

# EKE 20 b

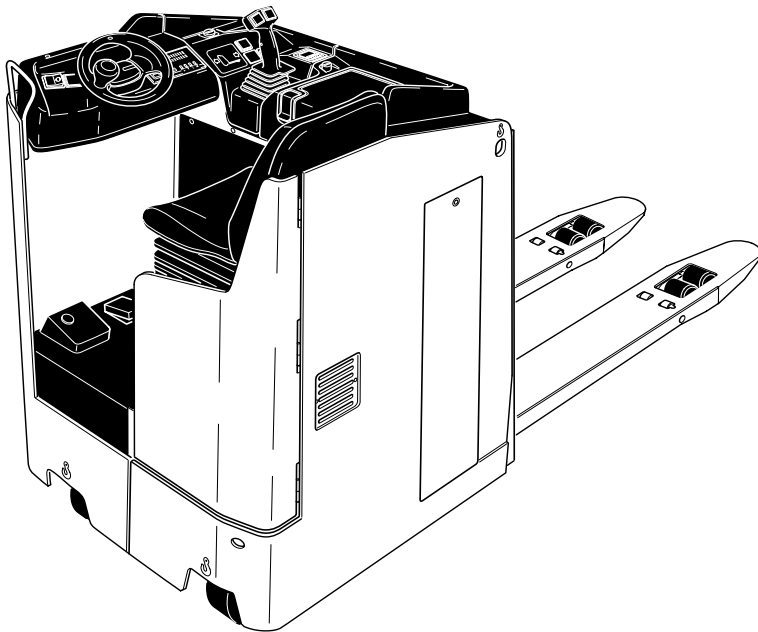
04.02-

## Operating instructions



50261576

04.02



# Foreword

The present ORIGINAL OPERATING INSTRUCTIONS are designed to provide sufficient instruction for the safe operation of the industrial truck. The information is provided clearly and concisely. The chapters are arranged by letter. Each chapter starts with page 1. The page identification consists of a chapter letter and a page number.

For example: Page B 2 is the second page in chapter B.

The operating instructions detail different truck models. When operating and servicing the truck, make sure that the instructions apply to your truck model.

Safety instructions and important explanations are indicated by the following graphics:



Used before safety instructions which must be observed to avoid danger to personnel.



Used before notices which must be observed to avoid material damage.



Used before notices and explanations.



Used to indicate standard equipment.



Used to indicate optional equipment.

Our trucks are subject to ongoing development. Jungheinrich reserves the right to alter the design, equipment and technical features of the truck. No guarantee of particular features of the truck should therefore be inferred from the present operating instructions.

## Copyright

Copyright of these operating instructions remains with *JUNGHEINRICH AG*.

Jungheinrich Aktiengesellschaft

Am Stadtrand 35  
22047 Hamburg - GERMANY

Telephone: +49 (0) 40/6948-0

[www.jungheinrich.com](http://www.jungheinrich.com)



# Table of contents

<b>A</b>	<b>Correct use and application of the truck</b>	
<b>B</b>	<b>Description of the truck</b>	
1	Design and application .....	B 1
2	Assemblies .....	B 2
2.1	Technical data - standard version .....	B 3
2.2	Performance data .....	B 3
2.3	Dimensions .....	B 4
2.4	EN standards .....	B 5
2.5	Conditions for application .....	B 5
3	Location of instruction labels and identification labels .....	B 6
3.1	Truck identification plate .....	B 7
<b>C</b>	<b>Transportation and commissioning</b>	
1	Transportation by crane .....	C 1
2	Commissioning .....	C 1
3	Moving the truck with the drive unit inoperative .....	C 2
<b>D</b>	<b>Battery - Servicing, recharging, replacement</b>	
1	Safety regulations governing the handling of lead-acid batteries .....	D 1
2	Battery types .....	D 2
3	Exposing the battery .....	D 2
4	Charging the battery .....	D 3
5	Removing and installing the battery .....	D 4
6	Battery discharge indicator, battery discharge monitor, operating hour meter .....	D 5

## E Operation

1	Safety regulations governing the operation of the fork-lift truck .....	E 1
2	Description of the operating controls and indicators .....	E 2
3	Starting up the truck .....	E 4
4	Operation of the fork-lift truck .....	E 6
4.1	Safety regulations applicable when operating the truck .....	E 6
4.2	Driving, steering, braking .....	E 7
4.3	Picking up and setting down loads .....	E 10
4.4	Safe parking of the truck .....	E 11
5	Information and service indicator (LISA) .....	E 12
5.1	LED indicators .....	E 12
5.2	Keyboard assignment .....	E 12
5.3	Indicators.....	E 13
5.4	Changing driving parameters .....	E 14
6	Fault location .....	E 15

## F Maintenance of the fork lift truck

1	Operational safety and environmental protection .....	F 1
2	Safety regulations applicable to truck maintenance .....	F 1
3	Servicing and inspection .....	F 3
4	Maintenance checklist .....	F 4
5	Lubrication schedule .....	F 6
5.1	Fuels, coolants and lubricants .....	F 7
6	Instructions for the servicing operations .....	F 8
6.1	Preparing the truck for servicing and maintenance operations .....	F 8
6.2	Tilting up the armrest .....	F 8
6.3	Opening the battery hood .....	F 9
6.4	Opening the seat hood .....	F 9
6.5	Opening the control flap .....	F 10
6.6	Tightening the wheel screws .....	F 11
6.7	Checking the electric fuses .....	F 12
6.8	Recommissioning the truck .....	F 13
7	Decommissioning the fork lift truck .....	F 13
7.1	Operations to be performed prior to decommissioning .....	F 13
7.2	Measures to be taken during decommissioning .....	F 13
7.3	Recommissioning the truck .....	F 14
8	Safety checks to be performed at regular intervals and following any untoward incidents (D): Accident prevention check according to VBG 36) .....	F 14

# A Correct use and application of the truck



The “Guidelines for the Correct Use and Application of Industrial Trucks” (VDMA) are included in the scope of delivery for this truck. The guidelines are part of these operating instructions and must always be heeded. National regulations are fully applicable.

The fork-lift truck described in these operating instructions is a truck that is suitable for lifting and transporting loads.

It must be used, operated and maintained according to the information in these operating instructions. Any other uses are outside the design envelope and can lead to injury to persons or damage to equipment and property. Above all, overloading caused by excessively heavy or unbalanced loads must be avoided. The max. admissible load to be picked up is indicated on the identification plate or load diagram label shown on the truck. The fork-lift truck must not be operated in spaces subject to fire or explosion hazards, or in spaces where corrosive or very dusty atmospheres prevail.

**Duties of the user:** A “user” within the meaning of these operating instructions is defined as any natural or legal person who either uses the fork-lift truck himself, or on whose behalf it is used. In special cases (e.g. leasing or renting), the user is considered the person, who, in accordance with existing contractual agreements between the owner and the user of the fork-lift truck, is charged with the observance of the operating duties.

The user must ensure that the truck is not abused and only used within its design limits and that all danger to life and limb of the operator, or third parties, is avoided. In addition to this, it must be ensured that the relevant accident prevention regulations and other safety-related provisions, as well as the operating, servicing and maintenance guidelines, are observed. The user must also ensure that all persons operating the truck have read and understood these operating instructions.



If these Operating Instruction are not observed the warranty becomes void. The same applies if improper work is carried out on the device by the customer and/or third parties without permission of our Customer Service.

**Mounting of attachments:** The mounting or installation of any attachments which will interfere with, or supplement, the functions of the truck is permitted only after written approval by the manufacturer has been obtained. If necessary, the approval of local authorities has to be obtained.

Any approval obtained from local authorities does not, however, make the approval by the manufacturer unnecessary.



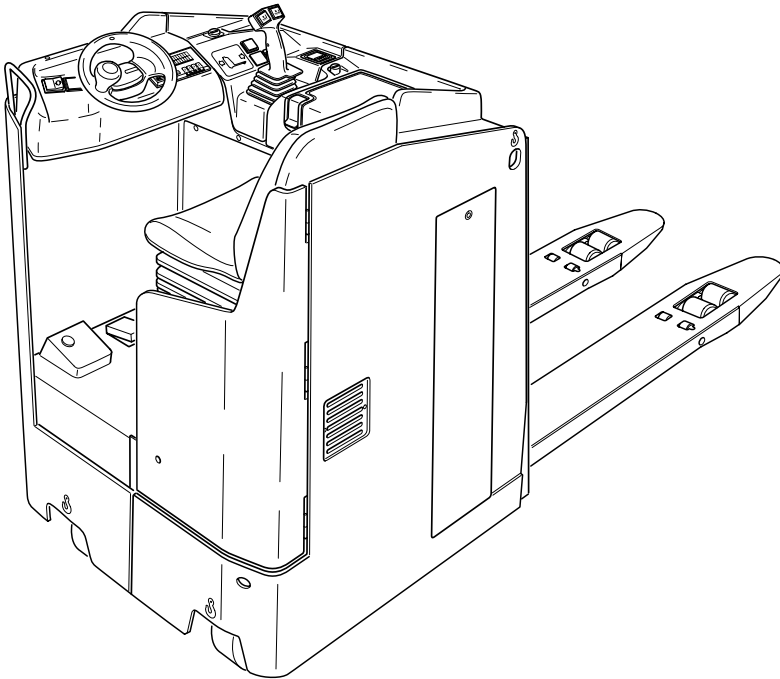
# B Description of the truck

## 1 Design and application

The EKE 20 b is an electric pallet truck with lateral seat in four-wheel design. It is provided with a driver's seat with electric steering wheel control.

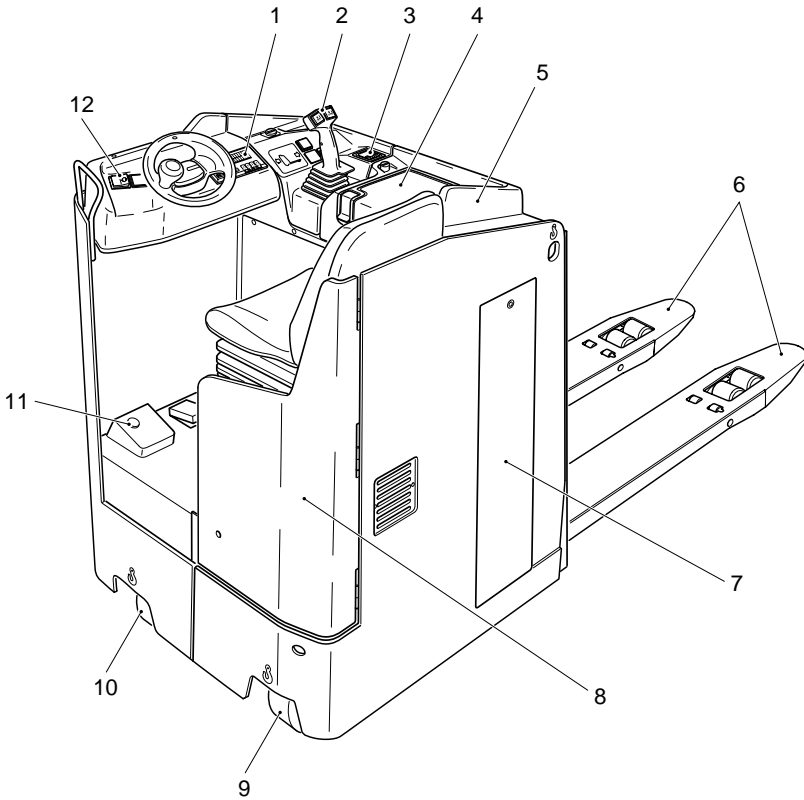
The EKE 20 b is designed for transport and order-picking operations on level ground. Pallets with open ground support or pallets fitted with lateral boards (provided that the boards are outside the range of the load-bearing wheels) can be picked up.

The rated capacity of the truck is shown on the identification plate or on the capacity label Qmax.





## 2 Assemblies




Item		Designation	Item		Designation
1	●	Information and service indicator	7	●	Battery door
2	●	Control lever	8	●	Seat hood
3	●	Master switch (emerg. stop)	9	●	Drive wheel
4	●	Armrest	10	●	Supporting wheel
5	●	Battery hood	11	●	Dead man's switch
6	●	Lifting device	12	●	Parking brake

● = Standard equipment

○ = Optional equipment

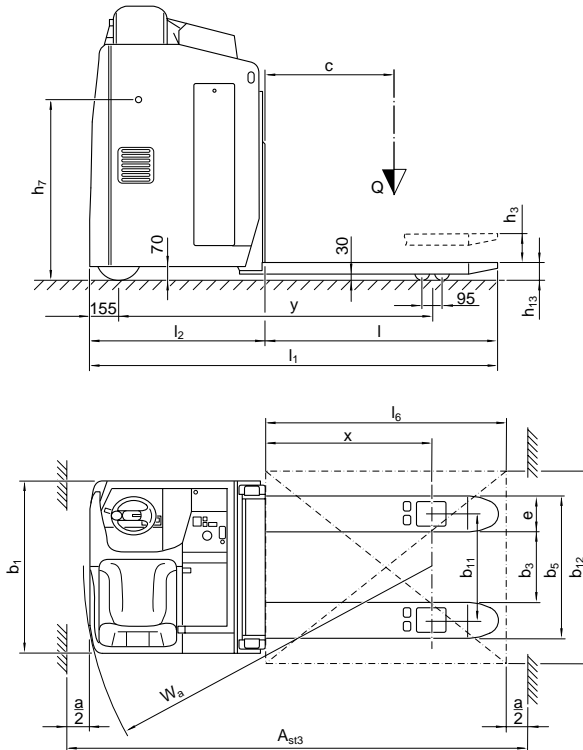
## 2.1 Technical data - standard version

 Indication of technical data according to VDI 2198, subject to modification and supplementing.

## 2.2 Performance data

	Designation	Standard	Rapid drive	
		●	○	
Q	Rated capacity	2,000	2,000	kg
c	Load centre distance	600	600	mm
	Travelling speed with / without rated load	7.7 / 10.0	9.5 / 12.5	km/h
	Lifting speed with / without rated load	8.0 / 12.0	8.0 / 12.0	cm/s
	Lowering speed with / without rated load	6.5 / 4.0	6.5 / 4.0	cm/s
	Max. climbing capacity (5 min.) with / without rated load	6 / 13	7 / 14	%

\*<sup>1</sup>In case of longer forks, the load centre is in the fork centre.



## 2.3 Dimensions

(all dimensions in mm)

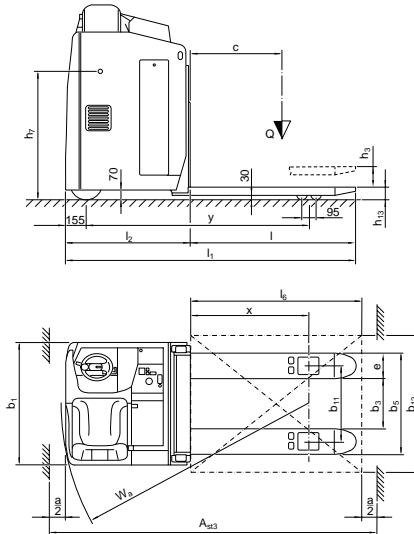
	Designation	
$l_2$	Design length of front	880
$h_{13}$	Height of fork when lowered	90
$h_3$	Lift	125
$h_7$	Seat height	1,020
$b_1$	Truck width	950
$b_5$	Distance between forks, outside	510 / 540 / 670
$b_{11}$	Track	340 / 370 / 500
$b_3$	Distance between forks, inside	170 / 200 / 330
$e$	Fork width	170
$a$	Safety distance	200
	Dead weight	Refer to truck identification label

### Working aisle widths

(all dimensions in mm)

$l$	$l_1$	$y^{1)}$	$x^{1)}$	$l_6$	$b_{12}$	$W_a^{1)}$	$A_{st3}$
1,150	2,030	1,689	964	1,200	800	1,844	2,280
1,600	2,480	2,139	1,414	1,600	1,200	2,294	2,680
2,400	3,280	2,565	1,840	2,400	1,200	2,720	3,480


<sup>1)</sup> With the load part lifted, the values are reduced by 90mm



## 2.4 EN standards


Continuous sound level: 68 dB(A)

according to prEN 12053 as stipulated in ISO 4871

-  The continuous sound level is a value averaged according to standard regulations, taking the sound pressure level into account when driving, lifting and idling. The sound pressure level is measured at the ear.


Vibration: 0.36 m/s<sup>2</sup>

according to prEN 13059

-  The swinging acceleration acting on the body in its operating position is, according to standard regulations, the linear integrated, weighted acceleration in the vertical plane. It is determined by driving over bumps with a constant speed.

Electromagnetic compatibility (EMC)


The manufacturer confirms compliance with the limit values for electromagnetic emission and interference immunity as well as testing of static electricity discharge according to prEN 12895 and the references to other standards contained therein.

-  Electrical or electronic components and their arrangement may only be modified after written approval by the manufacturer has been obtained.

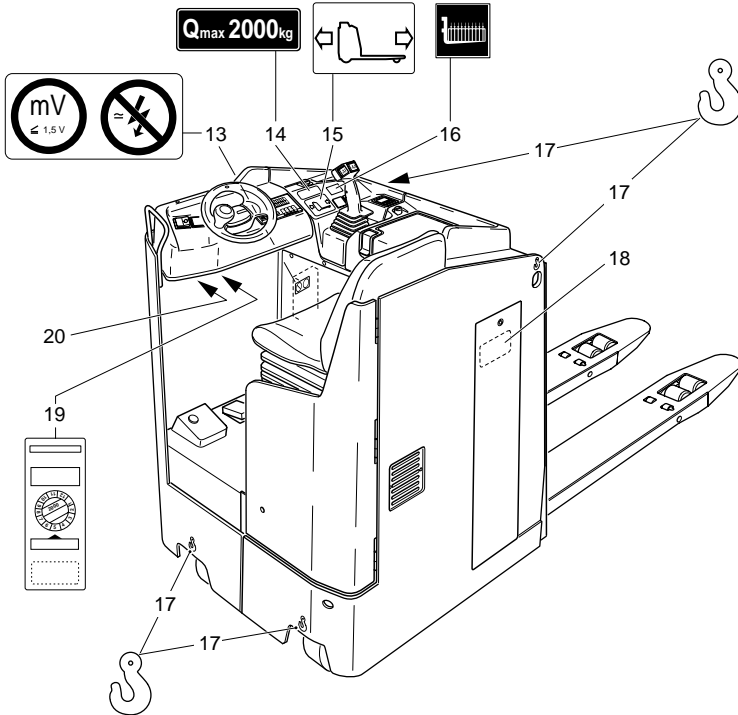
## 2.5 Conditions for application

Ambient temperature:

- during operation: 5°C to 40°C

-  Industrial trucks must be specially equipped and approved for continuous use in environments with temperatures below 5°C or in cold stores respectively with extreme temperatures or humidity changes.

### 3 Location of instruction labels and identification labels

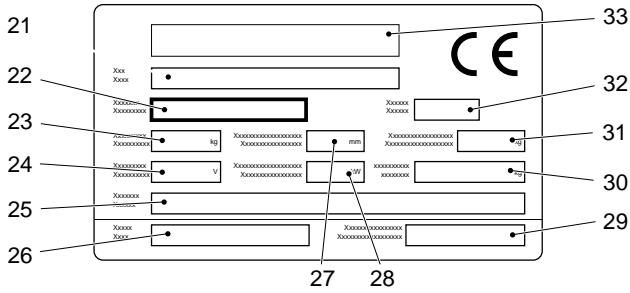


Item	Designation
13	Label "CAUTION: Low-voltage electronics"
14	Capacity Qmax
15	Control lever
16	Floor load
17	Attachment point of hooks for transportation by crane
18	Battery identification plate
19	Accident prevention inspection label (D only)
20	Truck identification plate



The capacity label (14) indicates the maximum capacity of the truck as Qmax. The rated capacity as shown must not be exceeded.  
 The "Caution electronics and low voltage" warning signs (13) are visible after opening the corresponding hood.  
 The battery identification plate (18) is visible after opening the battery hood and door (refer to chapter D).

### 3.1 Truck identification plate



Item	Designation	Item	Designation
21	Type	28	Drive power
22	Serial No.	29	Customer no.
23	Rated capacity in kg	30	Min./max. battery weight in kg
24	Battery: Voltage V	31	Empty weight without battery in kg
25	Manufacturer	32	Year of manufacture
26	Order no.	33	Manufacturer logo
27	Load centre distance in mm		



In the event of queries relating to the truck or spare part orders, please state the serial No. (22) of the truck.



# C Transportation and commissioning

## 1 Transportation by crane



Only lifting gear of adequate capacity must be used (for the transport weight, refer to the truck identification label).

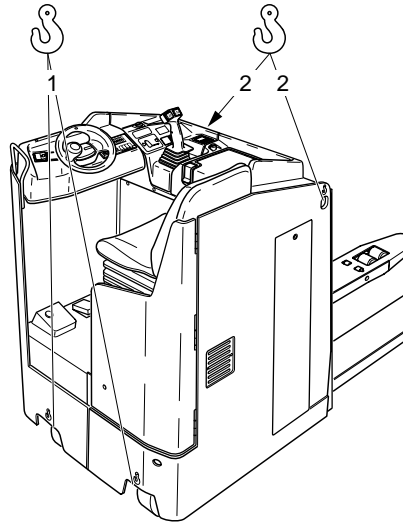


Bore holes for lifting screws (1) and hoisting points at the chassis (2) can be used if hoisting gear is to be used for transporting the truck.

- Park the truck and render it safe (refer to chapter E).
- Screw the transportation screws (1) into the bore holes of the single mast.



The lifting gear must be attached to the attachment points in such a manner that it absolutely cannot slip and cannot come into contact with any attachments of the truck when the truck is lifted.



## 2 Commissioning



The truck must only be operated on battery current. Rectified alternate current will damage the electronics. Cables connected to the battery (trailing cables) must be less than 6 meters in length.

In order to prepare the truck for work following delivery or transportation, the following operations must be performed:

- Check the truck for completeness and satisfactory condition of the equipment.
- If necessary, install the battery. Do not damage the battery cable (refer to chapter D)
- Charge the battery (refer to chapter D).
- Check whether the information and service indicator setting corresponds to the used battery type (refer to chapter D).
- Commission the truck as detailed in chapter E).



When the truck is parked, the running surface of the tyres will flatten. The flattening will disappear after a short operating time of the truck.



### 3 Moving the truck with the drive unit inoperative



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

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

- Set the master switch to position “OFF”.
- Set the key switch to position “OFF” (“0”) and remove the key.
- Ensure that the truck cannot accidentally move.
- Open the seat hood (refer to chapter F).
- Slacken the lock nuts (4) and tighten the screws (3).

The brake has now been released and the truck can be moved.

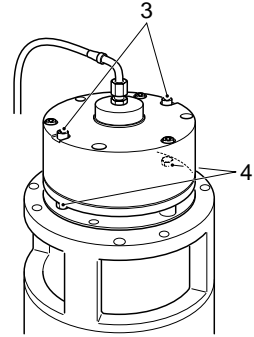


After arriving at the repair bay, ensure that the brake is put back to its initial state. The truck must on no account be parked with the brake in the released condition.

- Loosen the screws (3) by approx. 5 mm and lock by tightening the lock nuts (4).

The brake is now applied again.

- Close the seat hood.



# D Battery - Servicing, recharging, replacement

## 1 Safety regulations governing the handling of lead-acid batteries

The truck must be parked and rendered safe before any operations on batteries are undertaken (refer to chapter E).

**Servicing staff:** Recharging, servicing and replacing of batteries must only be performed by qualified personnel. The instructions contained in this operating manual, and the instructions of the manufacturer of the battery and of the battery recharging station, must be observed when performing the above operations.

**Fire protection measures:** Smoking and naked flames are not permitted when handling batteries. No inflammable substances or spark-generating materials must be present or stored within a distance of 2 meters of the truck parked for battery recharging. The location must be well ventilated and fire fighting equipment must be kept ready.

**Servicing of batteries:** The battery cell screw caps must be kept dry and clean. Terminals and cable shoes must be clean, lightly greased with pole grease and must be securely tightened. Batteries with bare terminal posts must be covered using a non-skid insulating mat.

**Disposal of the battery:** Batteries must only be disposed of as stipulated in the national environmental protection regulations or waste disposal provisions. The manufacturer's specifications for the disposal must be heeded.



Before closing the battery hood, make sure that the battery cable cannot be damaged.



Batteries contain dissolved acid which is toxic and caustic. For this reason, protective clothing and goggles must be worn whenever work is undertaken on batteries. Avoid physical contact with battery acid.

If clothing, skin or eyes accidentally come into contact with battery acid, liberally flush the affected parts with clean water. Consult a doctor when skin or eyes come into contact with battery acid. Spilled battery acid must be immediately neutralized.



Only batteries with closed tray may be used.



Battery weight and dimensions have considerable influence on operational safety of the truck. Changing the battery equipment is not permitted without prior approval by the manufacturer.

## 2 Battery types

Depending on the truck version, the truck will be supplied with different battery types. The table below shows the capacity of the batteries and also the combinations used as standard equipment.

24V - PzS - Battery	3 PzS 330L (with weights)
24V - PzS - Battery	3 PzS 420L
24V - PzS - Battery performance-enhanced	3 PzS 450HX

The battery weights can be seen on the battery identification plate.

Depending on the type of battery used, it is also possible to use models with enhanced performance or maintenance-free batteries.



When replacing or installing batteries, ensure that the battery is correctly secured in the battery compartment of the truck.

## 3 Exposing the battery

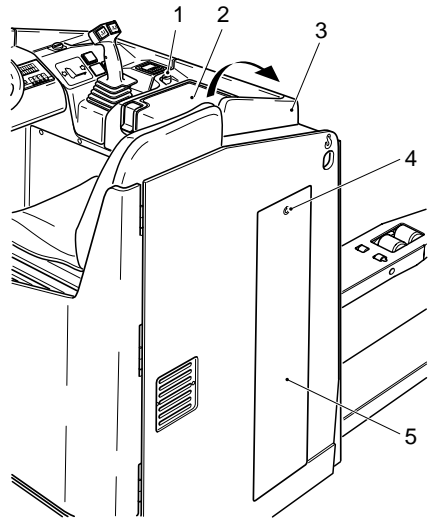


Park the truck and render it safe (refer to chapter E).

- Use the hex key located beneath the armrest (2) (see chapter F) to open the battery door (5), take out the door and put it aside.
- Pull the unlocking lever (1) for the battery hood (3).
- Swing up the battery hood (3) and engage it.



Open and close the battery hood carefully. Connecting and disconnecting of battery connector and socket is only permitted when the truck and the charger are both switched off.



## 4 Charging the battery



To charge the battery, the truck must be parked in a closed and properly ventilated room.

- Expose the battery (refer section 3).



The battery connector (6) and the charging cable must only be connected or disconnected with the truck and the battery charger switched off. The master switch must also only be actuated with the truck and the battery charger switched off.



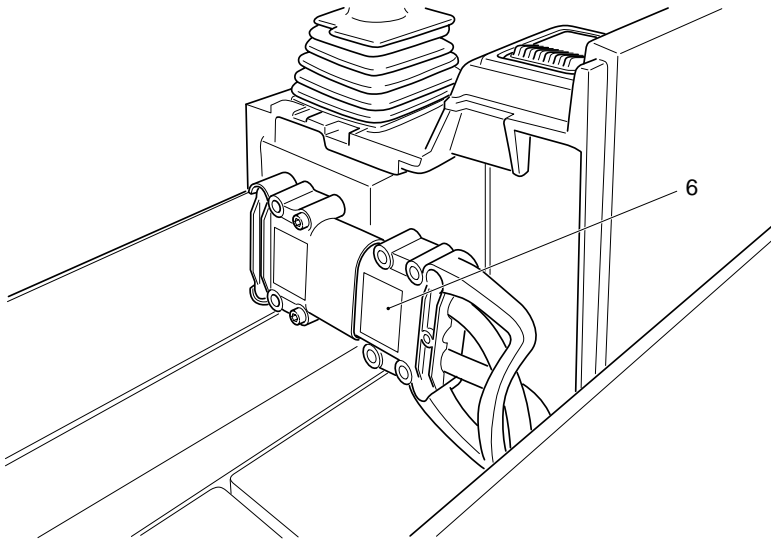
During the recharging operation, the tops of the battery cells must be exposed to ensure adequate ventilation. No metal objects must be placed on the battery. Prior to starting the recharging operation, check all cable connections and plugged connections for visible damage.

All safety instructions as provided by the battery supplier and battery charger supplier must be strictly observed.

- Withdraw the battery connector (6).
- Remove any insulating mats from the battery.
- Connect the charging cable of the battery charger to the battery connector (6) and switch on the charger.



Recharge the battery observing the instructions provided by the battery supplier and by the battery charger supplier.



## 5 Removing and installing the battery



The truck must be parked on level ground. To prevent short-circuits, batteries with exposed poles or cell connectors must be covered using a rubber mat. Place the battery connector or the battery cable, respectively, in such a way that they will not catch behind any truck protrusions when the battery is withdrawn.



When transporting batteries with the aid of a crane, ensure that the crane is of adequate capacity (the battery weight is indicated on the battery identification plate at the battery trough). The lifting gear must pull in a vertical direction to prevent damage to the battery trough. The lifting gear hooks must be secured to the attachment points in such a way that the lifting gear, when slack, cannot collapse on the battery cells.

- Expose the battery (refer section 3).
- Withdraw the battery connector (6).
- Open the battery door (5) with the hex key.



The square key is located under the armrest (refer to chapter F).

- Remove the red battery lock (8).
- Pull the battery (7) laterally onto the battery change station.



Heed the operating instructions of the manufacturer of the battery exchange trolley!

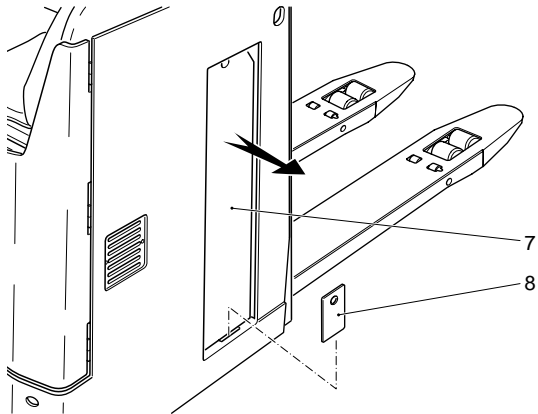
Installation is in the reverse order of operations. When reinstalling the battery, heed the required installation position and make sure the battery is connected correctly.



After reinstallation of the battery, visually check all leads and connectors for damage.

Ensure that the battery is firmly secured in the truck to prevent any damage caused by sudden movements of the truck. Make sure that the red battery lock (8) is properly attached.

The battery hood and door must be properly closed.



## 6 Battery discharge indicator, battery discharge monitor, operating hour meter

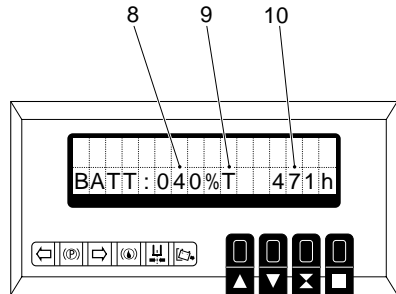
**Battery discharge indicator:** The loading status of the battery (8) is indicated in steps of 10% on the information and service indicator.



The manufacturer setting of the battery discharge indicator / discharge monitor is standard batteries.

If maintenance-free batteries are used, the indicator must be adjusted in such a way that the "T" symbol (9) appears behind the percent specification. If this setting is not selected the battery may be damaged due to a complete discharge. Contact the customer service for setting the instrument.

If the remaining battery capacity falls below 30%, it is required to recharge the battery.



**Battery discharge monitor:** If the residual capacity falls below the specified minimum value, the lifting function is switched off. A corresponding message is displayed in the information and service indicator.



The lifting function will only then be released, if the connected battery is reloaded by min. 70%.

**Operating hour meter:** The operating hours (10) are indicated next to the loading status of the battery. The operating hour meter indicates the total time of all riding and lifting movements.



# E Operation

## 1 Safety regulations governing the operation of the fork-lift truck

**Driving permission:** The fork-lift truck must only be operated by persons who have been trained in the operation of trucks, who have demonstrated to the user or his representative their capability of moving and handling loads, and who have expressly been charged by the user or his representative with the operation of the truck.

**Rights, duties and conduct of the driver:** The driver must be: informed of his rights and duties; trained in the operation of the fork-lift truck; and familiar with the contents of these operating instructions. All necessary rights must be granted to him. If the fork-lift truck can be used in the pedestrian-controlled mode, the driver must wear safety boots when operating the truck.

**Prohibition of unauthorised use:** The driver is responsible for the fork-lift truck during working time. He must forbid unauthorised persons to drive or operate the fork-lift truck. The transport or lifting of persons is forbidden.

**Damage and defects:** Damage or defects noted on the fork-lift truck or on the attachments must immediately be brought to the notice of the person in charge. Fork-lift trucks that cannot be safely operated (e.g. due to worn tyres or defective brakes) must not be used until they have been properly repaired.

**Repairs:** Without specific training and express authorisation, the driver is not allowed to perform any repairs or modifications on the fork-lift truck. Under no circumstances must the driver change the setting of switches or safety installations or render them ineffective.

**Danger area:** A "danger area" is considered to be the area within which persons are endangered by the travelling or lifting movements of the fork-lift truck or its load lifting devices (e.g. fork or attachments), or by the loads being transported. This also includes the area within reach of falling loads or falling/lowering truck attachments.



Unauthorised persons must be asked to leave the danger area. The driver must give a warning signal whenever a situation presenting danger to persons might develop. The fork-lift truck must immediately be brought to a standstill if persons, although asked, do not leave the danger area.

**Safety devices and warning labels:** The safety devices, warning labels and warning notes described in the present operating instructions must always be heeded.

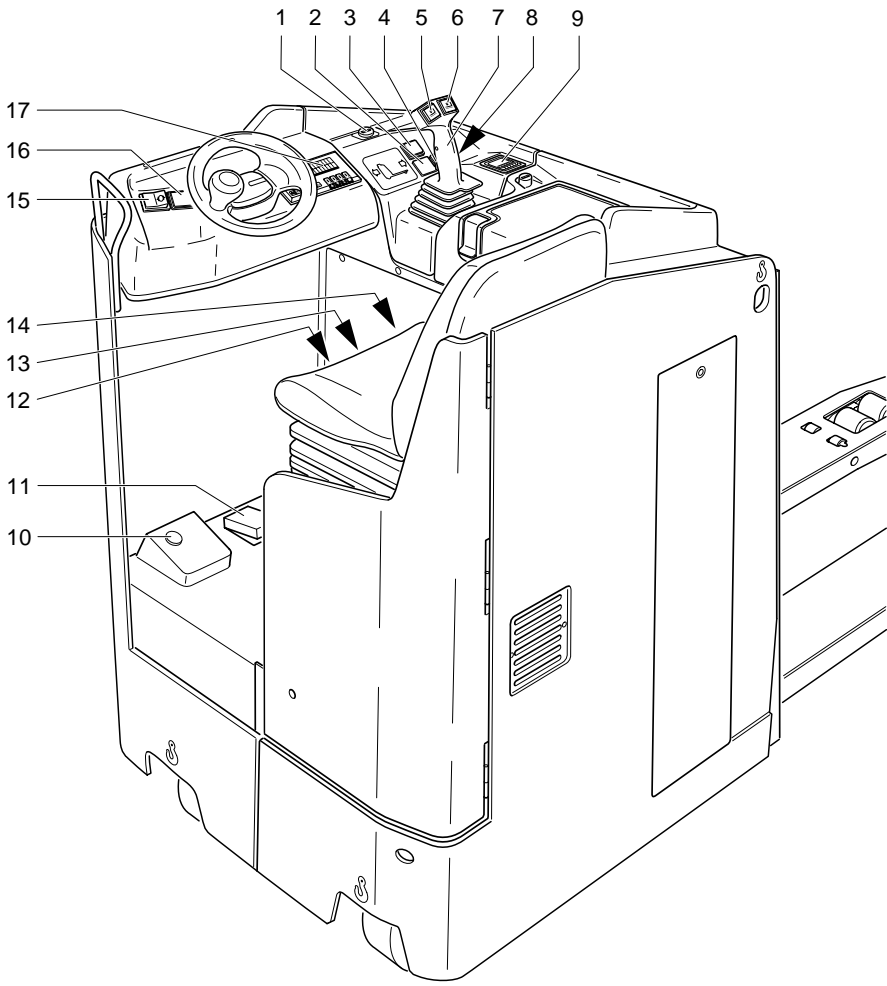


## 2 Description of the operating controls and indicators

Item	Operating control or display		Function
1	Key switch	●	Switches the control current on and off. When the key is removed from the key switch, the truck cannot be operated by unauthorised persons.
2	Control lamp - driver seat heating	○	Shows, when alight, that the driver seat heating is ON.
3	Lamp indicating that the truck is operational	●	Shows, when alight, that the control current is ON.
4	Operating key "Horn"	●	Gives an audible warning signal.
5	Operating key "Lowering"	●	Lowers the lifting device.
6	Operating key "Lifting"	●	Lifts the lifting device.
7	Control lever	●	Sets the desired travelling direction.
8	Switch - driver seat heating	○	Switches the driver seat heating ON and OFF.
9	Master switch (emergency stop)	●	The circuit is interrupted, all electrical functions are switched off and the truck is automatically braked.
10	Deadman key	●	released: Driving function blocked or truck is slowing down operated: Driving function released
11	Brake pedal	●	Braking of the truck.
12	Adjusting wheel for seat damping	●	Sets the driver weight for optimum damping effect. The set weight is indicated.
13	Adjusting wheel for backrest	●	Adjustment of the driver seat backrest.
14	Driver seat locking mechanism	●	Horizontal adjustment of the driver seat.
15	Switch - parking brake	●	Applies or releases the parking brake.
17	Control lamp - parking brake	●	Shows, when alight, that the parking brake is applied.
17	Information and service indicator	●	Indicates important driving and lifting parameters, warning messages, notes on operation faults and service information (refer section 5).

● = Standard equipment

○ = Optional equipment



### 3 Starting up the truck



Before starting or operating the truck, or before lifting any loads, the driver has to make sure that nobody is within the danger area.

The electronic driving and steering systems automatically control their functions. If an error or fault occurs, the driving and steering functions are stopped.



Before the truck is restarted, it is required to perform the relevant troubleshooting actions.

#### Checks and operations to be performed before starting daily work

- Visually check the entire truck (especially the wheels and the lifting device) for visible damage.
- Visually check the battery attachment and the cable connections.



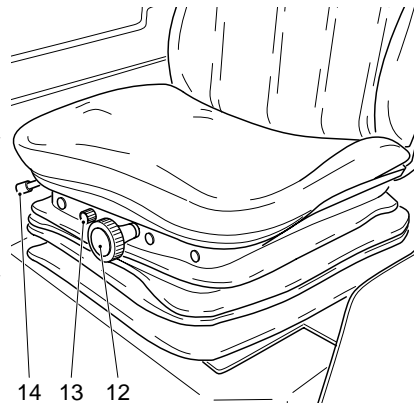
Do not actuate the control lever when entering the truck.

#### Adjusting the driver seat



Do not reach into the rear wall of the truck when adjusting the driver's seat.

- Sit down on the seat.
- Release the driver seat locking mechanism (14) and slide the seat forward or backward to the desired position.
- Allow the locking mechanism to re-engage.
- Using the adjusting wheel (12), adjust the seat damping system to the driver weight.
- Adjust the backrest by means of the backrest adjusting mechanism (13).



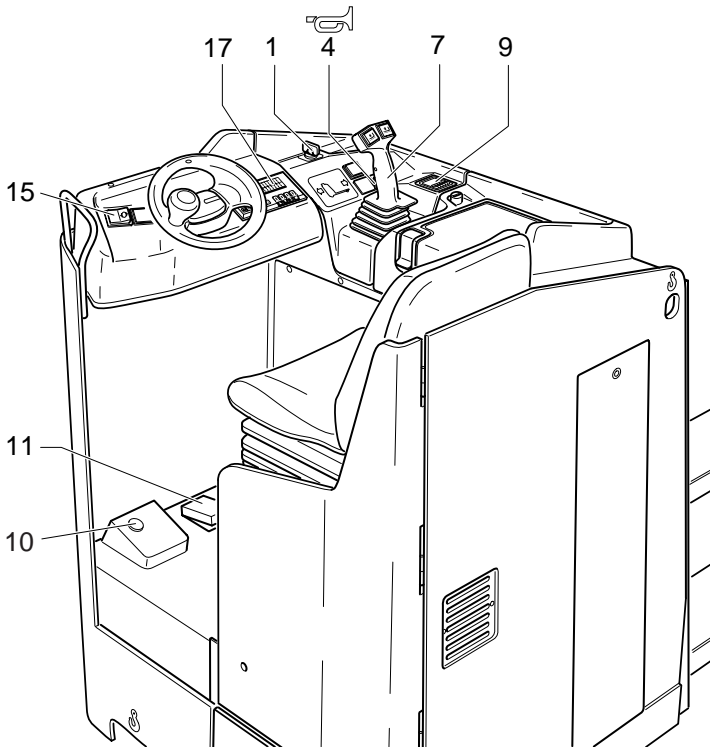
## Switching on the truck

- Pull up the master switch (9).
- Insert the key in the key switch (1) and turn the key clockwise towards the “I” position until reaching the stop.
- Check the horn (4) for correct functioning.
- Check whether the deadman key (10), brake pedal (11), “Parking brake” switch (15) and control lever (7) are properly functioning (refer section 4.2).

The truck is now ready for operation.



The information and service indicator (17) briefly displays the vehicle code, followed by the current steering position of the drive wheel, the available battery capacity and the hours of operation.



## 4 Operation of the fork-lift truck

### 4.1 Safety regulations applicable when operating the truck

**Driving lanes and work areas:** Only such lanes and routes that are specially allocated for truck traffic must be used. Unauthorised persons must stay away from work areas. Loads must only be stored at places specially provided for this purpose.

**Driving conduct:** The travelling speed must be adapted to the prevailing local conditions. The truck must be driven at slow speed when negotiating bends or narrow passages, when passing through swing doors and at blind spots. The driver must always observe an adequate braking distance between the fork-lift truck and the vehicle in front and he must be in control of his truck at all times. Sudden stopping (except in emergencies), rapid U-turns and overtaking at dangerous or blind spots is not permitted. It is forbidden to lean out of or reach beyond the working and operating area.

**Visibility:** The driver must look in the direction of travel and must always have a clear view of the route ahead. When loads blocking the view are carried, the fork-lift truck must be driven with the load at the rear. If this is not possible, a second person must walk in front of the fork-lift truck to give suitable warnings.

**Negotiating slopes and inclines:** Negotiating of slopes and inclines is permitted only when they are recognised lanes, when they are clean and non-slipping, and when the technical specification of the truck permits safe driving on such slopes or inclines. Loads must always be carried at that end of the truck facing uphill. U-turns, cutting obliquely over slopes or inclines and parking of the fork-lift truck on slopes or inclines is not permitted. Inclines must only be negotiated at slow speed, with the driver ready to brake at any moment.

**Use of lifts and driving on loading platforms:** Lifts and loading platforms must only be used if they are of adequate load bearing capacity, if suitable for driving on, and if authorised by the user of the truck for truck traffic. The fork-lift truck driver has to satisfy himself accordingly before driving into lifts or on to loading platforms. The truck must enter lifts with the load in front and must take up a position which does not allow it to come into contact with the walls of the lift shaft. Persons riding in the lift together with the fork-lift truck must only enter the lift after the fork-lift truck has come safely to a standstill, and must leave the lift before the fork-lift truck.

**Nature of the loads carried:** Only loads that have been safely and correctly secured must be carried. Never transport loads stacked higher than the top of the fork carriage, or stacked higher than the guard grille.

**Towing trailers:** The maximum trailer load given for the fork-lift truck for braked and/or unbraked trailers must not be exceeded. The trailer load must be properly secured and must not exceed the dimensions permitted for the driving routes. After attaching the trailer but before starting driving, the driver must check that the trailer attachment is secured against detachment. Towing fork-lift trucks must be operated in such a manner that safe driving and braking of the truck and the trailer is guaranteed for all driving movements.

## 4.2 Driving, steering, braking



Increased attention has to be paid during driving and steering the truck. Control the steering position of the drive wheel on the information and service indicator (17).

The electric steering system is self-monitoring.

The steering control systems monitors the fault frequency over a certain period. If the same fault is detected several times during this period, the steering control reduces the driving speed of the truck to low speed. If such a fault occurs, the driving speed is not reset to normal speed by switching the truck off and on again. This method prevents the cancellation of a fault without eliminating the fault.



As the steering system is a safety-relevant component, the fault must be eliminated by trained service personnel.

### Emergency stop

– Depress the master switch (9).

This will switch off all electric functions.

### Deadman key

The deadman key (10) must be operated for all operating functions. If it is not applied, all functions (exception: the information and service indicator (17)) are deactivated and the brake is operated.

### Driving



Do not drive the truck unless the hoods are closed and locked in the stipulated manner.

- Start up the truck (refer section 3).
- Operate the deadman key (10).
- Release the parking brake by depressing the parking brake switch (15).



Control the steering position of the drive wheel on the information and service indicator (17).

– Set the control lever (7) to the desired travelling direction (V) or (R).

The truck will move in the selected direction.



The travelling speed is controlled by means of the control lever (7).

## Driving up an incline



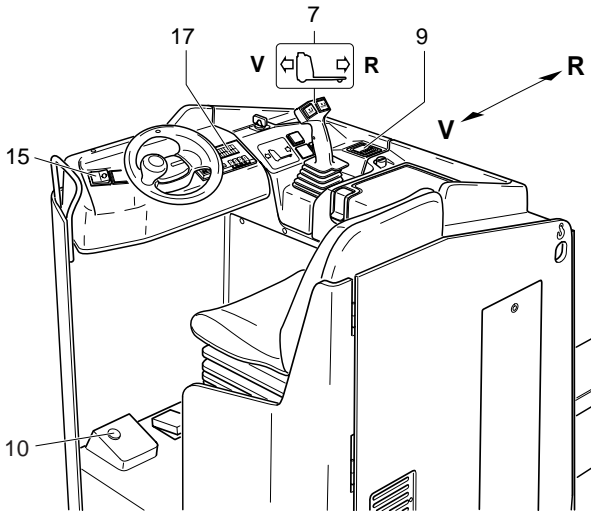
The load must be transported facing the incline!

### Safety measures against “rolling down” of the truck:

With the control lever (7) set to neutral, the service brake is automatically applied after a brief jolt (the controller detects the truck’s rolling down on an incline). The control lever (7) is used to release the service brake; the speed and driving direction are set as desired.



When the service personnel has switched off the coast-down brake, only the service and/or the counter-current brake can be used.



## Steering

– Turn the steering wheel to the left or to the right.



The position of the steered wheel is displayed on the information and service indicator (17).

## Braking



The braking behaviour of the truck strongly depends on the state of the floor. This must be taken into account by the driver for his driving behaviour.

The truck may be braked in three ways:

- using the service brake (break pedal (11))
- using the generator brake (coasting)
- by counter-current braking (control lever (7))



In case of emergencies, the truck must only be braked using the service brake (break pedal (11)).

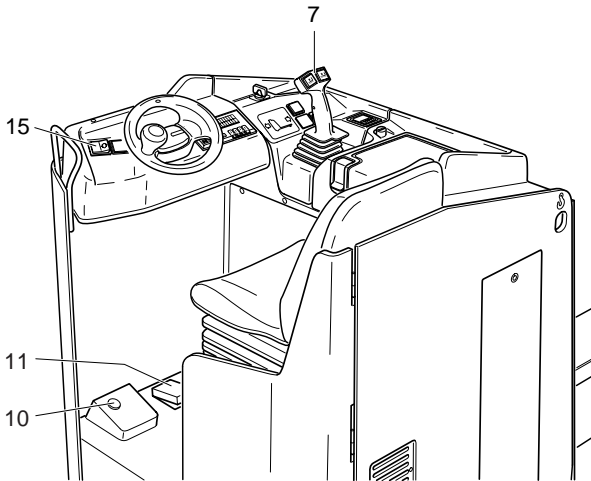


During normal operation, the generator brake and counter-current braking should be applied. These methods of braking reduce wear and require less energy (energy recovery).

### Braking by means of the service brake:

- Depress the brake pedal (11).

The truck is braked at the maximum possible deceleration rate until it stands still.





### Braking by means of the generator brake (coasting)

- Release the control lever (7) - control lever to neutral.

Depending on the setting, the truck is braked by the generator braked, coasting to a stop.



The degree of speed reduction can be set by the manufacturer service.



When the service personnel has switched off the coast-down brake, only the service and/or the counter-current brake can be used.

### Counter-current braking

- Setting the control lever (7) to the opposite drive direction while travelling.

The truck is braked by counter-current until it starts moving into the opposite direction.



The braking effect depends on the setting of the control lever.

## 4.3 Picking up and setting down loads



Before picking up a load, the driver has to make sure that it is correctly palletised and that the capacity of the truck is not exceeded.

- Pass the lifting device as far as possible under the load. Picking up long loads crosswise is not permitted.



Pick up the load, ensuring that it does not project excessively from the tips of the lifting device (less than 50 mm).

### Lifting and lowering



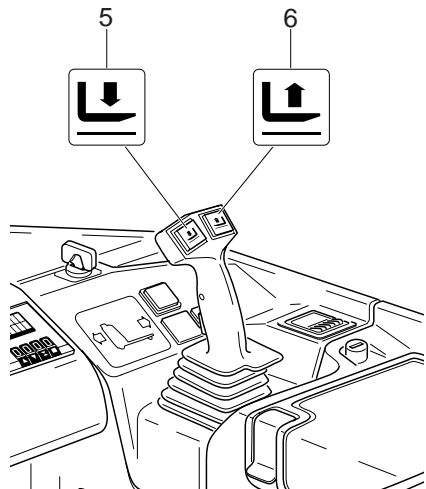
When operating the keys “Lifting” or “Lowering”, the lifting or lowering movement will be at a fixed speed. The deadman key (10) must be operated.

#### Lifting

- Depress operating key “Lifting” (6) until the required lifting height has been reached.

#### Lowering

- Depress operating key “Lowering” (5); the fork is lowered.



#### 4.4 Safe parking of the truck

If the truck is left unattended, even for only short periods of time, it must be rendered safe.



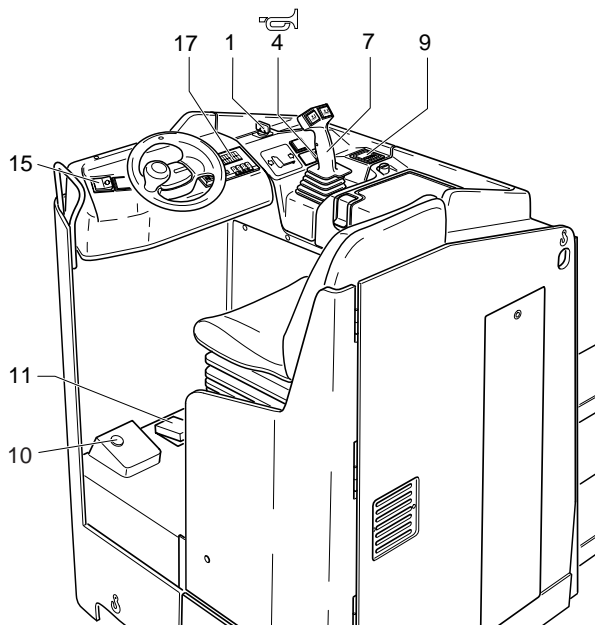
Never park the truck on a slope or incline. The lifting device must always be completely lowered.

- Operate the parking brake switch (15).
- Lower the lifting device.
- Set the drive wheel to the “straight ahead position”.  
Turn the steering wheel until the drive wheel is set to its straight ahead position.



Control the displayed steering angle on the information and service indicator (17).

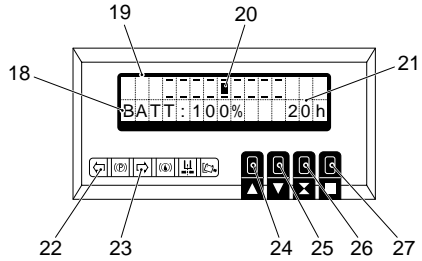
- Switch the key switch (1) to position “OFF” (“0”) and remove the key.
- Depress the master switch (emergency cut-out) (9) to the “OFF” position.



## 5 Information and service indicator (LISA)

The LCD display (19) of the LISA information and service indicator indicates the battery charge status (18), the operating hours (21) and the position of the steered wheel (20). The operating data is shown in the service and diagnosis mode (refer section 5.3).



Two light-emitting diodes (LED (22) - (23)) below the display are used as indicators. The keyboard, four keys, (24) - (27), is needed to select, read or modify truck parameters.







In the service mode, only authorised personnel of the manufacturer service may perform modifications!

### 5.1 LED indicators

Two lit LED indicators show the following states:

Item.	Function
22	 Driving direction forward (direction of the drive) (green LED)
23	 Driving direction backwards (direction of the load) (green LED)

### 5.2 Keyboard assignment

Item.	Function
24	 Double function – increase of the selected parameter in steps – Selection of the individual menu items in upward direction
25	 Double function – decrease of the selected parameter in steps – Selection of the individual menu items in downward direction
26	 Double function – Release of a selection menu from the main menu – Confirmation of a question with “NO” -> “x”
27	 Quadruple function – Quitting a selected menu item – Saving a modified parameter – Confirmation of a question with “YES” -> “■” – Change between “operating hours” and “time” indication

### 5.3 Indicators

Operating data and error messages are displayed on the indicator. The operator menu can be used to set the following truck parameters:

Here, the interval between maximum controller actuation and 100% adjustment of the electronics is set.

ACCELERATION									
█	█	█	█	█	█	█	█	█	L



This driving parameter may only be adjusted by the custom service.

RELEASE BRAKE									
█	█	█	█	█	█	█	█	█	L



This driving parameter has no function.

INVERSION BRAKE									
█	█	█	█	█	█	█	█	█	L



This driving parameter may only be adjusted by the custom service.

PEDAL BRAKE									
█	█	█	█	█	█	█	█	█	L



This driving parameter has no function.

MAX SPEED FORW.									
█	█	█	█	█	█	█	█	█	L



This driving parameter may only be adjusted by the custom service.

CUT BACK FORW.									
█	█	█	█	█	█	█	█	█	L



This driving parameter has no function.

MAX REVERS.SPEED									
█	█	█	█	█	█	█	█	█	L



Issues an audible alarm in case of an operating fault.

BUZZER ON/OFF									
█	█	█	█	█	█	█	█	█	L



This setting has no function.

RELOAD									
█	█	█	█	█	█	█	█	█	L



Setting the time: Select the required hours and minutes with key (26). Use keys (24) and (25) to correct the entered values.

CHANGE TIME									
█	█	█	█	█	█	█	█	█	L

## 5.4 Changing driving parameters



The driving behaviour of the truck is changed if the truck parameters are modified. This is to be taken into consideration during start-up! Parameters may only be modified with the truck parked and while it is not performing any lifting movements.

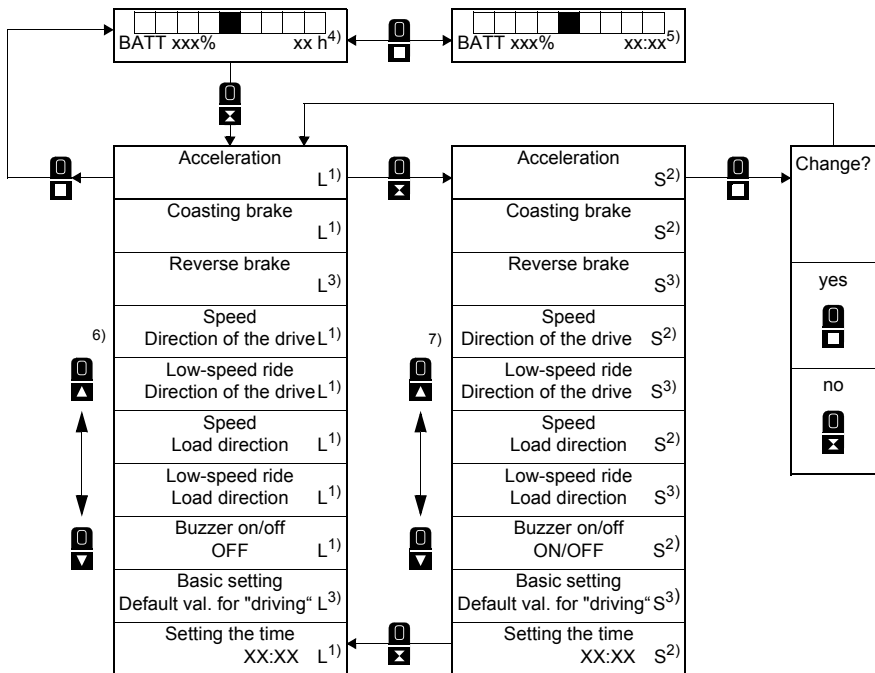
- Commissioning the truck (refer section 3).
- Put the key into the key switch and turn it right until stop.

The operator menu is displayed for approx. 3 sec., indicating the truck designation. Then, the current steering angle, the battery charging status and the operating hours are indicated.

- Key Press selection menu key (26).

The indicator displays “acceleration” with the corresponding parameter.

- Proceed as indicated in the following diagram, if you want to check or modify any truck parameters.
- Use the following keys to change between the adjustment parameters: (30) and (24) and (25).



1) L = Read operating parameters (Read mode).

2) S = Change operating parameters (Write mode) using the keys .

3) no function

4) Indicator "Operating hours"

5) Indicator "Time"

6) Parameter selection indicator

7) Change of parameters

## 6 Fault location

This chapter enables the operator to locate and rectify minor faults and malfunctions, or the effects of operating errors. When trying to locate a fault, proceed in the order shown in the table.

Fault	Possible cause	Remedial action
Truck does not move	<ul style="list-style-type: none"> <li>– Battery connector not connected.</li> <li>– Master switch (emergency stop) depressed.</li> <li>– Key switch in position “0”.</li> <li>– Battery exhausted.</li> <li>– The deadman’s key has not been pressed.</li> <li>– Fuse defective.</li> </ul>	<ul style="list-style-type: none"> <li>– Check the battery connector and connect if necessary.</li> <li>– Release the master switch.</li> <li>– Set the key switch to position “1”.</li> <li>– Check the charging condition of the battery and recharge if necessary.</li> <li>– Press the deadman’s key</li> <li>– Check fuses F1, 1F1 and 3F9.</li> </ul>
Load cannot be lifted	<ul style="list-style-type: none"> <li>– Truck not operative.</li> <li>– Hydraulic oil level too low.</li> <li>– Battery discharge monitor has switched off the lifting function and indicates “STOP”.</li> <li>– Fuse defective.</li> <li>– Load is too heavy.</li> </ul>	<ul style="list-style-type: none"> <li>– Perform all remedial actions listed under the fault “Truck does not move”.</li> <li>– Check the hydraulic oil level.</li> <li>– Recharge the battery.</li> <li>– Check fuse 2F1.</li> <li>– Heed the maximum capacity (see the identification plate).</li> </ul>



If it is not possible to rectify the fault by performing the indicated remedial actions, please contact the customer service, as more intricate faults can only be rectified by specially trained and qualified service personnel.



# F Maintenance of the fork lift truck

## 1 Operational safety and environmental protection

The checks and servicing operations contained in this chapter must be performed in accordance with the intervals as indicated in the servicing checklists.



Modifications of fork lift truck assemblies, especially of the safety installations, are not permitted. On no account must the operational speeds of the truck be changed.



Only original spare parts have been certified by our quality assurance service. To ensure safe and reliable operation of the fork lift truck, only spare parts of the manufacturer must be used. Used parts, oils and fuels must be disposed of in accordance with the applicable environmental protection regulations. For oil changes, the oil service of the manufacturer is available to you.

Upon completion of any checking and servicing activities, the operations contained in the section "Recommissioning" must be performed (refer to chapter F).

## 2 Safety regulations applicable to truck maintenance

**Servicing and maintenance personnel:** The fork lift truck must only be serviced and maintained by trained personnel of the manufacturer. The service organization of the manufacturer has external technicians trained especially for these assignments. We thus recommend signing a maintenance contract with the relevant service location of the manufacturer.

**Lifting and jacking up:** When a fork lift truck is to be lifted, the lifting gear must only be secured to the points specially provided for this purpose. When the truck is to be jacked up, suitable measures must be taken to prevent the truck from slipping or tipping over (use of wedges, wooden blocks). Work underneath the raised load lifting device must only be carried out when the fork is immobilised and supported by a chain of adequate strength.

**Cleaning operations:** No inflammable liquids must be used when cleaning the fork lift truck. Prior to commencing cleaning operations, all safety measures that are required to prevent sparking (e.g. by short-circuits) have to be taken. For battery-operated fork lift trucks, the battery plug must be removed. Only weak indraft, weak compressed air and non-conducting, antistatic brushes must be used for the cleaning of electric or electronic assemblies.



If the fork lift truck is to be cleaned using a water jet or a high-pressure cleaner, all electric and electronic components must be carefully covered beforehand because moisture can lead to incorrect functioning. Cleaning by means of a steam jet is not permitted.

Upon completion of cleaning work, the operations detailed in the section "Recommissioning" must be performed.



**Work on the electric system:** Work on the electric system of the truck must only be performed by personnel specially trained for such operations. Before commencing any work on the electric system, all measures required to prevent electric shocks have to be taken. For battery-operated fork lift trucks, the truck must also be depowered by removing the battery plug.

**Welding operations:** To prevent any damage to electric or electronic components, these have to be removed from the fork lift truck before any welding operations are undertaken.

**Settings:** When repairing or replacing hydraulic, electric or electronic components or assemblies, all truck-specific settings have to be retained.

**Tyres:** The quality of the tyres greatly affects the stability and the driving behaviour of the fork-lift truck. The factory-mounted tyres must only be replaced by original spare parts of the manufacturer, since otherwise the specification of the data sheet cannot be met. When replacing wheels or tyres, it must be ensured that the fork-lift truck remains level (tyres and wheels must always be replaced in pairs, i.e. left and right together).

**Lift chains:** The lift chains wear rapidly if not lubricated. The intervals in the service checklist apply to normal duty. If requirements are higher (dust, temperature), lubrication is required more often. The specified chain spray must be used as specified. The external application of grease does not provide sufficient lubrication.

**Hydraulic hoses:** The hoses must be renewed every six years. When replacing hydraulic components, also renew the hoses in this hydraulic system.

### 3 Servicing and inspection

Thorough and expert servicing is one of the most important preconditions for safe operation of the fork-lift truck. The neglect of regular servicing intervals can lead to fork-lift truck failure and constitutes a potential hazard to personnel and equipment.



The indicated servicing intervals are based on single-shift operation under normal operating conditions. For applications in dusty environments, or involving large temperature fluctuations or multiple-shift operation, the servicing intervals must be shortened accordingly.

The following servicing checklist indicates the operations to be performed and the respective intervals to be observed. The servicing intervals are defined as follows:

- W1 = every 50 operating hours, but at least once per week
- M3 = every 500 operating hours, but at least every 3 months
- M6 = every 1000 operating hours, but at least every 6 months
- M12 = every 2000 operating hours, but at least every 12 months



The W1 maintenance intervals must be carried out by the operator / customer.

In the running-in phase of the truck, the following additional operations have to be carried out:

#### **After the first 50 to 100 operating hours, at the latest after two months:**

- Tighten pole screws of battery and check condition of the cell connectors.
- Perform visual inspection of the electronic and mechanic components.
- Check the brake fluid.
- Check the lifting chains for even tension.
- Check transmission for leakages.
- Check screw connections and mechanical safety retentions for tight fit.
- Check the wheel nuts for security and retighten, if required.
- Check the hydraulic connections for leakages and retighten, if necessary.
- Check the slide elements on the mast and adjust, if necessary.

#### 4 Maintenance checklist

##### Maintenance intervals

		Standard = ●	W	M	M	M
		Cold-storage depot = *	1	3	6	12
<b>Chassis/ Design:</b>	1.1	Check all load bearing elements for damage		●		
	1.2	Check all bolted connections		●		
	1.3	Check platform for correct functioning and damage	*	●		
<b>Drive unit:</b>	2.1	Check the transmission for noises and leakage		●		
	2.2	Check the transmission oil level		●		
	2.3	Change the transmission oil			*	●
<b>Wheels:</b>	3.1	Check for wear and damage		●		
	3.2	Check the wheel bearings and ensure secure fastening of wheels a)	*	●		
<b>Steering:</b>	4.1	Check the steering wheel play		●		
	4.2	Check the steering chain and the chain sprocket for wear; adjust and grease c)	*	●		
	4.3	Replace "actual value" steering angle potentiometer (on the steering motor)	*	●		
<b>Brake system:</b>	5.1	Performance and adjustment check		●		
	5.2	Check the brake linings for wear		●		
	5.3	Check reset function of the brake pedal	*	●		
	5.4	Check the brake linkage; adjust if necessary		●		
<b>Lifting device:</b>	7.1	Check performance, wear and adjustment		●		
	7.2	Perform a visual check of rollers, sliding elements, and stops	*	●		
	7.3	Check the fork tines and fork carrier for wear and damage	*	●		
<b>Hydr. system:</b>	8.1	Performance check	*	●		
	8.2	Check all connections for leakage and damage b)	*	●		
	8.3	Check hydraulic cylinders for leakage, damage and secure attachment		●		
	8.4	Clean filter	*	●		
	8.5	Check the oil level			*	●
	8.6	Change hydraulic oil d)			*	●
	8.7	Check the pressure relief valves for correct functioning		●		

Maintenance intervals

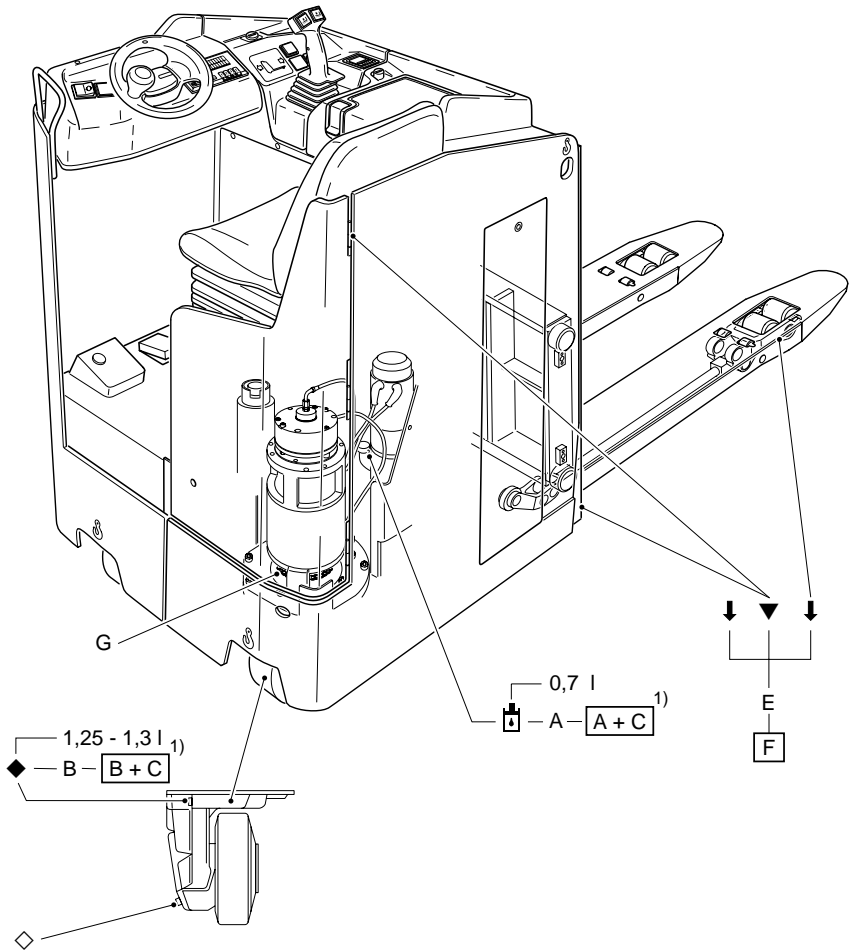
		Standard = ●	W	M	M	M
		Cold-storage depot = *	1	3	6	12
<b>Electrical system:</b>	9.1	Performance check		●		
	9.2	Check all cables for secure connection and damage		●		
	9.3	Check the fuses for correct amperage				●
	9.4	Check switches and trip cams for secure attachment and correct functioning		●		
	9.5	Check the warning installations and safety circuits for correct functioning	*	●		
	9.6	Check contactors, replace wearing parts if necessary		●		
<b>Electric motors:</b>	10.1	Check the carbon brushes for wear		●		
	10.2	Check the motor for secure attachment		●		
	10.3	Clean motor housing by means of a vacuum cleaner and check the commutator for wear		*	●	
	10.4	Check whether the cover of the steering-engine potentiometer is present.				
<b>Battery:</b>	11.1	Check acid density, acid level and cell voltage	*	●		
	11.2	Check the terminals for secure attachment and apply grease	*	●		
	11.3	Clean battery connections, check for tight seat	*	●		
	11.4	Check the battery cables for damage, renew, if necessary		●		
	11.5	Check whether the battery lock is fully functioning		●		
<b>Lubrication:</b>	12.1	Grease the vehicle in accordance with the lubrication schedule	*	●		
<b>General measurements:</b>	13.1	Check the electrical system for a grounding fault				●
	13.2	Check the driving speed and braking distance				●
	13.3	Check the lifting and lowering speed				●
	13.4	Check safety and shutdown devices		●		
<b>Demonstration:</b>	14.1	Perform a trial run under a nominal load		●		
	14.2	Upon completion of servicing operations, demonstrate the vehicle to the person responsible	*	●		

- a) Wheel bolts to be first checked for tightness after approx. 100 operating hours, tighten, if necessary.
- b) Hydraulic connections to be first checked for leakage after approx. 100 operating hours; tighten, if necessary.
- c) Check the steering chain tension for the first time after ca. 100 operating hours and adjust, if necessary.
- d) First change after 500 operating hours.



The maintenance intervals refer to normal service conditions. In case of aggravated conditions, the intervals must be reduced as required.

5 Lubrication schedule



- ▼ Gliding surfaces
- ↓ Grease nipples
- ⊞ Filler plug for hydraulic oil
- ◆ Filler plug for gear oil
- ◇ Drain plug for gear oil
- Cold store usage

1) Compound for cold store usage 1:1

2) 1.25l - 1.3l; depending on the drive type (always up to the lower edge of the filler neck).

## 5.1 Fuels, coolants and lubricants

**Handling consumption type material:** Consumption type material must always be handled properly. Manufacturer's instructions are to be observed.



Improper handling is injurious to health, life, and environment. Consumption type materials must be stored in adequate containers. They might be inflammable and, therefore, must not come into contact with hot components or open fire.

When filling in consumption type materials use clean containers only. It is prohibited to mix consumption type materials of different grades or qualities, except if mixing is expressly prescribed in these operating instructions.

Avoid spilling. Spilt liquid must be removed immediately using a suitable binding agent, and the mixture of consumption type material and binding agent is to be disposed of according to the regulations.

Code	Order No.	Supply Qty	Designation	Used for:
A	29 200 670	5.0 l	H-LP 46, DIN 51524	Hydraulic system
B	29 200 680	5.0 l	CLP 100, DIN 51517	Transmission
C	29 200 810	5.0 l	H-LP 10, DIN 51524	Transmission, hydraulic system
E	29 201 430	1.0 kg	Grease, DIN 51825	Lubrication
F	29 200 100	1.0 kg	Grease, TTF52	Lubrication

### Grease data

Code	Saponification	Dropp. point °C	Worked penetr. at 25 °C	NLG1 class	Service temperat. °C
E	Lithium	185	265 - 295	2	-35 / +120
F	—	—	310 - 340	1	-52 / +100

## 6 Instructions for the servicing operations

### 6.1 Preparing the truck for servicing and maintenance operations

All required safety measures must be taken to prevent any accidents in the course of the servicing and maintenance operations. The following preparatory operations must be performed:

- Park the truck and render it safe (refer to chapter E).
- Disconnect the battery plug to prevent accidental starting of the truck (refer to chapter D)



When work has to be performed under the jacked-up truck, suitable measures must be taken to prevent any dropping, tilting or slipping of the truck. When lifting the truck, the instructions contained in the chapter "Transportation and commissioning" have to be observed.

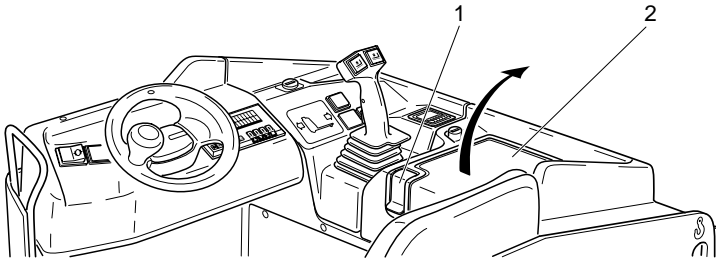
### 6.2 Tilting up the armrest

- Pull up the release (1).

The armrest (2) will swivel upwards.

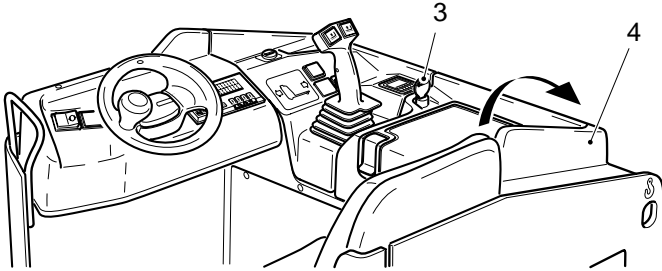


The hex key is now accessible.



### 6.3 Opening the battery hood

- Use the service key to unlock the battery hood (3).
- Swing the battery hood (4) upward and lock it.

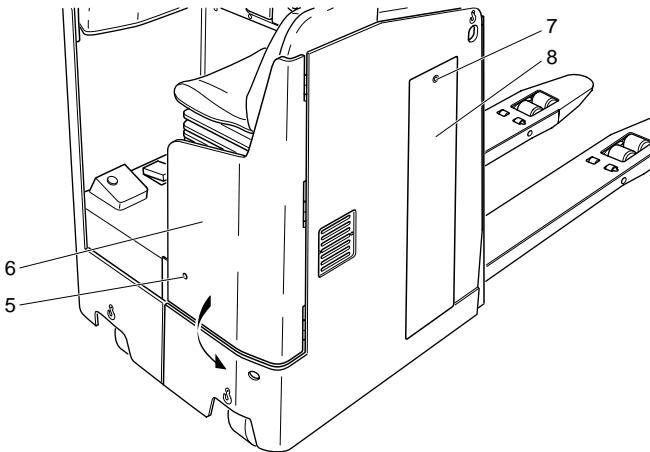


### 6.4 Opening the seat hood

- Use the hex key located beneath the armrest (2) to open the seat hood (5).
- Swing the seat hood (6) to the outside.



Drive unit, steering motor, steering control and the hydraulic installation can be easily accessed for maintenance works.



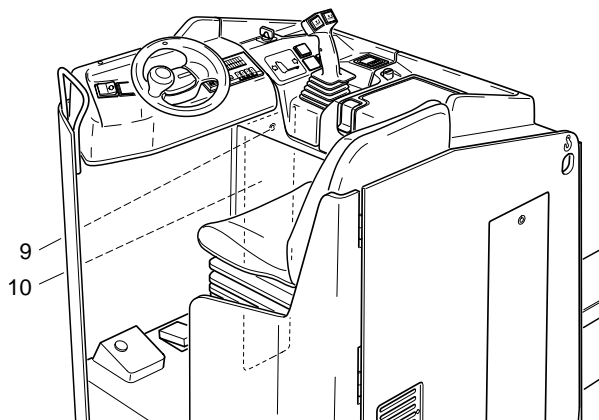


## 6.5 Opening the control flap

- Open the latch (9) with the hex key (located beneath the armrest (2)).
- Take out the control flap (10) and put it aside.



The drive current control system and the truck fuses are readily accessible for servicing purposes.



Do not drive the truck unless the hoods are closed and locked in the stipulated manner.

## 6.6 Tightening the wheel screws

The wheel screws of the drive wheel must be retightened in accordance with the servicing intervals indicated in the servicing checklist.

- Position the drive wheel (12) at right angles to the longitudinal axis of the truck.
- Tighten all wheel-fixing bolts (10) using a wrench which is to be inserted through the opening (13) of the collision guard.

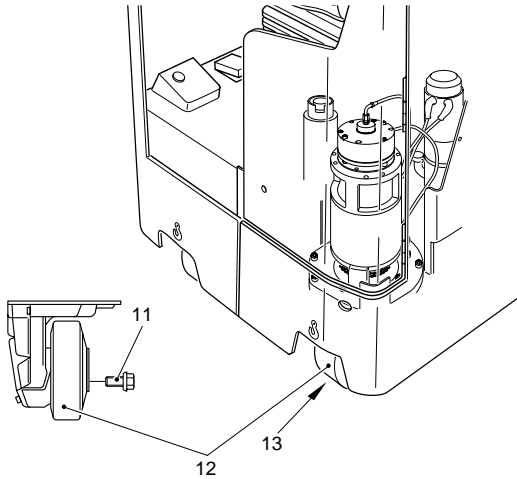


Tightening torque

- 1st step - MA = 10 Nm
- 2nd step - MA = 105 Nm

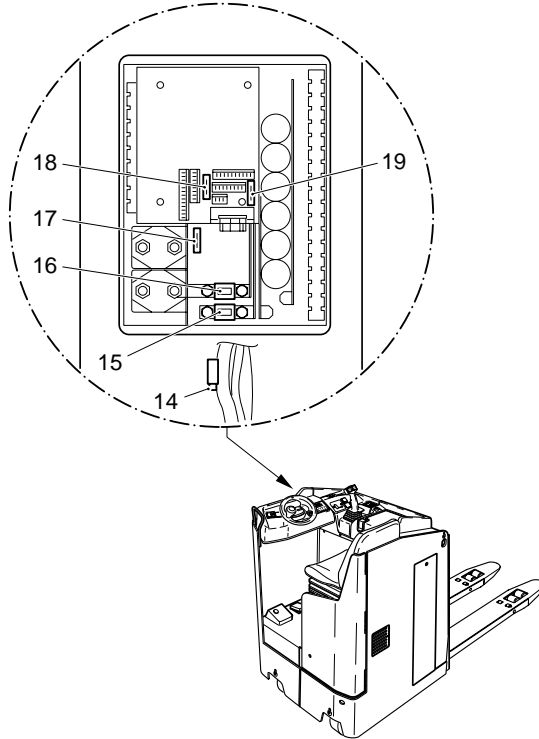


Remove the wrench after tightening the wheel-fixing bolts.



## 6.7 Checking the electric fuses

- Prepare the truck for the servicing and maintenance operations (refer to chapter F, section 6.1).
- Open the hoods (refer to chapter F, section 6.3 and 6.4).
- Referring to the table, check all fuses for correct rating and damage; replace fuses where required.



Item.	Designation	Protection of:	Value
14	3F9	Steering motor	30 A
15	1F1	Pump motor	150 A
16	2F1	Drive motor	150 A
17	1F10	Field "Driving"	40 A
18	6F2	Battery discharge indicator / operating hour meter	10 A
19	F1	Entire control circuit	10 A

- Reclose the hoods (refer to chapter F, section 6.3 and 6.4).

## 6.8 Recommissioning the truck

Recommissioning of the truck following the performance of cleaning or maintenance work is permitted only after the following operations have been performed:

- Check the horn for proper functioning.
- Check the master switch for correct functioning.
- Check the brake for correct functioning.
- Lubricate truck according to lubrication schedule.

## 7 Decommissioning the fork lift truck

If the fork lift truck is to be decommissioned for more than two months, it must be parked in a frost-free and dry location and all measures to be taken before, during and following decommissioning must be performed as detailed below.



During decommissioning, the fork lift truck must be jacked up, ensuring that the wheels are clear of the ground. Only this measure will ensure that wheels and wheel bearings do not suffer damage.

If the fork lift truck is to be decommissioned for more than 6 months, additional measures must be discussed with the Service Department of the manufacturer.

### 7.1 Operations to be performed prior to decommissioning

- Thoroughly clean the fork lift truck.
- Check the brakes for correct function.
- Check the hydraulic oil level and top up if required (refer to chapter F).
- Apply a thin film of oil or grease to all parts not protected by a paint coating.
- Grease the fork lift truck as detailed in the lubrication chart (refer to chapter F).
- Recharge the battery (refer to chapter D).
- Disconnect and clean the battery. Apply pole grease to the battery poles.



In addition to this, all instructions given by the battery supplier must be observed.

- Spray all exposed electrical contacts with a suitable contact spray.

### 7.2 Measures to be taken during decommissioning

#### Every 2 months:

- Recharge the battery (refer to chapter D).



Battery-operated fork lift trucks:

Regular recharging of the battery is very important; otherwise, exhaustive depletion of the battery caused by self-discharging would occur. Owing to sulfatisation, this will result in the destruction of the battery.

### 7.3 Recommissioning the truck

- Thoroughly clean the fork lift truck.
- Lubricate the fork lift truck according to the lubrication chart (refer to chapter F).
- Clean the battery. Grease the pole screws using pole grease and reconnect the battery.
- Recharge the battery (refer to chapter D).
- Check if the gear oil contains condensed water and change if required.
- Check if the hydraulic oil contains condensed water and change if required.
- Start up the fork lift truck (refer to chapter E).



Battery-operated fork lift trucks:

If switching troubles are experienced in the electric system, spray the exposed contacts with contact spray and remove any oxide layer on the contacts of the operating controls by repeated operation.



Perform several brake tests immediately after recommissioning the truck.

## 8 Safety checks to be performed at regular intervals and following any untoward incidents (D): Accident prevention check according to VBG 36)

At least once yearly, or after any untoward incident, the fork lift truck has to be checked by a qualified inspector. The inspector must assess the condition of the truck from a standpoint purely concerned with safety aspects, uninfluenced by any company or economic circumstances. The inspector must be adequately informed and experienced to be able to assess the condition of the fork lift truck and the effectiveness of the safety installations based on the technical rules and principles governing the inspection of fork lift trucks.

The inspection must comprise a comprehensive check of the technical condition of the fork lift truck with regard to accident prevention aspects. Apart from this, the fork lift truck must be thoroughly inspected for damage possibly caused by incorrect use of the fork lift truck. The inspection results must be recorded in an inspection report which must be kept available for a period spanning at least the next two inspection intervals.

The user has to ensure that all defects are eliminated without delay.



The manufacturer has set up a special safety service with specially qualified staff. As visual proof that the fork lift truck has passed the safety inspection, a plaque is affixed to it. This plaque indicates in which month of which year the next test will be due.