Original instructions

Counterweight pallet stacker

EXG-10
EXG-12
EXG-16

CE

1217 1218 1219

first in intralogistics

1170 801 15 09 EN - 10/2017

Address of manufacturer and contact details

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1 Introduction

2 Safety

3 Overviews

4 Use

1

Introduction

Your industrial truck

General

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

If the truck is to be operated on public roads, it must conform to the existing national regulations for the country in which it is being used. The driving permit must be obtained from the appropriate office.

The trucks have been fitted with state-of-the-art technology. All that remains is to handle the truck safely and maintain its functionality.

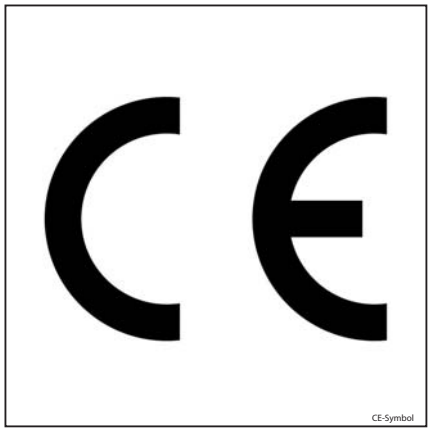
These operating instructions provide the necessary information to do this. Read and observe the information provided before commissioning the truck. This will prevent accidents and ensure that the warranty remains valid.

CE labelling

The manufacturer uses CE labelling to indicate that the truck complies with the standards and regulations valid at the time of marketing. The supplied EC declaration of conformity confirms this. The CE labelling is attached to the nameplate.

An independent structural change or an addition to the tow tractor can compromise safety, thereby invalidating the EC declaration of conformity.

The EC declaration of conformity must be carefully stored and made available to the responsible authorities.



Copyright and property rights

EC declaration of conformity

Declaration

STILL GmbH
Berzeliusstrasse 10
22113 Hamburg
GERMANY

We declare that the machine

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.

Person authorised to compile the technical documents:

See EC compliance declaration

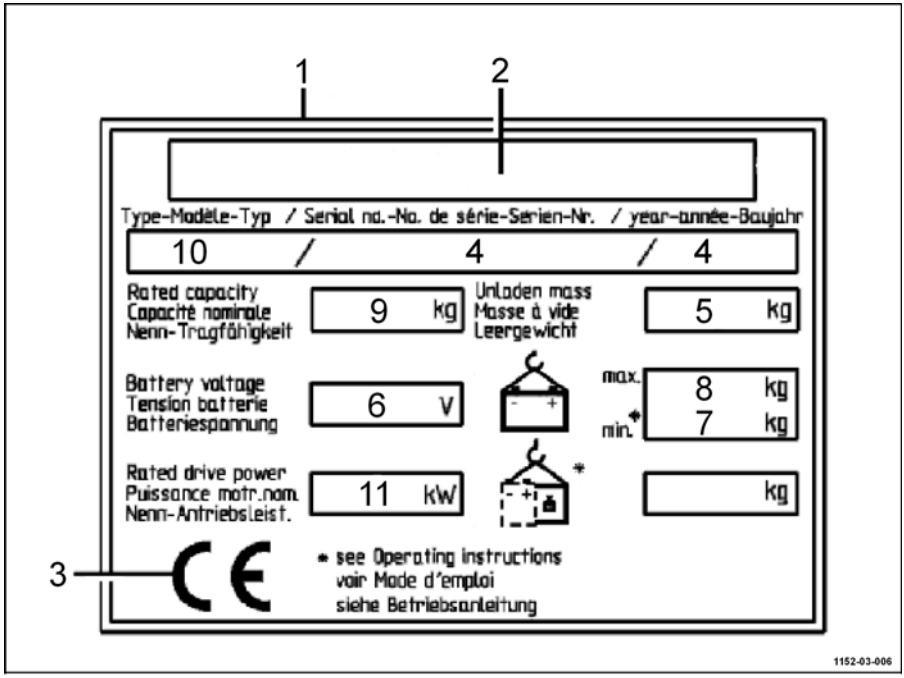
STILL S.A.S.

The manufacturer declares that the truck complies with the requirements of the EC directives valid at the time of marketing. This is confirmed by the EC declaration of conformity and by the EC labelling on the nameplate.

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

The EC declaration of conformity must be carefully stored and made available to the relevant authorities.

Identification label



1	Identification label	6	Battery Voltage
2	Manufacturer	7	Minimum battery weight
3	CE symbol (this symbol means that the machine complies with European regulations for industrial trucks)	8	Maximum battery weight
		9	Nominal capacity of the truck
4	Serial number/year	10	Model
5	Unladen weight	11	Motor rated power

Rules for the operating company of industrial trucks

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

This guide provides information for handling industrial trucks:

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

Internet address and QR code

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

Proper usage

The truck described in these operating instructions is suitable for lifting, transporting and stacking loads.

The truck should only be used for the purposes for which it was designed, as described in these instructions.

If the truck needs to be used for purposes other than those specified in these instructions, you should first:

- Obtain permission from the manufacturer
- Obtain permission from the competent authorities, if applicable

The purpose of obtaining these permissions in advance is to limit danger as far as possible.

The capacity label specifies the maximum load that can be raised. This limit must not be exceeded.

Description of use and climatic conditions

Normal use

– Indoor and outdoor use.

– Ambient temperature in tropical and Nordic regions ranging from -10°C to 45°C

– Start capability from -10°C to 45°C.

– Maximum start time of 20 seconds

– Use at up to 2000 metres above sea level.

Special use (partly with special measures) for trucks equipped with Gel or Lead batteries

– Use, for example, in the event of abrasive dust (such as AL203), lint, acid, leach, salt and incombustible substances.

– Ambient temperature in tropical regions up to 55 °C.

– Start capability at -25°C.

– Use at up to 3,500 metres above sea level.

Unauthorised use

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

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

Transporting people is prohibited.

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

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

Explanation of symbols used

⚠ DANGER

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

⚠ WARNING

Compulsory procedure that must followed to avoid injury.

⚠ CAUTION

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

NOTE

For technical requirements that require special attention.

ENVIRONMENT NOTE

To prevent environmental damage.

Disposing of components and batteries

The truck is made up of different materials.

If components or batteries must be replaced and scrapped, 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 when disposing of components and batteries.

2

Safety

Safety regulations

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

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

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

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

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

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

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

Then, and only then, proceed to transferring pallets.

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

Safety regulations for handling consumables

Permissible consumables

⚠ WARNING

Consumables can be dangerous.

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

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

Oils

⚠ DANGER

Oils are flammable!

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

⚠ DANGER

Oils are toxic!

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

⚠ WARNING

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

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

⚠ WARNING

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

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

ENVIRONMENT NOTE

Oils are water pollutants!

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

Avoid spilling oils.

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

Dispose of old oils according to the applicable regulations.

Hydraulic fluid

⚠ WARNING

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

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

Hydraulic fluid is a water-polluting substance!

Always store hydraulic fluid in containers complying with the regulations.

Avoid spilling.

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

Dispose of old hydraulic fluid according to regulations.

ENVIRONMENT NOTE

Battery acid

⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is toxic.

- Avoid contact and consumption.
- In case of injury, seek medical advice immediately.

⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is corrosive.

- When working with battery acid, always wear protective clothing and eye protection.
- Do not allow any acid to get onto the clothing or skin or into the eyes; if this does happen, rinse immediately with plenty of clean water.
- In case of injury, seek medical advice immediately.
- Immediately rinse away spilt battery acid with plenty of water.
- Follow the statutory regulations

ENVIRONMENT NOTE

– Dispose of used battery acid in line with the applicable regulations.

Disposal of consumables

ENVIRONMENT NOTE

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

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

Emissions

Noise emission values

Calculated during the test cycle performed in accordance with standard EN12053.

Acoustic pressure level in the driver's compartment			
EXG10, EXG12, EXG16	L_{PAZ}	<	70 dB (A)
Uncertainty	K_{PA}	±	2.5 dB (A)

NOTE

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

Vibration values for upper limbs

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

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

NOTE

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

Residual dangers, residual risks

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

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

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

⚠ WARNING

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

These operating instructions draw your attention to the safety rules.

The risks are:

- Escape of consumables due to leaks, ruptured lines and tanks etc.
- Risk of accident when driving over difficult ground such as slopes, soft or irregular surfaces or in poor visibility etc.
- Falling, tripping etc. when moving on the industrial truck, especially in the wet, with leaking consumables or icy surfaces.
- Loss of stability due to the load being unstable or the load slipping etc.
- Risk of fire and explosion due to batteries and electrical voltages.
- Human error - Disregarding safety regulations.

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

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

Stability

Forklift truck stability is guaranteed only if the unit is used according to the indicated recommendations.

It is not guaranteed in the event of:

– cornering at excessive speeds

– moving with the load raised

– moving with a load that is protruding to the side (e.g. sideshift),

– turning and driving diagonally across descents or ascents,

– driving on descents or ascents with the load on the downhill side,

– loads that are too wide or too heavy,

– driving with a swinging load,

– ramp edges or steps.

Definition of responsible persons

Operating company

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

The operating company must ensure that the truck is only used for its intended purpose and

in compliance with the safety guidelines set out in these operating instructions.

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

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

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

Specialist

A specialist is deemed to be:

- A person whose experience and technical training has allowed him to develop relevant knowledge of industrial trucks
- A person who is also familiar with national health and safety regulations and generally recognised technical directives and conventions (standards, VDE regulations, technical regulations of other European Union member states or countries that are signatories to the treaty that established the European Economic Area). This expertise allows him to assess the condition of industrial trucks in terms of health and safety

Drivers

This truck may only be driven by suitable persons who are at least 18 years of age, have been trained in driving, have demonstrated their skills in driving and handling loads, and have been specifically designated to drive the truck. Specific knowledge of the truck is also necessary.

Driver rights,duties and rules of behaviour

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

The driver must be granted the required rights.

The driver must wear protective equipment (protection suit, safety helmet, industrial goggles and protective gloves) that is appropriate for the conditions, the task and the load to be lifted. The driver must also wear safety footwear to be able to drive and brake in complete safety.

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

The driver must:

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

⚠ DANGER

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

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

Prohibition of use by unauthorised persons

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

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

Safety tests

Regular safety inspection of the truck

Safety inspection based on time and extraordinary incidents ▷

The operating company (see chapter entitled "Definition of responsible persons") must ensure that the truck is checked by a specialist at least once a year or after noteworthy incidents.

As part of this inspection:

- A full check of the technical condition of the truck in terms of accident safety must be performed
- The truck must be thoroughly checked to detect any damage that may have been caused by improper use
- A test log must be created.

The results of the inspection must be retained until at least 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.

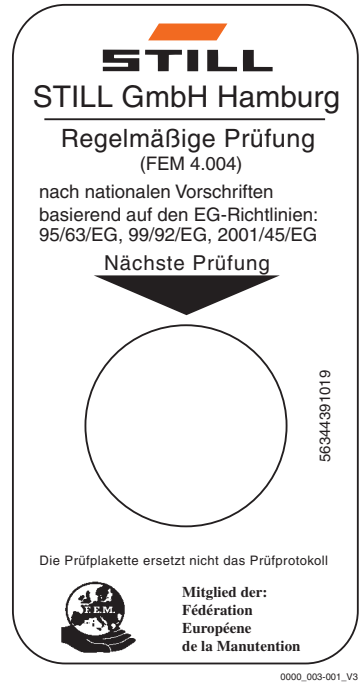
– Observe the guidelines for tests carried out on the truck in accordance with FEM 4.004.

The operator is responsible for ensuring that any defects are remedied immediately.

– Contact your service centre.

NOTE

Observe the regulations in force in your country.

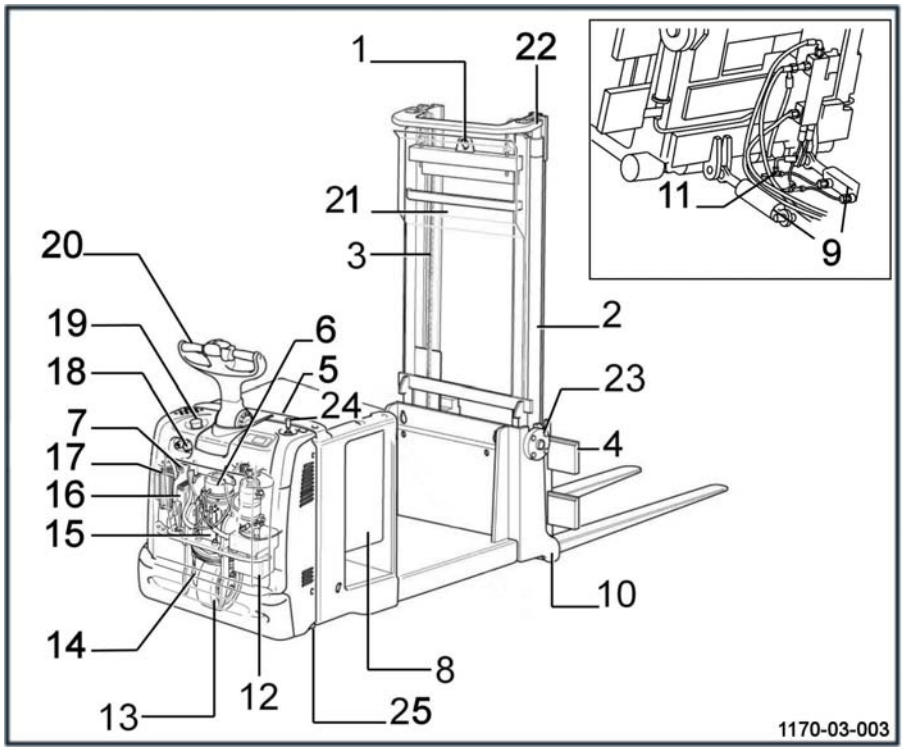


3

Overviews

Truck overview

Overview

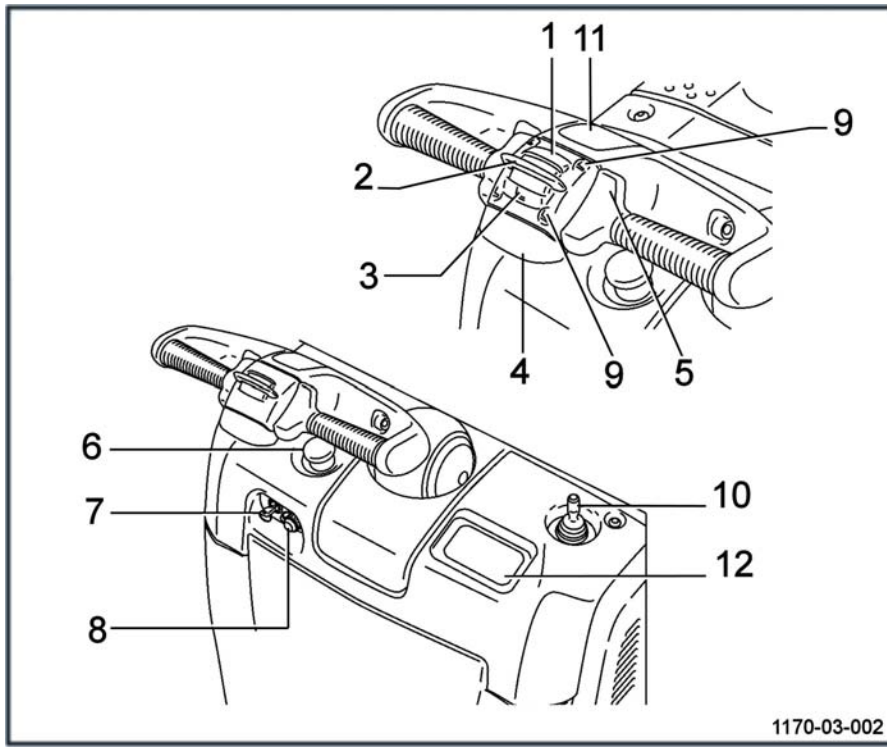


1	Mast slinging point	14	Transmission gear
2	Lift cylinder	15	Traction motor
3	Chains	16	ES30–24 steering unit
4	Fork carriage	17	Traction and lift controller
5	Battery socket	18	Diagnostic connector
6	Electromagnetic brake*	19	Emergency stop button
7	Panel	20	Tiller
8	Battery	21	Mast safety shield
9	Tilt cylinder	22	Fixed or tilting lift mast (depending on truck type)
10	Load wheels		
11	Tilt hydraulics	23	Mast joint
12	Pump unit	24	Mast tilt control
13	Drive wheel	25	Foot protection

*Hydraulically assisted

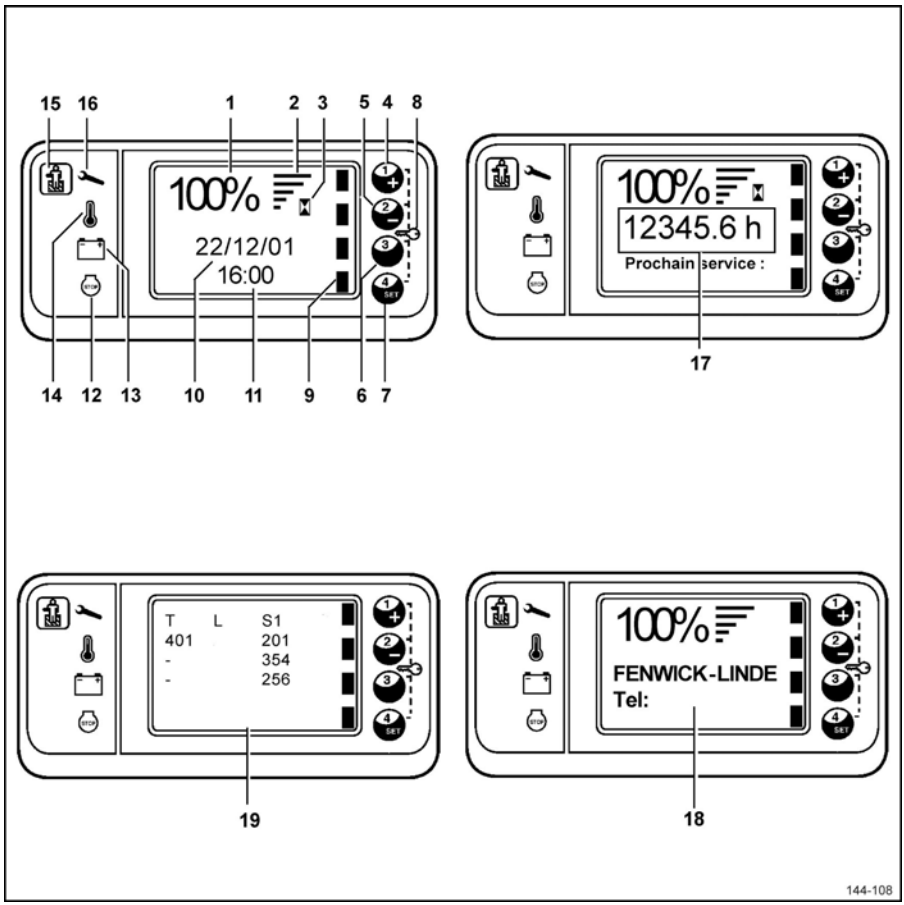
Controls and display

Tiller and dashboard



1	Fork lowering	7	Switch key
2	Fork lifting/lowering proportional control	8	Diagnostic connector
3	Fork lifting	9	Tilt selector
4	Safety reverser	10	Mast tilt
5	Direction reverser/accelerator	11	Horn
6	Emergency stop button	12	Multifunction indicator

Display function



	DESIGNATION	EXPLANATION	COMMENTS / SCREEN MESSAGES
1	Battery charge level as a %	100% = full charge 10% = low charge **1)** 0%= discharged **2)**	**1)** Recharge recommended **2)** Recharge essential
2	Battery charge level represented by 5 bars	100% = full charge 10% = low charge 0% = discharged **1)**	**1)** Battery discharged by 80%. Lifting function deactivated.
3	Hourglass (flashing)	Indicates that hour meter is running	
4	Control button "1"	To display a different screen	Alternative function: setting button

	DESIGNATION	EXPLANATION	COMMENTS / SCREEN MESSAGES
5	Control button "2"	To display the previous screen	Alternative function: setting button
6	Control button "3"	Truck off button	With Digicode option only
7	Control button "4" SET	To access control screens	
8	Digicode keypad	To enter operator's or service engineer's personal ID code	Option preventing use by unauthorised personnel. Default user code: **1-2-3-4** (factory setting)
9	Active button indicator		
10	Date display		See "Setting the date and time"
11	Time display		See "Setting the date and time"
12	"STOP INDICATOR LIGHT" Red indicator light	Various faults	**1)** Message: "Motor fault" - Try to restart by resetting ignition key - Alarm still active: Call service engineer **2)** Message: "Brake worn "+ audible alarm - Alarm still active:Call service engineer
13	"BATTERY ALARM" Red indicator light	**1)** Flashing: charge < or = 10% **2)** Lit: battery discharged	**1)**->Recharge recommended Message: "Low battery charge level" **2)**-> Lifting disabled ->Recharge essential Message: "Battery level=0% Lifting restricted"
14	Temperature alarm indicator light (red)	Lit: control module over-heated	-> Truck is stopped Message: "T° fault" In general, wait for the truck to cool down and then restart it.
15	Operator presence indicator (green)	Illuminates for 10 seconds after switching on and when the forklift operator is on the platform. Goes out after 10 seconds	Self-test before truck is started.
16	"Maintenance display" Red indicator light	**1)** Flashing: service recommended in:... **2)** Lit: service required immediately	**1)** Message: "Next inspection in X days or in Y hours" **2)** Message: "Service inspection required today".

	DESIGNATION	EXPLANATION	COMMENTS / SCREEN MESSAGES
17	Hour meter	Indicates the number of operating hours of the machine	- The meter starts running when the machine is switched on and a control is used. - When the meter is running, the hourglass flashes slowly -The hour meter displays hours and tenths of an hour. - When the power supply is disconnected, the hours are stored in the memory.
18	Information message display		
19	Error code display	Error code beginning with: **T**: Traction module error codes **L**: Lifting module error codes **S1**: Steering controller error codes	These codes will help the After Sales Service to decide on the appropriate response from the service engineer.

Display settings

Starting the truck using the ignition key (standard version)

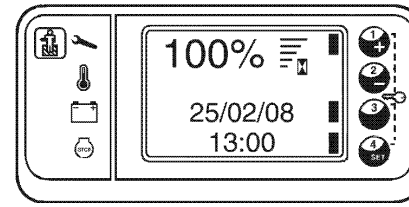
– Plug in the battery connector.

– Pull the emergency stop button.

– Switch on the ignition.

The following display appears:

The truck is ready for operation.



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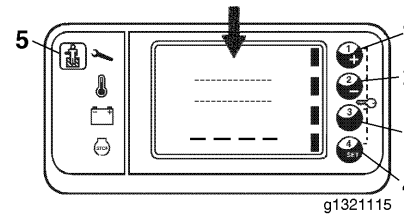
Starting the truck using the digicode

– Plug in the battery connector.

– Pull the emergency stop button.

The screen displays "**Enter PIN Code**" (see arrow).



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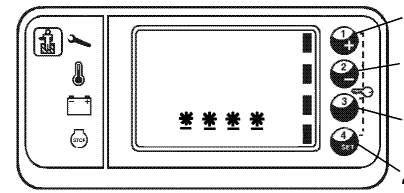
– Enter your personal PIN code using buttons (1) to (4). The figures are represented by stars.

If the code is correct, the welcome screen appears.



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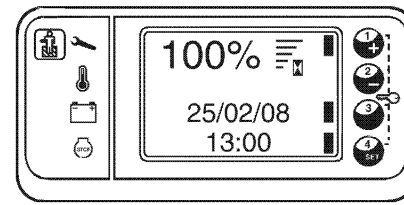
Date, time, battery discharge indicator



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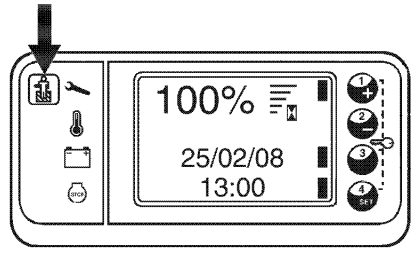
Driver on the platform ▷

When the driver steps onto the platform, the green "Driver present" indicator light comes on (see arrow). It stays on for 10 seconds and then switches off.

The green indicator light starts to flash when the driver steps off the platform.



g1321118

NOTE

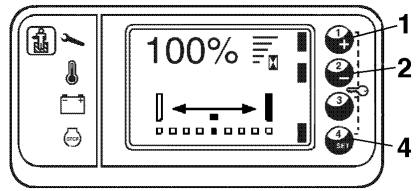
- *The default PIN code (factory setting) is 1-2-3-4.*
- *If the PIN code is incorrect, repeat the operation.*

Screen contrast

– Press the "**SET**" control button (4) to open the screen for adjusting the **contrast**. ▷

– "**+**" button (1): increases the contrast.

– "**-**" button (2): reduces the contrast.



g1321110

NOTE

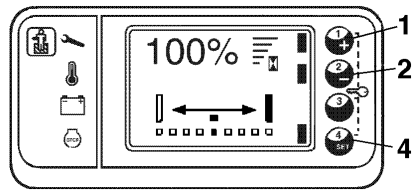
After 5 seconds with no action on the adjustment buttons, the settings are stored and the display automatically returns to the main screen.

Setting the display brightness

– Press the "**SET**" control button (4) twice to open the screen for adjusting the **brightness**. ▷

– "**+**" button (1): increases the brightness.

– "**-**" button (2): reduces the brightness.



g1321110

NOTE

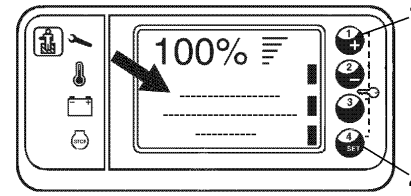
After 5 seconds with no action on the adjustment buttons, the settings are stored and the display automatically returns to the main screen.

Setting the date and time

– Press the (1)"**+**" button twice.

The following display appears (see arrow): ▷
"**After Sales Service Address**"

– Press the "**SET**"(4) button (for about 2 seconds) until the date appears and then flashes (see arrow).



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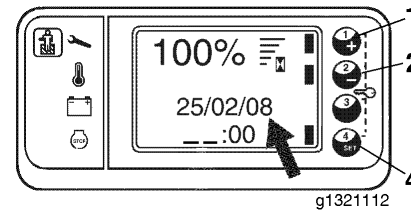
– Use the "**SET**"(4) button to select the different areas (day/month/year - hours: minutes). ▷
– Confirm the flashing values selected using the buttons (1)"**+**" and (2)"**-**".



g1321112

NOTE

All the settings are saved after 10 seconds if no data is entered and the display automatically returns to the welcome screen.

Settings by the service engineer

When the truck is commissioned, the service engineer sets:

- The language
- The access code for authorised personnel (factory setting: 1-2-3-4)
- The after sales service centre details
- The battery charge indicator display
- The service interval in days or hours
- The service alarm X days or Y hours before the limit (default: 50 hours or 7 days before the limit).

NOTE

The service alarm function can be deactivated.

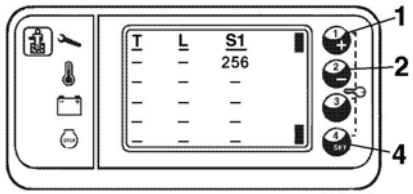
At the end of his maintenance visit, the service engineer:

- Resets the service alarm.
- Reprograms the date and hour meter for the next visit.

Error codes

All the reasons why the truck is running slowly or has stopped are shown on the display, in the form of error codes.

- **T:** traction controller error code
- **L:** lift controller error code
- **S1:** steering controller error code



131-03-014

NOTE

The appearance of a fault code causes the STOP indicator light to come on.

– Make a note of the breakdown code.

– Press the (1)"**+**" button to display the After-Sales Service Centre details.

– Press the "**SET**"(4) button to return to the home screen.

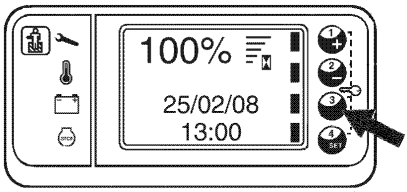
NOTE

Each time the truck is switched on, this screen will appear until the fault is rectified.

Disconnecting the truck (in digicode mode)

– Go to the main screen.

– Press button "**3**" (see arrow) for 3 seconds.



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NOTE

The truck's power supply shuts itself down automatically after 10 minutes if no control is activated. This cut-off time can be adjusted and reprogrammed by the service engineer. To restart the truck, the user must enter his PIN code again.

Changing the PIN code (in digicode mode)

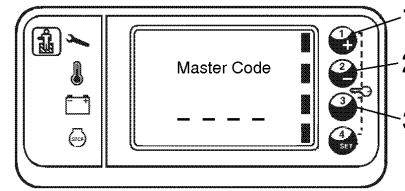
– Start the truck and enter the PIN code.

– Press the button (2) "(-)" until the "**After Sales Service address**" appears on the display.

– Press the button (3) for 3 seconds.

The following message appears on the display:

- Enter the administrator code.
- Enter the new PIN code.
- Confirm by pressing button (1) "(+)".



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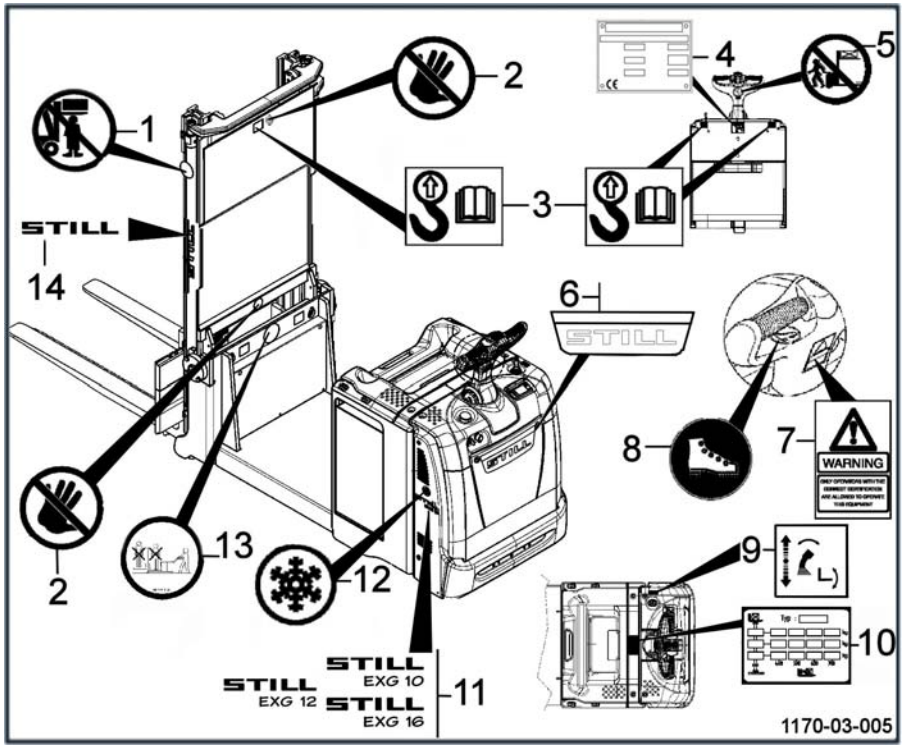
Markings

Marking positions



1	Safety label	8	Label for compulsory foot protection
2	Do not touch warning label	9	Mast tilt label
3	Coupling label	10	Capacity label
4	Identification label (see following page)	11	Truck model label
5	"Do not drive with high load" label	12	Cold store label
6	Company label	13	Passengers not allowed label
7	WARNING label (GB only)	14	Still logo label

Serial number

NOTE

Indicate the serial number for all technical enquiries.

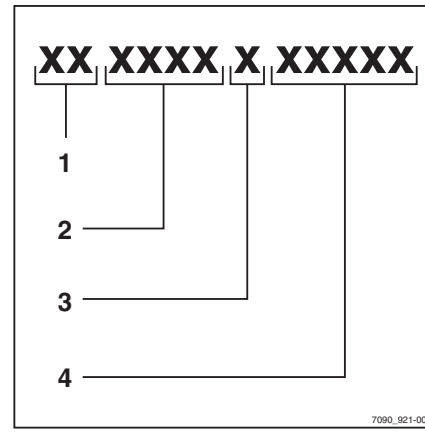
The serial number contains the following information:

1 Production location

2 Type

3 Year of production

4 Count number



4

Use

Electric pallet stacker

Electric counterweight pallet stacker types EXG 10, EXG 12 and EXG 16 are designed for stacking.

They can also be used to transport pallets of a maximum weight 1000 kg (EXG 10), 1200 kg (EXG 12) and 1600 kg (EXG 16) inside stores, warehouses and factories.

EXG capacity

EXG 10: maximum of 1000 kg on the fork arms

EXG 12: maximum of 1200 kg on the fork arms

EXG 16: maximum of 1600 kg on the fork arms

Configuration

EXG trucks are configured to pedestrian version as follows:

– **Unladen:** 6 km/h for forward travel and 5 km/h for reverse travel.

– **Laden**: 6 km/h for forward travel and 5 km/h in the fork direction.

These safe, robust, comfortable and extremely stable trucks offer excellent performance due to their construction which includes:

– a fixed central chassis with the mechanical, electrical and hydraulic units required to operate the truck,

– a fixed fork carriage at the rear of the battery.

Drive system

The drive is provided by a 3 kW asynchronous traction motor.

The drive wheel is driven by a transmission gear with a first stage reduction and a spur and pinion final drive.

The power is supplied by a 3PzS, 4PzS and 5PzS capacity lead-acid battery.

There are several battery types available:

– Vertical access

– Side access

The power supply to the traction motor is controlled by an electronic control module which provides complete control of the speed, acceleration and braking.

Steering

The electric steering offers driving precision and reduced effort during manoeuvres.

The truck is equipped with a 0.185-kW asynchronous steering motor.

Steering is controlled by a tiller designed for pedestrian driving.

The drive unit is mounted on a turntable; steering lock is provided by an electric geared motor which positions the turntable.

The steering motor is controlled by an electronic module that receives information from the tiller and the wheel angle position.

Lifting system

The pallet stackers are fitted with pump unit having a 3 kW motor and a single pump.

Braking

EXG models are fitted with two types of brakes:

– **an electromagnetic safety brake** that also acts as a parking brake.

The parking brake is applied automatically in the following situations:

- tiller released
- truck stationary with drive direction switch in neutral
- power off.

The safety brake is applied automatically in the event of a fault in the traction or steering control systems.

– **an electric counter-current brake** which is applied automatically when the accelerator

is released and when the direction of travel is reversed.

Driver's compartment

Pedestrian model:

- the speed is limited to 6 km/h
- the tiller has all the control units and provides the steering for the truck.

All models are also equipped with:

- an emergency off switch on the control board.
- a multifunction display which shows the date, operating hours and battery charge level.

Options

Various options are available on EXG trucks:

- **Cold Store** option
- gradual carriage stop
- digicode
- load backrest
- computer pack
- battery holder.

List of checks prior to start-up

⚠ WARNING

Damage or other defects on the forklift truck or attachments (special equipment) can result in accidents.

If damage or other faults are noticed on the truck or attachments (special equipment) during the following inspections, do not use the truck until it has been properly repaired. Do not remove or disable the safety systems and switches. Do not change the pre-set values.

⚠ WARNING

Risk of falling!

When working on high-level parts of the truck, do not use truck components for access or to stand on.

– Use suitable access equipment.

Before start-up, ensure that the truck operates correctly.

To do this, perform the following checks:

– Fork arms or other load-carrying equipment should not show any signs of noticeable damage (for example: bending, cracks, significant wear).
– Check that there are no signs of leaking consumables under the truck.
– Do not restrict the field of vision. Ensure the visible area specified by the manufacturer is observed.
– Attachment parts (special equipment) must be properly secured and function according to their operating instructions.
– Damaged or missing stickers must be replaced in compliance with the marking position table.
– The guard grille must be intact and securely mounted.
– The roller guide rails must be coated in a visible layer of grease.
– The wheels must show no signs of defects or heavy wear. They must be mounted correctly.
– Check that there are no foreign objects that could hinder the operation of the wheels and rollers.
– The warning devices (horn etc.) must work.
– The battery cover must be closed.
– Check that the covers are correctly positioned.
– The chains must be in perfect condition and must be evenly and correctly tensioned.
– The operator must be qualified to drive the truck. The operator must be able to reach the controls and operate them (especially the anti-crush device). Do not obstruct access to the controls.

Please inform your supervisor if you notice any defects.

Checks and actions prior to commissioning

Checking the brake

NOTE

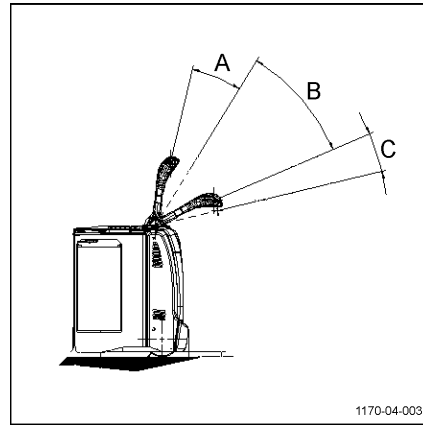
Perform this check on a flat surface.

– Drive the machine forward.

– Tilt the tiller in areas (A) and (C).

In these two areas, the machine is braked and the drive unit is no longer powered.

Releasing the tiller in the drive area (B) sends the tiller into the area (C) and cuts traction.



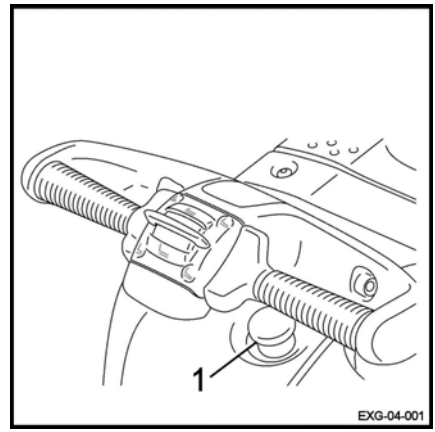
Checking the emergency shutdown

– Press the emergency off switch (1).

The electrical supply to the truck is cut off. The electrical controls and motors are no longer supplied with power. The electromagnetic brake is applied.

– Press the emergency off switch (1).

– Switch on the ignition to make the functions available again.



Checking the anti-crush safety device

Anti-crush safety function

The truck moves in reverse when the anti-crush button (2) is pressed.

If the truck is being operated in narrow areas (such as in a lift for example), the operator may get stuck against the wall if care is not taken. Without an anti-crush safety device, the tiller could injure the operator.

The truck automatically shifts into reverse travel when the anti-crush device on the tiller head comes into contact with the operator's body. When the operator moves away from the anti-crush safety device, the vehicle stops even if forward travel is selected again.

Checking the anti-crush safety device ▷

⚠ WARNING

Accident hazards

Ensure that the test zone is free of people and objects, both in front of and behind the truck.

– Move the drive switch (3) into forward travel.

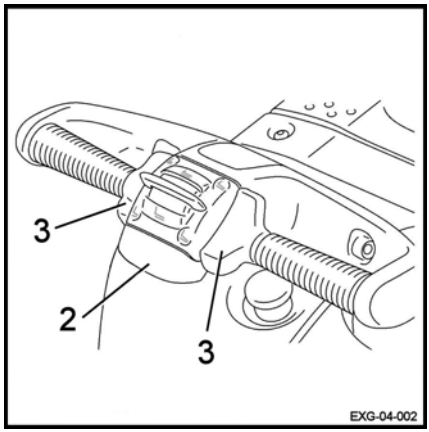
The truck moves forward.

– In the event of an obstacle, press and hold the anti-crush safety button (2).

The truck stops and shifts into fast reverse travel.

– Release the anti-crush safety button.

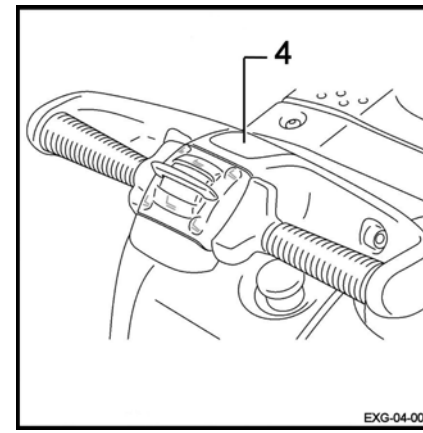
The truck stops.



Checking the horn

– Press the horn button (4) located on the upper part of the tiller.

The warning sounds.



Truck operating instructions

The trucks are designed for indoor and outdoor use in non-hazardous atmospheres. The temperature should be between -10°C and +45°C and the relative humidity of the air less than 95%.

NOTE

A cold store option is available for lower temperatures.

The places where the truck is used must comply with the applicable regulations (condition of the ground, lighting etc.).

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

Before using the truck, it is essential to check the working environment. This check can take the form of visual inspection.

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

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

- A person near the truck
- A person below the forks when they are raised
- The operator must not use an MP3 player or any other electrical equipment that could impair awareness of his/her surroundings
- There must be no signs of oil or grease on the floor

The operator must take care when transporting a load. The load dimensions can interfere with manoeuvres and restrict the field of vision. The speed of the truck must also be reduced as the truck could tip over when breaking or cornering.

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

For uses other than those shown above, please consult the After-Sales Service Centre.

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

Speed must be reduced when moving over obstacles to prevent the truck from becoming unbalanced and vibrations in the operator's arms.

The trucks can drive across ramps and shallow inclines. With an initial lift, they can cross larger obstacles.

⚠ WARNING

Risk of loss of stability

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

NOTE

- *To prevent the bottom of the load lift system from scraping the ground, always move the forks to the raised position before setting off*
- *Always switch off the ignition before leaving the truck*
- *The mast protective screen must always be correctly positioned, properly secured and clean*

⚠ WARNING

Risk of damaging the truck

Ensure that the height of the mast is lower than obstacles (racks, doors etc.).

⚠ WARNING

Risk of injury

Always keep your hands on the controls. Never put your hands near moving parts and assemblies without first lowering the load arms to the ground and disconnecting the battery.

For effective protection, safety shoes must be worn.

Do not climb on the hoods of the truck (battery, chassis etc.).

⚠ WARNING

Driving safety guidelines:

- The driver must drive slowly around corners and when entering narrow passageways.
- The driver must always maintain a safe braking distance from vehicles or people in front of him.
- The driver must avoid stopping suddenly, making U-turns too quickly and overtaking in dangerous areas with poor visibility.

⚠ CAUTION

Risk of injury

Before using a side access truck, check that the battery is correctly locked.

Driving

Driving safety instructions

Behaviour when driving

The operator must obey the same rules within the plant as he would on the road. He must drive at a speed appropriate for the driving conditions. For example, an operator should drive slowly around corners, when entering and passing 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. He should avoid sudden stops, making fast U-turns, overtaking other vehicles in potentially dangerous areas or areas with poor visibility.

Driving the truck while sitting on top of it is prohibited.

All EXG models are designed to be operated in pedestrian mode. Therefore:

- Never sit on the truck to drive it.
- Do not use the truck as a stepping stool.
- Do not use the truck to carry people.
- Stay in the safety area (working area defined by the manufacturer).

Use of a telephone or radio with the truck is permitted.

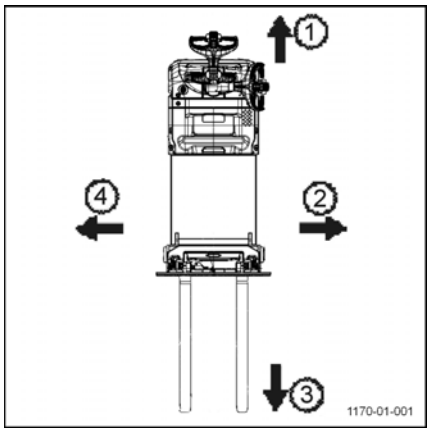
However, do not use these devices when driving as they may distract you.

Take a test drive on an open surface.

Definition of directions

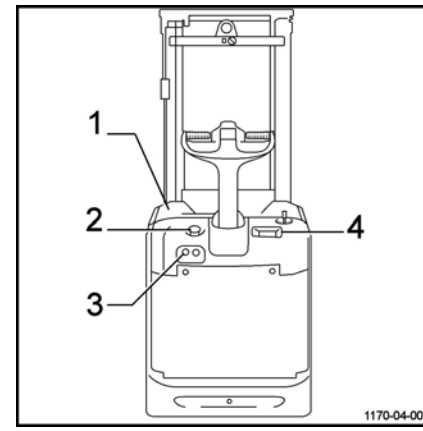
Names used in the text: forward travel (1), reverse travel (3), to the right (2) and to the left (4) refer to component installation position with respect to the driver's compartment.

The load is positioned at the back.



Driving

Start-up



- Open the battery cover (1).
- Plug in the battery connector.
- Close the battery cover (1).
- Pull the emergency off switch to the raised position (2).
- Turn the switch key (3) to the right or enter the start-up PIN code on the multifunction indicator (4) depending on the version.
- The multifunction indicator (4) starts up.

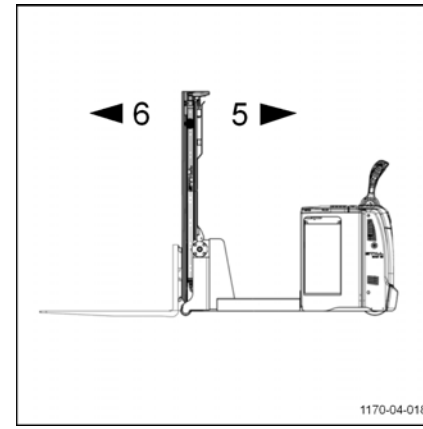
NOTE

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

Emergency off switch

- During normal truck operation, the emergency off switch (2) must be pulled out.
- In case of danger, press the switch (2) to break the electrical circuit and apply the electromagnetic brake.

Direction of travel



On a pallet stacker, the conventional controls for the drive direction are:

- Forward travel: (5) - Tiller direction
- Reverse travel: (6) - Fork direction

Forward travel

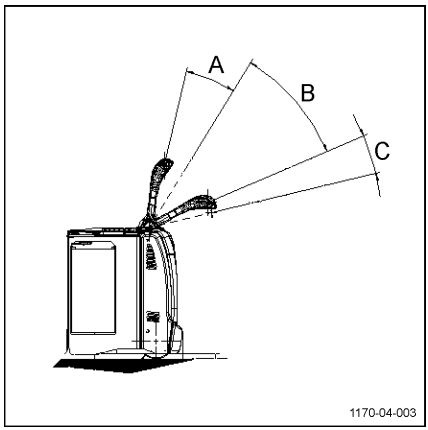
– Tilt the tiller in the driving area (B)

– Move the drive direction switch forward

– The truck speed depends on the angle of rotation of the drive direction switch.

⚠ WARNING

The operator must remain as far as possible from the truck (arms outstretched) in order to avoid injuries to the feet.



Reverse travel

– Tilt the tiller in the driving area (B)

– Gradually and slowly press the drive direction switch backward with your thumb

– The truck speed depends on the angle of rotation of the drive direction switch.

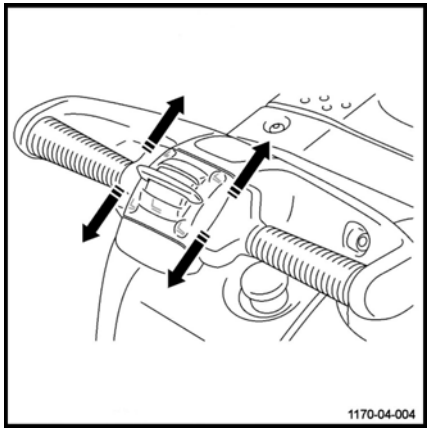
Changing the drive direction

– Release the drive direction switch and activate it in the opposite direction.

The drive direction can be reversed while the truck is in motion.

In this case, the truck is braked electrically until it stops, then it moves off in the opposite direction.

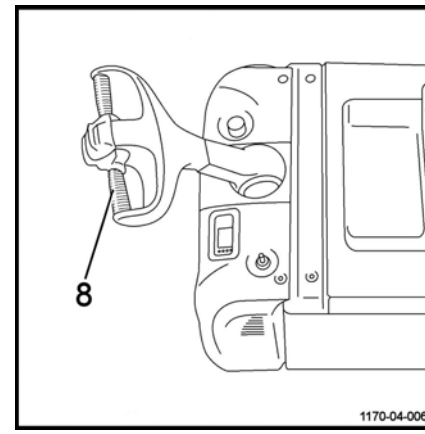
Maximum slowing is controlled by the traction controller.



Steering

The EXG model is fitted with electric steering controlled by a tiller (8).

The electric power steering enables the truck to be manoeuvred gently and precisely with one hand.



⚠ WARNING

Risk of serious injury and/or serious damage to the machine.

Never use a truck with faulty steering.

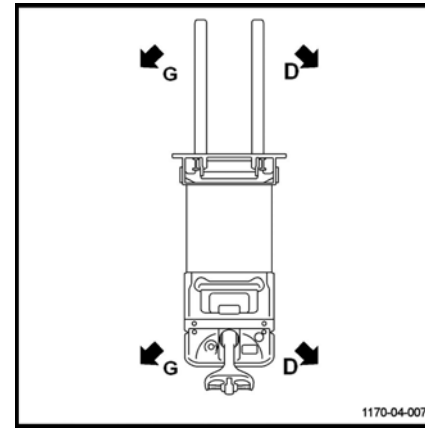
⚠ WARNING

A safety device stops the truck and applies the brake in the event of a steering fault.

⚠ WARNING

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

Turning direction in forward travel



- Turn the tiller to the left (L), the truck turns to the left.
- Turn the tiller to the right (R), the truck turns to the right.
- Release the tiller; it should return to the neutral position and the truck should move in a straight line.

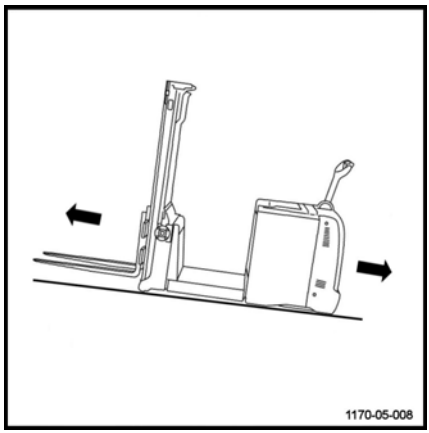
Steering angle: 180°

The turning radius (Wa) depends on the length of the fork. (see technical characteristics).

Safety when cornering: speed limitation

The EXG is fitted with a cornering safety device that automatically reduces the speed when cornering, when a specific drive wheel steering angle is exceeded.

Driving on upward and downward slopes



Slopes should always be approached with the load facing towards the top of the slope. Only slopes marked as clear traffic routes compatible with the truck's technical specifications can be safely used.

⚠ DANGER

Risk of accident

The operator must ensure that the ground is clean and has a non-slip surface.

Never travel across slopes or make a U-turn on a slope.

Do not park the truck on a slope.

Reduce speed when going down slopes.

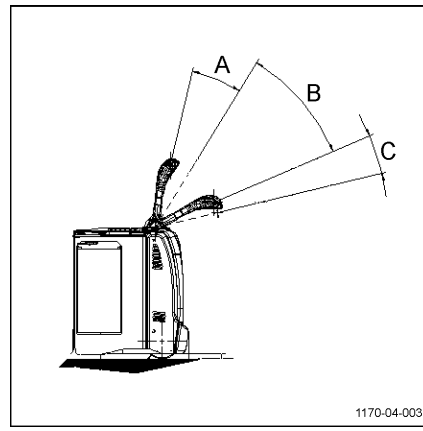
Please observe the maximum gradients defined as suitable for laden and unladen transport.

Braking

Safety or parking electromagnetic brake system ▷

The electromagnetic brake is applied automatically:

- If a fault is detected by the traction and/or steering controller.
- When the tiller is in upper braking cut-out position (A) or in lower braking cut-out position (C)
- When the drive direction switch is in the neutral position and the truck is stationary
- When the emergency off switch is pressed.



NOTE

The braking torque is automatically matched to the weight of the load on the forks.

Automatic braking

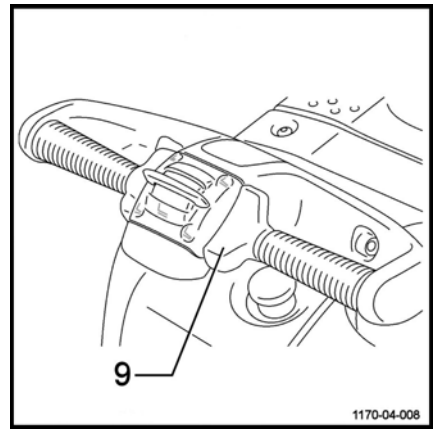
When the drive direction switch is released, braking is activated automatically. It engages as soon as a certain travel speed is reached.

Braking by changing the drive direction ▷

Braking can be achieved by reversing the direction of travel:

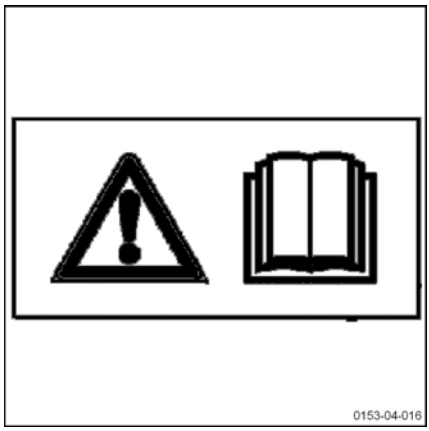
– Move the drive direction switch (9) in the opposite direction until the truck stops.

– Then release the switch.



Transporting loads

Load handling safety rules



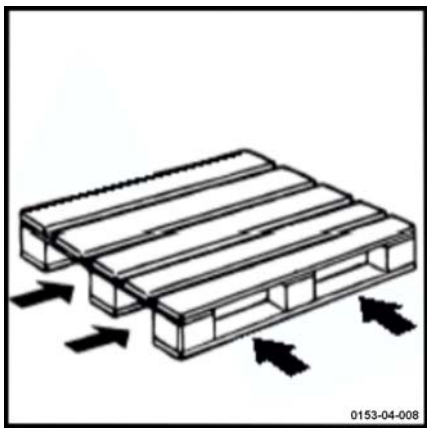
⚠ WARNING

It is necessary to closely observe the following instructions before picking up loads. Never touch or stand on moving parts of the truck (e.g. lifting device, pushing devices, work installations or devices for picking up loads).

⚠ WARNING

Take care not to trap hands or feet when operating the truck.

Grabbing a loading unit



Watch out for the following elements:

- the load must be well-balanced and centred correctly between the fork arms
- the fork arms must be sufficiently slid underneath the load to guarantee stability.

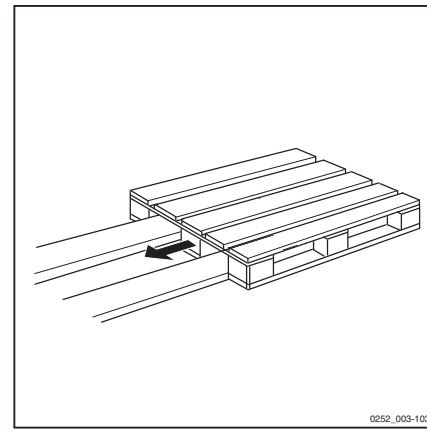
The load must not protrude too far over the fork arms, nor should the fork arms protrude too far out from the load.

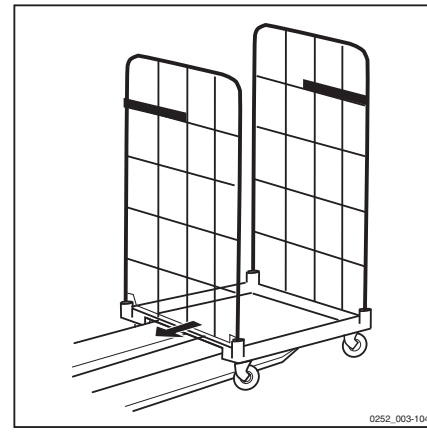
Transporting pallets or other containers ▷

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

- when the safety preconditions are fulfilled.
- by order of the monitoring agent.

The forklift operator must ensure that the loading unit is properly packaged. He must only move loading units that have been carefully prepared and that meet the safety requirements.





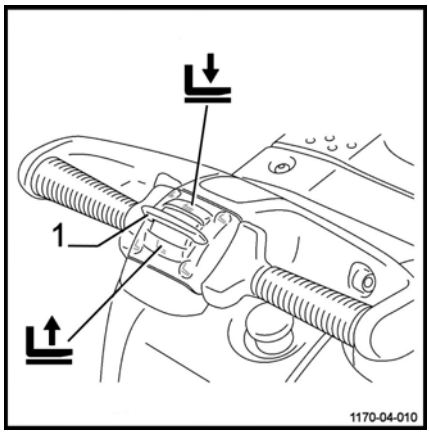
Lift control elements

Lifting the fork arms

– Push the control flap (1) downwards.

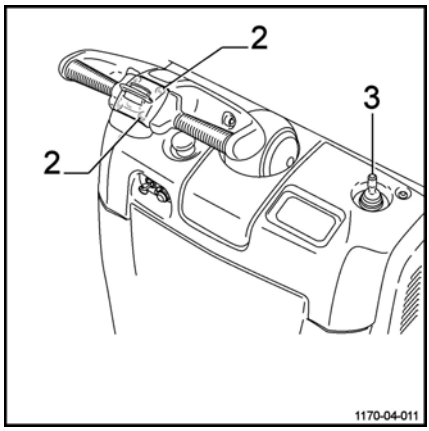
Lowering the fork arms

– Push the control flap (1) upwards.

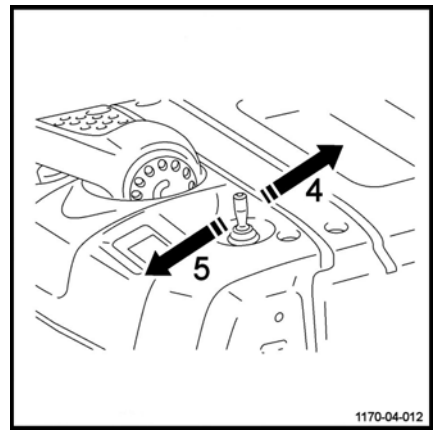


Tilting the mast

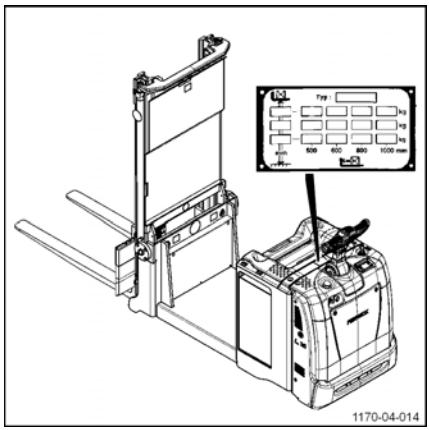
– Move the tilt selector up or down (2)



– Push or pull the joystick lever (3) forwards (4): maximum tilt 1°.
– Push or pull the joystick lever (3) backwards (5): maximum tilt 6°.



Capacity



⚠ CAUTION

Deterioration or destruction of the equipment.

Before picking up a load, make sure that its weight does not exceed the lifting capacity of the machine. Refer to the nominal capacity specified on the truck's capacity rating plate.

The values shown are for compact, homogeneous loads. They must not be exceeded; otherwise the stability of the truck and the resistance of the mast and the chassis are no longer guaranteed.

The distance of the load's centre of gravity from the back of the fork and the lift height determine the maximum lift weight. Check the pallet is in good condition.

Nominal capacity

EXG 10: 1000 kg with 500 mm centre of gravity

EXG12: 1200 kg with 500 mm centre of gravity

EXG12: 1600 kg with 500 mm centre of gravity

⚠ CAUTION

Deterioration or destruction of the equipment

Be careful not to touch adjacent loads or loads positioned at the side or in front of the load being handled.

⚠ CAUTION

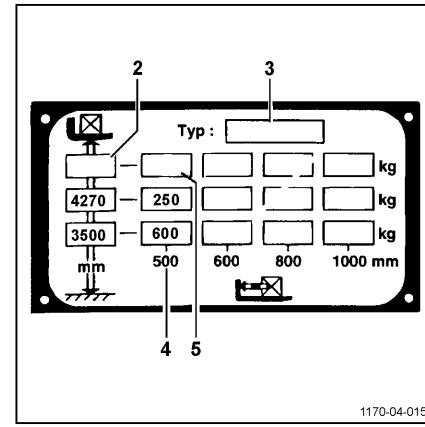
Deterioration or destruction of the equipment

Loads must be arranged so that they are aligned with a narrow space between them to prevent them from catching.

Reading the capacity rating plate

Example of a current label:

- (2) - Maximum lift height
- (3) - Type of lift mast
- (4) - Distance from the back of the fork to the load centre of gravity
- (5) - Maximum capacity on the forks



Adjusting the fork arm span

NOTE

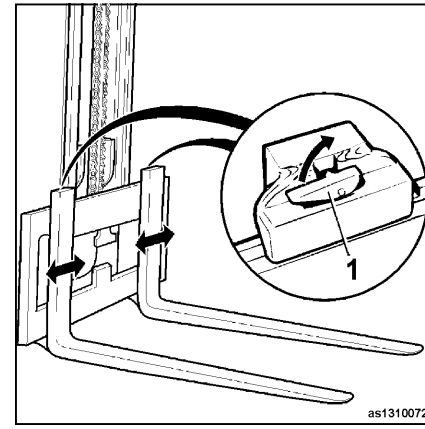
The load centre of gravity must always be at an equal distance from each fork.

– Move the locking lever (1) upwards.

– Set the fork arm span according to the load to be lifted.

The fork arms must be the same distance from the centre line of the truck.

– Release the opposing lock by one detent on the carriage.



Working with loads

Before picking up a load

Ensure that its weight does not exceed the truck's capacity.

- Refer to the nominal capacity specified on the truck's capacity rating plate.
- You must also make sure that the load is stable, well-balanced and centred between the load arms in order to avoid dropping any part of the load.
- Check that the width of the load is compatible with the width of the load arms.

⚠ CAUTION

Safety footwear must be worn.

Transporting people is strictly prohibited.

⚠ DANGER

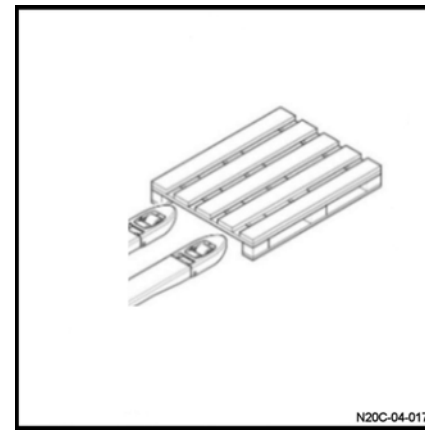
It is essential to slow down when approaching a corner or on wet floors.

⚠ CAUTION

Do not touch nearby loads or loads positioned at the side or in front of the load being handled.

Arrange the loads with a small space between them to prevent them coming into contact with one another.

Picking up a load from the ground

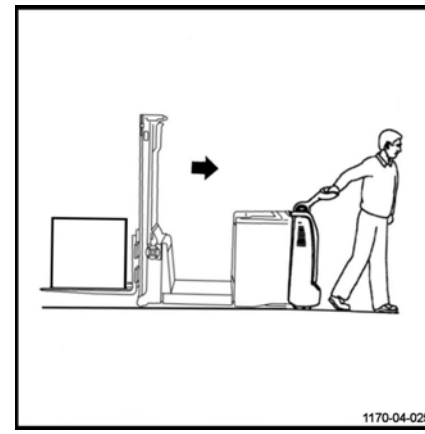


- Approach the load carefully.
- Tilt the mast vertically.
- Lower the fork arms so that they are easily inserted into the pallet.
- Move the forks under the load.
- If the load is shorter than the forks, position it so that the end of the load overhangs the end of the fork arms by several centimetres, to avoid hooking onto the load in front.
- Raise the load a few centimetres from the ground.
- Tilt the mast back as far as it will go.
- Withdraw the load slowly and in a straight line.

⚠ DANGER

Ensure that the pallet is in good condition before commencing any operation.

Transporting a load



- Always drive forwards for optimum visibility and with the mast tilted as far back as possible.
- When carrying a load on a slope, always climb and descend with the load uphill. Never travel across the slope or make a U-turn.
- Reverse gear must only be used for depositing a load. Since visibility in this direction is restricted, you should only travel at very low speed.
- Never drive with an unstable load.
- If visibility is poor, let someone guide you.
- Watch out for low passageways, low doorways, scaffolding, pipes etc.

⚠ CAUTION

Always drive with the mast tilted as far back as possible to ensure optimum distribution of the load over the axles.

The axles will thus have better longitudinal stability and maximum braking capacity.

⚠ CAUTION

The driver must remain as far as possible from the truck (arms outstretched) in order to avoid injuring his/her feet.

Do not travel with a load on the forks in the lower limit stop position or on the load arms. The hydraulic braking assistance no longer corresponds to the weight of the moving unit.

⚠ DANGER

Never drive with the load in the upper position. It is essential to lower the forks before setting off.

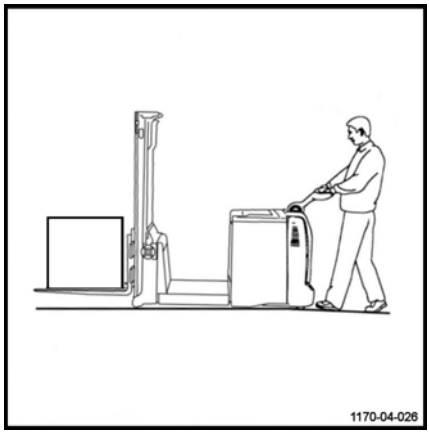
It is essential to slow down when approaching a corner or on wet floors.

⚠ WARNING

Transporting people is strictly prohibited.

Setting a load down on the ground

▷



– Carefully drive the machine to the required location.
– Carefully move the load into the unloading area.
– Lower the load until the fork arms are free.
– Withdraw the machine in a straight line.

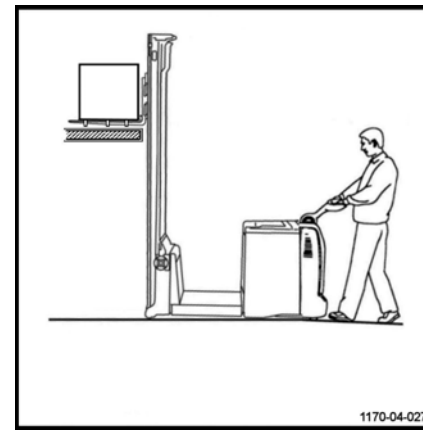
⚠ CAUTION

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

⚠ DANGER

Personnel must not stand under or near the truck when the load is in the raised position.

Stacking a load



DANGER

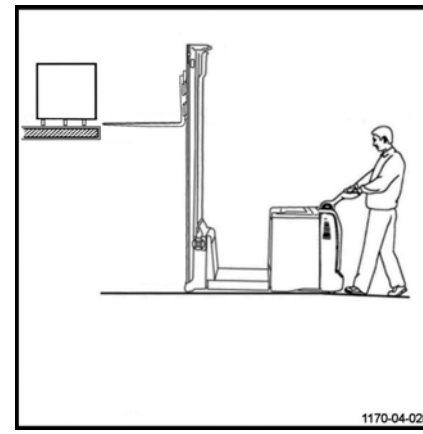
Check that the load does not exceed the maximum capacity of the truck in relation to the lift height.

- Carefully drive the machine to the required location.
- Raise the forks clearly above the level where the load is to be placed.
- Tilt the mast vertically.
- Drive the truck forward into the racking.
- Lower the load until the fork arms are free.
- Withdraw the machine in a straight line.
- Lower the forks again to several centimetres from the ground.

DANGER

Personnel must not stand under or near the truck when the load is in the raised position.

Picking up a load at a height



DANGER

Check that the load does not exceed the maximum capacity of the truck in relation to the lift height.

Check the pallet is in good condition.

- Carefully drive the machine to the required location.
- Tilt the mast vertically.
- Lift the forks to the height of the pallet.
- Move the fork forward carefully under the pallet.
- Lift the forks until the pallet moves away from the racking.
- Tilt the mast as far back as possible.
- Reverse the truck to free the pallet.
- Lower the load to a few centimetres from the ground.

⚠ DANGER

Personnel must not stand under or near the truck when the load is in the raised position.

Before leaving the machine

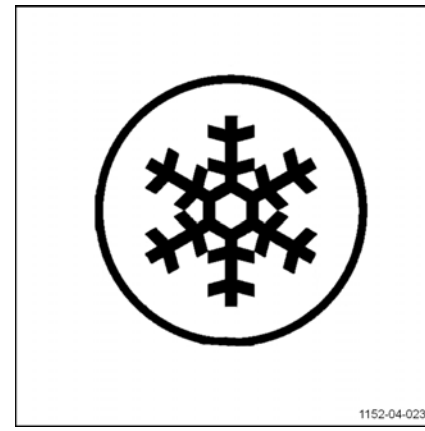
⚠ CAUTION

Always stop the machine on level ground away from traffic routes.

– Lower the fork arms to the bottom position.
– Tilt the mast as far forward as possible.
– Switch off the ignition
– In the case of a prolonged shutdown, press the emergency stop switch and disconnect the battery.

Cold store (option)

Cold store usage (optional)



⚠ CAUTION

Standard trucks risk being subject to significant damage if used in extreme conditions.

Only trucks with the Cold Store option may be used inside cold storage. Specific oil designed for cold stores must be used.

These trucks are identified by their Cold Store label.

Area of Use

Trucks with the Cold Store option may be used in two different areas:

- **operating range 1**: the truck can operate at a temperature of -5 °C and, for short periods, at a temperature of -10 °C. It must be parked outside of the cold store.
- **operating range 2 (Entry / Exit applications)**: the truck must be used alternately inside and outside of the cold store. It can withstand temperatures between -30 °C and +45 °C. Specific rules should be followed so as not to damage the truck and to avoid the occurrence of streaming (see the following paragraph). The truck is parked outside of the cold store.

Precautions for Use

The difference in temperature between the cold store and the room temperature zone may result in the formation of condensation water.

This water can freeze when the truck goes back into the cold store and jam the moving parts of the truck.

Streaming occurs if the truck remains outside of the cold store for more than ten minutes. Therefore, it is essential to leave the truck outside of the cold store for 30 minutes so that the condensation disappears.

⚠ DANGER

If the condensation freezes in the cold store, it is prohibited to operate the jammed parts.

This could cause permanent damage to the truck.

Parking

The truck must be parked outside of the cold store.

Parking inside the cold store could cause serious damage to the electrical and mechanical equipment (seals, hoses, rubber and synthetic parts).

⚠ CAUTION

Do not leave discharged or unused batteries in the cold store.

They could be permanently damaged.

Parking the truck.

⚠ WARNING

Risk of injury

Do not park the truck on a slope. If this is absolutely necessary, make sure it is safely secured using chocks.

Never leave the truck with the load in the raised position.

Parking the truck

– Immobilise the truck.
– Lower the fork arms.
– Switch off the ignition (key or electronic key).
– Press the emergency off switch.

Restarting work

– Switch on the ignition again (key or electronic key).
– Pull the emergency off switch.

Handling the battery

Battery type

Trucks can be fitted with different types of battery. Comply with the information indicated on your battery's type plate, as well as with its features.

⚠ WARNING

The weight and size of the battery influence the stability of the truck.

The new battery must weigh the same as the old one. Do not remove extra weight or change its position.

⚠ CAUTION

Be careful not to damage any wiring when replacing the battery.

Order picking

Maintenance personnel

The battery must be replaced by specially trained personnel. Personnel must follow the manufacturer's instructions for the battery, the charger and the truck.

It is also necessary to follow the battery maintenance instructions.

Fire protection measures

⚠ WARNING

Do not smoke or create a flame when handling batteries. There must be no combustible material or tools that produce sparks within a minimum radius of 2 m around the truck and the battery charger.

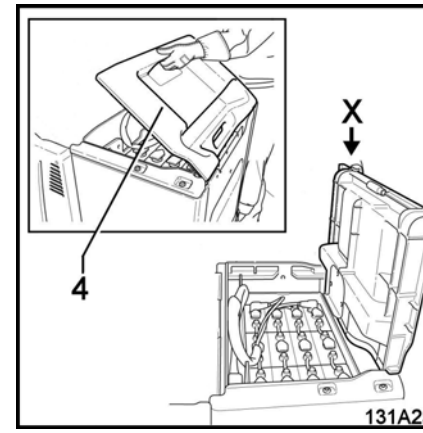
The work area must be well ventilated. Fire extinguishers must be provided and located near the work area.

Parking the truck securely

When the battery is being worked on, the truck must be parked safely. The truck can only be

restarted when the covers and connectors have been put back in the operating position.

Opening the battery cover



- Stop the truck and lower the forks.
- Turn off the ignition and remove the key.
- Press the emergency off switch.
- Lift the cover (4) in the direction of the forks until it reaches its upper stop (X).

To close, return the cover to the(4)horizontal position using its handle.

⚠ CAUTION

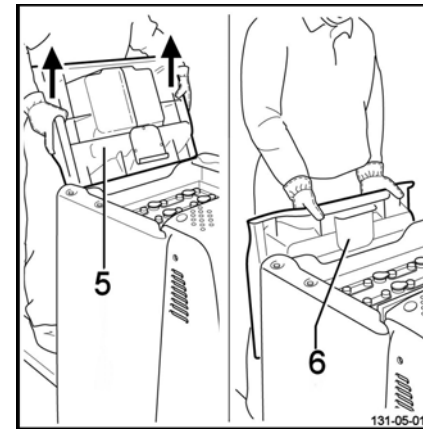
The cover is rather heavy and must be handled with care. The wearing of gloves is recommended.

⚠ CAUTION

Keep fingers away from moving parts to avoid any risk of them being trapped.

NOTE

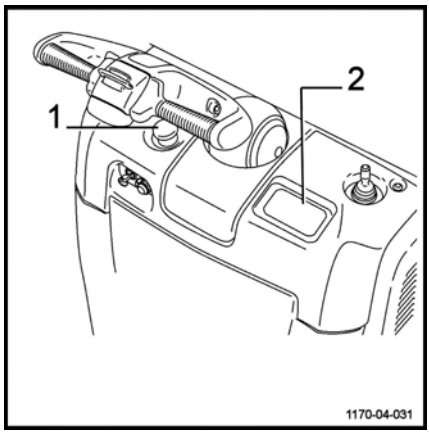
It is possible to remove the cover (5) after opening it fully. Release it vertically for easy access to the battery components.



NOTE

A hook (6) makes it possible to hang the cover on the edge of the battery compartment.

Battery charging with an external charger



- After use, move the truck to the charging station.
- Stop the truck, lower the forks and switch off the ignition.
- Press the emergency stop switch (1).
- Open the cover on the battery compartment.
- Disconnect the battery connector (refer to chapter 5 on disconnecting and connecting the battery connector).
- Plug the battery connector into the socket on the charging station.
- Now switch the charger on as directed in its specific instructions.
- When charging is complete and the charger has stopped, unplug the charger and reconnect the battery connector to the truck.
- Close the cover on the battery compartment.
- Check the charge status on the truck's multifunction indicator (2) after pulling out the emergency stop switch and switching on. The truck is now ready for use.

⚠ WARNING

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

To avoid any sparks, connect the battery connector before switching the battery charger on and disconnect it after switching the charger off.

⚠ DANGER

Risk of explosion or fire

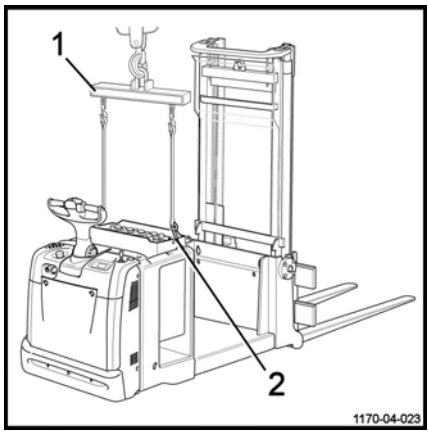
Charge the battery in a well-ventilated area that is free from combustible substances.

- Make sure that the charger is compatible with the truck's battery in terms of voltage and charging current (refer to the instructions for the charger).

- Gel electrolyte batteries require a specific setting for the discharge indicator and the charger.
- Ensure correct "+" and "-" polarity when connecting the battery and charger connectors (do not reverse the connectors).
- The connectors are fitted with a locating device to ensure that they are connected the right way round. Regularly check the presence and condition of this device.

Vertical access battery

Changing the battery using a hoist



– Lower the fork arms completely.
– Open and remove the battery compartment cover.
– Disconnect the battery connector.
– Position the handling device (1) above the battery compartment.
– Attach the slinging hooks (2) to the battery compartment.

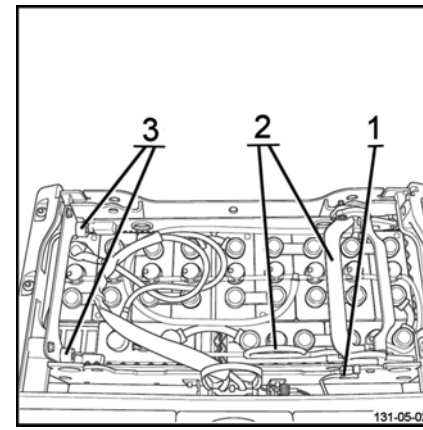
NOTE

Using secured hooks is recommended.

– Remove the battery.
– Replace the battery by carrying out this procedure in reverse.

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

Side access battery: selection of battery compartment opening side



Depending on the installation, you can choose which side the battery is changed.

To switch the battery removal direction:

– Turn around the stop with its rubber buffers (3).

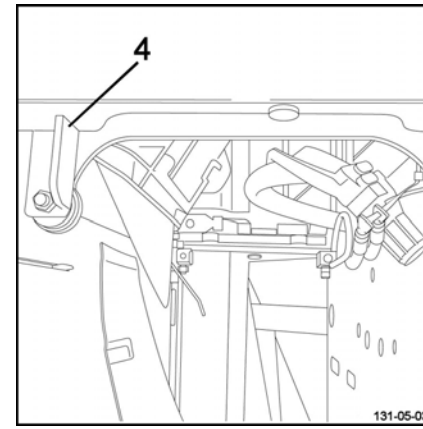
– Turn around the locking system (2).

– Turn around the battery locking safety sensor (1).

Once the stop and its rubber buffers have been turned around, carry out the following two adjustments:

- 1) Battery stop adjustment
- 2) Buffer adjustment

1) Battery stop adjustment



– When fitting the buffer support stop, ensure that it is correctly positioned against its two brackets without any play (4).

2) Buffer adjustment

– Once the buffer support stop is locked in place, ensure that the buffers (3) are adjusted to the correct height. They are adjustable in order to ensure proper contact with the battery tabs.

NOTE

The buffers must not catch the battery compartment when the battery is being changed.

Side access battery: unlocking - locking the battery

Battery locked

The handle is in the horizontal position and the battery tabs (2) are held by the hooks (3).

Unlocking the battery

- Open the battery hood.
- Raise the handle (1) vertically until it reaches the stop to unlock the battery.

DANGER

Risk of losing the battery

Do not use the truck when the battery is unlocked.

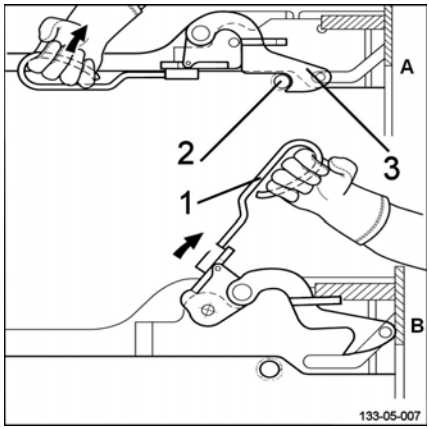
WARNING

Handling the battery

Once the battery is unlocked, it can be moved.

NOTE

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



Locking the battery

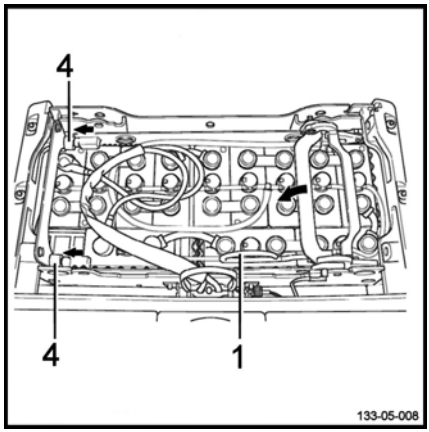
When the battery is in contact with the pads (4):

- Lock the battery by lowering the handle (1) towards the battery until it reaches the stop.
- Close the battery hood.

CAUTION

Risk of injury

During operations to lock and insert the battery, keep your fingers away from moving parts. Gloves should be worn to avoid any risk of trapping your fingers.



Handling the truck in an emergency

Emergency mast lowering

The safety valve (1) allows the mast to be lowered manually if the truck breaks down.

Proceed as follows:

– Loosen the valve (1) to empty the oil from the pump-motor unit. Drainage of the pump-motor unit causes the forks to lower.

⚠ DANGER

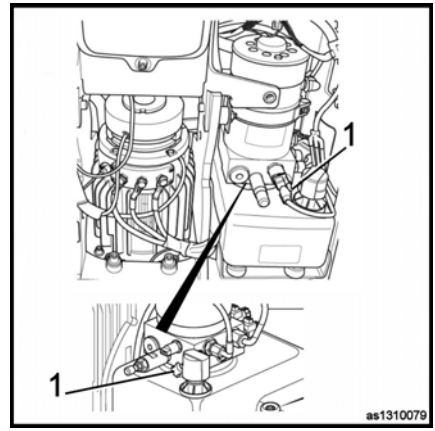
Danger of death.

Do not walk underneath the forks when in the raised position.

Ensure that no one is in the danger area before manually lowering the mast.

When the forks are fully lowered:

– Retighten the valve (1).



Truck towing procedure

It is not possible to tow the truck with no electrical function. The electromagnetic brake remains in the closed position.

You may only tow the truck with a rigid connection (tow bar) if the truck to be towed can no longer be braked. Check that the towing vehicle is sufficiently powerful to pull and brake the truck being towed.

⚠ CAUTION

Do not tow the truck by the tiller.

Unload the truck before towing it.

Moving with no battery

NOTE

In the event of an electrical fault or no battery, it is possible to unlock the brake manually.

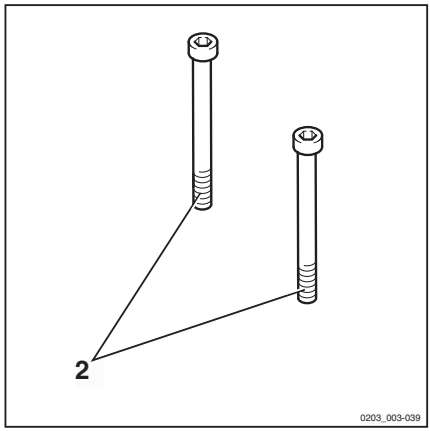
⚠ CAUTION

This procedure must only be carried out by authorised personnel.

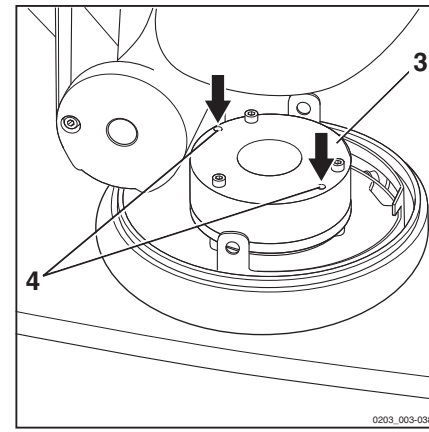
– Unload the fork arms, disconnect the battery.

– Remove the motor cover

– Obtain two screws M5 X 35 (2). ▷



– Screw the screws (2) all the way in the holes (4) in the brake (3). The brake is then deactivated.



⚠ CAUTION

The truck must only be towed at creep speed and with care.

– After towing, chock the truck to prevent it from moving.

– To re-establish brake operation, unscrew and remove the two screws (2).

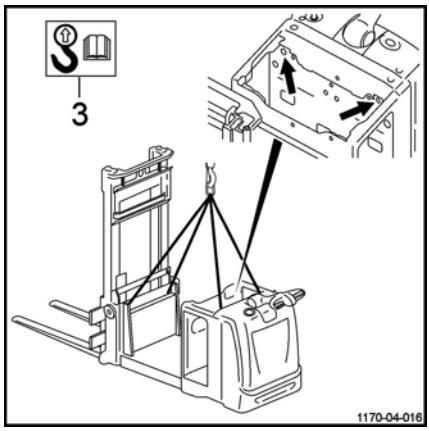
– Refit the covers

⚠ WARNING

It is essential that the covers are correctly refitted before the machine is used.

Handling the truck in specific situations

Slinging the truck



⚠ CAUTION

Risk of truck falling

Only use slings and a hoist of sufficient capacity. The slinging points are marked by a label (3). Remove the load before slinging the truck.

Check the weight of the truck (including battery) to select a suitable device. Refer to the technical features.

Observe the following recommendations:

- Shut off the truck and disconnect the battery connector.
- Remove any items that could fall.
- Protect all parts that come into contact with the lifting device.
- Attach the lifting device.

NOTE

Do not sling the truck by the tiller.

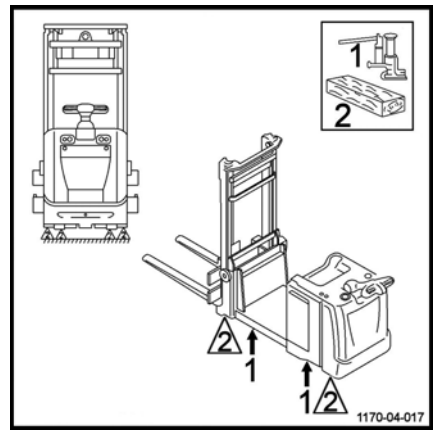
- Carefully lift the truck.

⚠ DANGER

Risk of falling

Make sure no one is under or near the truck when slinging the truck.

Lifting the truck



DANGER

Danger of truck tipping over

Truck lifting must be performed carefully.

For some work it is necessary to lift the truck.

– Switch off the ignition and disconnect the battery connector.

– Use a jack (1) with adequate lifting capacity.

Front section of the truck:

– Place the jack under the chassis in the corners (1). For safety reasons, chock with a piece of wood (2).

Maintenance of the load wheels:

– Place the jack (1) under the forks in the indicated locations (2).

CAUTION

Risk of the equipment becoming worn or damaged

Do not place the jack or the wedges under the platform of the truck.

WARNING

Risk of serious injury and/or serious damage to equipment

Always properly immobilise and chock the machine after lifting it.

Truck towing procedure

It is not possible to tow the truck with no electrical function. The electromagnetic brake remains in the closed position.

Truck towing is authorised with a rigid connection (tow bar) if the truck to be towed can no longer be braked. Check that the towing vehicle is sufficiently powerful to pull and brake the truck being towed.

Moving with no battery

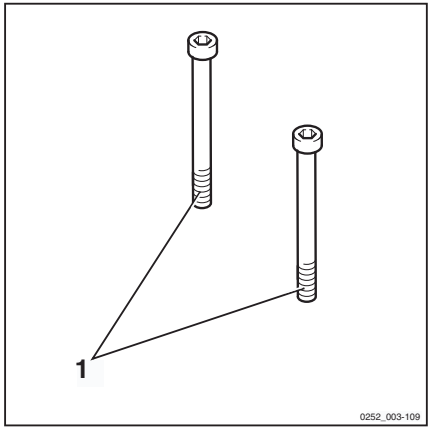
NOTE

In the event of an electrical fault or no battery, it is possible to unlock the brake manually.

CAUTION

This procedure must be carried out by authorised personnel.

– Unload the fork arms, then disconnect the battery.



– Remove the engine cover.

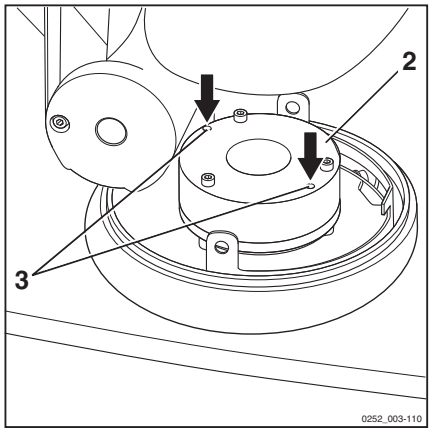
– Two M5 X 35 screws (1) are required.

– Screw the screws (1) to the brake (2) in the holes (3). The brake is then unlocked.

CAUTION

The truck must only be towed at creep speed.

– After towing, chock the truck to prevent it from moving.



– To re-establish brake operation, unscrew and remove the two screws (1).

– Refit the covers.

WARNING

It is essential that the covers are correctly refitted before the machine is used.

Carefully refit the components.

Transporting the truck in the lift

The truck must only be taken in lifts with an adequate loading capacity that are designed for this purpose, and for which authorisation has been received from the operator. Inside the lift, the truck must be immobilised so that no part is in contact with the wall of the lift cage.

A minimum safety distance of 100 mm from the walls of the lift must always be observed.

Anyone transported with the truck must only enter the lift after the truck has been correctly immobilised and they must exit 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.

5

Maintenance

General maintenance information

General

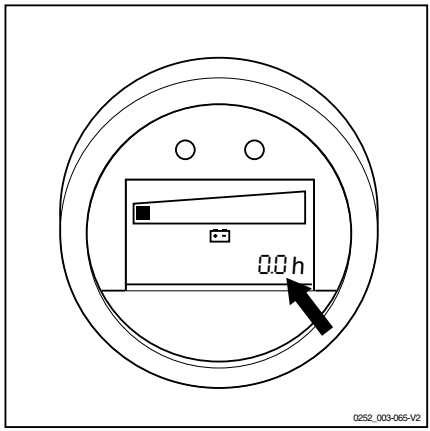
The following instructions contain all the information needed for truck maintenance. It is necessary to carry out the various maintenance operations according to the maintenance plan. The truck will then be ready for service, will continue to be reliable and the warranty can be applied.

Service plan

Maintenance work must be carried out according to the hour meter. Please consult the truck's maintenance plan.

The service plan is followed by advice to facilitate work.

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



Grade and quantity of lubricants and other consumables

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

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

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

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

All containers used to pour oil must be clean.

Servicing and maintenance personnel training and qualification

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

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

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

Battery maintenance staff

Batteries must only be recharged, maintained and changed by specially trained personnel. Personnel must follow the manufacturer's instructions of the battery, the battery charger and the truck.

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

Maintenance operations that do not require special training

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

In this case, it is not necessary to have a qualification such as that required for maintenance of batteries and chargers.

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

Ordering spare parts and consumables

Spare parts are provided by our spare parts service department. You will find the information required to place an order in the spare parts and fitting catalogue.

Only use spare parts recommended by the manufacturer.

Unauthorised spare parts may increase the risk of accidents due to faults relating to quality or incorrect choices. Anyone who uses non-compliant spare parts must assume full responsibility in the event of an accident.

Maintenance safety instructions

Servicing and maintenance measures

To avoid accidents during servicing and maintenance operations, take all necessary safety measures, such as, for example:

ensuring that there is no risk of the truck moving or starting up unexpectedly (remove the battery connector).

Working on the electrical equipment

Operations on the truck's electrical system must only be carried out when there is no voltage supply.

Operating checks, testing and adjustment work on parts supplied with voltage must only be carried out by personnel:

- who have received detailed instructions
- who have been authorised to perform this work
- who have taken the necessary precautionary measures.

Rings, metal bracelets etc., must be removed before carrying out any operations on electric components.

Remove the electric equipment (which comprises electric components such as the traction controller) before carrying out any welding operations. This precaution prevents this electric equipment from being damaged.

Operations on the electric system require the consent of the manufacturer.

Safety devices

After any repair or maintenance work, it is necessary:

- to refit all safety devices
- to check these for correct operation.

Recommended lubricants

⚠ CAUTION

Damage to equipment if non-recommended lubricants are used.

Only use recommended lubricants. Only the lubricants listed below are approved by the manufacturer. Do not mix lubricants. If in doubt, please contact the After-Sales Service Centre.

Hydraulic oil

Recommended oil for standard use:

ISO-L-HM 46 as per ISO 6743-4 or ISO VG46-HLP as per DIN 51524-2.

Recommended oil for heavy-duty use:

ISO-L-HM 68 as per ISO 6743-4 or ISO VG68-HLP as per DIN 51524-2.

Recommended oil for the cold store version:

ISO-L-HM 32 as per ISO 6743-4 or ISO VG32-HLP as per DIN 51524-2.

Transmission oil

Recommended oil:

SAE 85W90 API GL4

Aerosol can for chains

Standard chain spray.

If in doubt, please ask your local dealer for advice. You should also consult your local dealer if a representative of a third party company offers you an oil product that is not specified in these operating instructions.

Multi-purpose grease

Lithium soap grease with EP agents and MoS 2 **KPF 2N - 20** complying with the standard DIN 51825.

ENVIRONMENT NOTE

Used oil must be stored safely until it is disposed of in compliance with environmental protection measures. No one should have access to the used oil. Do not dispose of used oil in drains or allow it to penetrate soil.

ENVIRONMENT NOTE

Do not allow the product to disperse into the environment. Packaging that has contained this product is treated as waste. Contaminated packaging must be completely emptied and may then be recovered following a thorough clean.

Technical data for inspection and maintenance

Assembly	Consumables/lubricants	Capacities/Setting values
Main hydraulic system	Maximum hydraulic oil	9.5 l
Transmission gear	Transmission gear oil	1.5 l
Traction and pump motor	Fuses	Power 250 A, Quantity: 1
Steering motor	Fuses	Power 40 A, Quantity: 1
Control cable harness	Fuses	Control 7.5 A, Quantity: 1
Cold store control cable harness	Fuses	Control 10 A, quantity: 1
Steering motor		0.185 KW
Battery	Distilled water	As required
Joints	lithium-soap grease	As required

Accessing the technical compartment

– Fully raise the truck's fork arms to facilitate these operations.

⚠ CAUTION

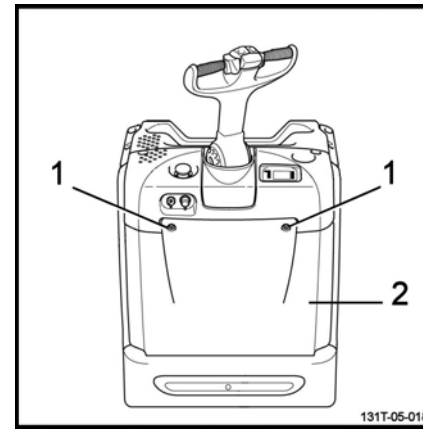
Electrical hazards

Before removing anything from the truck:

– Switch off the ignition.
– Press the emergency off switch.

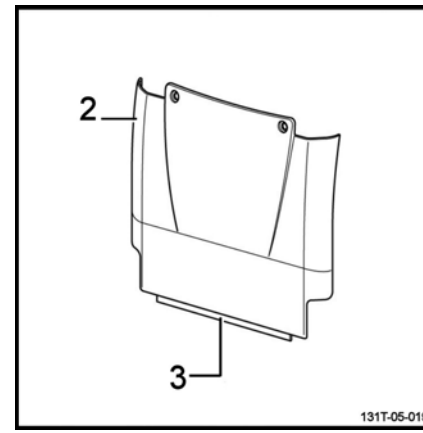
Opening the front hood ▷

– Unscrew the two screws (1) that hold the hood in place.
– Carefully remove the hood (2). Lay it on the side of the truck.



Closing the front hood ▷

– Position the tab (3) inside the chassis.
– Replace the hood (2).
– Tighten the two screws (1).



Maintenance plan as required

Depending on the application, environmental conditions and driving style, the following procedures should be carried out as required
Preparation
Cleaning the truck
Chassis and equipment
Checking the brake operation
Checking the condition of the roller frame
Wheels
Checking the wheels for wear
Electrical equipment
Checking the condition of the cables, connections and battery connectors
Check the battery acid level and the electrolyte level
Checking the fuses
Transmission
Regularly checking the transmission gear
Lift mast
Checking the load lift system

1000-hour maintenance plan

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000										✓	✖
Depending upon use, environmental conditions and driving style, the following procedures must be carried out in line with the intervals shown below.											
Before performing the procedures											
Clean the truck											
Error code history: read and delete											
Adjust the accelerator											
Adjust the lift control											
Labels: check the condition and the legibility											
Enter the next maintenance interval											
Transmission											
Transmission gear: visually check the mounting											
Transmission gear: check the oil level											
Transmission gear: check for leaks											
Traction motor: visually check the mounting											
Traction motor: clean the cooling fins											
Chassis, bodywork and fittings											
Battery hood: check											
Battery support: check the side stops and the mountings											
Changing the battery: check the lock (side access)											
Changing the battery: check the roller frames (side access)											
Changing the battery: grease the roller frames (side access)											
Check the stops/tipping protection											
Load wheels: grease the bearings											
Steering/wheels											
Steering unit: visually check the mounting											
Steering unit: visually check the mounting of the tiller and of the head of the steering unit											
Steering unit: clean, check and grease the pinion gear and the ring gear											

1000-hour maintenance plan

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000										✓	✖
Wheels: check for damage, the presence of foreign objects and for wear on the wheels											
Brakes											
Brakes: check for wear											
Brakes: check for any damage and check for leaks											
Operating component											
Accelerator: check											
Electrical equipment											
Battery: check the condition											
Battery: check the cables and sockets											
Cables and connectors: check the condition and positioning											
Electrical components: clean											
Fan: clean											
Pump motor: clean and check the brushes											
Height switch: check											
Hydraulic system											
Hydraulic system: replace the pressure filter											
Pump-motor unit: check the mounting											
Hydraulic system: check the oil level											
Hydraulic system: check for leaks											
Tilt cylinders: visually check the mounting											
Load lift system											
Mast: grease the support points											
Mast: grease											
Mast: check the mounting											
Lift cylinders, chains, rollers and end stops: check the condition, mounting and operation											
Lifting chain: clean, adjust and grease											
Fork carriage: check											
Protective device: check											
Final checks											

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000										✓	✖
Carry out a functional test and a test drive											
Attach the maintenance label											

3000-hour maintenance plan

Additional maintenance operations every 3000 hours
Depending upon use, environmental conditions and driving style, the following procedures must be performed every 3000, 6000 and 9000 hours
Information
Carry out all 1000-hour maintenance work
Transmission
Drain the transmission gear oil
Hydraulic system
Clean the suction filter of the circuit
Clean the screen filter
Replace the breather filter for the circuit
Drain the hydraulic system

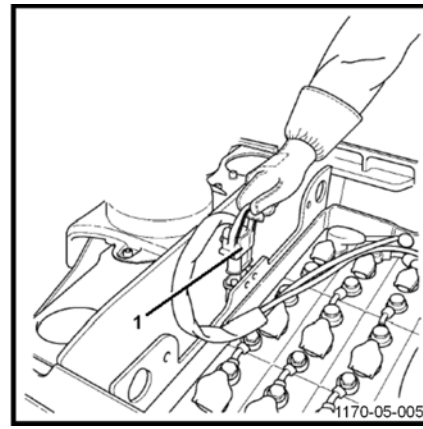
Chassis, bodywork and fittings

Cleaning the truck

Cleaning instructions

– Always park the truck following the instructions provided.

– Disconnect the battery connector (1).



Washing the outside of the truck

Disconnect the battery before cleaning the truck. Use a steam jet cleaner or products with a strong degreasing effect with extreme care because they dilute the grease inside the sealed-for-life bearings. These bearings cannot be greased by hand and may be permanently damaged by these cleaning methods.

⚠ WARNING

Do not use flammable liquid to wash the truck. The safety regulations mentioned above must be followed to prevent sparks which could cause a short circuit (remove the battery connector). All components that are sensitive to moisture (particularly electrical components) must be protected if the truck is to be cleaned. Follow the manufacturer's instructions when using the cleaning product.

– Clean the truck with a cleaning product mixed with water. Use a sponge and cloths.

– Specifically clean the oil filler holes and their surrounding area and also the lubricating nipples.

– Lubricate the required locations (hinges and seals).

Cleaning the electrical system

⚠ WARNING

Do not expose electric motors or any other electrical equipment, brakes and bearings to a direct jet.

NOTE

Only use dry cleaning products. Do not remove the cowlings and other covers.

– Clean the electrical parts with a non-metal brush and dry with lightly compressed air.

After washing

– Carefully dry the truck (with compressed air, for example).

– Start the truck, in accordance with the instructions.

If there are still traces of moisture in the motor despite the precautions taken, dry it using compressed air (clean and dry), otherwise there is a risk of short-circuit. ONLY then may the truck be switched back on and returned to service while preventing any corrosion.

Clean the battery and its compartment ▷

⚠ WARNING

Risk of injury

This task must be carried out by a person wearing acid-resistant protective gloves and industrial goggles. Follow the safety regulations described in previous chapters.

ENVIRONMENT NOTE

Do not pour acid-bearing wash water down the drain. For more information, see the battery instructions.

Gel battery

– Check for traces of sulphate in the compartment and frame.

– If there is only minimal sulphate build-up, just wipe the top of the cells with a damp cloth.

– If sulphate build-up is heavy, you will need to take out the battery, jet wash it and clean the frame.

Lead battery

– Check that there are no electrolytes at the bottom of the compartment by connecting the rubber suction bulb supplied with the battery to the plastic pump tube.

– Pump off any electrolyte that may have spilled between the cells.

– Clean the top of the cells with a damp cloth.

⚠ CAUTION

In case of heavy sulphate build-up or excessive electrolyte spillage, please contact the After-Sales Service Centre.

General information on battery maintenance

⚠ DANGER

Risk of injury

Before carrying out any operations on the electric installation, turn the truck power supply off. Disconnect the battery connector.

Precautions to be taken during battery maintenance

The plugs on the battery cells must always be dry and clean.

Neutralise any spilt battery acid immediately.

The battery terminals and lugs must be clean, lightly covered with grease for terminals and securely tightened.

Charging the battery

During the charging process, the surface of the battery cells must be clear to ensure sufficient ventilation.

Do not place metal objects on the battery.

The battery cover must remain open during charging. See the chapter entitled **Battery charging using an external charger.**

Battery type

Lead or gel batteries are used. It is advisable to choose a compatible charger.

Before charging, ensure that the charger is suitable for the type of battery.

⚠ CAUTION

Gel batteries are subject to specific charging, maintenance and treatment instructions. A non-compatible charger may result in a battery failure.

Observe the manufacturer's recommendations.

NOTE

- *The discharge indicators used to check the battery must also be suitable for the type of battery.*
- *Contact the relevant After-Sales Service Centre.*

Charging the battery

– Park the truck in an area without condensation or pollution and with sufficient ventilation.

– Stop the truck.

– Pull the emergency stop handle.

– Open the battery hood.

– Do not disconnect the battery plug.

⚠ CAUTION

Do not expose the charger to water, rain, oils, grease or any similar substances.

The charger becomes hot during the operation.

⚠ CAUTION

Do not obstruct the ventilation. Allow the charger to cool down for 10 minutes after charging is complete before touching it. Do not use the charger out of the truck.

Steering and wheels

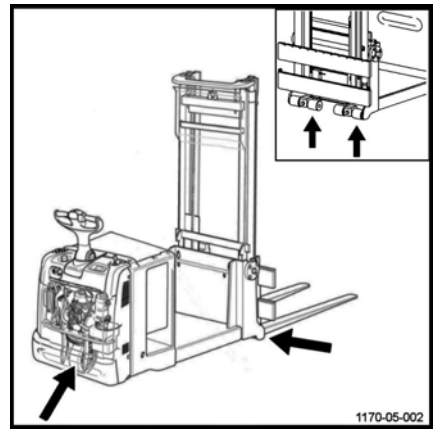
Servicing the wheels

Checking the tyres and the wear on the wheels ▷

The tyre tread of the drive wheel and the load wheels must not be damaged.

Dimensions	
Drive wheel	254 x 102 mm
Load wheels	85 x 105 mm

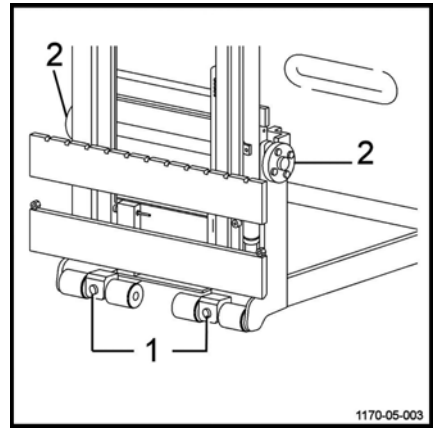
– Replace damaged or worn wheels with new wheels, and damaged or worn rollers with new rollers.



Lubricating the load wheel axles and mast tilt bearings ▷

– Lubricate the 2 grease nipples on the load wheel axles (1)

– Lubricate the 2 grease nipples on the mast tilt bearing (2)



Electrical equipment

Electrical system maintenance

Checking the cable and fuse connection mountings ▷

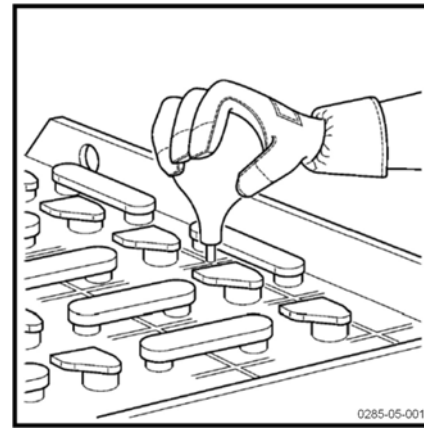
⚠ WARNING

Electrical hazards

Stop the truck and disconnect the battery before carrying out the following checks.

– Remove the front hood.
– Check the condition of the fuses.
– Check that the cable terminals are correctly mounted.
– Retighten all the cable mounting screws.

Checking the battery acid level and electrolyte density



⚠ WARNING

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

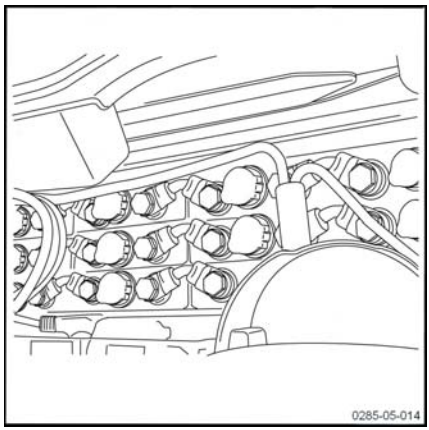
- Always wear suitable protective equipment (industrial goggles, safety gloves) when working on a battery.
- Never wear a watch or jewellery when handling battery acid.
- Do not allow any acid to get onto the clothing or skin or into the eyes. If this does happen, rinse immediately with plenty of clean water.
- Immediately rinse away any spilled battery acid with plenty of water.
- In case of injury, seek medical advice immediately.
- Always follow the safety information provided by the battery manufacturer.
- Comply with the regulations in force.

- Check the battery acid level and electrolyte density according to the battery manufacturer's recommendations.
- The cell covers of the battery must be kept dry and clean.
- Any spillage of battery acid must be neutralised immediately.

ENVIRONMENT NOTE

Dispose of any used battery acid in accordance with the regulations.

Checking the condition of cables, terminals and battery connector



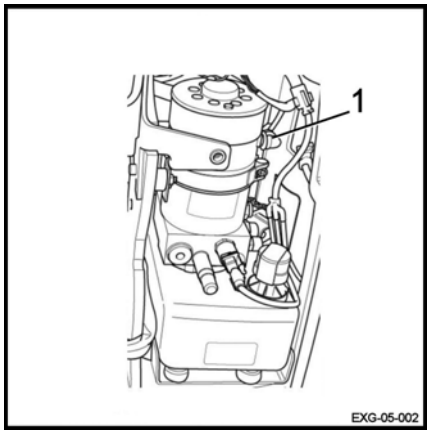
- Check that the cable insulation is undamaged and that there are no signs of overheating at the connections.
- Check that the "+" and "-" output terminals are not sulphated (presence of white salt).
- Check the condition of the battery connector contacts and the presence of the keying pin.
- If the truck is equipped with an on-board charger, check the condition of the spindles of the mains socket. No oxidation must be present and the wires must not be damaged.

⚠ CAUTION

The points mentioned above can cause serious incidents. In case of an incident, contact our service engineers as quickly as possible.

Servicing the pump motor

Checking the electrical connections



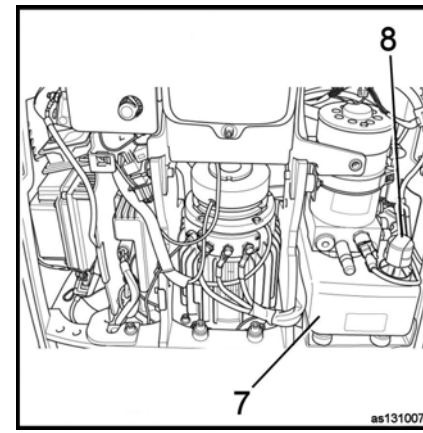
- Check the mounting, condition and insulation of the pump motor (1).
- Eliminate any traces of oxidation.
- Replace faulty cables.

NOTE

Oxidised connections and faulty cables will result in a drop in voltage, leading to malfunctions.

Hydraulic systems

Checking the hydraulic oil level



To check the hydraulic oil level, proceed as follows:

– Immobilise the truck.

– Lower the forks completely.

– Switch off the truck and press the emergency off switch.

– Disconnect the battery connector.

– Remove the hood of the technical compartment.

– Check the oil level (7).

To ensure proper usage of the truck functions, the oil level (7) must be between the minimum and maximum marks on the tank.

– Unscrew the plug (8). If necessary, top up via the opening.

– Tighten the plug (8) at the end of the operation.

⚠ CAUTION

Deterioration or destruction of the equipment

Only use hydraulic oil that complies with the specifications (see lubrication table).

– Refit the hood of the technical compartment.

– Reconnect the battery connector.

– Return the truck to service.

Draining the circuit

– Lower the forks to the ground to eliminate pressure in the hydraulic circuit.

– Switch off the ignition and unplug the battery connector.

– Use the suction drainage kit.

– Remove the breather and insert the discharge hose into the filler port down to the bottom of the tank.

– Drain the oil.

NOTE

Dismantling the pump unit is not recommended.

Filling up

– Fill up the tank through the filler hole.
– Change the breather filter.
– Tighten the plug.
– Operate the lifting mechanism several times and bleed the circuit using the screws provided on the lift cylinders.

CAUTION

Deterioration or destruction of the equipment

Only use hydraulic oil that complies with the specifications (see lubrication table).

Lift mast

Types of lifting masts

Working on the lift mast

⚠ WARNING

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

When working on the front of the truck with the mast or fork carriage raised, fit a safety device to prevent the mast from being lowered accidentally.

⚠ WARNING

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

After all work is completed, re-secure and clean the mast protective screens if necessary.

Standard lifting mast

OPERATION

When lifting the inner strut, the return pulley of the chain is also raised in such a way that the fork carriage is lifted at a ratio of 2:1.

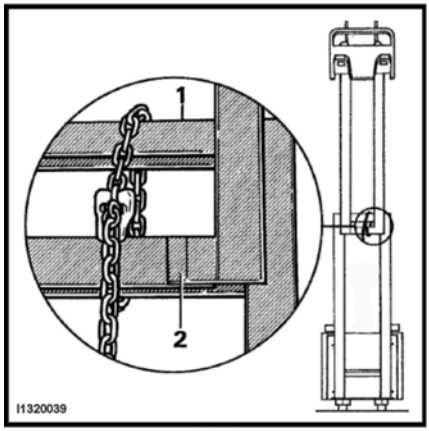
Safety device for the standard lift mast

⚠ WARNING

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

Choose a chain whose strength is far greater than the weight of the mast.

– Raise the mast.
– Connect the chain after passing it over the fixed strut (2) and beneath the cross member of the inner strut (1).
– Lower the inner strut until the safety chain is under tension.



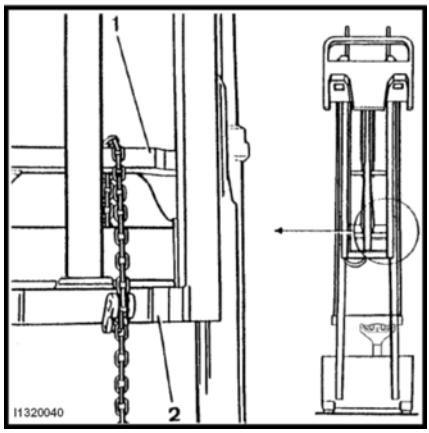
Dual lifting mast

NOTE

The advantage of this mast is that it can be used in areas with low ceilings such as cellars, lorries, boat hulls etc., allowing maximum use of its free lifting ability.

OPERATION

The fork carriage is raised until free lifting through the return pulley of the centre cylinder chain. It moves at twice the speed of the cylinder. Then the inner strut is lifted by the two side cylinders and brings the fork carriage with it. The centre cylinder is mounted on the inner mobile strut.



Safety device for the Duplex lift mast

WARNING

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

Choose a chain whose strength is far greater than the weight of the mast.

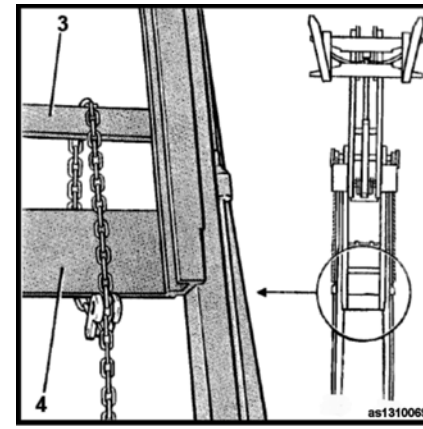
– Lift the mast.
– Connect the chain after passing it over the cross member of the fixed strut (1) and the cross member of the inner strut (2).

– Lower the inner strut until the safety chain is under tension.
– Lower the fork carrying carriage to the bottom of its travel.

Triple lifting mast

OPERATION

The fork carriage is raised until free lifting through the return pulley of the centre cylinder chain. Then the two outer cylinders raise the intermediate mast. Due to the chain return, the inner mast is raised at the same time. The centre cylinder is located in the inner mobile mast.



Safety device for the Triplex lift mast

DANGER

Danger of death and/or risk of serious damage to equipment.

Select a chain whose lifting strength is suitable for each type of mast. Observe the maximum recommended elevations.

– Raise the mast.
– Connect the chain after passing it over the cross member of the outer mast (4) and under the cross member of the centre mast (3).
– Lower the mast until the safety chain is under tension.
– Lower the fork carrying carriage to the bottom of its travel.

Specific mast maintenance

Checking the condition of mast mounting and its chains

- Thoroughly clean the mast guide rails and the chains.
- Inspect surfaces for wear and check rotation of rollers.
- Inspect the chains for wear, especially around the return pulleys.
- Check the chain fixings and anchorings.
- Replace any worn chains, or any chain that is stretched by 3 %.
- Inspect the fixing elements between the mast and the chassis.
- Inspect the fixing collars of the mast cylinders.

Adjusting the length of the mast chains

NOTE

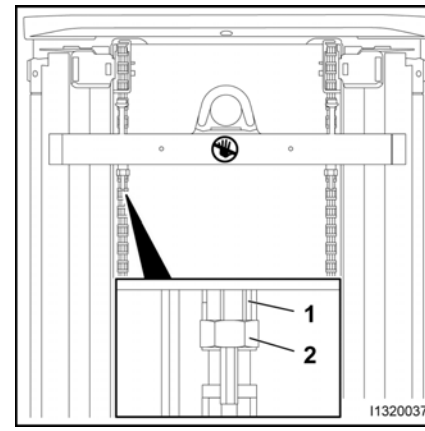
Depending on the use of the truck, the chains are liable to stretch and as a result they have to be adjusted regularly.

– Lower the mast completely.
– Undo the lock nut (2).
– Place the chains under slight tension by tightening the nut (1).
– Retighten the lock nut (2).

⚠ CAUTION

Deterioration or destruction of the equipment.

After this adjustment, check that the fork carriage does not reach the mechanical stop at the top of the mast during the maximum lift. If this is the case, slacken or replace the chains. We recommend that this operation be carried out by our After-Sales Service Centre.



Cleaning and lubricating the chains

NOTE

If the lifting chain is too dirty, clean it.

– Place a recipient underneath the elevator.
– Clean using a paraffin-based product (petroleum, fuel oil etc.). Observe the manufacturer's safety instructions.
– If using a steam jet cleaner, do not use additives.
– Immediately dry the chain and its joints with compressed air. Move the chain frequently during this operation.
– Lubricate the chain immediately using a special aerosol chain lubricant.

⚠ CAUTION

Deterioration or destruction of the equipment.

Chains are safety components. Use of cold cleaning agents, chemical products, acid or chlorinated products could destroy the chains.

NOTE

Use of high pressure liquid cleaning devices is not advisable.

⚠ DANGER

Danger of death and/or risk of serious damage to equipment.

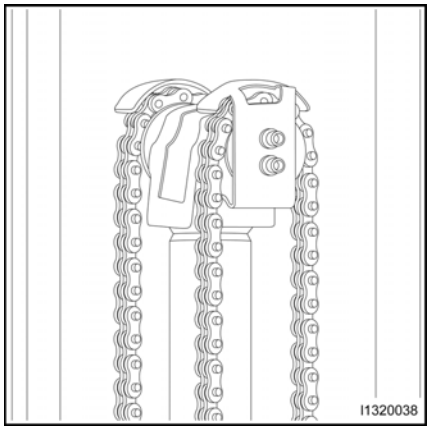
On trucks fitted with macrolon mast protection, clean the translucent screen thoroughly after lubrication operations.

Lubricating the mast ▷

– Coat the guidance surfaces, the return pulleys and chains with a special aerosol chain lubricant.

NOTE

For equipment that is used in the food industry, use a dry lubricant instead of an aerosol.



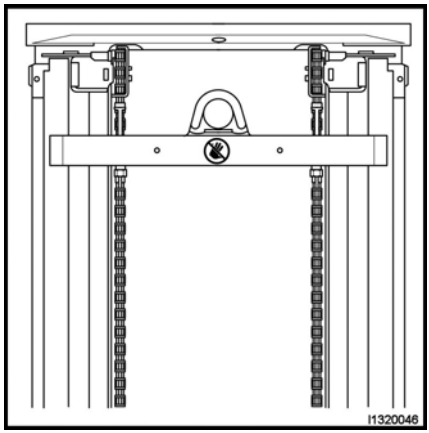
Checking the condition and mountings of the mast protectors ▷

It is important to inspect the condition of the mast protection screens and to check that the mountings are tightened.

⚠ WARNING

Risk of serious injury and/or serious damage to equipment

Keep hands away from moving parts and assemblies without first lowering the equipment to the ground and disconnecting the battery.



Putting Out of Commission and Storage

Long-term truck storage

The following work must be carried out on the truck to prevent corrosion if it needs to be stored for a long period of time. If the truck is to be stored for more than two months, it must be positioned in a clean and dry area. The area must be well-ventilated with no risk of freezing.

Work prior to storage

- Clean the truck thoroughly.
- Check the hydraulic oil level and refill if necessary.
- Coat any unpainted metal parts with a thin layer of oil or grease.
- Grease all hinges and joints.
- Check battery condition and electrolyte density. Maintain the battery in accordance with the manufacturer's requirements. (Follow the instructions).
- Spray contacts with an aerosol product designed for contacts.
- Raise and chock the truck so that the wheels do not touch the ground, in order to prevent irreversible deformation of the tyres.
- Cover the truck with a cotton cover to protect it from dust.

⚠ CAUTION

We recommend that you do not use a plastic sheet as this encourages condensation to form.

Consult the service department for further measures to take if the truck must be stored for a longer period of time.

Recommissioning after storage

If the truck has been stored for more than six months, it must be checked carefully before being recommissioned. This check is similar to the workplace accident prevention inspection. It is therefore necessary to check all points and systems that are important for truck safety.

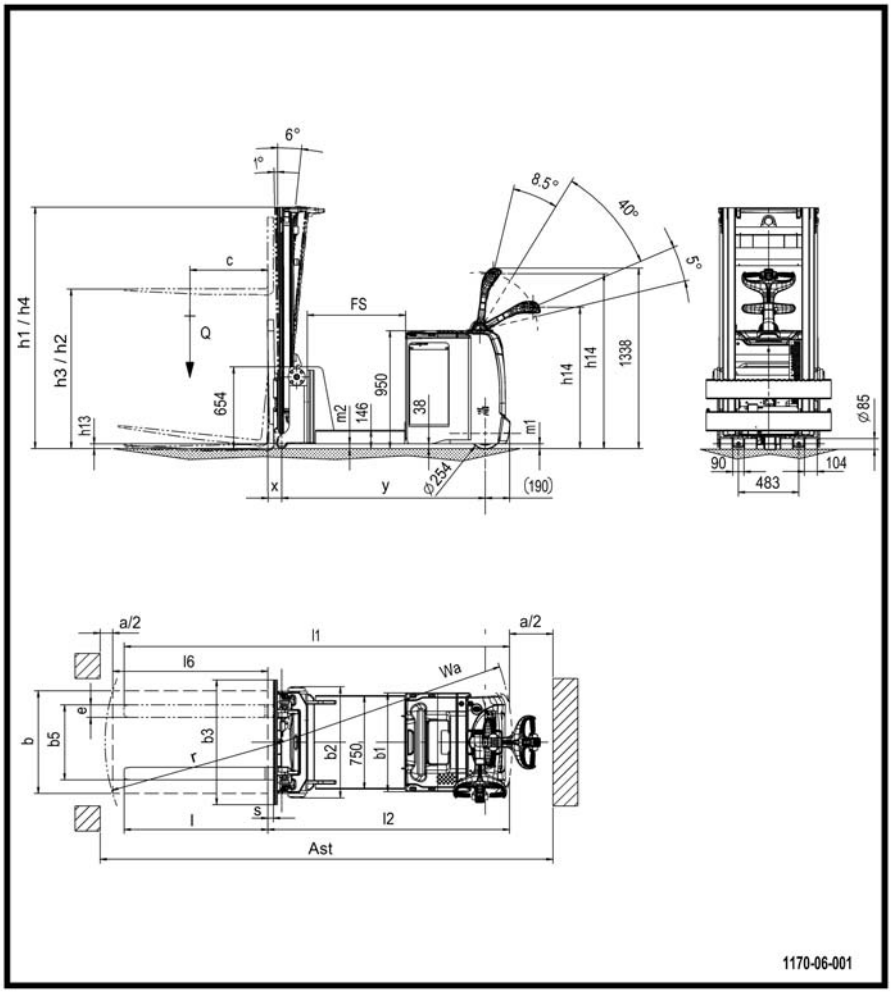
Carry out the following operations:

- Clean the truck thoroughly.
- Grease all hinges and joints.
- Check the condition and density of electrolyte, and, if necessary, recharge the battery.
- Check that there are no traces of condensation water in the hydraulic oil. Drain if necessary.
- Carry out the same maintenance work as for the first time it was commissioned.
- Commission the truck.
- In particular, check the following during start-up:
  - traction, control and steering
  - brakes (service brake and parking brake)
  - lifting device

6

Technical data

Technical Data Sheet EXG 10-12-16



DESCRIPTION					
1.1	Manufacturer		STILL		
1.2	Model type		EXG16	EXG12	EXG10
1.3	Drive type: battery, diesel, petrol, LPG, mains power		Battery		
1.4	Driving: manual, pedestrian, standing, seated, order picking		Pedestrian		
1.5	Rated capacity	Q (kg)	1600	1200	1000
1.6	Centre of gravity	c(mm)	500	500	500
1.8	Distance from the centre of the wheel to the front face of the forks	x (mm)	105	100	100
1.9	Wheelbase	y (mm)	1635	1270	1270

WHEELS			EXG16	EXG12	EXG10
3.1	Tyres: polyurethane, rubber		Polyurethane for slippery floors		
3.2	Front wheel (drive wheel) dimensions	mm	∅ 254 x 102		
3.3	Front / rear wheel dimensions (load side)	mm	4 ∅ 85 x 105		
3.5	Number of front / rear or drive side / load side wheels		1 x /4		
3.7	Rear track width, load side	mm	483		

DIMENSIONS			EXG16	EXG12	EXG10
4.1	Mast / fork tilt, front / rear	a/b (°)	1/6		
4.9	Height of tiller in driving position, min/max.	h14(mm)	1103/1287		
4.15	Height of forks when lowered	h13 (mm)	46	41	41
4.19	Total length	l1 (mm)	2920	2550	2550
4.20	Length to front of forks	l2 (mm)	1920	1550	1550
4.21	Total width	b1/b2 (mm)	790/890		
4.22	Fork arm dimensions	s/e/l (mm)	45/100/1000	40/80/1000	40/80/1000
4.24	Fork carriage width	b3(mm)	minimum 800		
4.25	Fork arm spread, min/max	b5(mm)	225/753	205/733	205/733
4.31	Ground clearance, mast	m1 (mm)	40		
4.32	Ground clearance, centre of truck	m2 (mm)	40		

4.33	Aisle width with a 1000 x 1200 pallet crosswise	Ast (mm)	See calculation formulas		
4.34	Aisle width with an 800 x 1200 pallet lengthwise	Ast (mm)	See calculation formulas		
4.35	Turning radius	Wa (mm)	1845	1480	1480

PERFORMANCE DATA			EXG16	EXG12	EXG10
5.1	Travel speed (with/without load)	km/h	6 forward / 5 reverse		
5.2	Lifting speed with/without load	m/s	0.11 / 0.23		
5.3	Lowering speed with/without load	m/s	0.29 / 0.39		
5.10	Service brake		Electromagnetic		

DRIVE			EXG16	EXG12	EXG10
6.1	Traction motor, 60 minutes	kW	3		
6.2	Lift motor, 15 %	kW	3		
6.3	Battery type according to DIN 43531/35/36 A, B, no		4/5 PzS SV — 4 PzS SL	3/4 PzS SV — SL	3/4 PzS SV — SL
6.4	Battery voltage and capacity (5h)	V/Ah	24 / —		
6.5	Battery weight (+/- 5%)	kg	See DIN/Battery type/Capacity		

MISCELLANEOUS			EXG16	EXG12	EXG10
8.1	Speed control		LAC		
8.4	Noise level at operator's ear	dB(A)	<70		

Loads per axle

	3 Pzs (VA)	3 Pzs B (SA)	4 Pzs (VA)	4 Pzs B (SA)	5 Pzs (VA)	Un-its	
EXG16 (mast 2844D) with tilt	Non-standard		2020	2085	2230	kg	Weight in running order
			1310	1295	1360	kg	Drive axle load, unladen
			710	790	870	kg	Load-bearing axle load, unladen
			730	710	780	kg	Drive axle load, laden
			2890	2975	3050	kg	Load-bearing axle load, laden
			738	788	663	mm	Free Space FS (load chassis)
			100 X 45 / 1000	100 X 45 / 1000	100 X 45 / 1000		Forks
EXG 12 (mast 2924D) with tilt	Non-standard	1885	2060	1985	Non standard	kg	Weight in running order
		1100	1180	1145		kg	Drive axle load, unladen
		785	880	840		kg	Load-bearing axle load, unladen
		550	620	590		kg	Drive axle load, laden
		2535	2640	2595		kg	Load-bearing axle load, laden
		523	373	423		mm	Free Space FS (load chassis)
		80 X 40 / 1000	80 X 40 / 1000	80 X 40 / 1000			Forks
EXG 10 (mast 2424D) with tilt	1930	1861	2035	1958	Non standard	kg	Weight in running order
	1125	1099	1180	1144		kg	Drive axle load, unladen
	805	762	855	814		kg	Load-bearing axle load, unladen
	660	635	715	680		kg	Drive axle load, laden
	2270	2226	2320	2278		kg	Load-bearing axle load, laden
	423	523	373	423		mm	Free Space FS (load chassis)
	80 X 40 / 1000	80 X 40 / 1000	80 X 40 / 1000	80 X 40 / 1000			Forks

VA: Vertical Access

SA: Side Access

Loads per axle

Note: Apron ISO 2B width: 800 mm.

Mast table

EXG10	Mast type	1924S	2424S	2924S	3324S	3824S
h3	Lift (mm)	1924	2424	2924	3324	3824
h3 + h13	Lift + fork height (mm)	1970	2470	2970	3370	3870
h1	Mast height HT retracted (mm)	1515	1765	2015	2215	2465
h4	Mast HT height extended (mm)	2485	2985	3485	3885	4385
h2	Free lift (mm)	150	150	150	150	150

EXG10	Mast type	1924D	2424D	2924D	3324D	3824D	3516T
h3	Lift (mm)	1924	2424	2924	3324	3824	3516
h3 + h13	Lift + fork height (mm)	1970	2470	2970	3370	3870	3562
h1	Mast height HT retracted (mm)	1440	1690	1940	2140	2390	1690
h4	Mast HT height extended (mm)	2485	2985	3485	3885	4385	4077
h2	Free lift (mm)	879	1129	1379	1579	1829	1129

EXG12	Mast type	1924S	2424S	2924S	3324S	3824 S	4224S	1924 D
h3	Lift (mm)	1924	2424	2924	3324	3824	4224	1924
h3 + h13	Lift + fork height (mm)	1970	2470	2970	3365	3870	4270	1970
h1	Mast height HT retracted (mm)	1515	1765	2015	2215	2465	2665	1440
h4	Mast HT height extended (mm)	2485	2985	3485	3885	4385	4785	2485
h2	Free lift (mm)	150	150	150	150	150	150	879

EXG12	Mast type	2424D	2924D	3324D	3824D	4224 D	3516T	4266T
h3	Lift (mm)	2424	2924	3324	3824	4224	3516	4266
h3 + h13	Lift + fork height (mm)	2470	2970	3370	3870	4270	3562	4312
h1	Mast height HT retracted (mm)	1690	1940	2140	2390	2590	1690	1940
h4	Mast HT height extended (mm)	2985	3485	3885	4385	4785	4077	4827
h2	Free lift (mm)	1129	1379	1579	1829	2029	1129	1379

Mast table

EXG16	Mast type	1844S	2344S	2844S	3244S	3744 S	4144S	1844 D
h3	Lift (mm)	1844	2344	2844	3244	3744	4144	1844
h3 + h13	Lift + fork height (mm)	1895	2395	2895	3295	3795	4195	1895
h1	Mast height HT retracted (mm)	1515	1765	2015	2215	2465	2665	1440
h4	Mast HT height extended (mm)	2405	2905	3405	3805	4305	4705	2405
h2	Free lift (mm)	150	150	150	150	150	150	879

EXG16	Mast type	2344D	2844D	3244D	3744D	4144 D	3516T	4266T
h3	Lift (mm)	2344	2844	3244	3744	4144	3516	4266
h3 + h13	Lift + fork height (mm)	2395	2895	3295	3795	4195	3567	4317
h1	Mast height HT retracted (mm)	1690	1940	2140	2390	2590	1690	1940
h4	Mast HT height extended (mm)	2905	3405	3805	4305	4705	4077	4827
h2	Free lift (mm)	1129	1379	1579	1829	2029	1129	1379

A

B

C

D

T

U

V

W

STILL GmbH

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