



Original instructions

Pallet truck

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first in intralogistics

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Made in China



Rules for the operating company of industrial trucks

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

This guide provides information for handling industrial trucks:

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

Internet address and QR code ▷

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



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1

Introduction

Your industrial truck

Your industrial truck

General

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

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

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

Therefore:

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

Conformity marking

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

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

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

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



Your industrial truck

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.

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.

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

Information about documentation

Scope of the documentation

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

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

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

Production number	
Year of manufacture	

Please quote the production number in all technical enquiries.

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

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

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

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

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

Information about documentation

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



NOTE

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

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

Supplementary documentation

This industrial truck can be fitted with a **Customer Option (CO)** that deviates from the standard equipment and the variants.

This CO may consist of:

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

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

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

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

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

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.

Information about documentation

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.

Date of edition and latest update of this manual

The publication date of these operating instructions is printed on the cover sheet.

The manufacturer makes continuous efforts to improve its industrial trucks, and therefore reserves the right to implement changes and to accept no claims concerning the information provided in this manual.

To receive technical assistance, please contact the service centre authorised by your closest manufacturer.

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	

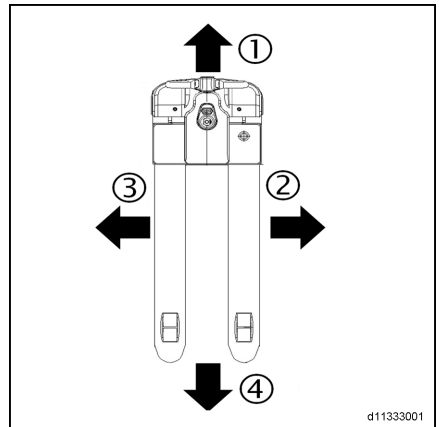
Information about documentation

Abbreviation	Meaning	Explanation
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	
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)

Abbreviation	Meaning	Explanation
VDE	Verband der Elektrotechnik Elektronik Informationstechnik e. V.	German technical/scientific association
VDI	Verein Deutscher Ingenieure	German technical/scientific association
VDMA	Verband Deutscher Maschinen- und Anlagenbau e. V.	German Mechanical Engineering Industry Association
WLAN	Wireless LAN	Wireless local area network

Defining directions

The truck's directions define as the forwards (1), backwards (4), right(2) and left(3).



Information about documentation

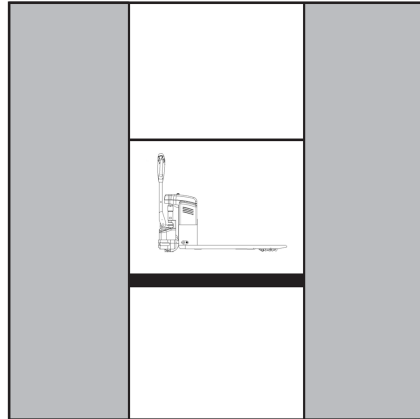
Illustrations

At many points in this documentation the (mostly sequential) operation of certain functions or operating procedures is explained. To illustrate these operations, schematic representations of a truck are used.



NOTE

These schematic representations do not represent the design state of the documented truck. They only serve to illustrate operating procedures.



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.

Technical description

The Electric Pallet Trucks is used for handling pallets and have a maximum load capacity of 1500 kg.

Design

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

Technical description

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

Steering system

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

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

Tiller

The composite construction tiller head provides excellent impact resistance.

The ergonomic control layout is suitable for left-handed and right-handed operators. The horn, lifting and lowering devices 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

The electronic control unit ensures comfortable use and lower costs.

Precise, load-independent travel.

Jolt-free starting and smooth acceleration to maximum speed.

Simply release or turn the drive direction switch to brake.

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

Hydraulic system

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

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

Equipped with lithium-ion battery.

The display unit displays the battery's remaining charge.

Description of use and climatic conditions

Normal use

- Indoor use.
- Driving (travelling and lifting) on a substantially firm, smooth and prepared surfaces.
- Driving with the horizontal load centre of gravity approximately on the longitudinal centre plane of the truck.
- Ambient temperature ranging from 5°C to +40°C.



NOTE

If the Forklift is used for a long time in an environment lower than 5 °C, in a cold storage or under extreme temperature and humidity changes, special equipment must be installed additionally and the manufacturer's permission must be obtained.

- The truck's maximum operation altitude is up to 2000 m.

Use of the truck

Use of the truck

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.

Unauthorised use

Any danger caused as a result of unauthorised use becomes the responsibility of the operator or driver and not that of the manufacturer.

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

Place of use

The truck only can be used in indoors.

The sites on which the truck is used must comply with the applicable regulations (condition of the ground, lighting etc.).

The ground must have sufficient load capacity (concrete, asphalt).

The truck is suitable for indoor use (temperatures ranging from 5°C to +40°C). The maximum operation altitude is up to 2000 m.

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.

Transporting people is prohibited.

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

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

The operator (see chapter entitled "Definition of terms used for responsible persons") must ensure that appropriate fire protection is available in the vicinity of the truck during operation.

Depending on the application, additional fire protection must be provided on the industrial truck. If in doubt, please contact the relevant authorities.

Residual risks

Residual dangers, residual risks

Despite all operational precautions and compliance with standards and rules, the possibility of additional risks when using the truck cannot be entirely excluded.

The truck and all its components comply with the regulations relating to current applicable safety rules.

Persons in the vicinity of the truck must be particularly cautious and react immediately in the event of any malfunction, incident, breakdown etc.

WARNING

Personnel in contact with the truck must be informed of the risks related to using the truck.

These operating instructions draw your attention to the safety rules.

The risks are:

- Escape of consumables due to leaks, ruptured lines and tanks etc.
- Risk of accident when driving over difficult ground such as slopes, soft or irregular surfaces or in poor visibility etc.

- Falling, tripping etc. when moving on the industrial truck, especially in the wet, with leaking consumables or icy surfaces.
- Loss of stability due to the load being unstable or the load slipping etc.
- Risk of fire and explosion due to batteries and electrical voltages.
- Human error - Disregarding safety regulations.

It is important to adjust the speed of the truck depending on the load and ground conditions.

The stability of the truck has been tested to the latest standards. These standards only take account of the static and dynamic tilting forces that can arise during operation that complies with the specifications and operating rules. Risks caused by misuse or incorrect operation that jeopardise the stability cannot be ruled out in extreme situations.

Residual risks

Residual dangers, residual risks

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

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

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

WARNING

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

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

Risks can include:

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

The manufacturer is not held responsible for accidents involving the truck caused by the failure of the operating company to comply with these regulations either intentionally or carelessly.

Stability

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

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

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

Special risks associated with using the truck and attachments

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

Residual risks

Overview of hazards and countermeasures



NOTE

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

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

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

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

Residual risks

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

Danger to employees

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.

Residual risks

2

Safety

Definition of terms used for responsible persons

Definition of terms used for 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 intended purpose and in compliance with the safety guidelines set out in these operating instructions.

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

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

It is recommended that these checks comply with national performance specifications.

Specialist

A specialist is deemed to be:

- A person whose experience and technical training has allowed him to develop relevant knowledge of industrial trucks
- A person who is also familiar with national health and safety regulations and generally recognised technical directives and conven-

tions (standards, VDE regulations, technical regulations of other European Union member states or countries that are signatories to the treaty that established the European Economic Area). This expertise allows him to assess the condition of industrial trucks in terms of health and safety

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, and have been specifically designated to drive the truck. Specific knowledge of the truck is also necessary.

wear to be able to drive and brake in complete safety.

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

Driver rights, duties and rules of behaviour

The driver must be duly informed of his rights and duties.

The driver must:

- Have read and understood the operating instructions
- Have familiarised himself with safe operation of the truck
- Be physically and mentally able to drive the truck safely

The driver must be granted the required rights.

The driver must wear protective equipment (protection suit, safety helmet, industrial goggles and protective gloves) that is appropriate for the conditions, the task and the load to be lifted. The driver must also wear safety foot-

DANGER

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

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

Definition of terms used for responsible persons

Prohibition of use by unauthorised persons

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

When leaving the truck, the driver must secure it against unauthorised use.

Basic principles for safe operation

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.

Special features when using lithium-ion batteries (variant)

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



⚠ DANGER

Risk of explosion!

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

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

Permissible lithium-ion batteries

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

Declaring the use of lithium-ion batteries

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

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

Hazard assessment

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

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

Driver qualification

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

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

Procedure in the event of a fire

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

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

Basic principles for safe operation

- Ventilate the location of the fire well, as the resulting combustion gases are corrosive if inhaled.
- Inform the fire brigade that lithium-ion batteries are affected by the fire.
- Observe the information provided by the battery manufacturer regarding the procedure in the event of a fire.

Water can be used to cool down an incipient fire.

Transport

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

- Contact the authorised service centre for more information.

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, attachments 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.

Wheels and tyres

⚠ DANGER

Risk to stability!

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

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

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

The following rules must be observed to ensure stability:

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

Basic principles for safe operation

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

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

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

- Contact your authorised service centre regarding this matter.

Medical 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.

Emissions

Noise emission values

Calculated during the test cycle performed in accordance with standard EN 12053

Acoustic pressure level on the driver's compartment		
ECH 15	LPAZ	<70



NOTE

Lower or higher noise values may occur when using industrial trucks, e.g. due to the mode of operation, environmental factors and other sources of noise.

Vibrations

Vibrations to which the hands and arms are exposed

The following value is valid for all truck models:

- Vibration characteristics $< 2.5 \text{ m/s}^2$



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.

Safety tests

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.

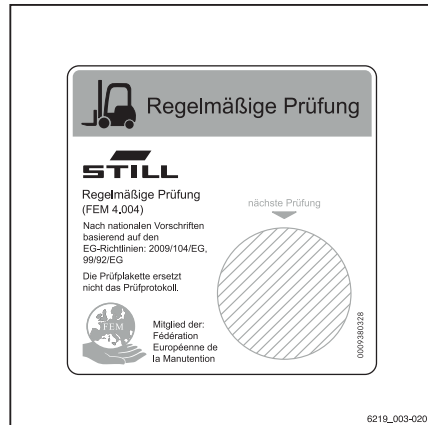
The operating company is responsible for ensuring that any defects are remedied without delay.

- Notify your authorised service centre.



NOTE

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



Electrical insulation testing

The truck's electrical insulation must have sufficient insulation resistance. Insulation resistance must be tested in accordance with EN 1175-1 and ISO 20898 at least once a year.

NOTE

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

Measuring battery insulation resistance

NOTE

- *Test voltage > battery nominal voltage*
- *The test voltage must not exceed 100 V or triple the value of the nominal voltage*
- Measure insulation resistance using a suitable meter.

The insulation resistance is sufficient when it has a resistance of at least 50 Ohms multiplied by the nominal voltage of the truck cir-

cuit, between the parts under voltage and the truck chassis.

Contact the After-Sales Service.

Measuring the insulation resistance of the electrical system

NOTE

- *Test voltage > battery nominal voltage*
- *The test voltage must not exceed 100 V or triple the value of the nominal voltage*
- Measure insulation resistance using a suitable meter.

The insulation resistance is sufficient when it has a resistance of at least 1000 Ohms multiplied by the nominal voltage of the truck circuit, between the parts under voltage and the truck chassis.

Contact the After-Sales Service.

Safety regulations for handling consumables

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!

⚠️ 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.



⚠️ 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.



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.



⚠️ 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.

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.

Safety devices

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.

Safety guidelines

The operating company must ensure that the driver understands all the safety information.

Observe the relevant regulations and guidelines, e.g.:

- Operation of industrial trucks
- Rules for driveways and the area of operation
- Driver rights, duties and rules of behaviour
- Special operating areas
- Information regarding setting off, driving and braking
- Information for maintenance and repair
- Periodic checks
- Disposal of greases, oils and battery
- Residual risks

As the operating company or responsible person, ensure that all directives and safety guidelines that are applicable to your industrial truck are complied with.

- Any special equipment for attachments
- Features of the operating and working area

Only then should intensive training exercises commence.

Safety information

DANGER

The truck must not be used by unauthorised persons.

As the operating company, you must ensure that access to the truck is only possible for authorised personnel.

DANGER

Safety systems are there for your safety.

Safety systems - of any kind - must never be disabled.

DANGER

Loads should be arranged so that they do not project beyond the edge of the truck loading surface and cannot slip, topple over or fall off.

If necessary, use a load backrest (special equipment).

CAUTION

Welding operations on other parts of the truck can cause damage to the electronics.

Therefore, always disconnect the battery and all connections to the electronic controls beforehand.

WARNING

The working area of the industrial truck must be adequately lit.

If it is insufficiently lit, working spotlights must be installed to ensure that the driver can see properly

CAUTION

The functionality of medical equipment (e.g. pace makers or hearing aids) may be impaired.

Check with a doctor or the medical equipment manufacturer that the equipment is sufficiently protected against electromagnetic interference.

Battery connection cables

Battery connection cables

CAUTION

Using sockets with NON-ORIGINAL battery connection cables can be dangerous (see purchase references in the parts catalogue)

EMC – Electromagnetic compatibility

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

EMC involves

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

An EMC test thus firstly measures the electromagnetic interference emitted by the truck and

secondly checks it for sufficient resistance to electromagnetic interference with reference to the planned usage location . A number of electrical measures are taken to ensure the electromagnetic compatibility of the truck .

CAUTION

The EMC regulations for the truck must be observed.

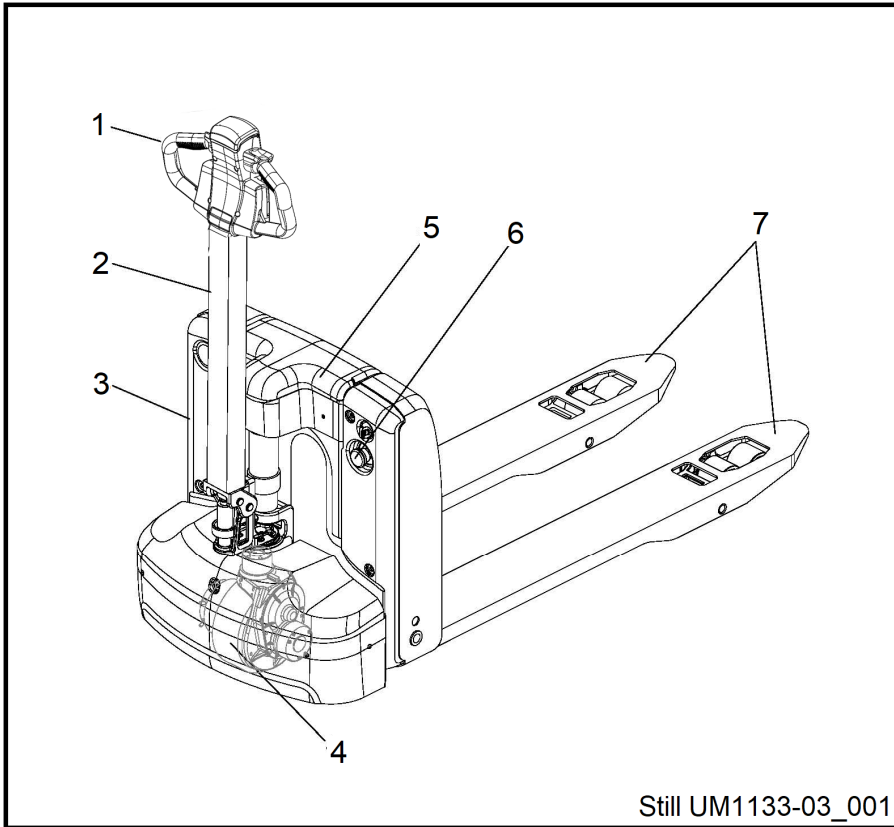
When replacing truck components the protective EMC components must be installed and connected again.

3

Views

Overview

Overview

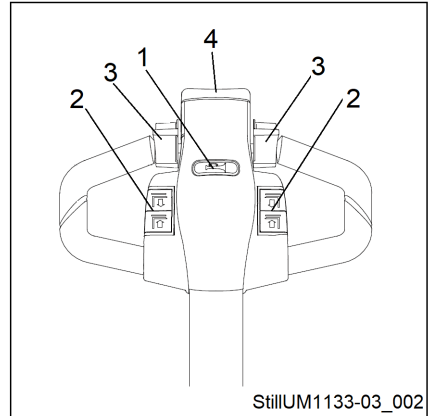


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- 1 Operating handle
- 2 Tiller
- 3 Hydraulic station
- 4 Drive wheel

- 5 Battery
- 6 Emergency off switch
- 7 Fork

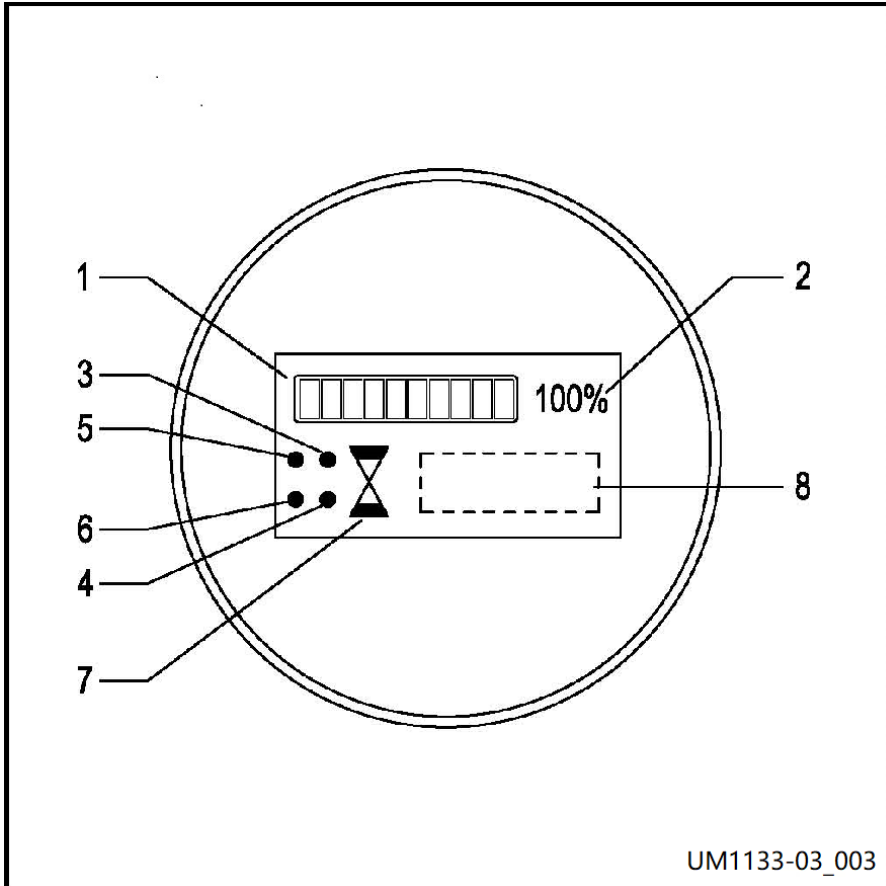
Operating handle



No.	Name	Description
1	Horn button	Emits an acoustic warning signal.
2	Lifting/lowering button	Raises or lowers the load component.
3	Drive switch	Controls the direction and speed of travel.
4	Collision protection button	Protection function: The truck will move away from the operator until this button is released.

Display element

Display element

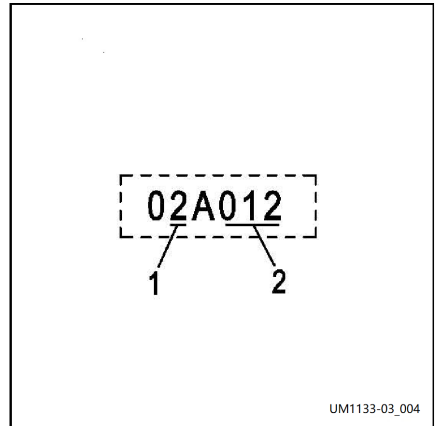


No.	Composition	Function
1	Charge display	When all 10 bars are lit, the battery is fully charged. When the first and second bars flash alternately, the battery charge is low and the battery needs to be recharged.
2	Battery residual charge	Displays the residual charge of the battery; "100%" indicates that the battery is fully charged.

3	Forward indicator light	Lights up when travelling forward normally.
4	Reverse indicator light	Lights up when reversing normally.
5	Lifting indicator light	Lights up when lifting normally.
6	Lowering indicator light	Lights up when lowering normally.
7	Operating status indicator light	Lit solid, interlock switch off; Flashing, interlock switch closed, hour meter starts counting.
8	Information display area	Displays the vehicle's total operating time; Displays error messages.

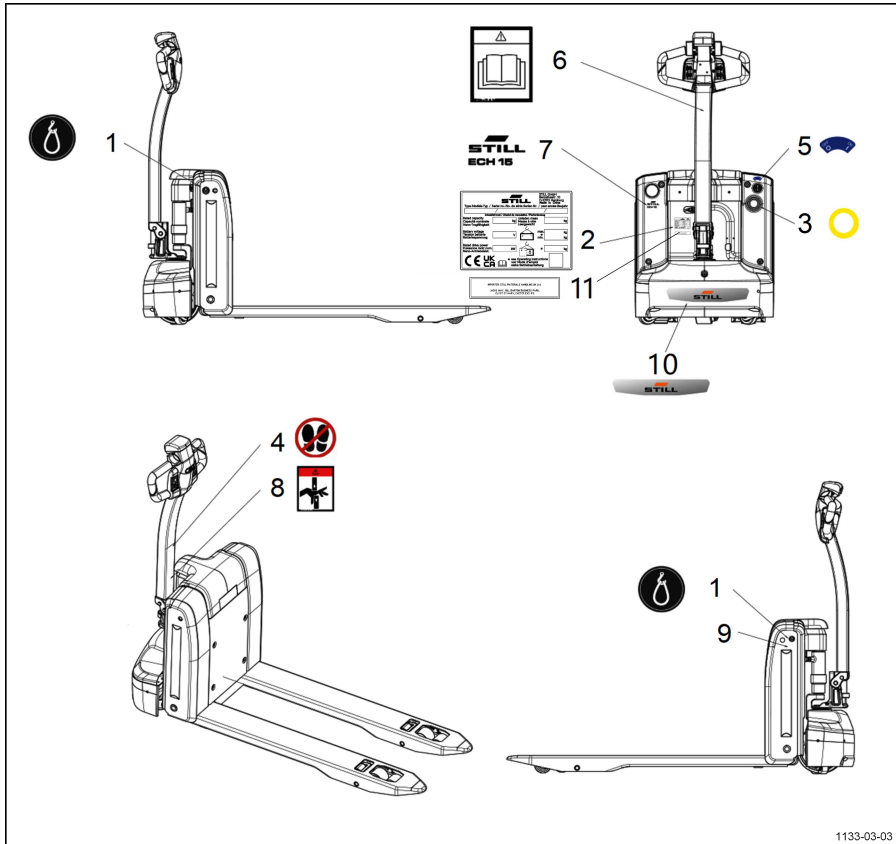
Error code

Error codes		
1	Control unit codes	2 = Drive control unit 6 = Steering control unit
2	Error code	The corresponding error message can be checked based on the error code



Labels

Labels

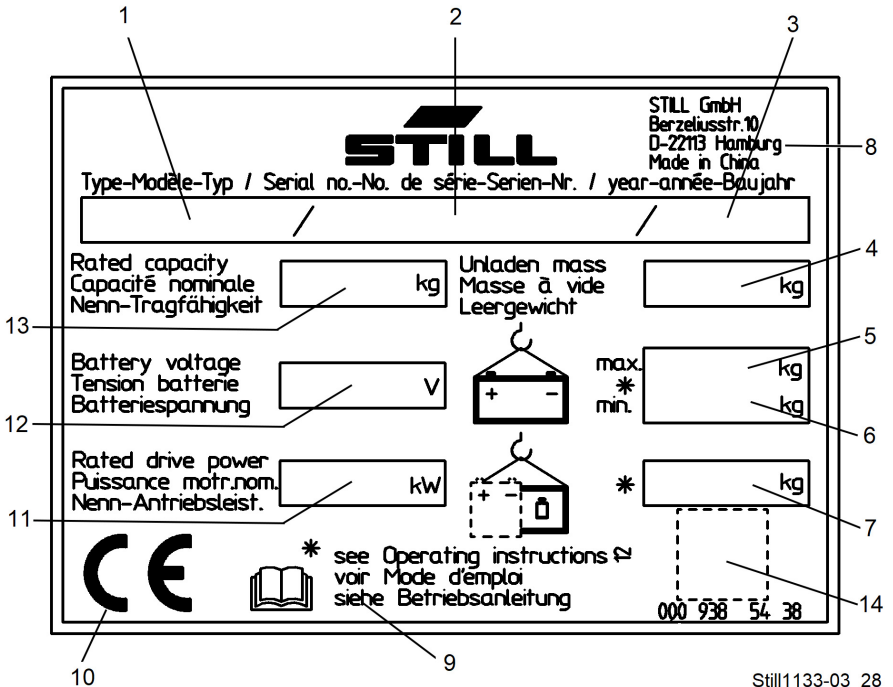


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- | | | | |
|---|--|----|-------------------------|
| 1 | Sling label | 7 | Model label |
| 2 | Nameplate | 8 | Anti-pinch label |
| 3 | Emergency cut-off switch warning label | 9 | Chassis NO. |
| 4 | No stepping warning label | 10 | STILL Logo |
| 5 | Key switch label | 11 | Importer label (for UK) |
| 6 | Instructions label | | |

Nameplate, variant 1

Identification plate

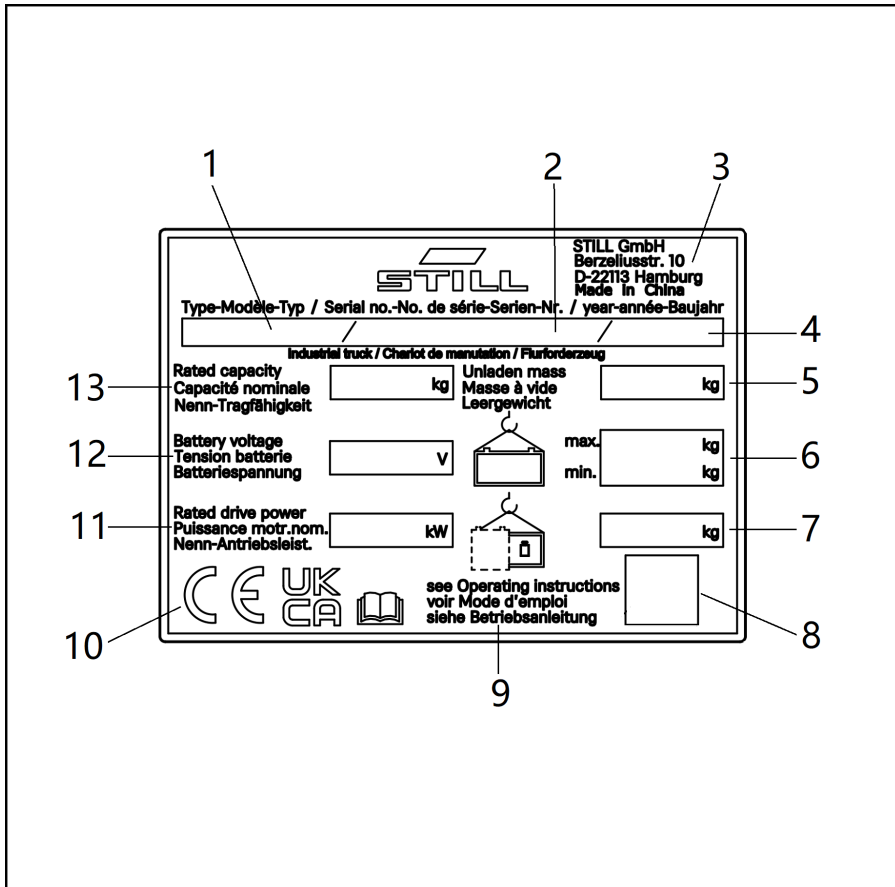


- | | | | |
|---|--|----|---|
| 1 | Type | 8 | Manufacturer |
| 2 | Serial number | 9 | Refer to technical data listed in this operating instructions for more detailed information |
| 3 | Year of manufacture | 10 | CE label |
| 4 | Unladen mass in kg | 11 | Rated drive power in kW |
| 5 | Max. permissible battery weight in kg (for electric trucks only) | 12 | Battery voltage in V |
| 6 | Min. permissible battery weight in kg (for electric trucks only) | 13 | Rated capacity |
| 7 | Own mass (self weight) in kg without battery | 14 | For QR code |

Nameplate, variant 2

Nameplate, variant 2

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 | 11 | Rated drive power in kW |
| 3 | Manufacturer | 12 | Battery voltage in V |
| 4 | Year of manufacture | 13 | Rated capacity |
| 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 | | |
| 8 | Data matrix code | | |
| 9 | Refer to technical data listed in this operating instructions for more detailed information | | |

i NOTE

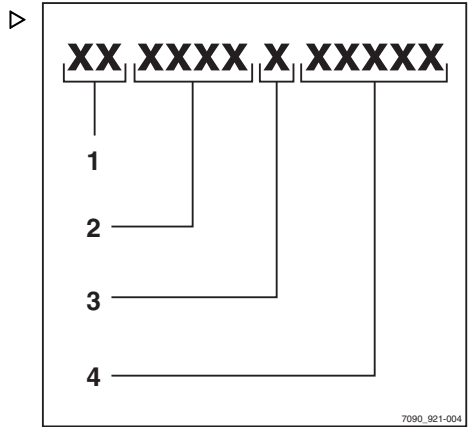
- It is possible for there to be multiple conformity markings on the nameplate.
- The EAC mark may also be located in the immediate vicinity of the nameplate.

Production number**i** NOTE

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

The production number contains the following coded information:

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



Production number

4

Operation

Cleaning the Forklift

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.

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.

Checks and tasks before daily use

Visual inspections

⚠ WARNING

Damage or other defects on the industrial truck can result in accidents.

If damage or other defects are identified on the industrial truck during the following inspections, do not use the truck until it has been repaired properly. Do not remove or disable safety systems and controls. Do not change predefined set values

Prior to start-up, ensure that the truck is safe to be operated:

- Fork arms or other load-carrying equipment should not show any noticeable damage (e.g. bends, cracks, significant wear).

- Check the area under the industrial truck for leaking consumables.

- Check whether all decal information is present and legible. Damaged or missing adhesive labels must be replaced. Check the visible areas of the hydraulic system for damage and leakages. Damaged components must be changed.

- All covers and must be fitted and secured.

- Report defects to the supervisory personnel.

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.

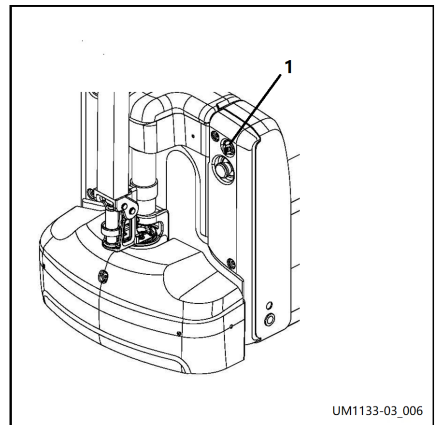
⚠ CAUTION

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.

Key switch

The key switch (1) turns the control current on and off.

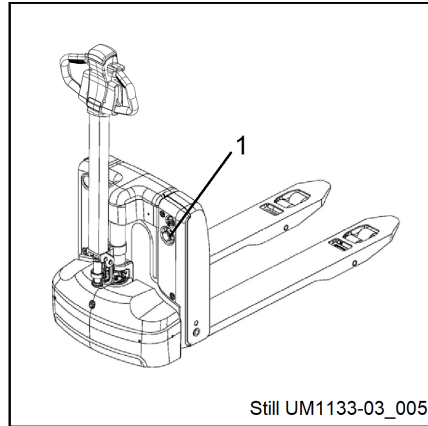
Remove the key from the key switch to ensure that the truck will not start accidentally.



Emergency off switch

Emergency off switch

The vehicle's electrical system circuits will be disconnected when you press this switch (1). All electrical functions will be stopped and the vehicle will be forced to perform an emergency stop.



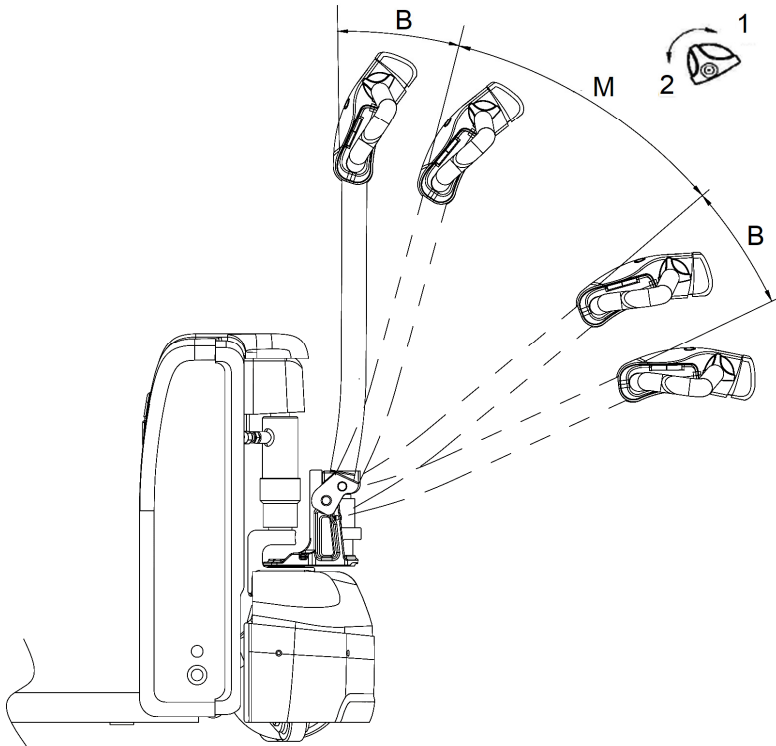
Driving the truck

Daily checks and preparations that must be carried out before putting the truck into operation.

CAUTION

Before putting the truck into use or lifting heavy objects, the driver must ensure that no other people are within the hazard area.

Driving



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Place the operating handle in the drive position (M) and place the drive switch in the desired drive direction (1 or 2). When there is a large angle of rotation, the speed will also be correspondingly large.

Driving the truck

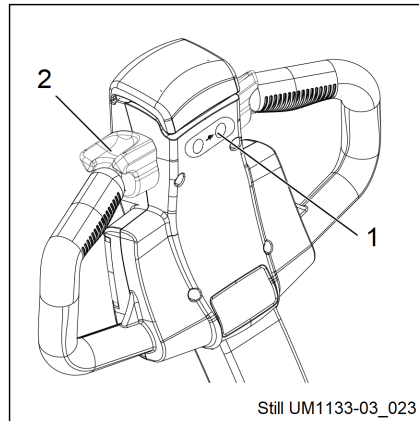
Tortoise speed

Switch on the slow travel function

Procedure:

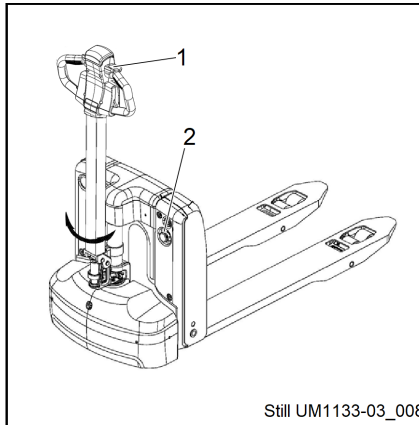
- Press and hold down the "slow travel" button (1).
- Rotate the drive switch (2) in the required travel direction.

The brake is released. The truck travels at slow speed.



Steering

Turn the operating handle (1) left or right according to the desired direction.



Braking

Emergency stop

When the emergency off switch (2) is pressed, all motor functions will be interrupted.

Forced braking

Releasing the operating handle will force the brakes. The operating handle will automatically move to the upper braking position (B). Alternatively, the brake can be forced by pressing the operating handle down to the lower braking position (B).

CAUTION

If the operating handle moves into the braking position slowly, identify the cause and rectify the fault.

Regenerative braking

Release the drive switch, which will automatically return to the initial position (speed is 0). The vehicle will enter the regenerative braking state and slow down. When it decelerates to less than 1 km/h, the brake will bring the vehicle to a standstill.

⚠ CAUTION

Activate 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. Replace the armrest elbow if necessary.

Reverse braking

Turning the drive switch to the opposite direction while travelling brakes the truck by reverse current until it starts moving in the opposite direction.

⚠ CAUTION

In a dangerous situation, the driver can apply forced braking by placing the operating lever in the braking position, or by using reverse braking, depending on the actual situation.

⚠ CAUTION

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

Using the truck on ramps

⚠ CAUTION

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

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

Be particularly careful near slopes:

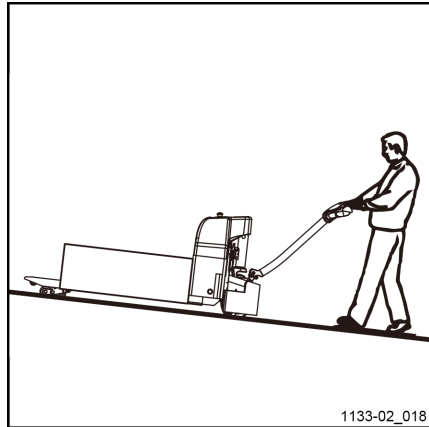
- Never attempt a ramp that has a gradient greater than the maximum gradient negotiable by the truck (see technical specifications).
- Make sure that the ground is clean and has a non-slip surface and that the route is clear.

Using the truck on ramps

Ascending slopes

- You must drive in reverse to move a load up a slope (with goods in front of the person).

You can go up the slope forwards if no goods are loaded.



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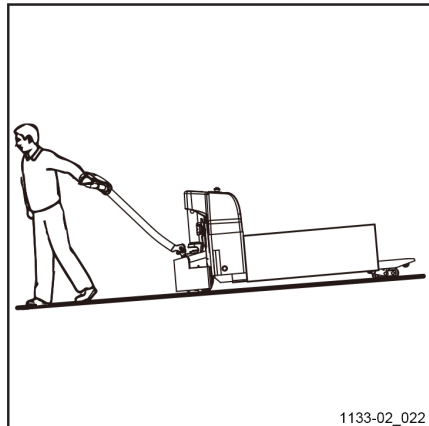
Descending slopes

⚠ DANGER

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

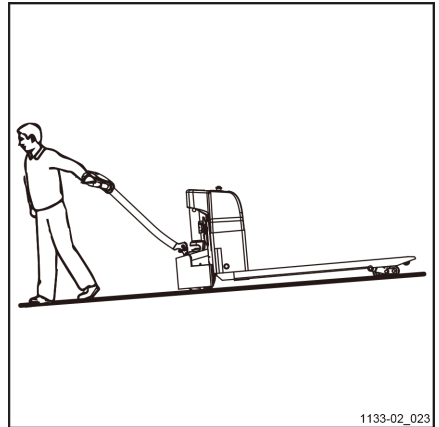
Never park the truck on a ramp. Never make a U-turn or take shortcuts on a ramp. The operator must drive very slowly on ramps.

- You must drive forwards to move a load down a slope (with goods above the person).



1133-02_022

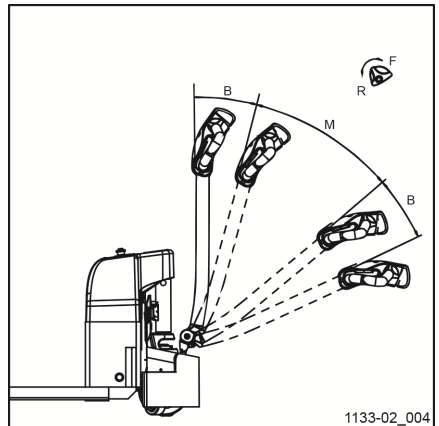
- Going down slopes forwards is recommended if no goods are loaded.



1133-02_023

Starting to move on a ramp

If you need to start the truck on a ramp, first move the tiller into position (B) (with the truck's brake applied), then push the handle switch in the desired direction ((F) or (R)). Finally, push the tiller into the operating position (M).



1133-02_004

F Forward travel
R Reverse travel

Picking up and storing goods

Picking up and storing goods

⚠ CAUTION

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

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

Do not place long loads in a lateral direction across the fork.

Stay away from the area beneath the raised forks.

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

- Instruct all personnel to vacate the hazard area of the truck. 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.
- Do not transport goods using damaged equipment (such as the truck, pallets etc.).
- Never go under the raised load component.
- Personnel are prohibited from entering the load component.
- Do not use the truck to lift personnel.
- Try to move the fork until it is completely under the goods.

Lifting

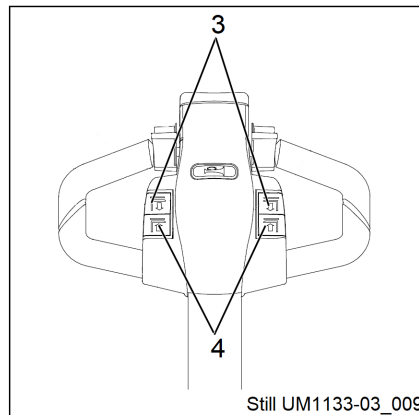
Push the lifting button (3) until the desired lift height is reached, then release the button.

⚠ CAUTION

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

Lowering

Press and hold down the lowering button (4) until the load component is at the very bottom, then release the lowering button.



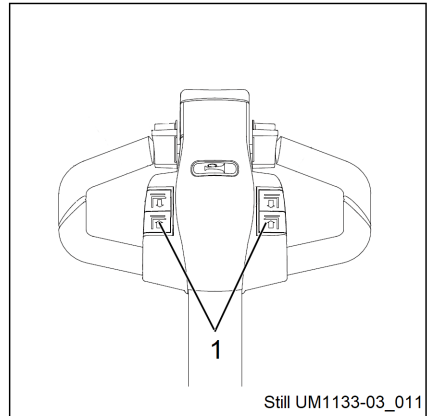
Truck parking

Whenever the driver leaves the truck, it must be parked correctly, even if it is only intended to be left for a short time.

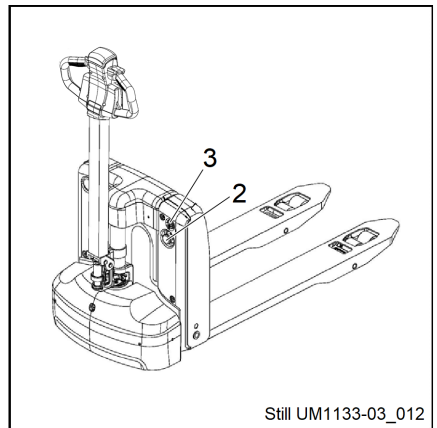
⚠ CAUTION

Always park the truck correctly. Never park the truck on a ramp. The load component must be completely lowered.

- Hold down the lowering button (1) to lower the load component. ▷
- Fully lower the fork arms.



- Turn the key switch (3) to the "OFF" position and pull out the key. ▷
- Press the emergency off switch (2).



Hoisting

Hoisting

⚠ DANGER

Danger to life!

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

⚠ WARNING

Risk of serious injury and/or major equipment damage.

Use lifting hooks and a hoist with adequate lifting capacity. Protect all components that come into contact with the lifting device.

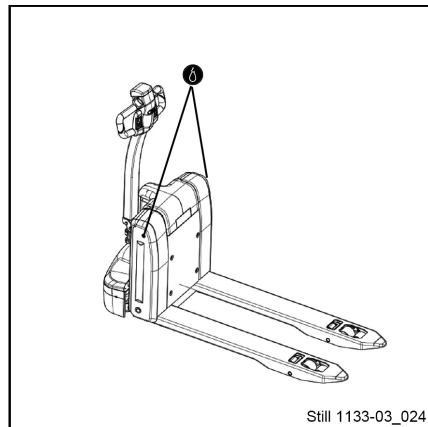
Truck weight (with battery): see technical specifications.

- Remove the load before hoisting the pallet truck.
- Disconnect the power supply.
- 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.



Truck transport

- Place the truck on a wooden pallet.

- Fix the truck to the pallet to prevent loosening. ▷

i 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 blades when lifting the truck onto the pallet, to prevent injuries caused by the forks.

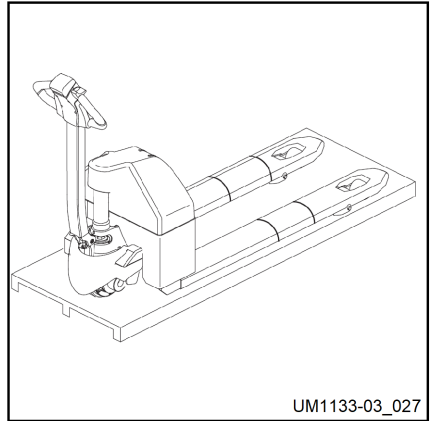
Follow the prescribed steps and park the vehicle correctly.

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.



Truck transport

Battery use and maintenance

Battery charger

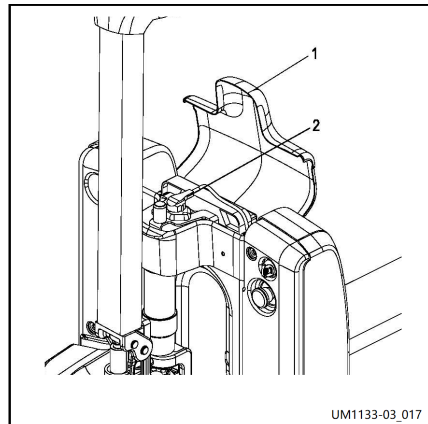
Battery charger

Charging precautions

- The truck must be parked in a well-ventilated room.
- There must be no metal objects on the surface of the battery.
- Before the start of the charging procedure, 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 charging station manufacturer must be strictly observed.

Charging procedure

- Ensure that charging requirements are complied with.
- Park the truck correctly.
- Open the swivelling hood (1).
- Unplug the power current plug (2), then plug it into a suitable power source.



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⚠ CAUTION

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

Charging indicator light

LED status	phenomenon	Malfunction analysis	Exclusion method	Description
Red light remains lit		Normal status	No	Charger is charging

Green light remains lit		Normal status	No	Battery charging is complete
Indicator lights fail to light up	Change in current / voltage	Indicator light fault	Depot repair	Battery fault
	No change in current / voltage	The power input line is in good contact with the socket and charger	Charger fault, return to factory for maintenance	Charger fault
Flashing red light		Poor contact between power input line and socket, charger	Check whether the input power line contacts well	
Yellow light remains lit		Battery fault (battery reverse connection)	Troubleshooting the battery	
		Battery fault (battery not connected)	Troubleshooting the battery	
Flashing yellow light		High ambient temperature	Ambient temperature reduced to normal temperature	
		Battery voltage too high	Troubleshooting the battery	
		Charger failure	Charger fault, return to factory for maintenance	

Disassembling and installing the battery

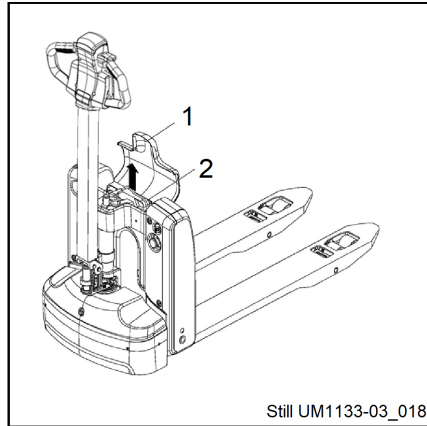
Switch off the truck power before removing and installing the battery.

Battery removal/installation steps:

Disassembling and installing the battery

- a: Open the swivelling hood (1).
- b: Pull out the battery (2) from above.

Install following the above steps in reverse order.



6

Maintenance

Cleaning

Cleaning

⚠ 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.

Cleaning operations

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 circuit). If the truck is powered by a rechargeable 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 using a water hose or high-pressure equipment to 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.

After cleaning operations are completed, the operating procedures specified in the "Putting the equipment back into operation" section must be carried out.

Operational safety and environmental protection

- The checks and maintenance operations outlined in this section must be carried out at the intervals set out in the maintenance checklist.
- Modifying this truck, especially its safety devices, is prohibited. It is strictly forbidden to change the working speed of the truck.
- Only original equipment and spare parts meet with company quality assurance requirements. To ensure the equipment's stability and operational performance, you must only use original equipment manufac-

tured 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.

- After the inspection and maintenance operations are completed, the operating procedures specified in the "Putting the equipment back into operation" section must be carried out.

Repairs and maintenance safety regulations

Personnel qualifications

Only qualified and authorised personnel are allowed to perform maintenance work. Regular safety checks and checks after unusual incidents must be performed by a competent person. The competent person must conduct their evaluation and assessment from a safety

standpoint, unaffected by operational and economic conditions. The competent person must have sufficient knowledge and experience to be able to assess the condition of a truck and the effectiveness of the protective devices in accordance with technical conventions and the principles for testing trucks.

Maintenance personnel for batteries

Batteries must only be charged, serviced, and replaced by personnel who have received appropriate training in accordance with the instructions from the manufacturers of the battery, battery charger and truck.

- Follow the handling instructions for the battery and the operating instructions for the battery charger.

Maintenance work without special qualifications

Simple maintenance work, such as checking the hydraulic oil level, may be carried out by untrained personnel. A qualification of the type held by a competent person is not required to carry out this work. The required tasks are described in the chapter entitled Preserving operational readiness.

Information for carrying out maintenance

This section contains all information required to determine when the truck needs maintenance. Maintenance must be carried out within the time limits according to the hour meter and by following the maintenance check lists. This is the only way to ensure that the truck remains ready for operation and provides optimal performance and service life. It is also a precondition for any warranty claims.

Maintenance timeframe

- The maintenance check lists indicate the maintenance work that is due.
- Carry out maintenance work on the truck based on the hour meter.

The following factors may necessitate shorter maintenance intervals:

- Dirty, poor quality roadways
- Dusty or salty air
- High levels of air humidity
- Extremely high or low ambient temperatures, or extreme changes in temperature
- Multi-shift operation with a high duty cycle
- Specific national regulations for the truck or individual components

Lifting and jacking equipment

⚠ 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.

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

When jacking up the truck, appropriate tools or equipment 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 fork arms.

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 also 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

Calendar of maintenance operations

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, the

left and right wheels should be replaced at the same time).

Calendar of maintenance operations

- It is necessary to perform regular inspection and maintenance to ensure the normal operation of all of your tow tractor's components, to ensure that it operates safely and reliably, to improve its service life, and to ensure that it operates at its best performance.
- We recommend carrying out maintenance operations at the specified frequency for normal use.
- Maintenance intervals should be shortened and maintenance frequency should be greater in harsh and poor operating environments, such as high or low-temperature environments and acidic or dusty environments. There number of maintenance operations should also be increased.
- Maintenance should be undertaken by qualified personnel using correct tools and procedures.
- Maintenance and replacements should make use of genuine parts from the original manufacturer.

Daily checks before use (every 1 month)

- Check operation switch, display equipment and component functions;
- Check the inching switch setting function;
- Visually inspect the battery;
- Check the chassis frame and apply grease. Check the position reset function of the operating handle;
- Check the hydraulic functions;
- Check hoses, pipes and interfaces for damage and ensure their tightness and sealing;

1000 hour service plan

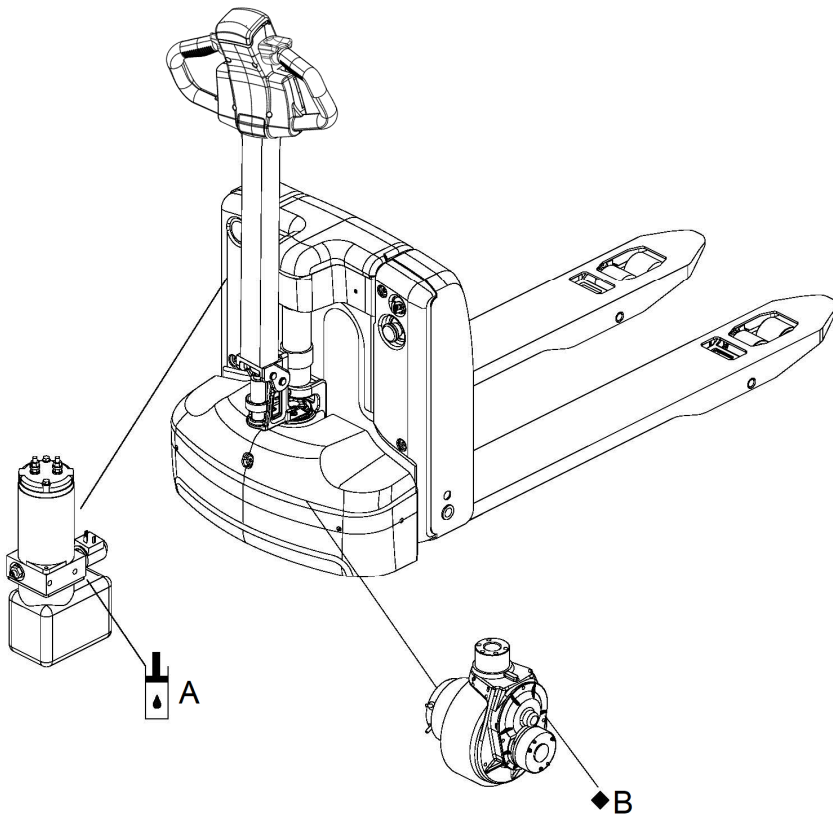
At operating hours									Carried out		
1000		3000		5000		7000		9000		✓	*
11000		13000									
Servicing work to be performed every 1000 hours or every 12 months.											
Electrical system											
Check that cables are free from damage and that the terminals are firmly attached.											
Check the control unit.											
Check the fastening of the cables and motor.											
Power supply											
Check whether the battery is secured.											
Drive system											
Check the gearbox for abnormal sound and leakage.											
Check the wheels for wear and damage.											
Check the wheel bearings and their mounting.											
Overall structure											
Check the frame for damage.											
Hydraulic system											
Check cylinder block and piston for damage and ensure that they are properly sealed and secured.											
Check the oil level in the oil tank.											

2000-hour service plan

At operating hours									Carried out		
2000		4000		6000		8000		10000		✓	*
12000		14000									
Servicing work to be performed every 2000 hours or every 2 years.											
Hydraulic system											
Change the hydraulic oil.											
Check and clean the hydraulic oil filter. Change when necessary.											

Lubrication maintenance schematic view

Lubrication maintenance schematic view



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A Hydraulic oil filler port

B Gear oil filler port

Fluids

Strictly follow the manufacturer's regulations when using and handling fluids.

Non-standard operation may put the operator's health and life at risk and damage the environment. Fluids should only be stored in the specified container. Fluids may be flammable,

so keep them away from hot components and naked flames.

Clean utensils must be used when refilling fluids. It is strictly prohibited to mix different fluids together (except where specifically indicated in the operating instructions).

Make sure to protect against fluid splashes. In the event of a fluid spillage, immediately cover the spillage using an appropriate adsorbent and dispose of the fluid/adsorbent mixture in accordance with regulations.

Code	Designation	Applies to	Amount added
A	L-HM32	Hydraulic system	0.48 L
B	Grease (contains MoS ₂)	Gearbox	100 g

Servicing

Pre-service preparations

Adopt all necessary safety measures to avoid accidents during servicing. The procedure below must be followed:

- Park the truck correctly.
- Pull the key switch and disconnect the battery plug out to prevent the truck from being accidentally started.
- If you need to work underneath a raised truck, take effective measures to prevent accidents such as the truck overturning or slipping.

Servicing

Remove cover

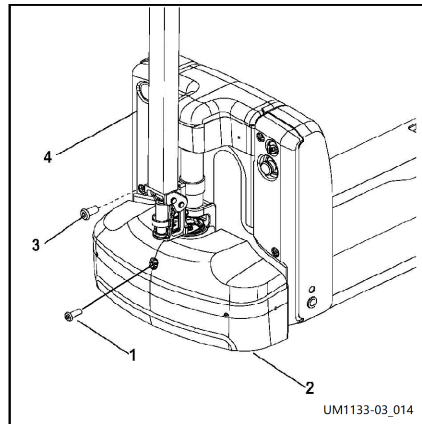
- Unscrew the three bolts (1) and take out the universal wheel housing (2). ▷
- Unscrew the two bolts (3) and take out the rear left side panel (4).

Replacing the drive wheel

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

Checking the hydraulic oil level

If there are popping noises coming from the tubing when lifting, this indicates that the hydraulic oil is insufficient and should be promptly replenished.



⚠ CAUTION

Do not add hydraulic oil that contains impurities.

Top up the hydraulic oil:

- Carry out the pre-service preparations properly.
- Remove the cover.
- If necessary, top up with hydraulic oil of the correct specification.

After topping up, lift the fork. The oil level is fully topped up when you no longer hear popping noises; continue to add oil if you still hear popping noises.

Install following the above steps in reverse order.

Topping up the gear oil

- Carry out the pre-service preparations properly.
- Remove the lower cover assembly.

Decommissioning and storing the truck

- Top up with gear oil of the correct specification by pouring it into grease nipple "1". ▷
- Top up every 500 operating hours or annually, whichever occurs first.

⚠ CAUTION

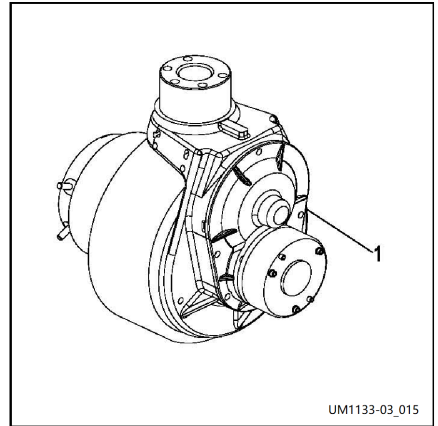
Do not add gear oil that contains impurities.

Install following the above steps in reverse order.

Putting the equipment back into operation

After cleaning or maintenance, the following operations must be performed before the truck can be put back into operation.

- Check the functionality of the alarms.
- Check the functionality of the emergency off switch.
- Check the functionality of the brake.
- Lubricate according to the truck's maintenance schematic diagram.


Decommissioning and storing the truck

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

The operations that must be performed before and after storage, as well as during storage, are detailed in the following subsections.

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 replace it if necessary.
- Apply a thin layer of lubricating oil or grease to all unpainted mechanical components.
- Lubricate according to the truck's maintenance schematic view.
- Recharge the battery periodically.

⚠ CAUTION

Charge the battery every month.

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

- Clean the battery and apply special grease to the electrode bolts.

Decommissioning and storing the truck



NOTE

Please observe the instructions and regulations provided by the battery manufacturer.

- Spray all exposed contacts with a suitable contact spray.

Recommissioning after storage

- Clean the truck thoroughly.
- Lubricate according to the truck's maintenance schematic view.
- Clean the battery, apply special grease to the electrode bolts, and install and fix the terminals on the battery.

- Charge the battery.
- Check whether the hydraulic oil contains condensation water. Change the hydraulic oil if necessary.
- Put the truck into operation.

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.

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.

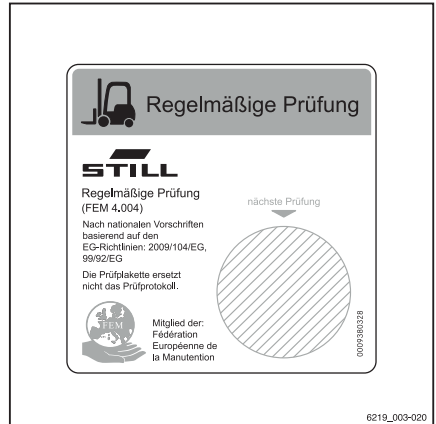
- Notify your authorised service centre.

NOTE

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

Equipment scrapping and disposal method

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.



Equipment scrapping and disposal method

7

Troubleshooting

Troubleshooting

This chapter is intended to help users identify and eliminate simple faults or problems caused by operational errors.

Carry out the checks in the table below in sequence to determine the specific cause of the failure.

Malfunction	Possible reason	Solution
Unable to drive the truck	<ul style="list-style-type: none"> - The switch is locked in the OFF position - Battery power is too low - A fuse is blown - The truck is in charging mode 	<ul style="list-style-type: none"> - Turn the key switch to the ON position - Check the battery charge and charge the battery if needed - Check the fuse device - Interrupt the charging process
Unable to lift goods	<ul style="list-style-type: none"> - The hydraulic oil level is too low - Load capacity exceeded 	<ul style="list-style-type: none"> - Check the hydraulic oil level - Pay attention to the rated load (refer to the model identification plate)

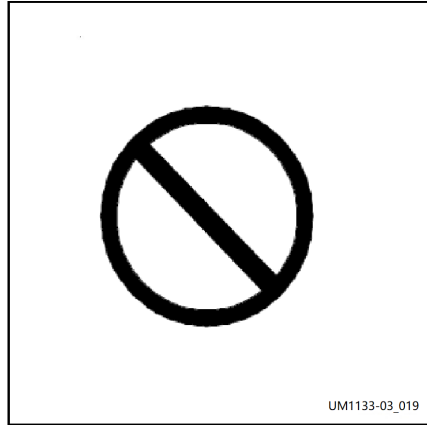
If you are still unable to resolve the fault after performing all the steps listed in "Solutions", please contact the company's customer service department. Further fault identification and elimination operations must be performed by after-sales service personnel who have undergone special training.

Lithium-ion battery use and maintenance

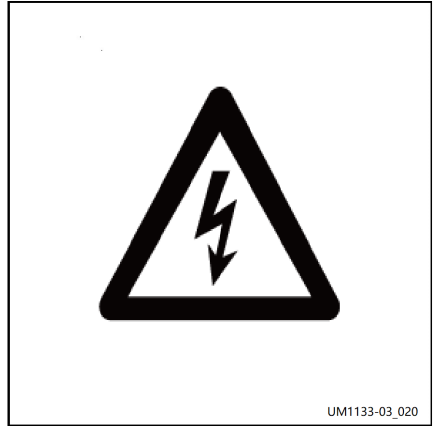
Safety precautions

Safety precautions

- Do not short-circuit the positive and negative terminals of the battery. ▷
- Do not bump the battery. Handle it gently and avoid subjecting it to excessive vibration, external impact or falls from height.
- Do not place the battery or battery pack in a corrosive chemical environment.
- Do not charge the battery without a charging protection device or using charging equipment not approved by the truck manufacturer.
- Do not expose the battery to or leave the battery in an environment above 40°C for a prolonged period, such as heat sources or direct sun light.
- Do not disassemble, crush, puncture or heat the battery.
- Lithium-ion batteries must not be used by people who lack knowledge of how to use them safely.
- Do not immerse the battery in water or other conductive liquids.
- It is forbidden to use batteries in series or in parallel with other models or types of battery.
- Serial and parallel operation of a complete power supply system containing a lithium-ion battery protection circuit board or battery management system is prohibited. If batteries have even the slightest external damage, dispose of them in accordance with national regulations for the country in which they are being used.



- It is strictly forbidden to hot-swap batteries. ▷
- Fire and electric shock are easily caused.



- Be aware of corrosion. ▷
- It may cause battery damage and shorten the battery life.



Battery introduction and instructions

- Smoking and naked flames are strictly prohibited. ▷
- They may cause the battery to explode.



Battery introduction and instructions

Battery introduction

Rated voltage	48 V	Battery material	LFP
Rated capacity	30 Ah/ 20 Ah	Battery dimensions	405 x 279 x 107 mm
Charger voltage	48 V	Charger current	10 A
Battery weight	14 kg		

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. The lithium-ion battery should be used at an ambient temperature of 0°C–40°C. Do not use or store the battery near a fire/heat source where the temperature is outside this permitted range;

⚠ CAUTION

Ambient usage 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 it promptly to avoid over-discharge; the replaced battery should also be charged promptly to avoid internal damage to the battery caused by over-discharge of the battery after self-discharge;
4. Do not place metal objects (such as wrenches, knives) on the lithium-ion battery, or other objects that may cause short-circuiting of the battery, in order to avoid short circuit between the positive and negative terminals;
5. Do not bump or strike the lithium-ion battery during use. If the battery leaks or smells, stop using it immediately and keep it away from sources of fire;
6. If the battery life is significantly shortened, please contact the after-sales service to have it checked;

7. If the lithium-ion battery fails and cannot be used, remove it from the vehicle. Trained personnel can use our BMS special reading instrument to read the information and make a preliminary judgement. For problems that cannot be solved, please contact the after-sales service department for a solution;

8. Before installing and removing the battery, be sure to read the user manual. The weight of the battery body is evenly distributed. If there is an external weight, pay attention dur-

First aid measures after a Li-ion accident

ing installation and removal. When lifting, hook two slings to the eyelets, gently lift and keep the battery stable without tilting it; Make sure that the lifting gear is suitable in terms of size and load capacity. Observe the battery weight given on the battery nameplate).

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

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.

Charging

Charging

1. The battery can only be charged using the vehicle-specific charger. Other chargers may cause battery damage;
2. The normal charging temperature range of the battery is 5°C–40°C. Do not charge in an environment that exceeds the normal temperature range;
3. If charging is not completed within the specified time, stop charging the battery;
4. Professional personnel must be on hand to carry out and oversee charging operations, in order to ensure that the charging plug and socket work normally without overheating, the charging equipment works properly, the battery pack and its protection circuit work properly, and the entire power supply system shows no signs of short circuit, overcurrent, overtemperature and overcharging.
5. When charging and maintaining the battery, observe the manufacturer's maintenance instructions for the battery and battery charger.

Storage



NOTE

Lithium-ion batteries are classified as dangerous goods according to class 9.



NOTE

Wherever possible, store batteries at ground level so that they cannot be damaged by falling. Store the batteries in a segregated area suitable for fire protection (container or safety cabinet).

1. Try to ensure that the battery or battery pack power is $\geq 60\%$ before long-term storage as the battery has a self-discharge function. Be sure to charge the battery once every 2 months to ensure that the battery power remains $\geq 60\%$;
2. Store in an environment with a temperature range of 0°C–40°C;

⚠ DANGER

Never overcharge or over-discharge the lithium-ion battery.

⚠ CAUTION

1. The normal battery charging temperature range is 5°C–40°C.
2. The voltage difference between the maximum and minimum cell voltages during charging is less than 0.1 V.
3. The voltage of the lithium-ion battery matches the charger voltage.
4. The charger should periodically check the charging overvoltage protection device.

⚠ CAUTION

Ambient storage temperature: 0°C to 40°C

3. Store in a dry, ventilated and cool environment, avoiding direct sunlight, high temperature or humidity, corrosive gas and severe vibration; Protect against precipitation.
4. Stacking is prohibited for this product series;

⚠ CAUTION

Store batteries secured against overturning. To protect batteries against moisture, do not store them directly on the floor.

Due to the fire risk, store batteries outside buildings. Store batteries at a safe distance from flammable materials.

Store lithium-ion batteries separately from other types of batteries (no mixed storage).

Maintain a safety margin of at least 2.5m from other goods.

5. Do not store under conditions whereby a load or a hidden load is connected – that is, it

Transportation

1. During loading, unloading and transportation, avoid severe vibrations and large external impacts. Rough handling, rolling, overturning, crushing and excessive stacking are prohibited; The battery transportation safety has passed UN38.3 certification, and the single transportation conforms to UN3480, and the single transportation with forklift conforms to UN3481;

2. Avoid rain during transportation;

3. Ensure that the battery or battery pack has been disconnected from the load or charging

is prohibited to have any form of discharge behaviour during storage;

6. If the battery is found to be swollen, cracked or the voltage value is excessively low after long-term storage, the battery may be damaged. Please contact the company's technical department immediately for technical support.

7. After the battery has not been used for a long time, do not charge or discharge it if a smell or leakage is detected in the vicinity of the battery.

device before transportation, without any form of charging and discharging.

⚠ DANGER

Do not bump the battery – handle it gently.

Observe the national regulations for the transport of lithium-ion batteries.

If you have any questions regarding the transport of lithium-ion batteries contact your authorised service centre.

Troubleshooting common problems

During the use and maintenance of lithium-ion power batteries, one or more of the following abnormal conditions may occur with the battery or battery system. Please arrange for a professional technician to perform the necessary repairs according to the instructions in this manual. If you have any questions about identifying or dealing with abnormal conditions, please promptly contact the after-sales service department to obtain professional technical support.

1. If the battery is found to have abnormal mechanical characteristics such as swelling, or rupture, melting, deformation or distortion of

the casing before installation and use, immediately stop using the battery and store it separately;

2. If the battery terminal compression bolts, conductive tape, main circuit wires or connectors show abnormal signs such as looseness, cracks, splits in the insulation layer or burn marks, immediately stop using the battery, find and analyse the cause and fix it;

3. If the polarity of the positive and negative terminals of the battery is found not to match

Maintenance

the polarity marks before installation, immediately stop using the battery and contact the after-sales service department to replace the battery or discuss alternative solutions;

4. If the battery temperature is found to be over high before installation and 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;

5. If the battery is found to emit smoke before installation and during use, immediately stop using the battery, cover it in sand, and notify the company's after-sales service department to obtain technical support;

Maintenance

Routine maintenance

1. The battery must be attended during charging, especially when it is nearly full. During the charging process, make sure that the plug and socket are in good contact, the charging device is working properly and the battery module contacts are in good condition. Should any abnormality be detected, the issue must be fixed before charging;

2. Before charging and discharging, check the battery voltage, temperature and pressure difference on the round indicator unit and make sure that all the values are within the normal range;

3. In case of excess dust, metal filings and other debris on the battery system cover and terminal posts, clean as soon as possible with compressed air or a dry cloth. Do not use water or other objects moistened with water to clean;

4. During charging and discharging, protect the battery system cover and terminal posts from coming into contact with water or other conductive objects. For example, avoid operation in heavy rain;

5. Estimate the charging time and discharging time of the battery according to the actual state of using of the battery or battery module. Observe the battery or battery module for any abnormal status at the end of the charging process and discharging process, for example unusual battery voltage difference.

Regular maintenance

1. Check the conductive strips, voltage acquisition terminals and other connectors for loos-

ing, peeling, rusting or deformation. Make sure that the serial and parallel harness for the battery module is secure and reliable (once per month);

2. Check the battery cover for cracks, deformation, loose terminal posts, expansion and other abnormal states (once per month);

3. Check the reliability of the charging device and make sure that the charging device is charging in full compliance with the voltage and current regulation signals from the BMS. Make sure that the battery will not be overcharged (once per month);

4. Check the discharge protection devices such as fast-acting fuses, DC contactors and relays. Make sure that the main circuit of the battery module can be quickly disconnected in the event of dangerous situations such as short circuit or overcurrent (once per month);

5. Check the status of the insulation resistance of the battery module and the bodywork, and make sure that the resistance complies with the DIN 43539, VDE 0510, in order to prevent battery leakage (once per month);

Disposing of used batteries

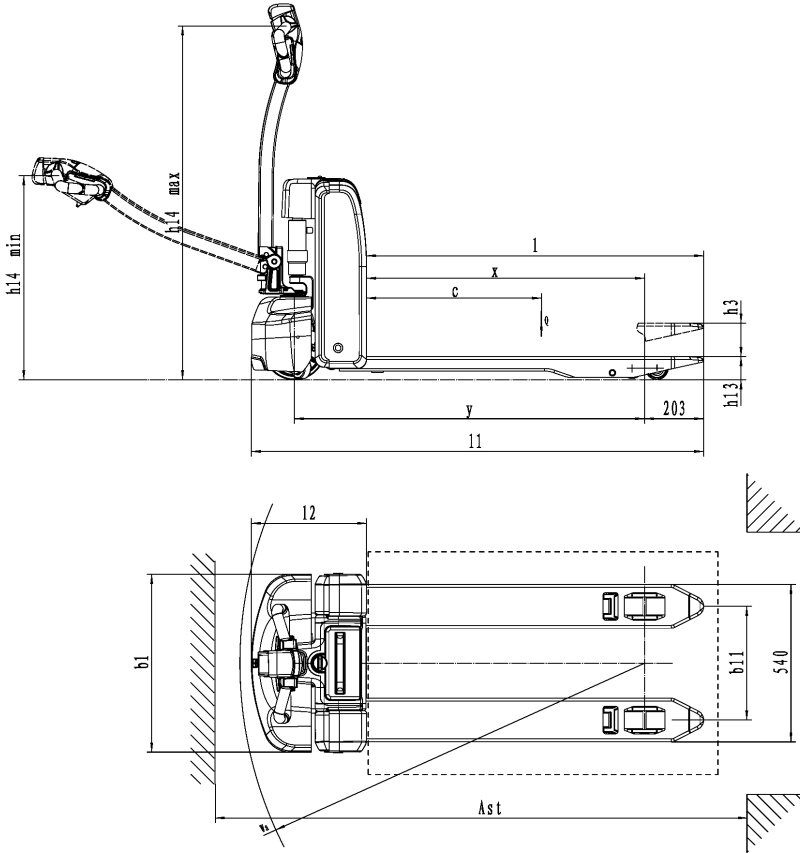
In order to prevent environmental pollution, used batteries should be sent to local battery recycling/disposal centres or professional lithium battery disposal organisations. Observe the regional and national regulations.

Technical data

Technical datasheet

Technical datasheet

Technical datasheet



Technical datasheet

The technical data given below complies with the VDI2198 standard. The company reserves the right to make technical changes and additions.

		Cod e	Met- ric	Chinese Metric
Features				

1.1	Brand			Still
1.2	Model no.			ECH15
1.3	Drive type			Battery
1.4	Operation type			pedestrian
1.5	rated capacity	Q	kg	1500
1.6	Load centre distance	c	mm	600
1.8	Load distance	x	mm	946/883
1.9	Wheelbase	y	mm	1200/1135
Weight				
2.1	Service weight (include. battery)		kg	180
2.2	Axle loading, laden driving side/ loading side		kg	606/1076
2.3	Axle loading, unladen driving side/loading side		kg	145/35
Tyres, Chassis				
3.1	Type of tyre, drive wheel/load wheel:			PU/PU
3.2	Tyre size, driving wheels (diam- eter×width)		mm	Φ210x70
3.3	Tyre size, loading wheels (diam- eter×width)		mm	Φ80x60(Φ74x88)
3.4	Tyre size, caster wheels (diame- ter×width)		mm	Φ74 x 30
3.5	Wheels, number driving , caster/ loading (x= drive wheels)		mm	1 x 2/4 (1 x 2/2)
3.6	Track width, front, driving side	b10	mm	450
3.7	Track width, rear, loading side	b11	mm	390
Dimensions				
4.4	Basic model, maximum lift height	h3	mm	115
4.9	Height of handle in operating po- sition, min/max	h14	mm	700/1200
4.15	Fork height lowered	h13	mm	80
4.19	Overall length	l1	mm	1550
4.20	Length to vertical face of fork	l2	mm	400
4.21	Total width	b1/b 2	mm	620/705
4.22	Fork dimensions	s/e/l	mm	50/150/1150
4.23	Vehicle height		mm	615
4.24	Vehicle to ground height		mm	695
4.25	Distance between fork-arms	b5	mm	540(685)
4.32	Ground clearance, center of wheelbase	m2	mm	30

Eco-design requirements for electric motors and variable speed drives

4.34.1	Aisle width for pallets 1000 × 1200 crossways	Ast	mm	2151
4.34.2	Aisle width for pallets 800 × 1200 lengthways	Ast	mm	2208
4.35	Turning radius	Wa	mm	1390
Performance data				
5.1	Travel speed, laden/ unladen		km/h	5/5.5
5.2	Lifting speed, laden/ unladen		m/s	0.028/0.031
5.3	Lowering speed, laden/ unladen		m/s	0.068/0.043
5.8	Max. gradeability, laden/unladen		%	8/20
5.9	Acceleration time, laden/unladen		s	10.78/9.88
5.10	Service brake type			Electromagnetic
Electric-engine				
6.1	Drive motor rating S2 60 min		kW	0.9
6.2	Lift motor rating at S3 15%		kW	0.8
6.3	The maximum allowed size battery		mm	270*110*440
6.4	Battery voltage/nominal capacity K5		V/Ah	48V*1/20ah(/30Ah)
6.5	Battery weight		kg	10.5*1
6.6	Energy consumption according to VDI cycle		kWh/h	0.239
Other data				
8.1	Type of drive control			DC
10.5	Steering type			Mechanical
10.7	Sound pressure level at the driver's ear		dB (A)	<70

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

Eco-design requirements for electric motors and variable speed drives

because these variable speed drives do not meet the description given in Article 2 "Scope", Item (1) (b).

Eco-design requirements for electric motors and variable speed drives

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