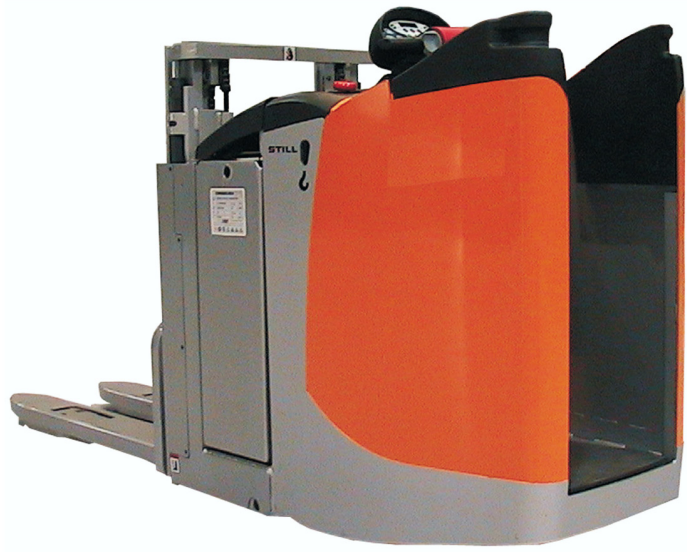
Original instructions

STILL
ELECTRONIC
DOCUMENTATION
SYSTEM

Electric pallet truck

EXD-S-20



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1

Introduction

Forklift data

We recommend that you record the principal forklift data in the following table so that they are available if required by the sales network or authorised service centre.

Type	
Serial number	
Date of delivery	

General information

- This manual contains "Original Instructions" provided by the manufacturer.
- The "operator" is defined as the person driving the forklift.
- The "user" is the physical or legal person who has the forklift truck used by the operators.
- For correct use of the forklift and in order to avoid accidents, the operator is obliged to read, understand and apply the contents of this manual, the "Rules for the use of industrial vehicles" and the labels and plates applied to the forklift.
- This manual and the attached "Rules for the use of industrial vehicles" must be kept carefully and must always be on the forklift for fast consultation.
- The manufacturer assumes no responsibility for any accidents to persons or damage to things due to the failure to observe the instructions in this manual, in the "Rules for the use of industrial vehicles" and on the labels and adhesive supplied to the forklift.
- The forklift may not be put to any use other that than indicated in this manual.
- The forklift must be used by appropriately trained operators only. For the necessary operator training, contact the authorised sales network.
- Persons working near the forklift must also be instructed in the risks associated with use of the forklift.
- In the interests of clear information, some illustrations in this manual show the forklift without the safety equipment (guards, panels, etc.). The forklift may not be used without safety equipment.

How to Consult the Manual

There is a table of contents at the beginning of the manual for ease of use. The manual is divided into chapters with specific topics. The name and title of the chapter are given at the top of each page The following is found at the bottom of each page: the type of manual, the identifying code, the language and the manual version.

Some general information is provided in this manual. Please only consider the information relevant for your specific forklift.

The following symbols have been used to highlight some parts of this manual.

⚠ DANGER

Failure to observe the instructions highlighted with this symbol may jeopardise safety.

⚠ CAUTION

Failure to observe the instructions highlighted with this symbol may cause damage to the forklift and, in some cases, result in warranty invalidity.

ENVIRONMENT NOTE

Failure to observe the instructions highlighted with this symbol may cause environmental damage.

NOTE

This symbol is used to provide additional information.

Date of edition and latest update of this manual

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

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

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

Copyright and trademark rights

Delivery of the forklift and documentation

Ensure that the truck has all of the options requested and that it has been delivered with the following documentation:

- Original instructions
- Rules for the compliant use industrial vehicles;
- EC Declaration of Compliance;
- Warranty book.

If the forklift has been delivered with a traction battery and/or battery charger, ensure that such products conform to the order and that the relative user and maintenance manual are included, as well as the EC declaration for the battery charger.

If applied equipment, other equipment or devices are present, ensure that they conform to the order and that the relative use and maintenance manual and of the relative EC declaration (if provided by regulations in effect) are included.

All of the above documentation must be kept for the entire operative life of the forklift. In the event that the documentation is lost or damaged, contact the authorised sales network for copies of the original documentation.

EC declaration of conformity in accordance with Machinery Directive

Declaration

STILL GmbH
Berzeliusstraße 10
D-22113 Hamburg Germany

We declare that the

Industrial truck	**according to these operating instructions**
Model	**according to these operating instructions**

conforms to the latest version of the Machinery Directive 2006/42/EC.

Personnel authorised to compile the technical documents:

See EC compliance declaration

STILL GmbH

Technical service and spare parts

For scheduled maintenance and any repairs to the forklift, contact only the authorised service network.

The authorised service network has personnel trained by the manufacturer, original spare parts and the tools necessary to carry out maintenance and repairs.

Servicing by the authorised service network and the use of original spare parts maintain the technical characteristics of the forklift over time.

Only original spare parts provided by the manufacturer may be used for forklift maintenance and repairs. The use of non-original spare parts invalidates the warranty and renders the user responsible for any accidents due to the inappropriateness of the non-original parts.

Normative References

This forklift complies with:

- The most recent version of Machine Directive 2006/42/EC in effect
- Electromagnetic Compatibility Directive 2014/30/EC and subsequent amendments, relative to forklifts for handling in accordance with the EN 12895 standard

The noise tests regarding the sound pressure level at the driver's seat were carried out in accordance with the EN 12053 standard and declared according to the EN ISO 4871 standard

The vibration tests were carried out in accordance with standard EN 13059 and declared in accordance with standard EN 12096.

The limit values for the electromagnetic emissions and immunity relative to the forklift are those set out in the EN 12895 standard.

Type of use

"Normal use conditions" of the forklift are understood as:

- lifting and/or transport of loads using forks with weight and load centre within the values provided (see Chapter 6 - Technical Data).
- transport and/or lifting on smooth, flat and compact surfaces;
- transport and/or lifting of stable loads uniformly distributed on the forks;
- transport and/or lifting with the load centre approximately on the forklift's median longitudinal plane.

⚠ DANGER

The forklift must not be used for other purposes.

Any other use renders the user solely responsible for injury/damage to persons and/or objects and voids the warranty.

The following scenarios are examples of incorrect use of the forklift truck:

- Transport on uneven (irregular or non-compact) surfaces
- loads that exceed the weight and/or load centre limits;
- transporting non-stable loads;
- transporting loads not equally distributed on the forks;
- transporting swinging loads;
- transporting loads whose load centre is considerably displaced with respect to the forklift's longitudinal median plane;
- transporting loads of dimensions such as to block the view of the operator when driving;
- transporting loads piled so high that they could fall onto the operator;
- travelling with a load over 300 mm off the ground;

- transporting and/or lifting people;
- pushing or pulling loads;
- moving upwards or downwards on a slope with the load facing downwards;
- turning at high speed;
- turning and/or moving sideways on slopes (upwards or downwards);
- colliding with stationary and/or mobile structures;

⚠ DANGER

Improper use of the forklift could cause it and/or at the load to overturn.

Working conditions

The forklift has been designed and built for internal transport.

Do not use beyond the limits of the climatic conditions indicated below:

- Maximum ambient temperature: +40°C
- Minimum ambient temperature: +5°C
- Altitude up to 2000 m
- Relative humidity between 30% and 95% (without condensation).

⚠ CAUTION

Do not use the forklift in dusty areas.

Using the forklift in environments with high concentrations of salty air or water could interfere with its proper operation and cause corrosion of metallic parts.

If the forklift must be used in conditions that exceed the limits indicated or, in any case, under extreme conditions (extreme weather, cold-storage rooms, presence of strong magnetic fields etc), appropriate equipment and/or use precautions are necessary. Contact the authorised sales network for more information.

⚠ DANGER

The forklift may not be used in environments in which there is a risk of explosion. It may not be used to handle explosive loads.

For forklifts that must operate in environments in which there is a risk of explosion or must handle explosive loads, appropriate equipment is necessary and must be accompanied by a specific EC Declaration of Compliance which replaces that of the standard forklift, and by the relevant User and maintenance manual.

Contact the authorised sales network for more information.

Modifications to Forklift

No modifications may be made to the forklift, otherwise the EC certificate and the warranty will become invalid, with the exception of:

- assembly of the options provided by the manufacturer
- assembly of applied equipment

for which it is necessary to refer exclusively to the authorised sales network

⚠ DANGER

If the forklift is equipped at the factory or later with devices that emit non-ionising radiation (such as radio transmitters, RFID players, data terminals, scanners, etc), the compatibility of such devices must be verified with the presence of operators using medical devices (such as heart pacemakers).

Applied equipment

To use equipment that has not been applied, please contact the authorised sales network, in order to:

- verify feasibility
- install the equipment
- add a label with the new residual capacity is
- provide documentation on the equipment (user and maintenance manual and EC certificate).

User obligations

Users must comply with applicable local legislation governing forklift use and maintenance.

Environmental considerations

Disposal of components and batteries

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

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

NOTE

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

ENVIRONMENT NOTE

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

Packaging

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

ENVIRONMENT NOTE

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

2

Safety

Safety guidelines

General Precautions

NOTE

Some safety regulations to be followed when using the forklift are listed below. These regulations integrate those in the manual "**Rules for approved use of industrial vehicles**".

General Safety Rules

- Only allow qualified, trained and authorized personnel to use the forklift.
- Do not install equipment on the forklift unless supplied or indicated by the manufacturer.
- Maintain the forklift in full working efficiency in order to limit any type of risk to the minimum.
- Do not use the truck with bonnets or doors open or with guards removed.
- The data plates found on the forklift must be kept in good condition and replaced if damaged.
- Carefully read and follow all of the safety indications found on the forklift.
- Make sure that the forklift has sufficient overhead clearance.
- Do not park the forklift in front of fire-fighting devices or fire escapes or anywhere that it blocks traffic.
- If the forklift shows signs of failure or breakage and there is reason to consider it unsafe, stop, park it, and notify the maintenance manager.
- Maintain appropriate distances from high voltage overhead cables. Comply with the safety distances established by the competent authorities.
- Never raise the load using just one fork.
- Place the load on the fork carriage or in such a way that the centre of gravity of the load is as close as possible to the fork carriage.
- The load must be placed on the fork arms so that the centre of gravity falls lengthwise on the mid point between the fork arms.
- Do not drive with loads off-centre laterally with respect to the forklift's median axis. Lack of compliance with this regulation can compromise forklift stability.
- Make sure that the surface on which the load rests is able to support its weight.
- Always use safety clothing compliant with current regulations and any personal protective equipment that may be applicable.
- Do not travel on loose or hilly ground or on steps.
- Do not drive with loads raised more than 300 mm from ground level.
- Do not turn or stack on slopes.
- Reduce speed on slopes.
- Do not overload the forklift beyond the capacity limits indicated on the capacity plates.
- Individuals under the influence of drugs and alcohol are not permitted to use the truck.
- The operator may not use an MP3 player or any electrical device that may distract their attention from the surrounding work environment.

Flooring requirements

The work floor must be even and free of holes or dips, which can be difficult to get around. Any steps must be equipped with ramps to prevent impacts with the wheels, which affect the entire structure of the truck.

⚠ CAUTION

Passing over cracks or damaged parts of the floor with the truck is prohibited. Dirt and any objects in the work path must be removed immediately.

Battery connection cables

⚠ CAUTION

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

Requirements for the traction-battery charging area

When the traction battery is being charged, the area must be sufficiently ventilated in order to download or eliminate the gases produced (EN 50272-3).

Safety Regulations Relative to Forklift Use

- The operator must familiarize himself with the forklift to be able to better describe any defects and assist maintenance personnel. The operator, trained and authorized to use the forklift, must be familiar with the controls and performances of the forklift.
- Any defect (squeaking, leaks, etc.) must be promptly reported because, if neglected, it could cause more serious failures/defects.
- Carry out the inspections indicated in the chapter on "Daily Inspections".

ENVIRONMENT NOTE

Report any oil and/or battery fluid leaks: they are dangerous and highly polluting.

⚠ CAUTION

If you notice a burning smell, stop the forklift and turn off the engine, then disconnect the battery.

Safety Regulations Relative to Operating Materials

Rules for handling and disposing of operating materials

ENVIRONMENT NOTE

Improper use and disposal of operating and cleaning materials can cause serious damage to the environment.

Always use and handle the operating materials in a suitable manner and follow the manufacturer's instructions for the product's use.

Keep the operating materials only in containers intended for this purpose and in a location that satisfies the requirements.

The operating materials may be flammable, so avoid contact with hot objects or open flames.

When topping up the operating materials, only clean containers should be used.

Follow the manufacturer's safety and disposal instructions regarding the operating and cleaning materials.

Do not disperse oils or other operating liquids! Any spilt liquid must be immediately collected and neutralised with a binding material (such as an oil binder) and then disposed of in accordance with current regulations.

Always comply with anti-pollution regulations!

Before carrying out work that involves lubrication, filter replacement or hydraulic equipment interventions, the area in question must be thoroughly cleaned.

The replaced parts must always be disposed of in accordance with the anti-pollution laws.

ENVIRONMENT NOTE

The incorrect or unlawful use of brake fluid is harmful to people's health and the environment.

Oils

- Do not allow to come into contact with the skin.
- Do not inhale oil vapors.
- Wear appropriate means of individual protection during forklift maintenance operations (gloves, goggles, etc.) to prevent the oil from coming into contact with your skin.

ENVIRONMENT NOTE

The used oils and relative filters contain substances that are hazardous to the environment and must be disposed of according to current regulations. We advise you to contact the authorised service network.

DANGER

The penetration in the skin of hydraulic oil that has leaked under pressure from the forklift's hydraulic system is dangerous. If this type of lesion should occur, contact a doctor immediately.

DANGER

Small high pressure jets of oil can penetrate the skin. Look for any leaks using a piece of cardboard.

Battery Acid

- Do not inhale the vapor: it is poisonous.
- Use adequate means of individual protection to prevent contact with the skin.
- Battery acid is corrosive: if it should come into contact with your skin, rinse abundantly with water.
- Explosive gas mixtures can form when charging the battery; therefore, the rooms in which the battery is charged must be in compliance with the specific regulations on the subject (e.g. EN 50272-3 etc.).
- DO NOT smoke or use open flames and lights within a 2 m radius from the charged battery and in the battery charging area.

NOTE

For greater information, consult the specific battery manual that comes with the battery.

ENVIRONMENT NOTE

The batteries contain substances that are hazardous to the environment. The replacement and disposal of the life-expired battery must be carried out as required by law. We advise you to contact the authorised service network that is equipped for eco-friendly disposal in accordance with current regulations.

Residual risk

Residual dangers, residual risks

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

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

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

WARNING

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

In addition, we draw your attention to the Safety Guidelines in these operating instructions.

Risks can include:

- Escape of consumables due to leakages, rupture of lines and containers etc.
- Risk of accidents when driving on ramps or in conditions of poor visibility, etc.
- Falling, tripping etc. when moving the truck, especially in wet or icy conditions or when consumables are leaking.

- Fire and explosion risks due to batteries and electrical voltages.
- Human error resulting from failure to observe the safety guidelines.
- Unrepaired damage or defective and worn components.
- Insufficient maintenance and testing
- Use of incorrect consumables
- Maintenance intervals exceeded

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

Stability

The stability of the truck has been tested in accordance with up-to-date technical regulations and is guaranteed if the truck is used correctly and in line with the intended purpose. These standards only take into account the static and dynamic tipping forces that can arise during use in accordance with the operating standards and intended purpose. In extreme cases there is a risk of exceeding the moment of tilt due to improper use or incorrect operation, which will affect stability.

Risks can include:

- loss of stability due to unstable or sliding loads etc.;
- turns at excessive speeds;
- moving with the load raised;
- moving with a load that is projecting to the side (e.g. side shift);
- turning and driving diagonally across slopes;
- driving on slopes with the load pointing downhill;
- oversized loads;
- swinging loads;
- steps or ramp edges.

Electromagnetic radiation

The limit values for electromagnetic emissions and for immunity relative to the forklift are those provided by the EN 12895 standard.

Non-ionised radiation

If the forklift is equipped at the factory or later with devices that emit non-ionising radiation (such as radio transmitters, RFID players, data terminals, scanners, etc), the compatibility of such devices must be verified with the presence of operators using medical devices (such as heart pacemakers).

Noise

Sound pressure level in driver's seat	L_{pAZ} < 70 dB (A)
Uncertainty factor	K_{pA}=4 dB (A)

The value is determined in a test cycle in accordance with Harmonised European Standard EN 12053 and declared according to EN ISO 4871 with weighted time percentages of the Transport, Lifting and Idling modes.

⚠ CAUTION

The value expressed above can be used to compare forklift trucks of the same category. This cannot be used to determine the noise level in workplaces (daily personal noise exposure). Noise values that are lower or higher than those indicated above can occur during actual truck use, for example following different operating modes, different environmental conditions and additional noise sources.

Vibrations

Value of the vibrations to which the hands-arms are exposed:

$\bar{a}_w < 2.5\ m/s^2$

The value complies with Harmonised European Standard EN 13059 (Safety of industrial trucks — methods for measuring vibration).

⚠ CAUTION

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

Safety tests

Regular safety inspection of the truck ▷

Safety inspection based on time and extraordinary incidents

The operating company must ensure that the truck is checked at least once a year, or following noteworthy incidents.

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

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

– Arrange for the service centre to perform periodic safety inspections on the truck.

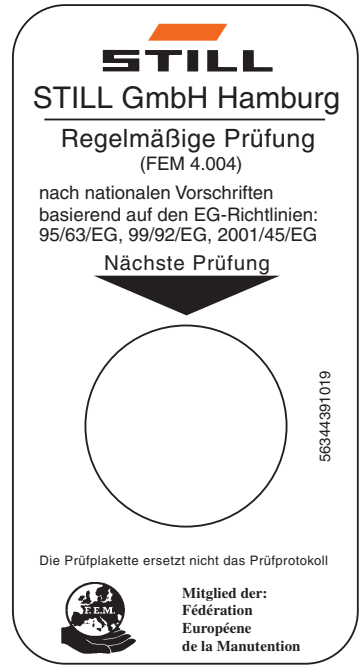
– Observe guidelines for checks carried out on the truck in accordance with FEM 4.004.

The operator is responsible for ensuring any defects are remedied without delay.

– Contact your service centre.

NOTE

Observe the national regulations for your country!



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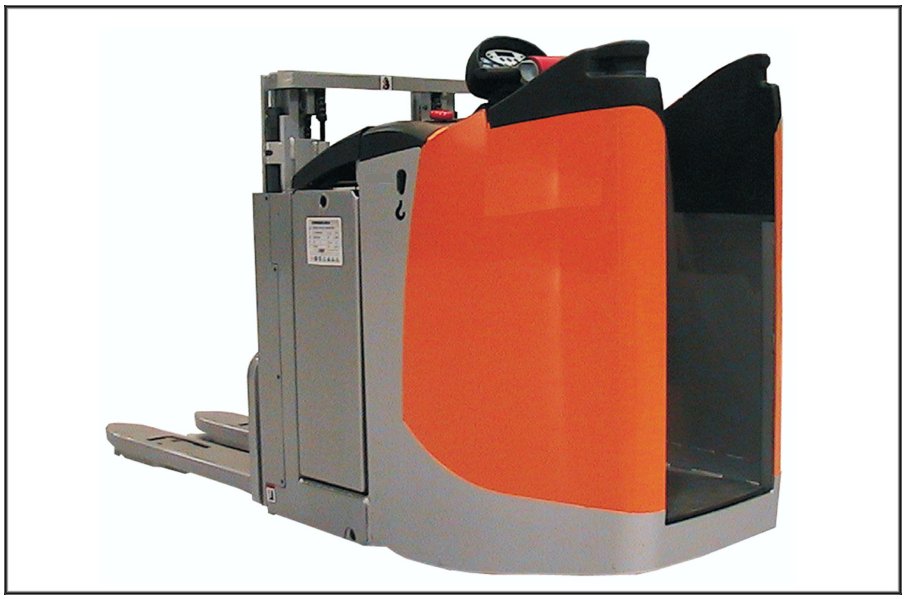
3

Overviews

Technical description



The EXD-S is a double-load pallet stacker designed for the most intense operations. It can carry up to 2 tonnes using the initial lift, with 1 tonne on each level, for optimal loading/unloading of lorries and transfer of loads.

Chassis

- The EXD-S was designed for loading/unloading lorries and has excellent handling on ramps and in the confined spaces of lorries.
- The even chassis moves smoothly and never catches on protruding edges of ramps, whilst the platform's tapered sides protect the operator from colliding with side walls, even when working on the end two pallet rows.
- The platform is an integral part of the chassis and it has an enclosed, high-resistance structure providing extreme reliability, even on violent impacts on the dock.
- To optimise traction and braking, the centre-mounted drive unit is sprung and features variable wheel pressure on the ground proportional to the load on the forks.
- For lateral stability, two exclusive STILL twin-wheels have been specially designed for the EXD-S for extreme reliability in the most arduous applications.

Steering

- Fully electric steering "with automatic return to neutral".
- In the centre angle range, any unintentional steering movements are damped by means of an electronic filter, guaranteeing precise steering.
- Automatic speed reduction during cornering combined with the stabilising wheels gives high lateral stability and reduces centrifugal force effects on the operator and the load.

Cockpit

- The new "cockpit" console contains all the functions for access, operation and control on the EXD-S.
- Due to the ergonomic layout of the controls, all functions can be operated with either hand.
- The following functions are integrated into the cockpit:
- Steering and travel control
- Raising/lowering of forks
- Lift and initial lift
- Hour meter connected to functions
- Battery discharge indicator with fork lift cut-out
- Operator profiles with two performance modes
- Performance mode selection by electronic key
- Service centre diagnosis for maintenance (by means of service codes)
- In addition, the cockpit provides a secure support for the operator whilst driving, so that he does not get tired or have to keep turning backwards and forwards.

Driver rides on standing on "sprung" platform

- Depending on the application, the EXD-S is available with two platform types that are ergonomically suited to the operator's needs. These needs are very different from one type of job to another, so we have designed two different platforms.
- For typical loading/unloading applications where pallet transfer or long runs require the driver to spend a long time standing on the truck, the platform with side access will offer the greatest comfort and safety for driving in both directions.
- If the driver has to step in and out frequently for any peripheral work, (scanning products, manual handling etc.), then the platform with rear access is best suited.
- Either EXD-S platform type always provides great comfort due to an innovative, unique, fully sprung platform floor.
- The truck incorporates various storage facilities and a holder for rolls of stretch wrap integrated within the hood.
- A clipboard is available as standard.

Driving

- The asynchronous traction technology is powerful and economical. Travel power is 3.0 kW.
- The latest generation of asynchronous controller combined with the cockpit offers the possibility of selecting two drive modes by touching one of the two performance mode buttons:
- In "ECO" mode (Tortoise button), the controller supplies the travel motor with low current and it accelerates gradually. This results in 15 % more battery economy, but the same productivity as other machines of this type.
- In "BOOST" mode (Hare button), the controller drives the travel motor to provide very high torque and acceleration, even when fully loaded. While economy remains unchanged, productivity increases by around 25 %.
- With each mode, the drive characteristics can be adjusted (speed, acceleration, braking) to precisely match the application or driver preference.
- Thanks to the controller's speed control system, the EXD-S will start smoothly and accelerate to maximum travel speed, regardless of the load on the forks.
- The service brake is activated by releasing the butterfly valves or by reversing the direction of travel.
- To avoid any unintentional movements whilst on a ramp, the (electromagnetic) parking brake is activated once the butterfly valves are in neutral position or the operator leaves the platform.

Hydraulic system

- A pump unit comprising a compact, 2.2-kW pump motor with built-in oil tank, solenoid valve and safety valve controlling end-of-travel lift cut-out.
- This powerful hydraulic system offers very short lift times, even with a full load, thereby providing high productivity for loading and unloading lorries with the EXD-S.

Mast and initial lift

- Excellent visibility for loading due to a new mast design.
- Full view of the load.
- Maximum load capacity of two tonnes thanks to initial lift that allows loading of two one-tonne loads.

Brake circuit

- There are two independent brake circuits.
- Progressive service brake with energy recovery activated by releasing or reversing the butterfly valves.
- Electromagnetic emergency brake activated by a button in the cockpit.
- Driving is only possible when the operator is on the platform, which acts as a contact switch.

Battery

- The battery is easily accessible. For use in multiple shifts, it can be changed from the side thanks to the integrated rollers.
- Two different battery compartments allow batteries with 450 Ah or 600 Ah capacities to be used.

Safety

- Our trucks are built to meet EU Directive 98/37 and carry the "CE" symbol.
- STILL is certified to ISO 9001.
- Speed reduction with optimal higher loading thanks to Optispeed.

Options

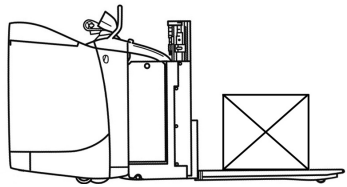
- Unique STILL modular accessory system with horizontal bar.
- A4 clipboard.
- Preparation for on-board IT terminals.
- Cold store version (-30 °C).
- 24 Volt 600 Ah battery compartment.
- Access control and fleet management with FleetManager.

Sample graphics ▷

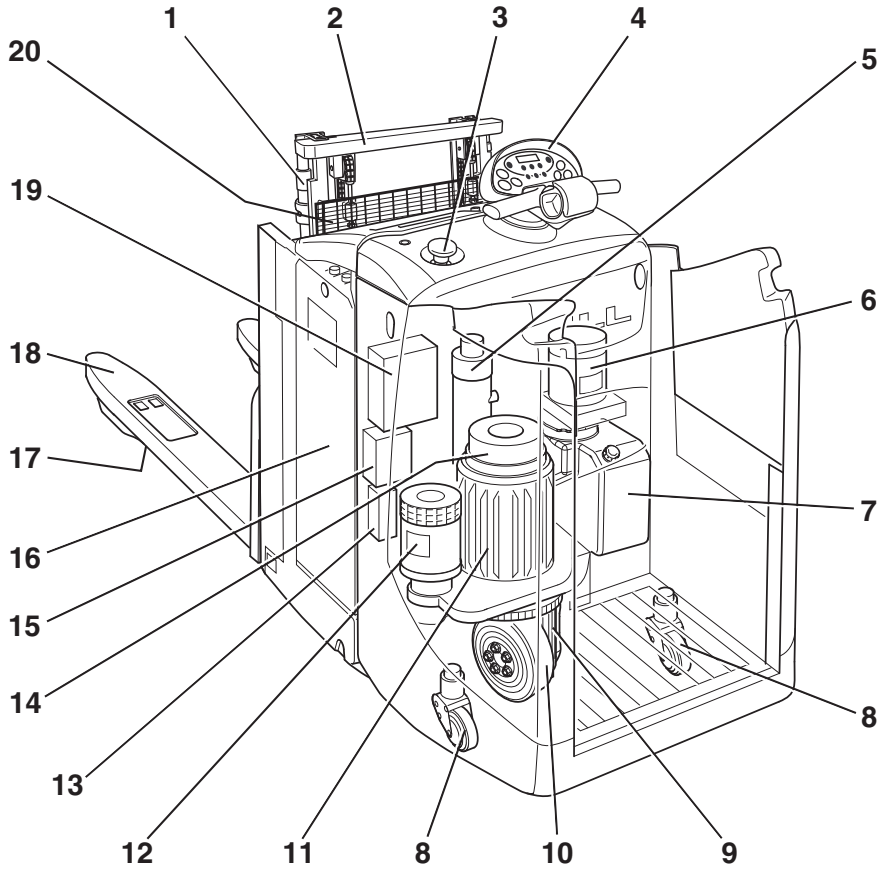
This documentation explains the (usually sequential) sequence of certain functions or operations. Schematic diagrams of a truck are used to illustrate these sequences.

NOTE

These schematic diagrams are not representative of the constructed state of the documented truck. They serve only to illustrate the sequences.



Overviews



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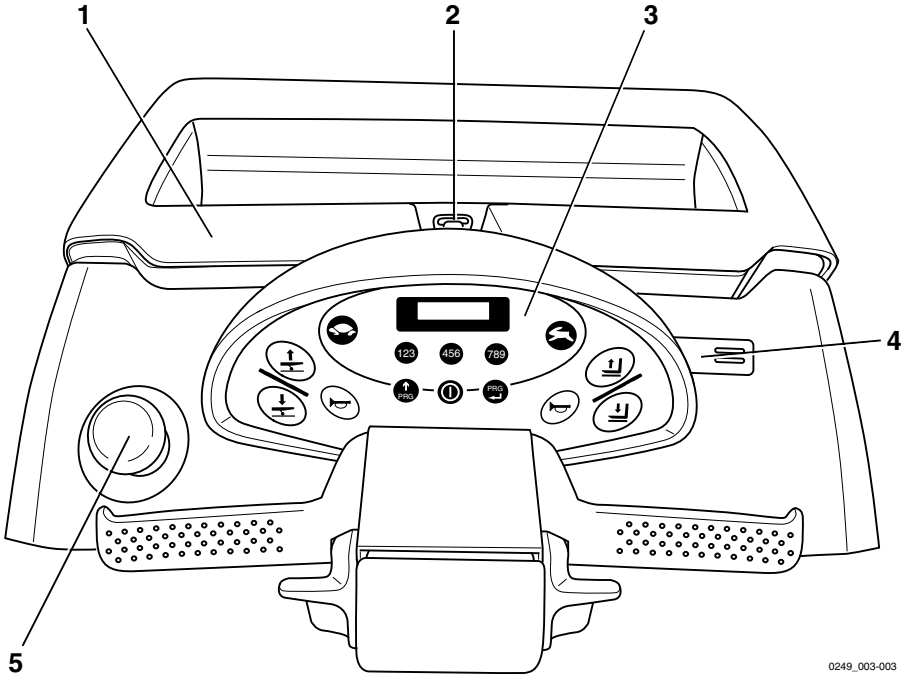
1	Lift cylinder main lift	11	Drive motor
2	Mast	12	Steering motor
3	Emergency stop switch	13	Steer control
4	Cockpit	14	Brake
5	Lift cylinder, basic lift	15	Fuse mount
6	Pump motor	16	Battery
7	Hydraulic oil tank	17	Load wheel
8	Stabiliser	18	Forks
9	Gearbox	19	Travel control
10	Traction wheel	20	Protective screen

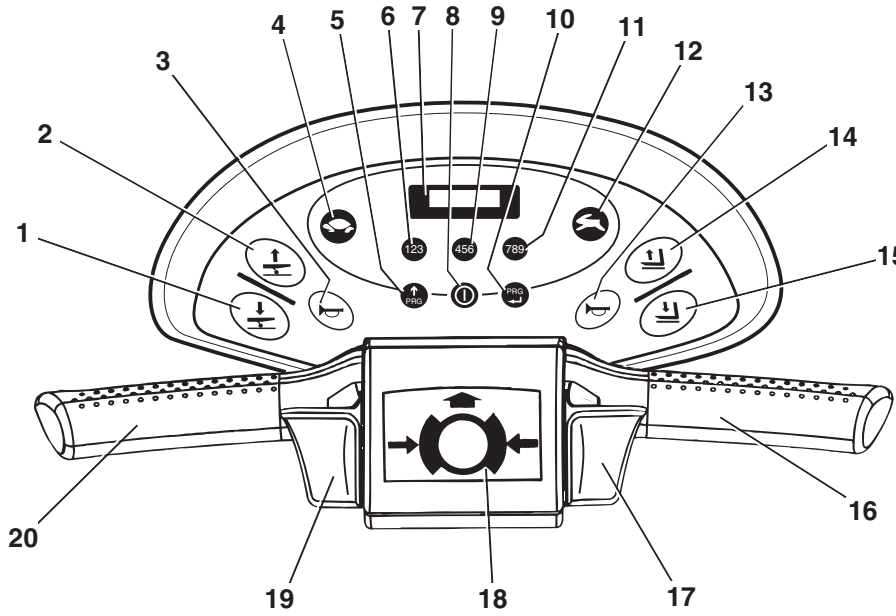
Control and display elements

View of the control elements



1 Battery cover
2 Battery compartment lock
3 Cockpit
4 Document holder
5 Emergency isolator button

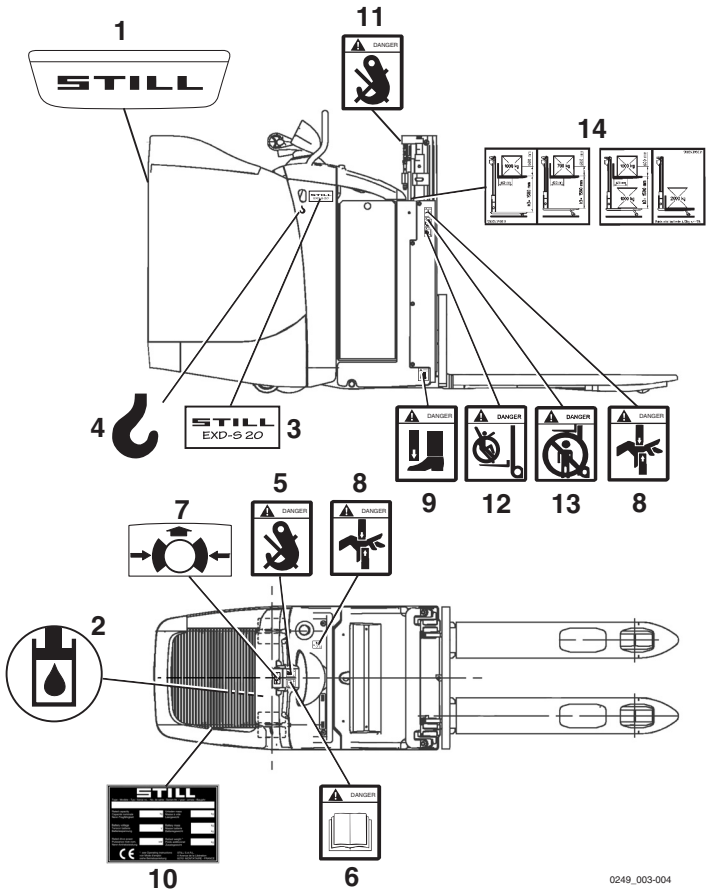
Cockpit



1	Lower button	11	Numbers 789 button
2	Lift button	12	Hare button
3	Horn button	13	Horn button
4	Tortoise button	14	Main lift up button
5	PRG ↑ (scrolling) button	15	Main lift down button
6	Numbers 123 button	16	Handle
7	Display	17	Travel control
8	I (ON) button	18	Emergency brake switch
9	Numbers 456 button	19	Travel control
10	PRG ↵ input (enter) button	20	Handle

Markings

Location of plates and labels



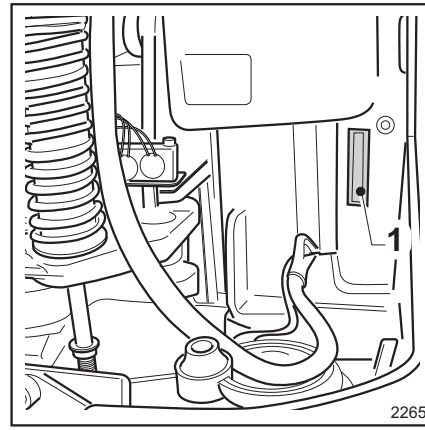
1	Brand label	8	Label "Danger of getting pinched for hands"
2	Label "Fill hydraulic oil here"	9	Label "Danger of getting pinched for feet"
3	Brand label and truck designation	10	Manufacturer's plate
4	Label "Lifting slings here"	11	Label "Lifting slings not allowed here"
5	Label "Lifting slings not allowed here"	12	Label "Don't step on the forks"
6	Label "Read the operating instructions"	13	Label "Don't stay under the lifted forks"
7	"STOP" label	14	Load capacity diagram

Notice labels

The warning labels and warning notices must always be obeyed.

Chassis frame labelling

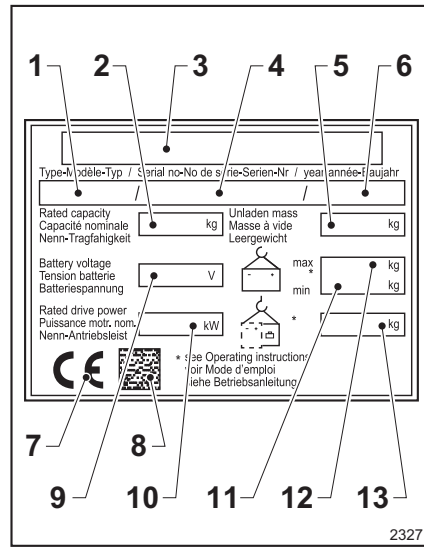
The truck's serial number is marked on the chassis frame (1).



Data plate

NOTE

Please indicate the serial number for all technical enquiries.



1 Model
2 Rated capacity in kg
3 Manufacturer
4 Serial no.

5	Unladen weight (without battery) in kg
6	Year of manufacture
7	EC conformity symbol
8	QR code
9	Battery voltage V
10	Nominal power rating in kW
11	Minimum battery weight
12	Maximum battery weight
13	Additional weight (ballast) in kg

Options and variants

Overview of options and models

- Single load wheels
- Continuous operation hour meter (with own battery in the tiller head)
- Battery charge indicator (for gel battery)
- Battery charge indicator (for gel battery) with service interval indicator
- Battery charge indicator (for lead battery) with service interval indicator
- Cold store model
- Document holder
- Preparation for data input terminal
- Customer's logo
- Rollover bar (various types)
- FleetManager
- Tray 71
- Battery electrolyte level indicator LED

Overview of accessories

- Master code (factory setting "1 2 3 4")
- Key for battery compartment (2 items)

4

Application

Authorised and safe use

Intended use of the trucks

⚠ CAUTION

This machine is intended for the transport of loads packed on pallets or in industrial containers designed for this purpose, as well as for placing pallets into and removing pallets from stock.

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

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

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

Safety instructions relating to use of the truck

Behaviour when driving

The operator must obey the same rules within the plant as on the road. The operator must drive at a speed appropriate for the driving conditions. For example, the operator should drive slowly around corners, when entering and travelling through narrow passageways, when driving through swing doors, at blind spots, or on uneven surfaces. The operator must always maintain a safe braking distance from vehicles and persons in front of him and must always have the truck under control. The operator must avoid sudden stops, making fast U-turns and overtaking other vehicles in potentially dangerous areas or areas with poor visibility.

⚠ WARNING

Driving the truck while sitting down is prohibited.

Please remember the following:

- Drive the truck as described in the "Operator positions" section.
- The truck must not be used as a stepladder.

- The truck has not been designed to transport anyone other than the operator and must not be used for this purpose.
- The operator must always stay within the truck clearance.
- Stay in the safety area (working area defined by the manufacturer).

NOTE

Using a telephone or radio in the truck is permitted, but avoid using these devices when driving as they may distract you.

People in the danger area

Before starting the truck and while you are working, ensure that no one is in the danger area. If people are in danger, warn them well in advance. Stop working with the truck immediately if the people do not leave the danger area despite the warnings.

DANGER

Risk of injury! There is a risk of physical injury inside the danger area. Danger of death from falling loads!

Do not stand on the forks!

Standing or walking under the forks is strictly forbidden, even when they are not loaded!

Danger area

The danger area is the area in which people are in danger from the forklift truck movements, from its work equipment and from its load lifting devices (e.g. accessories) or from the load. The danger area also includes areas in which a load could fall or in which work equipment could lower or fall.

Traffic route conditions

The surface of traffic routes must be sufficiently level, clean and clear of objects. Drainage channels, railway crossings and other similar obstacles must be levelled and, if necessary, fitted with ramps so that the truck can cross without jolting.

There must be sufficient distance between the highest part of the truck or the load and

the surrounding fixed installations. The height depends on the lift height and the dimensions of the load. Refer to the technical characteristics.

Regulations regarding the traffic routes and the manoeuvring areas

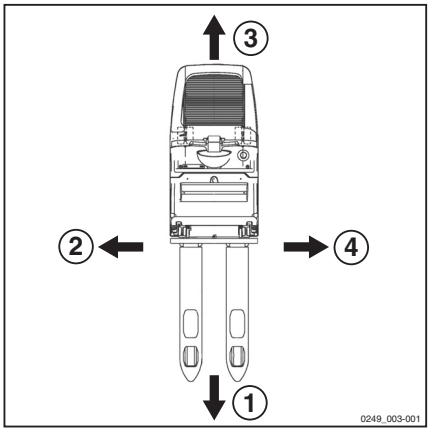
Only traffic routes authorised by the operator or his agent may be used. Traffic routes must be free of obstacles. Loads may only be unloaded and stored in places designed for this purpose. The operator or his agent must ensure that no unauthorised person approaches the working area.

Hazards

Hazards on the traffic routes must be signalled by standard road signs or possibly by additional warning notices.

Definition of directions

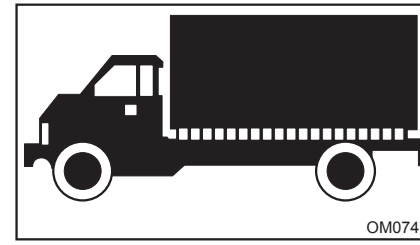
The references forward (1), backward (3), right (2) and left (4) when describing location are made relative to the operator's station. The load is at the rear.



Truck transport and lifting

Transporting the truck

The forklift is normally transported by road and rail. If the forklift's dimensions exceed the max. clearance size allowed, it is transported disassembled. The sales network is in charge of the disassembly and reassembly operations. The forklift must be secured to the transport means during transport using appropriate restraint systems. Block the wheels with wedges to prevent even the slightest movement.



Climatic Conditions for Transport and Storage

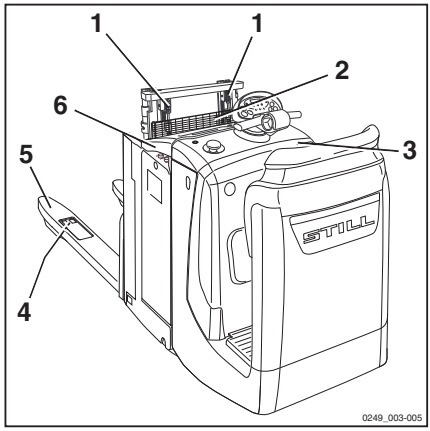
The forklift must be protected from atmospheric agents during transport and storage.

Breaking-In

This type of forklift does not require special breaking-in operations.

Checks and actions prior to commissioning

Visual inspections



⚠ WARNING

Damages or any other defects on the truck or the attachment (option) can lead to accidents.

If damages or any other defects on the truck or on attachment (option) are detected during the following checks, do not use the truck until it is properly repaired. Do not remove or disable safety features and switches. Do not change specified settings.

– Report any faults to the supervisors.

⚠ WARNING

Risk of falling!

In the event of services on higher parts of the truck, do not use components of the truck for climbing up and for standing on.

– Use the appropriate equipment for this purpose.

Before starting operation convince yourself of the safe operating condition:

– No visible damage (eg deformation, cracks, heavy wear, hairline crack(s)) to forks (5) and other load lifting devices.

⚠ CAUTION

Have damaged forks replaced by our after-sales service.

– The wheels must not be damaged or worn and must be fastened correctly.

– Warning devices (eg horn) must function properly.

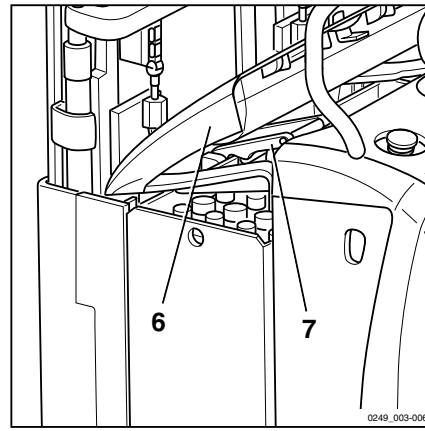
– Check the area beneath the truck for leaking operating fluids.

– Inspect the wheels and load wheels (4) for strings, fibres and any other objects which could hinder their free rotation.

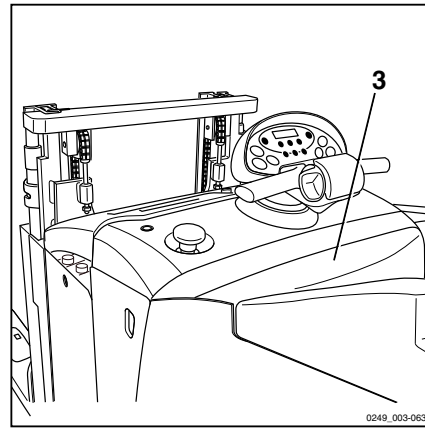
– No damage to the chains (1) sufficient and even chain tension.

– Lubricate the roller guide rails with plenty of grease.

– The latch (7) must be closed.
– The battery cover (6) must be closed.



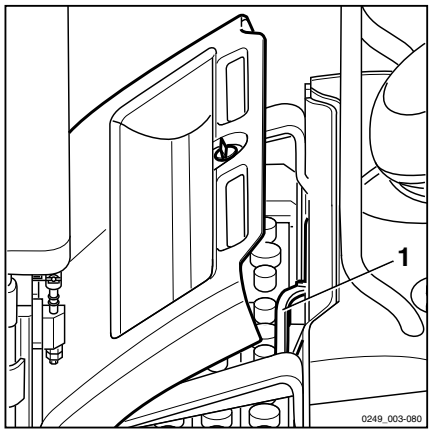
– The cover (3) must be fitted.
– The protective screen (2) must be fitted and undamaged.
– Check notice and safety labels for completeness and intactness, see ⇒ Chapter "Location of plates and labels", P. 3-28.
– Replace any damaged or missing labels according to the overview of the location of plates and labels.
– Attachments (option) must be properly secured and operate in accordance with their operating manual.
– Inspect hydraulic pipes and hoses where visible for damage and leakage. Damaged hoses must be replaced.



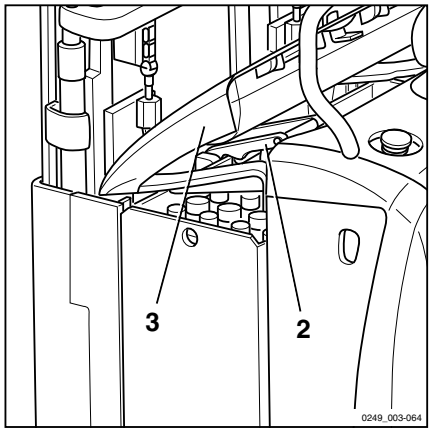
Report any defects to the supervisor.

Connecting the battery plug (charging station)

– Disconnect the battery socket (1) from the charging station and insert into the plug on the truck.

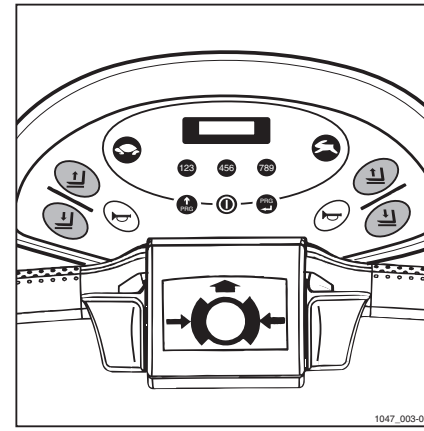


– The latch (2) must be closed.
– Close the battery cover (3).



Commissioning

Turning on the truck

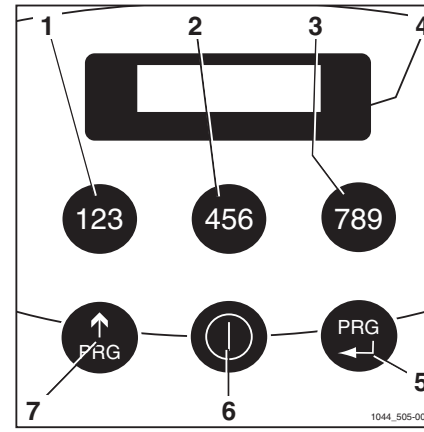


NOTE

The pallet truck is equipped with a digital control and is taken into operation by entering a driver code. The driver code consists of four figures and is assigned by the pool manager. It is used for normal use and operation of the truck by the driver and operator. The knowledge of the code is like a key and should not be misused. Do not tell third persons your driver code except if expressly ordered to do so.

– It is possible to send other codes; see chapter: ⇒ Chapter "Digicode control", P. 4-67.

Entering the user code



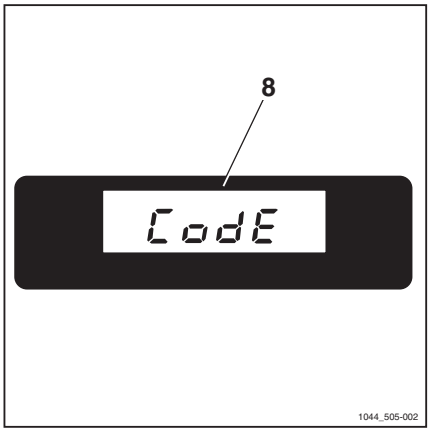
– Press the I key (on) (6). The display (4) shows the message Code (8). This message switches off after approximately one second. You can then enter the 4-digit user code. The digits are entered in the same way as on a mobile phone.

– Press keys (1), (2) or (3) several times until the desired digit is shown;

for digits:

- 1-2-3, press key 123 (1),
- 4-5-6, press key 456 (2),
- 7-8-9, press key 789 (3).

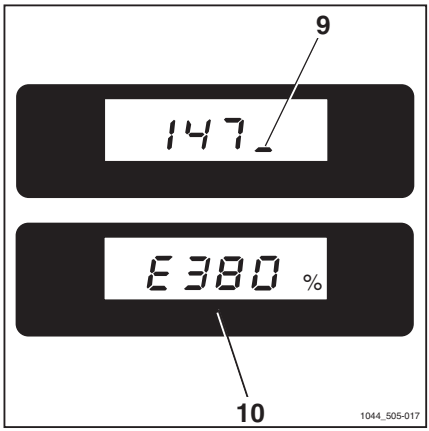
After entering a digit, the display moves to the next position. The display shows a flashing line (9) (the illustration shows an example).



NOTE

If the digit entered is wrong, it is possible to cancel it by depressing the PRG ↑ key (scroll) (7).

– The digit will be deleted and the flashing line (9) will reappear. It is now possible to enter digits again. ▷
– After the fourth digit has been entered, confirm this code by pressing PRG ↵ (5). The name of the truck manufacturer is displayed. It is now possible to activate the truck.



NOTE

If an error code is displayed, e.g. E380 (10), stop the truck by pressing the key (6) and carry out the activation procedure again.

NOTE

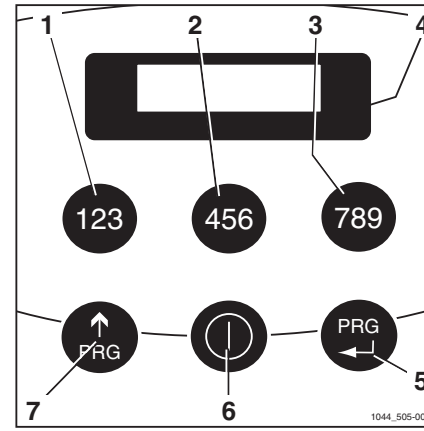
It is possible to show the following displays by repeatedly depressing the PRG ↑ key (scroll) (7).

- Hour meter ⇒ Chapter "Hour meter", P. 4-41
- Battery charging ⇒ Chapter "Battery discharge indicator", P. 4-42
- Servicing interval management ⇒ Chapter "Display of time to next servicing", P. 4-42

Starting with FleetManager (optional)

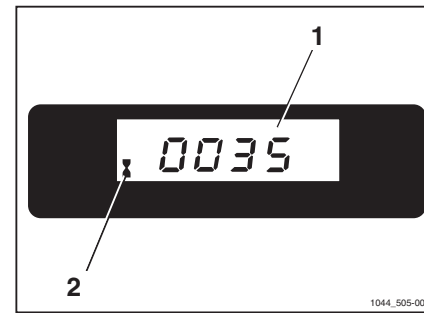
– Push the [I] key (START) (6). Do not pay attention to the Code alert that appears in the display

– Start the truck directly via the FleetManager keyboard or reading device, depending on the version.



Hour meter

The operating hours (1) appear approx. 4 to 5 seconds after starting the truck, accompanied by the hourglass symbol (2). The total hours are indicated from when the truck is first commissioned. The hour meter totals during travel. Perform maintenance work according to the operating hours in accordance with the maintenance schedule.

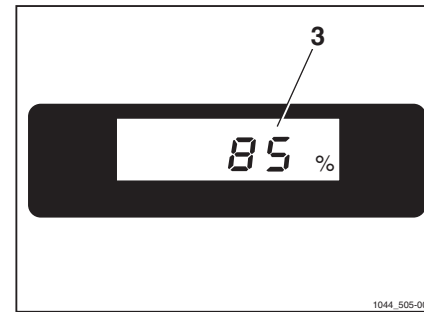


NOTE

The meter goes to 9999.

Battery discharge indicator

– Press the [PRG ↑] key (browse) (4) to view the battery charge (3) that is still available.



NOTE

The correct battery charge status is only indicated approx. 1 minute after connection.

The charge status is indicated in % and updates in increments of 5%.

NOTE

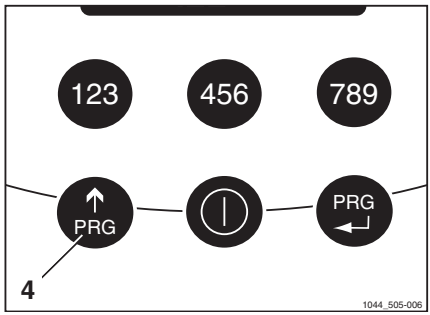
The battery discharge indicator is registered in the factory for lead batteries, but signalling can be adapted for gel batteries. Contact the technical service department.

- When the remaining charge reaches 20%, the battery must be charged shortly
- The speed of travel decreases

CAUTION

Deep discharging damages the battery.

The battery must be recharged immediately because deep discharge is now starting.



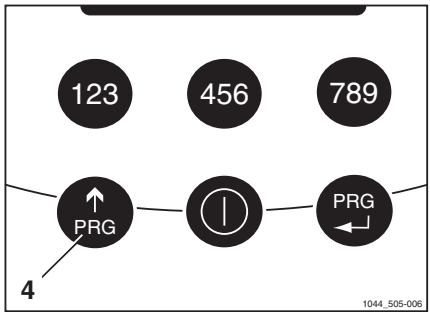
Display of time to next servicing

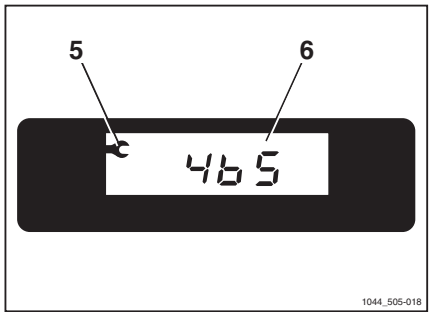
– Press the PRG ↑ (scrolling) button (4) to display the time remaining until the next scheduled servicing. The time is shown in hours (6) and with the symbol of a spanner (5). Have the maintenance carried out according to service hours specified in the maintenance schedule.

NOTE

The display of the time to the next servicing can be set by your Service. Please contact your Service in this regard.

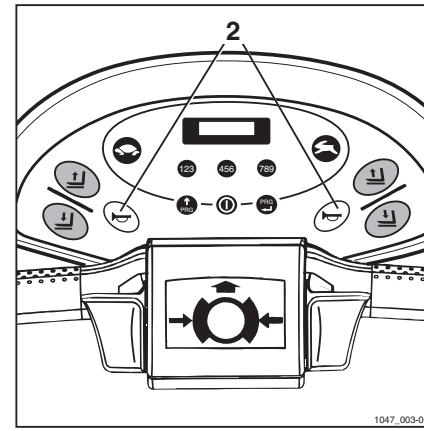
– The display can show subsequent information ⇒ Chapter "Error code", P. 4-75.





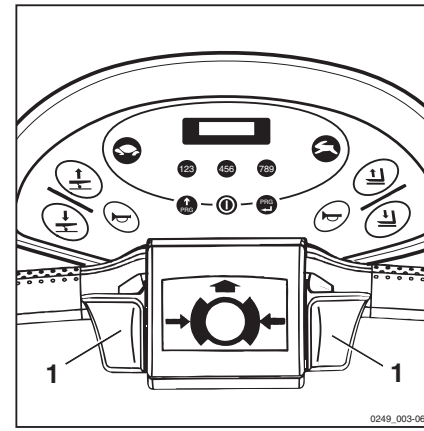
Operating the horn

– Press the horn button (2) on the cockpit.

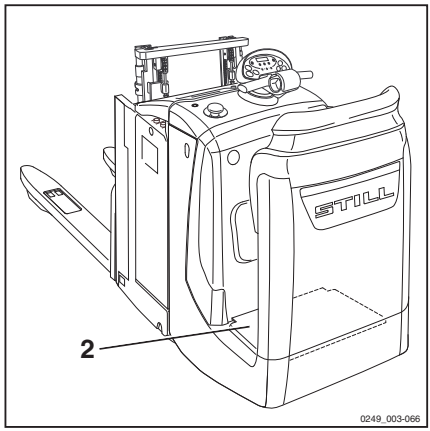


Check of brake and presence area

– Start the truck slowly with the throttle (1).



– Step off the presence area (2) while leaving the throttle actuated. ▷

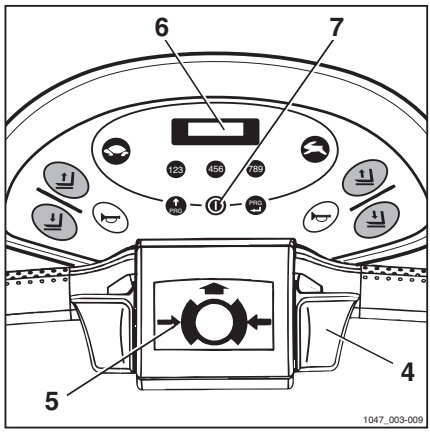


Checking the emergency brake ▷

– Drive the truck slowly using the traction control (4).

– Press the belly button (5). The truck is braked to a stop.

– The STOP signal appears on the display (6).



NOTE

After the STOP *message has disappeared, the* ⏻ *key (START) (7) must be pressed to resume the work.*

⚠ CAUTION

This brake may only be used in an emergency.

Driving

Driving safety rules

Behaviour when driving

The driver must drive within the plant according to the traffic rules for public roads. The speed of the truck must be consistent with local conditions. Speed must be reduced, for example, in bends, narrow passages, when driving through swing doors, in areas where visibility is obstructed and on uneven ground. A safe braking distance must always be maintained to the vehicle ahead and to persons. Sudden braking, fast turns, overtaking in hazardous areas or areas with poor visibility must be avoided.

Do not sit on the truck when driving.

The EXD-S20 trucks are designed for pedestrian operation, therefore:

- Never operate the truck when sitting or standing on it.
- Never use the truck as a climbing aid.
- Never use the truck to transport persons.
- Do not lean out. Always stay within the truck profile.

The use of a mobile phone or walkie-talkie when operating the vehicle is permitted. However, do not use these devices while driving, as this will reduce your concentration.

First practice driving in a clear area or on a free roadway.

Visibility when driving

The driver must look in the direction of travel and have a clear view of the route travelled on. He must always ensure that the way is clear, particularly when reversing. When transporting goods that obstruct visibility, the truck must be driven with the load trailing. If this is not possible, a guide must walk ahead of the truck. In this case, the truck may only be driven at walking pace and with the utmost caution. The truck must be stopped

immediately when eye contact with the guide is lost.

Before driving

Persons in the danger area

Before and during operation of the truck, the driver must ensure that no person is standing in the danger area of the truck. A warning signal must be given in the event of danger to persons. If these persons refuse to leave the danger area despite the warning, the driver must stop working with the truck immediately.

⚠ WARNING

Risk of injury!! Within of the danger zone there is a risk of being injured.

Do not step on the forks.

⚠ DANGER

Risk of death through falling loads!

It is expressly forbidden to stand under the raised forks or to walk by beneath them, even if there is no load on the forks.

Danger zone

The danger zone is the area in which persons are endangered through the movement of the truck, its implements, load-lifting devices (eg attachments) or the carried load. This also includes the area within the range of falling loads or a descending implement.

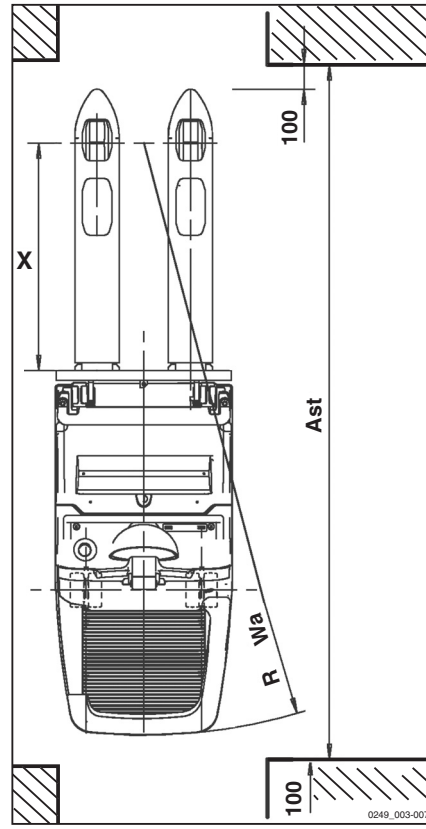
Dimensions of roads and working aisles

The dimensions specified in the description section apply under established conditions and should ensure safe manoeuvring. Check in each case whether a wider aisle is required when, for example, the load dimensions deviate.

The required aisle widths (Ast) depend on the dimensions of the load and are calculated according to the following formula: Ast = Wa - X + length of pallet + 200 mm

Observe your local and national regulations.

The truck may only be used on roadways without any tight curves, too large gradients and too narrow and too low passages.

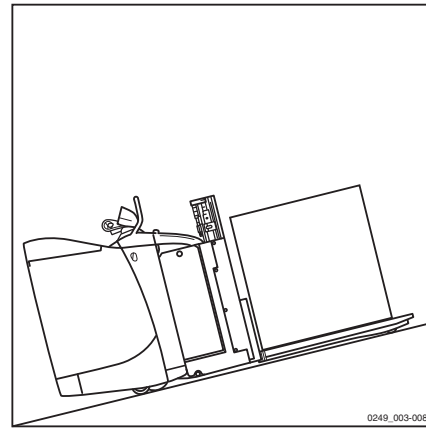


The following inclines or slopes may be driven on with the truck:

Gradient in %	with load	without load
	7	15

The inclines and slopes must not exceed the above gradients and they should possess a rough surface.

Smooth passages at the top and lower end should prevent the load from touching the ground or damage to the truck.



Condition of roadways

Roadways must be solid enough, free of debris and fallen objects. Drainage ducts,

railway crossings and the like must be level and, if necessary, provided with ramps so that they can be crossed without jolts, if possible.

There must be sufficient clearance between the highest parts of the truck or load and fixed parts of the surroundings. The height depends on the lift height and the dimensions of the load. Check the data sheet for your truck.

Rules for roadways and working area

Only the roadways released for traffic by the operator or his representative may be driven on. The roadways must be free of obstacles. The load may only be stacked and stored at the appropriate places. The operator and his representative must ensure that unauthorised persons keep away from the working area.

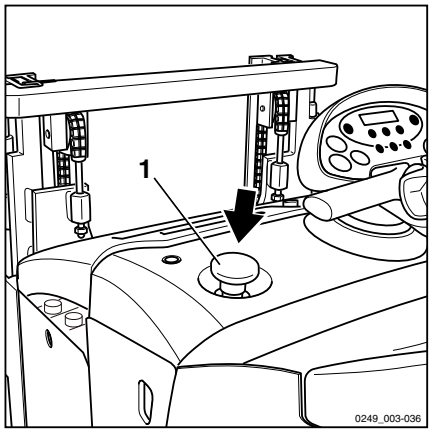
Hazard areas

Hazard areas on roadways must be marked with the usual traffic signs or, if necessary, by additional warning signs.

Emergency stop procedure

In an emergency, all truck functions can be cut off.

– To do so, depress the emergency isolator button (1). The truck comes to a stop. ▷



⚠ CAUTION

This safety feature may only be used in an emergency.

NOTE

After pulling up the emergency isolator button re-enter the driver's code to resume work.

Driving, ride-on standing mode

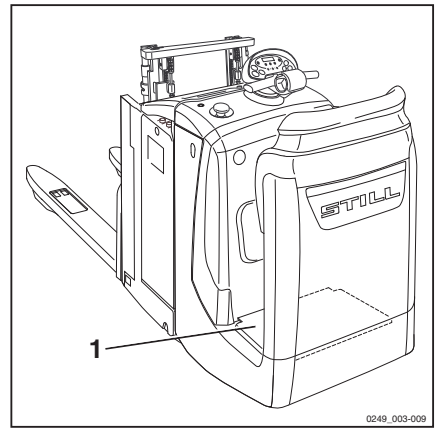
– Stand upright, with feet placed in the presence zone (1) of the platform.

NOTE

The truck must be switched on.

WARNING

The platform floor must be kept free of any object that could activate the operator presence mat by its weight.

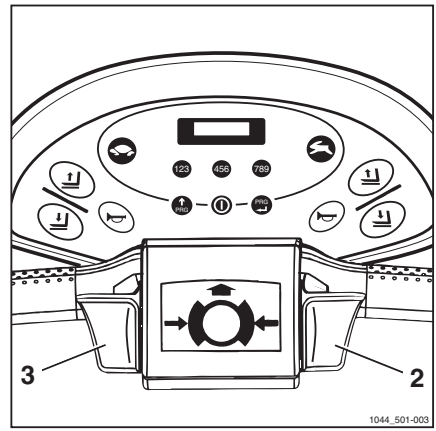


Driving forward

– Press the upper part of the throttle (2) or (3) with your thumb.

– The speed increases with the movement of the throttle.

– When the travel throttle is released, the truck brakes electrically.



Reverse travel

– Press the lower part of the throttle (2) or (3) with your thumb.

– The speed increases with the movement of the throttle.

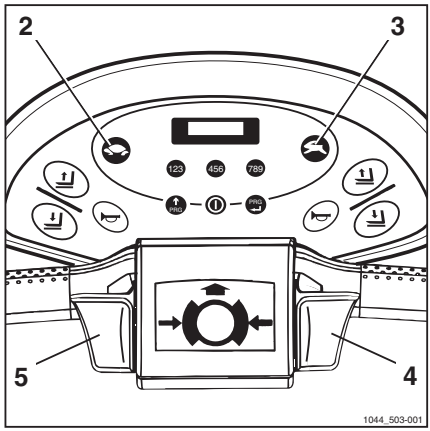
– When the travel throttle is released, the truck brakes electrically.

Reversing the direction of travel

– Release the throttle.

– Gradually turn the throttle in the opposite direction until the required speed is reached.

Selecting the driving mode



NOTE

The pallet truck has 2 selectable driving modes.

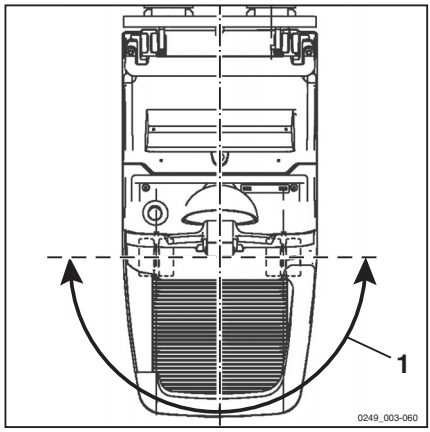
– For normal travel, push the Hare button (3).

– To drive with gentle accelerations, push the Tortoise button (2).

NOTE

The travel control (4) and (5) can be operated with both the left and the right hand. Always operate the travel control slowly to avoid jerky starting, braking or reverslng.

Steering



The truck is steered by turning the cockpit in range (1).

The turning radius (Wa) depends on the fork length and the battery. (See table.)

	Turning radius data (Wa) (All data in mm)
Model	Wa
EXD-S20 Access from rear	2362
EXD-S20 Access from side	2432

Brakes

⚠ WARNING

The surface finish influences the driving and braking behaviour of your truck.

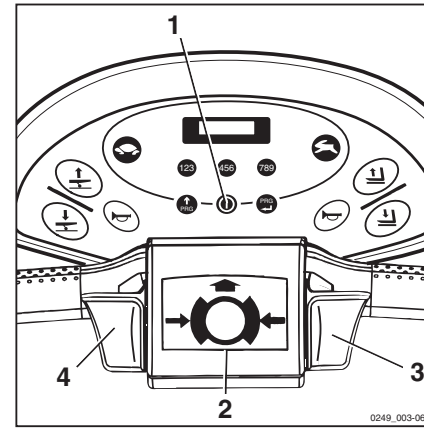
Therefore take this into account when driving and braking (eg: wet floor).

Soft braking

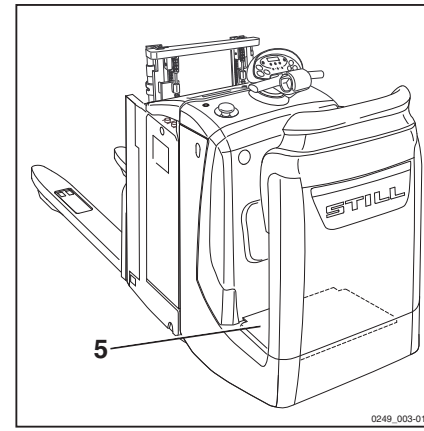
NOTE

The truck is braked electrically.

– Release throttle (3) or (4) when driving. ▷



– Leave the presence area (5). ▷



Average braking

– Operate throttle (3) or (4) in the opposite direction.

Emergency braking

⚠ CAUTION

This type of braking may only be used in an emergency.

– Press the belly button (2). The pallet truck brakes to a stop.

– `SToP` appears in the display.

NOTE

After the disappearance of `SToP` *in the display, press button I "ON" (1) to restart work.*

The truck is operational again.

Parking brake

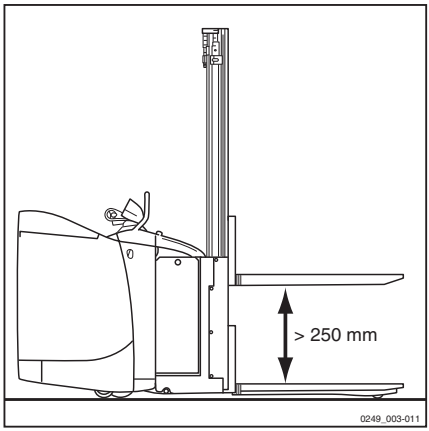
– Release traction control (3) or (4).

The truck is braked by the electromagnetic brake.

Speed limitation

When the forks are lifted for more than 250 mm, the max. travel speed is reduced as follows:

Forward travel	6 km/h
Reverse travel	7 km/h



Using the truck on inclines, loading bridges and lifts.

Driving on inclines

When driving the truck up or down inclines, you must not exceed the values for inclines indicated in the chapter "Technical data".

The operator must check that the ground is clear with a good grip.

⚠ WARNING

When driving up or down inclines, the speed of travel must be reduced.

⚠ DANGER

Risk of tipping!

When driving up or down inclines, do not turn, reverse and/or travel diagonally.

⚠ WARNING

When driving on an incline with a load, you must keep the load facing upwards.

⚠ DANGER

Risk of accident

Keep the truck at a safe distance from the edges of ramps, tailboards etc.

⚠ CAUTION

In certain cases, it is permitted to drive with the forks pointing towards the top of the incline even if the truck is not loaded.

In these cases, drive with the utmost care and avoid turning until all the wheels are on a flat surface.

⚠ DANGER

Risk of accident

Do not park on an incline: if, in the event of an emergency, you have to do so, apply the parking brake and block the wheels with chocks.

Using the truck on a lift

Using the truck on lifts is only allowed if the lift has sufficient load capacity (check the maximum weight of the truck including the traction battery) and only with appropriate authorisation.

Slowly drive the truck onto the lift load-first.

Secure the truck in the lift so that no part comes into contact with the walls of the lift. A minimum distance of 100 mm from the walls of the lift must always be observed.

⚠ WARNING

The truck must be correctly immobilised so that it cannot move inadvertently.

⚠ CAUTION

Personnel accompanying the truck onto the lift may only enter the lift once the truck is secure and must exit the lift first after transit.

Using the truck on loading bridges

⚠ DANGER

Risk of accident

Before driving on to a loading bridge, the operator must check that it has been properly fitted and secured and has sufficient load capacity.

You must drive onto the loading bridge slowly and carefully.

The operator must check that the vehicle to be loaded or unloaded is sufficiently secure so that it will not move and that it is suitable to support the strain of the truck.

The lorry driver and the forklift truck operator must agree on the time of departure of the lorry.

Towing trailers

The forklift is not qualified to tow trailers.

Lifting

Lifting devices

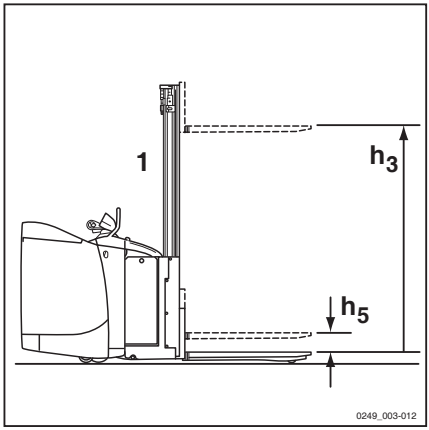
The truck has 2 lifting devices:

Initial lift (h5)

The initial lift raises the wheel legs to 130 mm maximum.

Main lift (h3)

The main lift raises the forks to 1580 mm maximum.



Types of masts

Telescopic

When the lift button is pushed, the inner mast is lifted by the two hydraulic cylinders on the side, taking up the fork carriage (h3) by means of the chains (the carriage is lifted at twice the speed of the inner mast).

⚠ CAUTION

With low ceilings, observe that the height of the inner mast (1) can be higher than the height of the fork carriage.

Lifting device controls

⚠ WARNING

Risk of injury!

The safety regulations must be followed closely, see ⇒ Chapter "Safety rules for handling loads", P. 4-57.

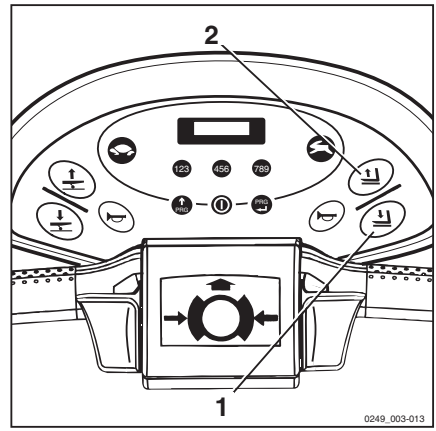
Do not put your hand into moving truck parts (eg mast, sideshift, implements, load lifting device, etc).

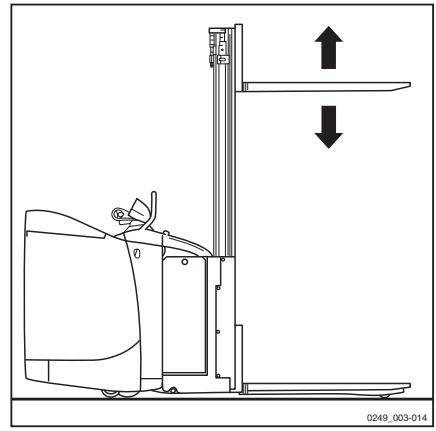
⚠ WARNING

Risk of injury!

The safety regulations must be followed closely, see ⇒ Chapter "Safety rules for handling loads", P. 4-57.

Do not put your step into moving truck parts (eg mast, sideshift, implements, load lifting device, etc).





Lifting the forks

– Press the lift button (2).

The forks will be lifted up to the maximum height.

Lowering the forks

– Press the lower button (1).

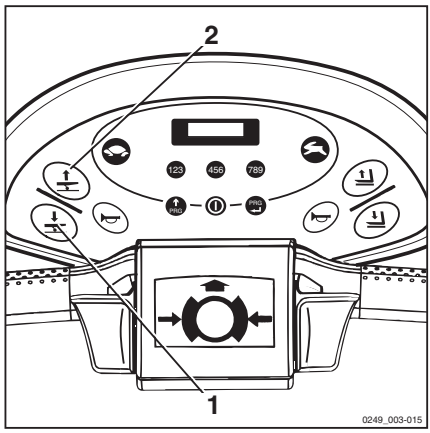
The forks will be lowered to the lowest position. Their movement can be stopped at any time by releasing the button.

NOTE

On the trucks EXD-S20, the speed of the forks is proportional to how far the lift and lower buttons are pressed.

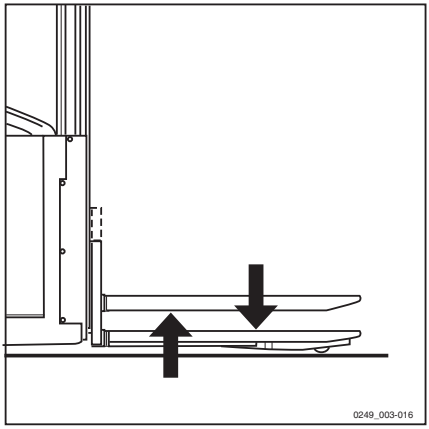
Raising the initial lift

– Press the initial lift button (2) to raise the wheel legs 130 mm.



Lowering the initial lift

– Press the initial lift button (1) to lower the wheel legs fully.



Handling loads

Safety rules for handling loads

⚠ WARNING

Before picking up the load, carefully observe the following instructions. Do not reach or climb into moving truck parts (e.g. mast, sideshifts, working devices, load lifting devices, etc.).

⚠ WARNING

Risk of crushing hands and feet if lifting device is operated.

Never lift or transport persons standing on the forks.

Stacking and removing load units

Always use the following procedure:

⚠ WARNING

Risk of injury!

Do not step under the raised forks.

- Slowly approach the stack with the load lowered as specified.
- Raise the load to the height of the racking.
- Carefully drive the forks into the racking.
- Deposit the load until it rests properly on the racking.
- Look back!
- Reverse the truck until the forks can be lowered without contacting the racking.
- Lower the forks until ground clearance is reached and drive off.

Checks to be carried out before lifting a load ▷

⚠ WARNING

Never exceed the capacity of the truck. This capacity is based on the centre of gravity and the lift height of the load.

Comply strictly with the load diagram! It is not permitted to increase the capacity by adding extra weight to the truck. Never exceed the maximum loads shown! Otherwise, the stability of the truck can no longer be guaranteed.

Transporting people in order to increase the capacity of the truck is prohibited.

.

Example	
Weight of load to be lifted:	1200 kg (3)
Distance between the load centre of gravity/fork carriage:	600 mm (1)
Permissible lift height:	2600 mm (2)

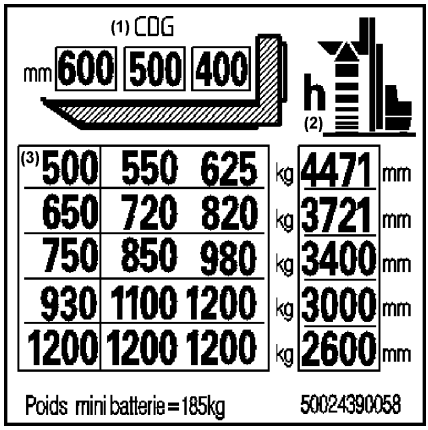
⚠ WARNING

The illustrations are only examples.

Only the values stated on your truck's plate should be taken into consideration.

⚠ WARNING

If small items are being transported or if the load exceeds the height of the fork carriage, a load protective guard must be installed to prevent the items from falling on the operator.



(1) CDG = distance "C" from the centre of gravity of the load on the forks to the fork carriage (in mm)

(2) h = lift height of the forks from the ground (in mm)

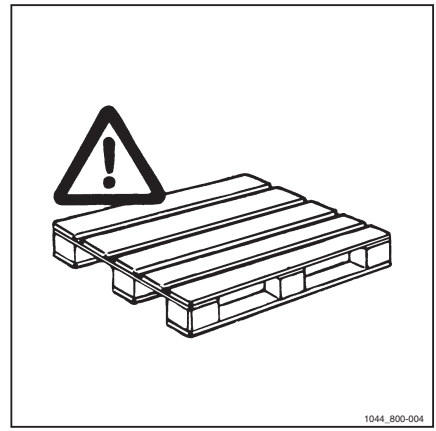
(3) Maximum permissible loads "Q" (in kg)

Picking up the load

Only stack pallets that do not exceed the specified maximum size. Do not stack damaged load make-up accessories and improperly formed load units.

Place the load on the load lifting device or secure it thereon in such a way that it can not shift and fall off.

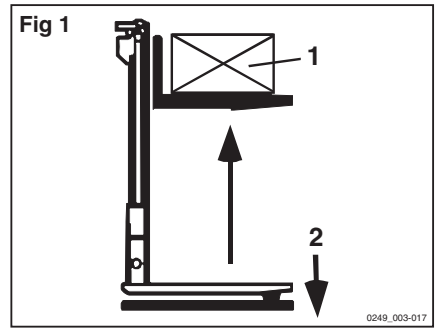
Stack the load units so that the specified aisle width is not reduced due to projecting parts.



Picking up one load

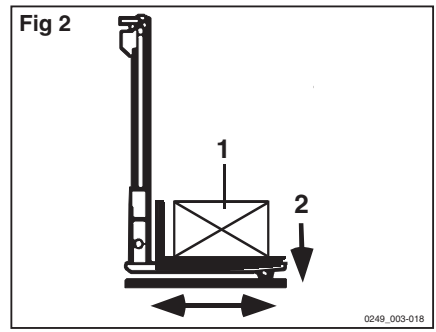
– Lift the load (1) with the main lift, initial lift (2). Observe the data on the capacity plate (Fig. 1).

Fig 1



– Before driving, lower the load (1) and the initial lift (2) (Fig. 2).

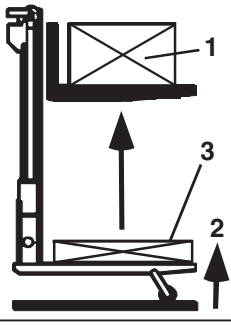
Fig 2



Picking up two loads

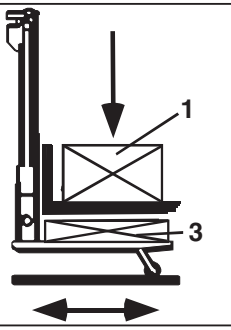
– Even if the initial lift (2) is used for a light load (3), eg an empty pallet, the load (1) must be raised with the main lift. Observe the data on the capacity plate (Fig. 3). ▷

Fig 3



– Before driving, lower the upper load (1) as near as possible to the lower load (3) (Fig. 4). ▷

Fig 4

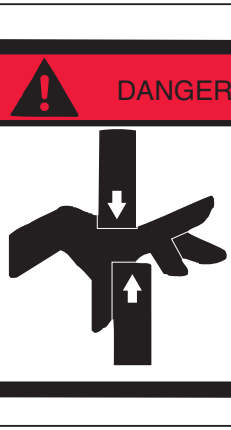


Never lift or transport persons on the forks. Keeps your hands off moving parts of the truck (eg mast) ▷

⚠ CAUTION

Risk of injury!

Do not put hands into moving parts of mast.



Do not put the feet in the area of the basic lift device during operation!

⚠ CAUTION

Risk of injury!

Do not put feet into moving parts of mast.

Do not step under the elevated forks!

⚠ CAUTION

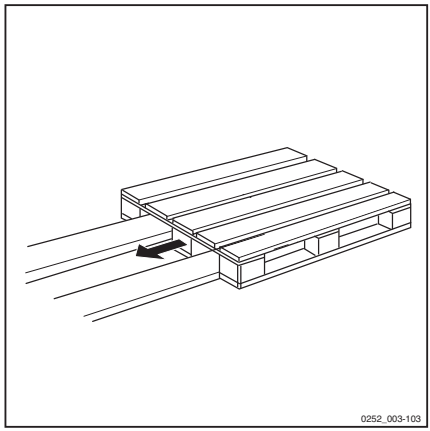
Risk of injury!

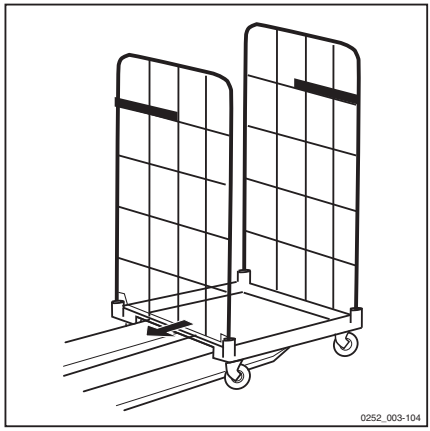
Transporting pallets or other containers ▷

As a general rule loading units must be transported one by one (e.g. pallets). Transporting several loading units at once is only authorised if

- the safetypreconditions are fulfilled.
- by order of the supervisor,

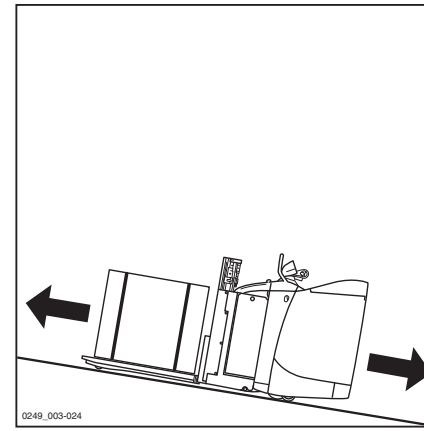
The operator must ensure that the loading unit is properly packed. He must only move loading units that have been carefully prepared and are safe.





Driving up and down on an incline

When driving up and down on an incline, the load must always be carried uphill. It is only permitted to drive on inclines which are identified as suitable for traffic and which can be safely negotiated according to the technical data of the truck. The driver must satisfy himself that the ground is clean and provides enough grip. It is not allowed to turn on, park on or travel across inclines. Speed must be reduced when driving down on an incline.



Transporting a load

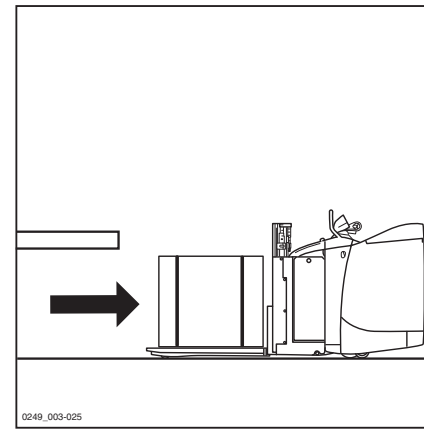
⚠ WARNING

– Raise or lower the load until ground clearance is obtained.

The load should only be so high that the driver's view to the front is not obstructed, otherwise drive with the load trailing. If this is not possible, work with a guide walking beside the truck. In this case, drive the truck only at walking pace and with the utmost caution. Stop the truck immediately when losing contact with the guide.

⚠ DANGER

Never drive with the load raised as stability can then not be ensured.



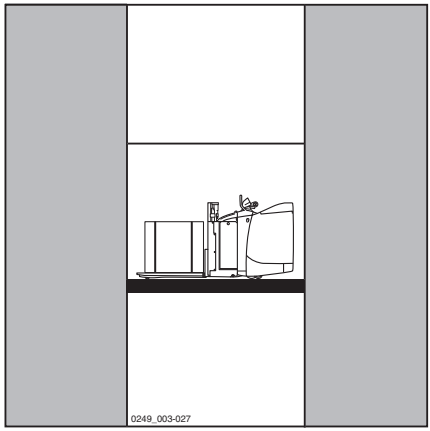
Entering lifts

With this truck, the driver may only enter lifts having a sufficient load capacity and for which the operator of the lift has given permission to enter. In the lift, the truck must be secured so that no parts touch the shaft walls.

The clearance to the shaft wall must at least 100 mm.

The maximum weight of the truck (dead weight without driver, the max. load of 2 t and with tray 71) is 3611 kg.

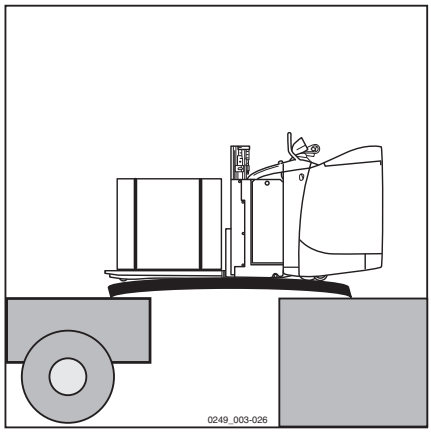
Persons travelling with the lift at the same time may enter the lift only after the truck is standing securely and they must leave the lift first.



Driving on loading bridges

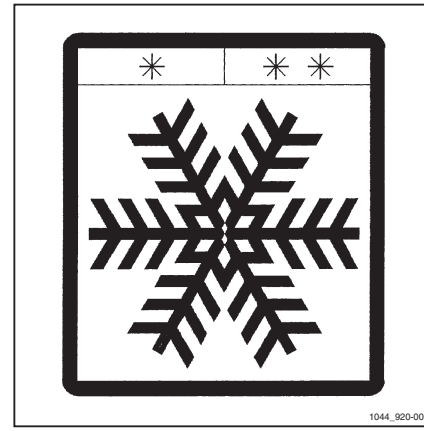
Before crossing a loading bridge, the operator must make sure it is properly attached and secured and its load capacity is sufficient. Cross the loading bridge slowly and carefully. The driver must be sure that the vehicle to be entered is secured sufficiently against movement and that it can support the load of the forklift truck.

The lorry driver and lift truck operator must coordinate the departure time of the lorry.



Cold store use

Designation



Your truck is fitted with special equipment for use in cold stores. It can be used for two operating ranges and carries a cold store label.

The cold store equipment for the truck consists of using specialised oils (for the hydraulic installation and the gears) suitable for cold stores.

Proper usage

Operating range 1: permanent use in areas with temperatures of –5 °C and for short periods of time down to –10 °C. Parking outside the cold store.

Operating range 2: alternating use indoors and outdoors in compliance with the rules below, temperature range from –32 °C to +40 °C. Parking outside the cold store. This use requires hydraulic oil for cold stores as given on the list of maintenance characteristics.

Use

General

The change in temperature between the cold indoors and the heat outside causes condensation. This water can freeze when the truck goes back into the cold store and jam the moving parts of the truck. This is why the length of time the truck remains in the different temperature areas given below for the two operating ranges must be strictly adhered to.

The temperature of the traction batteries must never fall to the temperature of the cold store, otherwise they will stop working.

Prior to start-up

⚠ CAUTION

The truck must be dry and at operating temperature before being used in the cold store.

– Drive the truck for approximately 5 minutes and operate the brakes several times to ensure the truck operates safely.
– Operate all the lifting functions several times. This warming up phase is required to allow the oil to reach operating temperature.

Use

Operating range 1

Permanent use in areas with temperatures of–5 °C and for short periods of time down to –10 °C.

Operating range 2

Alternating use indoors with temperatures down to –32 °C and outside with temperatures up to +25 °C for short periods of time even up to +40 °C. The truck must not leave the cold area for more than 10 minutes, because this length of time is not long enough for the formation of condensation. If the truck stays outside for longer than 10 minutes, it must remain outside for long enough to allow the condensation to run away. This generally takes at least 30 minutes.

⚠ DANGER

If the condensation freezes in the cold store, the moving parts that have become jammed must not be freed by hand.

Parking

– Always park the truck outside the cold store.

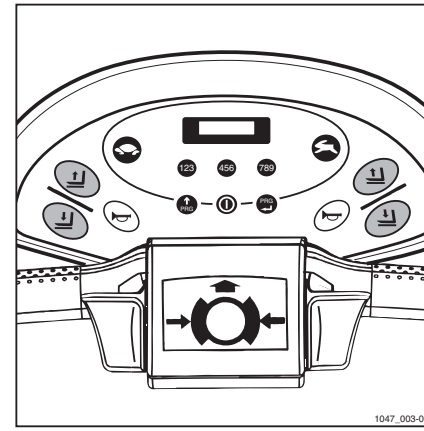
⚠ CAUTION

The batteries must not remain discharged or unused in the cold store overnight.

– Charge the battery outside the cold store and use a spare battery.

Digicode

Digicode control



Access to the electronic control is granted with three different codes:

- Driver's code
- master code
- service code

Driver's code

The driver's code consists of four digits and must be created by the Pool Manager.

It is used for the regular utilisation and operation of the truck by the driver and operator.

The knowledge of the code should be regarded as a key and must not be misused. The driver's code must not be given to other persons without express order.

The control can store a maximum of 200 driver's codes. A driver's code can be added ⇒ Chapter "Adding a driver's code", P. 4-71 or deleted ⇒ Chapter "Deleting a driver's code", P. 4-73 with the master code.

Master code

The master code consists of four digits and is reserved for the Pool Manager.

The factory setting of this code is "1234". The pool manager is advised to replace this code with a new master code ⇒ Chapter "Deleting a master code", P. 4-69 or ⇒ Chapter "Adding the master code", P. 4-68.

Like the driver's code, it is used for the regular operation and use of the truck, but it also allows the addition or deletion of a driver's code. This control can store a maximum of five master codes.

NOTE

If master codes or driver's codes are forgotten or get lost, please contact the Service Engineer, for he alone can make the stored codes visible.

Service code

The service code is only intended for the after-sales service. It allows the diagnosis of the truck for inspections and the access to the driver's and master code.

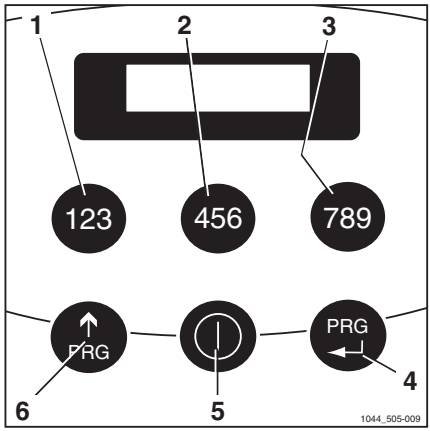
Adding the master code

NOTE

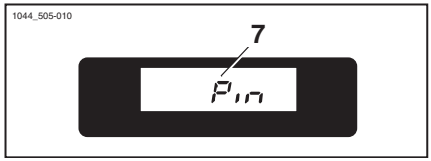
The truck is turned off, the battery is connected.

– Press the I (ON) button (5).

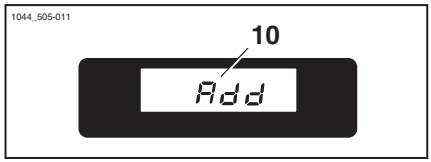
– Enter a valid 4-digit master code with the buttons 123 (1), 456 (2) and 789 (3).



– Scroll with the PRG ↑ (scrolling) button (6) until Pin (7) appears in the display.



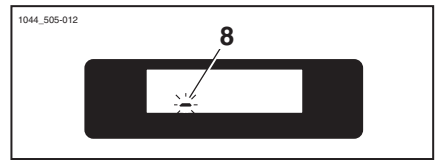
– Confirm with the PRG ↵ (enter) button (4) until Add (10) appears in the display.



– Confirm with the PRG ↵ (enter) button (4). A flashing line cursor (8) will appear in the display.

– Enter the desired new 4-digit master code with the buttons (1), (2) or (3) as described above.

▷

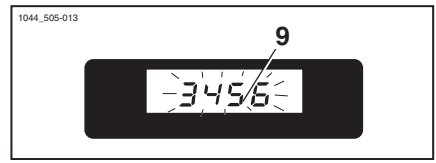


NOTE

The controller can store a maximum of five master codes. If one attempts to add a sixth master code, `Err` *will appear in the display.*

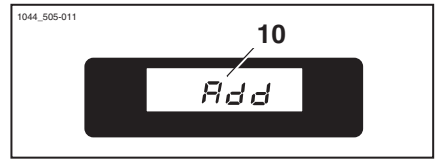
– Confirm with the PRG ↵ (enter) button (4) until the new master code (9) blinks (an example is shown).

▷



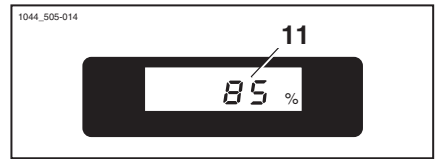
– Then release the button. `Add` (10) will appear again in the display.

▷



– Press the PRG ↑ (scrolling) button (6) until a normal readout (11) (eg battery charge) appears in the display. The new master code is entered.

▷

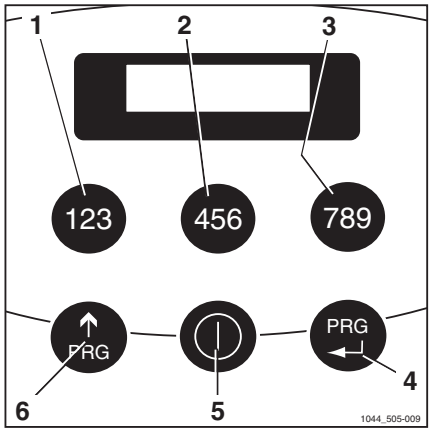


Deleting a master code

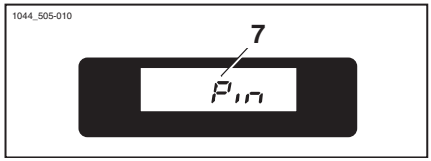
NOTE

The truck is turned off, the battery is connected.

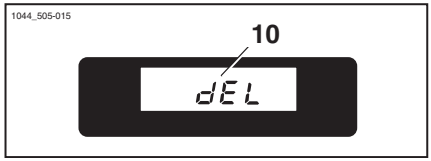
– Press the [I] (ON) button (5).
– Enter the valid 4-digit master code with the buttons [123] (1), [456] (2) and [789] (3).



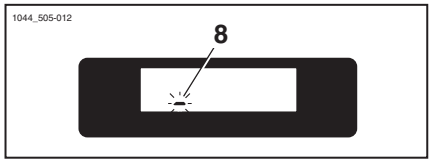
– Scroll with the [PRG ↑] (scrolling) button (6) until `Pin` (7) appears in the display.



– Confirm with the [PRG ↵] (enter) button (4) until `dEL` (10) appears in the display.



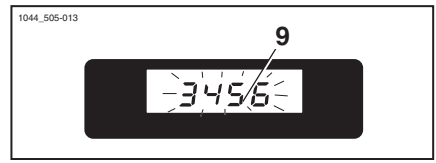
– Confirm with the [PRG ↵] (enter) button (4). A flashing line cursor (8) will appear in the display.
– Enter the 4-digit master code to be deleted with the buttons (1), (2) or (3) as described above.



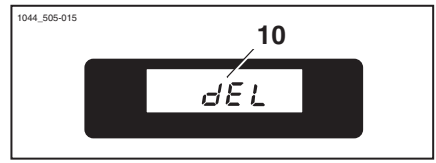
NOTE

If one attempts to delete an erroneous master code, `Err` *will appear in the display. If only one master code remains,* `None` *will appear in the display.*

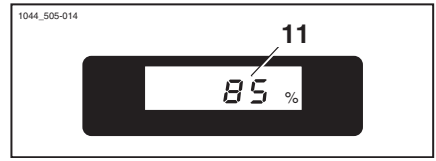
– Confirm with the PRG ↵ (enter) button (4) until the master code (9) to be deleted blinks (an example is shown).



– Then release the button. dEL (10) will appear again in the display.



– Press the PRG ↑ (scrolling) button (6) until a normal readout (11) (eg battery charge) appears in the display. The master code is deleted.



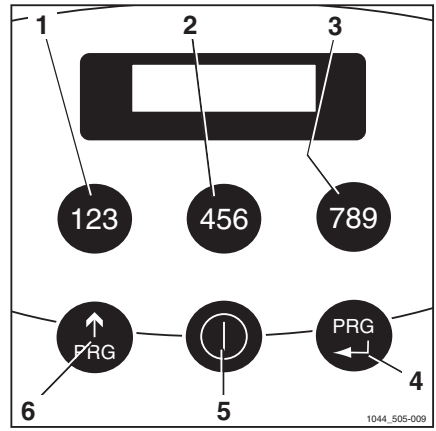
Adding a driver's code

NOTE

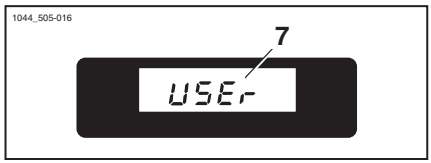
The truck is turned off, the battery is connected.

– Press the I (ON) button (5).

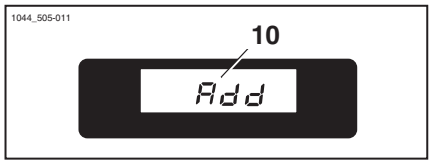
– Enter the valid 4-digit master code with the buttons 123 (1), 456 (2) and 789 (3).



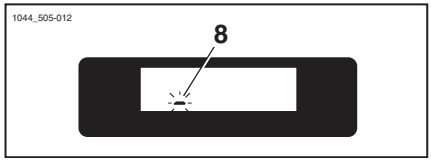
– Scroll with the PRG ↑ (scrolling) button (6) until USEr (7) appears in the display. ▷



– Confirm with the PRG ↵ (enter) button (4) until Add (10) appears in the display. ▷



– Confirm with the PRG ↵ (enter) button (4). A flashing line cursor (8) will appear in the display. ▷

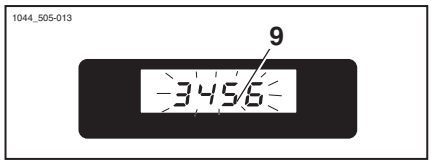


– Enter the new 4-digit driver's code with the buttons (1), (2) or (3) as described above.

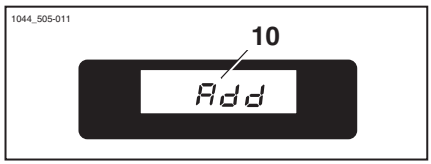
NOTE

The controller can store a maximum of 200 driver's codes. If one attempts to add a 201st driver's code, Err *will appear in the display.*

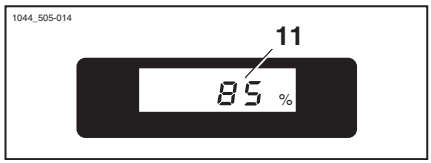
– Confirm with the PRG ↵ (enter) button (4) until the new driver's code (9) blinks (an example is shown). ▷



– Then release the button. Add (10) will appear again in the display. ▷



– Press the PRG ↑ (scrolling) button (6) until a normal readout (11) (eg battery charge) appears in the display. The new driver's code is entered. ▷



Deleting a driver's code

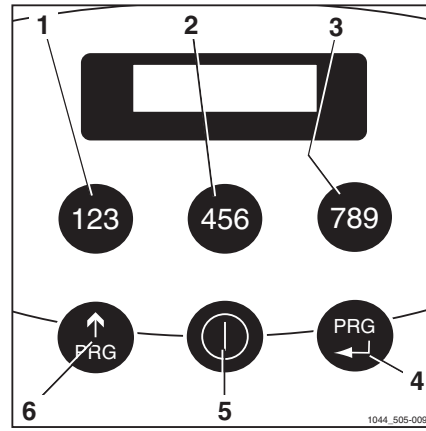
NOTE

The truck is turned off, the battery is connected.

– Press the [I] (ON) button (5).

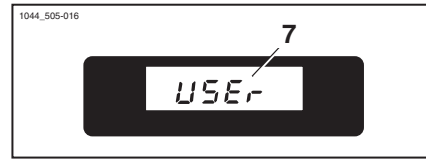
– Enter the valid 4-digit master code with the buttons [123] (1), [456] (2) and [789] (3).

▷



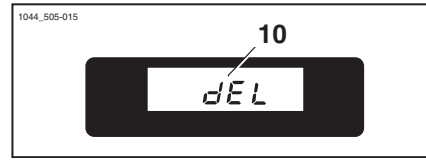
– Scroll with the [PRG ↑] (scrolling) button (6) until USEr (7) appears in the display.

▷



– Confirm with the [PRG ↵] (enter) button (4) until dEL (10) appears in the display.

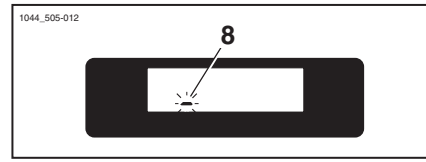
▷



– Confirm with the [PRG ↵] (enter) button (4). A flashing line cursor (8) will appear in the display.

– Enter the 4-digit driver's code to be deleted with the buttons (2), (3) or (3) as described above.

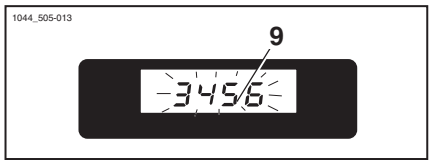
▷



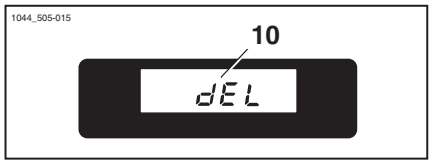
NOTE

If one attempts to delete an erroneous driver's code, Err *will appear in the display.*

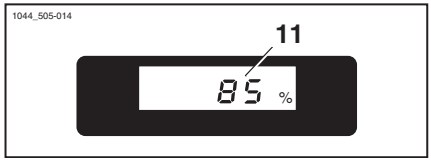
– Confirm with the PRG ↵ (enter) button (4) until the driver's code (9) to be deleted blinks (an example is shown). ▷



– Then release the button. dEL (10) will appear again in the display. ▷



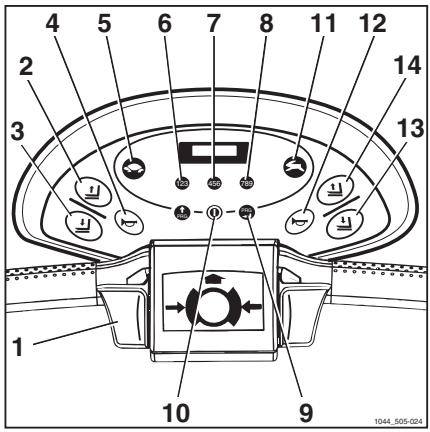
– Press the PRG ↑ (scrolling) button (6) until a normal readout (11) (eg battery charge) appears in the display. The driver's code is deleted. ▷

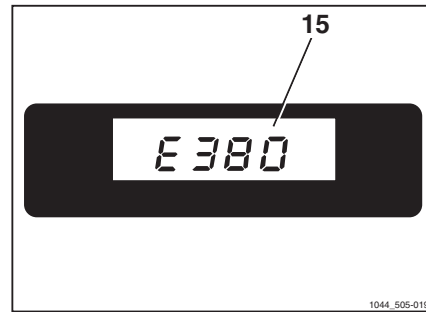


Error codes

Error code

If an error code such as E380 (15) appears, shut the truck off by pressing button (10) and repeat the start-up ⇒ Chapter "Commissioning", P. 39. If the error code persists, call your Service. ▷





Error code	Description	Action
E350	Travel control operated at power-up.	Release the travel control (1).
E370	Left Lift button operated at power-up.	Release the left Lift button (2).
E371	Left Lowering button operated at power-up.	Release the left Lowering button (3).
E372	Left Horn button operated at power-up.	Release the left Horn button (4).
E373	Tortoise button operated at power-up.	Release the Tortoise button (5).
E374	Button 1-2-3 operated at power-up.	Release the button 1-2-3 (6).
E375	Button 4-5-6 operated at power-up.	Release the button 4-5-6 (7).
E376	Button 7-8-9 operated at power-up.	Release the button 7-8-9 (8).
E377	PROG button operated at power-up.	Release the button PROG (9).
E378	ON button operated at power-up.	Release the ON button (10).
E379	Hare button operated at power-up.	Release the Hare button (11).
E380	Right Horn button operated at power-up.	Release the right Horn button (12).
E381	Right Lowering button operated at power-up.	Release the right Lowering button (13).
E382	Right Lift button operated at power-up.	Release the right Lift button (14).

Battery electrolyte level indicator LED (optional)

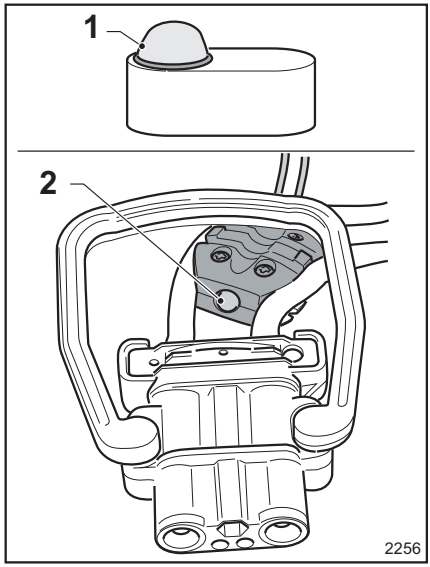
There are two versions of the LED:

- 1) Located on the battery
- 2) Located next to the battery plug.

The LED indicates whether it is necessary to top up the distilled water in the battery.

Operation:

- If the LED (1) or (2) is green, there is a sufficient level of electrolyte in the battery. The battery must not be topped up with distilled water.
- If the LED (1) or (2) is red, there is an insufficient level of electrolyte in the battery. The battery must be topped up with distilled water.



Handling the truck in specific situations

Hoisting the truck

⚠ CAUTION

Only use a lifting gear and crane with a sufficient load capacity. See the vehicle identification plate for the loading weight.

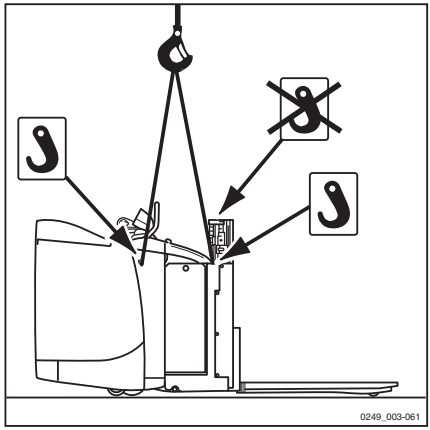
– For hoisting with a crane, always attach the slings to the points identified with the hook symbol.

⚠ CAUTION

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

⚠ CAUTION

– Insert pieces of wood to prevent damage.



DANGER

Danger to life!

Do not step or stand under a suspended load.

Transport

– Shut down the truck with the key switch.

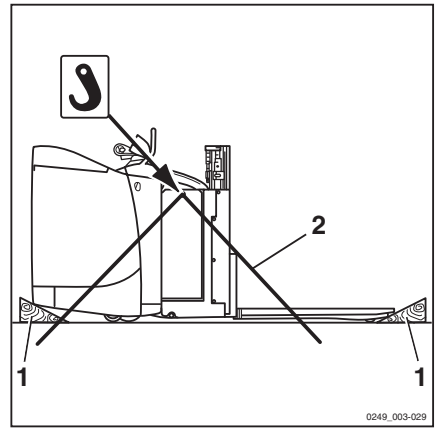
– Disconnect the battery connector.

Chocking the truck

– Secure the truck against rolling and sliding with chocks (1).

Lashing down the truck

– Attach the lashing ropes (2) at the frame.



Handling the battery

Battery type

The pallet stacker can be equipped with different types of batteries. Observe the information on the nattery type plate. Also refer to ⇒ Chapter "VDI data sheet for standard EXD-S 20", P. 6-105 for this purpose.

⚠ WARNING

The weight and dimensions of the battery affect truck stability.

Do not change the weight conditions when changing the battery. Do not remove nor change the position of additional weights.

Damage to cables

⚠ CAUTION

Take care not to damage the battery leads when removing and installing the battery.

Preparation

Maintenance personnel

The battery may only be changed by specially trained personnel, in accordance with the manufacturer's instructions for the battery, the battery charger and the truck. The maintenance instructions for the battery must be observed.

Fire prevention measures

⚠ WARNING

Do not smoke or use a naked flame when handling batteries. In the area designated for parking the truck to recharge the battery or battery charger, there should be no flammable materials or substances that can cause sparks within a radius of at least 2 metres. The charging area must be well ventilated. Keep a fire extinguisher at hand.

Safe parking

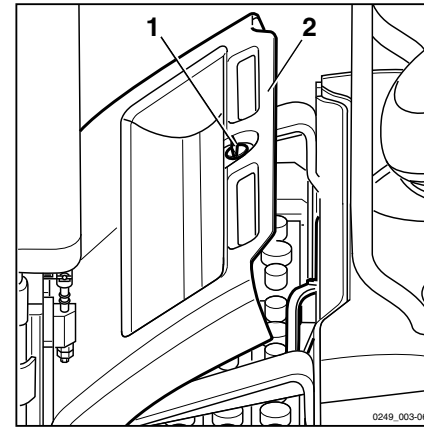
Park the truck securely before carrying out work on the battery. The truck can only be operated when the battery cover is closed and the battery outlet is inserted. If the truck is enabled for side removal of the battery, the truck can only be operated once the battery is fixed in place properly using the battery locking system.

Opening/closing the battery compartment

Opening the battery compartment

– Turn the lock (1) 90° and lift the battery cover (2).

▷



Closing the battery compartment

⚠ WARNING

Danger of crushing.

When closing the battery door, there should be nothing between battery door and edge of the frame.

– Lower the battery compartment and turn the lock 90°.

Battery charging with external battery charger

⚠ CAUTION

Deep discharges damage the battery.

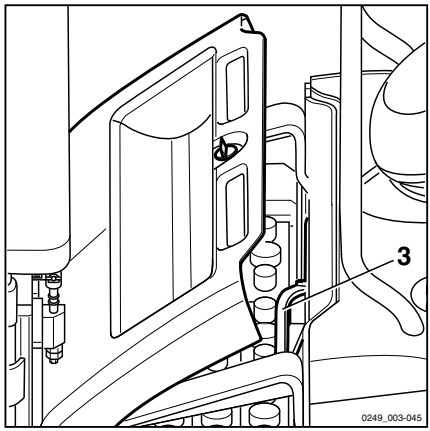
– The battery must be charged at once.

– Park the truck safely, refer to ⇒ Chapter "Safe parking of the truck", P. 4-87.

– Open the battery compartment.

– Before charging, inspect the battery leads and charging cables for damage and replace them, if required.

– Disconnect the battery connector (3).



⚠ WARNING

Switch the truck and charger off before disconnecting the male and female connectors.

– Connect the battery connector to the charger connector.

NOTE

Observe the information in the operating instructions for your battery and battery charger (equalising charge).

⚠ WARNING

Risk of damage, shorting and explosion.

Do not place any metallic objects or tools on the battery. No naked lights, no smoking permitted.

⚠ WARNING

The electrolyte (diluted sulphuric acid) is poisonous and caustic!

Observe the safety precautions for handling battery acid.

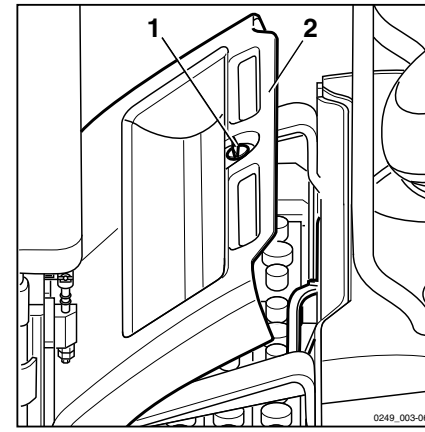
⚠ WARNING

Eplosive gases are released during charging.

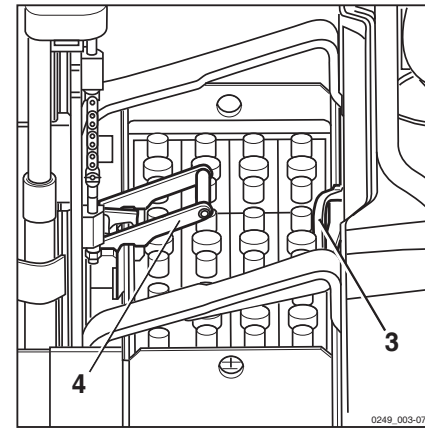
– Ensure that the room ventilation is adequate.

Removing the battery

– Turn the lock (1) 90° and lift the battery cover (2).



– Disconnect the battery connector (3).
– Lift the battery latch (4) to release the battery.



– Put the battery trolley (6) opposite the battery.
– Stand opposite the battery trolley and push the battery (5) onto the trolley.

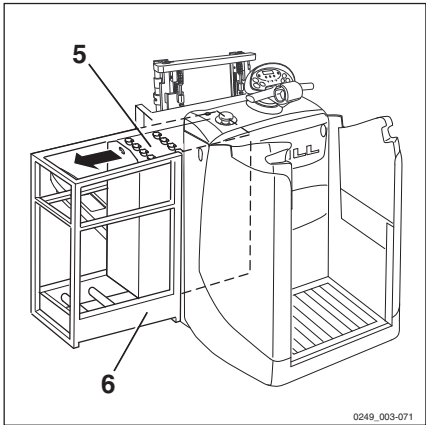
⚠ CAUTION

Risk of injury through squeezing.

Don't put the hands into the frame or between the battery and the battery trolley.

⚠ CAUTION

The cables must not be damaged during battery installation or removal.



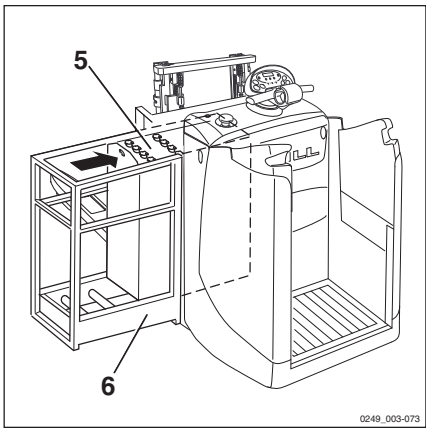
Installing the battery

– Put the battery trolley (6) with the new battery opposite the battery compartment opening.
– Push the battery (5) fully into the battery compartment.

⚠ CAUTION

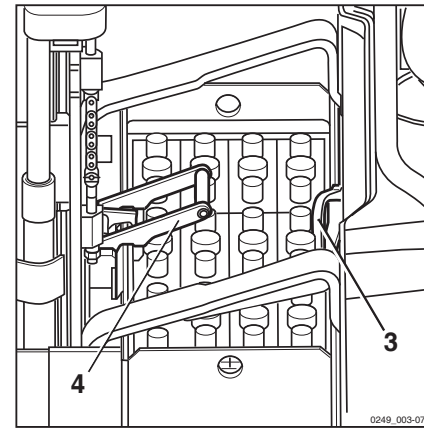
Risk of injury through squeezing.

Don't put the hands into the frame or between the battery and the battery trolley.



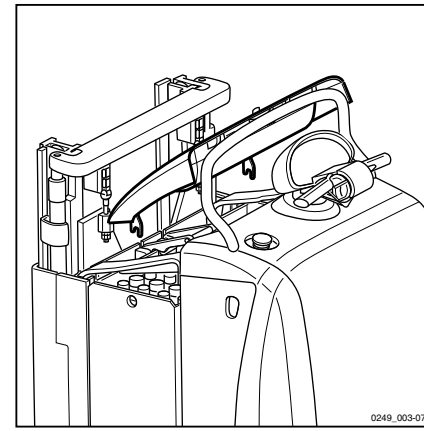
– Close the battery latch (4).
– Connect the battery connector (3).

▷



– Now the battery cover can be reinstalled.

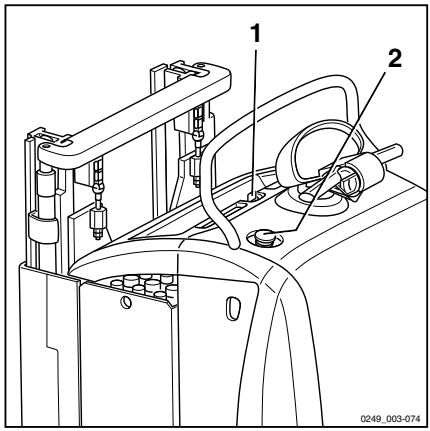
▷



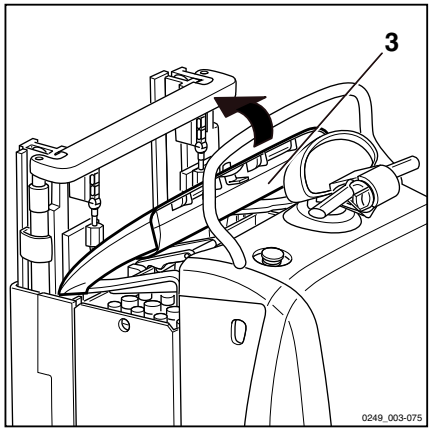
Removing the battery cover

– Park the pallet truck.

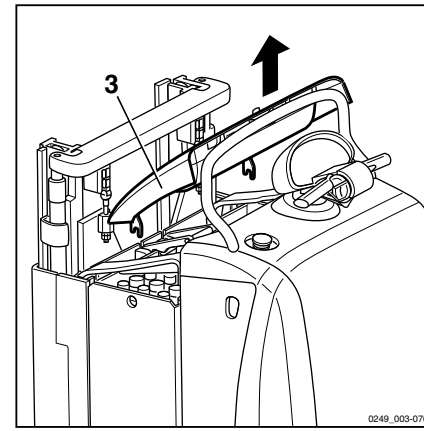
– Push in the emergency isolator switch (2).
– To open the battery compartment, turn the latch (1) 90 degrees.



– Lift the battery cover (3) a few centimetres.

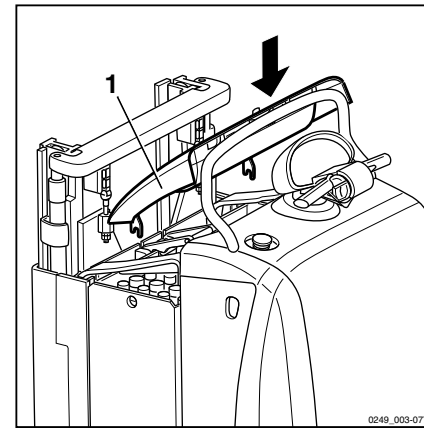


– Remove the battery cover (3) by lifting. ▷

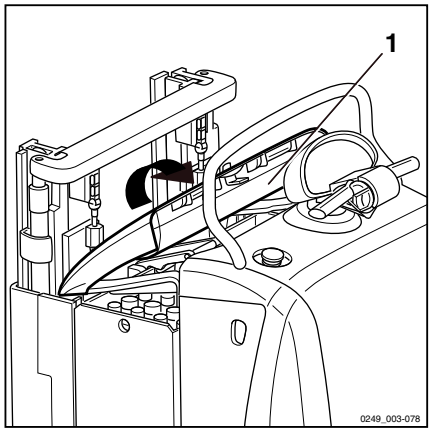


Installing the battery cover

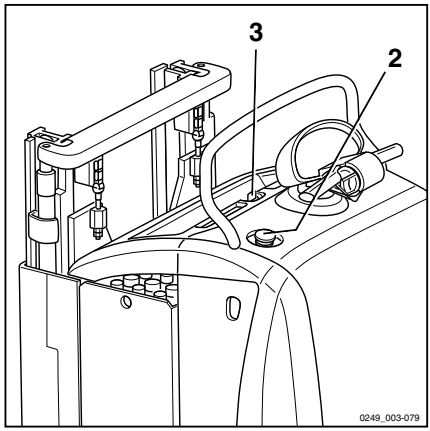
– Install the battery cover (1). ▷



– Close the battery cover (1).



– To close the battery compartment, turn the latch (3) 90 degrees.
– Release the emergency isolator switch (2).



Decommissioning

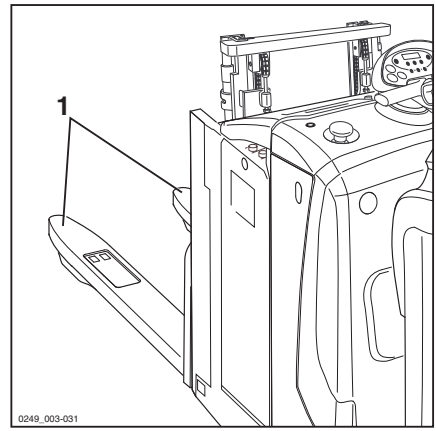
Safe parking of the truck

– Park the truck in a dry, clean and well-ventilated area.

⚠ WARNING

Do not park the truck on gradients. In exceptional cases, secure the truck with chocks.

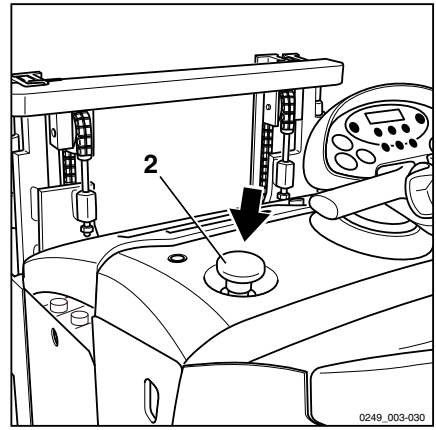
– Lower the forks (1) on the ground. ▷



⚠ WARNING

– Before leaving the truck, lower the load fully.

– Depress the emergency isolator button (2). ▷



NOTE

If you leave the truck without disconnecting the battery connector, the control is shut off automatically after approx. 15 minutes.

The truck can only be operated again after re-entering the driver code.

Storage

Measures when storing the stacker for a longer period of time

If the stacker is to be held in storage for a longer longer period of time, carry out the following corrosion protection measures. If the stacker is to be stored for over two months, park it in a clean and dry storage area, which is also well ventilated and frost-free. Also perform the following measures:

Measures before taking out of operation

- Clean the stacker thoroughly.
- Raise the forks several times as far as possible.
- Check the hydraulic oil level, adding oil if necessary.
- Lower the forks on to an appropriate support, for example a pallet, until the lift chains are relaxed.
- Coat all blank, moving parts with a thin film of oil or grease.
- Oil all moving parts and joints.
- Check the condition and electrolyte density of the battery, service the battery according to the instructions of the manufacturer. (Follow the battery manufacturer's instructions.)
- Spray all naked electric contacts with a suitable contact spray.

⚠ CAUTION

- Block up the truck so that the wheels are clear of the ground. This will prevent a permanent deformation of the tyres.

- Cover the pallet stacker with a cotton blanket and protect it against dust.

⚠ CAUTION

We do not recommend using a plastic foil as this enhances the formation of condensate.

If the truck is to be taken out of service for an even longer period, contact your after-sales service.

Taking back into service after storage

If the pallet stacker has been out of service for over six months, it must be inspected carefully before it is taken back into service. The inspection, similarly to the safety inspection, should also include safety-related points on the truck.

– Clean the stacker thoroughly.
– Oil all moving parts and joints.
– Check the condition and acid density of the battery, charging it if required.
– Check the hydraulic oil for condensate and renew the oil, if necessary.
– Perform the services as before initial operation.
– Take the pallet stacker into operation.
– During the next commissioning, check in particular:

• Traction drive, control, steering
• Brake (service brake, parking brake)
• Lifting device

5

Maintenance

General Information

To keep your forklift in good condition, carry out the servicing indicated regularly, within the times indicated and using the consumption materials provided for that purpose, as specified on the following pages. Please make sure that you keep a record of work done; this is the only way for the guarantee to remain valid.

Maintenance is divided into:

- scheduled (to be done by the service network authorised by the manufacturer)
- as required (done by the user)

⚠ DANGER

Scheduled maintenance and repairs must be done by the service network authorised by the manufacturer in order to maintain the machine in perfect condition and compliant with technical specifications.

NOTE

Contact the authorised service network for a maintenance contract appropriate to your forklift.

⚠ CAUTION

Maintenance intervals are defined for standard use. In the following cases, it is necessary to reduce the interval between the various scheduled maintenance operations: in the event of use in dusty of salty environments, extremely high or low ambient temperatures, high levels of air humidity, particularly intense and heavy uses, specific national regulations for trucks or individual components.

Operations Preliminary to Maintenance

Do the following before performing maintenance operations:

- Place the truck on a flat surface and make sure that it cannot move accidentally.
- Lower the forks fully.
- Switch off the vehicle.
- Press the emergency stop button.

⚠ DANGER

Before performing any intervention on the electric system, disconnect the battery outlet from the relative plug.

Scheduled maintenance

Summary table of maintenance operations EXD-S

Operations	Intervals in hours			Com-pleted
	1000 (a)	2000 (b)	5000 (c)	v
Checks and tests prior to commissioning	•			
Check the hydraulic system oil level	•			
Test the insulation between the chassis and the electric motors	•			
Test the insulation between the chassis and the electronic control	•			
Check the condition of the battery and truck wiring and check that they are correctly mounted	•			
Check for wear on the lift motor brushes and replace if necessary	•			
Check the truck braking	•			
Check and adjust the electromagnetic brake	•			
Check that the forks are in good condition	•			
Check the condition of the piping	•			
Check for oil leakages from cylinders and hydraulic connectors	•			
Check chain maintenance and adjust-ment ▲	•			
Lubricate the fork and mast sliding track	•			
Check the condition and mounting of the anti-shearing protective screen	•			
Check the wheel tightness	•			
Check the tyre wear	•			
Service the lift mast and check the lateral clearance and the pins		•		
Replace the hydraulic oil and filter		•		
Service the transmission gear			•	

1000 (a) = To be repeated every 1000 hours (for example at 1000, 2000, 3000, 4000, 5000 etc.) or at least every 12 months (whichever comes first).

2000 (b) = To be repeated every 2000 hours. For example at 2000, 4000, 6000, 8000, 10,000 etc.)

5000 (c) = To be repeated every 5000 hours. For example at 5000, 10,000, 15,000, 20,000 etc.)

▲ = Every 1000 hours or at least every 12 months (whichever comes first), unless local regulations require more frequent intervention.

ENVIRONMENT NOTE

During maintenance operations, follow the instructions provided in the section "Safety guidelines relative to operating materials".

Maintenance as required

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.

Lubricating and cleaning the lifting chains

NOTE

Turn off the truck and perform the preliminary maintenance operations

Lubricating the lifting chains

To ensure that the chains operate correctly, make sure that they are always sufficiently lubricated.

⚠ WARNING

Lubricant reduces friction and protects the chain from oxidation caused by the environment.

If lubricant is not used or if it is insufficient, the chains will be noisier (squeaking etc.) and performance will be reduced.

– For chain lubricant specifications, see the section "Supply table" in chapter 6. Alternatively, contact the sales network authorised by the manufacturer.
– Using a clean brush, spread a thin layer of lubricant along the entire length of the chain. Lubricate the chain both inside and outside. This will help the lubricant to penetrate the links of the chain.
– If dirt has accumulated on the chain, thoroughly clean the lifting chains before lubricating them (see the following instructions).

Cleaning the lift chains

⚠ WARNING

There is a risk of accident!

Load chains are safety components.

The use of cold/chemical cleaning agents or fluids that are corrosive or contain acid or chlorine can damage the chains and is therefore prohibited.

– Follow the manufacturer's guidelines before using a cleaning agent.

– Place a collection vessel under the lift mast.
– Clean with paraffin derivatives, such as benzine.
– If using a steam jet, do not use any additional cleaning agents. Remove any water in the chain links with compressed air immediately after cleaning.
– Dry the chain with a clean cloth and then lubricate the chain.

ENVIRONMENT NOTE

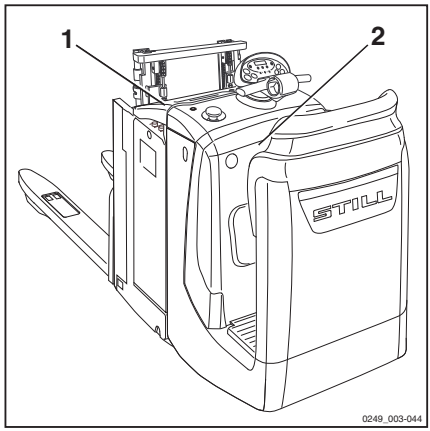
Dispose of fluid that has been spilled or collected in the collection vessel in an environmentally-friendly manner. Follow applicable current regulations

Fuses

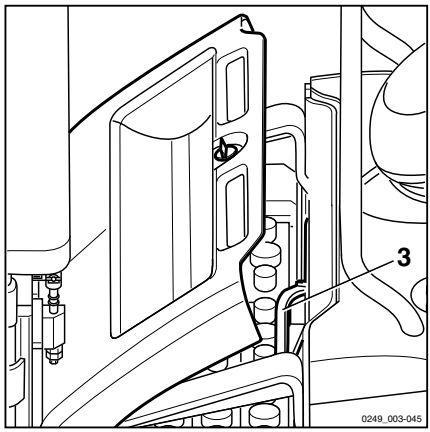
⚠ CAUTION

Before performing any work on the electrical installation, remove any power from the system by disconnecting the battery connector.

– Open the battery cover (1). ▷

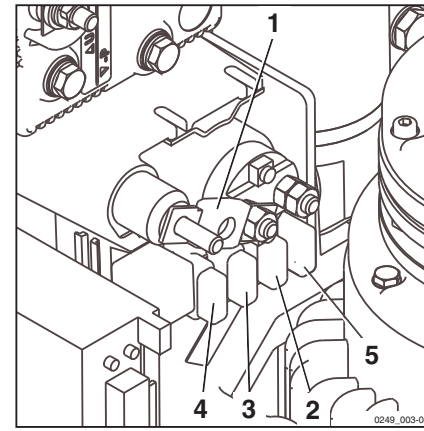


– Disconnect the battery connector (3). ▷
– Remove the bonnet (2) to gain access to the fuse carrier.



The following fuses are located on the fuse carrier:

1 Main fuse	400 A
2 Fuse F3	7.5 A
3 Fuse F4	7.5 A
4 Fuse F5	20 A
5 Fuse F8 (Option)	3 A



Battery replacement with side removal

⚠ DANGER

Before changing the battery, park the truck. Ensure that the truck is on an even surface and cannot move accidentally.

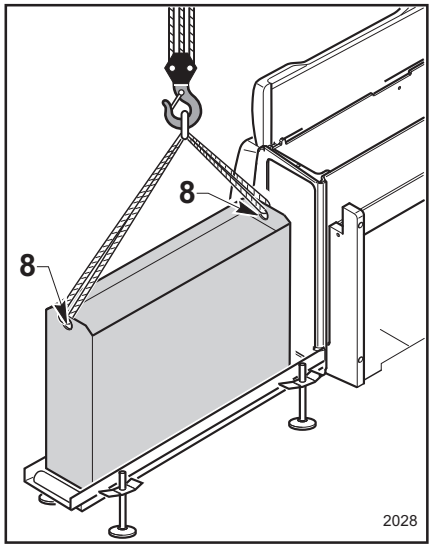
Ensure that the unlocked battery cannot slide off and fall onto the ground. Danger of crushing hands and feet and risk of battery acid spillage.

- Turn off the truck and perform the preliminary maintenance operations
- Lift the battery cover
- Remove the plug from the socket
- Place the manufacturer-approved battery side-removal roller unit next to the truck; position it so that it is still and stable; adjust the height of the roller unit so that it is level with the underside of the battery at the battery compartment

⚠ DANGER

"Risk of crushing hands!" The battery must be removed by a single operator only. The operator must follow the operating instructions given in this section, positioning himself on the same side as the battery side-removal roller unit.

– Pull the battery outwards, sliding it along the rollers on the truck frame and positioning it on the previously prepared external roller unit.
– Hook the battery at the two points (8) with a sling or chain. ▷
– Lift the battery and remove it.



⚠ DANGER

Use a crane with a suitable lifting capacity for the weight of the battery. Lifting operations must be performed by qualified personnel. DO NOT stand within the crane's radius of action or near the truck. Do not stand in the danger area below suspended loads. Use NON-METALLIC slings. Make sure that the lifting capacity of the slings is suitable for the weight of the battery. The rope slings must be pulled vertically. To prevent short circuits, it is recommended that batteries with polar terminals or unprotected connections be covered with a rubber mat.

– Change the battery and refit it by following the above steps in reverse order.
– When installing the new battery, be particularly careful during the battery insertion stage. Push the battery inwards, sliding it along the rollers on the truck frame and positioning it on the previously prepared external roller unit.

⚠ DANGER

The operation must be performed by a single operator. The operator must follow the operating instructions given in this section, positioning himself on the same side as the battery side-removal roller unit.

⚠ CAUTION

To decide which type of battery to use, check the battery characteristics provided in the "TECHNICAL DATA" chapter.

⚠ CAUTION

When closing the battery cover, take care to correctly position the cables of the battery male connector so as not to damage them.

NOTE

After having positioned the battery holddown, check that there is little or no clearance in the battery compartment.

Decommissioning

General Information

The operations to be performed for "**Temporary decommissioning**" and "**Permanent decommissioning**" are listed in this chapter.

Forklift Towing

The forklift may not be towed in the case of breakdown.

The forklift must be lifted with due caution, as described on the preceding pages.

Temporary Putting Out of Commission

The following operations must be performed when the forklift is not going to be used for a long time:

- Clean the forklift as indicated in the "**Maintenance**" chapter and put it in a dust-free and dry room. -
- Lower the forks.
- Lightly grease all of the unpainted parts with oil or grease.
- Perform the lubrication operations indicated in the maintenance chapter.
- Remove the battery and put it in a room where there is no danger of freezing. Charge the battery at least once a month.
- Raise the forklift so that the wheels do not touch the ground; otherwise, the wheels will become flat at the point of contact with the floor.
- Cover the forklift with a **NON**-plastic sheet.

Checks and Inspections After a Long Period of Inactivity

⚠ DANGER

Perform the following operations before using the forklift:

- Clean forklift truck thoroughly.
- Check the battery charge level and re-assemble it in the forklift, making sure to spread Vaseline on the terminals.
- Lubricate all of the parts provided with lubricating nipples and the chains.
- Carry out the fluid level checks.
- Perform all of the functional maneuvers of the forklift and of its safety devices both loaded and unloaded.

⚠ DANGER

Follow the instructions provided in the maintenance chapter for the operations indicated previously.

Permanent Putting Out of Commission (Demolition)

The forklift must be demolished in compliance with local legislation. Contact the authorised service network or authorised companies to scrap the forklift according to local legislation.

ENVIRONMENT NOTE

In particular, batteries, fluids (oils, fuels, lubricants, etc, electrical and electronic components and rubber components must be disposed of in compliance with specific local legislation for each type of material.

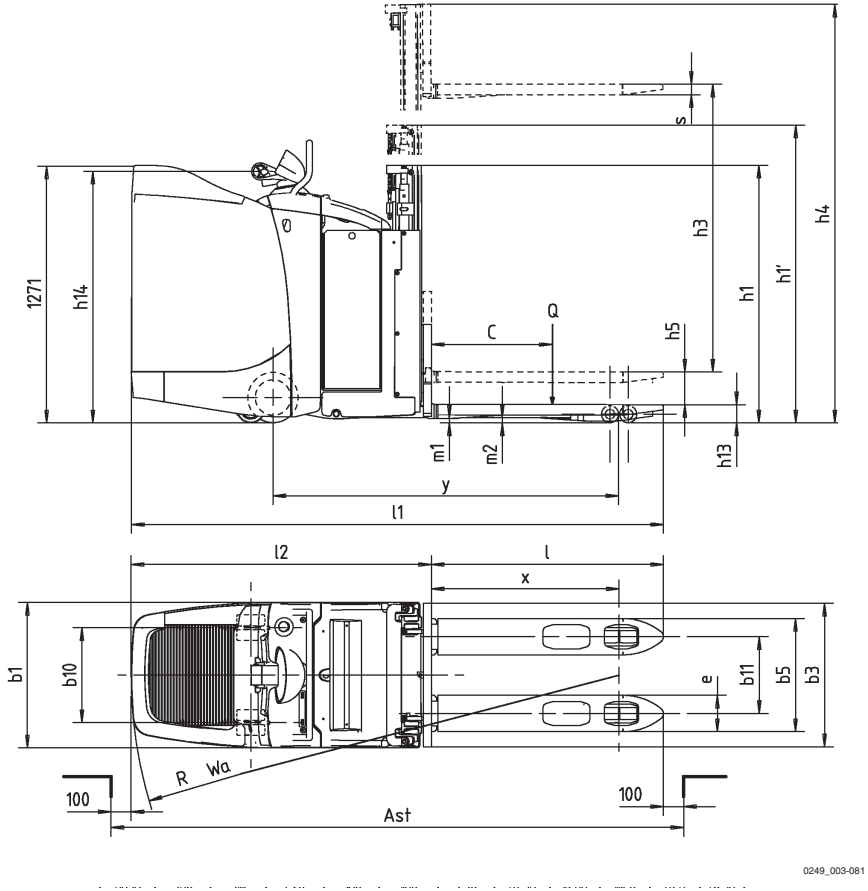
⚠ DANGER

Disassembly of the forklift for scrapping is extremely hazardous.

6

Technical data

Dimensions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VDI data sheet for standard EXD-S 20

Designation

			EXD-S 20	EXD-S 20
Driver's platform			Access from rear	Access from the side
Power source: Electric, diesel, petrol, LP gas, mains power			Battery	Battery
Operator type: Hand, pedestrian, stand-on, seated, order picker			Ride-on standing	Ride-on standing
Rated load capacity/load end		Q [kg]	2000	2000
Load center-of-gravity distance		c (mm)	600	600
Load distance		x (mm)	942	942
Wheelbase		y (mm)	1729	1729

Weight

			EXD-S 20	EXD-S 20
Weight of truck	With battery	kg	1500	1500
Axle loading with load, rear	Driver's end/load end	kg	1550/1950	1550/1950
Axle loading without load, rear	Driver's end/load end	kg	1150/350	1150/350

Wheels and tyres

			EXD-S 20	EXD-S 20
Tyre type: Rubber, Vulkollan, air, polyurethane			Polyurethane	Polyurethane
Wheel size	Driver's end	mm	∅250 x 100	∅250 x 100
Wheel size	Load end	mm	∅85 x 61.5	∅85 x 61.5
Dimensions of stabiliser wheel		mm	∅140 x 54	∅140 x 54
Number of wheels (x = driven)	Driver's end/load end		1x -2/4	1x -2/4
Track	Driver's end	b 10 (mm)	470	470
Track	Load end	b11 [mm]	380	380

Basic dimensions

			EXD-S 20	EXD-S 20
Height with mast lowered		h1 (mm)	1355	1355
Height of mast, retracted with free lift		h1' (mm)	1410	1410
Lifting		h3 (mm)	1580	1580
Overall height with mast raised		h4 (mm)	2070	2070
Height of seat/stand		h7 [mm]	210	210
Height of cockpit in driving position	Min./max.	h14 (mm)	1245	1245
Fork lift, lower position		h13 (mm)	91	91
Overall length, without load		l1 (mm)	2568	2639
Length of powerhead to face of forks		l2 (mm)	1418	1489
Overall width chassis		b1 (mm)	720	720
Fork dimensions		s / e / l (mm)	52/180/1150	52/180/1150
Fork carriage width		b3 (mm)	711	711
Width across forks		b5(mm)	560	560
Ground clearance at centre of wheelbase		m2 (mm)	25	25
Working aisle width with 800 x 1200 pallets (b12 X l6)		Ast (mm)	2768	2839
Turning radius		Wa (mm)	2362	2432

Performances

			EXD-S 20	EXD-S 20
Driving speed	With/without load	km/h	8/11	8/11
Lifting speed/time	With/without load	m/s	0.15/0.23	0.15/0.23
Lowering speed/time	With/without load	m/s	0.23/0.28	0.23/0.28
Gradient	With/without load	%	7/15	7/15
Acceleration time (0 - 10 m)	With/without load	s	7/5	7/5
Service brake			Electromag-netic compo-nents	Electromag-netic compo-nents

Motors

			EXD-S 20	EXD-S 20
Steering motor, rating S2 = 60 min		kW	3	3
Lift motor, rating S3 = 15%		kW	2.2 kW S3, 5	2.2 kW S3, 5
Battery to DIN 43531/35/36 A, B, C, no			IEC 254-2: B	IEC 254-2: B
Rated battery voltage C5		V/Ah	24 V/450 Ah	24 V/450 Ah
Battery minimum weight	Depending on supplier	kg (+/-5%)	410	410
Power consumption for VDI cycle		kWh/h	< 1.2	< 1.2

Miscellaneous

			EXD-S 20	EXD-S 20
Traction controller type			Pulsed	Pulsed
Noise level at operator's ears		dB(A)	< 70	< 70

Mast types EXD-S

		Tele
Mast/fork carriage height, lowered	h1	1280
Mast/fork carriage height	h1'	1410
Free lift	h2	0
Special free lift	h2'	150
Lift	h3	1580
Mast height, extended	h4	2070
Initial lift	h5	130

Battery specifications (to DIN 43531 B)

⚠ CAUTION

Only use batteries in accordance with DIN. The battery tray must be closed at the bottom. Do not change the location of added weights.

			Max. tray size in mm		
Battery type	**Capacity in Ah**	**Weight in kg ± 5 %**	**Height**	**Width**	**Length**
Trog 70	450	405	784	289	719
Trog 71	600	510	784	374	719

Wheels and tyres

Approved types of wheels

Only the wheel types listed in the parts catalogue may be used.

Supply table EXD EXD-SF EXD-S

	Standard version
Traction transmission gear oil	FUCHS Renolin PG 220
Lifting hydraulics oil	Olio idraulico HLF 32
Generic lubricant	Tutela MP 02
Chain grease	Kluber / Structovis EHD

	Cold storage version
Traction transmission gear oil	FUCHS Renolin PG 220
Lifting hydraulics oil	EQUIVIS XV32
Generic lubricant	Tutela EP2
Chain grease	Kluber / Structovis FHD

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