Linde Material Handling

Electric pallet truck

Original instructions

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Linde Material Handling– Your Partner

Selling over 125,000 forklift and warehouse trucks per year, Linde Material Handling ranks as one of the leading intralogistics manufacturers and solution providers.

And there is a reason for this success. Linde products not only win over customers with their innovative technology with a reputation for excellent performance, but in particular with reduced energy and operating costs, which are up to 40% lower than those of the competition.

The high level of manufacturing quality is also a benchmark for the quality of our advice and services. With an extensive network of distribution partners, we are at our customers' disposal both around the clock and around the world.

Your local Linde dealer offers a complete service package from a single source — from expert advice to sales and servicing, and with the right financing, of course. Whether leasing, hiring or hire purchase — you maintain your flexibility. In your work and in your decisions.

Linde Material Handling GmbH
Carl-von-Linde-Platz
63743 Aschaffenburg, Germany
Telephone: +49 (0) 6021 99-0
Fax: +49 (0) 6021 99-1570
Email: info@linde-mh.de
Website: http://www.linde-mh.de

Rules for the operating company of industrial trucks

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

This guide provides information for handling industrial trucks:

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

Internet address and QR code

By entering the address
www.linde-mh.com/VDMA
in a web browser or by scanning the QR code, information can be accessed at any time.

Using the Directions QR Code

➢ You can scan the code to get the relevant product manual and operation directions. ▷

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Introduction

Introduction

Your Linde forklift truck (made in China)

gives you the very best in terms of performance, safety and driving comfort. However, it is up to you, the truck operator, to preserve these qualities for a long time to come and to make full use of their benefits on the job.

During the manufacturing process (if affixed with conformity mark):

- ➢ We adhered to all declaration of conformity safety requirements.
- ➢ We carried out all compliance tests required by law.

This is proven by the conformity stamp shown on the identification plates.

The manual provides you with important information on activating, driving, operating and maintaining a Linde forklift truck.

Regularly and promptly complete the maintenance checklists in accordance with the truck operating instructions and use the specified tools, cleaning products etc.

In order to maintain valid warranty service for your truck, please keep and save a complete, detailed record of the maintenance process.

All maintenance procedures must be recorded; otherwise you will lose the warranty.

Users, especially forklift truck drivers and repair personnel, must strictly adhere to GB/T 36507 regulations.

Users, especially forklift truck drivers and maintenance personnel, must strictly follow "Guidelines on correct and safe use of materials handling equipment" and BITA guidelines. (Overseas edition)

The user shall be responsible for any loss caused by improper use. The manufacturer Linde Ltd shall not be responsible for such loss.

If you want to use the truck for purposes that are not mentioned in the user manual, please contact dealers accredited by Linde Corp. Ltd.

Any modification of your truck, in particular fitting of equipment or conversion of the truck, is prohibited without the permission of the manufacturer.

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

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

Attachment manuals are provided

NOTE

Add a load identification plate for any attachments to the truck.

⚠ CAUTION

To maintain stability and the specified minimum braking distance, do not carry out stacking/unstacking operations on a slope.

The climbing degrees in the type sheet are ascertained from the truck's pulling force, and only apply when going over small obstacles and driving on relatively flat surfaces.

Technical notes

This user manual must not be copied, translated or sent to a third party without the manufacturer's written consent.

Linde's business philosophy is to constantly improve the design and structure of its products. Linde therefore reserves the right to change the design and technical parameters of its trucks at any time.

The company declines any responsibility for claims regarding the technical parameters, illustrations and instructions in this user manual.

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

Carry out the specified work regularly, at the due times and using the consumables designed for this purpose in accordance with the inspection and maintenance overview. Make sure that you record any work performed in the registration document for the industrial truck; this is essential for any warranty claims.

The designations used in the text (front, back, left, right) always refer to the installation position of the parts described in relation to the forward drive direction of the truck.

Servicing work not described here will require specialist knowledge, measuring instruments and, often, special tools. Please ask your authorised dealer to carry out this work.

Servicing should only be carried out by competent personnel (specialists) approved by Linde.

For questions about the truck and orders for spare parts, please contact your local Linde dealer and leave a full shipping address.

To maintain the original technical efficiency of the truck, please use authentic Linde spare parts when repairing.

When ordering spare parts, in addition to part numbers, please provide the following information:

Truck model number:

Serial number/year of manufacturing:

Delivery date:

Part numbers should be specified when ordering parts.

Part number of the lift mast:

Lifting height of the lift mast [mm]:

When taking delivery of the forklift truck, copy data from the component identification plates into this user manual. The relevant information can be found on the identification plates on the truck. We recommend you write down this information in the manual for future reference.

Truck handover

Before leaving the factory, every truck must be carefully examined so that it is completely up to standard and can be delivered to the user in perfect condition.

To guarantee the truck works correctly, Linde dealers are obliged to check the following items before the handover:

- Check whether the drive wheel nuts are tightened
- Check the battery status
- Check the hydraulic oil level
- Check the braking function
- Check the steering function
- Check the traction function
- Check the lift mast and attachment functions

General information

To avoid the inconvenience of making a claim after use, check the truck is in perfect condition and repair, and confirm your satisfaction with the vehicle on the manufacturer's product qualification certificate upon handover.

NOTE

When a truck with attachments leaves the factory, operating instructions for the attachments should be provided along with the vehicle.

NOTE

Every truck is provided with the following technical documents:

- Operating instructions for the truck
- Spare parts manual
- Operating instructions for the attachments (only applies to trucks delivered from the factory with attachments)
- Declaration of Conformity (applicable for certified trucks)

General information

The truck described in these operating instructions corresponds to the applicable standards and safety regulations.

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

These operating instructions provide the necessary information and help to avoid accidents and to keep the truck ready for operation beyond the warranty period.

Therefore:

- ➢ Read the operating instructions before commissioning the truck and follow the instructions during operation.
- ➢ Follow all of the safety information contained in the operating instructions and on the truck.

Operating on public roads

If the truck is to be operated on public roads, the truck must conform to the national regulations for the country in which it is being used. The required operating permit must be obtained from the relevant authorities.

Insurance cover on company premises

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

NOTE

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

Intended use

The industrial truck may only be used as permitted.

The industrial truck is used for moving and lifting the loads indicated on the capacity rating plate.

Damages and defects

Damages and other defects to industrial trucks or to attachments must be reported to the Supervisor immediately. Industrial trucks and attachments which are not safe to operate may not be used until they have been properly repaired.

Safety installations and switches may not be removed or rendered unusable. Specified settings may only be changed with the approval of the manufacturer.

Danger areas

Danger areas are those areas in which persons are in danger as a result of the movements of industrial trucks, their operating equipment, their load carrying devices (e.g. their attachments) or the loaded goods. This also includes the area which can be reached by falling goods or lowering or falling operating equipment and devices.

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

Working areas

Only the areas approved by the operating company or its representative may be used for transportation purposes. Loads may only be deposited or stored at the intended places.

In operating areas with magnetic fields that have a magnetic flux density greater than 5 mT, unintentional truck and lift mast movements cannot be entirely excluded under unfavourable circumstances. Components developed especially for use in such operating areas must be used.

Driving routes

Driving routes shall be sufficiently paved, level and free of objects. Drain channels and railways crossings, etc., shall be levelled and, if necessary, covered with ramps in such a way that they can be driven over without bumps as far as possible.

Industrial trucks shall only be used on routes without sharp curves, excessive slopes and gates which are too narrow or too low.

Inclines used by industrial trucks shall not exceed the limits specified by the manufacturer and must have an adequately rough surface. Level and smooth transitions at the upper and lower end shall prevent the load from touching the floor or causing damages to the chassis.

The admissible area and point load of driving lanes or routes may not be exceeded. There shall be an adequate clearance between the highest parts of industrial trucks or the load and the fixed parts of the surrounding areas.

The EU Directive 89/654/EEC (Minimum Regulations for Health and Safety at Work) shall be observed. The respective national regulations apply for non-EU countries.

Danger points on driving lanes or routes shall be secured or marked by the customary road traffic signs and by additional warning signs, if necessary.

When driving on public roads, the corresponding regulations must be observed, as well as country-specific restrictions for winter road conditions.

Fire protection

The operating company is responsible for adequate fire protection in the vicinity of the industrial truck. Depending on the form of use, it is responsible for additional fire protection on the industrial truck. Enquiries should be directed to the responsible supervisory authority in case of doubt.

Improper use

Attachments

Attachments shall only be used as permitted. The driver shall be instructed in the handling of attachments.

The attachment operating instructions are enclosed for trucks that are delivered from the factory with an attachment. Before commissioning a truck with an attachment, you must check that loads are handled securely. Depending on the type of attachment, it may be necessary to make adjustments, e.g. pressure settings or adjusting stops and operating speeds. See the attachment operating instructions for the corresponding instructions.

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

The attachments and the connection of power supplies for powered attachments may only be made by specialists in accordance with the specifications of the manufacturer. The proper functioning of the attachments shall be checked after each installation before initial use.

The permissible carrying capacity of the attachments and the permitted load of the industrial truck (carrying capacity and load moment) combined with the attachments shall not be exceeded., refer to additional capacity rating plate.

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

Trailers

Industrial trucks may only be used to tow trailers if they are intended for this purpose by the manufacturer and if they are fitted with the appropriate trailer coupling. The maximum towed load specified in the operating instructions for unbraked or braked trailers must not be exceeded.

The towing industrial truck must be operated in such away that safe driving and braking of the towed vehicle is ensured for all driving movements.

Improper use

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

⚠ WARNING

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

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

⚠ DANGER

High risk of injury, death and property damage.

Avoid the use of prohibited substances.

The list below is merely illustrative and not exhaustive.

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

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

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

Do not pick up an off-centre load.

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

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

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

Do not operate the truck on loose or greasy surfaces.

Do not drive on uneven or obstructed surfaces.

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

Do not dismount from the truck while it is moving.

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

Never leave the vehicle unattended on a ramp.

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

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

Operating steps

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

Always look in the direction of travel.

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

Always sound the horn when approaching blind spots.

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

Follow the instructions in the user manual when transporting loads.

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

Drive a loaded truck forward when going uphill.

Drive a loaded truck in reverse when going downhill.

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

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

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

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

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

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

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

Summary

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

Additional information

Damage and defects

Any damage or other defects found on the industrial truck or its attachments must immediately be reported to a supervisor.The industrial truck and attachments that present operating hazards can only be used after proper maintenance has been carried out.

Do not remove safety devices and switches or render them unusable.Do not alter specific

settings without first obtaining permission from the manufacturer.

Danger areas

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

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

Work areas

⚠ DANGER

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

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

Contact your local authorised dealer.

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

Travel routes

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

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

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

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

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

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

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

Fire prevention measures

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

Attachments

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

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

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

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

Do not exceed the permissible load capacity of the attachment or the permissible load of the industrial truck and attachment combination (load capacity and load torque).Please refer to the attached capacity rating plates.

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

Fork extensions should not be longer than 150% of the supporting fork's length.

Truck modification

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

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

Description of use

- ➢ This truck is suitable for transporting goods over level surfaces.
- ➢ This truck is suitable for use within temperatures ranging from 5°C to 40°C and above. If the truck is used for long periods in environments below 5°C, in freezers, or where there are extreme changes in temperature and humidity, it must be fitted with additional special equipment with permission from the manufacturer.
- ➢ The truck can climb gentle gradients below 6% at full load, or below 16% without a load.
- ➢ Only use the truck at altitudes not exceeding 2000 metres.
- ➢ Use the truck properly to avoid being crushed by the drive wheel.
- ➢ Do not use the truck to carry passengers.
- ➢ Do not drive on slippery surfaces such as grease etc.

Precautions

- Do not drive on steep slopes, to prevent the load from slipping off.
- The truck must be switched off when left unattended.
- When using this truck, pay attention to the surroundings and do not become distracted.
- Please pay attention to the moving parts of the truck to prevent your hands from being crushed.

Symbols used

The terms DANGER, WARNING, CAUTION, NOTE and ENVIRONMENT NOTE are used in these operating instructions. They are intended to draw attention to specific dangers or unusual information that needs to be highlighted:

⚠ DANGER

Means that failure to comply can risk the lives of others and/or cause major damage to equipment.

⚠ WARNING

Means that failure to comply can result in the risk of serious physical injury and/or major damage to equipment.

⚠ CAUTION

Means that failure to comply can result in the risk of major damage to equipment or destruction.

NOTE

This means that particular attention must be paid to the specific technical meaning because this may not be obvious, even to a specialist.

ENVIRONMENT NOTE

The instructions listed here must be complied with otherwise environmental damage may result.

⚠ CAUTION

This label is found on the truck in the areas where particular care and attention are required from the operator.

Refer to the appropriate section in these operating instructions.

For your safety, additional symbols are also used. Please take these different symbols into consideration.

Disposing of components and batteries

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

- Disposal
- Handling
- Recycling

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 requirements.

Technical description

This series of electric pallet trucks is used for handling pallets and has a maximum load capacity of 1500 kg.

Design

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

The polyurethane cowling provides superior stability and shock resistance.

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

Steering system

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

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

Tiller

The composite construction tiller head provides excellent impact resistance.

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

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

Driving

Precise, load-independent travel.

Jolt-free starting and smooth acceleration to maximum speed.

Simply release or turn the drive direction switch to brake.

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

Brake system

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

Battery

24 V/20 Ah maintenance-free lithium battery.

The power indicator light displays battery power.

Technical description

2

Safety

Safety guidelines

The "Rules for proper use of industrial trucks" supplied with these operating instructions must be brought to the attention of the persons in charge, in particular to those persons concerned with operating and maintaining the industrial truck, before working with or on the truck.

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
- Driving licences
- 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.

When training a truck driver who has already been trained to the BGV D 27 standard, the following must be practised sufficiently by training, driving, switching and steering, so that they are fully mastered:

- 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).

⚠ DANGER

When retrofitting a third auxiliary hydraulic system, using solutions other than those recommended by the truck manufacturer will render the relevant conformity null and void, and is therefore expressly prohibited.

Trucks may only be retrofitted with a third auxiliary hydraulic system with the approval of the truck manufacturer.

⚠ 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.

⚠ CAUTION

For ease of operation, some truck functions are gas-spring assisted.Gas springs are complex components that contain high internal pressures (up to 300 bar).

They may under no circumstance be opened unless so directed, and may be removed only when depressurised.Damage, lateral forces, buckling, temperatures in excess of 80°C and heavy contamination must be avoided.Damaged or defective gas springs must be changed immediately.Please contact your authorised dealer.He will, if necessary, depressurise the gas spring in accordance with regulations before dismantling it.Gas springs must be depressurised before recycling.

⚠ WARNING

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

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

⚠ CAUTION

Various items of special equipment fitted to your truck have a "speed reduction" function.It is purely an assistance function.This means that the driver must not rely solely on the "speed reduction" function during operation.

The driver is always responsible for safe operation.

⚠ 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.

NOTE

If your truck is equipped with a fire extinguisher, make sure that you familiarise yourself with it in case of an emergency.Information about handling is given on the fire extinguisher.

Stability

Stability is guaranteed if your truck is used properly in accordance with its intended purpose. Common reasons for a loss of truck stability include:

- Emergency stops or sharp turns
- Driving with a raised load or a load handling device
- Driving with an off-centre load
- Turning the vehicle around on or driving across a slope
- Driving up or down a slope with the load pointing downhill
- Driving with a wide load
- Carrying a swinging load
- Driving near the edge of a ramp or up steps
- Tilting the mast forward while carrying a raised load
- Driving on uneven surfaces
- Overloading the truck
- Carrying bulky loads in strong winds
- When carrying liquid, its centre of mass inside the container may shift due to inertial force (such as when pulling away, braking or turning)

Residual risks

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

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

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

⚠ DANGER

Persons in the vicinity of the industrial truck must be informed about the dangers of the truck.

These operating instructions also contain additional safety regulations.

Residual risks can include:

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

Use of lubricants

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

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

Use only the proper receptacles for draining liquids.

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

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

Always dispose of used or contaminated lubricants as specified.

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

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

⚠ WARNING

Accidental penetration of hydraulic fluid under the skin is dangerous.

See a doctor immediately if injured.

Handling consumables

ENVIRONMENT NOTE

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

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

⚠ WARNING

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

➢ Wear protective equipment.

⚠ WARNING

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

➢ Observe the manufacturer's instructions.

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.

Regulations

Regular safety inspection

Periodic safety inspections are essential to keep your truck safe and in good working order.

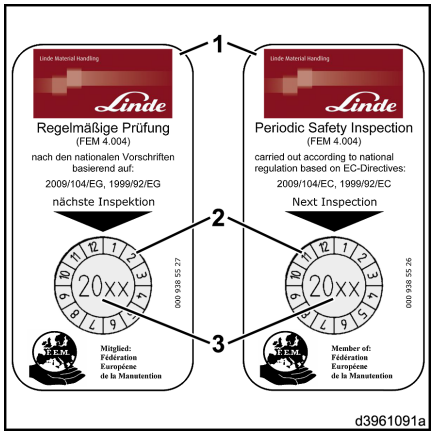
Observe the national regulations for your country.

Europe: National laws based on Directives 95/63/EC, 99/92/EC and 2001/45/EC require that the truck is checked regularly by a competent person to ensure that it is in good condition.

Germany: Ordinance on Industrial Safety and Health (BetrSichV).

China: National Standard GB 10827.1-2014 of the People's Republic of China.

Recommendation FEM 4.004 of the European Industrial Truck Association sets out the scope of the inspection. It defines a test log to document the current inspection and an inspection sticker for the next inspection. The next inspection is shown by year number (3) on sticker (2), the colour of which changes each year on (1). The scope of the inspection is extended by Linde in accordance with the specific truck type. Please ask your authorised dealer to carry out this work. ▷



Competent person

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

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

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

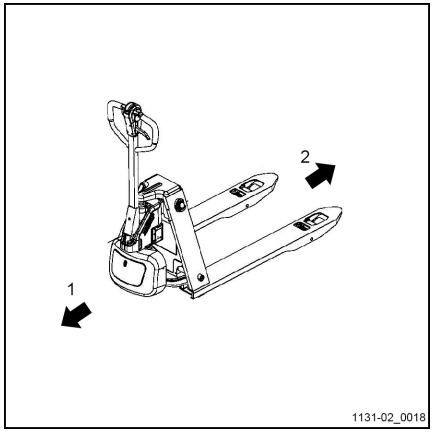
Competent person

3

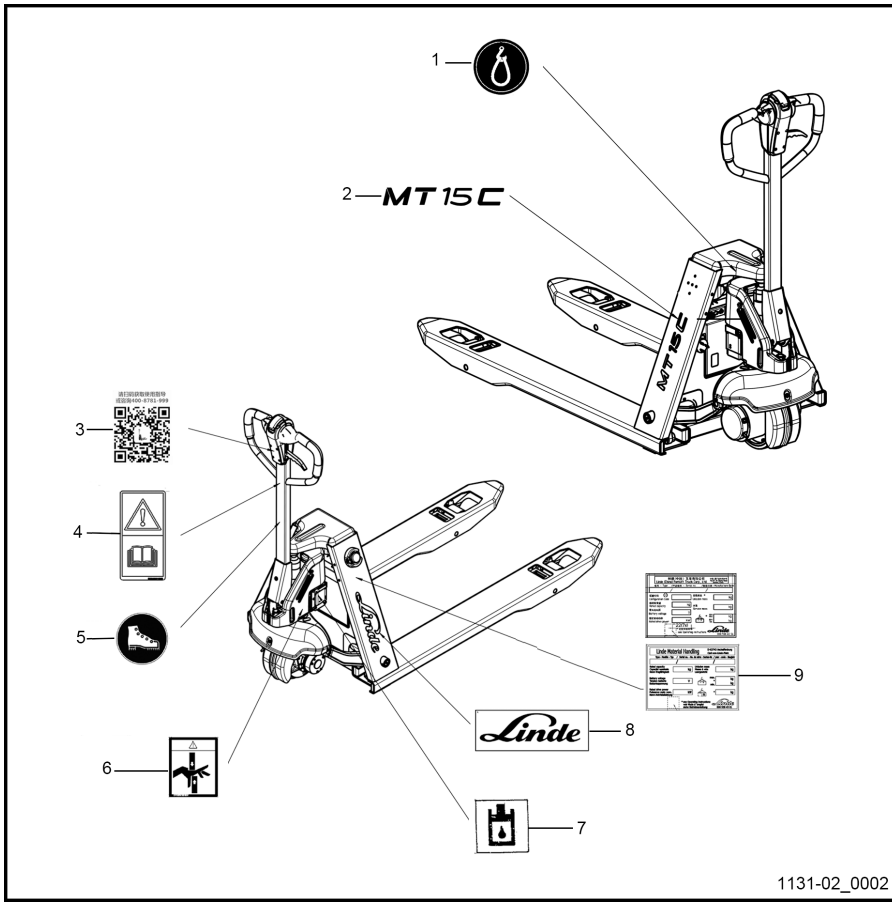
Views

Drive directions

The drive directions of the truck are forward (1) and reverse (2). ▷

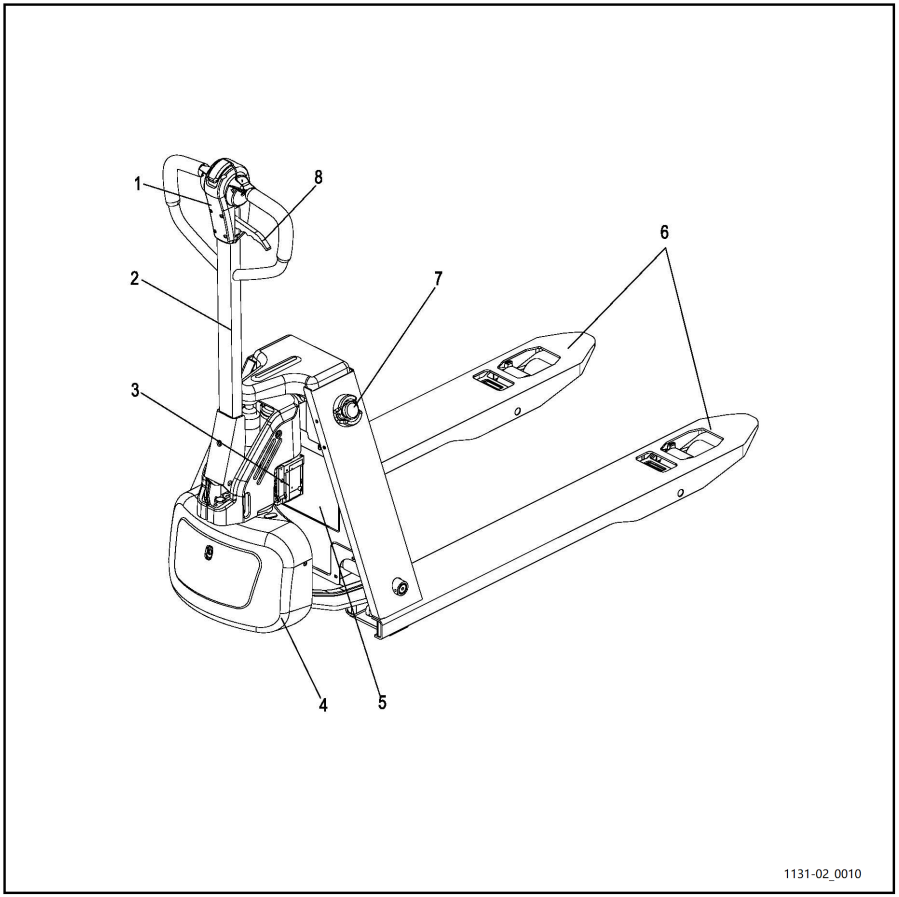


Safety devices and warning labels



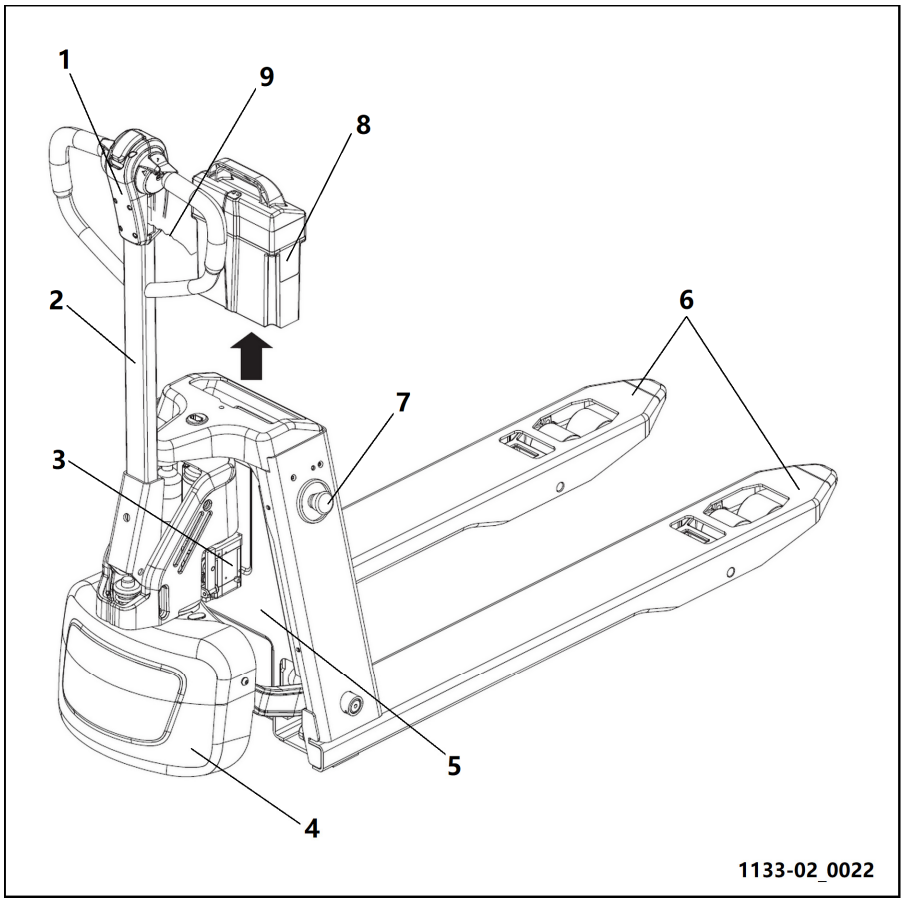
1 “Slinging” label
2 "Pallet truck model" label
3 “QR Code” label
4 "Instructions" label
5 "Foot protection" label
6 "Anti-pinch" label
7 "Filler port" label
8 “Linde” label
9 "Identification plate" label

Overview of main components



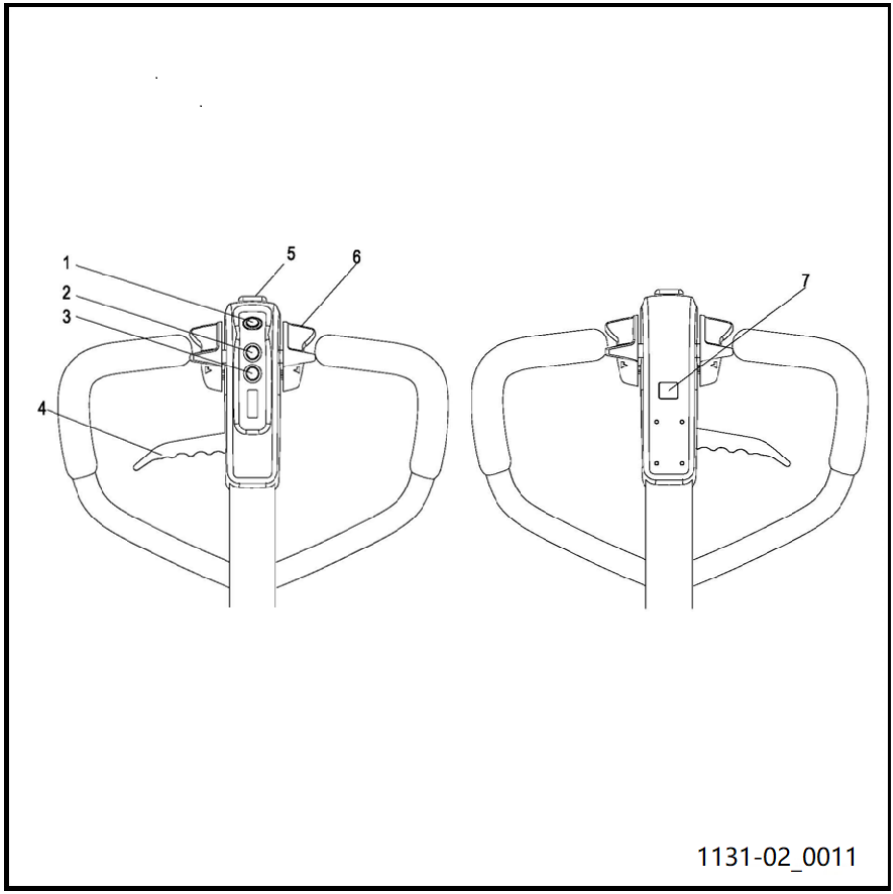
1	Operating handle	5	Battery
2	Joystick	6	Forks
3	Hydraulic station	7	Emergency off switch
4	Drive wheel	8	Handle

Overview of main components_plug model (optional*)



1	Operating handle	6	Fork
2	Joystick	7	Emergency off switch
3	Hydraulic station	8	Lithium-ion battery
4	Drive wheel	9	Handle
5	Baffle		

Control handle

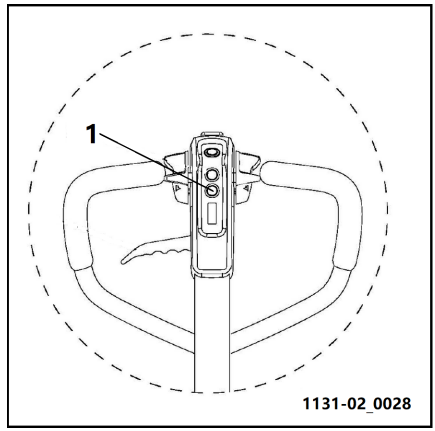


1 Horn button
2 Lifting button
3 Start button
4 Manual lowering button
5 Emergency reverse button
6 Drive switch
7 Creed speed button

Start button

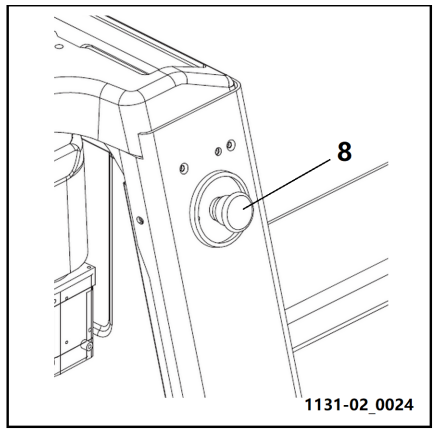
Turns the control current on and off.

- When the start button (1) is pressed, the truck's power supply is turned on.
- When the start button (1) is pressed again, it returns to its original position and the truck's power supply is turned off.

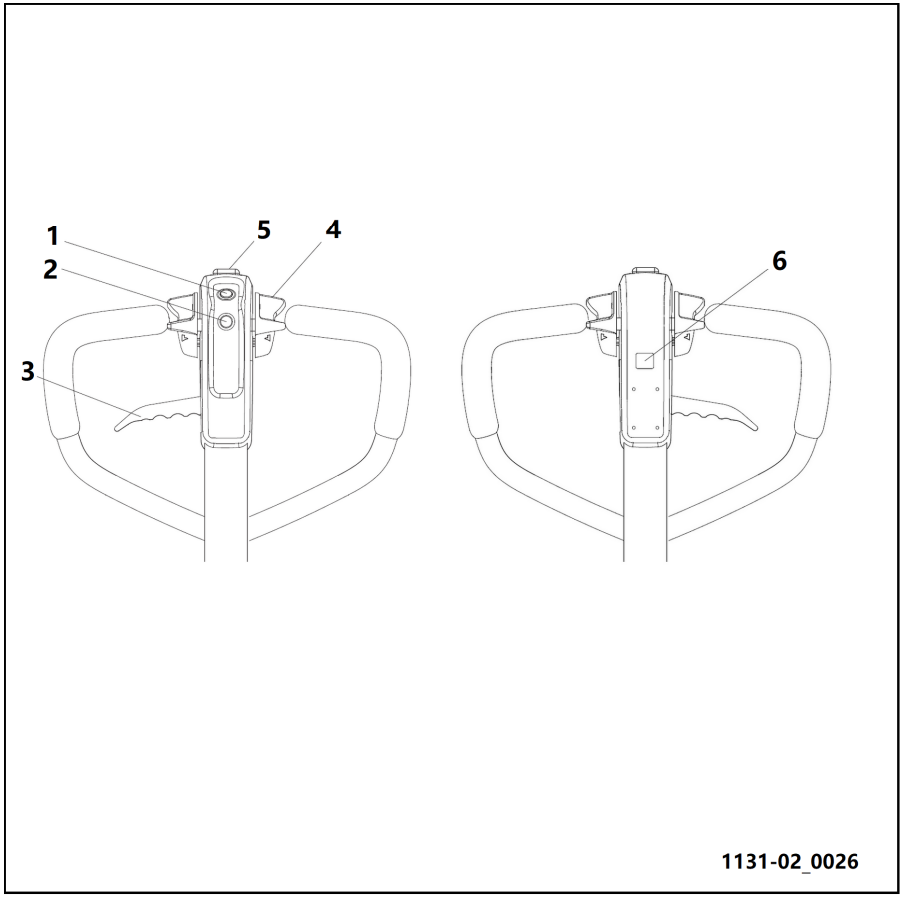


Emergency off switch

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



Control handle_plug model (optional*)

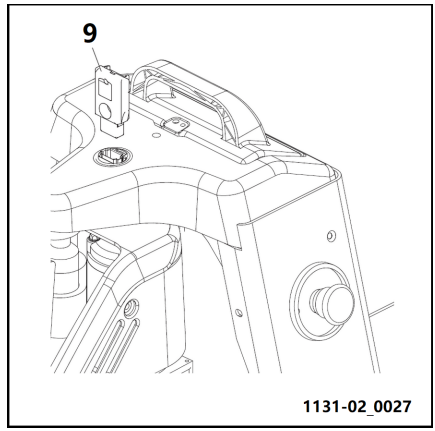


1	Horn button	4	Drive switch
2	Lifting button	5	Emergency reverse button
3	Manual lowering button	6	Upright travel button

Key switch

Turns the control current on and off.

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



Emergency off switch

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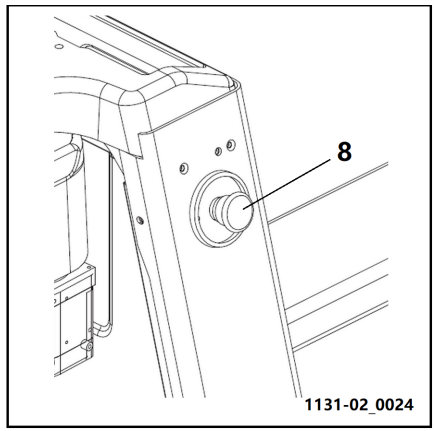
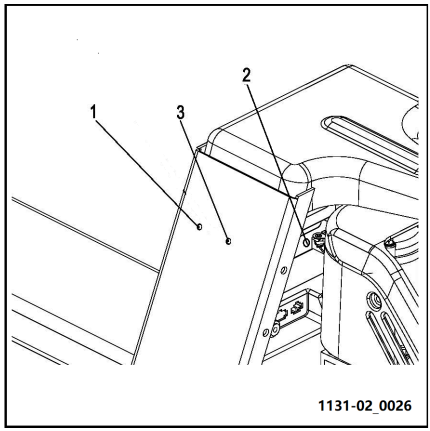


Indicator light

The charging indicator (1) displays the following different states:



Charging indicator		
Display	Description	Malfunction analysis
Red light remains lit	Charger is charging	Normal status
Green light remains lit	Battery charge completed	Normal status

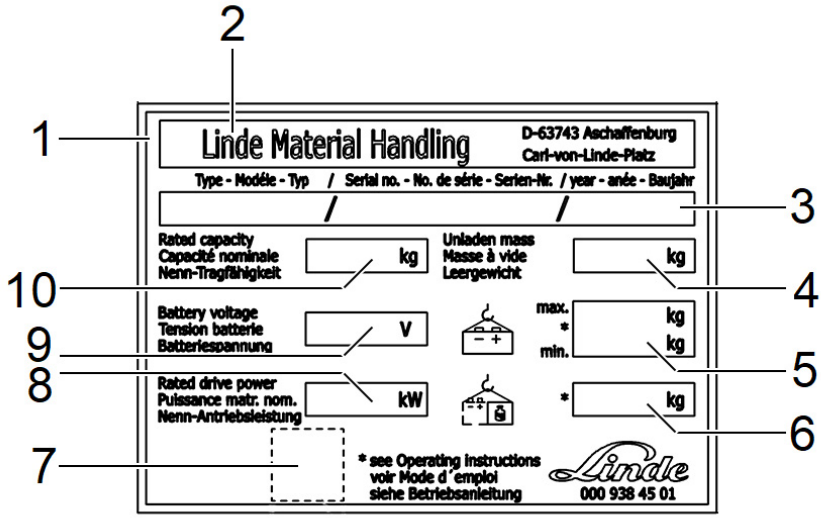
Power display light (2) normal status display:

Name	LED colour	Parameter value
Remaining charge on standard battery	Green	60-100%
	Yellow	30%-60%
	Constantly illuminated in red	15-30%
	Flashing red	0-15%

If the control unit detects a battery malfunction, the power display light (2) will flash with an error code until the malfunction is eliminated.

The error report light (3) is constantly lit green in its normal state. Please see the control unit malfunction information when the control unit reports an error.

Identification plates



1	Identification plates	6	Service weight
2	Manufacturer	7	Placeholder for data-matrix code
3	Model/Product no./Date of manufacture	8	Rated drive power
4	Unladen mass	9	Battery voltage
5	Battery weight (max./min.)	10	Rated lift capacity

Identification plates

4

Operation

Operating instructions

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

Ambient temperature for usage:

- Suitable for temperatures between 5°C and 40°C.
- If the truck is in used for long periods in environments under 5°C, in freezers or in places with extreme changes in temperature and humidity, then additional special equipment must be installed with permission from the manufacturer.

NOTE

The floor surface must be dry, clean and level.

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

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

⚠ CAUTION

The pallets used must be in good condition.

⚠ WARNING

Risk of serious injury and/or major equipment damage.

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

⚠ CAUTION

Equipment wear or damage

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

⚠ CAUTION

Equipment wear or damage

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

⚠ CAUTION

Equipment wear or damage

Safety shoes must be worn to provide effective protection.

⚠ WARNING

Risk of serious injury and/or major equipment damage.

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

⚠ WARNING

Risk of serious injury and/or major equipment damage.

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

⚠ DANGER

Fatal crushing hazard!

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

⚠ CAUTION

Equipment wear or damage

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

⚠ WARNING

Risk of serious injury and/or major equipment damage.

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

⚠ CAUTION

Equipment wear or damage

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

⚠ CAUTION

Equipment wear or damage

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

Checks before first commissioning

⚠ WARNING

The truck can only be driven by battery power!

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

- Check whether the equipment is intact and in good condition.
- Check whether the hydraulic system is in good condition.
- If the truck does not yet have a battery installed, you must install a battery, making sure not to damage the battery cables.
- Recharge the battery.

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

Break-in period precautions

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

- Excessive discharge of a new battery during initial use must be prevented.It should generally be charged promptly when at 20%.
- The specified preventive maintenance must be done thoroughly.
- Avoid sudden braking, driving quickly or sharp turns.
- Change oil or lubricant promptly according to the instructions.
- Limit the load weight to 70-80% of the rated load.

⚠ CAUTION

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

Drive system

Driving, steering and braking

NOTE

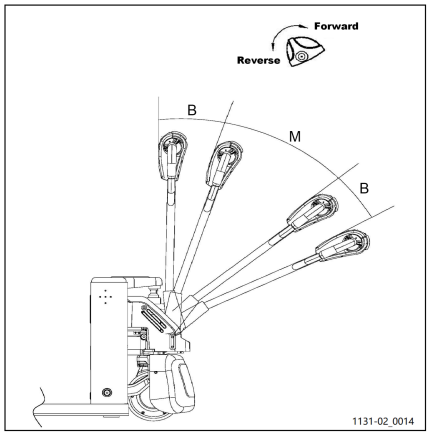
Before driving the truck, make sure that all covers are closed.

⚠ CAUTION

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

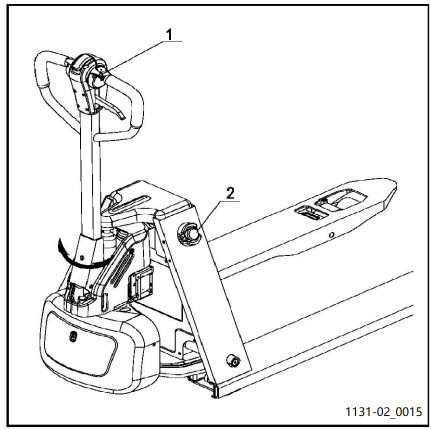
Driving

Place the drive handle in the driving area (M) and place the drive switch in the desired direction of travel (forward or reverse). When there is a large angle of rotation, the speed will also be correspondingly large.



Steering

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



Braking

Emergency stop

➢ Press the emergency off switch (2). All electrical 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. The drive switch 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 motor to a stop.

⚠ 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 handrail elbow if necessary.

Reverse brake

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.

Using the truck on a slope

NOTE

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

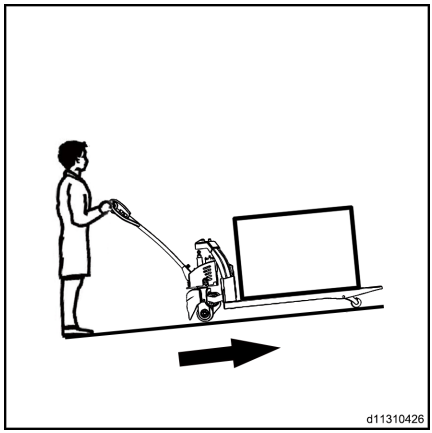
Be particularly careful near slopes:

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

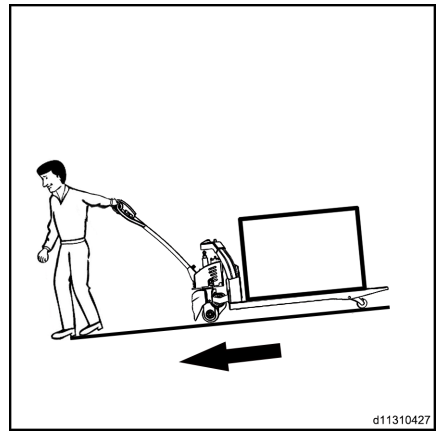
Ascending slopes

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

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



Descending slopes



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

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

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

⚠ DANGER

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

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

⚠ WARNING

Risk of serious injury and/or serious damage to equipment

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

Starting on a slope

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

- Stop on the slope by pressing the accelerator in the opposite direction until the machine comes to a standstill.
- Return the accelerator to the neutral position, then release the accelerator control button to apply the parking brake.
- To restart, press the accelerator button for the desired direction.
- The truck will move off.

Load handling

Picking up and storing goods

NOTE

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

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

⚠ CAUTION

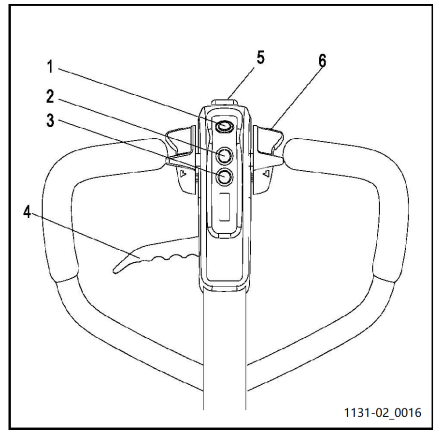
Before picking up a load, the operator must ensure that it has been correctly stacked.

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

Do not place long loads sideways across the forks.

Lifting

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

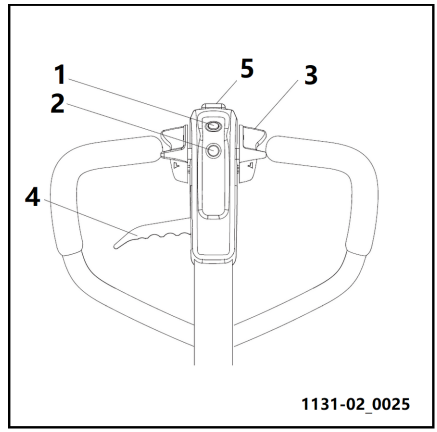


Lowering

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

Lifting_plug model (optional*)

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



Lowering_plug model (optional*)

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

⚠ CAUTION

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

Safety guidelines for handling loads

⚠ WARNING

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

⚠ WARNING

Risk of crushing hands and feet when using the lift.

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

Load handling

⚠ DANGER

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

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

⚠ DANGER

Risk of accident when forks are changed:

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

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

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

⚠ DANGER

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

Risk of crushing feet when manoeuvring the truck.

⚠ CAUTION

The transport of persons or passengers is strictly prohibited.

⚠ CAUTION

Be especially careful not to collide with adjacent loads.

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

Loading

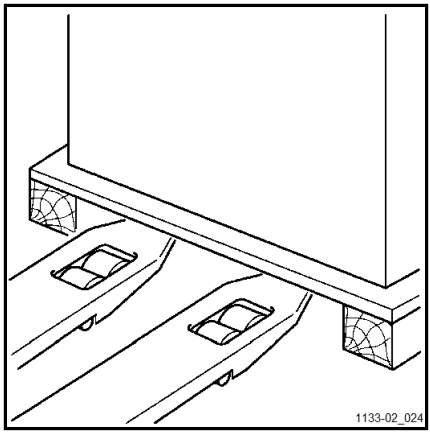
Loading

▷

⚠ CAUTION

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

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



⚠ DANGER

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

⚠ WARNING

Transporting people is strictly prohibited.

⚠ CAUTION

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

Loads should be laid out as follows:

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

⚠ CAUTION

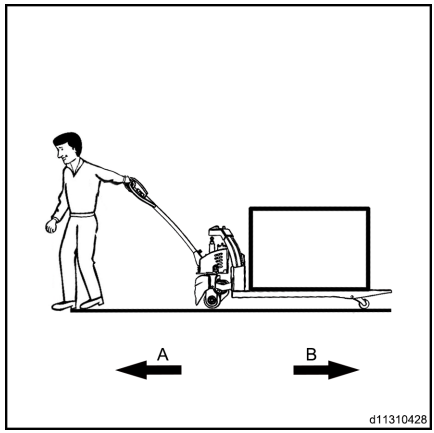
Only transport loads that have been positioned and secured in accordance with regulations.

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

- Approach the load carefully.
- Adjust the height of the forks until they can be easily inserted into the pallet.
- Insert the forks under the load.
- If the load is shorter than the forks, position the forks so that the front of the load overhangs them by a few centimetres, to avoid interference with the load immediately ahead.
- Raise the load a few centimetres above its support.
- Back the truck away from the stack or any neighbouring loads, gently and in a straight line.

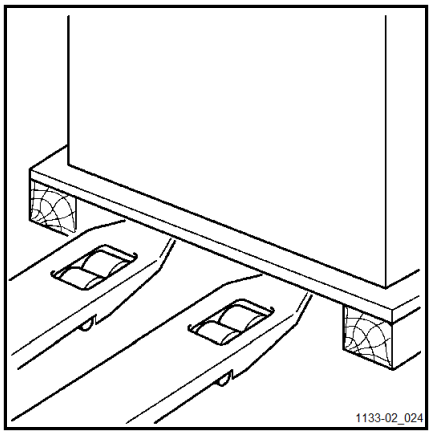
Transporting loads

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



Load handling

Unloading

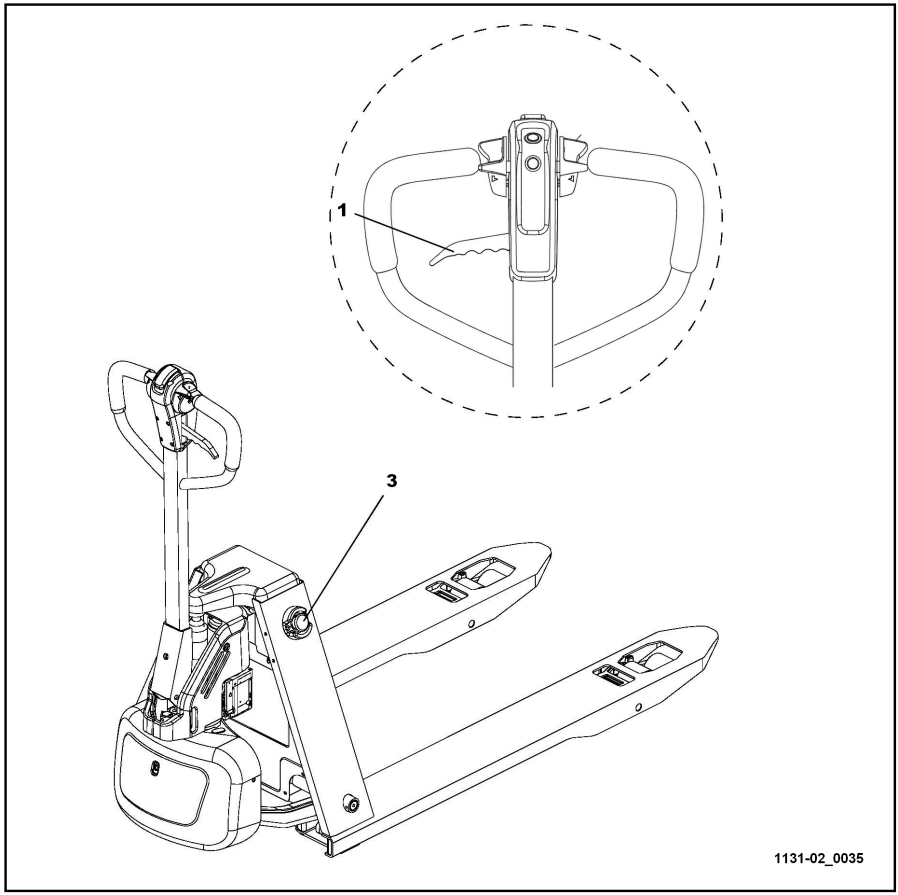


- Carefully drive the truck to the desired location.
- Carefully drive the truck to the unloading area.
- Lower the load until the fork arms are free from the pallet.
- Back the truck away in a straight line.
- Raise the forks to mid-height.

⚠ CAUTION

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

Parking the vehicle safely

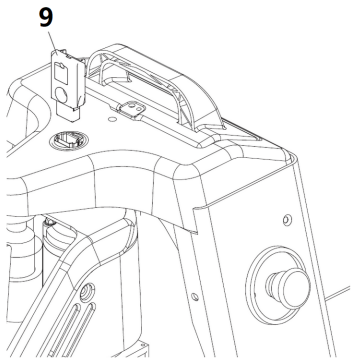


Whenever you leave the truck, it must be parked correctly, even if you only intend to leave it for a short time.

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

Hoisting

➢ Pull out the key switch(9) to turn off the power. ▷



⚠ WARNING

You must always park the truck according to regulations.

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

Hoisting

⚠ 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.

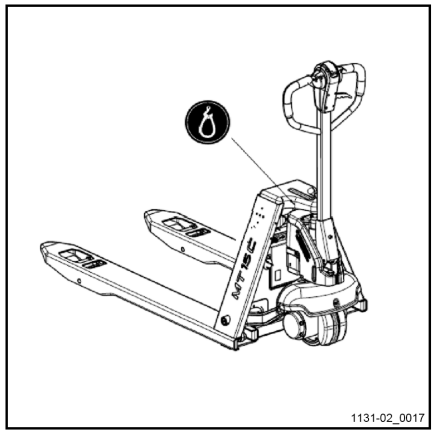
Use lifting hooks and a hoist with adequate lifting capacity. Protect all components that come into contact with the lifting device.

Truck weight (with battery): refer to 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.

Battery Use and Maintenance

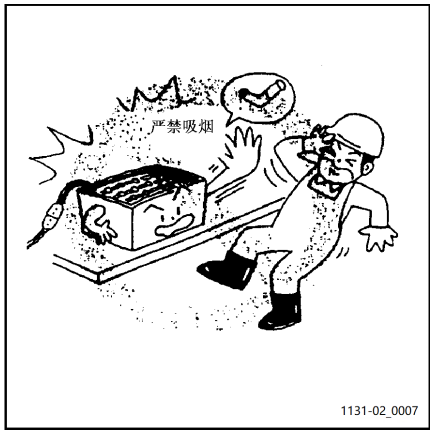
Precautions for safely working on the battery

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

Fire prevention measures

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

▷



Preventing electric shock

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

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

NOTE

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

Battery charging

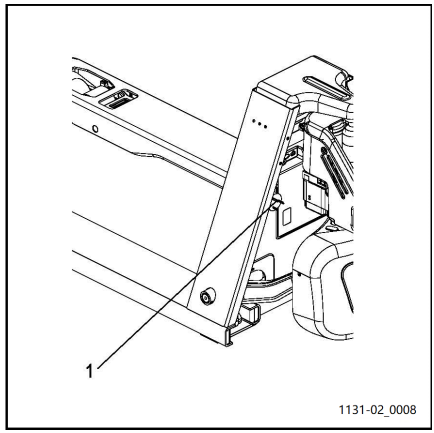
Charging precautions

- The truck must be parked in a well-ventilated room.
- There must be no metal parts on the surface of the battery.
- Before starting charging, check all cable connections and plug connectors for obvious damage.

- Make sure that the charger is not connected to the circuit before connecting or disconnecting it.
- The safety regulations supplied by the battery and charger manufacturer must be strictly observed.

Charging procedure

- Ensure that charging requirements are complied with.
- Park the truck as specified.
- Unplug the mains plug (1), then plug it into a suitable power supply. ▷



⚠ CAUTION

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

Battery charging_plug model (optional*)

Charging precautions

- The truck must be parked in a well-ventilated room.
- There must be no metal parts on the surface of the battery.
- Before starting charging, check all cable connections and plug connectors for obvious damage.
- Make sure that the charger is not connected to the circuit before connecting or disconnecting it.

Battery Use and Maintenance

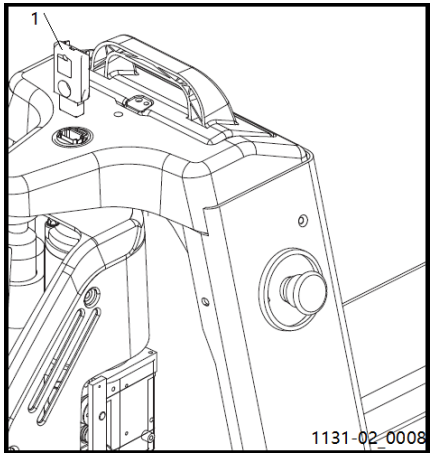
➢ The safety regulations supplied by the battery and charger manufacturer must be strictly observed.

Charging procedure

➢ Ensure that charging requirements are complied with.

➢ Park the truck as specified.

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



⚠ CAUTION

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

Disassembling and installing the battery

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

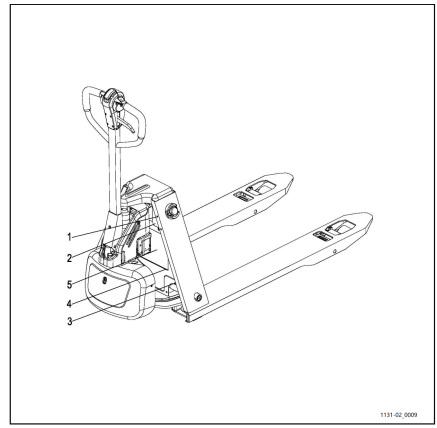
Disassembly/installation steps:

➢ Remove the 4 stud bolts (1) and take off the electrical apron (2). ▷

➢ Remove the 4 stud bolts (3) and take off the battery charger apron (4).

➢ Remove the battery's (5) power cables.

➢ Remove the 8 stud bolts from the battery and carefully remove the battery (5)



⚠ CAUTION

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

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

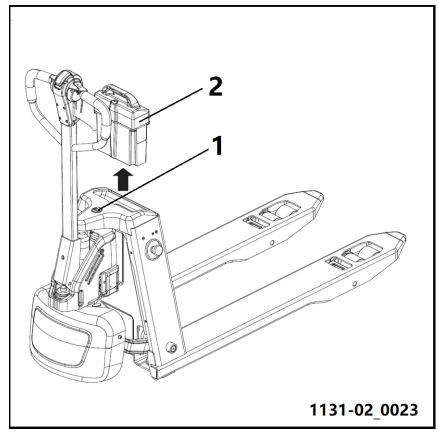
Disassembling and installing the battery_plug model (optional*)

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

Disassembly/installation steps:

➢ Remove the key switch (1) to turn off the power.

➢ Remove the lithium-ion battery (2). ▷



⚠ CAUTION

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

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

Servicing the battery

Never over-discharge the battery

- Never allow the battery charge to be depleted until the truck cannot move before recharging. This shortens the battery life.
- Once the low battery charge symbol appears, charge the battery immediately.

Servicing the battery

The battery must be kept dry and clean. Terminals and cable lugs must be tightened, cleaned and a small amount of specialised grease applied. Batteries with non-insulated terminals must be covered with a non-slip insulating mat.

NOTE

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

Battery waste disposal

The disposal of used batteries must strictly comply with national environmental protection regulations or current waste disposal regulations. Waste disposal must also be performed in strict compliance with manufacturer instructions.

The acid in the battery is toxic and corrosive. Therefore, you must wear protective clothing and goggles before performing any operations on the battery. Avoid direct contact with battery acid.

If battery acid accidentally touches clothing or skin or gets into the eyes, you must immediately rinse the contact area with plenty of water. A prompt medical examination is required in the event of contact with the skin or eyes. Spilled battery acid must be neutralised immediately.

The battery can only be used when the battery compartment is closed.

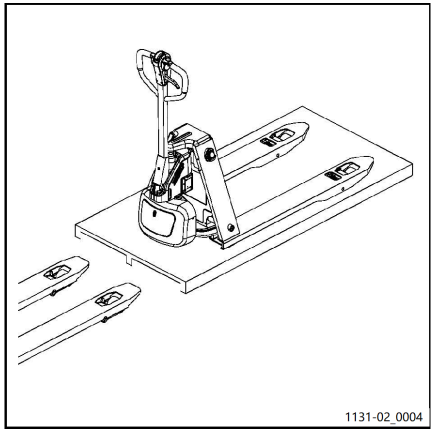
The size and weight of the battery have a significant impact on the operational safety of the truck. Battery replacement equipment must be approved in advance by the company.

Li-ion Battery waste disposal please contact your service dealer.

Forklift truck transport

- Only use haulage equipment with sufficient load capacity. (For loading and unloading weights, see the truck model nameplate and vehicle parameters).
- The load weight is greater than the net weight of the truck (including battery weight). The load weight does not just include the net weight of the truck; it also includes the wooden pallet.
- The pallet (or wooden box) should be large and strong enough to withstand the weight of the truck.

▷



- 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.

NOTE

- *Pay attention to the fork blades when lifting the truck onto the pallet, to prevent injuries caused by the fork blades trailing on the ground.*
- *Transport on a spacious and level surface to avoid damaging the truck.*
- *Be mindful of surface conditions when raising and lowering the pallet to avoid tipping the truck.*
- *The truck should be protected against rain.*

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.

Decommissioning and storing

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

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

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

Precautions prior to storage

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

⚠ CAUTION

Charge the battery every month.

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

Recommissioning after storage

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

NOTE

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

Equipment scrappage and disposal procedure

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

Equipment scrappage and disposal procedure

5

Maintenance

General Maintenance Information

Operational safety and environmental protection

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

Repairs and maintenance safety regulations

Repairs and maintenance personnel

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

Lifting and jacking equipment

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

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

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

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 circuits). If the truck is powered by a battery, you must disconnect it from the battery cable connections.

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

If you use 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.

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

Working on the electrical system

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

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

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

Parameter regulations

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

Truck tyres

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

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

Maintenance and checks

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

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

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

General

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

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

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

NOTE

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

⚠ CAUTION

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

ENVIRONMENT NOTE

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

General Maintenance Information

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

Service plan

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

The service plan is followed by advice to facilitate work.

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

Grade and quantity of lubricants and other consumables

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

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

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

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

All containers used to pour oil must be clean.

Daily inspection

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

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

Remove load from truck and lower the forks.

⚠ CAUTION

Risk of injury.

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

- Check for scratches, deformation or cracks.
- Check if there is any oil leakage from the cylinder.
- Check the vertical creep of the truck.
- Check the smooth movement of the wheels.
- Check the function of the emergency brake by activating the emergency button.
- Check, the tiller arm- switch braking function
- Check the lifting and lowering functions by operating the buttons.
- Check if all bolts and nuts are tightened firmly.
- Visual check if there are any broken hoses or broken electric wires.

Servicing and maintenance personnel training and qualification

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

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

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

regulations and principles established for checking industrial trucks.

Inspection and Maintenance

Service plan

Service plan

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

Daily inspection and servicing work.
Power supply
Visually inspect the battery.
Electrical system
Check operation switch, display equipment and component functions.
Check alarm system and safety devices.
Check the inching switch setting function.
Drive system
Check the chassis frame and apply grease. Check the position reset function of the operating handle.
Hydraulics
Check the hydraulic functions.
Check hoses, pipes and interfaces for damage and ensure their tightness and sealing.

Additional servicing work to be performed every 500 hours or every half year.
Power supply
Check that the battery cable connections are tight and grease the battery poles if necessary.
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.
Drive system
Check the gearbox for abnormal sound and leakage.
Check the wheels for wear and damage.
Check the wheel bearings and their mounting.
Hydraulics

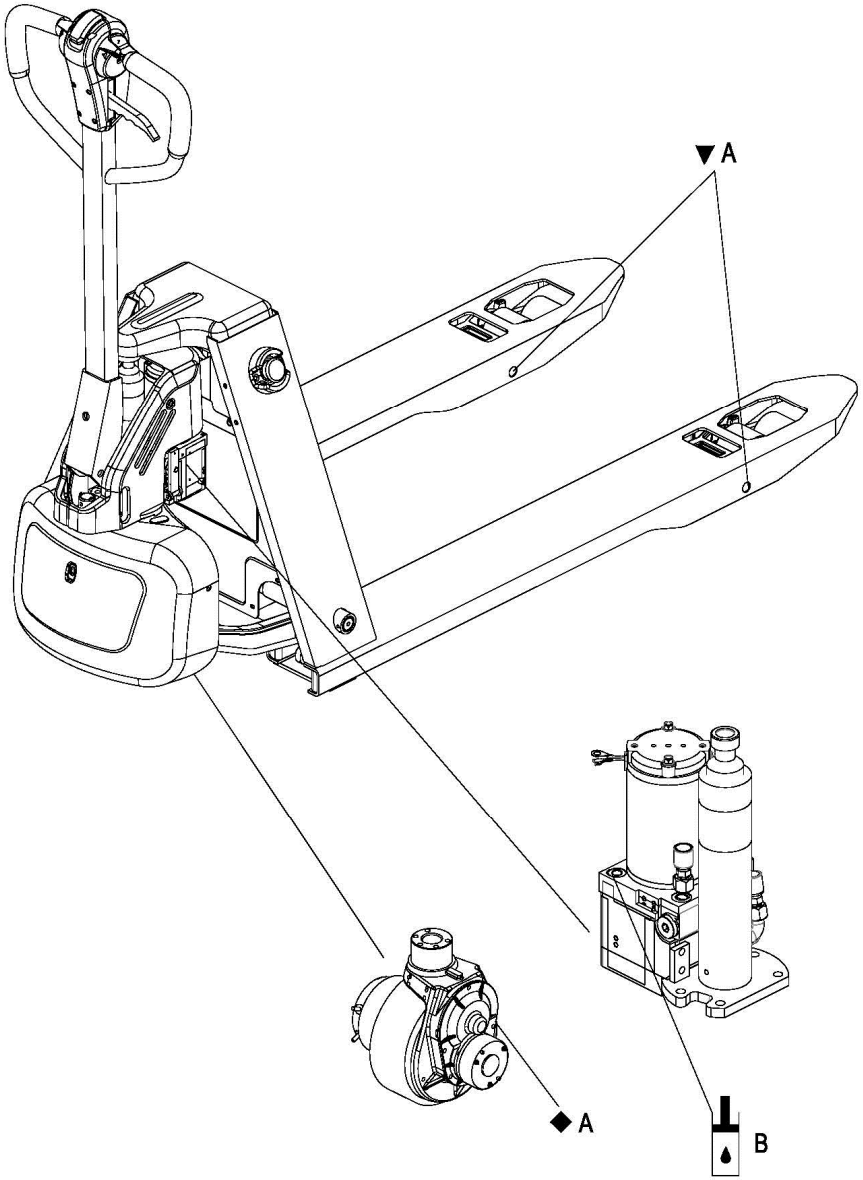
Additional servicing work to be performed every 500 hours or every half year.
Check cylinder block and piston for damage and ensure that they are properly sealed and secured.
Check the oil level in the oil tank.
Other
Check the frame for damage.

Additional servicing work to be performed every 1000 hours or every 12 months, in addition to the 500-hour servicing work:
Drive system
Adding gear oil.

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

Technical inspection and maintenance data

Lubrication maintenance schematics



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

Table of recommended fuels and oils

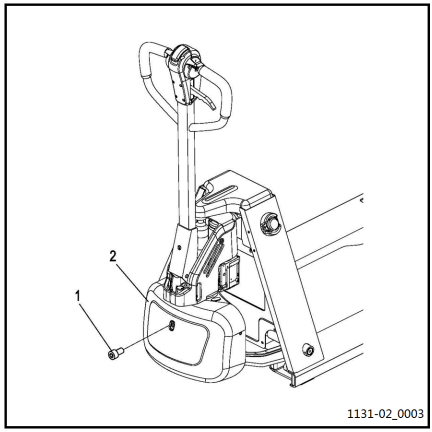
Designation	Model no.	Amount added	Position used
Antifriction hydraulic oil	L-HM46	0.21L	Hydraulics
Moly lithium grease no. 3	Grease (contains MoS2)	110 g	Gearbox
Moly lithium grease no. 3	Grease (contains MoS2)	As appropriate	Turning mechanism

Essential maintenance

Disassembling the cowling

➢ Loosen the 4 stud bolts that lock the cowling in place (1).

➢ Remove the cowling.



Replacing the drive wheel

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

Check 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.

➢ Park the truck as specified.

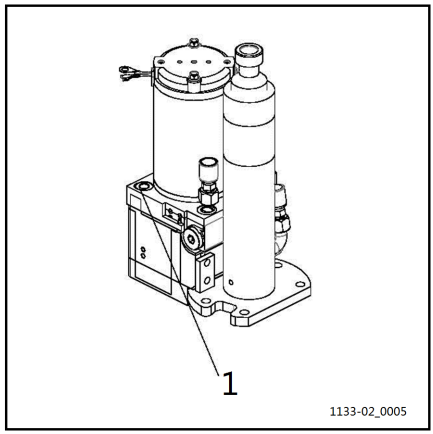
➢ Pull the key switch out to prevent the truck from being accidentally started.

⚠ CAUTION

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

➢ Remove the cover.

- When necessary, you must top up from the filler port (1) with the specified hydraulic oil.
- After topping up, lift the forks. The oil level is fully topped up when you no longer hear popping noises; continue to add oil if you still hear popping noises.
- Refit by following the above steps in reverse order.



Topping up the gear oil

- Park the truck as specified.
- Pull the key switch out to prevent the truck from being accidentally started.

⚠ CAUTION

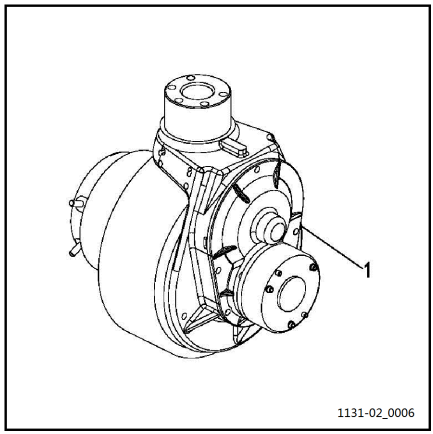
If you need to work underneath a raised truck, take effective measures to prevent accidents such as the truck overturning or slipping.

- Remove the cover.
- Pour correct gear oil into the grease fitting (1).

⚠ CAUTION

Do not add gear oil that contains impurities.

- Refit by following the above steps in reverse order.



Troubleshooting

Troubleshooting

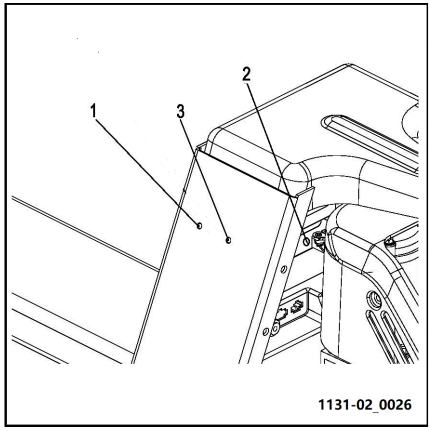
This chapter is intended to help users identify and eliminate simple faults or problems caused by operational errors. Carry out the checks in the table below in sequence to determine the specific cause of the failure.

Malfunction	Possible reason	Solution
The truck cannot start	The truck's power supply is off. The battery power is too low A fuse is blown The truck is in battery charge mode	Press the start button or insert the key switch. Check the battery charge and charge the battery if needed Check the safety device Interrupt the charging process
Unable to lift goods	The hydraulic oil level is too low The load is overweight	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.

Battery malfunction information

➢ If the control unit detects a battery malfunction, the battery light (2) will flash with an error code until the error is eliminated. Specific error code displays are as follows: ▷



- 1. Monomer under-voltage: the green light flashes once (the cycle is for 1 second) then stops for 2 seconds, then flashes twice, then stops for 3 seconds and repeats.
- 2. Monomer over-voltage: the green light flashes once (the cycle is for 1 second) then stops for 2 seconds, then flashes 3 times, then stops for 3 seconds and repeats.
- 3. Short circuit protection: the green light flashes once (the cycle is for 1 second) then stops for 2 seconds, then flashes 4 times, then stops for 3 seconds and repeats.

- 4. Overcurrent protection: the green light flashes once (the cycle is for 1 second) then stops for 2 seconds, then flashes 5 times, then stops for 3 seconds and repeats.
- 5. Battery temperature is too high: the green light flashes twice (the cycle is for 1 second) then stops for 2 seconds, then flashes 3 times, then stops for 3 seconds and repeats.
- 6. Battery temperature is too low: the green light flashes twice (the cycle is for 1 second) then stops for 2 seconds, then flashes 4 times, then stops for 3 seconds and repeats.
- 7. Contactor-related malfunction: the green light flashes 3 times (the cycle is for 1 second) then stops for 2 seconds, then flashes 4 times, then stops for 3 seconds and repeats.
- 8. For other malfunctions, the yellow light will flash; the cycle is for 1 second.

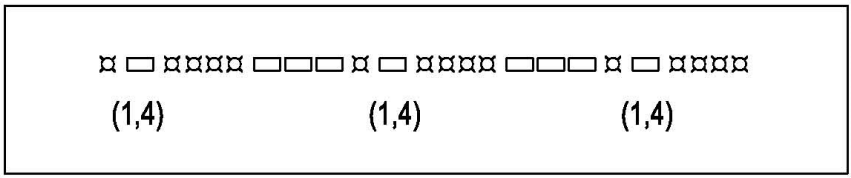
Control unit error messages

Handheld unit diagnostic

➢ Connect the handheld unit to the control unit terminal;

➢ Enter the Diagnostic menu and look for the error message.

LED malfunction light diagnostic



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Under normal vehicle usage, the LED malfunction indicator light (3) will be continuously lit. When a malfunction occurs, the LED will flash and display an error code. The LED light will turn off once the malfunction has been eliminated.

The LED light will display a two digit code:

Troubleshooting

➢ For example, the digit code “1, 4”——60— CAPACITOR CHARGE, will be displayed as shown in the image.

Error message	LED flashes (1) time	LED flashes (2) times	Fault	Error diagnosis
THERMAL FAULT	1	1	Over/under temperature cut	(1) temperature is under 80°C or below -10°C; (2) Vehicle is over-loaded; (3) Operating in harsh environment; (4) Electromagnetic brake is not releasing normally
THROTTLE FAULT	1	2	Potentiometer slippage or low voltage beyond range	(1) Accelerator input terminal open circuit or short circuit; (2) Accelerator potentiometer failure; (3) Incorrect accelerator type selected
SPEED POT FAULT	1	1	Speed limit potentiometer malfunction	(1) Speed limit potentiometer open circuit or short circuit; (2) Speed limit potentiometer open circuit
UNDER-VOLTAGE FAULT	1	4	Cell voltage too low	(1) Cell voltage <17 V; (2) Poor battery or control unit connection
OVERVOLTAGE FAULT	1	5	Cell voltage too high	(1) Cell voltage >31 V; (2) Battery charger is still connected when the vehicle is running; (3) Poor battery contact
MAIN OFF FAULT	2	1	Main contactor coil drive “closed” malfunction	(1) The main contactor coil was activated in error
(not used)	2	2		
MAIN FAULT	2	3	Main contactor malfunction	(1) The main contactor is stuck or there is an open circuit; (2) Main contactor coil drive error
MAIN ON FAULT	2	4	Main contactor coil drive “closed” malfunction	(1) The main contactor coil was deactivated in error
(not used)	2	5		
WIRING FAULT	3	1	HPD malfunction time exceeds 10 seconds	(1) Incorrect operation of the accelerator; (2) Accelerator terminal or the accelerator

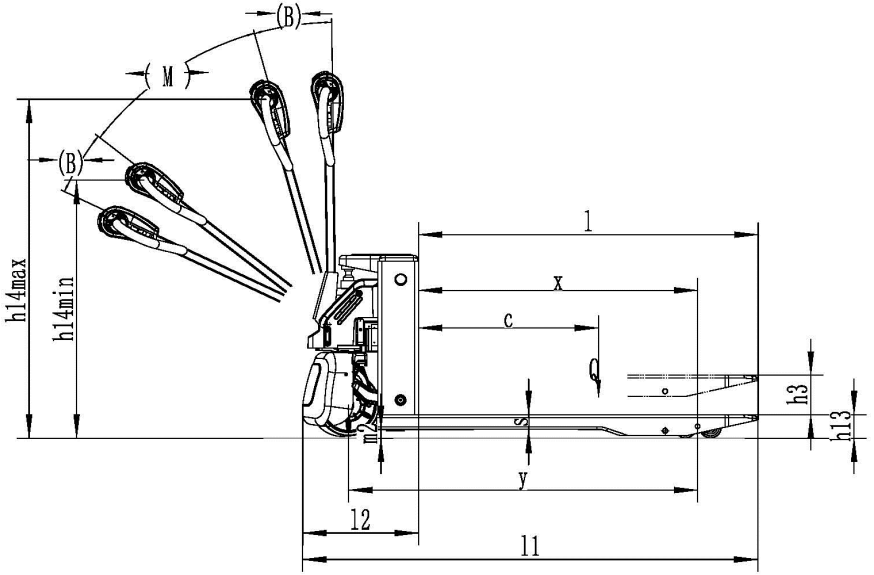
BRAKE ON FAULT	3	2	Brake activation malfunction	(1) Solenoid brake coil open circuit; (2) Solenoid brake drive short circuit
PRE-CHARGE FAULT	3	3	Precharge fault	(1) Control unit failure; (2) Low cell voltage
BRAKE OFF FAULT	3	4	Brake deactivation malfunction	(1) Solenoid brake coil short circuit (2) Solenoid brake coil open circuit
HPD FAULT	3	5	HPD malfunction	(1) The accelerator or key switch have been made to, or prohibited from, inputting several operating sequence errors; (2) Erroneously adjusting the accelerator
CURRENT SENSE FAULT	4	1	Current check malfunction	(1) Electric motor or electric motor wiring short circuit; (2) Control unit failure
HARDWARE FAILSAFE	4	2	Electric motor voltage exceeds range	(1) Electric motor voltage cannot match accelerator input; (2) Electric motor or electric motor wiring coil short circuit
EE CHECK-SUM FAULT	4	3	EEPROM Malfunction	(1)EEPROM malfunction or failure
(not used)	4	4		
BATTERY DISCONNECT FAULT	4	5	Battery is not connected	(1) Battery is not connected; (2) Poor battery terminal contact

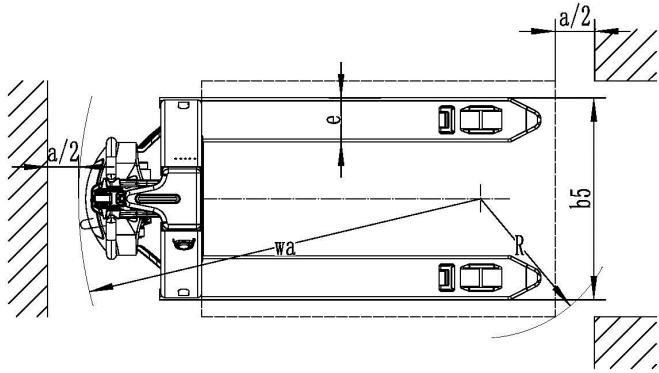
Troubleshooting

6

Technical Data

Technical datasheet





Technical datasheet

Description			
1.1	Manufacturer		Linde
1.2	Truck model		MT15C
1.3	Drive type: battery, diesel, petrol, LPG, mains power		Battery
1.4	Operation		Pedestrian
1.5	Nominal loading capacity	Q (kg)	1500
1.6	Load centre	c (mm)	600
1.8	Axle centre to fork face	x (mm)	950 (880)
1.9	Wheelbase	y [mm]	1190 (1120)

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

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

Dimensions			
4.4	Lift height	h3 (mm)	115
4.9	Height of tiller arm in driving position,min/max	h14 [mm]	750/1190
4.15	Fork height, lowered	h13 (mm)	80
4.19	Overall length	l1 (mm)	1550
4.20	Length to fork face	l2 (mm)	400
4.21	Total width	b1/b2 (mm)	560 (685)
4.22	Dimensions of forks	s/e/l (mm)	53x150x1150
4.25	Fork spread (outside of forks)	b5 (mm)	560 (685)
4.32	Ground clearance with load, center of wheelbase	m2 [mm]	30

Eco-design requirements for electric motors and variable speed drives

Dimensions			
4.34	Aisle width with 800 x 1200 mm pallet along forks	Ast (mm)	2062
4.35	Turning radius	Wa (mm)	1390

Performance data			
5.1	Driving speed, full load/no load	km/h	4.0/4.5
5.2	Lifting speed, with/without load	[m/s]	0.017/0.024
5.3	Lowering speed, with/without load	[m/s]	0.09/0.06
5.8	Maximum climbing ability, with/without load	%	6/16
5.10	Service brake		Electric

Driving			
6.1	Traction motor rating S2 60 min	kW	0.75
6.2	Lifting motor rating at S3 15%	kW	0.5
6.3	Battery acc. to DIN 43531/ 35/ 36 A, B, C, no		230x260x85
6.4	Battery voltage, nominal capacity K5	V/Ah	24/20
6.5	Battery weight	kg	5
6.6	Energy consumption acc. to VDI cycle	[kW/h]	n/a

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

Eco-design requirements for electric motors and variable speed drives

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

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

Linde Material Handling GmbH

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