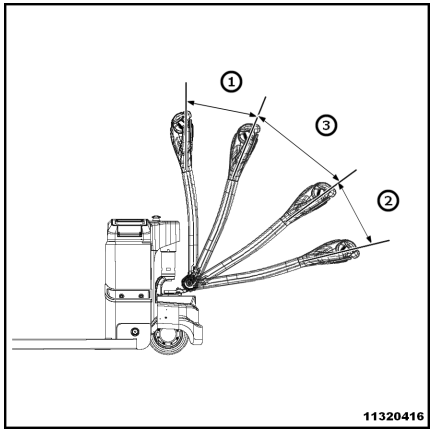
To enter the creep speed drive mode with the tiller in the upright position, the tiller must be first pushed down into the operating zone and then returned to the upright position after the truck is powered on for the first time.

Braking

Electromagnetic brake

– The electromagnetic brake is automatically activated if any of the following conditions is met:

- A serious malfunction is detected while driving.
- Push the emergency off switch.
- The drive switch is in the neutral position
- When the tiller is in the upper zone (1) or lower zone (2) and the driving speed is reduced to the set value



Regenerative braking

When driving the truck, if you release the drive switch or push the drive switch in the opposite direction, regenerative braking will automatically be applied.

Release the drive switch:

– Fully release the drive switch when driving.

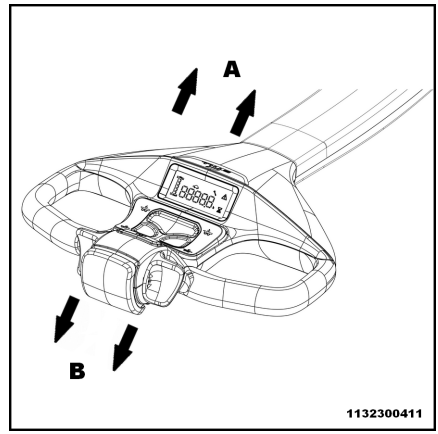
Change the drive direction:

– Press the drive switch to (A) or (B).

– Press the drive switch for the opposite direction when driving.

– Release the drive switch.

When the tiller is in the upper zone (1)or lower zone (2), regenerative braking is automatically applied.



Lifting/lowering of fork arms

NOTE

Always place both hands on the tiller when lifting or lowering the fork arms.

⚠ CAUTION

Do not hang objects on the tiller.

Lift the fork:

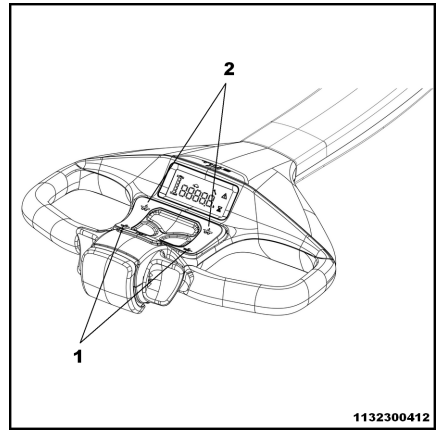
– Push the tiller down into the operating zone.

– Push the lifting buttons on either side (1) to lift the fork arms.

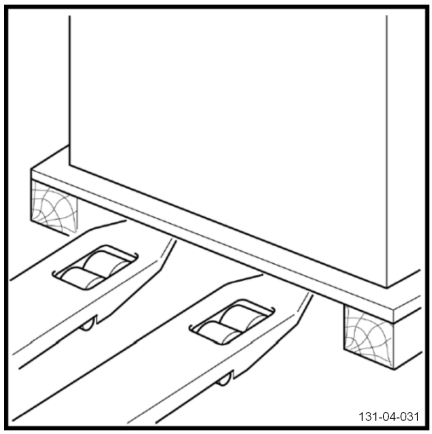
Lowering the fork arms:

– Push the tiller down into the operating zone.

– Push the lowering buttons on either side (2) to lower the fork arms.



Working with loads



⚠ CAUTION

Before picking up a load, make sure that its weight does not exceed the carrying capacity of the truck.

- Refer to the rated load capacity specified on the truck's nameplate.
- In addition, you must ensure that the load remains stable, balanced and reliably attached to the two fork arms, and that it is centred between the two fork arms, to avoid dropping part of the load.
- Check that the width of the load is suitable for the width of the fork arms.
- Check and ensure that the load is intact.

⚠ CAUTION

There is a risk of injury.

You must wear safety footwear.

Transporting people is strictly prohibited.

⚠ DANGER

There is a risk of tipping.

You must reduce the speed when cornering or when on wet surfaces.

⚠ CAUTION

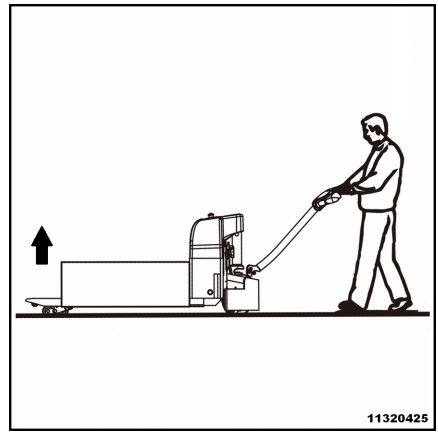
Arrangement of loads

Do not touch nearby loads, or loads that are next to or in front of the load to be moved.

There should be a small amount of space between the loads to prevent them from scratching each other.

Lifting a load from the ground

- Approach the load carefully.
- Lower the fork arms until they can easily be inserted into the pallet.
- Insert the fork arms below the load.
- If the load is shorter than the fork arms, one end of the load can hang over the end of the fork arms by a few centimetres. These precautions can prevent scratching of the load in front of it.
- Raise the load a few centimetres above the ground.
- Slowly remove the load in a straight line.



Transporting a load

⚠ DANGER

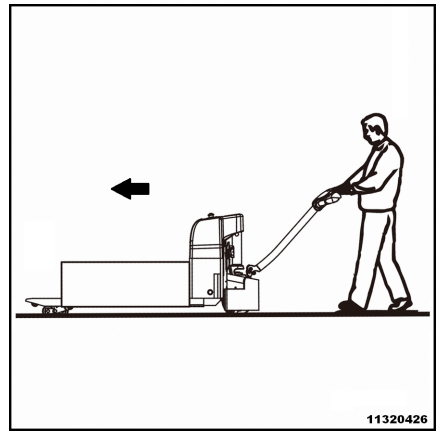
Danger of accidents

When driving in the direction of the fork arms, the load must not obstruct the driver's field of vision.

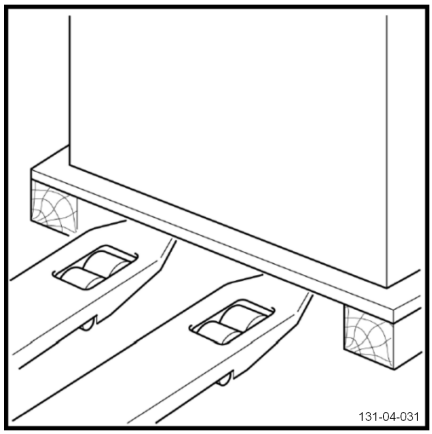
- When traversing ramps with a load, whether ascending or descending, always make sure that the load is facing uphill. Never cross ramps diagonally or make U-turns on ramps.
- To avoid obstacles, raise the fork arms slightly to increase the ground clearance.

⚠ CAUTION

Never drive the truck with the fork arms loaded and the forks lowered to the position-related traction cut-out.



Placing the load on the ground



– Carefully drive the truck to the intended location.
– Carefully place the load in the intended zone.
– Lower the load until the fork arms are free.
– Drive back the truck in a straight line until the forks are completely clear of the load.
– Lift the fork arms by a few centimetres.

⚠ CAUTION

Be careful not to touch nearby loads or those behind the truck.

⚠ DANGER

Danger of accidents

Ensure that there is no one under or near the pallet when the load is in the high position.

Jacking up the truck

⚠ 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.

Hoisting a truck

⚠ DANGER

Risk of forklift fall-through

Only use slings and hoists with sufficient load capacity.

Check the weight of the vehicle (including the battery) to select suitable equipment.

See Technical Datasheet.

⚠ DANGER

Risk of fall-through

When hoisting the truck, make sure that no one is under or near the truck.

– Lower the forks.

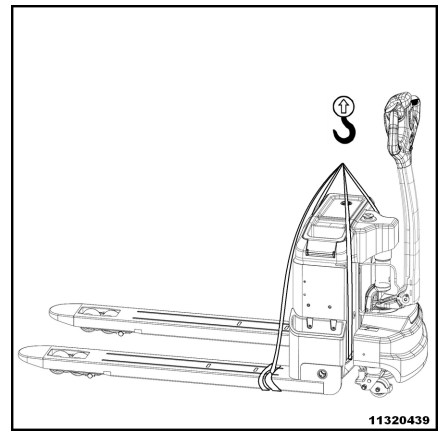
– Turn off the truck and disconnect the battery plug.

– Remove any items that may fall on the truck.

– Protect all components that come into contact with the lifting device.

– Attach four 2 to 3 metre-long slings to each of the four hoisting points.

– Connect hoisting equipment.

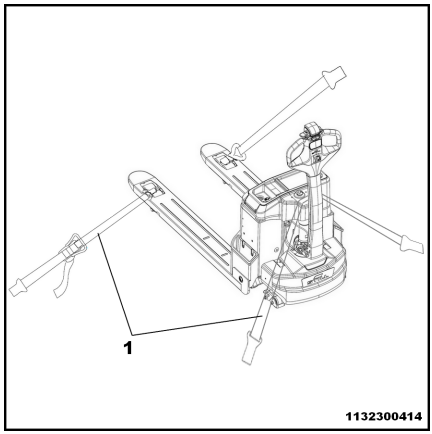


NOTE

Never hoist the truck by the tiller.

– Carefully hoist the truck.

Truck transport



⚠ WARNING

When transporting the truck, secure it correctly to avoid movement.

– Lower the forks and park the truck safely.
– Hang a tension belt(1) on the truck and secure it to the securing ring of the transport vehicle.
– Use chocks to prevent the truck from moving.
– Tighten the tension belt(1) with a tensioner.

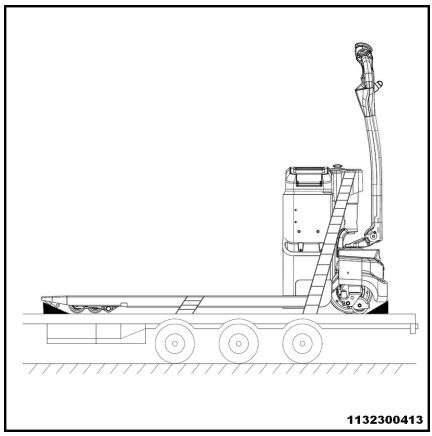
⚠ WARNING

The transport vehicle must have a retaining ring.

Use chocks to secure the truck.

Only use a tension belt or fastening belt of sufficient strength.

If required for long-haul pallet trucks, the truck must be transported on a forklift or trailer using a lifting device or platform. Before operation, securely belt the pallet truck to the transport vehicle and block the wheels to avoid relative movement during transport.

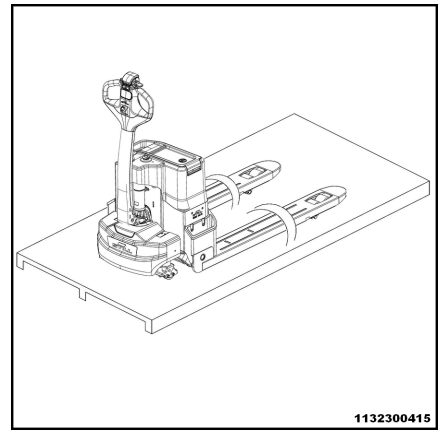


Transporting faulty trucks

In the event of truck malfunction or damage, it is not permitted to tow the truck directly on the ground, as the truck brakes are normally switched off and should be released first.

The faulty truck may be transported as follows.

– Place the truck on a wooden pallet or secure the truck with wooden blocks. Use a rope to tie the fork blades and vehicle body.



NOTE

Only use haulage equipment with sufficient load capacity.

- *The load weight is greater than the net weight of the truck (including the battery weight).*
- *The load weight does not just include the net weight of the truck, it also includes the wooden pallet.*
- *The pallet or wooden box should be large and strong enough to withstand the weight of the truck.*
- *Pay attention to the fork blades when lifting the truck onto the pallet, to prevent injuries caused by the fork blades trailing on the ground.*

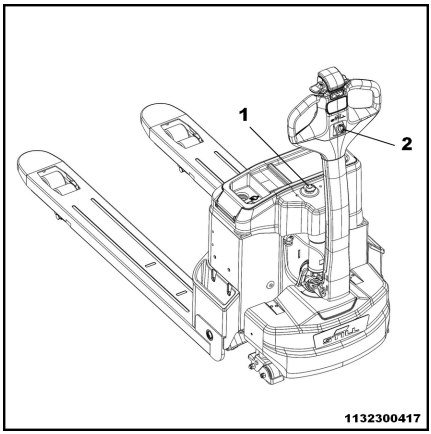
Follow the prescribed steps and park the vehicle correctly.

⚠ CAUTION

Operate on open, level ground and pay attention to ground conditions when lifting and lowering the pallet to prevent the truck from tipping.

When transporting the truck, make sure it is fully secured and take precautionary measures against bad weather.

Park the truck securely ▷



Whenever the driver leaves the truck, it must be properly parked in accordance with specifications, even if you are only exiting for a short period of time.

⚠ DANGER

Risk of injury!

It is prohibited to park the truck when the lifting system is still in the raised position.

⚠ CAUTION

Always park the truck in accordance with specifications.

Never park the truck on a ramp.

– Choose a safe and flat location.
– Set down the load and lower the fork carriage completely.

The fork arms must be lowered to the lowest position.

– Apply braking.
– Turn the switch key (2) counterclockwise to switch off the truck.
– Press the emergency off switch (1).
– When exiting the truck, remove the key from the switch (2).
– If the truck has been parked for more than a week, unplug the battery.

Decommissioning and storing

– If the vehicle has been parked for more than a month, it must be placed in a dry, frost-free environment.
– Clean the truck carefully.
– Check the hydraulic oil level and top up if required.
– Coat any unpainted metal parts with a thin layer of oil or grease.
– When not in use for long periods of time, try to remove the battery.
– Charge the battery regularly as required in the battery manual. This is to prevent it from automatically discharging to a certain extent, and needing to be disposed of.
– Lift and chock the truck: The wheels must not touch the ground, to prevent irreversible tyre distortion.

⚠ CAUTION

Follow the instructions above to ensure that the truck maintains good performance when it is put back into operation.

Recommissioning after parking

- Clean the truck thoroughly.
- Lubricate the truck according to the lubrication diagram.
- Charge the battery.
- Check whether the hydraulic oil contains condensation water. Change the hydraulic oil if necessary.
- Carry out a functional test of the truck.
- Put the truck into service in accordance with the operational manual's instructions.

Disposal of old trucks

The disposal of old trucks is regulated in directive 2000/53/EC from the European Parliament and Council.

We therefore recommend having this work carried out in an approved recycling plant.

If you would like to carry out this work yourself, you must obtain approval from the relevant authorities as per articles 9, 10 and 11 of directive 75/442/EEC.

You must also observe the following minimum requirements:

- The locations where old trucks are stored must be areas that are suitable for this task. These areas must be equipped with waterproof surfaces. These areas must also be equipped with collection devices and separators for leaking fluids and degreasing cleaning materials.
- Processing areas must have the same features (waterproof surfaces, auxiliary devices for collecting and separators). In addition, there must be sufficient storage for disassembled parts with some oil staining and for the pneumatic tyres. Fire protection measures must also be taken. Storage tanks that are suitable for liquids such as hydraulic oil must also be provided.
- To dispose of harmful substances from old trucks, the batteries must be removed. Oils must also be removed, collected and stored separately.
- The following parts must be collected separately and recycled: metal components containing copper and aluminium, pneumatic tyres, large plastic components (consoles, fluid containers), etc.

NOTE

The operating company is responsible for adherence to the directives as well as additional country-specific regulations.

Lithium-ion battery

Safety instructions

NOTE

For trucks with lithium-ion batteries, special safety regulations must be observed. A lithium-ion battery label is attached to the truck.

NOTE

For trucks with optional lithium-ion battery, separate instructions for use of the lithium-ion battery are provided with the vehicle.

- **Please read this lithium ion battery manual carefully before use.*
- *Follow the information in the lithium-ion battery operating instructions.*

For your personal safety, please carefully read and observe the following lithium battery safety instructions:

DANGER

Live device, do not touch!

Do not touch the positive and negative terminals of the battery compartment with both hands at the same time.

DANGER

Do not rinse!

Avoid high-voltage components when washing the truck to avoid adverse consequences caused by contact with water.

DANGER

No metal objects or watches!

Be sure to wear insulated gloves and not wear watches or other metal accessories when operating and maintaining the battery system.

⚠ CAUTION

Flammable and explosive

The battery system should be working in an environment far away from highly corrosive or flammable substances and fire.

– Other Precautions for Lithium Batteries: ▷

NOTE

- *Handle with care*
- *Up*
- *Keep away from any sources of heat or radiation*
- *Not suitable for moist environments*
- *Do not roll over*
- *Keep note the temperature limits*

Emergency handling plan

Scenario: Extreme emergency

In the course of using the truck, it is important to maintain safety awareness and avoid prohibited operations. Avoid abuse use of the battery system (overcharging, overdischarging, short circuit, squeezing, perforating, overly hot environments, large current discharging etc.). Common faults with the power battery system when charging or using the battery include:

- Rapid temperature increases with the battery system or local areas
- Any part of the battery system has an abnormal smell
- Any part of the battery system fumes or catches fire

Step 1: The driver should quickly exit the truck and call the police if the situation so requires.

Step 2: Implement the following operations as long as personal safety can be maintained:

1. If the battery wiring harness catches fire, extinguish the fire with a carbon dioxide or dry powder fire extinguisher.

2. If the battery catches fire, use a high-pressure water gun over a long distance to extinguish the fire.

3. If you should accidentally inhale smoke, leave the area immediately and seek medical attention.

Step 3: Contact the authorised service partner of the truck to get professional handling advice.

⚠ CAUTION

If the fire is caused by abnormal charging, be sure to switch off the power supply first and then proceed accordingly.

Instructions for using the battery system

Battery temperature properties

- Permissible ambient temperature for discharging: -20℃~55℃
- Permissible ambient temperature for charging: 0℃~45℃
- Ambient temperature for storage: 5℃~45℃

Checks before use

- Charge the battery to 100% before using the truck for the first time.
- After the battery is switched on, check that the display shows no battery system warnings.
- Check the residual charge before using the battery. It is recommended to use the battery when the SOC is between 50% and 100%.
- Do not use the battery if the SOC is below 20%. Please charge the battery as soon as possible.

⚠ CAUTION

When you receive a prompt indicating low lithium battery level, charge the battery as soon as possible to avoid over-discharging, which may cause the battery to be unable to recharge. If the battery is unable to recharge after over-discharging, contact your authorised service partner for assistance.

Long-term storage

- Before long-term storage, make sure that the battery system has a battery level of 50% to 80%.
- Perform charge maintenance once every three months.
- Before using the battery system again after three months' storage, check the battery system for fault warnings. If there is any fault warning, contact your authorised service partner for maintenance.
- The storage environment should dry (humidity < 85%) and ventilated, away from heat sources.

Checking the battery level ▷

⚠ CAUTION

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

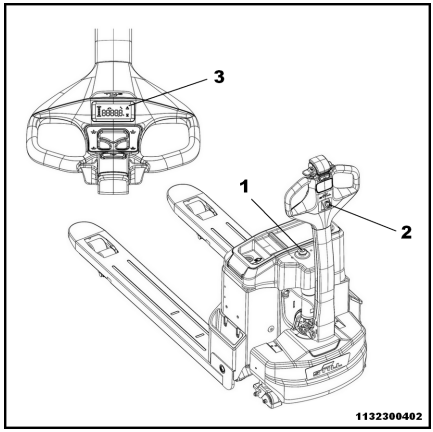
When the charge is below 20%, it is not recommended to continue using the truck. Charge the battery as soon as possible.

Do not completely discharge the battery.

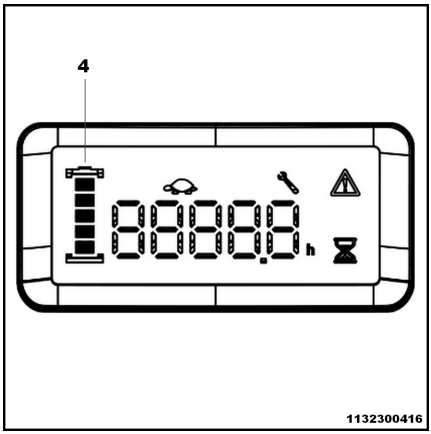
Charge the trolley immediately after use in a low-temperature environment below 0℃.

– Pull the emergency off switch (1).

– Turn on the key switch (2).



– Check the residual charge on the tiller display unit screen (3). ▷

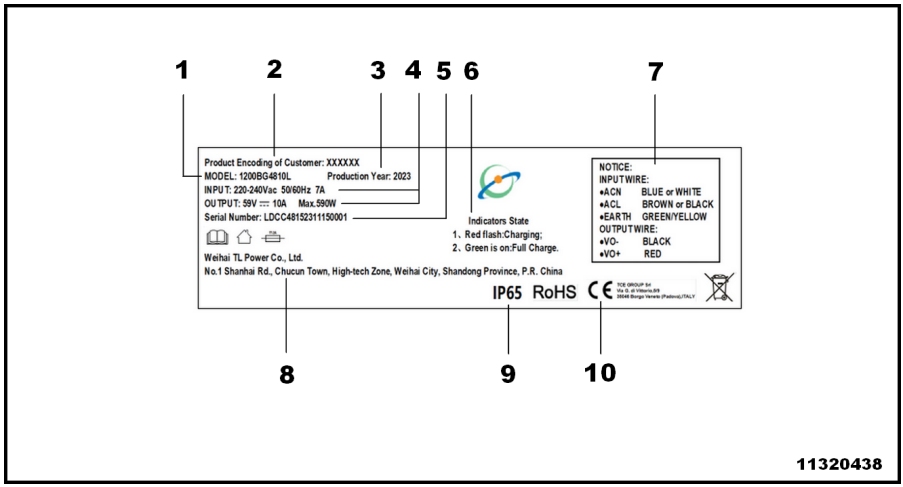


NOTE

It is recommended to use the truck with a residual charge percentage (4) between 50% and 100%.

– Check the confirmation display screen for battery system malfunction messages.

Onboard charger



1	Model	6	Indicators state
2	Product encoding	7	Notice for wire color
3	Production year	8	Manufacturer information
4	Electric data	9	IP Protection class: IP65
5	Serial number	10	CE mark

This battery charger is suitable for operation using the public 220-240 V socket. The socket must meet the following requirements and undergo regular, professional testing:

– Fuse protection with max. primary current: 10A.
– Fuse protection - type fuse: gL fuses can be used or circuit breakers with B or C characteristics in accordance with EN 60898.
– Fault-current circuit breaker - type: A.

Precautions for using on-board chargers

⚠ DANGER

The housing of the onboard charger must not be opened, as there is a danger to life due to the high voltages inside.

In the event of non-compliance, the warranty will be voided.

When using the charging cable, keep the following in mind:

– Lay the charging cable without heavy mechanical stress, e.g. pulling.
– Protect the charging cable from mechanical stress. For example, no traffic routes may be or placed over sharp edges.
– Before using the charging cable, open the plugs and the connection sockets. Check for damage.
– If any damage is found, do not use the affected components (this applies to the charging cable and the charger socket).

⚠ DANGER

Plugs that are not fully plugged in can heat up excessively. They pose a fire hazard.

Always plug the mains plug and the vehicle plug of the charging cable completely into the respective plug in the socket.

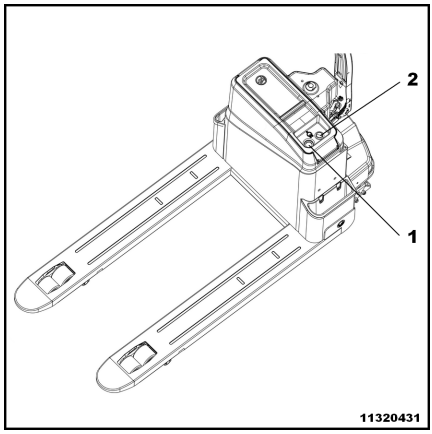
⚠ WARNING

Do not unplug the power supply under load, as it will wears excessively, thus creating a fire hazard.

If the power plug is to be unplugged before the end of charging, stop charging manually cancel beforehand.

If the charging plug is disconnected during charging (under load), an arc is created. This can lead to burn on the contacts, which significantly shortens their lifespan and poses a fire hazard. In addition, the forklift electronics can be damaged by the resulting over voltage.

Lithium-ion battery charging ▷



⚠ DANGER

Improper charging may damage the battery or render it unusable.

Only use the manufacturer-approved charger to charge the lithium-ion battery.

See the lithium-ion battery user guide.

⚠ CAUTION

If a malfunction warning appears during charging, both the battery system and the charger will stop charging.

When a malfunction appears, promptly contact your authorised service partner.

NOTE

Before charging, park the truck in a safety area dedicated to charging.

- *The charging environment should be dry and ventilated, with no flammable or explosive substances nearby.*

– Park the truck directly next to a power socket.

– Lower the fork arms, unload the load and switch off the truck.

– Connect the battery charging plug (1) on the truck to the charging power source. The battery will start charging.

– During the charging process, the charging indicator light (2) is illuminated.

- Charging indicator light flashes red: Charging is in progress.
- Charging indicator light is solid green: Fully charged.

⚠ CAUTION

To protect the battery, if charged when the charger level is above 75%, the charge level shown on the display unit will not be able to reach fully charged status

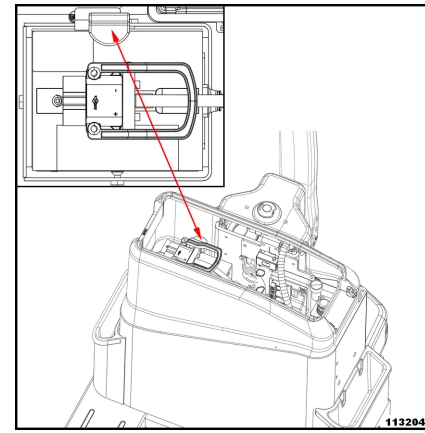
– When the charge indicator light (1) turns green, the charger enters a floating status to protect the battery from damage.

– When charging is complete, disconnect the battery charging plug from the charging power source.

Battery locking devices

Battery locking

▷



– Turn the knob to the locked state(1), the battery is locked.

⚠ CAUTION

During operations to lock and insert the battery, keep your fingers away from moving components to avoid any risk of them being trapped.

We recommend the use of gloves.

Unlocking battery

– Turn the knob to the unlocked state(2), the battery is unlocked.

⚠ DANGER

Risk of injury

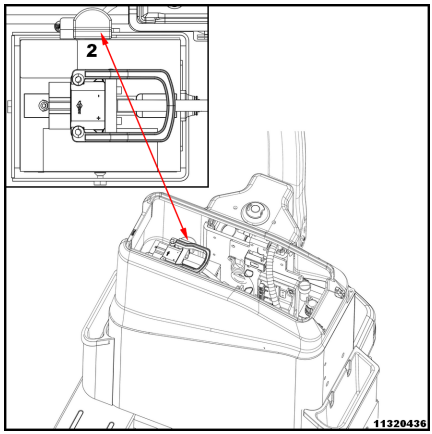
Do not use the truck when the battery is unlocked.

⚠ CAUTION

Make sure the battery is correctly locked in position.

Once the battery is unlocked, it can be moved.

Only locking the battery correctly prevents it from being accidentally dislodged from its compartment.



Disassembling and installing the lithium battery

⚠ CAUTION

Risk of injury

Battery components are heavy and fragile. Please handle with care.

It is recommended to wear gloves and safety shoes.

⚠ CAUTION

Danger of crushing.

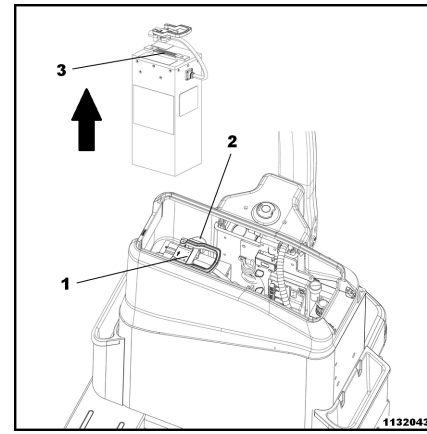
When lowering the forks, make sure that your feet are not underneath a fork.

⚠ CAUTION

Trapping hazard.

During operations to lock and insert the battery, make sure to keep your fingers away from moving components to avoid any risk of them getting trapped.

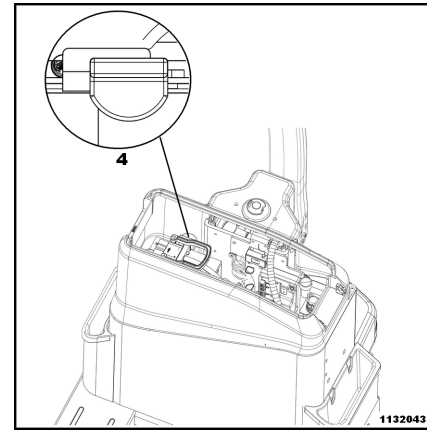
– Immobilise the truck and lower the forks.
– Switch off the truck, press the emergency off switch.
– Lift the upper cover plate.
– Use the battery plug handle to remove the battery plug (1) from the truck connector.
– Turn the battery lock knob to the unlocked state (2).
– Grasp the lithium-ion battery handle (3) and carefully pull the lithium-ion battery from the top.



⚠ CAUTION

Before pulling out the lithium-ion battery, prevent the vehicle body from tilting to guard against the risk of unexpected tipping.

– To install the lithium-ion battery, insert the lithium-ion battery into the battery holder.
– Turn the battery lock knob to the locked state (4).
– Use the battery plug handle to plug in the battery plug to the truck connector.
– Close the upper cover plate.
– The truck can be operated again.



General troubleshooting

Issue	Possible cause	Solution
The truck cannot be powered on.	The emergency off switch is pressed	Pulling up the emergency off switch
	The discharging plug connectors are not fitted into place and get loose.	Fit the plug connectors into place.
	The key switch is damaged.	Replace the key switch.
The battery cannot charge.	Physical connections are not complete or the charger is not connected to a power source.	Check physical connections and connect the charger to a power source.
	The power battery is fully charged.	When the power battery is fully charged, charging will stop automatically.
	The power battery temperature is below 0°C or above 65°C.	Allow the battery to warm up or cool down before charging. Put the battery in an environment at an appropriate temperature and wait until the battery temperature becomes normal before charging.
	There is a fault with the charger or the truck.	If the power battery system fault indictor of the display unit is lit up, or if the display unit shows charging system errors or charger errors, please stop charging immediately and contact your authorised deal for assistance.

⚠ CAUTION

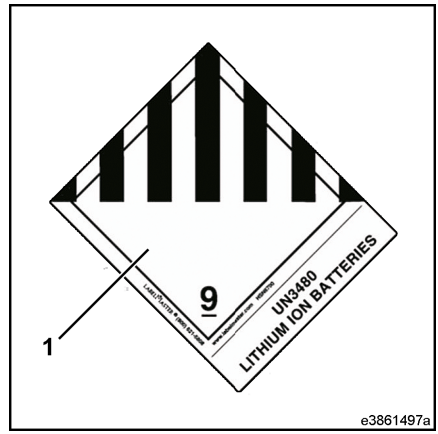
If you encounter an issue that cannot be resolved, please contact your authorised service partner for assistance. Do not try to fix the issue yourself.

Lithium-ion battery: Transporting the battery ▷

A "truck equipped with a lithium-ion battery" is transported in the usual manner. No additional measures and precautions are required.

A lithium-ion battery is a special product. Special measures must be taken when transporting the lithium-ion battery separately:

- The hazardous materials label with hazardous materials class 9 symbol (1) must be attached in a visible position on the transporting truck



NOTE

- *The applicable country-specific specifications and regulations must be observed when transporting a "truck equipped with a lithium-ion battery" and when transporting lithium-ion batteries separately*
- *The shipping company must have special knowledge about "transporting hazardous materials"*

NOTE

Special measures must be taken when transporting damaged lithium-ion batteries. For further information, contact your service partner.

5

Maintenance

General maintenance information

General

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

Maintenance should only be carried out by authorised technicians, or by authorised service partners in accordance with a signed maintenance contract.

Modifying or installing additional equipment on the forklift truck is prohibited without the agreement of the manufacturer.

NOTE

If the data plates or affixed labels are incomplete or damaged, they must be replaced with new ones. For locations and reference numbers, please see the spare parts catalogue.

⚠ CAUTION

If the forklift truck is used in an extreme environment (such as excessive heat, excessive cold or areas with high dust concentrations), the time intervals given in the maintenance tables should be reduced accordingly.

ENVIRONMENT NOTE

Please comply with regulations regarding the use, handling and disposal of fuel and lubricating oil.

The forklift must undergo functional testing and a trial run after each inspection.

Service plan

Maintenance work must be carried out according to the maintenance checklist.

The service plan is followed by advice to facilitate work.

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

Grade and quantity of lubricants and other consumables

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

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

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

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

All containers used to pour oil must be clean.

Servicing and maintenance personnel training and qualification

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

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

The person responsible for carrying out the inspection must have sufficient knowledge and experience to be able to assess the condition of the truck and the efficiency of the protective installations in accordance with the

technical regulations and principles established for checking industrial trucks.

Battery maintenance staff

Batteries must only be maintained and changed by specially trained personnel.

Personnel must follow the manufacturer's instructions of the battery, the battery charger and the truck.

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

Maintenance operations that do not require special training

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

A specific qualification is not necessary.

Complicated maintenance operations such as replacing the battery, replacing the wheels and so on should be carried out by the authorised service centre.

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

Inspection and maintenance data

Components	Item/oil	Capacity/standard value
Main hydraulic system	Hydraulic oil	0.6L
	Maximum pressure	170 bar
Drive wheel	Wheel nuts	Tightening torque: 12 Nm
Stabilising wheel	Bolt	Tightening torque: 35 Nm (tightening and Calotai 243 glue)
Brake system	Electromagnetic brake air gap	0.3 mm to 0.35 mm
Transmission system	Gear oil (fill when gearbox is replaced)	0.044 kg
Chassis system	Lubricating grease	As necessary
Fuse	F1	30 A
	F2	10 A

Recommended lubricating oils

⚠ CAUTION

The use of non-recommended lubricating oils may damage the equipment.

Use only recommended lubricating oils. Only the lubricating oils listed below are approved by the manufacturer. Do not mix lubricating oils. If in doubt, contact your authorised service partner for replacement.

Hydraulic oil

Recommended lubricating oils for standard conditions:

ISO-L-HM 46 in accordance with ISO 6743-4, or ISO VG46-HLP in accordance with DIN 51524-2

Recommended lubricating oils for cold store version:

ISO-L-HM 32 in accordance with ISO 6743-4, or ISO VG32-HLP in accordance with DIN 51524-2

Gear grease

Lubricants recommended for gearbox replacement:

KP2N-20 is used according to DIN 51825

Multi-purpose grease

Lithium grease containing EP additive and MoS 2 **KPF 2 N - 20**, in compliance with DIN 51825 standards.

ENVIRONMENT NOTE

Used oil must be stored safely until it is disposed of in compliance with environmental protection measures. Make sure that no one can come into contact with the used oil. Do not dispose of used oil in drains or allow it to penetrate soil.

Regular maintenance

The following maintenance will help in improving the truck condition and ensure its functionality.

Complete this work as regularly as possible, in accordance with the operating environment.

- Clean the truck (as required)
- Check the balance wheels for wear
- Lubricate all connections and bearings of the truck
- Check the condition of the spring pins, snap rings
- Check the harness connections and tightness of electrical components and adjust tightness if needed
- Check the hydraulic cylinder and pistons for damage, noise and leaks

Lithium-ion battery

- Clean the lithium-ion battery
- Check the housing appearance: Check the battery system housing for debris, obvious deformation, rust and other abnormal conditions
- Charging port: Turn off the battery system and check the charging port for debris, rust and other abnormal conditions
- Plug connectors: Turn off the battery system and check the plug connectors for looseness, damage or other abnormal conditions
- Check the display unit for lithium-ion battery error codes and make sure that the battery is in normal condition

NOTE

If any problems are found during the inspection, please contact your authorised service partner.

Service plan table

Maintenance precautions
Servicing work requires specialised knowledge and special tools. Please contact an authorised service partner.

Preparations
Clean the truck (as required).
Check that all labels are complete and legible.

Perform maintenance every 1000 operating hours or at least every 12 months.
Chassis frame and transmission system
Check the gearbox for noise and leakages.
Check the wheels for deformation and damage.
Check the balance wheel for wear and replace if necessary.
Test the emergency stop function.
Test the reverse and regenerative braking function.
Check the steering function.
Chassis and bodywork
Check the chassis for deformation and cracks.
Check the panelling for deformation and damage, and replace if necessary.
Check whether all screws are tightened.
Check the connecting rod for deformation and damage.
Lubricate all connections and bearings of the truck
Check the condition of the spring pins and circlips and replace if necessary.
Driver's compartment
Check that the horn function is working normally.
Test the function of the (belly) safety button.
Check the function of the tiller interlock switch.
Electrics-electronics

Perform maintenance every 1000 operating hours or at least every 12 months.
Check the cables for damage.
Check the function of the emergency off switch.
Check the electric traction motor for noise and damage.
Check that the display is working normally.
Check that the fuses are fastened.
Check the soft starter
Check the function and mechanical wear of the drive switch.
Check the harness connections and tightness of electrical components and adjust tightness if necessary.
Check the battery's voltage.
Check the terminals for corrosion and damage.
Check the battery housing for damage.
Check the main power cable for damage.
Check the startup protection function while charging.
Hydraulic system
Check the hydraulic cylinder and pistons for damage, noise and leaks.
Check the hydraulic connections and hoses for damage and leakage.
Check the hydraulic oil level and top up if necessary.
Lifting system
Check the fork arms for deformation and cracks.
Check the lifting and lowering function.
Subsequent tasks
Check that all labels are clear and complete.
Perform a test run.

Perform additional maintenance every 2000 operating hours or at least once every 2 years.
Hydraulic system
Change the hydraulic oil

Maintenance work

Cleaning the truck

Disconnect the battery before cleaning.

Extreme care should be taken when using steam jet cleaners or products with strong decontamination effects. They may dilute the grease in the sealed lubrication bearings and the bearings cannot be relubricated. These cleaning methods damage the bearings.

⚠ CAUTION

When using cleaning equipment, do not spray directly onto electrical and electronic components, electric motors, and insulation plates. Please protect these components before cleaning.

⚠ CAUTION

Using compressed air

It is recommended to wear goggles and a protective mask.

If using compressed air, first remove stubborn dirt with a cold cleaning material.

Before lubrication, please clean thoroughly: the cleaning material and grease filling opening.

- Oil filling opening and its surrounding areas
- Lubricating nipple

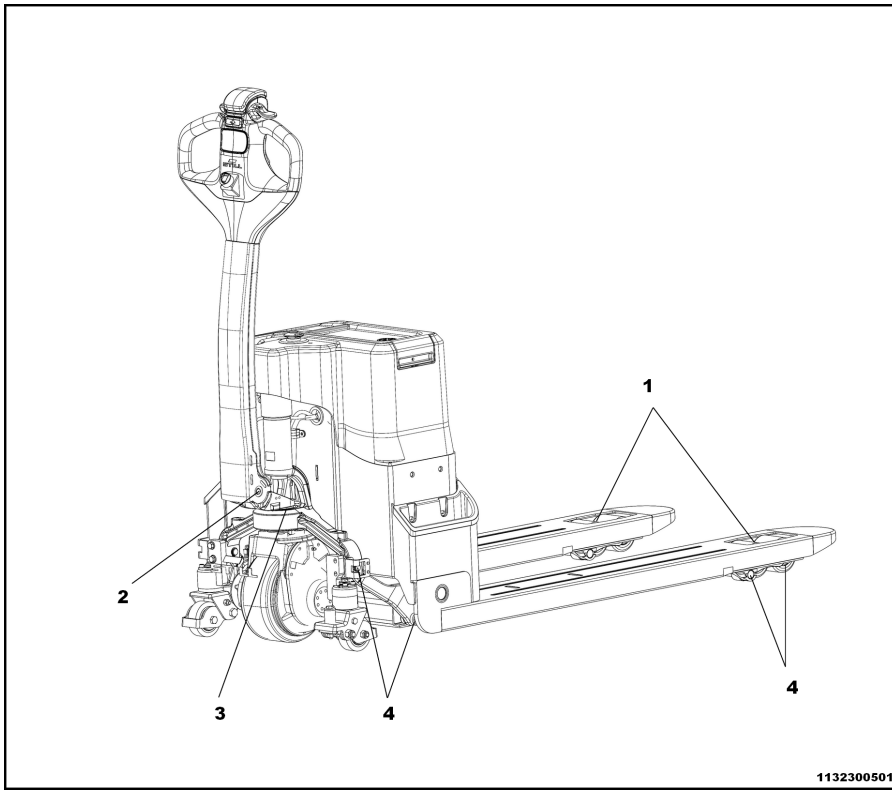
Dry the truck after cleaning.

If water still seeps into the motor after comprehensive protective measures are taken, the truck must be operated. This can prevent rusting (drying by self-heating). The motors may also be dried with compressed air.

NOTE

If a truck is cleaned frequently, it must also be greased more often.

Lubrication point



1	Shaft	3	Steering bearing
2	Connecting pin	4	Shaft

NOTE

- *Lubricate the marked points according to the maintenance checklist.*
- *Only apply grease to (2), (3) and (4) after part maintenance or replacement.*

Checking the hydraulic oil level

ENVIRONMENT NOTE

Observe information regarding the use of consumables.

To check the hydraulic oil level, please perform the following steps:

– Stop the truck and lower the forks.

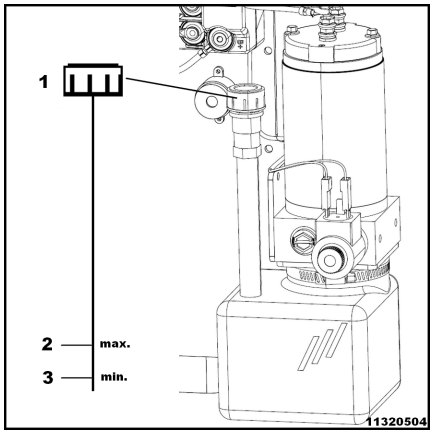
– Switch off the ignition and remove the key.

– Press the emergency off switch.

– Lift the upper cover plate.

– Disconnect the battery male connector.

– Unscrew the filler port cap(1)and check the hydraulic oil level through the dipstick. ▷



The hydraulic oil level should be(3)(2)between the minimum and maximum marks on the dipstick.

– If necessary, pour hydraulic oil to the appropriate level through the filler opening.

– Refit the filler port cap.

⚠ CAUTION

Risk of damaging components.

Only use hydraulic oil that complies with the specifications (see the "Recommended Lubricating Oil" section).

– Plug in the battery connector.

– Refit the upper cover plate.

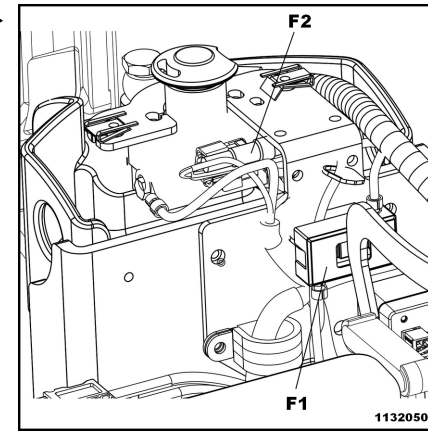
– The truck can be operated again.

Checking the fuses

Fuse	Value
F1	30A
F2	10A

– Remove the main cover.

– Replace the fuses as necessary.



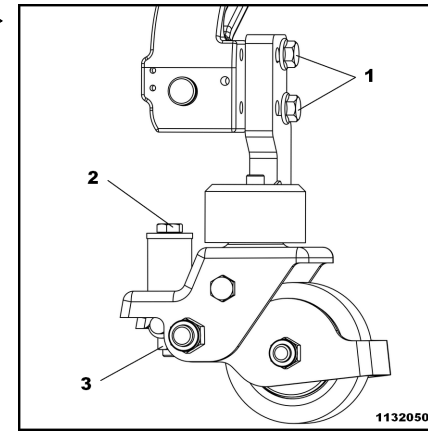
Check the balance wheels

– Check the balance wheel retaining bolts(1).

Apply Loctite 243 to the bolt when tightening, tightening torque: 35 Nm.

– Check that the balance wheels are not touching the ground.

- Check that the jam nut islocked when the flat cross wheel (3) is in contact with the ground.
- When the flat cross wheel does not touch the ground, Clockwise adjustment bolts(2), Place the balance wheels on the ground, then lock the jam nut(3).



Troubleshooting

Trouble shooting

If the truck has malfunctions:

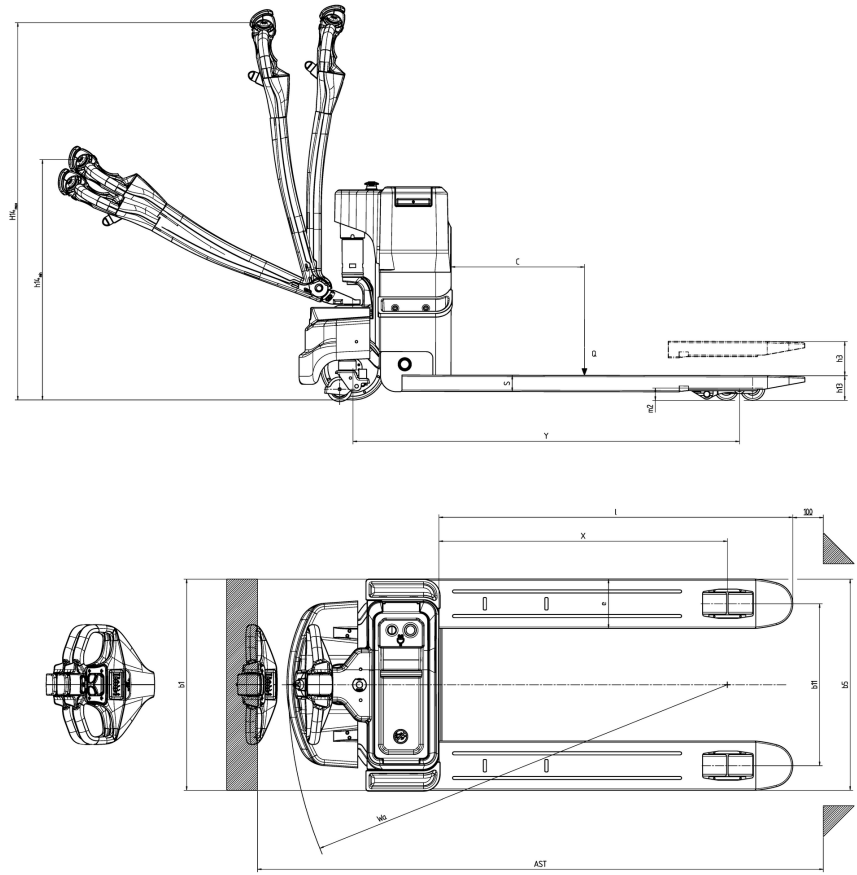
TROUBLE	CAUSE	REPAIR
Load can’t be lifted	Load weight too high	Lift only the max. capacity, mentioned on the ID-plate
	Battery discharged	Charge the battery
	Lifting fuse faulty	Check and eventually replace the lifting fuse
	Hydraulic oil level too low	Check and eventually refill hydraulic oil
	Oil leakage	Repair the hoses and/or the sealing of the cylinder
Oil leakage from air breathing	Excessive quantity of oil.	Reduce oil quantity.
Truck not starts operating	Battery is charging	Charge the battery completely and then remove the main power plug form the electrical socket.
	Battery not connected	Connect the battery correctly
	Fuse faulty	Check and eventually replace fuses
	Low battery	Charge the battery
	Combined emergency switch is activated	De-activate the combined emergency switch by insert and pull the knob.
	Tiller in the operating zone	Move the tiller firstly to the braking zone.

If the truck has malfunctions and can’t be operated out of the working zone, jack the truck up and go with a load handler under the truck and safe the truck securely. Then move truck out of the aisle.

6

Technical data

Technical datasheet



Characteristics			
1.1	Manufacturer		STILL
1.2	Model		EXH 14C
1.3	Power unit		Battery
1.4	Operation		Pedestrian
1.5	Load capacity	Q (kg)	1400
1.6	Load centre distance	c (mm)	600
1.8	Axle centre to fork face	x (mm)	935[1)]
1.9	Wheelbase: Forks up/down	y (mm)	1220/1260[1/2)]

Weight			
2.1	Service weight	kg	175[3/8)]
2.2	Axle load with load, drive/load side	kg	460/1115[3/8)]
2.3	Axle load without load drive/load side	kg	135/40/[3/8)]

Wheels and tyres			
3.1	Tyres, drive/load side		PU
3.2	Tyre size, drive side	mm	210 × 73
3.3	Tyre size, load side	mm	80 × 70
3.4	Auxiliary wheel, size	mm	80 x 30
3.5	Wheels number, drive/load side (x=driven)		1X+2/4
3.6	Drive side track width	b10 (mm)	/
3.7	Load side track width	b11 (mm)	400/525[1)]

Dimensions			
4.4	Lift height	h3 (mm)	115[1)]
4.9	Height of tiller arm in operation position min./max.	h14 (mm)	750/1185
4.15	Fork height, lowered (max.)	h13 (mm)	85[7)]
4.19	Overall length.(platform folded/lowered)	l1 (mm)	1650[5)]

Dimensions			
4.20	Length to fork face.(platform folded/lowered)	l2 (mm)	500[5)]
4.21	Overall width	b1 (mm)	560/685[1)]
4.22	Fork dimensions	s/e/l (mm)	55/160/1150
4.25	Fork spread, min./max.	b5 (mm)	560/685[1)]
4.32	Ground clearance, center of wheelbase(Full Load)	m2 (mm)	35[2)]
4.34.1	Aisle width, 1000x1200mm pallet crosswise	Ast (mm)	2219[5)]
4.34.2	Aisle width, 800x1200mm pallet crosswise	Ast (mm)	2095[5)]
4.35	Turning radius	Wa (mm)	1415[5)]

Performance			
5.1	Travel speed, with/without load	km/h	4.5[6)] / 5.0[6)]
5.2	Lift speed, with/without load	mm/s	30/35[6)]
5.3	Lower speed, with/without load	mm/s	46/33[6)]
5.8	Maximum climbing ability, with/without load	%	8/16
5.9	Acceleration time, with/without load	s	10[6)] / 9[6)]
5.10	Service brake		Electric

Drive			
6.1	Drive motor output (60 min rating)	kW	1
6.2	Lift motor output (10% rating)	kW	0.8
6.3	Battery, according to DIN 43 531/35/36 A, B, C, no		no
6.4	Battery voltage/rated capacity (20h)	V/Ah	48V/20 Ah
6.5	Battery weight (±5%)	kg	14
6.6	Power consumption according to VDI cycle	kWh/h	0.13

Other			
10.7	Sound level at driver's ear	dB(A)	66

Figture for standard version may vary when options equipment was fitted.

1) (+/-5mm)

2) Forks raised/lowered

3) (+/-5%)

4) Solid polyurethane+polyurethane

5) (+/-1%)

6) (+/-10%)

7) Tolerance (0 to -5mm)

8) Based on 560 type

Description of technical datasheet

⚠ CAUTION

The parameters listed in the technical datasheet are examples of parameters for a specific configuration model in this range and are for reference only.

The model configuration delivered to the user may differ from the technical datasheet. For details, please refer to the forklift product datasheet provided with the vehicle or in the sales contract/quotation signed externally by the manufacturer or with the delivery receipt.

Eco-design requirements for electric motors and variable speed drives

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

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

Eco-design requirements for electric motors and variable speed drives

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STILL GmbH

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