Original instructions

Electric pallet truck

ECH 12C, ECH 15C



CE

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first in intralogistics

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Rules for the operating company of industrial trucks

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

This guide provides information for handling industrial trucks:

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

Internet address and QR code

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

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1

Foreword

Your truck

Technical description

This series of electric pallet trucks is used for handling pallets and has a maximum load capacity of up to 1200 and 1500 kg , depengding on the model.

The truck range includes the following models: ECH12C, ECH15C.

Design

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

The polyurethane cowling provides superior stability and shock resistance.

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.

Ergonomic, suitable for left and right-handed operators. The push-buttons for the horn, lifting and lowering can be operated using one hand without changing grip.

The anti-crush button integrated into the tiller head protects the operator if the vehicle recoils.

Driving

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.

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

24 V/20 Ah maintenance-free lithium battery.

The power indicator light displays battery power.

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

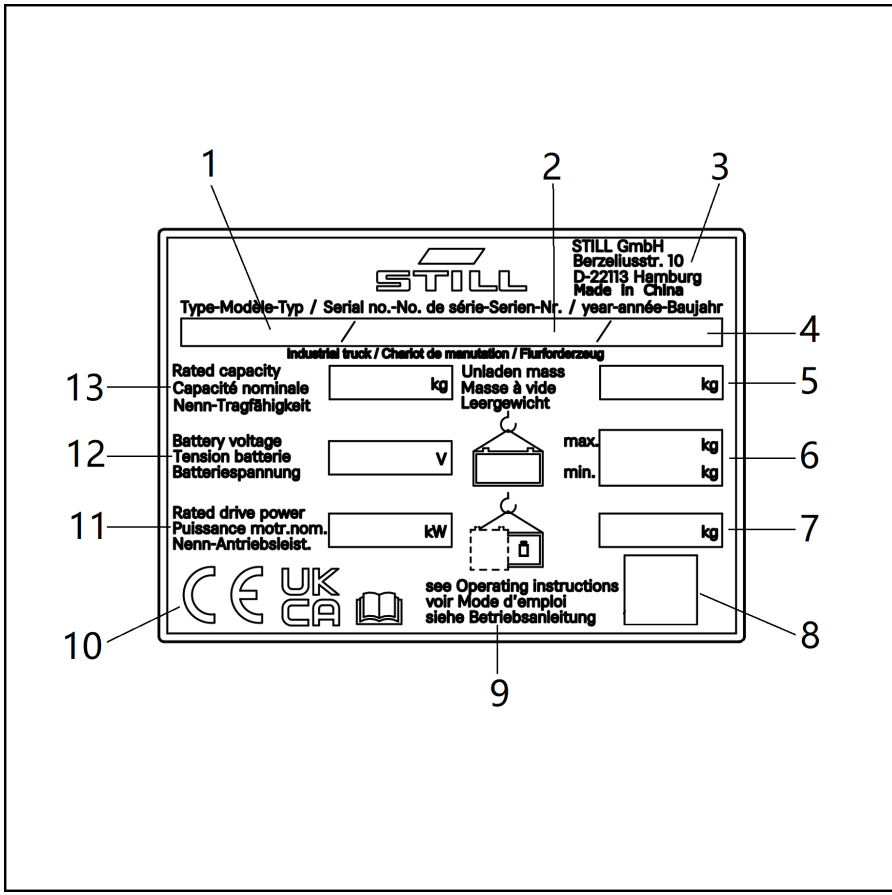
[1)] For the markets of the European Union, the EU candidate countries, the EFTA States and Switzerland.
[2)] For the United Kingdom market.

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

Normal use

– Indoor and outdoor use.

– Normal operating ambient temperatures: 5°C~` 40 °C . Due to the characteristics of the lithium battery, the truck is suitable for the best ambient temperatures from +15°C to +35°C.

– Use at up to 2000 m above sea level.

– This truck is suitable for driving on solid, flat, level and well-laid road surfaces (includes travelling and lifting) and transporting goods.

– Use the truck properly to avoid being crushed by the drive wheel.

– Do not use the truck to carry passengers.

– Do not drive on slippery surfaces such as grease etc.

NOTE

The operating temperature of the lithium-ion battery is divided into charge temperature requirements and discharge temperature requirements:

- *Charging temperature range is 0°C to 40°C. Charging at below 0°C can cause damage to the battery. The recommended charging temperature range is 5°C to 40°C.*
- *Discharging temperature range is -20°C to 55°C. If lithium-ion batteries are used at a low temperature of -20°C to 0°C, the discharge rate will be increased. Spending a long period of time between 40°C and 55°C will accelerate the ageing of a battery's internal materials and may shorten battery life. Batteries are therefore not recommended for prolonged use in low or high temperature environments. We recommend that the suitable operating temperature for batteries is 0°C to 40°C.*

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

These operating instructions, which come with the truck, 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 all the safety information.

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

- Information concerning the use of materials handling 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 concerning 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 use of material-handling trucks.

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

- 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.

Vibrations

Vibrations to which the hands and arms are exposed

The following value is valid for all truck models:

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

NOTE

It is mandatory to specify the hand-arm vibrations, even where the values do not indicate any danger, as in this case.

⚠ CAUTION

The value expressed above can be used to compare forklift trucks of the same category. It cannot be used to determine the operator's daily exposure to vibrations during real operation of the truck; these vibrations depend on the conditions of use (floor conditions, method of use etc.) and therefore daily exposure must be calculated using data from the place of use.

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".

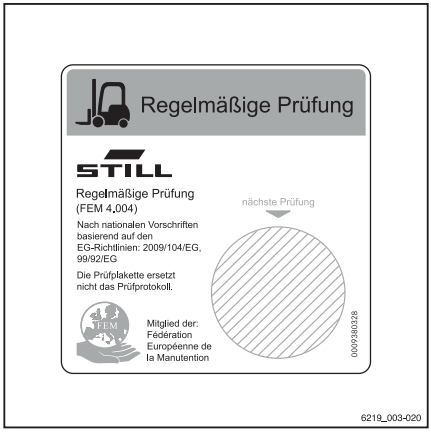
The design and equipment of the truck comply with the standards and directives required for CE conformity. The design and equipment also comply with the standards and directives necessary for the UKCA compliance that is required in the United Kingdom. The design and equipment are therefore not part of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

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

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.

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.

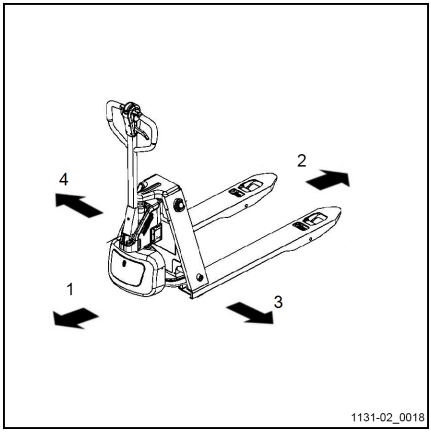
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Views

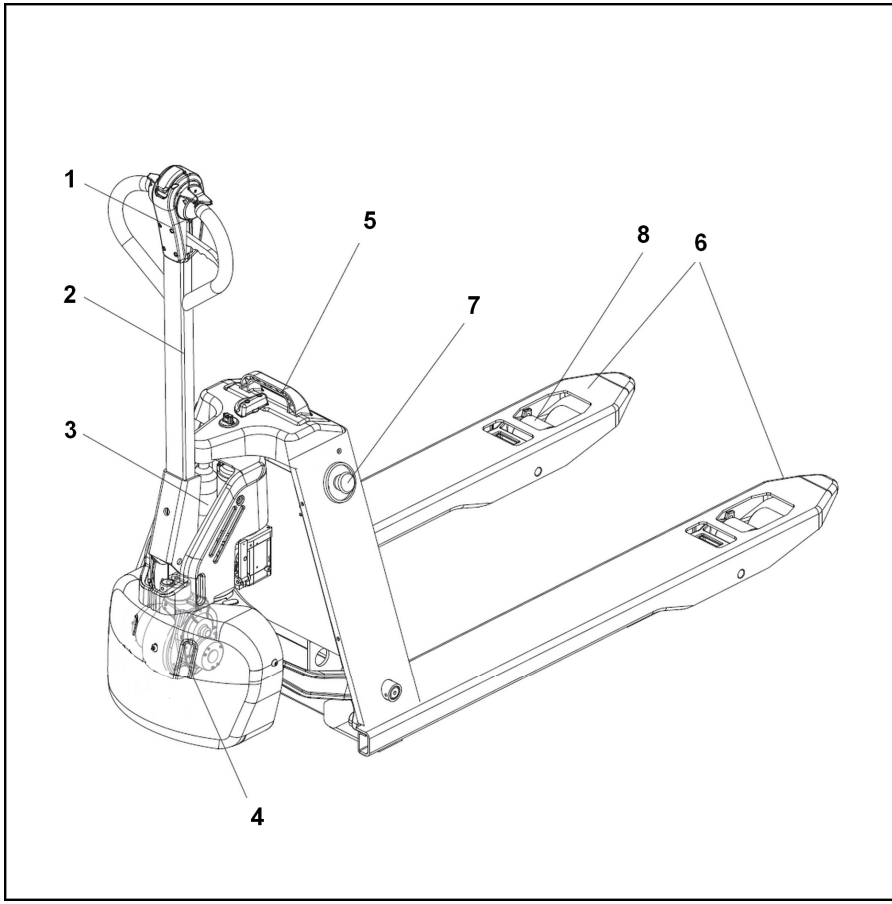
Drive directions

The drive directions of the truck :

- Forward (1)
- Reverse (2)
- Left (3)
- Right (4)

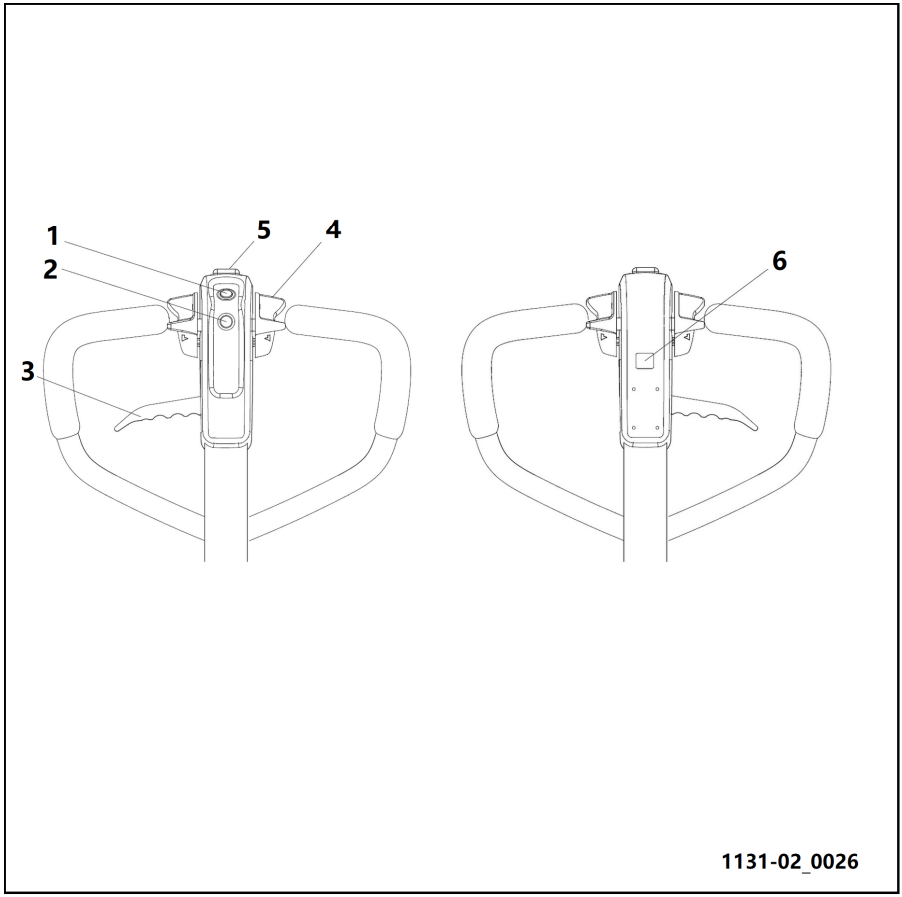


Overview of main components



1	Control handle	5	Lituium-ion Battery
2	Control lever	6	Forks
3	Lift cylinder	7	Emergency stop switch
4	Driving wheel	8	Load wheels

Control handle_plug model



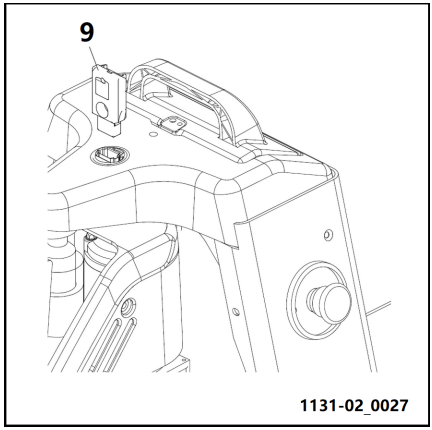
Item	Control / Display	Function
1	"Horn" button	Activates the horn.
2	"Lifting" button	Press the lift button. The forks will be lifted to its maximum height and stop on its own.
3	Lowering lever	Pull the lowering lever and hold. The forks will be lowered to its minimum height and stop on its own.
4	Drive switch	Select the required driving direction and speed.
5	Emergency reverse switch	By pressing this switch, the vehicle starts to travel in the opposite direction.
6	Creep speed switch	Keep the handle in the vertical state, and press creep speed switch and drive switch at the same time, then the vehicle will move at a low speed.

Key switch

Turns the control current on and off.

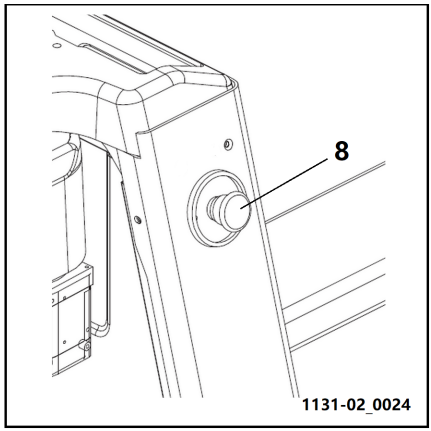
– Insert the key switch(9) to turn on the truck's power supply.

– Remove the key switch (9) to turn off the truck's power supply.



Emergency off switch

The vehicle's electrical system circuits will be disconnected when you press this switch (8). All electrical functions will be stopped and the vehicle will be forced to perform an emergency stop.



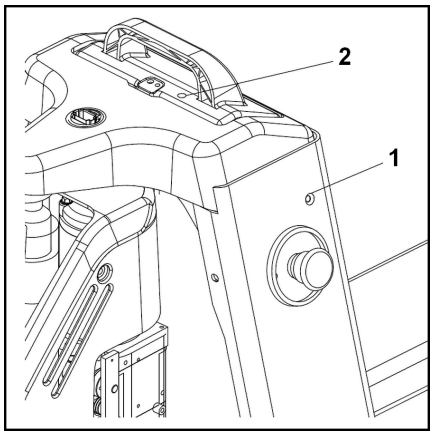
Indicator light

Error report light

The LCD (1) remain green light lit under normal, flashing show the failure state of truck.

Charging indicator

The LCD display (2) show battery residual capacity.



The color of the LCD (2) represent the following conditions:

Component	LCD color	Residual capacity
Standard battery residual capacity	Green	30-100%
	Continuous Yellow	15-30%
	Quick flashing red light (Flashing period 2s)	7-15%
	Slow flashing red light (Flashing period 1s)	0-7%

⚠ WARNING

After the yellow light is lit, Please charge the battery immediately to avoid truck power off or shorten the life of battery.

NOTE

After the red light starts flashing, the battery will enter the low-voltage protection state. According to the battery state, The truck will appear accidental power-off protection. Please charge the battery after restarting to avoid damage to the battery.

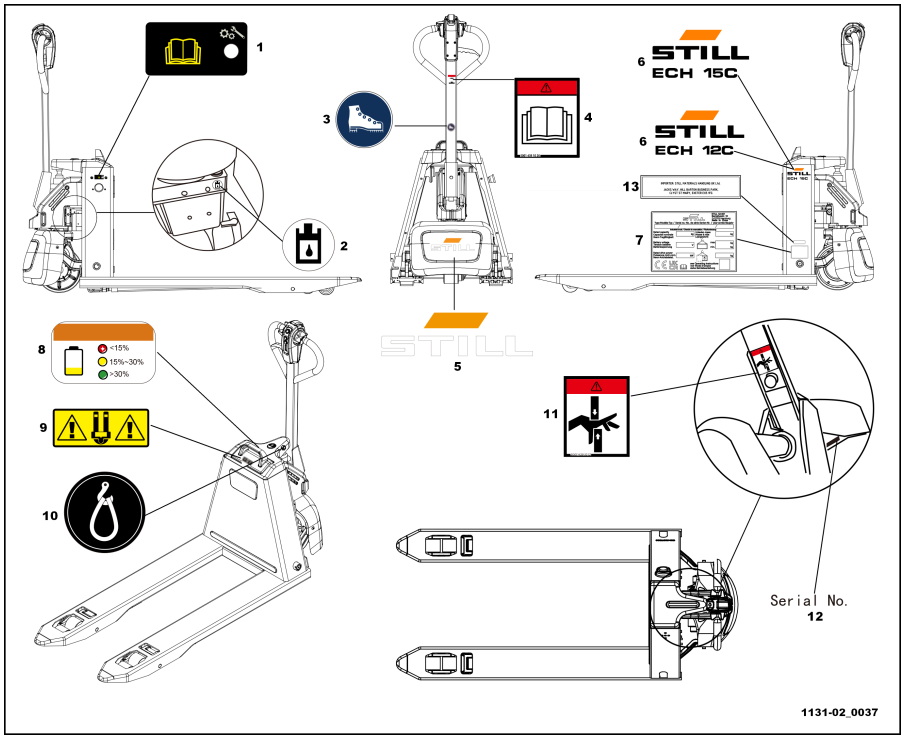
If the controller detects a battery failure, flashes of LCD(2) represent battery failure information until the failure is remedied. Details of failure information are shown as below:

- Under-voltage of single cell battery: The green light repeats in a cycle of flashing once in 1 second, pausing for 2 seconds and then flashing twice, pausing for 3 seconds.
- Over-voltage of single cell battery: The green light repeats in a cycle of flashing once in 1 second, pausing for 2 seconds and then flashing three times, pausing for 3 seconds.
- Short circuit protection: The green light repeats in a cycle of flashing once in 1 second, pausing for 2 seconds and then flashing four times, pausing for 3 seconds.
- Over-current protection: The green light repeats in a cycle of flashing once in 1 second, pausing for 2 seconds and then flashing five times, pausing for 3 seconds.
- Battery temperature is too high: The green light repeats in a cycle of flashing twice in 1 second, pausing for 2 seconds and then flashing three times, pausing for 3 seconds.
- Battery temperature is too low: The green light repeats in a cycle of flashing twice in 1 second, pausing for 2 seconds and then flashing four times, pausing for 3 seconds.
- Contactor - related failures: The green light repeats in a cycle of flashing three times in 1 second, pausing for 2 seconds and then flashing four times, pausing for 3 seconds.
- The yellow light flashes rapidly in 1 second when other failures happen.

⚠ CAUTION

When powered off, if the green light of power indicator is always on, it means that the battery is in a balanced state, which is a normal phenomenon.

Safety devices and warning labels



1	"Instructions" label
2	"Filler port" label
3	"Foot protection" label
4	"Instructions" label
5	"STILL" label
6	"Pallet truck model" label
7	"Identification plate" label
8	"Battery indicator" label
9	"Battery wrong insertion" label
10	"Slinging" label
11	"Anti-pinch" label
12	Serial No.
13	"Importer" label (for UK)

4

Operation

Safe usage specifications



Do not use the vehicle in rainy conditions



Never use the vehicle in a non-operating position



Unauthorised personnel are prohibited from using the vehicle
Do not ride the vehicle
Do not use the vehicle to carry or lift personnel



Do not use the vehicle on slippery surfaces
(E.g. ground covered in oil, snow, ice etc.)



Do not carry loads on steep slopes, to prevent them from slipping



Do not leave the vehicle until it has stopped as specified



Do not use the vehicle when non-personnel are in a hazardous area
Do not become distracted when using the vehicle



Do not place any part of your body in moving parts of the vehicle, to avoid the risk of becoming trapped



⚠ CAUTION

Note the Description of Use and Climatic Conditions section, to use the truck according to standards.

⚠ WARNING

The temperature for charging is 5–40°C. Do not charge the truck's lithium-ion battery at temperatures below 0°C.

⚠ WARNING

The use of a truck in cold storage or under extreme temperature and humidity conditions can affect the life of the battery. We recommend purchasing a cold storage truck. Please consult your authorised service centre.

⚠ WARNING

Operating surface conditions: Drive on solid, flat, level and well-laid surfaces (includes travelling and lifting).

Safety instructions

- Only qualified and authorised operators may operate a truck.
- Fire extinguishers should be available at the work site. Drivers and managers should be familiar with the location and use of fire extinguishers.
- If a fault with the truck is discovered, stop the truck immediately, remove the key, and report to management. You can use the truck only after the fault has been corrected.
- Do not use the truck in weather conditions such as sandstorms, snow, thunderstorms, rainstorms or typhoons. Avoid using the truck if the wind speed is greater than 5 m/s.
- When handling large objects that limit your vision, operate the truck in reverse or use additional guidance.
- The load must be positioned on the centre of the forks to ensure the stability.
- Wipe any oil, grease or water off the floorplate, foot pedals and joystick.

Operating instructions

This series of truck is suitable for transporting goods over a level surface. The pallet can be open or with horizontal slats and may protrude outwards.

Ambient temperature for usage:

NOTE

The floor surface must be dry, clean and level.

For braking and stability reasons, the maximum permissible gradient over short distances is limited to 16% unladen and 6% laden.

The pallet truck can only carry pallets up to a maximum weight of 1500 kg evenly distributed on the forks. For uses other than those specified above, contact an authorised dealer.

⚠ CAUTION

The pallets used must be in good condition.

⚠ WARNING

Risk of serious injury and/or major equipment damage.

Always drive in accordance with the floor conditions (uneven floor, etc.), especially in the case of hazardous work areas and hazardous loads.

⚠ CAUTION

Equipment wear or damage

To avoid scraping the bottom of the lifting system on the floor, keep the forks raised before starting.

⚠ CAUTION

Equipment wear or damage

The driver must turn off the ignition and remove the key before leaving the pallet truck.

⚠ CAUTION

Equipment wear or damage

Safety shoes must be worn to provide effective protection.

⚠ WARNING

Risk of serious injury and/or major equipment damage.

Place both hands on the tiller and turn off the power supply before touching moving parts and any equipment.

⚠ WARNING

Risk of serious injury and/or major equipment damage.

To prevent visibility being affected or completely obstructed during operation of the stacker, do not install or affix anything on the mast protection screen.

⚠ DANGER

Fatal crushing hazard!

The fork carriage must be at its lowest position when carrying out any work on the protection screen (cleaning, replacement, etc.).

⚠ CAUTION

Equipment wear or damage

The driver is not permitted to sit on the dashboard/battery cover.

⚠ WARNING

Risk of serious injury and/or major equipment damage.

Before driving forwards or backwards, carefully check in the direction of travel to ensure that it is safe to proceed.

⚠ CAUTION

Equipment wear or damage

To ensure the safety of the driver, the pallet truck must not be used in the vicinity of forklift trucks.

⚠ CAUTION

Equipment wear or damage

To prevent feet from being crushed by the load or forks, keep a safe distance from other people when lowering the forks.

Checks before first commissioning

⚠ WARNING

The truck can only be driven by battery power!

After the truck has arrived or been transported, you must perform the following checks before putting it into use:

– Check whether the equipment is intact and in good condition.

– Check whether the hydraulic system is in good condition.

– If the truck does not yet have a battery installed, you must install a battery, making sure not to damage the battery cables.

– Recharge the battery.

If the truck is parked for too long, the wheels may become slightly flattened where they touch the ground. The flat areas will automatically return to their former condition after the truck is driven for a short time.

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.

Daily inspection

This chapter describes pre-shift checks before putting the truck into operation.

Daily inspection is effective to find the malfunction or fault on this truck. Check the truck on the following points before operation.

Remove load from truck and lower the forks.

⚠ CAUTION

Risk of injury.

Don't use the truck if any malfunction is found.

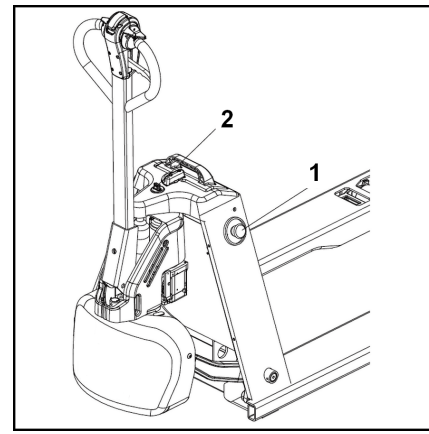
Daily inspection and servicing work.
Power supply
Visually inspect the battery.
Visually inspect the battery. box body is damaged, the box body is partially cracked or missing.
Check the liquid leakage corrosion at the charging and discharging terminals at the bottom of the Lithium-ion battery.
Check the traces of liquid leakage at the bottom of the Lithium-ion battery.
Check the Lithium-ion battery bulge, the bulging of the battery shows that the shape of the battery changes, which is different from the original size, and some or all of it expands to the surrounding.
Check the Lithium-ion battery terminal ablation, the terminal is blackened or there are traces of high temperature burning.
Check the battery charging and discharging insert
Check the battery charging cradle pins
Drive system
Check the chassis frame and apply grease. Check the position reset function of the operating handle.
Check the vertical creep of the truck.
Check the smooth movement of the wheels.

Daily inspection and servicing work.
Check that all operation buttons of the tiller operate correctly.
Chassis and bodywork
Check for scratches, deformation or cracks.
Check the chassis frame and apply grease as required. Check the position reset function of the operating handle.
Visually inspect the bolts and nuts.
Electrical system
Check operation switch, display equipment and component functions.
Check alarm system and safety devices.
Check the function of the emergency brake by activating the emergency button.
Check, the tiller arm-switch braking function
Check the inching switch setting function.
Check the lifting and lowering functions by operating the buttons.
Hydraulics
Check the hydraulic functions.
Check hoses, pipes and interfaces for damage and ensure their tightness and sealing.
Visually inspect if there are any broken hoses or broken electric wires.
Check if there is any oil leakage from the cylinder.

Drive system

Truck starting

▷



– Release the emergency stop switch (1).
– Insert the key (2)into the key hole and switch on the power supply.

Running, steering and braking

NOTE

Before driving the truck, make sure that all covers are closed.

⚠ CAUTION

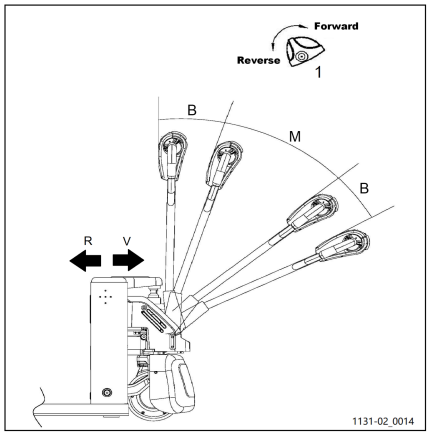
When using the vehicle on an incline or uneven surface, raise the forks to prevent the bottom of the forks scraping against the ground.

Running

Operators must be familiar with all safety procedures that apply to truck operation before driving.

Read and understand all safety information in Section C before operating the truck.

Tilt the control shaft into the driving range (M) and set the controller to the desired direction (V or R).



Rotary button

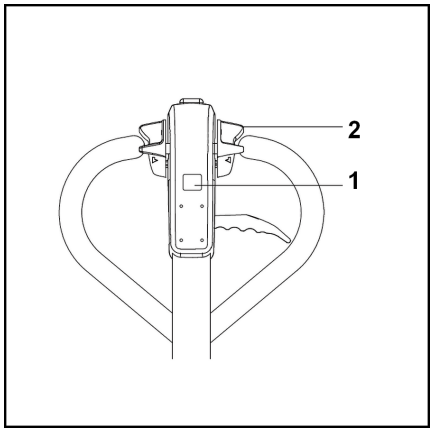
Control the running direction and speed of the truck using the drive switch (1). (the large the rotary angle, the faster corresponding speed)

NOTE

When using the truck on a ramp or a uneven road, please lift the leg of the forklift to prevent its bottom from colliding with the road surface.

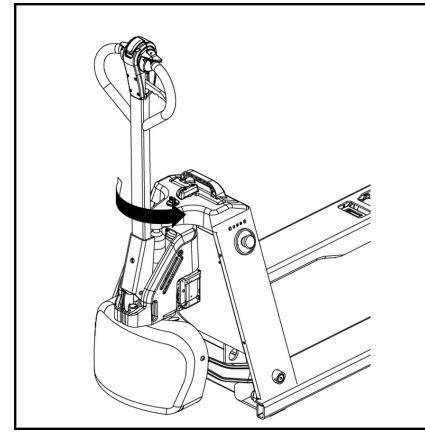
Creep speed

– Keep the control handle in the vertical state, Both press creep speed button (1) and drive switch (2) at the same time, the vehicle will travel at a low speed.



Steering

– Turn the operation hand shank leftward or rightward as required. ▷



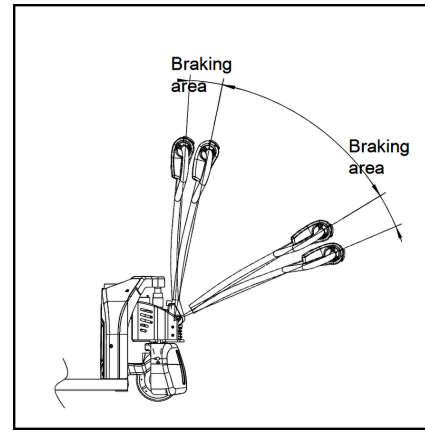
Braking

Mechanical operating brake ▷

– The truck is braked when the operating handle is released. The mechanical brake engages when the control hand is positioned in Braking area.

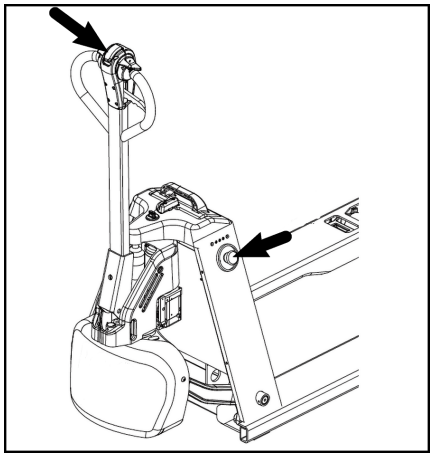
⚠ CAUTION

If the control handle moves slowly into the brake position, identify the cause and rectify the fault. If necessary, replace the gas spring!



Emergency reverse switch

To protect the driver from any risk of being trapped between an obstacle and the machine ,the end of the tiller is fitted with a emergency reverse switch. Once the safety reverser is triggered, the equipment will stop immediately, then slowly move back in the direction of the fork.



Reverse braking

Braking can be accomplished by changing the direction of travel.

Press the reverse switch in the opposite direction until the truck comes to a stop, then release the drive switch.

⚠ CAUTION

Open the drive switch; if the drive switch cannot quickly return to the initial position or resets very slowly, identify the cause and rectify the fault.

Regenerative braking

Release the drive switch. The drive switch will automatically return to the initial position and the vehicle will begin to enter the regenerative braking state. When it decelerates to <1 km/h, the electromagnetic brake will bring the motor to a stop.

Emergency stop switch

Press the emergency stop switch, and then all the electrically propelled functions will be interrupted.

Using the truck on a slope

NOTE

Incorrect use of the truck on slopes is not recommended. It places particular stress on the traction motor, brakes and battery.

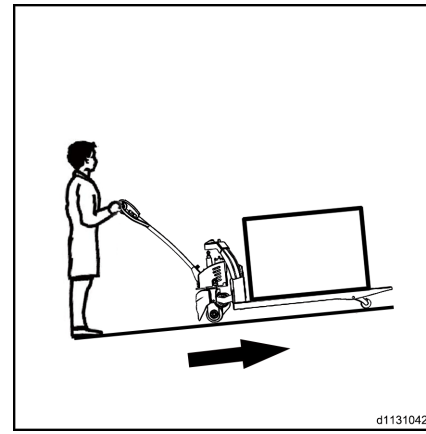
Be particularly careful near slopes:

- Never attempt a slope with a gradient greater than that specified in the truck's data-sheet.
- Make sure that the ground is dry with a non-slip surface and that the route is clear.

Ascending slopes ▷

Always ascend slopes travelling in the reverse direction, with the load facing uphill.

Without a load, we recommend that you ascend slopes forwards.



Descending slopes ▷

Travel down slopes must always be forwards, with the load uphill.

Without a load, it is recommended to descend slopes forwards.

In all cases, travel at a very low speed and brake very gradually.

⚠ DANGER

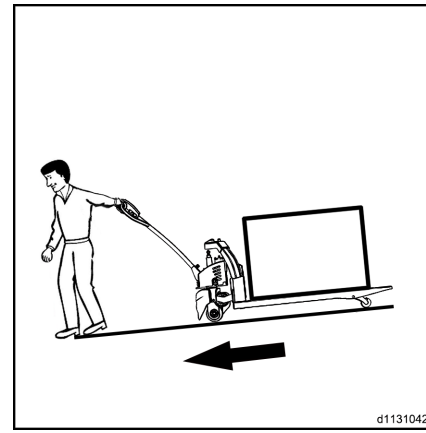
Risk to life and/or risk of major equipment damage.

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

⚠ WARNING

Risk of serious injury and/or serious damage to equipment

Since braking force is limited, a laden truck can climb a smooth gradient of 6% or less. An unladen truck can climb a smooth gradient of 16% or less.



Starting on a slope

If you have to stop and then start on slope, proceed as follows:

– Stop on the slope by pressing the accelerator in the opposite direction until the machine comes to a standstill.

– Return the accelerator to the neutral position, then release the accelerator control button to apply the parking brake.

– To restart, press the accelerator button for the desired direction.

– The truck will move off.

Load handling

Picking up and storing goods

NOTE

Loads that are not positioned and secured in accordance with the regulations pose an accident risk.

- *Instruct all personnel to vacate the truck's hazard area. If any person is located in the hazard area, stop the truck immediately.*
- *Only transport loads that have been positioned and secured in accordance with regulations. Adopt appropriate protective measures if the load is at risk of tipping over or falling during transport.*
- *You must not transport goods using damaged transportation tools (such as trucks, pallets etc.).*
- *Never go under raised load-bearing components.*
- *Personnel are prohibited from entering load components.*
- *You must not use the truck to lift personnel.*
- *Try to move the forks until they are completely under the goods.*

⚠ CAUTION

Before picking up a load, the operator must ensure that it has been correctly stacked.

The weight of the load must not exceed the truck's rated load capacity.

Do not place long loads sideways across the forks.

Lifting

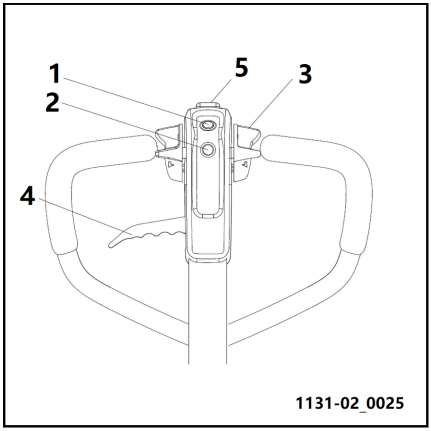
– Push the lifting button (2) until the desired lifting height is reached, then release the button.

Lowering

– Pull the lowering handle (4) upwards until the load-bearing component reaches the bottom, then release the button.

⚠ CAUTION

To avoid shortening the service life of the cylinder, try not to raise the forks to maximum height when lifting.



Safety guidelines for handling loads

⚠ WARNING

Read the following instructions carefully before picking up loads. Never touch or stand on moving parts of the truck (e.g. lifting devices, equipment for picking up loads).

⚠ WARNING

Risk of crushing hands and feet when using the lift.

When using the lift, keep hands and feet away from moving parts.

⚠ DANGER

It is not permitted to walk under the forks. It is not permitted to transport or lift people on the forks.

If there are people under or on top of the forks, do not move the truck. Do not move the forks and do not drive the truck.

⚠ DANGER

Risk of accident when forks are changed:

If the forks are changed and a different type of forks to the original forks is fitted, the residual load capacity changes.

When forks are changed, a new residual capacity plate must be affixed.

If a truck is supplied without forks, the residual capacity plate for standard forks is affixed. (See chapter "Technical Datasheet")

⚠ DANGER

Wear protective footwear. Always keep a suitable distance between your feet and the truck.

Risk of crushing feet when manoeuvring the truck.

⚠ CAUTION

The transport of persons or passengers is strictly prohibited.

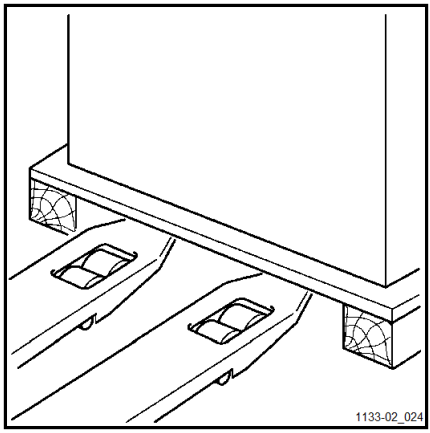
⚠ CAUTION

Be especially careful not to collide with adjacent loads.

The load must be properly positioned to prevent collisions in narrow aisle spaces.

Loading

Loading



⚠ CAUTION

Before lifting a load, ensure that its weight does not exceed the truck's maximum load capacity.

– Refer to the rated load capacity specified on the truck's identification plate.
– Ensure that the load is stable and uniform to prevent any partial spillage.
– Check that the width of the load is compatible with the width of the forks.

⚠ DANGER

It is mandatory to wear safety footwear for pedestrian mode driving.

⚠ WARNING

Transporting people is strictly prohibited.

⚠ CAUTION

Take care not to disturb any adjacent loads, or those which may be to the side or in front of the load being handled.

Loads should be laid out as follows:

– Line up loads with a small space between each one and its neighbour to avoid any fouling.

⚠ CAUTION

Only transport loads that have been positioned and secured in accordance with regulations.

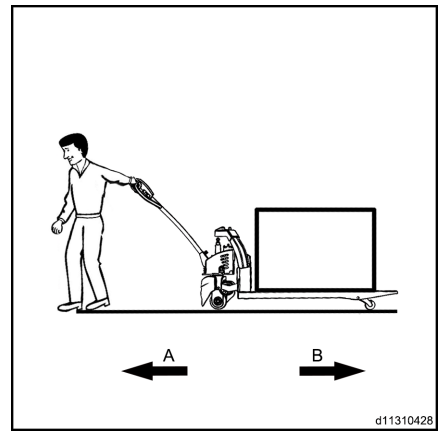
Take appropriate protective measures if the load is at risk of tipping over or falling during transport.

– Approach the load carefully.
– Adjust the height of the forks until they can be easily inserted into the pallet.
– Insert the forks under the load.
– If the load is shorter than the forks, position the forks so that the front of the load overhangs them by a few centimetres, to avoid interference with the load immediately ahead.

– Raise the load a few centimetres above its support.
– Back the truck away from the stack or any neighbouring loads, gently and in a straight line.

Transporting loads

– Always carry loads in the forward direction of travel (A) in order to have the best visibility.
– When carrying a load on a slope, always ascend or descend with the load uphill.Never drive sideways across a slope or perform a U-turn.
– Reverse travel (B) is to be used solely for unloading.Since visibility is reduced when travelling in this direction, drive only at very slow speed.

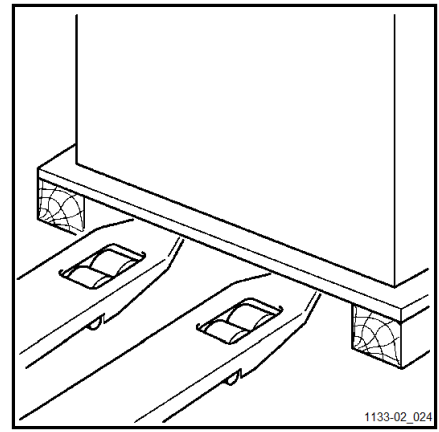


Unloading

– Carefully drive the truck to the desired location.
– Carefully drive the truck to the unloading area.
– Lower the load until the fork arms are free from the pallet.
– Back the truck away in a straight line.
– Raise the forks to mid-height.

⚠ CAUTION

Take care not to disturb any adjacent loads, or those which may be to the side or in front of the load being handled.



Operating the truck without its own drive system

If the truck has to be moved after a failure has rendered it immobile, proceed as follows: Set

the emergency stop switch “OFF”. Set the key switch “OFF” and remove the key.

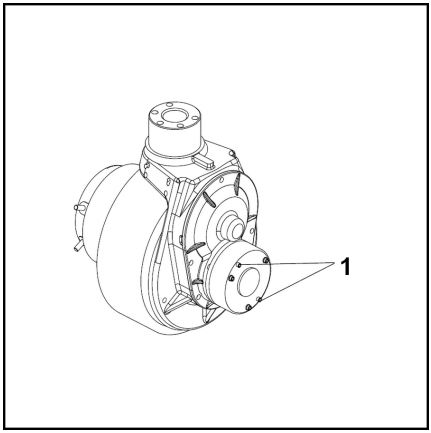
– Prevent the truck from rolling away.

– Remove the cover.

– Screw in two screws(1), (M4*35mm) until the truck can be moved (no braking action). ▷

– After setting down the truck at the destination, unscrew two screws(1).

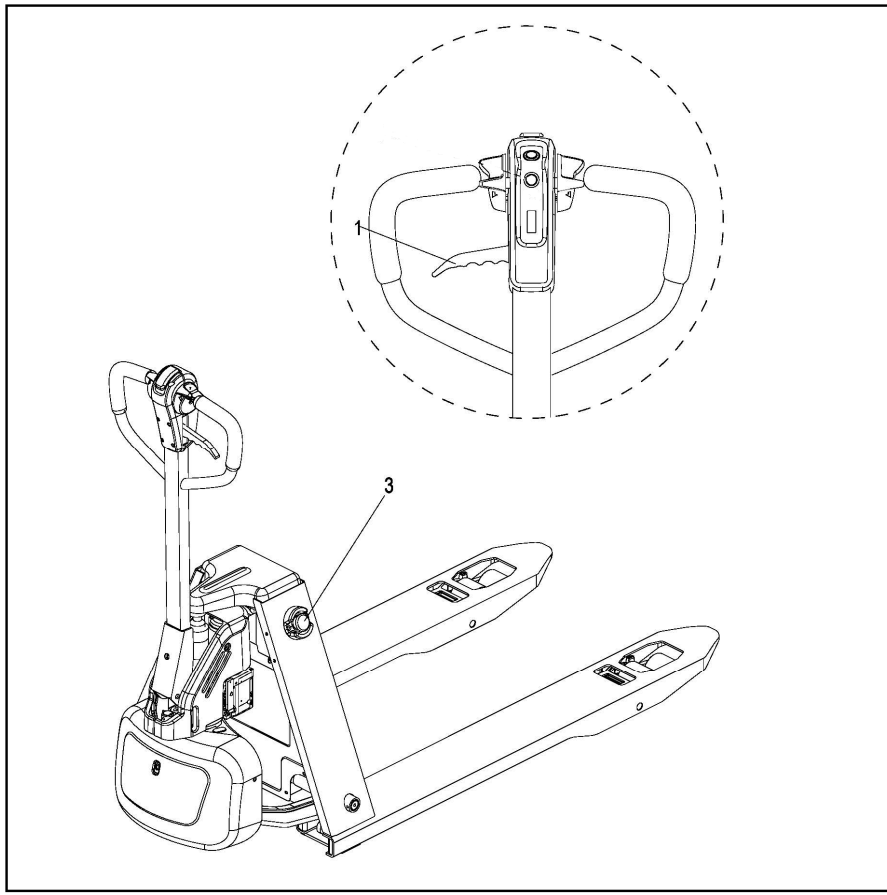
– Braking action is restored.



⚠ WARNING

This operating mode is not permitted when negotiating inclines and gradients.

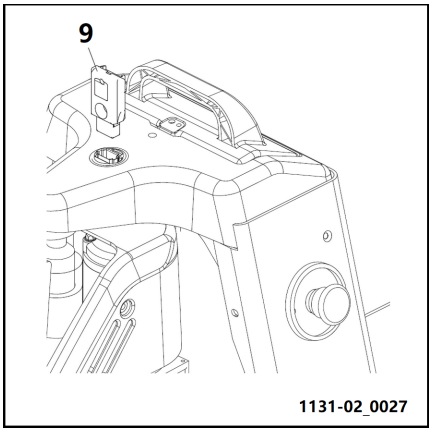
Parking the vehicle safely



Whenever you leave the truck, it must be parked correctly, even if you only intend to leave it for a short time.

– Pull the lowering lever (1). Lower the load-bearing component.
– Fully lower the forks.
– Press the emergency off switch (3).

– Remove the key switch(9) to turn off the power. ▷



⚠ WARNING

You must always park the truck according to regulations.

Never park the truck on an incline. The load-bearing component must be completely lowered.

Hoisting the Truck

This section explains the attachment of lifting equipment to the truck for the purpose of hoisting. Many methods of rigging to a crane or hoist are possible. Explanation of such methods as well as operation of lifting equipment is outside the scope of this manual. Both the attachment of lifting equipment to the truck and the hoisting operation itself must be performed by personnel experienced in rigging.

⚠ DANGER

Danger to life!

Personnel must not stand below or near the truck when the pallet truck is being lifted.

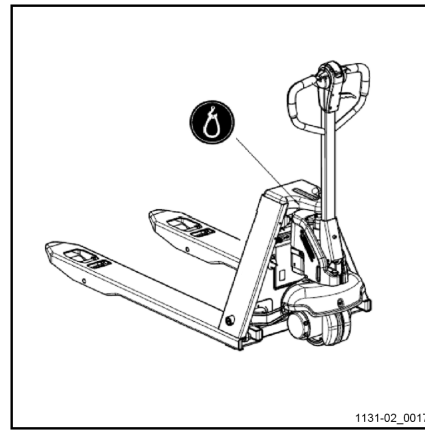
⚠ WARNING

Lifting equipment of insufficient capacity can fail and cause severe injury or death.

Ensure that all lifting slings, hardware, or other equipment has sufficient capacity to carry the weight of the truck. Refer to the truck data plate for truck weight. If a battery is installed, its weight must be added to the truck weight listed on the data plate.

– Switch the truck off and press the emergency stop button.

– Attach slings in the positions identified by the hook symbol. ▷

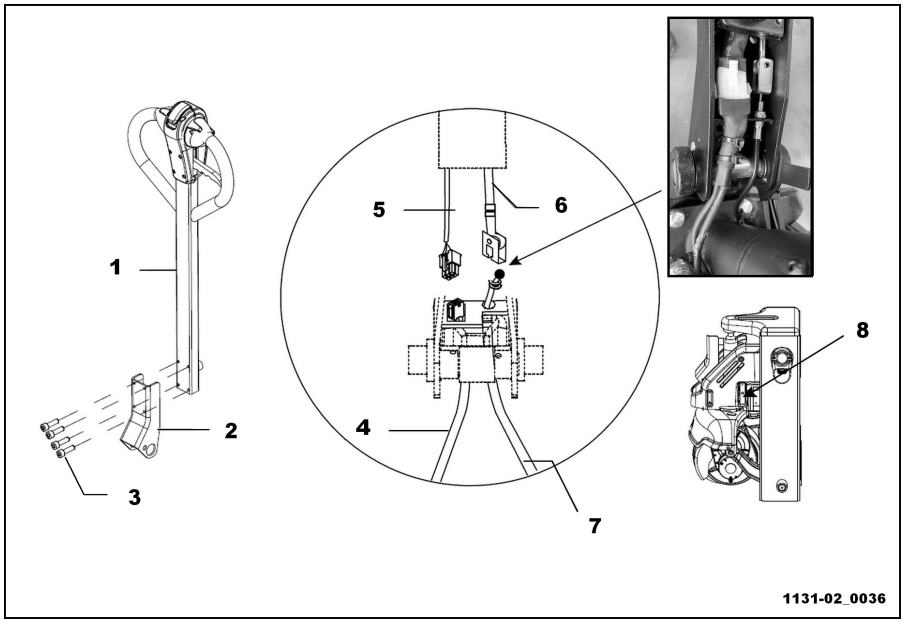


⚠ CAUTION

Risk of major equipment damage.

It is strictly forbidden to attach the lifting slings to the operating handle or to other points not intended for this purpose.

Handle and handle lever installation



1	Control handle	5	Bend wire
2	Bracket	6	Steel wire I
3	Screw	7	Steel wire II
4	Controller wire	8	Hand-operated value

– Plug the connector of bend wire(5) into controller wire(4).

- First, touching hand-operated value(8).
- The steel wire II(7)rising up buckle end of the steel I(6)into the steel wire II(7)from manual.
- Release the steel wire II(7) and tighten the adjust screw(3).

Battery Use and Maintenance

Information on the conformity of lithium-ion batteries

The manufacturer of the lithium-ion battery declares that: the lithium-ion battery conforms with the provisions of the following EU directive 2014/30/EU in accordance with EN12895.

These batteries has been certified according to EN 62619:2017 for safe use and according to UN38.3 for safe transport.

Precautions for safely working on the battery

The truck must be parked correctly before carrying out work on the battery.

Fire prevention measures

- Do not smoke or ignite naked flames around the battery.
- Flammable substances and work equipment that may produce sparks must not be placed within 2 m of the truck to be charged.
- The work location must have good ventilation.
- Fire-fighting equipment must be prepared.

Preventing electric shock

Take note of the following two points for batteries with high voltage and power:

- Do not create a short circuit.
- Keep tools away from the battery electrodes, to prevent sparks or short circuits.

NOTE

Metal or conductive objects must not be placed on top of the battery, to prevent the battery from short circuiting.

Battery introduction and instructions

Introduction to the battery

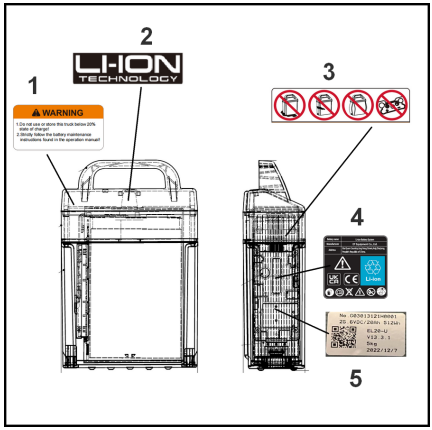
Rated voltage	24 V	Battery material	LFP
Rated capacity	20 Ah	Battery dimensions	Battery 1: 200 x 90 x 295 mm Truck Serial No.: => | CT1131M40000
			Battery 2: 200 x 90 x 340 mm Truck Serial No.: CT1131M40001 |=> Battery No.: G03013219E2249#25.6V20AH |=> **Note: Battery 1 and Battery 2 are not interchangeable.**
Charger voltage	24 V	Charger current	10 A
Battery weight	5 kg		

⚠ CAUTION

Do not interchange battery 1 and battery 2. Only use the suitable battery size for the truck.

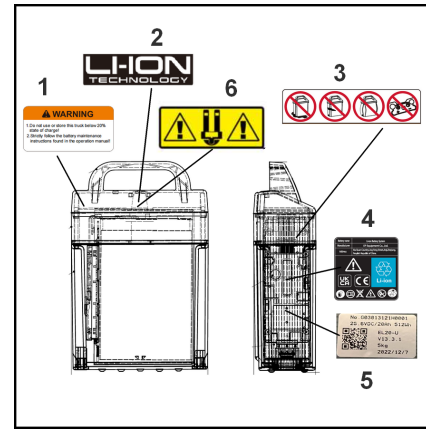
Battery label

Battery 1 ▷



1 Li-ion label
2 warning label
3 "Battery wrong insertion" label
4 Battery nameplate
5 QR code (Including battery number)

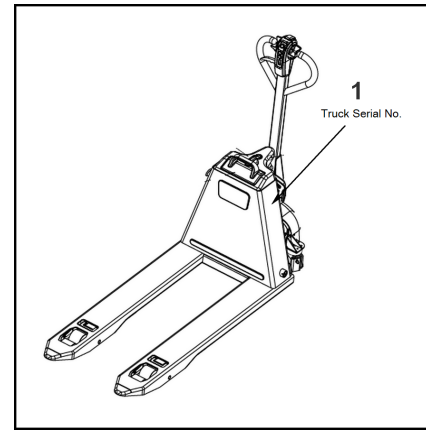
Battery 2 ▷



1 Li-ion label
2 warning label
3 "Battery wrong insertion" label
4 Battery nameplate
5 QR code (Including battery number)
6 Warning lable (Battery crack, bulge, leakage ,or other damage, remove from service and recycle immediately)

Truck Serial No.

Truck Serial No. (1). ▷



Operating instructions

1. Because the product may have been in transit or storage, before the lithium-ion battery is used for the first time it must be fully charged using the supplied charger (never use with other types of chargers or other modified devices);

2. Lithium-ion batteries can be used in an ambient temperature of 0°C to -40°C. Do not use or store batteries near to fire/heat sources that exceed the permitted temperature range.

⚠ CAUTION

Ambient temperature: 0°C to 40°C

3. The lithium-ion battery can be charged and reused at any time. When the battery power is low, charge the battery promptly to prevent over-discharge. In addition, the replaced battery should also be promptly charged in order

to prevent it from being damaged due to over-discharge after self-discharge.

4. Do not place on top of the battery any metal objects (such as spanners, knives) or other items that could short-circuit the lithium-ion battery, to prevent a short circuit between the positive and negative terminals.

5. Do not bump or hit the lithium-ion battery during use. If the battery is leaking or has an odour, stop using it immediately and stay away from sources of ignition;

6. If the service life of the battery is significantly shortened, please contact after-sales service personnel to have it checked.

7. If the lithium-ion battery is faulty and becomes unusable, remove it from the vehicle. Trained personnel can use our BMS-specific reading instruments to read information and make initial judgements. For problems that cannot be solved, please contact the after-sales service department for solutions;

8. Always read the user manual before installing and removing the battery.

9. The operator must carefully read the instructions before use and undergo relevant safety training in order to deal with any emergency situations;

Lithium-ion battery Compliance Standards

- Please carefully read the documents about the battery use and maintenance.
- Batteries may only be charged, maintained or replaced by properly trained personnel in accordance with the instructions from the manufacturers of the battery, battery charger and truck.
- Make sure it does not fall or have anything fall onto it.
- Do not allow the battery to be exposed to moisture or water (>80%)
- Protect the battery from sun exposure.
- Do not conduct any physical processes or modifications to the battery.
- Simple maintenance operations such as charging can be carried out by persons have with no special training, but read the charging safety of the manual.
- Do not place the lithium-ion battery above or near a flame or heat source (>65°C). Otherwise it may cause the battery to overheat or burst into flames. This will damage the battery's performance and lower its service life.
- It is strictly prohibited to remove the battery when it is in a charging state.
- Do not use or store batteries with low charge (using and storing batteries with low

charge will cause premature capacity loss of the battery system).

– Non-competent persons are strictly prohibited from disassembling and accessing the battery system, accompanying chargers and other equipment; the battery system is a hazardous product, only specialists may carry out maintenance and replacement.
– Before starting the vehicle, connect to the power supply via the push button switch. After the vehicle has stopped, the battery system must be powered off and stopped via the push button switch. If it takes too long, the battery will over-discharge. In severe cases, it will affect the battery's performance.
– When using it for the first time, the battery should be fully charged.
– The battery should be charged promptly after each use (the initial charging state should keep the temperature of the battery system below 40°C to ensure smooth charging).
– Only for use on trucks manufactured by the supplier (provided that this battery type has been approved for use with the truck).

⚠ DANGER

Do not open the battery. This can be an electrical risk. The battery can only be opened under the guidance of a trained and authorised technician appointed by the dealer.

Lithium-ion battery safety and warnings



Follow the operation manual!
All battery-related operations must be carried out under the supervision of a professional!



Always wear protective clothing (such as safety goggles and safety gloves) when working with lithium batteries.



Do not smoke!
There must be no open flames, hot metal wires or sparks around the battery, or there is a risk of explosion or fire!



Avoid overly high temperatures as they may lead to explosions, fires and short circuits!
Keep away from open flames and strong heat sources.



Do not knock down the battery!
Use lifting and conveying equipment as specified. Prevent the lifting hook from damaging the battery cell, connector and connection cable!
Do not inhale fumes in case of material leakage. Wear safety gloves.



Do not hot-plug (live) batteries.
This can easily cause fire or electric shock.



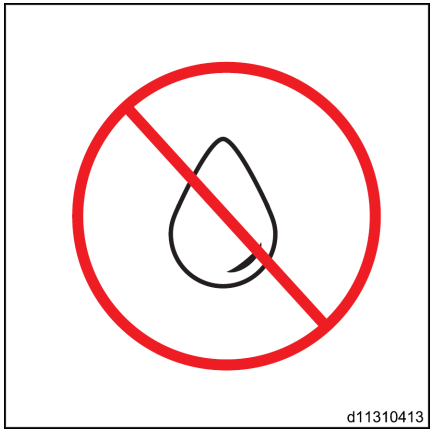
Do not place batteries on conductive objects.



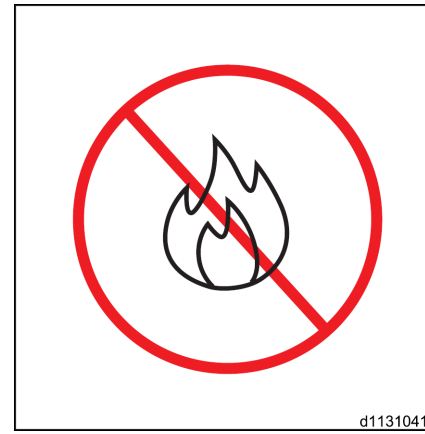
Do not step on the battery to avoid shaking or colliding!

Battery precautions

– Avoid the battery becoming corroded by water or corrosive liquid. ▷



– Keep the battery away from all fire sources, heat sources and flammable or explosive materials. ▷



– Do not place the battery on top of conductive objects. ▷

⚠ WARNING

If this happens, the battery may leak, emit heat or smoke, which may lead to a serious fire or explosion.



– The normal charging temperature of the battery is 0–40°C. We recommend charging at 5–40°C. Charging at below 0°C is strictly prohibited. ▷



⚠ WARNING

If the battery fails, please contact an authorised dealer to have it repaired.

Do not disassemble the battery.

Reasonably foreseeable misuse

– Never short circuit the battery terminals.

– Do not reverse the battery polarity.

– Do not overcharge.

⚠ DANGER

Failure to comply with these safety instructions can result in fire and explosion or the leakage of harmful materials.

First aid measures after a Li-ion accident

First-aid measures

⚠ WARNING

Risk of injury!

Escaping gases can lead to breathing difficulties.

– Course of action required if gases or liquids escape. Immediately ventilate the area or go out into the fresh air; in more serious cases, call a doctor immediately.

– Skin irritation can occur in the event of contact with the skin. Thoroughly wash the skin with soap and water.

– Eye irritation can occur in the event of contact with the eyes. Immediately rinse eyes thoroughly with water for 15 minutes, then consult a doctor.

– Measures in the event of electric shock Apply first-aid measures. Call a doctor or seek medical attention.

BMS (Battery Management System)

– The battery is permanently monitored by the BMS (Battery Management System).

– This provides the communication with the truck.

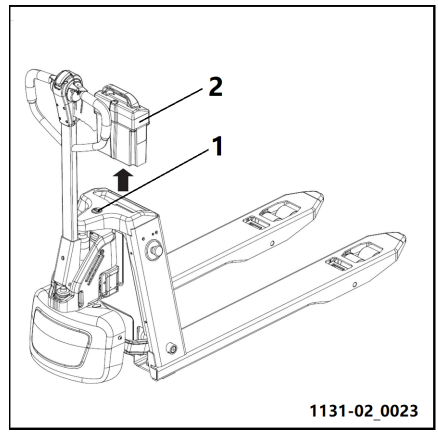
– The BMS continually monitors items such as the cell temperature, the voltage and the charge status of the cells.

Disassembling and installing the battery

Before disassembling and installing the battery, you must raise the forks to the highest position and then turn off the truck's power supply.

Disassembly/installation steps:

– Remove the key switch (1) to turn off the power, and remove the lithium-ion battery (2). ▷



⚠ CAUTION

When removing the cables, put them aside carefully to avoid damaging them during the procedure.

Install the battery in reverse order, paying attention to the location where the battery is installed and whether the wiring is correct. Route the battery cable so that it is not trapped when the battery is inserted.

Servicing the battery

Servicing the battery

Never over-discharge the battery

– Never allow the battery charge to be depleted until the truck cannot move before recharging. This shortens the battery life.

– Once the low battery charge symbol appears, charge the battery immediately.

Servicing the battery

The battery must be kept dry and clean. Batteries with non-insulated terminals must be covered with a non-slip insulating mat.

NOTE

- *To prevent static electricity from causing an explosion, never use a dry cloth or fabric to wipe the surface of the battery.*
- *Pull out the mains plug.*
- *Wipe it with a damp cloth.*
- *Wear protective eyewear, safety shoes and safety gloves.*

Maintenance

Routine maintenance

– Professional personnel must be on hand to carry out and oversee charging operations, especially when the lithium-ion battery is almost fully charged, specifically to ensure good contact between the plug and socket, good contact of the lithium battery pack connection points and correct operation of the charging device during the charging process. If an abnormal situation occurs, the lithium-ion battery must be repaired before charging.

– Before charging and discharging, check the battery voltage, temperature, cell voltage difference and other parameters of the lithium-ion battery on the indicator unit and make sure that all the values are within the normal range. (Only for vehicles with indicator unit)

– If the lithium-ion battery pack is covered in dust, metal filings or other debris, use a damp clean it. Avoid cleaning with water or damp items.

– When charging and discharging, try to avoid splashing water or other conductive liquids on the lithium-ion battery. Avoid exposing it to heavy rain during use.

Lithium-ion battery routine inspection ▷

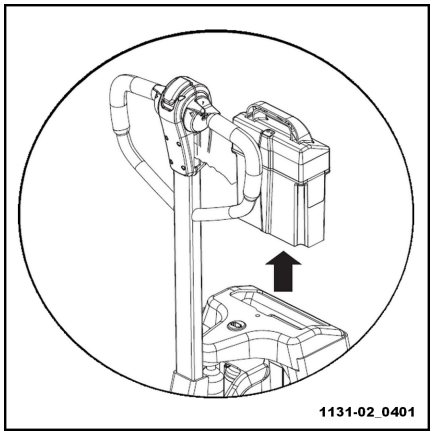


⚠ CAUTION

– Lithium-ion-battery routine inspection by the customer or operator.

– The following items should be checked every day.

– Remove the battery from the truck. ▷



Daily inspection items	Troubleshooting
Liquid leakage and corrosion at the charging/discharging contacts at the bottom of the battery	Stop using the battery and handle in accordance with the chapter "Instructions on storing and handling faulty batteries".
Signs of liquid leakage at the bottom of the battery	
Case broken	
Swollen battery	
Contacts burnt	Contact your authorised dealer to replace the contacts.
Check the battery charging and discharging insert	Contact your authorised dealer to replace the contacts.
Check the battery charging cradle pins	Check the Battery Charging Cradle Pins Daily section.

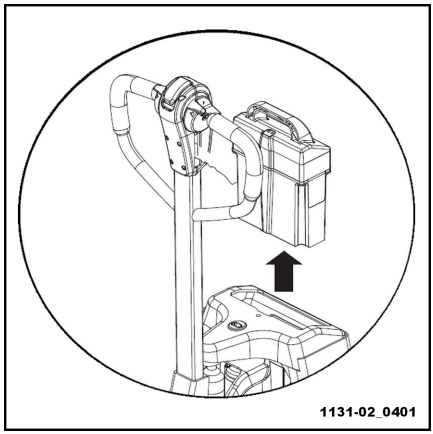
Check the battery charging and discharging connector daily

How to check the battery charge and discharge connector

– Remove the battery from the truck. ▷

– Visually inspect the battery bottom charging and discharging connector for corrosion, deformation, breakage, and blockage of the connector hole with debris. Any of these symptoms require replacement and cleaning of the connectors in a timely manner.

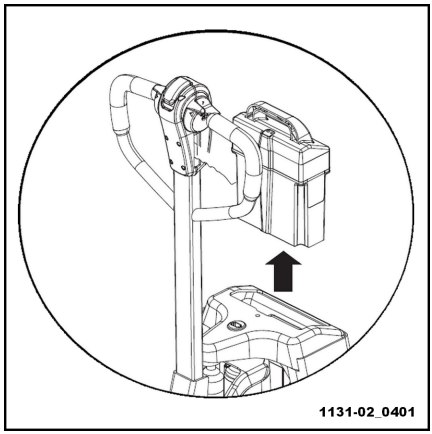
The connector normal terminal has complete appearance, no deformation, no burn marks. The surface is clean and free of accumulated dust and impurities.



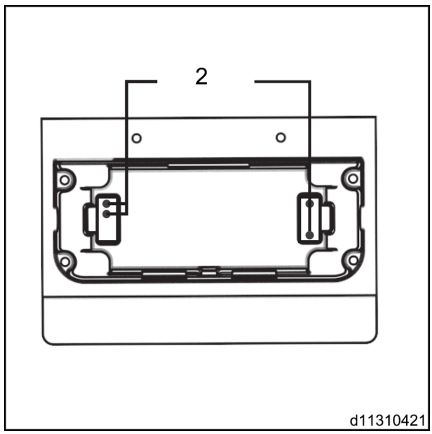
Check the battery charging cradle pins daily

To check the battery charging cradle pins:

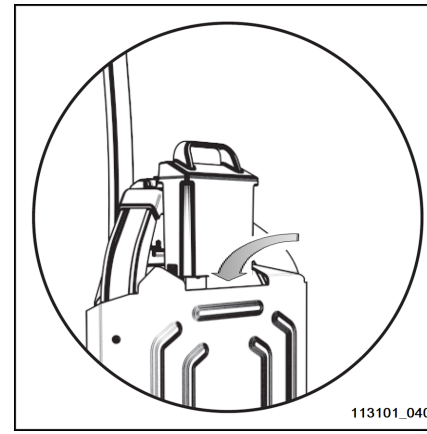
– Remove the battery from the truck. ▷



– Visually inspect the charging base pins for burns, deformation, breakage, contamination on the surface of the pins(2). Impurities. Any of these symptoms require the pins to be replaced and cleaned in a timely manner. ▷



The pin normal terminal has complete appearance, no deformation, burn and deformation of the pins.



Battery charger

Accessories

Do not use a charger that is not released by supplier for lithium-ion battery.

These batteries can only be used with the charger.

⚠ WARNING

Should such issues as failing to abide by the operation manual, failing to use the original parts for maintenance or damaging caused by users themselves occur, the quality guarantee will be invalid automatically!

Charging precautions

NOTE:

– The vehicle must be parked in a cool, ventilated room.

– There must be no metal parts on the surface of the battery.

– Before starting charging, check all cable connections and plug connectors for obvious damage.

– Make sure that the charger is not connected to the circuit before connecting or disconnecting it.

The safety regulations supplied by the battery and charger manufacturer must be strictly observed.

- Do not charge in a non-charging zone.
- Do not modify the vehicle and charger.
- Do not use a non-standard charging socket.
- The charging zone requires a clear height above 5 m and a safe distance of more than 5 m from other areas.
- The charging zone shall meet the requirements of the relevant local national standards.

Charging essentials:

1. The battery can only be charged using the vehicle-specific charger. Other chargers may damage the battery.

2. The normal charging temperature of the battery is 0–40°C. We recommend charging at 5–40°C. Charging at below 0°C is strictly prohibited. Do not charge in an environment where the temperature exceeds the normal temperature range.

3. If charging is not completed within the specified time, stop charging the battery.

4. Batteries may only be charged, maintained or replaced by properly trained personnel in accordance with the instructions from the manufacturers of the battery, battery charger and truck. , to ensure that the charging plug and socket are working properly with no overheating. Make sure that the charging equipment is working properly, that the battery pack and its protective circuits are working properly, and that the entire power system is free from short circuits, overcurrent, overtemperature and overcharging.

When charging and maintaining the battery, follow the manufacturer's maintenance instructions for the battery and the battery charger.

⚠ DANGER

It is strictly forbidden to overcharge or overdischarge the lithium-ion battery.

⚠ CAUTION

The recommended temperature range for battery charging is 5–40°C. Charging at below 0°C is strictly prohibited, as the charging temperature is too low and likely to cause the cell to short circuit and damage the battery.

The voltage of the lithium-ion battery matches the charger voltage.

Battery charging

Charging precautions

– The truck must be parked in a well-ventilated room.

– There must be no metal parts on the surface of the battery.

– Before starting charging, check all cable connections and plug connectors for obvious damage.

– Make sure that the charger is not connected to the circuit before connecting or disconnecting it.

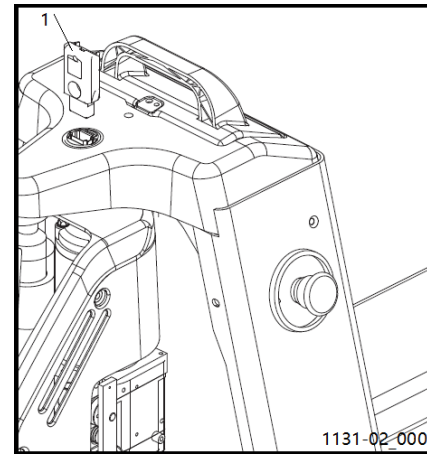
– The safety regulations in the chapter "Battery charging" must be strictly observed.

Charging procedure

– Ensure that charging requirements are complied with.

– Park the truck as specified.

– Remove the key switch (1) to turn off the power, and then take the plug-in lithium-ion battery out before charging.



⚠ CAUTION

The charging voltage range is 100–240 V, 50–60 Hz. Do not exceed this voltage range.

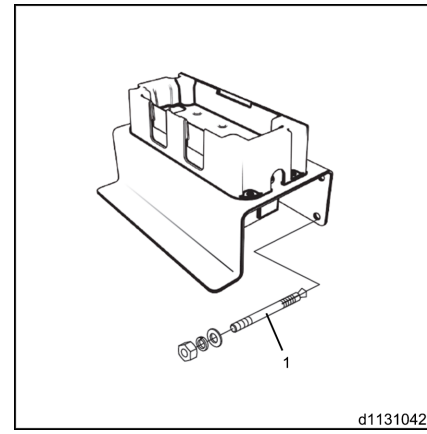
⚠ CAUTION

When charging and maintaining the battery, observe the manufacturer's maintenance instructions for the battery and battery charger.

Mounting the battery charger

NOTE

The charging stand can be secured to the wall using expansion screws (1).



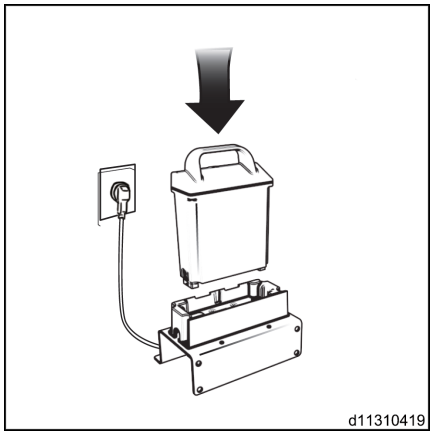
Charging the battery with external charger

– Inspect whether relevant charging requirements are satisfied according to “Precautions for safely working on the battery”;

– Park the truck securely (See section “Parking the truck securely”).

– Remove the battery (see section “Disassembling and installing the battery”).

– Plug into charging stand and charge; ▷
– The LED light on the charging stand comes on.
– A fully charging time see described in paragraph “Battery type & dimensions & Charging time”.



NOTE

Correctly plug the battery into the charging stand.

NOTE

LED light mode on the charging stand.

- *Charging:red LED light*
- *Fully charged:green LED light*
- *Charging fault:flashing yellow LED light*
- *Battery fault:steady yellow LED light*

⚠ WARNING

Charger maximum input power 333W .

Please strictly implement the above data to prevent equipment damage and accidental risks such as fire.

Battery type & dimensions & Charging time

battery type	Voltage/ Rated capacity	Dimensions	Charger		Charging time
			Internal	External	
Li-ion	24V/20Ah	200*100*300	/	10A	2h

Dangers of faulty or scrapped batteries

Please keep a close eye on the battery condition when using or storing batteries. If you notice any broken batteries, electrolyte leakage, abnormal swelling or pungent smells caused by transportation or vibration, please stop using the battery immediately and keep a distance of at least 5 metres from the relevant batteries. Please dispose of damaged batteries properly and contact the authorised service centre to recycle it.

For large batteries with an inner/outer casing structure, please put the battery in an outdoor environment for at least 5 days. Contact the authorised service to recycle it.

⚠ WARNING

1. Do not store batteries for long periods of time (about 5 days) .

2. Batteries in storage must not bear any loads, be crushed or in contact with each other.

3. Do not put batteries in warehouses for goods or near inflammable or explosive items.

4. Do not pile up faulty or old batteries.

During the use and maintenance of a lithium battery, the battery or battery system may exhibit one or more of the following anomalies. These anomalies should be dealt with as described in the manual by specialist engineers and technicians. If you have any questions about the battery's condition or solutions to these anomalies, please contact the dealer or the company's after-sales service department for professional technical support.

– If abnormal battery mechanical properties such as expansion, cracked housing, melted housing and deformed housing are found before or during installation, stop using the battery immediately, place it separately in an open, well-ventilated space and contact your authorised service centre.

– If any abnormal conditions such as loosening, cracks, cracks in the insulation layer or burn marks are found on the crimping bolts, conductive strips, main circuit wires and connectors of the battery before or during installation, stop using the battery immediately, place it separately in an open, well-ventilated space and contact your authorised service centre.

– If the temperature of the battery exceeds approx. 65°C before installation or during use, stop using the battery immediately and leave it on its own. If the temperature continues to rise, it needs to be covered in sand.

– If the battery is found to emit smoke /eakage before installation or during use, stop using the battery immediately , contact your authorised service centre. For large batteries (if required), the truck or battery should be moved to a safe area and then use a fire extinguisher of fire class A/B/C plus water or sand to fight a fire.

⚠ DANGER

Risk of poisoning due to vapours Inhaling vapours may cause poisoning.

– Call the fire brigade.

– Position yourself on the side of the fire from which the wind is blowing.

– Use air-supplied respiratory protection.

– Use a fire extinguisher of fire class A/B/C plus water or sand to fight a fire.

– Do not inhale toxic fumes.

⚠ DANGER

Risk of poisoning due to vapours Inhaling vapours may cause poisoning.

– Call the fire brigade.

– Position yourself on the side of the fire from which the wind is blowing.

– Use air-supplied respiratory protection.

⚠ CAUTION

A specialist battery recycling agency must be contacted immediately to dispose of the malfunctioning batteries.

Please contact your authorised service centre for more information.

⚠ WARNING

Do not open the battery. This can be an electrical risk. When handling a malfunctioning battery.

Please contact your authorised service centre.

Instructions on storing and handling faulty batteries

⚠ DANGER

Faulty batteries may cause short circuits and lead to fires. To eliminate potential safety hazards and avoid unnecessary economic losses and other consequences, please act in strict accordance with the guidelines.

Checking batteries for signs of malfunction ▷



– Whether there is any leakage between the communication terminal and charging/discharging pins at the bottom of the battery, and in the gaps around the pins;
– Check whether there are pungent smells;
– Check the jack at the bottom for signs of blackening and burning;
– Check the middle connection of the body for swelling of the housing or internal cells;
– Check the battery for signs of impact and damage.

Storing faulty batteries

Place the faulty batteries outdoors in an open and shaded area, this area must be well-ventilated and be equipped with fire equipment. Flammable substances and work equipment that may produce sparks must not be placed within 2 metres around.

Batteries in storage must not bear any loads, be crushed or in contact with each other.

⚠ CAUTION

A specialist battery recycling facility must be contacted immediately to dispose of the malfunctioning batteries. If required, please contact your authorised service centre for advice.

For leaking batteries that have a warranty, when needed please take a picture of the plate of the leaking battery and the leakage area.

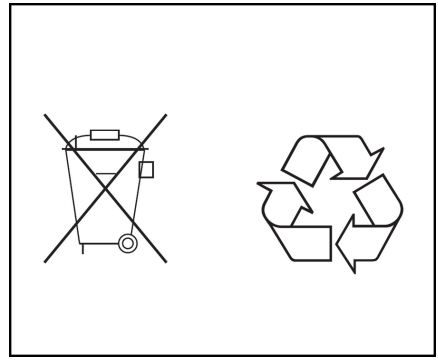
⚠ WARNING

Do not open the battery. This can be an electrical risk. The battery can only be opened under the guidance of a trained and authorised technician appointed by the authorised service centre.

⚠ WARNING

Do not store faulty batteries for long periods of time (about 5 days) .

Disposal instructions for lithium-ion batteries ▷



- Lithium-ion batteries must be disposed of in accordance with the relevant environmental protection regulations.
- Used battery cells and batteries are recyclable economic goods. Batteries must not be disposed of as domestic waste, as indicated by the battery recycling sign (a crossed-out dustbin). Batteries must be returned and/or recycled in accordance with the requirements of battery-related regulations.

NOTE

Requirements for recycling:

- *All lithium-ion batteries should be placed in a safe location in accordance with the requirements of the Dangers of Faulty or Scrapped Batteries section.*

Storage

It is recommended to store the battery at a height of between 60 to 120 cm.

Store the battery in a dry place at a temperature between 0 and 40°C to maintain its service life. The storage area must not be sealed to allow for air renewal.

Check the battery's level of charge at regular intervals. Do this at least every two months to maintain a level of charge of above 60%. Charge the battery when necessary.

- Store in a dry, cool environment with adequate ventilation, avoiding direct sunlight, high temperature, high humidity, corrosive gas and severe vibration.
- Do not stack this product.
- Do not store when connected to electrical or concealed electrical equipment. Any form of discharge is strictly prohibited during storage.

– If the lithium battery is found to bulge, crack or have a low voltage after prolonged storage, the lithium battery may be damaged. Please contact your authorised centre for technical support.
– Do not charge or discharge the lithium battery if you detect a leaking gas smell coming from the lithium battery after a long period of inactivity.

⚠ WARNING

– Do not store used and faulty batteries for long periods of time (about 5 days) .
– Do not put pressure on or place an excessive load on contact-stacked batteries.
– Do not place batteries near goods warehouses or flammable or explosive materials.

Transportation

Before transporting lithium batteries, check the regulations in force regarding the transport of dangerous goods. Observe these regulations when preparing for packaging and shipping. Trained authorised personnel should handle the dispatch of lithium batteries.

Special precautions should be taken when:

– Transporting a truck equipped with a lithium battery.
– Transport lithium batteries only.

A class 9 hazard label must be attached to the ▷ shipping packaging.



To transport lithium-ion batteries in and out of the truck, the current country-specific provisions must be observed. Regulations regarding hazardous materials and ADR provisions set out specific rules for the customer of the consignor, the consignor, the packer, the party responsible for loading, the carrier, the driver, the party responsible for unloading, the party responsible for unpacking and the consignee, which must be observed.

⚠ WARNING

Do not place the package above 1.2 m inside the container and ensure that it is securely fastened.

NOTE

Before transportation, a used lithium battery should be charged according to the mode of transport (transport by sea or road). Battery performance may be compromised if there is an excessive discharge on arrival. Faulty or scrapped batteries must not be charged.

Shipping a defective battery

To ship a defective lithium battery, please contact your authorised service centre. A defective lithium battery must not be transported without authorisation.

Truck transport

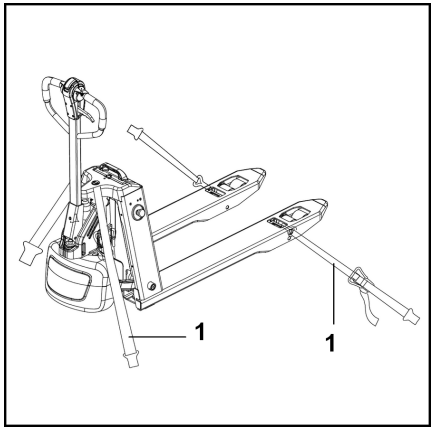
Correctly fix the truck to avoid move when using truck or trailer.

– Park the truck securely.

– Sling the tensioning belt(1) around the truck and attach it to the fastening rings of the transporting vehicle. ▷

– Use wedges to prevent the truck from moving.

– Tighten the tensioning belt (1)with the tensioner.



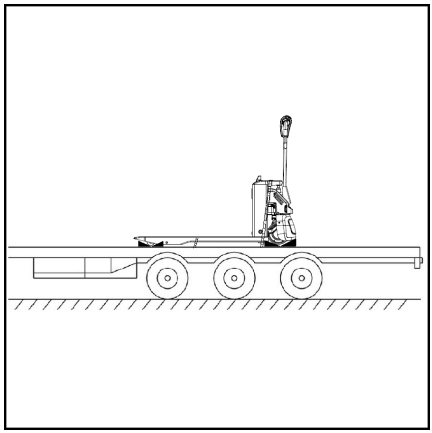
⚠ WARNING

The truck or trailer must have fastening rings.

Use wedges to prevent the truck.

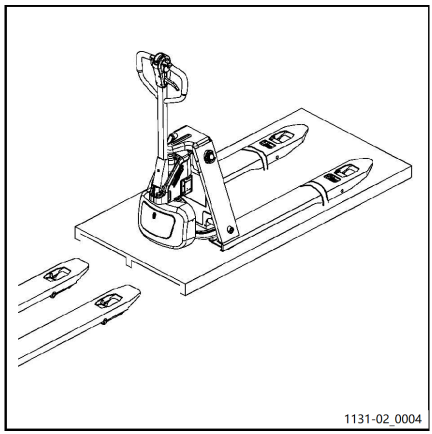
Only use tension belt or fastening belt of good nominal strength.

– The truck is only designed for short-distance material handling and inappropriate for long-distance transportation. If request, the truck must be transported by using lifting device or platform to place it on truck or trailer. Before operation, fix the pallet truck firmly on the transport vehicle with belt, and block the wheel to avoid relative motion during transportation. ▷



How to remove a broken truck ▷

It's not allowed to tow the truck on the ground directly when the truck is broken down or damaged since the brake of the truck is closed under normal circumstances. Appropriate vehicles should be used to remove the broken trucks.



NOTE

Only use haulage equipment with sufficient load capacity.

– The load weight includes the net weight of the truck (including battery weight) and 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 when lifting the truck onto the pallet , to prevent injuries caused by the forks.

– Follow the prescribed steps and park the vehicle correctly.

– Make sure the forks are aligned with the pallet , move slowly and stop after inserting the forks as far into the pallet as possible.

⚠ 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.

Cleaning the Forklift

Cleaning depends on the type of use and the workplace. Should the truck come into contact with highly aggressive elements such as salt water, fertilizers, chemical products, cement, etc., it should be cleaned as carefully as possible after every work cycle. It is preferable to use cold compressed air and detergents. Use water-dampened rags to clean the parts of the body.

⚠ CAUTION

Do not clean the truck with direct jets of water; DO NOT use solvents and petrols that could damage parts of the truck.

Cleaning operations

⚠ CAUTION

High-pressure cleaners, excessive water pressure or water and steam that are too hot can damage components. If water penetrates the electrical system ,there is a risk of a short circuit occurring !

– Do not use high pressure cleaners for cleaning.

– Strictly adhere to the following steps.

Do not use combustible liquids to clean the truck.

You must take all safety precautions before you start cleaning and you must prevent sparks from being produced during work processes (such as from short circuits). If the truck is powered by a battery, you must disconnect it from the battery cable connections.

When cleaning electronics and electrical components, you must use low-strength suction gas or compressed air. You should also use a non-conductive, anti-static brush to clean dust off component surfaces.

If you clean the truck, you must first carefully seal all electronics and electrical components, otherwise these components may get wet and malfunction.

Do not use steam cleaning equipment.

Once you have finished cleaning, you must check the alarm, emergency off switch, and brake performance. You must also lubricate the truck according to its maintenance schematics.

Decommissioning and storing

If the truck is to be decommissioned for more than 2 months, it must be parked in a frost-free and dry location.

When storing the truck, it must be jacked up so that all the wheels are clear of the ground. This is the only way of ensuring that the wheels and wheel bearings are not damaged.

If the storage period is longer than six months, the user must contact the company's service department to clarify other operational measures that need to be taken.

Precautions prior to storage

- Clean the truck thoroughly.
- Check the brakes.

- Check the hydraulic oil level and top up if required.
- Apply a thin layer of lubricating oil or grease to all unpainted mechanical components.
- Lubricate according to the truck's maintenance schematic diagram.
- Recharge the battery periodically.
- Clean the battery and apply specialised grease to the electrode bolts.
- Spray all exposed contacts with a suitable contact spray.

⚠ CAUTION

Charge the battery every month.

If the truck is driven by the battery, then the battery must be charged every month to avoid depletion of the battery through self-discharge, otherwise sulphation will destroy the battery.

Recommissioning after storage

- Clean the truck thoroughly.
- Lubricate according to the truck's maintenance schematic diagram.
- Clean the battery, apply specialised grease to the electrode studs, and install and fix the terminals on the battery.
- Recharge the battery.
- Check whether the hydraulic oil contains condensed water. Change the hydraulic oil if necessary.
- Check the alarm, emergency off switch and brake performance.
- Put the truck into service in accordance with the operational manual's instructions.

NOTE

If there are difficulties with operating electrical system switches, you should apply contact spray to the exposed contact surfaces and remove the oxide layers on the surfaces of the operating component contacts by performing repeated switch operations. After putting the truck into service, the driver should immediately carry out repeated brake performance tests.

Equipment scrappage and disposal procedure

When the truck is eventually scrapped and disposed of, this must be carried out in accordance with the laws and regulations in force in the country of use. Special attention should also be paid to regulations regarding the disposal of used batteries, fuel, oil, and electronic and electrical equipment, as well as local environmental protection regulations.

Lithium-ion batteries need to be disposed of in accordance with the Disposal Instructions section.

5

Maintenance

General Maintenance Information

Operational safety and environmental protection

- You must carry out the checks and maintenance operations outlined in this section at the intervals set out in the service plan.
- Modifying this truck, especially its safety devices, is prohibited. You must not change the work parameters of this truck.
- Only original equipment meets with company quality assurance requirements. To ensure the equipment's stability and operational performance, you must only use original equipment manufactured by our company. You must handle old components and replacement of fluids in accordance with current environmental protection regulations. Please contact our company's customer service department if you need to change the oil.
- Once you have completed checking and servicing, you must check the alarm system, emergency off switch and brake function. You must also lubricate in accordance with maintenance schematics. Once you have carried out these procedures, the truck can be put into service again.

Repairs and maintenance safety regulations

Repairs and maintenance personnel

Maintenance and repairs on the truck should only be carried out by qualified personnel who are authorised by our company.

Lifting and jacking equipment

When lifting the truck, the lifting device can only be installed on the fixed positions as specified.

When jacking up the truck, appropriate tools such as chocks and wooden blocks must be used to secure the truck and prevent it from accidentally rolling or tipping over.

When working under a raised load-bearing component, sufficiently strong chains or safety devices must be used to secure the forks.

⚠ WARNING

The battery connector must be disconnected before the industrial truck is jacked up.

⚠ WARNING

Make sure that the industrial truck is only jacked up on level surfaces, and is secured against rolling and dropping.

Working on the electrical system

Work on the electrical system must be carried out by professionally trained electricians.

Before commencing work, the operator must take all necessary measures to prevent electrical accidents.

If the truck is powered by a battery, the key switch must be removed to prevent the truck from being accidentally started.

Parameter regulations

When repairing and replacing hydraulics, electronics and electrical components, you must pay special attention to comply with the truck's relevant parameter regulations.

Truck tyres

The quality of the tyres directly affects the stability and driving performance of the truck. If you need to replace the tyres that were installed in the factory, you must use original equipment supplied by our company to meet the data indicators for the model list.

When replacing wheels or tyres, you must ensure that the truck will not tilt (for example, if you replace left and right wheels at the same time).

Maintenance and checks

Perform maintenance thoroughly in accordance with regulations to ensure reliable stability of the truck's performance. This is the one of the most important conditions for increasing service life. Neglecting regular maintenance can cause the truck to malfunction and break down. It can also create latent dangers for staff and work safety.

The wear to components that need maintenance is largely determined by the actual work and usage conditions of the truck. Service intervals will be shorter if operational usage conditions exceed ordinary levels. For example, if there is lots of dust, if there are large temperature fluctuations or if the truck is used for shift work.

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.

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.

Prepare the truck for maintenance and repairs

All necessary safety measures must be taken to avoid accidents when carrying out maintenance and repairs. The following preparations must be made:

- Park the truck securely (See Parking the truck securely). Remove the key to prevent the truck from accidentally starting.
- When working under a raised lift truck, secure it to prevent it from tipping or sliding away.

Inspection and Maintenance

Service plan

Service plan

Note regarding servicing work
Specialist knowledge is required for servicing work. Special tools are also needed. Contact your service dealer.

servicing work to be performed every 500 hours or every half year.
Power supply
Visually inspect the battery. box body is damaged, the box body is partially cracked or missing.
Check the liquid leakage corrosion at the charging and discharging terminals at the bottom of the Lithium-ion battery.
Check the traces of liquid leakage at the bottom of the Lithium-ion battery.
Check the Lithium-ion battery bulge, the bulging of the battery shows that the shape of the battery changes, which is different from the original size, and some or all of it expands to the surrounding.
Check the Lithium-ion battery terminal ablation, the terminal is blackened or there are traces of high temperature burning.
Check the battery charging and discharging insert
Check the battery charging cradle pins
Check that the battery cable connections are tight .
Electrical system
Check operation switch, display equipment and component functions.
Check alarm system and safety devices.
Check the inching switch setting function.
Check that cables are free from damage and that the terminals are firmly attached.
Check the control unit.
Check the fastening of the cables and motor.
Drive system
Check the chassis frame and apply grease. Check the position reset function of the operating handle.
Check the gearbox for abnormal sound and leakage.

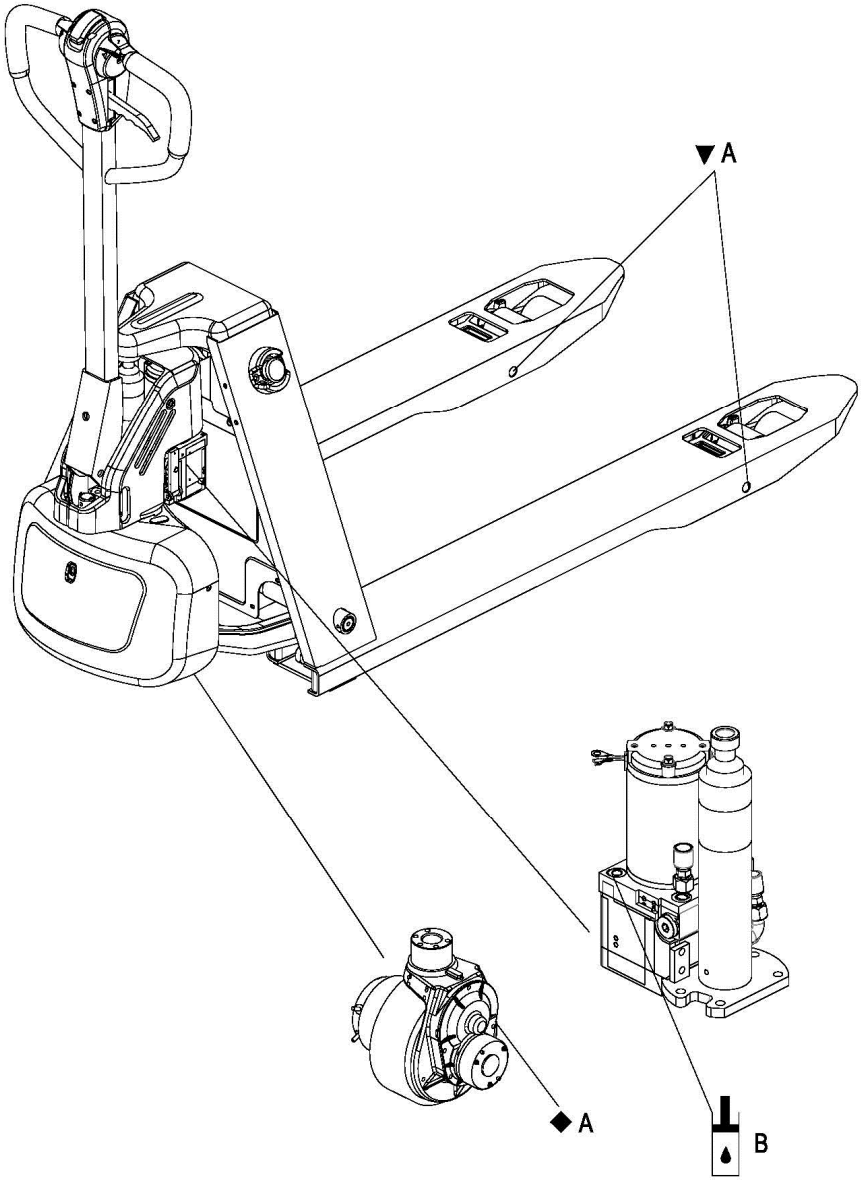
servicing work to be performed every 500 hours or every half year.
Check the wheels for wear and damage.
Check the wheel bearings and their mounting.
Hydraulics
Check the hydraulic functions.
Check hoses, pipes and interfaces for damage and ensure their tightness and sealing.
Check cylinder block and piston for damage and ensure that they are properly sealed and secured.
Check the oil level in the oil tank.
Other
Check the frame for damage.

Additional servicing work to be performed every 1000 hours or every 12 months, in addition to the 500-hour servicing work:
Drive system
Adding gear oil.
Power supply
Check the battery charging and discharging insert, replace them if any wear, deformation or erosion is found.
Check the battery charging cradle pins, replace them if any wear, deformation or erosion is found.

Additional servicing work to be performed every 2000 hours or every 24 months, in addition to the 1000-hour servicing work:
Hydraulics
Change the hydraulic oil.

Technical inspection and maintenance data

Lubrication maintenance schematics



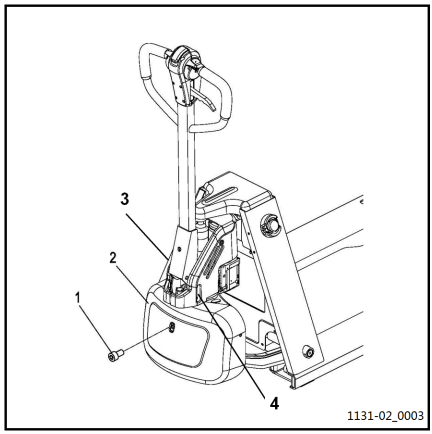
A Turning mechanism, gear oil injection port C
B Hydraulic oil filler port

Table of recommended fuels and oils

Designation	Model no.	Amount added	Position used
Antifriction hydraulic oil	HVLP46" / ISO VG46	0.21L	Hydraulics
Moly lithium grease no. 3	Grease (contains MoS2)	110 g	Gearbox
Moly lithium grease no. 3	Grease (contains MoS2)	As appropriate	Turning mecha-nism

Essential maintenance

Disassembling the cowling



– Loosen the 4 stud bolts that lock the cowling in place (1).
– Remove the driving cover(2).
– Rotate the handle 90 degrees, unscrew the four screws (4), remove the hydraulic cover (3) through the spaces.

Replacing the drive wheel

The drive wheel can only be replaced by authorised service personnel.

NOTE

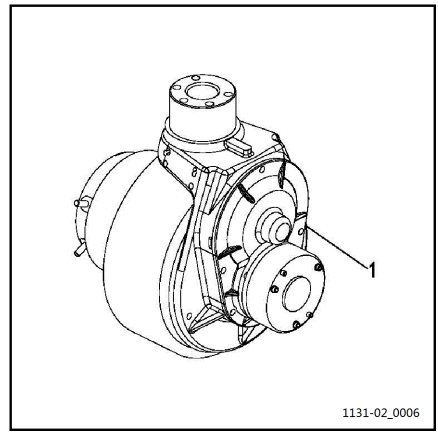
Please contact an authorized dealer.

The quality of tyres affects the stability and performance of the truck. When replacing tyres fitted at the factory, only use the manufacturer's original spare parts. Otherwise the data sheet specifications of the truck cannot be guaranteed. When changing wheels and tyres, ensure that the truck does not slew (e.g. when replacing wheels always left and right simultaneously).

WARNING

Only original tires have been certified by our quality assurance service. To ensure safe and reliable operation of the fork truck, only tires of the manufacturer must be used.

Topping up the gear oil



– Park the truck as specified.

– Pull the key switch out to prevent the truck from being accidentally started.

⚠ CAUTION

If you need to work underneath a raised truck, take effective measures to prevent accidents such as the truck overturning or slipping.

– Remove the cover.

– Pour correct gear oil into the grease fitting (1).

⚠ CAUTION

Do not add gear oil that contains impurities.

– Refit by following the above steps in reverse order.

How to add oil

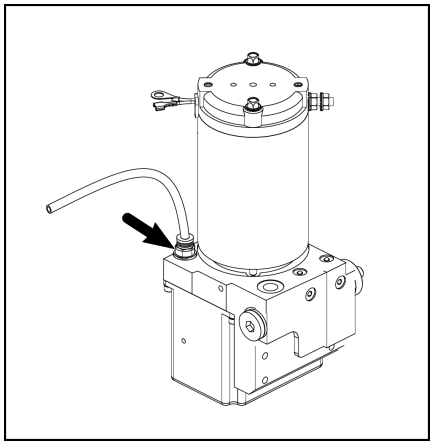
It is necessary to add hydraulic oil when you heard explosion sound from pipe during lifting.

– Prepare the truck for maintenance and repairs (See “Prepare the truck for maintenance and repairs”).

– Remove the hydraulic cover.(See “Disassembling the cowling”).

– Add hydraulic oil of the correct grade (See “Technical inspection and maintenance data”).

– Add hydraulic oil till you can't hear explosion sound during lifting any more.
– Re-installation in the reverse order.

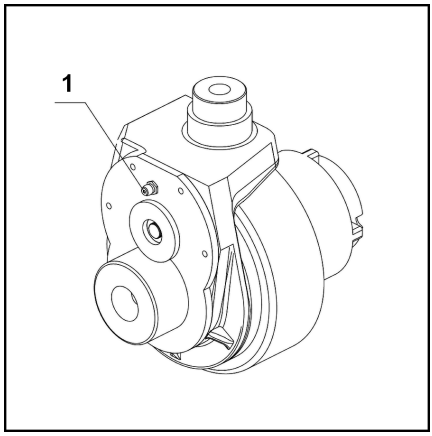


How to add grease

– Prepare the truck for maintenance and repairs (See “Prepare the truck for maintenance and repairs”).
– Remove the front panel. Add grease of the correct grade (See “Technical inspection and maintenance data”).
– Add gear grease(1).
– Re-installation in the reverse order.

⚠ WARNING

It is forbidden to add hydraulic oil with impurity.

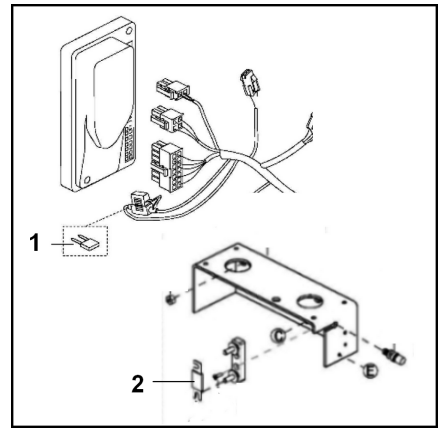


Checking the fuses

– Fully lower the forks.

– Press the emergency stop switch.
– Remove the electrical cover(See section “Disassembling and installing the battery”)
– Fuse 5A installed on main harness. If necessary, replace it with fuse that match the parameters specified in the table below. ▷

Item	Location	Rating
1	Wire harness	5A
2	chassis fuse holder	100A



Troubleshooting

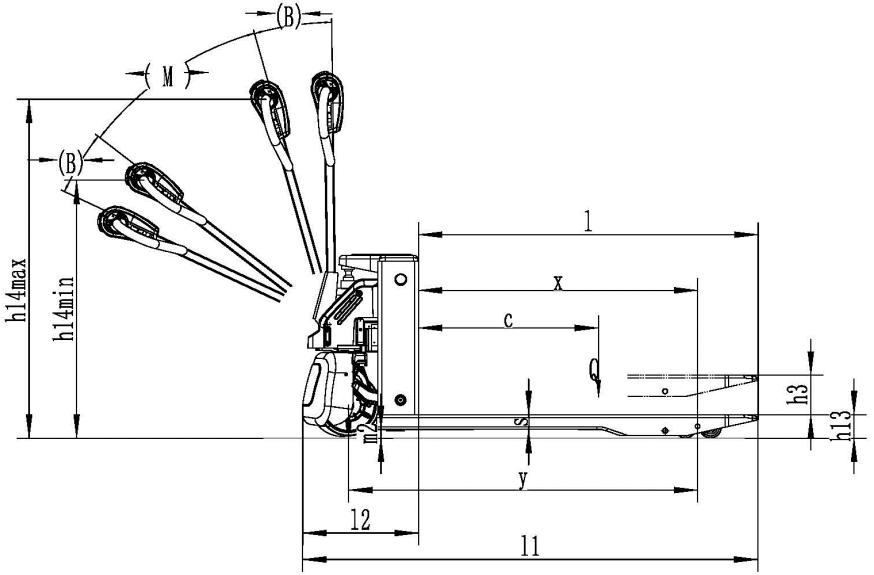
If the fault cannot be rectified after carrying out the remedial procedure, notify the Manfacture's sevice department, as any further troubleshooting can only be performed by specially trained and qualified service personnel.

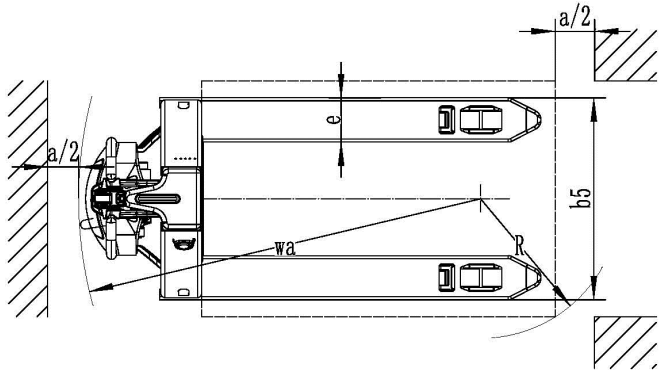
Fault	Probable Cause	Action
Truck does not start.	–Battery connector not plugged in –Key switch in “0” position –Incorrect CanCode code –Battery charge too low –Faulty fuse –Truck in charge mode	–Check the battery connector and connect if necessary. –Set key switch to “I” –Check code –Check battery charge, charge battery if necessary –Check fuses –Interrupt charging
Load cannot be lifted	–Charging capacity below 15% –Truck not operational –Hydraulic oil level too low –Faulty fuse	–Charging the battery –Carry out all measures listed under “Truck does not start” –Check the hydraulic oil level –Check fuses

6

Technical Data

Technical datasheet





Technical datasheet

Description				
1.1	Manufacturer		STILL	STILL
1.2	Truck model		ECH 12C	ECH 15C
1.3	Drive type: battery, diesel, petrol, LPG, mains power		Battery	Battery
1.4	Operation		Pedestrian	Pedestrian
1.5	Nominal loading capacity	Q (kg)	1200	1500
1.6	Load centre	c (mm)	600	600
1.8	Axle centre to fork face	x (mm)	950 (880)	950 (880)
1.9	Wheelbase	y [mm]	1190(1120)	1190(1120)

Weight				
2.1	Service weight	kg	115	115
2.2	Axle load with load, front/rear	kg	540/1070	540/1070
2.3	Axle load without load, front/rear	kg	100/15	100/15

Wheels				
3.1	Tyres: Pneumatic, polyurethane, rubber		PU	PU
3.2	Tyre size, front	mm	Φ210x70	Φ210x70
3.3	Tyre size, rear	mm	Φ80x60(Φ74x88)	Φ80x60(Φ74x88)
3.5	Wheels, number front/rear (X=drive)		1x/4(1x/2)	1x/4(1x/2)

Dimensions				
4.4	Lift height	h3 (mm)	115	115
4.9	Height of tiller arm in driving position, min/max	h14 (mm)	750/1190	750/1190
4.15	Fork height, lowered	h13 (mm)	80	80
4.19	Overall length	l1 (mm)	1550	1550
4.20	Length to fork face	l2 (mm)	400	400
4.21	Overall width	b1/b2 (mm)	560 (685)	560 (685)
4.22	Dimensions of forks	s/e/l (mm)	50x150x1150	50x150x1150
4.25	Distance between fork arms	b5 (mm)	560 (685)	560 (685)

Dimensions				
4.32	Ground clearance with load, center of wheelbase	m2 (mm)	30	30
4.34	Aisle width with 800 x 1200 mm pallet along forks	Ast (mm)	2062	2062
4.35	Turning radius	Wa (mm)	1390	1390

Performance data				
5.1	Driving speed, full load/no load	km/h	4.5/5	4.5/5
5.2	Lifting speed, with/without load	m/s	0.017/0.024	0.017/0.024
5.3	Lowering speed, with/without load	m/s	0.09/0.06	0.09/0.06
5.8	Maximum climbing ability, with/without load	%	6/16	6/16
5.10	Brake type		Electric	Electric

Driving				
6.1	Traction motor rating S2 60 min	kW	0.75	0.75
6.2	Lifting motor rating at S3 15%	kW	0.5	0.5
6.4	Battery voltage, nominal capacity K5	V/Ah	24/20	24/20
6.5	Battery weight	kg	5	5
6.6	Energy consumption acc. to VDI cycle	kW/h	n/a	n/a

Other				
8.1	Drive control method		DC	DC
8.4	Noise level	dB(A)	<74	<74

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).

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STILL GmbH

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