EFG-Vac 22-30 / 25L/S/SL

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Operating instructions

50116333

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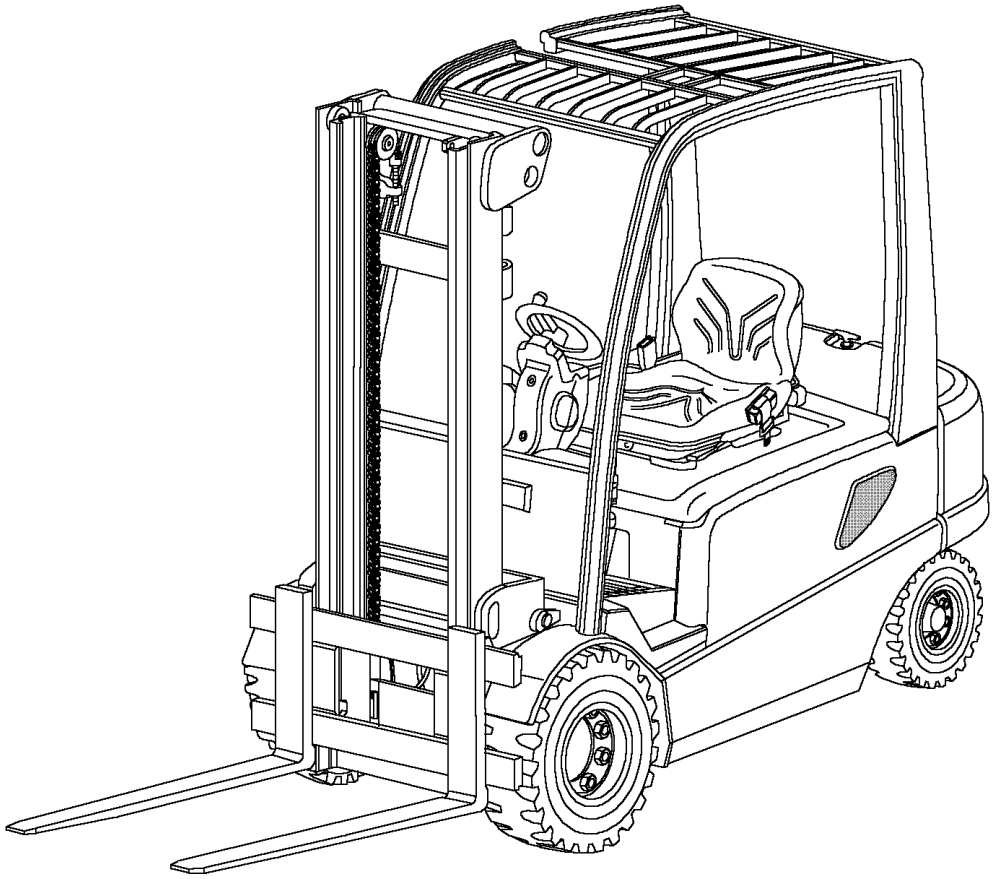

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Machines. Ideas. Solutions.

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.

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F Maintenance of the fork lift truck

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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 operator must ensure that damaged and/or poorly readable load diagrams are renewed. 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 instructions are not observed the warranty becomes void. The same applies if improper works are carried out at 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.

Trailing and slipping loads: The truck may only be used for trailing or slipping loads for which the truck has been approved.

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A 2

B Description of the truck

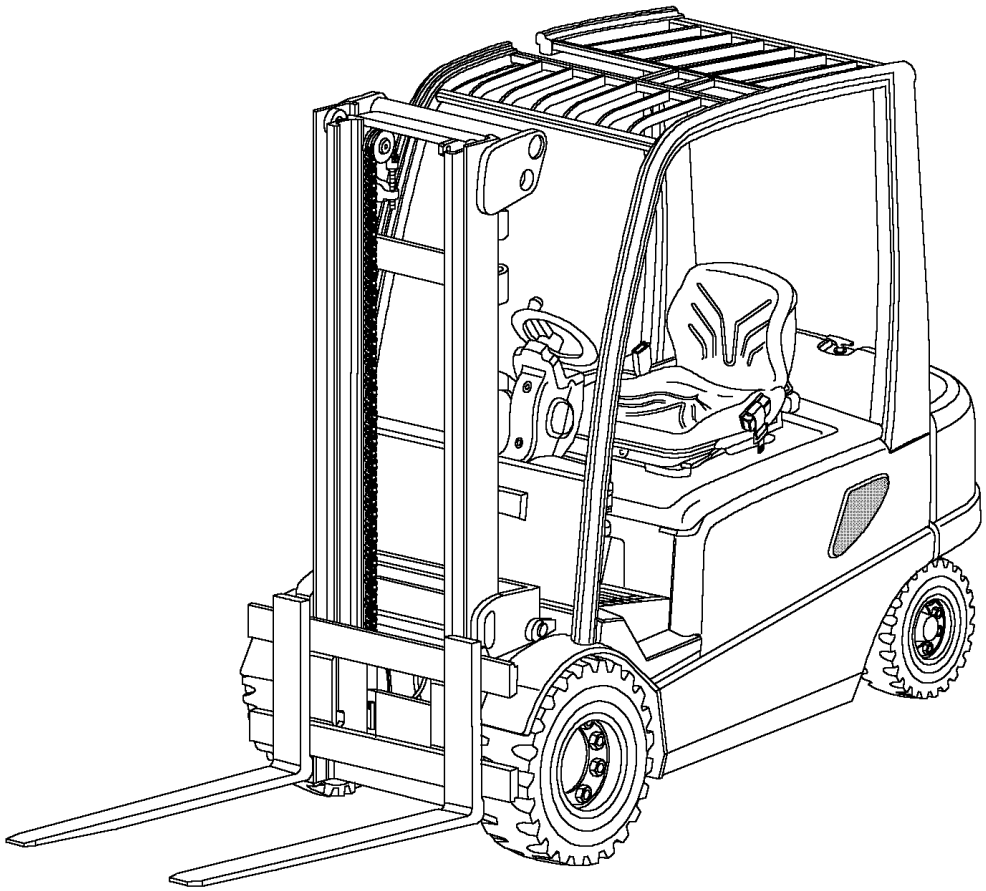
1 Design and application

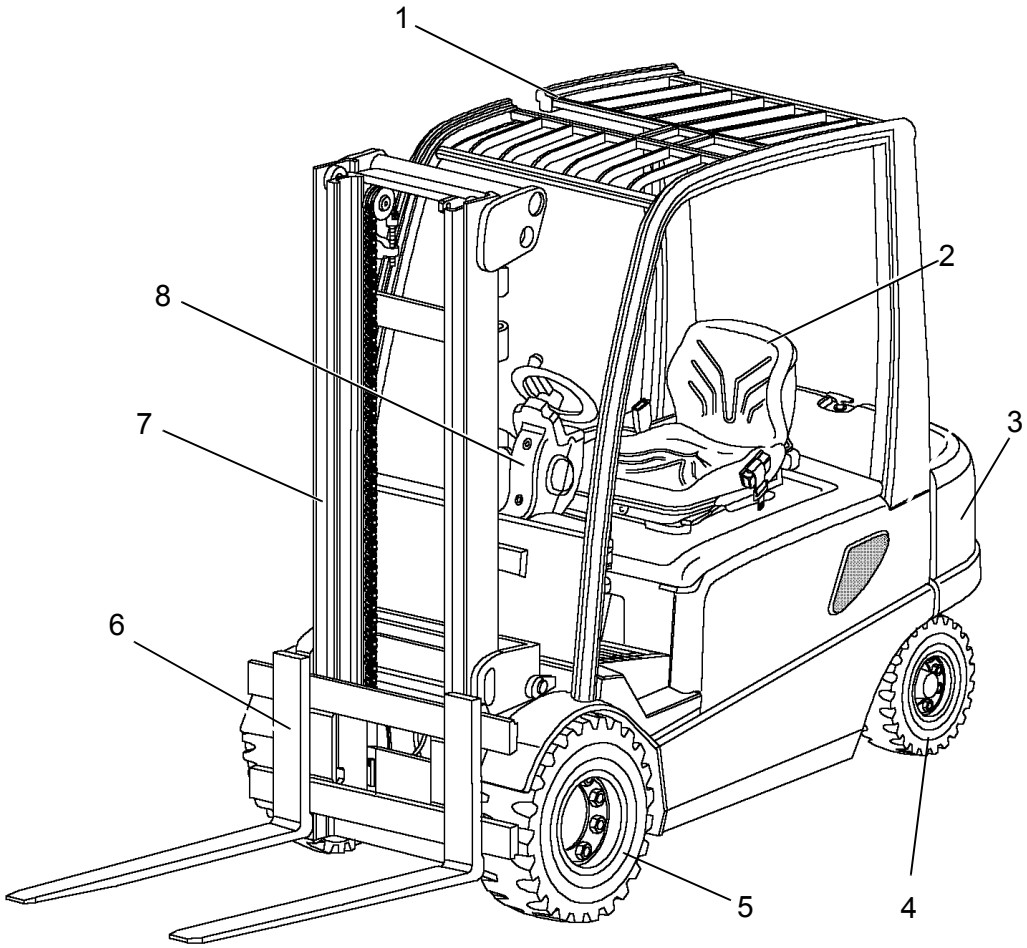
EFG-Vac is an electric rider-controlled fork lift truck in four-wheel construction with front drive which picks up, transports, and lifts its load outside the wheelbase. It is a cantilevered counterbalance truck which can – due to its load lifting device being located in front of the lift truck – unload lorries and deliver the load on ramps or in racks unimpededly. It can be used to stack and transport DIN 15142 pallets, DIN 15144 lattice box pallet, and other palletised loads.

Truck types and maximum carrying capacity:

Type	max. carrying capacity *)	Load centre
EFG-Vac 22	2,200 kg	500 mm
EFG-Vac 25	2,500 kg	500 mm
EFG-Vac 30	3,000 kg	500 mm

*) The load diagrams attached to the trucks are binding for the carrying capacity





Item		Designation
1	●	Overhead guard
2	●	Driver seat
3	●	Counterweight
4	●	Steering axle
5	●	Drive axle
6	●	Fork arm carriage
7	●	Lifting mast
8	●	Steering

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2.1 Truck

Steering (8): When a load is applied to the driver seat the steering is switched to Standby. The steering unit runs at a preset idle speed. Depending on the steering request the steering pump is increased and the travel speed is reduced depending on the steering arc (“CurveControl”). The steering angle is indicated in the display.

Driver seat (2): The driver seat is a comfort seat and the steering column is adjustable. There are storage places for documents or personal belongings of the driver. The MULTI-PILOT combines all hydraulic functions and the travel direction switch in one single lever. The overhead guard (1) is prepared for a cabin installation and thus can be easily retrofitted.

Electric/electronic system: Sophisticated three-phase AC technology enables data transfers with few cables only (CAN bus). Thus we achieve decreased susceptibility to faults caused be broken cables as well as considerably faster fault isolation. The complex TC system (Total Control) is designed for simply, safe, and flexible usage. Depending on the load the driver can select from different operating programmes: from high-performance to energy-saving. Convenient and very fast fault analysis and programming can be performed via PC.

Drive and brake system: The front drive offers ideal traction to the drive wheels at all times.
The hydraulically actuated oil-bath multi-disk brake used a service brake is practically maintenance-free. The encapsulation in the transmission allows applications even in aggressive environments. In addition, the lift truck is generatively braked via the travel motor. Thus the energy consumption is minimised.

After approximately 15 sec standstill of the truck or 1 to 15 sec (adjustable) after the driver seat is relieved the **spring-loaded brake** engages.
When actuating the accelerator the spring-loaded brake is automatically disengaged.

Hydraulic system: All functions must be executed sensitively, proportionally, and simultaneously (only if this does not impair the safety). For higher efficiency a hydraulic unit and a steering booster motor function separately from each other. The micro pressure filter can be changed from the top (without spilling hydraulic oil).

Lifting mast (7): Our goal is optimising the view. The high-strength steel profiles are narrow, which is especially notable in the three-stage lifting mast with its good view to the fork arms. The same good results are achieved for the fork arm carriage.
The lifting mast as well as the fork arm carriage move on prelubricated and thus maintenance-free cocked support rollers.

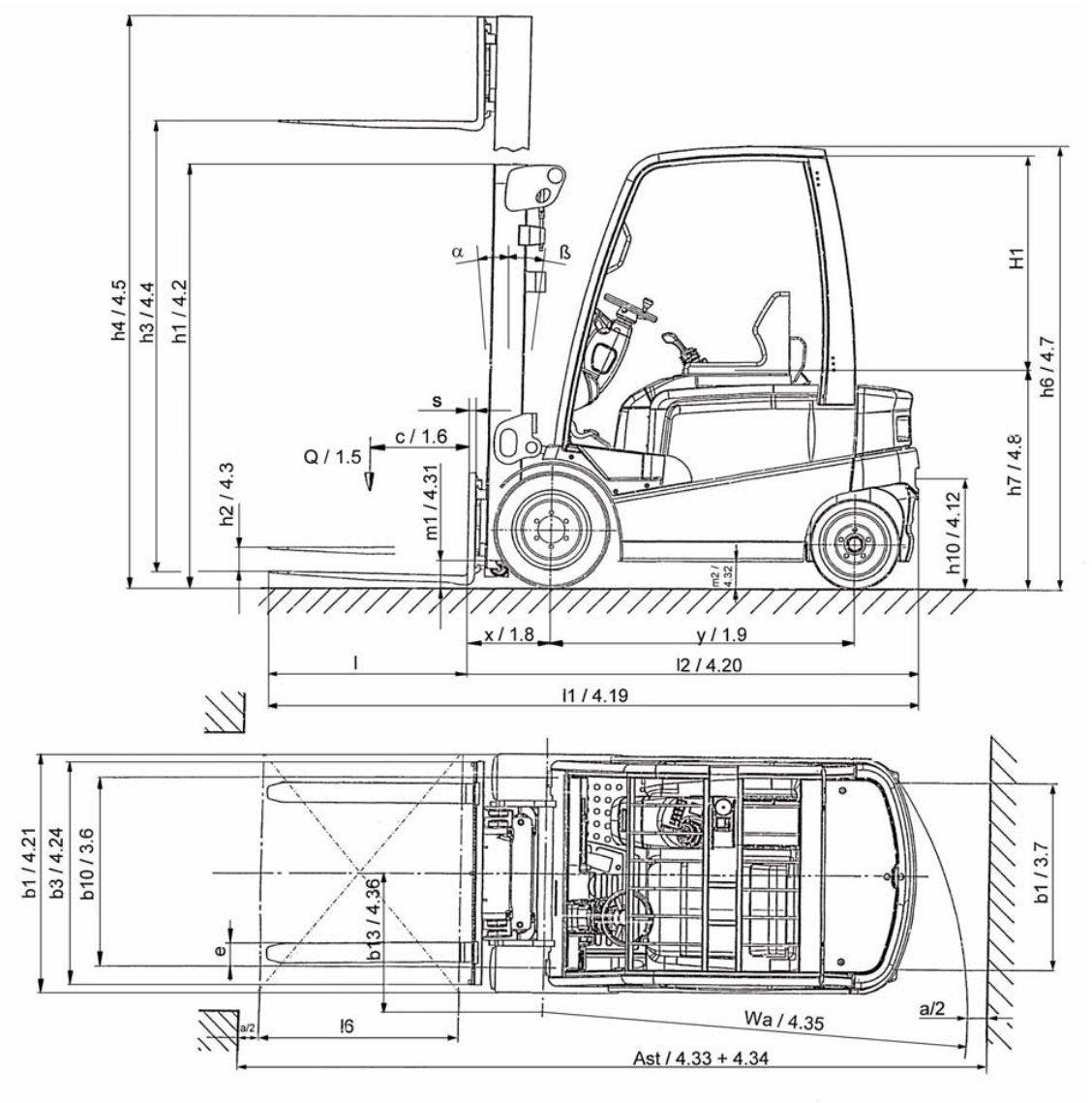
3 Technical data - standard version

	Designation	EFG-Vac 22	EFG-Vac 25	EFG-Vac 25L	
h_1	Height with mast retracted	2,200	2,200	2,200	mm
h_2	Free lift height	150	150	150	mm
h_3	Lift	3,100	3,100	3,100	mm
h_4	Height with mast extended	3,696	3,696	3,696	mm
h_6	Height above overhead guard	2,215	2,215	2215	mm
h_7	Seating height/standing height	1,060	1,060	1,060	mm
	Seating room H1	1,105	1,105	1,105	
h_{10}	Coupling height	390/ 550	390/ 550	390/ 550	mm
L_1	Overall length including fork	3,428	3,428	3,572	mm
L_2	Length including fork back	2,278	2,278	2,422	mm
b1	Overall width	1,196	1,196	1,196	mm
b3	Width of fork arm carriage	1,120	1,120	1,120	mm
m_1	Ground clearance with load under lifting mast	110	110	110	mm
m_2	Ground clearance at centre of wheelbase	125	125	125	mm
Ast	Width of aisle with pallets 800 × 1,200 lengthwise	3,875	3,875	4,025	mm
Ast	Width of aisle with pallets 1,000 × 1,200 crossways	3,675	3,675	3,825	mm
W_a	Turning radius	2,050	2,050	2,200	mm
x	Load distance	425[1)]	425[1)]	425[1)]	mm
y	Wheel-base	1,537	1,537	1,681	mm

[1)] = +25 mm DZ mast

	Designation	EFG-Vac 25S	EFG-Vac 25SL	EFG-Vac 30	
h_1	Height with mast retracted	2,200	2,200	2,200	mm
h_2	Free lift height	150	150	150	mm
h_3	Lift	3,100	3,100	3,100	mm
h_4	Height with lifting mast extended	3,696	3,696	3,806	mm
h_6	Height above overhead guard	2,215	2,215	2,215	mm
h_7	Seating height/standing height	1,060	1,060	1,060	mm
	Seat clearanceH1	1,105	1,105	1,105	
h_{10}	Coupling height	390/550	390/550	390/550	mm
L_1	Overall length including fork	3,428	3,572	3,577	mm
L_2	Overall length including fork back	2,278	2,422	2,427	mm
b1	Overall width	1,196	1,196	1,196	mm
b3	Width of fork arm carriage	1,120	1,120	1,120	mm
m_1	Ground clearance under lifting mast with load	110	110	110	mm
m_2	Ground clearance at centre of wheelbase	125	125	125	mm
Ast	Width of aisle with pallets 800 × 1,200 lengthwise	3,875	4,025	4,030	mm
Ast	Width of aisle with pallets 1,000 × 1,200 crossways	3,675	3,825	3,830	mm
W_a	Turning radius	2,050	2,200	2,200	mm
x	Load distance	425[1)]	425[1)]	430[1)]	mm
y	Wheel-base	1,537	1,681	1,681	mm

[1)] = +25 mm DZ mast



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3.1 Performance data

	Designation	EFG-Vac 22	EFG-Vac 25	EFG-Vac 25L	
Q	Carrying capacity/load	2.2	2.5	2.5	t
c	Load centre	500	500	500	mm
	Travel speed with/without load	17/18	17/18	17/17	km/h
	Lifting speed with/without load	0.46/0.54	0.44/0.54	0.44/0.54	m/s
	Lowering speed with/without load	0.58/0.56	0.58/0.56	0.58/0.56	m/s
	Negotiable gradient with/without load S2 30 min.	10/15	8.5/14	7.5/13	%
	Max. negotiable gradient with/without load S2 5 min.	20/31	18/29	17/27	%
	Acceleration time with/without load for 10 m	4.2/3.9	4.3/4,0	4.4/4.1	s

	Designation	EFG-Vac 25S	EFG-Vac 25SL	EFG-Vac 30	
Q	Carrying capacity/load	2.5	2.5	3.0	t
c	Load centre	500	500	500	mm
	Travel speed with/without load	20/20	20/20	20/20	km/h
	Lifting speed with/without load	0.55/0.60	0.55/0.60	0.50/0.60	m/s
	Lowering speed with/without load	0.58/0.56	0.58/0.56	0.58/0.56	m/s
	Negotiable gradient with/without load S2 30 min.	12/19	11/17	10/17	%
	Max. negotiable gradient with/without load S2 5 min.	21/35	20/32	18/29	%
	Acceleration time with/without load for 10 m	4.1/3.7	4.1/3.7	4.2/3.8	s

3.2 Weight (all weights in kg)

Designation	EFG-Vac 22	EFG-Vac 25	EFG-Vac 25L	
Dead weight (incl. battery)	4,300	4,600	4,750	kg
Battery weight	1,558	1,558	1,872	kg
Load per axle with load front/rear	5,800/700	6,300/800	6,400/850	kg
Load per axle without load front/rear	2,300/2,000	2,300/2,300	2,530/2,220	kg

Designation	EFG-Vac 25 S	EFG-Vac 25 SL	EFG-Vac 30	
Dead weight (incl. battery)	4,600	4,750	5,100	kg
Battery weight	1,558	1,872	1,872	kg
Load per axle with load front/rear	6,300/800	6,400/850	7,250/850	kg
Load per axle without load front/rear	2,300/2,300	2,530/2,220	2,600/2,500	kg

3.3 Tyres

	Designation	EFG-Vac 22	EFG-Vac 25	EFG-Vac 25L	
	Solid rubber tyres, SE (= solid), air	Solid	Solid	Solid	
	Tyre size, front	23 x 9-10	23 x 9-10	23 x 9-10	
	Tyre size, rear	18 x 7-8	18 x 7-8	18 x 7-8	
	Number of wheels, front/rear (x=driven)	2x / 2	2x / 2	2x / 2	
b_{10}	Track, front	990	990	990	mm
b_{11}	Track, rear	920	920	920	mm

	Designation	EFG-Vac 25S	EFG-Vac 25SL	EFG-Vac 30	
	Solid rubber tyres, SE (= solid), air	Solid	Solid	Solid	
	Tyre size, front	23 x 9-10	23 x 9-10	23 x 10-12	
	Tyre size, rear	18 x 7-8	18 x 7-8	18 x 7-8	
	Number of wheels, front/rear (x=driven)	2x / 2	2x / 2	2x / 2	
b_{10}	Track, front	990	990	956	mm
b_{11}	Track, rear	920	920	920	mm

3.4 Trailer loads

	EFG-Vac 22	EFG-Vac 25	EFG-Vac 25L	
Max. permissible trailer loads	12,900	13,800	13,800	kg
	EFG-Vac 25S	EFG-Vac 25SL	EFG-Vac 30	
	13,800	13,800	15,300	kg

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3.5 EN standards

Continuous sound pressure:

EFG-Vac 22/25/25L = 70 dB(A)
EFG-Vac 25S/25SL/30 = 71 dB(A)

according to EN 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: EFG-Vac 22-30 = $a_{w,zS} = 0.45\ m/s^2$

According to EN 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 EN 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.

3.6 Conditions for application

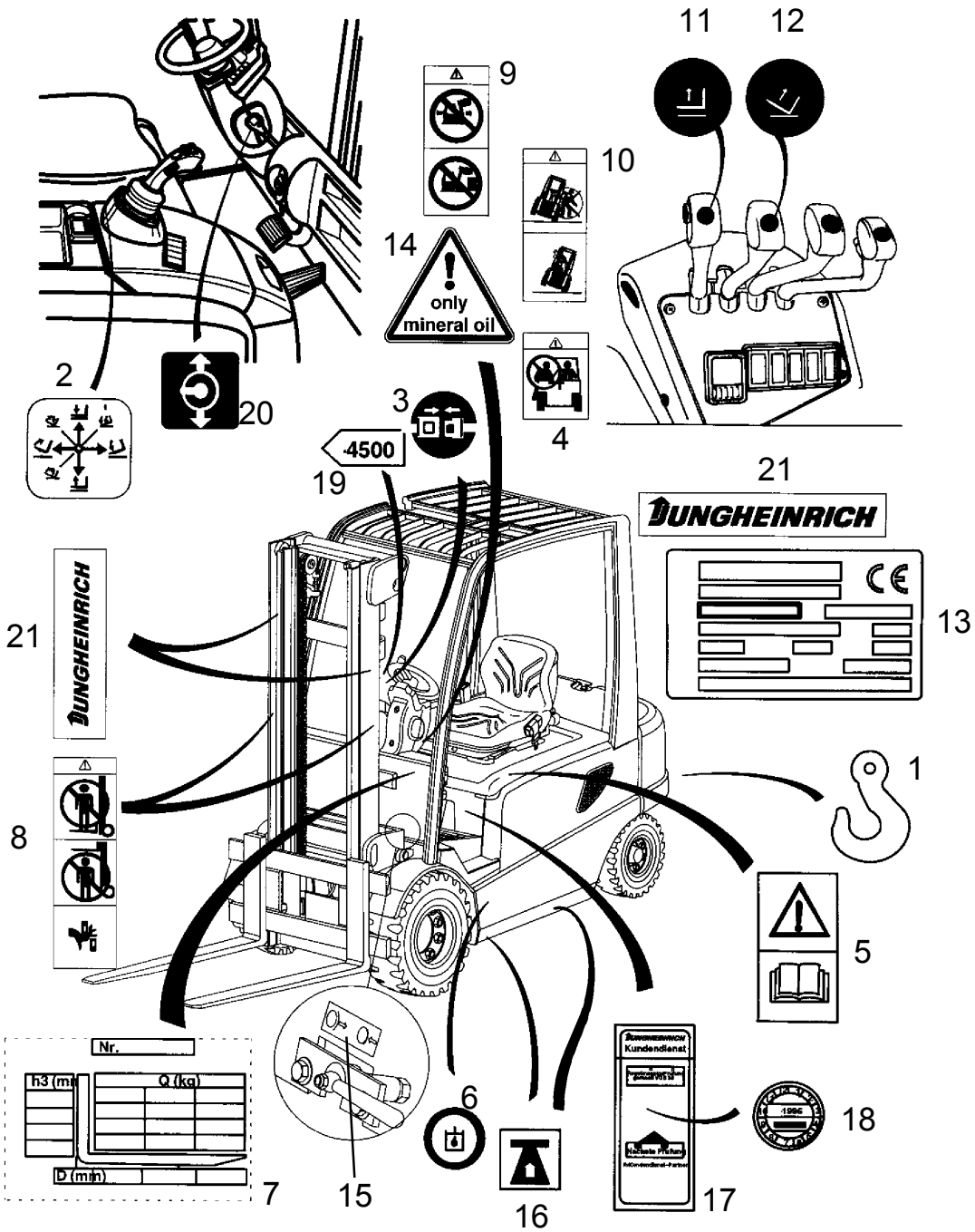
Ambient temperature:

- during operation: -20°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.

4 Label positions and identification plates

Warning and information labels such as load diagrams, sling points, and ID plates must be readable at all times and must be renewed, if necessary.



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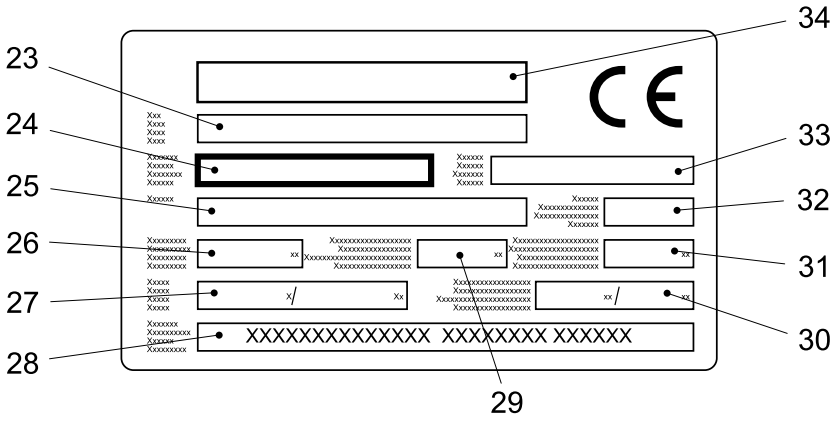
Item	Designation
1	Label, sling points
2	Label, hydraulic functions (MULTI-PILOT)
3	Label, safety belt
4	Label, No passengers allowed
5	Label, observe operating instructions
6	Label, refill hydraulic oil
7	Label, capacity
8	Label, do not step on or under load, danger of crushing
9	Label, do not drive with elevated load, forward mast tilt with elevated load prohibited
10	Label, warning when turning over
11	Label, lifting/lowering
12	Label, tilt forward/backward
13	Identification plate
14	Label, mineral oil
15	Label, spring-loaded brake
16	Label, lifting point
17	Accident prevention inspection label
18	Label, inspection plate
19	Label, lift limitation
20	Label, steering column adjustment
21	Label, Jungheinrich

4.1 Identification plate, truck



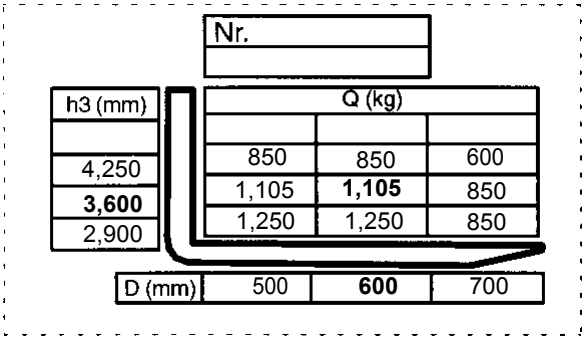
Item	Designation	Item	Designation
23	Type	29	Load centre distance in mm
24	Serial no.	30	Min./max. battery weight in kg
25	Order No.	31	Dead weight without battery in kg
26	Carrying capacity in kg	32	Year of manufacture
27	Battery: Voltage V Ampere hours Ah	33	Type No.
28	Manufacturer	34	Manufacturer's logo

☞ In the event of queries relating to the truck or spare part orders, please state the serial No. (24) of the truck.

4.2 Truck load diagram

The truck load diagram indicates the carrying capacity Q kg of the truck with the lifting mast in vertical position. The table shows the maximum carrying capacity at a standard load centre distance D (in mm) and the desired lifting height H (in mm).

Example:

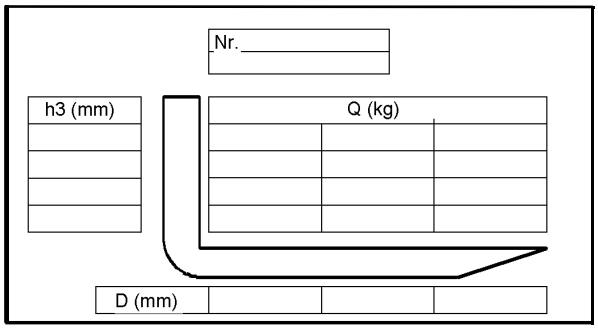


Example for determining the maximum carrying capacity:

At a load centre distance of D = 600 mm and maximum lifting height H = 3,600 mm the maximum carrying capacity Q = 1,105 kg.

4.3 Fork arm load diagram (basic device)

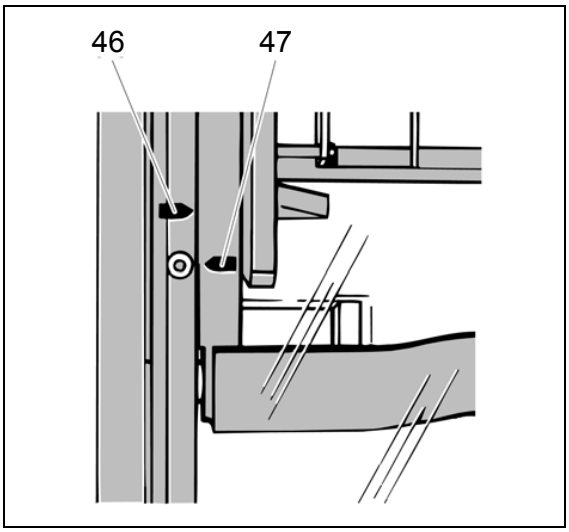
The fork arm load diagram indicates the carrying capacity Q of the truck in kg. In the diagram the maximum carrying capacity for different load centres D (in mm) is shown.



4.4 Attachment load diagram

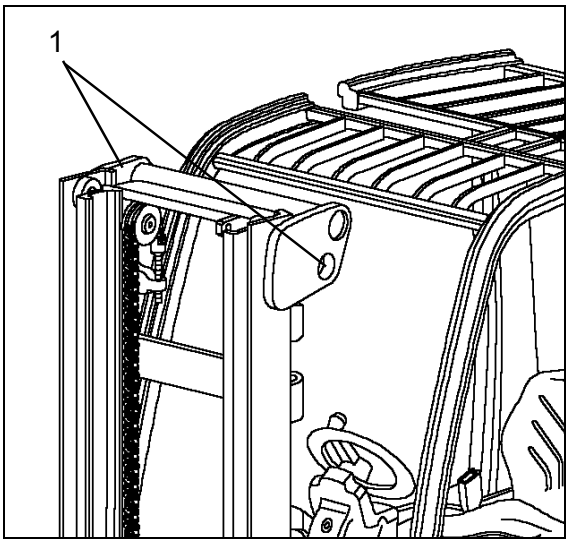
The attachment load diagram indicates the carrying capacity Q of the truck in connection with the respective attachment in kg. The attachment serial number indicated in the load diagram must correspond to the ID plate of the attachment, since the manufacturer must state the carrying capacity specially for each attachment. It is indicated in the same way as the carrying capacity of the truck itself and must be determined accordingly.

The arrow markings (46 and 47) at the inner respectively outer mast indicate to the driver that the lift limitations prescribed in the load diagram have been reached.



C Transportation and commissioning

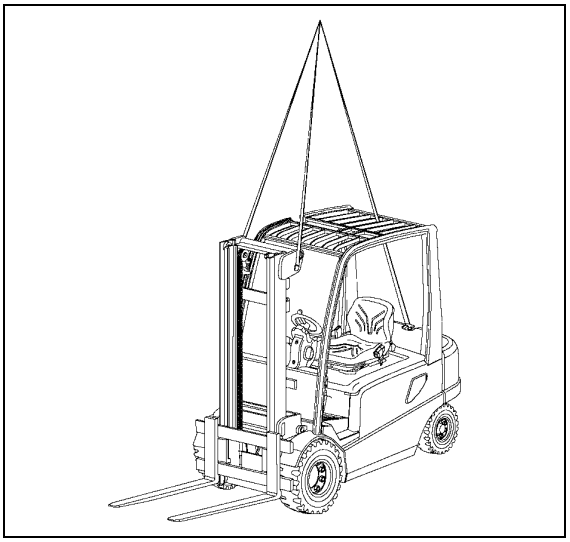
1 Transportation by crane



⚠ Only lifting gear of adequate capacity must be used
(loading weight = own weight + battery weight; see identification plate of the truck).

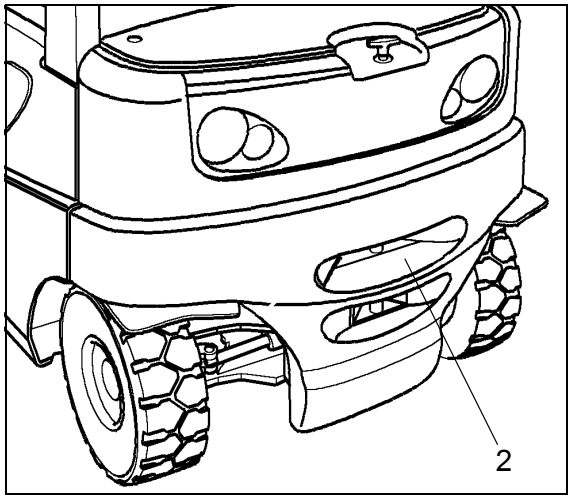
– Safe parking of the truck
  (refer to chapter E)
– Fasten hoisting gear at lifting mast crossbeam (1) and at trailer coupling (2).

⚠ Transporting by crane is only provided for transport for first commissioning.
For application conditions that require frequent shipment (changing usage locations) it is required to consult the manufacturer.



⚠ Hoisting belts or chains may only be hooked into the top lug of the counterweight and the lugs of the end crosshead (lifting mast).
The lifting mast must be fully tilted back.
The hoisting belt or chain at the mast must have a minimum free length of 2 m.

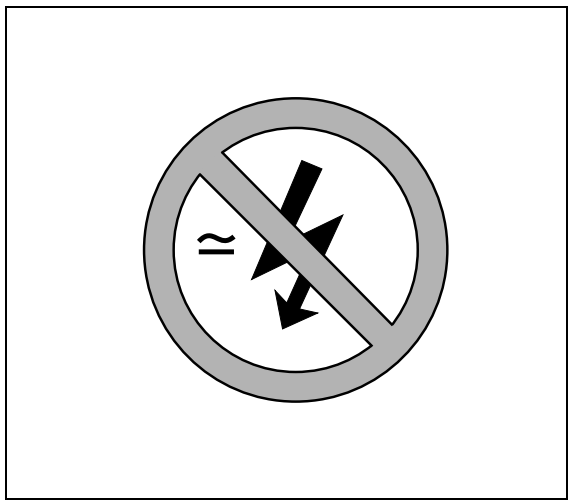
⚠ The crane hoisting gear must be attached in such a way that it cannot touch any attached components or the overhead guard during lifting.



2 Commissioning

Commissioning and instructing drivers may only be performed by appropriately trained personnel. If several trucks are delivered, care must be taken that only load carrying units, lifting masts, and basic truck with identical serial numbers are assembled.

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 equipment for completeness.
- Check battery connections and acid level (refer to chapter D, section 6).
- Check tightening torque of wheel nuts (refer to chapter F, section 6.3).
- Bring the truck into service as prescribed (refer to chapter E, section 3).

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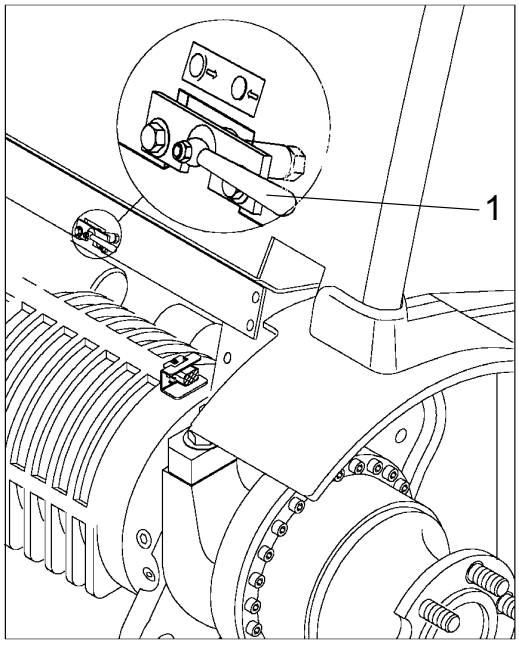
3 Moving the truck with the drive unit inoperative

In order to move the truck without electricity supply, the spring-loaded brake must be disengages as follows:

– Set lever (1) to position “Disengage spring-loaded brake”.
– Turn the steering wheel clockwise until pressure builds up in the hydraulics circuit and the spring-loaded brake is disengaged. (This can be noticed by checking whether the brake pedal functions normally, if the brake is still engaged you feel an immediate resistance). The drive wheels are no longer blocked resp. decelerated by the spring-loaded brake. The foot brake will still be fully operative. While turning the steering wheel the foot brake must not be actuated.



STOP Before the driver leaves the truck with the spring-loaded brake disengaged he must secure the truck against accidental rolling away.

⚠ Prior to recommissioning the truck by applying power again, lever (1) must be set to the right to “Travel position”. The truck is now ready to operate in travel position.

4 Towing the truck

– Connect a tow-rod/towing rope at the trailer coupling of the recovery vehicle and at the truck to be towed.
– Disconnect the battery plug (observe item 3!).
– Disengage the parking brake.

STOP There must be a person for steering the truck on the driver seat of the truck to be towed. Tow the truck at walking speed!

☞ As the steering booster is not switched on, the truck can only be steered with increased effort.

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.

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2 Battery types

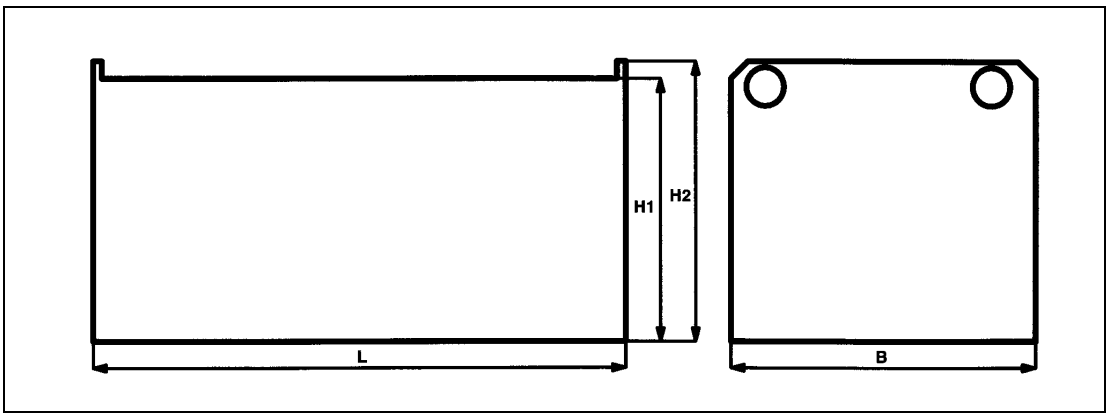
In dependence on the application, the truck is equipped with different battery types. The following table shows which standard combinations are possible, similar to DIN 43535, with indication of the capacity.

EFG-Vac 22	80 V - 4PzW - battery 480 Ah 80 V - 4PzS - battery 560 Ah
EFG-Vac 25	80 V - 4PzW - battery 480 Ah 80 V - 4PzS - battery 560 Ah 80 V - 4PzS - battery 600 Ah
EFG-Vac 25L/30	80 V - 5PzW - battery 600 Ah 80 V - 5PzS - battery 700 Ah 80 V - 5 PzS - battery 750 Ah

The battery weight is indicated on the rating plate of the battery.

Battery weight and dimensions have a considerable influence on the stability of the truck. For this reason, the dimensions and weight of the batteries must correspond to the following table and drawing. Operation of the truck with non-conforming batteries is only allowed with prior approval by the manufacturer.

Drive battery 80 V						similar to DIN 43535
Truck	Dimension (mm)				Nom. weight (-5/+8%)in kg	
	L max.	B max.	H1 +/- 2 mm	H2 +/- 2 mm		
EFG-Vac 22	1028	711	769	784	1558	480 - 560 Ah
EFG-Vac 25/ 25 S	1028	711	769	784	1558	480 - 600 Ah
EFG-Vac 25L/25SL/30	1028	855	769	784	1863	600 - 750 Ah



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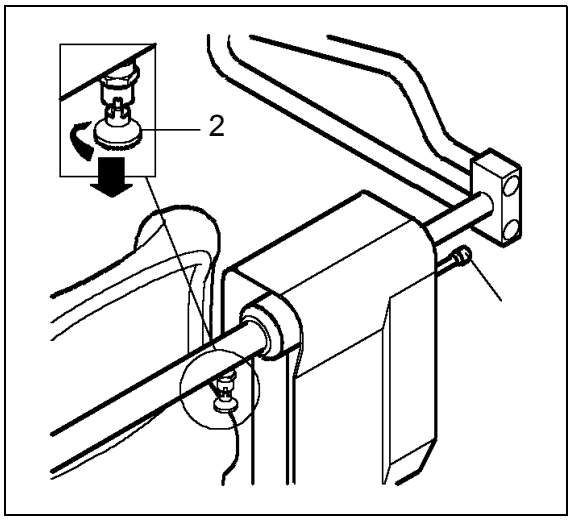
3 Opening the battery hood with support system (optional)

⚠ If the truck is equipped with a support system, the battery hood can only be opened when the safety straps are swivelled downwards.

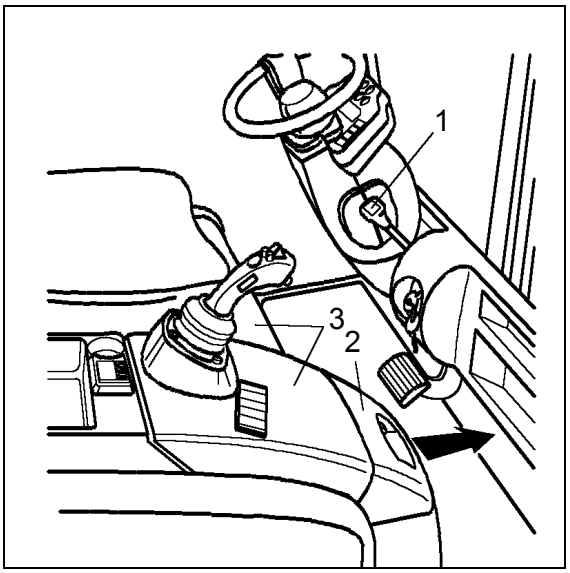
– In case of the automatic support system, lock the stop knob (2) and swivel the straps downwards.



4 Exposing the battery

Park and lock the truck (see chapter E).

– Release steering column lock (1), push steering column forward and secure in this position.



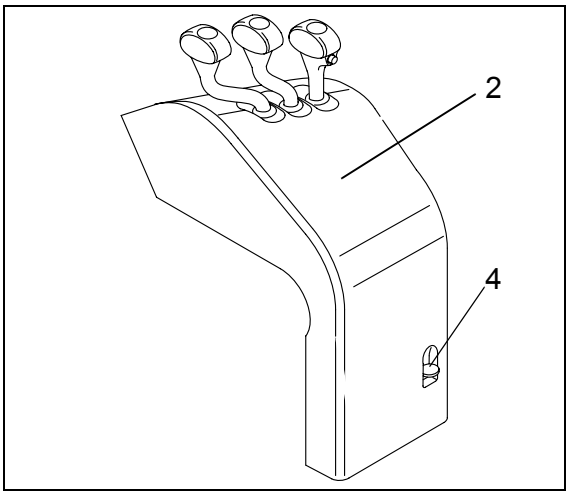
Pay special attention when unlatching and latching the control valve cover.

With MULTIPILOT:

– Pull control valve cover (2) forward until it engages.
– Carefully fold back battery cover with driver's seat (3).

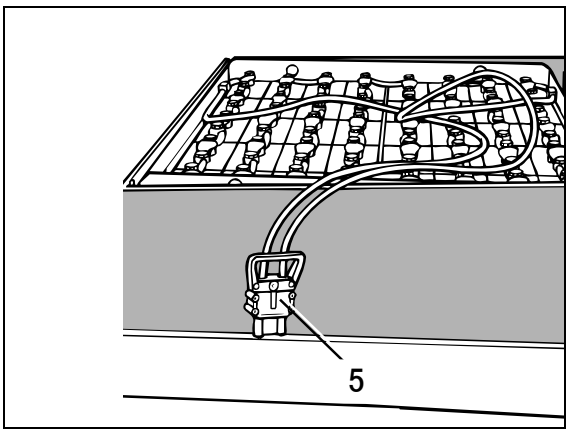
With SOLOPILOT:

– Unlatch control valve cover (2) by pressing lever (4) and swivel forward.
– Carefully fold back battery cover with driver's seat.



Connecting and disconnecting the battery plug and socket is only permitted with the main switch and charger switched off.

– Unplug battery connector (5).
– If necessary, remove any insulating mats from the battery.



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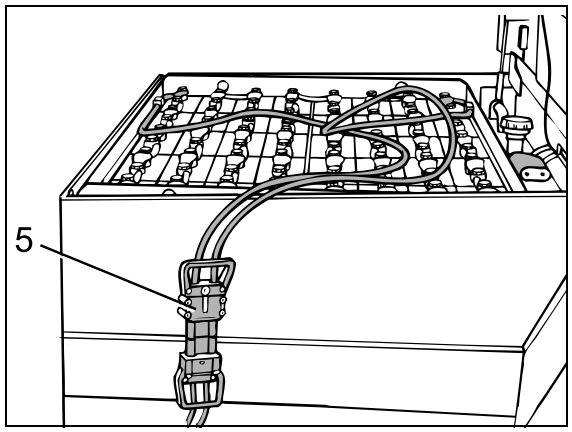
5 Charging the battery

– Expose the battery (refer to chapter D, section 3).

Connecting and disconnecting battery and charger is only permitted with the charger switched off.
The surface of the battery cells must be uncovered during charging operation, to guarantee sufficient aeration. Do not put any metal objects on the battery.

Check all cable and plug connections for visible damages prior to charging.

– Connect charging cable of the battery charging station to battery plug (5).
– Charge the battery according to the instructions of the battery and charger manufacturer.

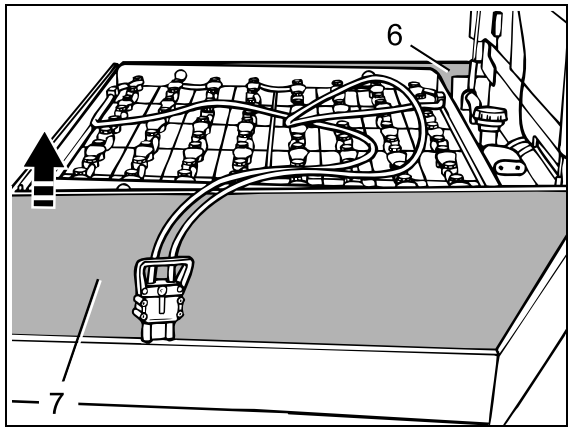


All safety instructions as provided by the battery supplier and battery charger supplier must be strictly observed. During charging, the battery cover must remain open at all times, so that any gas generated by the charging process can volatilise. No not use any open fire or light. Explosion hazard!

6 Removing and installing the battery

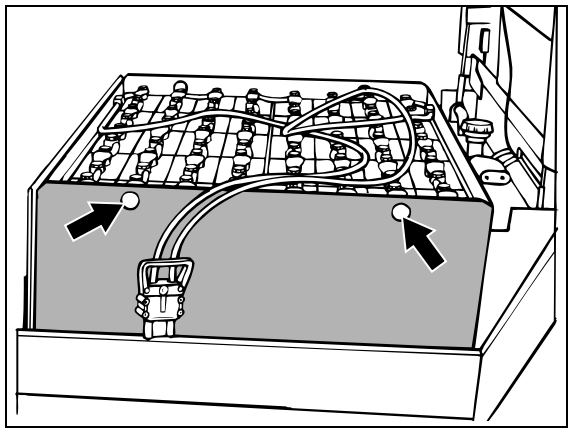
⚠ The battery must not be lifted above the collision guard at the rear wall, otherwise the ventilator or seat hood may be damaged.

– Exposing the battery (refer to chapter D, Section 3).
– Pull out side wall (6, 7).



STOP To prevent short-circuits, batteries with exposed poles or cell connectors must be covered using a rubber mat. When changing 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 crane hoisting gear is routed through the recess at the overhead guard and must exert vertical pulling action, so that the battery trough is not crushed. The hooks must be fastened in such a way that they cannot fall onto the battery cells when the crane hoisting gear is slackened.

– Attach the hoisting gear at the battery trough.
– Lift the battery by means of the hoisting gear to the right over the frame and then swivel it outwards to the side.



– Replacing the battery is done in reverse order.

STOP When replacing the battery, make sure only to use the same type as replacement. After reinstallation of the battery, visually check all cables and connectors for damage. All covers and side doors must be securely closed.

STOP During replacement/installation of the battery, pay attention that the battery is tight in the battery box of the truck.

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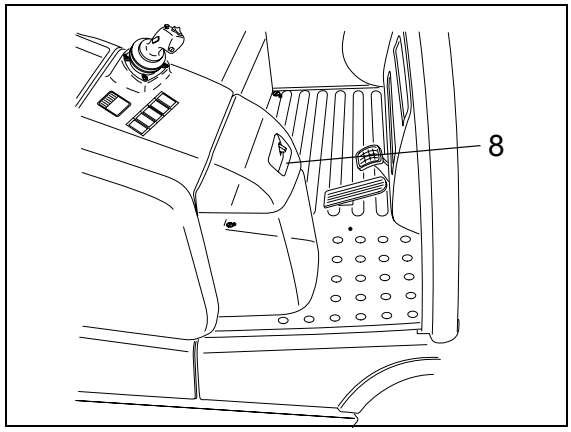
7 Closing battery cover

With MULTIPILOT:

– Pull control valve cover forward and simultaneously unlatch it by pressing lever (8). Control valve cover moves back by itself.

With SOLOPILOT:

– After closing the battery cover, swivel control valve cover to the back until it engages.



8 Battery discharge indicator, exhaustive discharge protection device, operating hour meter

Battery discharge indicator: The charging condition of the battery is indicated in 10% increments on the information and service display (100% = battery capacity 100%, display 0% = battery capacity 20%).

⚠ The standard setting of the battery discharge indicator / discharge monitor is made using standard batteries.
When using maintenance-free batteries, the display must be readjusted. The setting must be performed by customer service engineers. If this setting is not performed, the battery might suffer damage caused by exhaustive discharge.

When reaching the last 10% of the available capacity, the warning symbol flashes.

Recharging is required at a remaining battery capacity of 20% for standard batteries and 40% for maintenance-free batteries.

Battery discharge monitor: As soon as the capacity falls below the residual battery capacity, the lifting function will be switched off. This is indicated by a message displayed on the information and service display.

In order to complete the lifting process, the key switch must be switched off and on again, which enables lifting for another 30 to 40 seconds.

☞ Lifting will only become possible again after the battery has been recharged to at least 40%.

Operating hour meter: The operating hours are indicated next to the charging state of the battery. The operating hour meter shows the total time of the travelling 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.

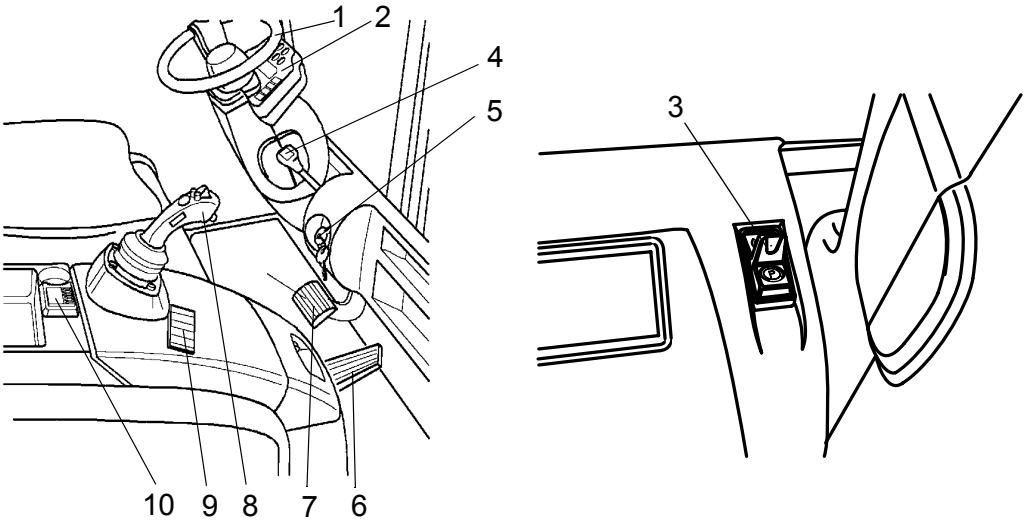
Safety devices and warning labels: The safety devices, warning labels and warning notes described in the present operating instructions must always be heeded.

2 Description of Operating and Display Elements

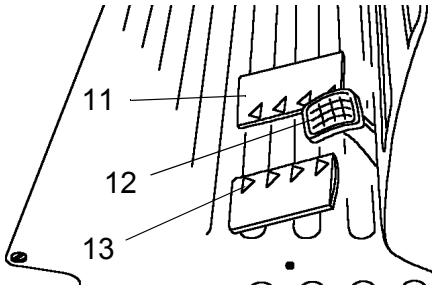
Item	Operating resp. display element		Function
1	Steering wheel	●	Steering the truck by five turns of the steering wheel from left to right.
2	Multifunction display	●	Display of the most important travel and lifting parameters, warning indicators, indication of incorrect operation and service display, as well as battery charge indicator and operating hour meter.
3	Parking brake (rocker handle switch)	●	Engage manually if service brake fails. Normally the parking brake (spring-loaded brake) operates automatically at standstill. Optical display: red = Parking brake engaged green = Parking brake disengaged
4	Steering column locking	●	The steering is adjusted to the desired distance and then locked in this position.
5	Key switch	●	Switches control voltage on and off. Removing the key secures the truck against switching on by unauthorised personnel.
6	Accelerator pedal	●	Driving speed is controlled continuously.
7	Brake pedal	●	Truck is decelerated.
8	Travel direction switch MULTIPILOT Horn Auxiliary hydraulics (ZH3)	○ ○ ○ ○	The desired travel direction is set. Controls the functions of the lifting mast. Triggers a warning signal. Toggling from ZH2 to ZH3.
9	Switch for optional equipment	○	e. g. display for working light ON
10	EMERGENCY OFF master switch	●	Switches power supply on and off.
11	for dual pedal control: Accelerator pedal “reverse”	○	Truck drives backwards when actuated Driving speed is controlled continuously.
12	for dual pedal control: Brake pedal	○	Truck is decelerated.
13	for dual pedal control: Accelerator pedal “forward”	○	Truck drives forwards when actuated Driving speed is controlled continuously.
14	Travel direction switch	●	The desired travel direction is set.
15	Horn	●	Triggers a warning signal.
16	SOLOPILOT Lifting - Lowering	●	The load fork is lifted/lowered.
17	SOLOPILOT Lifting mast - tilting	●	The load fork is tilted forward/backward.
18	SOLOPILOT Auxiliary hydraulics (ZH1) Side shift	○	The load fork is shifted right/left.
19	SOLOPILOT Auxiliary hydraulics (ZH2)	○	For hydraulic attachments.
20	Toggle switch Auxiliary hydraulics (ZH3)	○	Toggling from ZH2 to ZH3

● = Series equipment ○ = Optional equipment

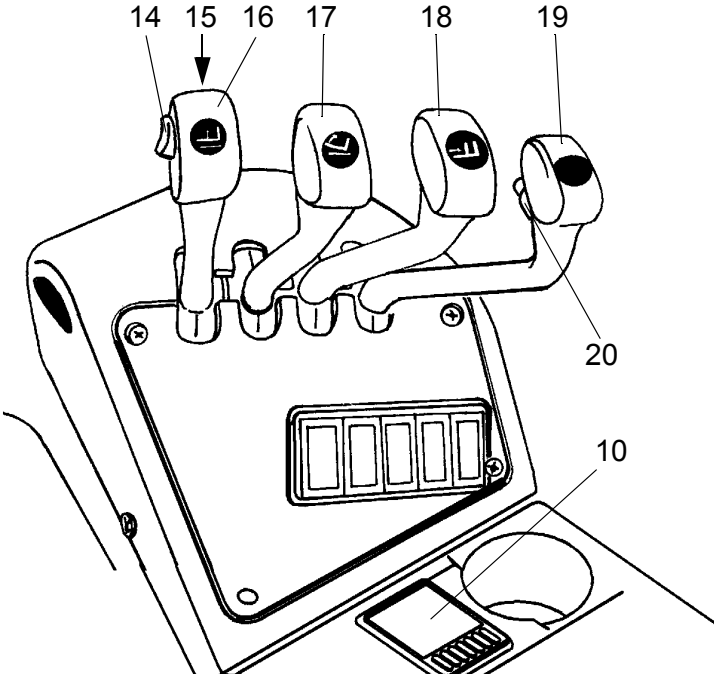
Truck with MULTIPILOT



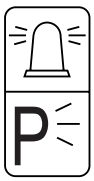
Dual pedal control



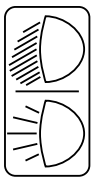
Truck with SOLOPILOT



2.1 Switch at instrument panel

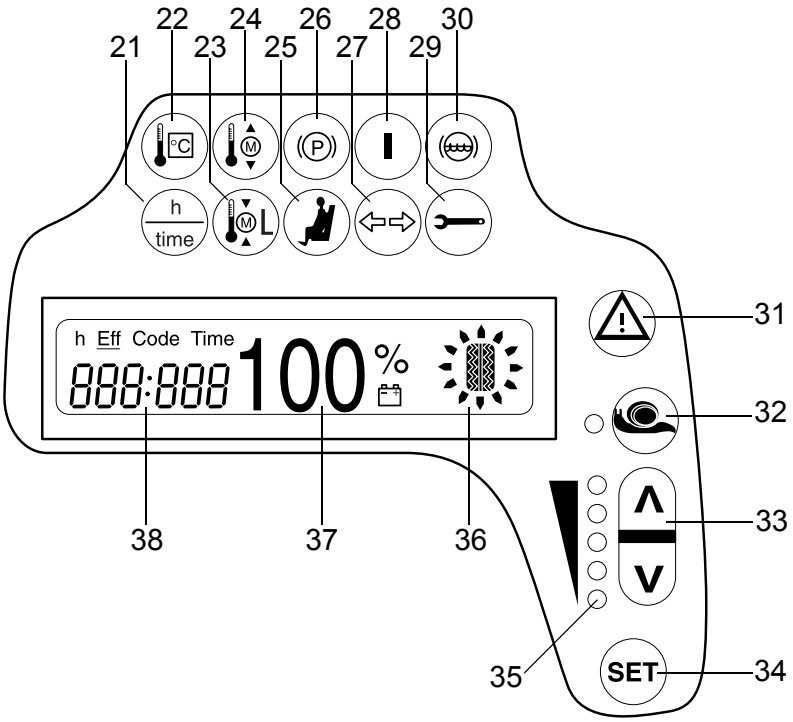
Function	
	Hazard warning switch
	Switch “360° warning light/parking light”
	Switch “Windscreen wiper and washing system” Position 1 “Windscreen wiper ON” Position 2 “Windscreen washer ON”

2.2 Switches at operating panel

Function	
	Override switch “Lift cut-off”
	Switch “Inching”
	Switch “Seat heater”
	Switch “Truck lighting” (parking light/dimmed headlights)
	Switch “Working lights”

2.3 Multifunction display

The multifunction display indicates operating data, battery capacity, operating hours, errors and information. Graphical symbols on the multifunction display issue warnings.



Item	Display
21	Push button to toggle between operating hours and time
22	Controller over temperature
23	Pump motor over temperature
24	Drive motor over temperature
25	Seat switch
26	Parking brake applied
27	Travel direction indicator ○
28	Truck in operation (key switch “ON”)
29	Service display / UVV display
30	Brake fluid level too low
31	Lights up in case of errors or flashes when battery capacity is lower than 10%
32	Inching speed pushbutton
33	Program selector button
34	SET button
35	Operating program indicator (programs 1 to 5)
36	Drive direction and wheel position indicator
37	Battery capacity indicator
38	Time and operating hours or diagnosis and error display

Warning indicators, pushbuttons, and switches

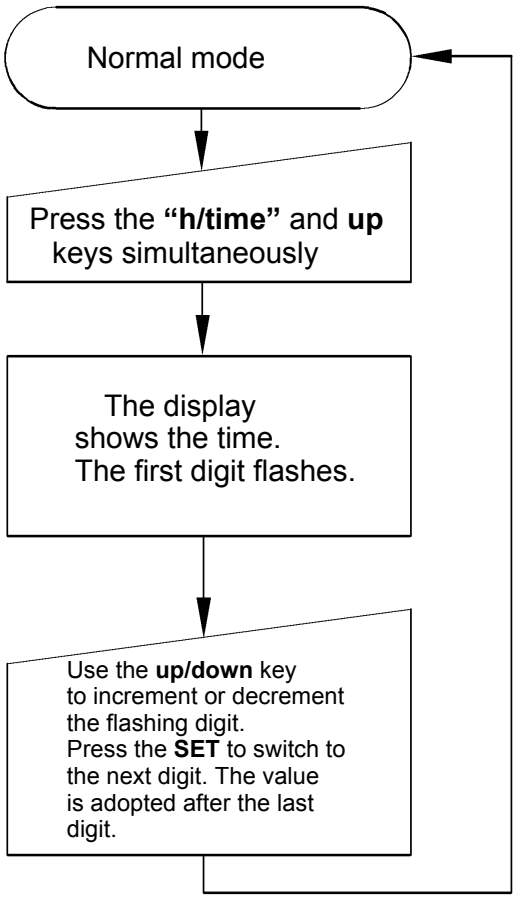
Indicate or control the following:

Item	Display / function
21	Push button to toggle between operating hours and time – Truck operating hours counted while key switch was set to “ON” – “Eff” operating hours can be switched “ON” or “OFF” with a code – Time display
22	Controller over temperature – Lights up in case of controller over temperature – Power is continuously reduced in relation to temperature
23	Pump motor, power steering motor over temperature – Pump motor, power steering motor temperature is continuously monitored – Power is reduced in case of over temperature
24	Drive motor over temperature – Drive motor temperature is monitored – Power is reduced in case of over temperature
25	Seat switch – Seat switch not closed – Truck ready for operation, seat not occupied
26	Parking brake applied – Truck ready for operation, parking brake applied
27	Travel direction indicator ○ – In case of lighting system with flashing system
28	Truck is in operation – Key switch to “ON”
29	Service display / UVV display – Service interval set has elapsed (1000 operating hours) or annual UVV inspection is due (display flashes)
30	Brake fluid level too low – A sensor on the brake fluid reservoir monitors the brake fluid level
31	WARNING – Lights up in case of errors – Flashes when battery capacity is less than 10 %
32	Inching speed pushbutton – Maximum travel speed km/h (adjustable)
33	Program selector button – Push button for “Up” and “Down”
34	SET button – Selects special functions
35	Operating program indicator – Indicates the drive program selected (1 to 5)

Displays

Item	Function
36	Drive direction and wheel position indicator – Indicates the drive direction selected (forward or reverse) or the wheel position of steered wheels
37	Battery capacity display in % The residual capacity available is indicated. Display 0% = battery discharged by 80%. With a 10% display, the Attention display (42) flashes. The lifting function is disabled after 30 to 40 seconds at a capacity of 0%.
38	Operating hours / error display – Indicates the operating hours: – Eff: Indicates the overall operating hours Error display: – The operating hours display is cleared when an error (Err) or a warning (Inf) is received. The error code is displayed. – When several errors have occurred, these will be alternately displayed for 1.5 seconds, and a warning tone sounds.

Setting the time



3 Starting up the truck

Before the truck may be put into operation, may be operated or a load unit may be lifted, the driver must ensure that nobody is within the danger area and that the truck is in operationally reliable condition.

3.1 Checks and operations to be performed before starting daily work

Prior to setting the truck into operation the driver must confirm the operationally reliable condition. Prior to starting work the following items must be verified:

- operation of the service and parking brakes respectively the automatic brake (Emergency Stop)
- no damages at the fork securing device against lifting out and shifting
- no visible damages at the load-carrying unit (bends, cracks, severe abrasion)
- operation of the warning equipment

3.2 Adjusting the driver seat

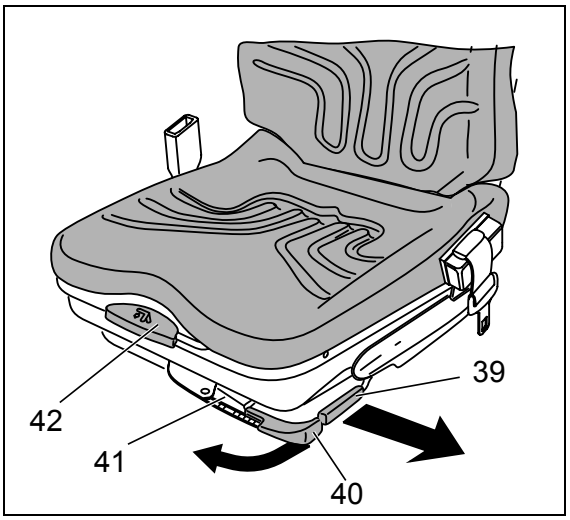
To achieve optimum seat cushioning the driver seat must be adjusted to the driver's weight.
When adjusting the driver seat to the driver's weight the seat must not be loaded!

Adjusting the weight:

- Pull weight setting "Driver seat" (40) in arrow direction to the limit and guide back again.

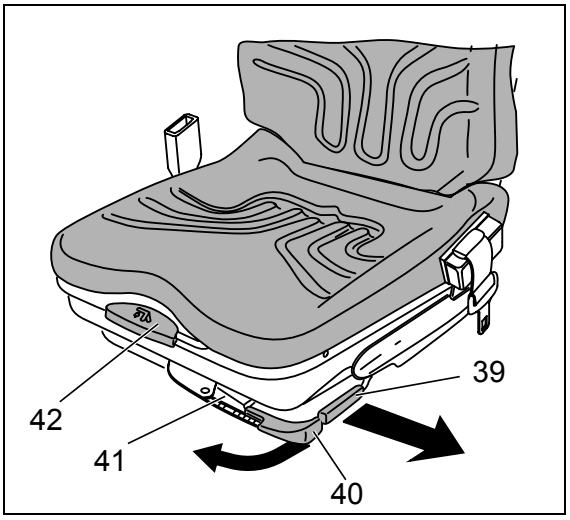
The prior weight setting is reset to the minimum value. The seat cushioning can be set in the range from 50 to 130 kg.

- Pull weight setting "Driver seat" (40) again in arrow direction until the weight display "Driver seat" (41) shows the corresponding weight mark. Subsequently guide back the weight setting "Driver seat".
- Sit on the driver seat.



Adjusting the backrest:

– Pull up backrest adjusting lever (42) and adjust the tilt of the backrest.
– Release backrest adjusting lever (42) again, the backrest is locked in its position.



Adjusting the seating position:

– Pull driver seat locking lever (39) outward and set driver seat to the desired seating position by sliding it forward or backward.
– Allow locking lever (39) to latch again.

The driver seat locking must be securely latched in the adjusted position. The driver seat setting must not be modified while travelling!

The driver seat adjustment procedure applies to the standard series equipment. For other models the adjusting procedure of the respective manufacturer is to be used. When adjusting the seat make sure that all operating elements can be reached easily.

3.3 Safety restraint belt

Put on the safety restraint belt every time before moving the industrial truck.
The belt protects you from serious injuries.

Protect the restraint belt from dirt (e. g. cover up at standstill) and clean regularly. If the belt catch or retractor is frozen, let it thaw and allow to dry to avoid freezing again.

The drying temperature of the warm air must not exceed +60°!

Modifications to the restraint belt are not permitted!
Increased risk through malfunctions.

- Replace restraint belts after an accident.
- Use only original spare parts for retrofits and repairs.

Damaged or non-functioning restraint belts must be exchanged by authorised dealers or in the subsidiary.

Managing extraordinary situations

If the industrial trucks is about to turn over, do not unfasten the belt and do not try to jump off the truck under no circumstances.
Jumping off increases the risk of suffering injuries!

Correct behaviour:

- Lean the upper body over the steering wheel.

- Grip the steering wheel with both hands and support yourself with the feet.

- Tilt body against turning direction.

Instructions for using the restrain belt

Before starting the industrial truck, pull the belt smoothly out from the retractor, pull it tight to the body over the thighs and latch it with the buckle.

STOP The belt must not be twisted when put on!

When operating the industrial truck (e. g. travelling, lifting, lowering, etc.), sit back as much as possible, so that your back is leaning against the backrest.

The automatic locking retractor allows sufficient freedom of shifting around on the seat.

STOP When sitting on the front edge of the seat, the belt is rolled out too long, thus providing not enough protection.

☞ Only use the belt to secure persons.

– After use, push the red button and hold the latch with your hand while the belt is being retracted.

☞ The latch hitting the housing can trigger the automatic locking mechanism. In that case the belt cannot be rolled out.

Releasing the block:

– Pull the belt with increased force 10 to 15 mm out of the housing.
– Allow belt to retract in order to release the automatic locking.

The belt can now be rolled out again.

Starting the industrial truck on steep slopes

The automatic blocking retractor locks the belt in the retractor when the truck is positioned on a steep slope. In such a situation the belt can no longer be pulled out from the retractor.

☞ Carefully move the truck away from the steep slope and then put on the belt.

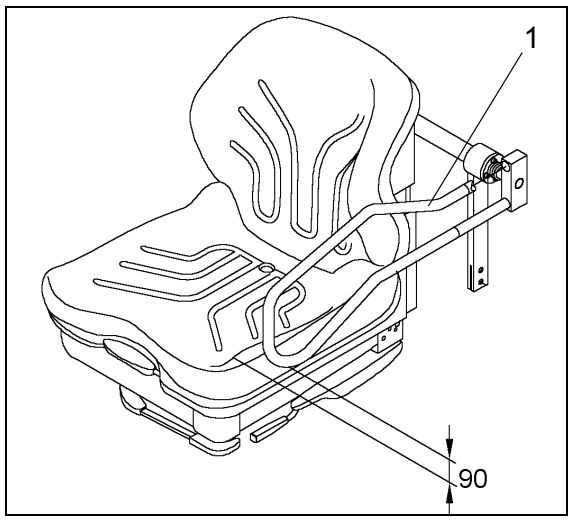
3.4 Automatic/Mechanical Support System (optional)

Never use the truck without functional support system.

Have the support system checked after each accident by authorised specialist personnel.

Do not modify the support system.

With loaded driver's seat, the dimension 90 mm between strap (1) and seat must be observed to ensure safe working conditions.



Behaviour in the event of unusual situations

If the truck is in danger of tipping over, under no circumstances try to jump off. Jumping off considerably increases the danger of injury.

Correct behaviour

– Bend the upper part of the body over the steering wheel.
– Hold the steering wheel with both hands and support yourselves with the feet.
– Lean the body against the direction of fall.

Operating Instructions for the (Automatic) Support System

Before travel starts, the function of the support system must be checked.

The stop knob (2) must not be locked.

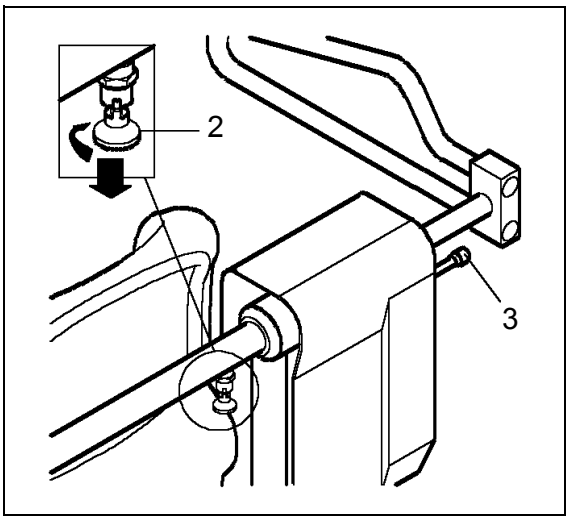
– Sit down
– Turn the switch key to "On".

After having released the parking brake, both safety straps on the left and right side close and lock automatically.

Pay attention that the safety straps can freely move.

After having parked the truck and applied the parking brake, the safety straps open automatically.

Only turn the switch key to "0" and take it out after the safety straps have opened.



In the event of a power failure, the support system can be unlocked by means of pulling knob (3). The safety straps can then be swivelled backwards manually.

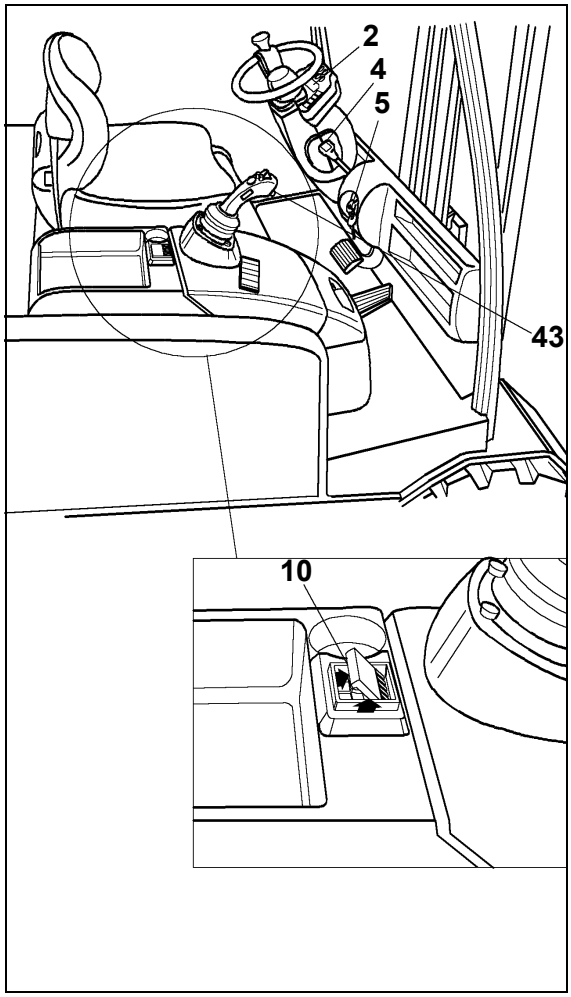
Operating Instructions for the (Mechanical) Support System

Before travel starts, the function of the support system must be checked.

For opening, press the left retaining strap inwards and swivel it upwards simultaneously, after having released the strap, it automatically swivels downwards and locks.

3.5 Adjusting the steering column

– Release steering column lock (4) and push steering column forward or backward to desired position.
– Retighten steering column.



3.6 Providing operational readiness

– Unlatch master switch (10).
  To do so:
  Push in rocker switch (⬇) and pull upwards (⬆) until the master switch noticeably latches.
– Insert the key in key switch (5) and turn the key clockwise towards the “I” position until reaching the stop.
– Check function of horn pushbutton (43).

STOP Check function of electric and hydraulic brake as well as parking brake.

The truck is now ready for operation. The multifunction display (2) indicates the remaining battery capacity.

☞ After pulling the EMERGENCY OFF and turning the key switch clockwise the truck executes a selftest for approximately 3 to 4 seconds (controls and motors are checked). During this period travelling movements are not possible. If the accelerator pedal is actuated within this period the display will indicate “Travel home position”.

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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: The driver must verify the proper condition of the load unit. 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 of trailers or other vehicles is only allowed occasionally and on paved, level driveways with a maximum deviation of +/-1% and a maximum speed of 5 km/h. Permanent trailer operation is not permitted.
While towing, loads are not allowed on the forks.
The maximum trailer load given for the fork lift truck for braked and/or unbraked trailers must not be exceeded. The indicated trailer load is only valid for the auxiliary coupling at the fork lift truck counterweight. Also heed the instructions of the coupling manufacturer if the genuine trailer coupling is replaced by another make.
After attaching the trailer but before starting driving, the driver must check that the trailer coupling is secured against detaching. 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

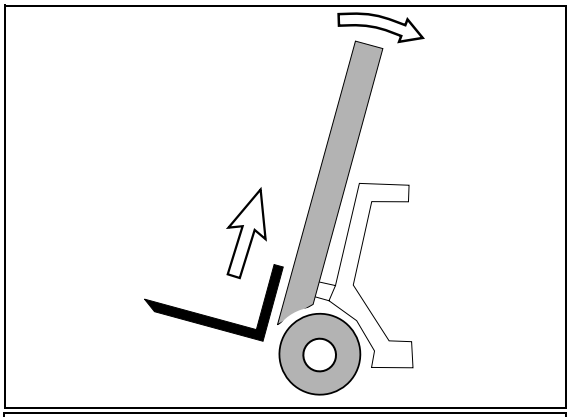
4.2 Driving

When driving through electromagnetic fields that exceed the permitted limits, uncontrolled driving behaviour may occur.
Immediately actuate the EMERGENCY OFF (master switch), brake the truck by means of the service brake and engage the parking brake.
Locate the cause of the malfunction and notify the customer service of the manufacturer, if necessary.

Safety functions

When the driver seat is not occupied or the driver weight is set too high, the travel function is interrupted by the safety switch (refer to section 3 “Adjusting the driver weight”). The spring-loaded brake is disengaged by occupying the driver seat and actuating the accelerator pedal.
The travel speed is reduced depending on the steering angle. Nevertheless the driver is still responsible for adapting the travel speed to the conditions of travel path, working area, and load.

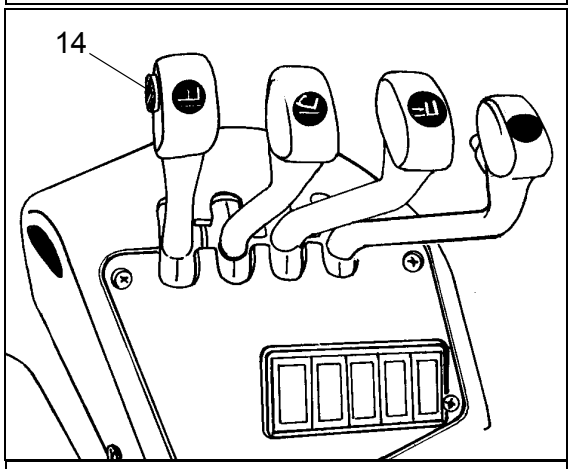
Do not drive the truck unless the hoods are closed and locked in the stipulated manner.
The travel paths must be free of obstacles.



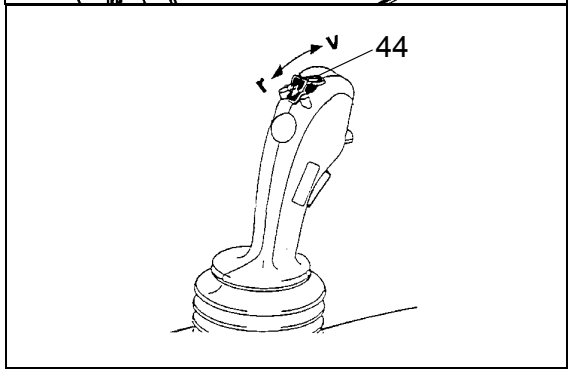
– Lift the fork arm carriage approximately 200 mm so that the fork arms are clear off the ground.
– Tilt the lifting mast fully backward.

Depending on the truck version the travel direction switch can be mounted either

at the SOLOPILOT (14) or



MULTIPILOT (44).



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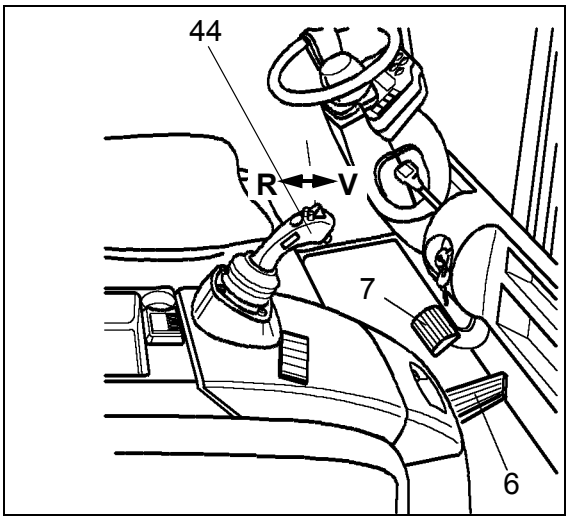
Forward travel (single-pedal)

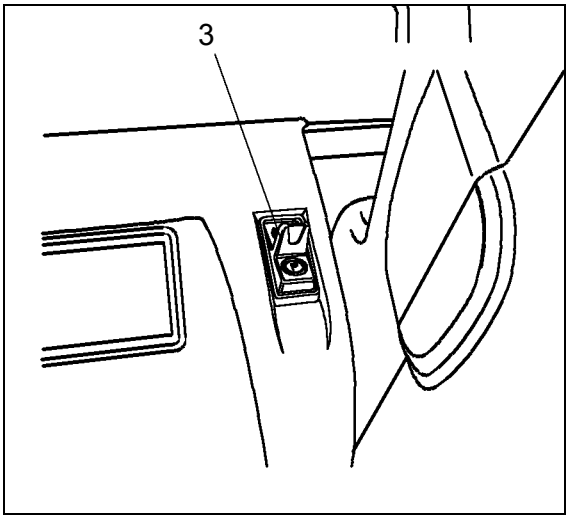


Make sure that the travel area is free

– Release the parking brake (3)
– Push travel direction switch (44) at the MULTIPILOT or SOLOPILOT (14) forward
– Slowly actuate accelerator pedal (6)

Forward travel (dual-pedal)

Make sure that the travel area is free



– Release the parking brake (3)
– Slowly actuate right driving pedal (13).

Do not move the MULTIPILOT for travelling.

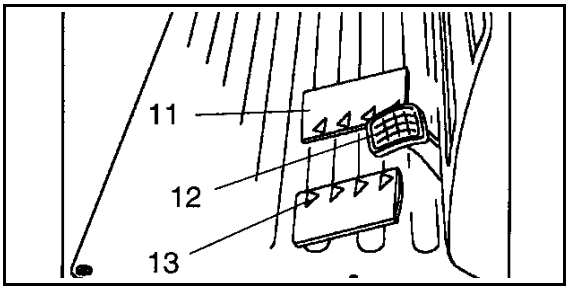
Changing the travelling direction (single-pedal)

Before starting to travel into the opposite direction make sure that the rear travelling area is free.

– Release foot from actuated driving pedal (6).
– Decelerate the truck to standstill by means of brake pedal (7).
– Push travel direction switch (44) or (14) backward.
– Slowly actuate the accelerator pedal until the desired travelling speed has been reached.

Changing the travelling direction (dual-pedal)

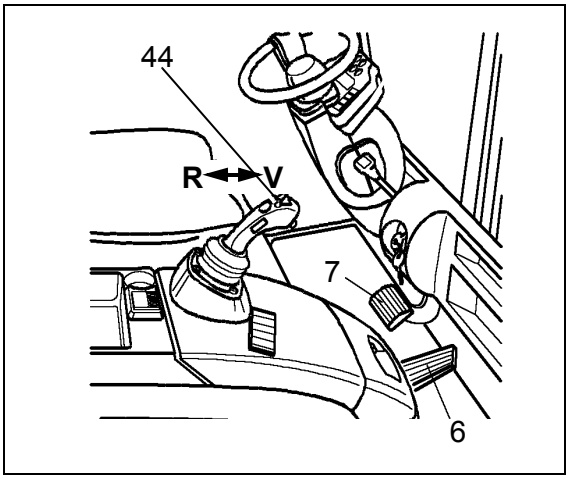
Before starting to travel into the opposite direction make sure that the rear travelling area is free.



– Release foot from actuated driving pedal (13).
– Decelerate the truck to standstill by means of brake pedal (12).
– Slowly actuate accelerator pedal (11) until the desired travelling speed has been reached.

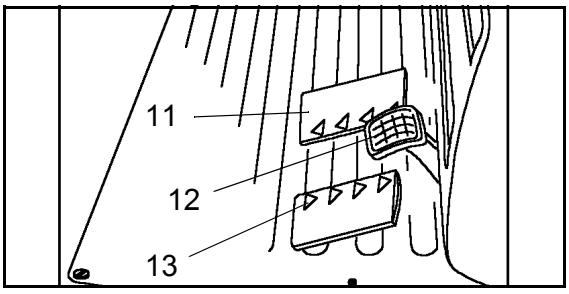
Accelerating the truck (single-pedal)

– Slowly actuate accelerator pedal (6) until the truck starts moving.
– Push down accelerator pedal (6) further.
  Motor speed and travel speed increase in relation to the pedal travel.



Accelerating the truck (dual-pedal)

– Slowly actuate accelerator pedal (11 or 13) depending on selected travel direction until the truck starts moving.
– Push down accelerator pedal (11/13) further. Motor speed and travel speed increase in relation to the pedal travel.



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Decelerating the truck

The braking behaviour of the truck is mainly dependent on the ground conditions. The driver must consider this when handling the truck. Carefully decelerate the truck so that the load does not shift.
When travelling with towed load, longer braking distances must be considered.

– Release foot from accelerator pedal (6) (11/13) and slightly push down brake pedal (7/12), if necessary (refer also to section 5.4).

4.3 Steering

Due to the hydrostatic steering system the steering force to be exerted is very low; therefore, turn the steering wheel sensitively.

Driving right curves

– Turn the steering wheel clockwise according to the desired steering radius.

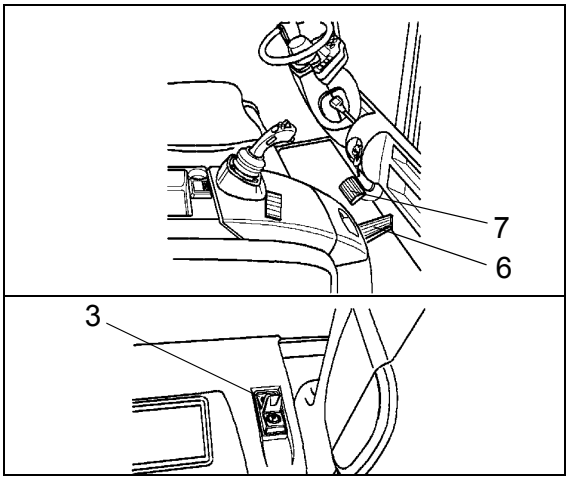
Driving left curves

– Turn the steering wheel counter-clockwise according to the desired steering radius.

4.4 Braking

The truck can be braked in four ways:

– Service brake
– Coasting brake
– Reversing brake
– Parking brake
– Spring-loaded brake



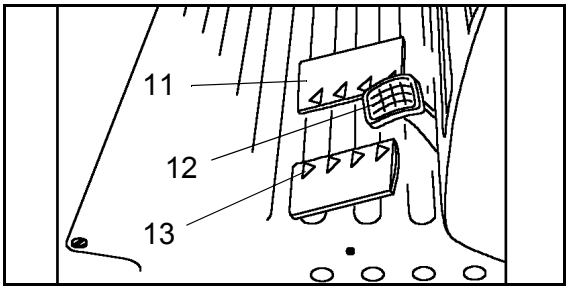
Service brake:

– Push down brake pedal (7/12) until noticeable braking pressure builds up.

The service brake decelerates the drive wheels via multiple disks.

Coasting brake:

– Release foot from accelerator pedal (6) (11/13). The truck is braked generatively by means of the drive current controller.



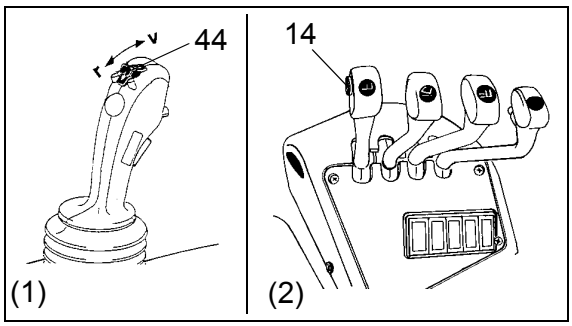
This operating method reduces the energy consumption.

Reversing brake (singel-pedal):

– While travelling, toggle travel direction switch (14/44) to the opposite travel direction. By means of the drive current controller the truck is generatively braked until travel continues in opposite direction.

Depending on the truck version the travel direction switch can be mounted

– either at the MULTIPILOT figure (2) or
– at the SOLOPILOT figure (2).



Reversing brake (dual-pedal)

While travelling, push down accelerator pedal (11/13) for the opposite travel direction. By means of the drive current controller the truck is generatively braked until travel continues in opposite direction.

Parking brake:

– Engage the parking brake

The parking brake actuates an on/off valve, i. e. deceleration cannot be performed sensitively.

The parking brake mechanically decelerates the drive wheels via multiple disks.

The parking brake hold the truck with the maximum permissible load, on clean surface, at a 15% slope.

Spring-loaded brake

The spring-loaded brake engages approximately 30 seconds (adjustable) after standstill of the truck and approximately 1 to 15 second(s) after taking away the weight from the driver seat.
When stopping on a ramp the truck is electrically held in position until the spring-loaded brake engages.
When starting to travel, a torque is built up at the traction motor before disengaging the spring-loaded brake, which prevents the truck from rolling backward.

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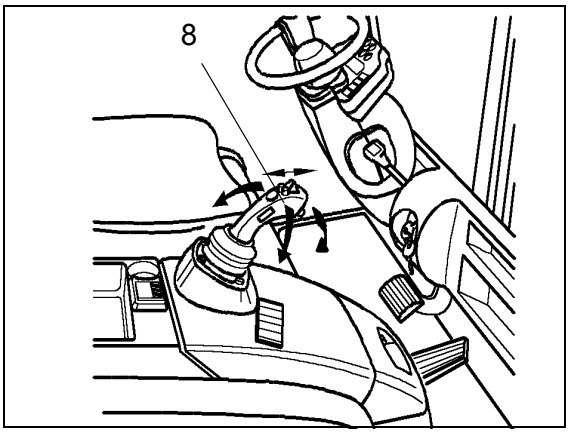
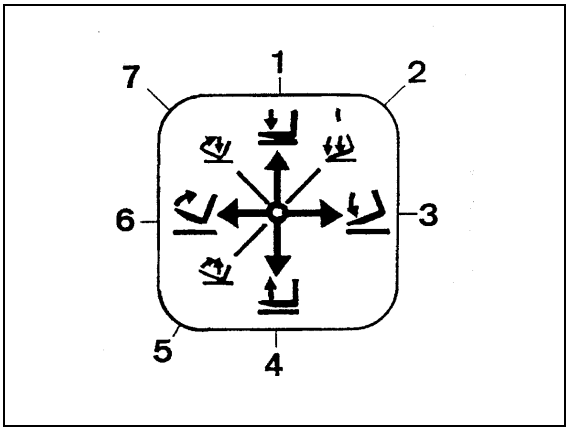
4.5 Operating the lifting unit and attachments (MULTIPILOT)



The MULTIPILOT must only be operated from the driver seat. The driver must have been instructed about the handling of the lifting unit and attachments!

Depending on the hydraulic function, push the MULTIPILOT into the respective direction.

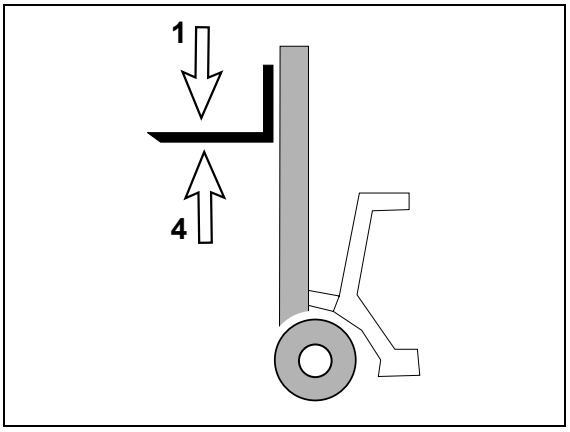
Lifting/lowering fork arm carriage



– To lift the fork arm carriage, push MULTIPILOT (8) to the rear (4).
– To lower the fork arm carriage, push MULTIPILOT (8) to the front (1).

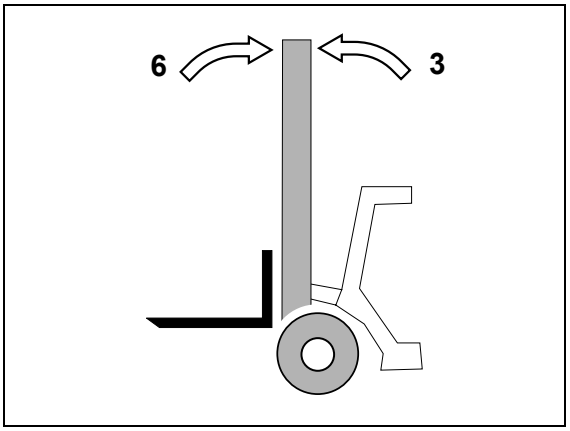
Lifting mast tilting forward/backward

Make sure not to put any parts of the body between mast and front wall when tilting the mast backward.



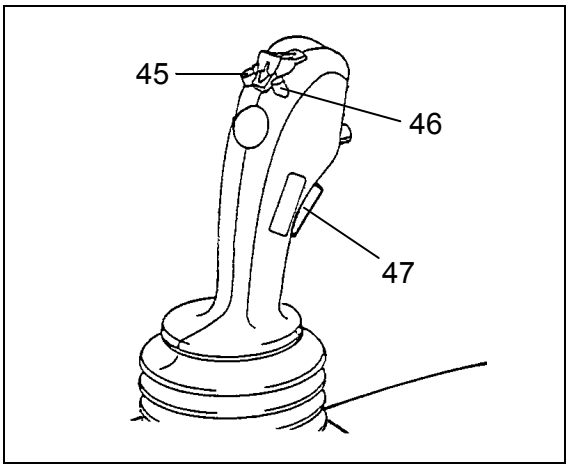
– To tilt the lifting mast backward, push MULTIPILOT (8) to the left (6).
– To tilt the lifting mast forward, push MULTIPILOT (8) to the right (3).

Combination function



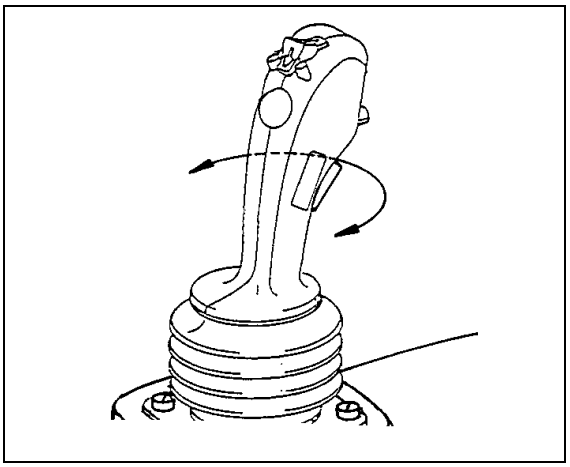
– To lower the fork arm carriage and tilt the lifting mast forward at the same time, push MULTIPILOT to the front and right (2).
– To lift the fork arm carriage and tilt the lifting mast backward at the same time, push MULTIPILOT to the rear and left (5).
– To lower the fork arm carriage and tilt the lifting mast backward at the same time, push MULTIPILOT to the front and left (7).

Auxiliary control I
(Integrated side-shift)



– To shift fork arm carriage to the left, push key (45) at the MULTIPILOT.
– To shift fork arm carriage to the right, push key (46) at the MULTIPILOT.

Auxiliary control II



To operate a hydraulic attachment the MULTIPILOT can be rotated. When operating attachment the operating instruction of the manufacturer must be observed.

Observe the carrying capacity of the attachment.

Auxiliary control III

Push key (47) at the MULTIPILOT for auxiliary control III (e. g. locking).

Controlling the speed of the working equipment

The excursion of the MULTIPILOT movements control the speed of the hydraulic cylinders.

After releasing the MULTIPILOT it travels automatically back to its home position and the working equipment remains in the position reached.

Always operate the MULTIPILOT sensitively and not erratically. Immediately release the MULTIPILOT when the working equipment reaches the limit stop.

Lifting of persons using the lifting device is prohibited.

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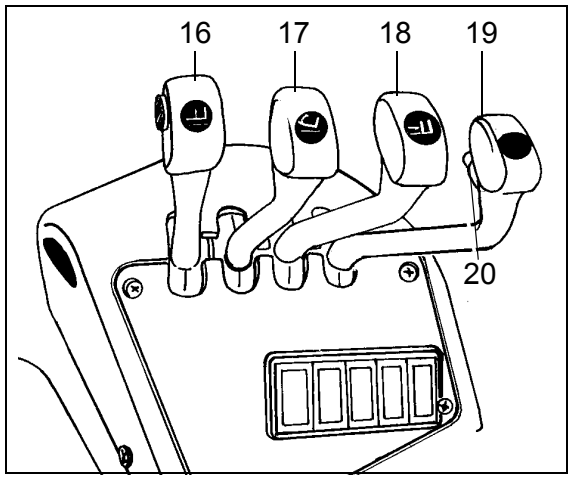
4.6 Operating the lifting equipment and attachments (SOLOPILOT)



The SOLOPILOT must only be operated from the driver seat. The driver must have been instructed about the handling of the lifting unit and attachments!

Lifting/lowering fork arm carriage

– To lift the fork arm carriage, pull SOLOPILOT (16) to the rear.
– To lower the fork arm carriage, push SOLOPILOT (16) to the front.

Lifting mast tilting forward/backward

Make sure not to put any parts of the body between mast and front wall when tilting the mast backward.

– To tilt the fork arm carriage backward, pull SOLOPILOT (17) to the rear.
– To tilt the lifting mast forward, push SOLOPILOT (17) to the front.

Controlling attachments

Observe the carrying capacity of the attachment.

– SOLOPILOT auxiliary hydraulic system ZH 1 (18) (e. g. side shifting device)

– Pull to the back or push to the front SOLOPILOT ZH2 (19) for controlling the attachment.

– Using key (20) the SOLOPILOT ZH2 (19) can be switched to auxiliary hydraulics (ZH3).

The excursion of the SOLOPILOT movements control the lifting speed of the hydraulic cylinders.

After releasing the SOLOPILOT it travels automatically back to its home position and the working equipment remains in the position reached.

Always operate the SOLOPILOT sensitively and not erratically. Immediately release the SOLOPILOT when the working equipment reaches the limit stop.

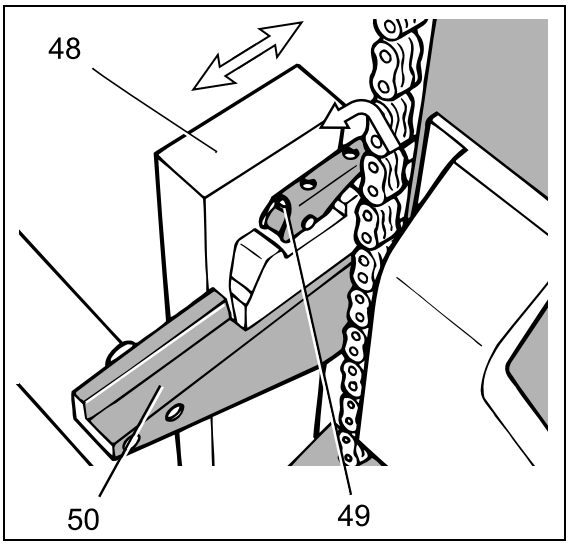
Lifting of persons using the lifting device is prohibited.

4.7 Picking up, transporting, and putting down load units

⚠ Before picking up a load unit the driver must make sure that it has been correctly palletised and does not exceed the permissible capacity of the truck.
Observe load diagram!

Adjusting the fork arms

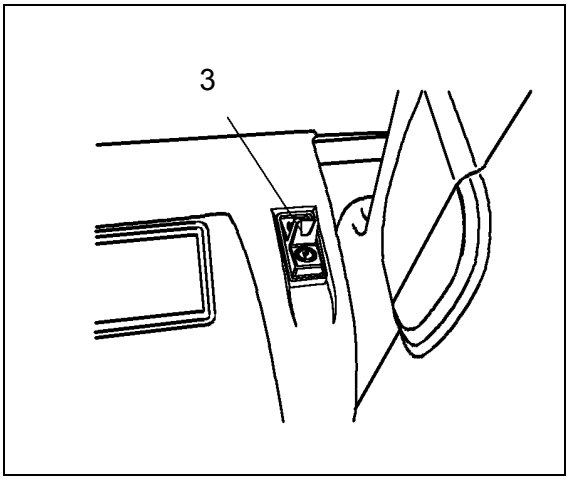
STOP The fork arms must be adjusted in such a way that both have the same distance to the outside edges of the fork arm carriage and the load centre is centred between the fork arms.



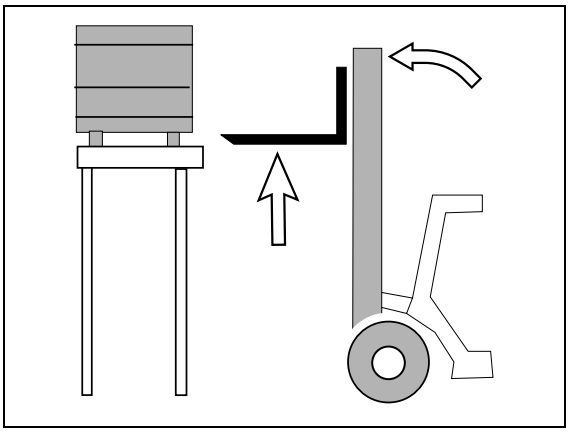
– Swivel locking lever (49) upward.
– Push the fork arms (48) on the fork arm carriage (50) into the correct position.
– Swivel locking lever downward and shift the fork arm until it latches in a notch.

Picking up a load

– Carefully approach the load to be picked up.
– Engage the parking brake (3).



– Set the mast to vertical position.
– Lift the fork arms to the appropriate height relative to the load.



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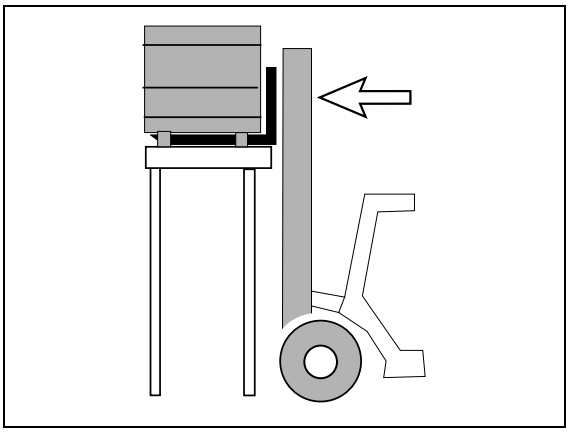
– Insert the fork arms as far as possible under the load unit.

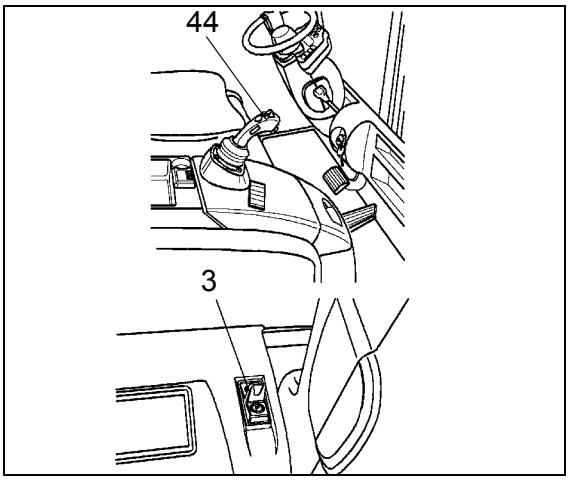


The fork arms must be inserted into the load at least one third of their length.

– Engage the parking brake (3). Lift the fork arm carriage, until the load is held completely by the fork arms.
– Set drive direction switch (44) to reverse travel and disengage the parking brake.

Make sure the area to the rear is clear for travelling.

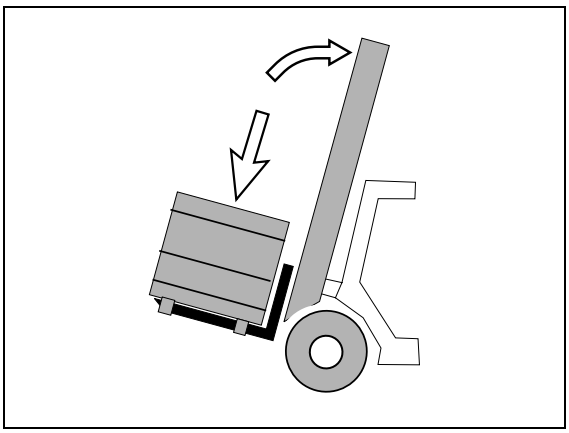
– Back up carefully and slowly, until the load is outside the storage area.



All personnel must stay clear of the raised load!
Do not reach through the lifting mast.

– Carefully tilt the lifting mast backward.
– Lower the load as far as it is absolutely necessary for transport (ground clearance approximately 150 to 200 mm).

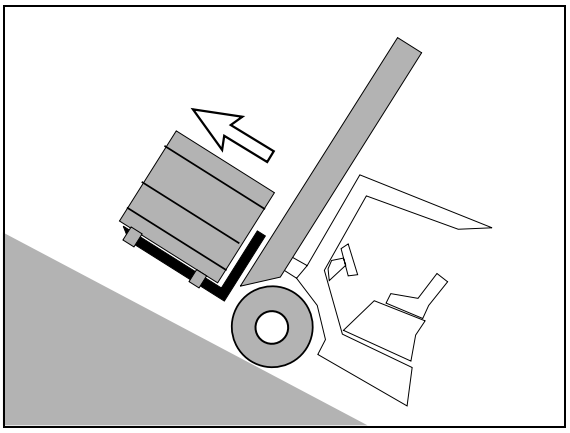
When transporting loads the lifting mast must be tilted back and the fork arms lowered as far as possible.



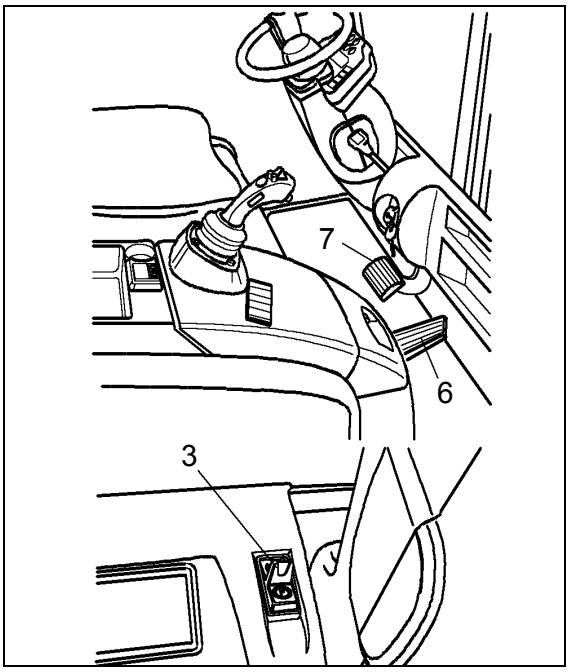
Transporting loads

If the load is stacked high and blocks the view to the front, you must travel backward.

– Sensitively accelerate the truck with the accelerator pedal (6) and carefully decelerate it using the brake pedal (7). Always be alert to brake immediately.
– Adapt the travel speed to the conditions of the travel paths and the transported load.
– Watch out for traffic at intersections and passages.
– In unclear situations a seconds person should be present to give guiding instructions.



At upward and downward slopes the load must always be transported on the hill side; never travel diagonally and never turn around.

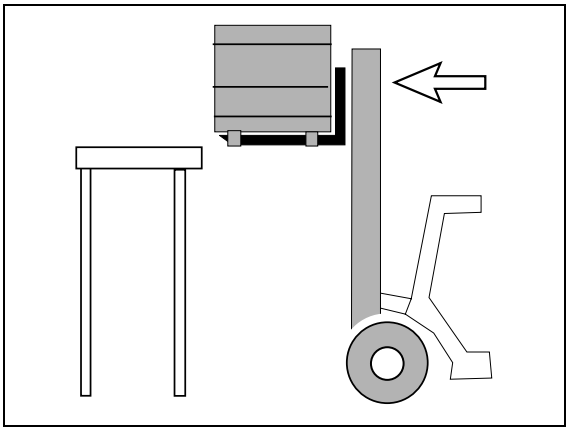


Setting down loads

– Carefully approach the load-carrying unit.
– Engage the parking brake (3).
– Set the mast to vertical position.
– Lift the fork arms to the appropriate height relative to the load-carrying unit.
– Disengage the parking brake.
– Carefully drive into the load-carrying unit.
– Slowly lower the load until the fork arms are free.

Avoid setting down the load heavily, in order not to damage load and load-carrying unit.

Bending forward with lifted load-carrying unit only in front of or above the stack.



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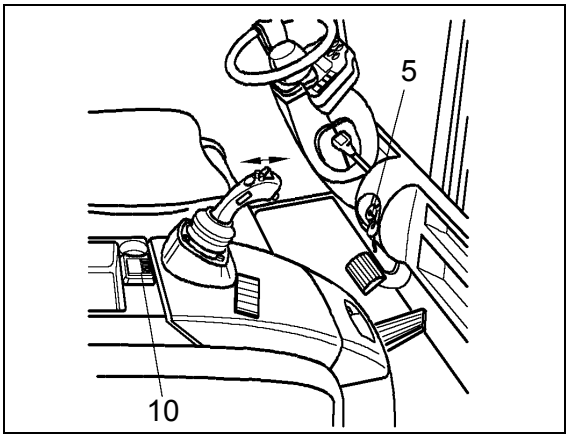
4.8 Safe parking of the truck

When the truck is left, it must be parked in a secure manner, even when leaving the truck only for a short while.

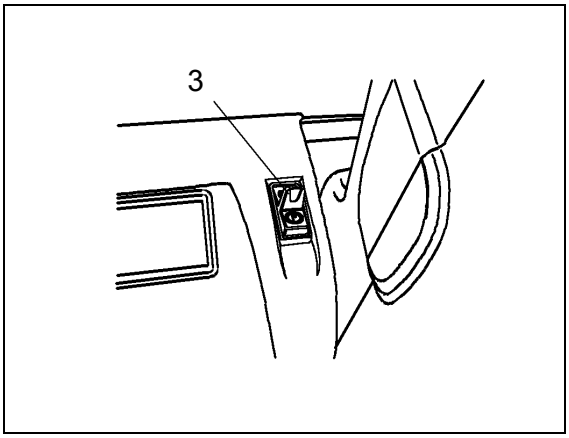
– Drive the truck to level ground.
– Engage the parking brake (3).
– Completely lower the fork arms and tilt the lifting mast forward.



Never park and leave the truck with elevated load.

– Depress the master switch (10).
– Set key in keyswitch (5) to position “0”.
– Remove key from key switch (5).

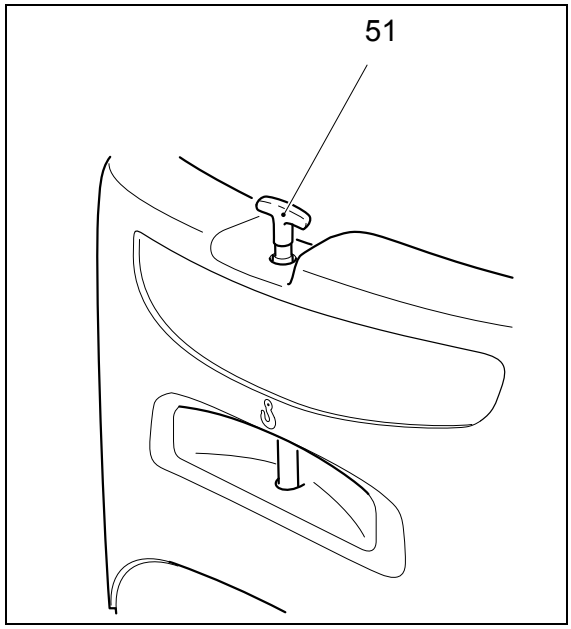
Parking the truck for longer periods in areas with temperatures below 15°C should be avoided, as the hydraulic fluids can become very viscous and the functions become correspondingly sluggish.
Do not run the cold pump at full speed. Warm up the oil by lifting/lowering slowly and repeatedly.
The LC display may temporarily be out of service. The display will be visible again when the temperature rises.



4.9 Trailer towing

The truck may be used for occasional towing of trailers on dry, level and smooth surfaces.

Coupling the trailer



– Push the socket pin (51) down and turn it by 90 degrees.
– Pull the socket pin upward and insert the trailer drawbar into the opening.
– Insert the socket pin, push it down, turn it by 90 degrees until it engages.

4.10 Trailer loads

⚠ The driver must make sure not to exceed the maximum permissible trailer load prior to coupling the trailer.

Maximum trailer load

Truck	Dead weight	Pulling force	Trailer loads
	(kg)	(N)	(kg)
EFG-Vac 22	4300	12200	12900
EFG-Vac 25L	4600	12300	13800
EFG-Vac 25	4600	14500	13800
EFG-Vac 25S	4600	14500	13800
EFG-Vac 25SL	5100	14000	13800
EFG-Vac 30	5100	14000	15300

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5 Troubleshooting

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	– Battery plug not connected	– Check battery plug and plug in, if necessary
	– Master switch depressed	– Release the master switch
	– Key switch in position “0”	– Set the key switch to position “I”
	– Battery charge too low	– Check battery charge, recharge battery, if required
	– Fuse defective	– Check fuses
Load cannot be lifted	– Truck not ready foroperation	– Perform all remedial actions listed under the fault “Truck does not move”
	– Hydraulic oil level too low	– Check hydraulic oil level
	– Fuse defective	– Check fuses
	– Battery charge too low	– Check battery charge, recharge battery, if required
Error indication in display	– Truck not ready for operation	– Press master EMERGENCY OFF switch or set key switch to position “0”, repeat desired working function after approximately 3 seconds
	– Software fault	

☞ If the fault could not be eliminated after carrying out the remedy procedure, notify the manufacturer's service organisation, as any further troubleshooting can only be performed 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.

When work has to be performed under the raised fork or under the jacked up truck, suitable measures must be taken to prevent any dropping, tilting or slipping of the fork or truck. When lifting the truck, the instructions contained in chapter “Transportation and commissioning” have to be observed.
When performing work on the parking brake, the truck must be secured against moving.

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. Changes must only be made following consultations with the manufacturer. 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.

The chain tensioners must be adjusted in such a manner that they can adapt themselves to the pulling direction of the chain. Pretensioning the tensioner head against the mounting is not allowed. A minimum distance of 20 mm must be kept.

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, at least once a week
M6 = Every 1000 operating hours, at least every six months
M12 = Every 2000 operating hours, at least every 12 months
M24 = Every 4000 operating hours, at least every 24 months

The maintenance intervals W1 are to be performed by the 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:

– Retighten battery terminal screws and check condition of cell connectors.
– Perform visual checks of electrical and mechanical components.
– Check brake fluid (mineral oil).
– Check brake system for leaks and brake lines for free routing.
– Check lifting chains for uniform tension.
– Check locking and limits of fork arms.
– Check transmissions for leaks.
– Check screw connections and mechanical safety devices for tight seat.
– Check wheel nuts for tight seat and retighten, if required.
– Change all hydraulic filters.
– Check hydraulic connections for leaks and retighten, if required.

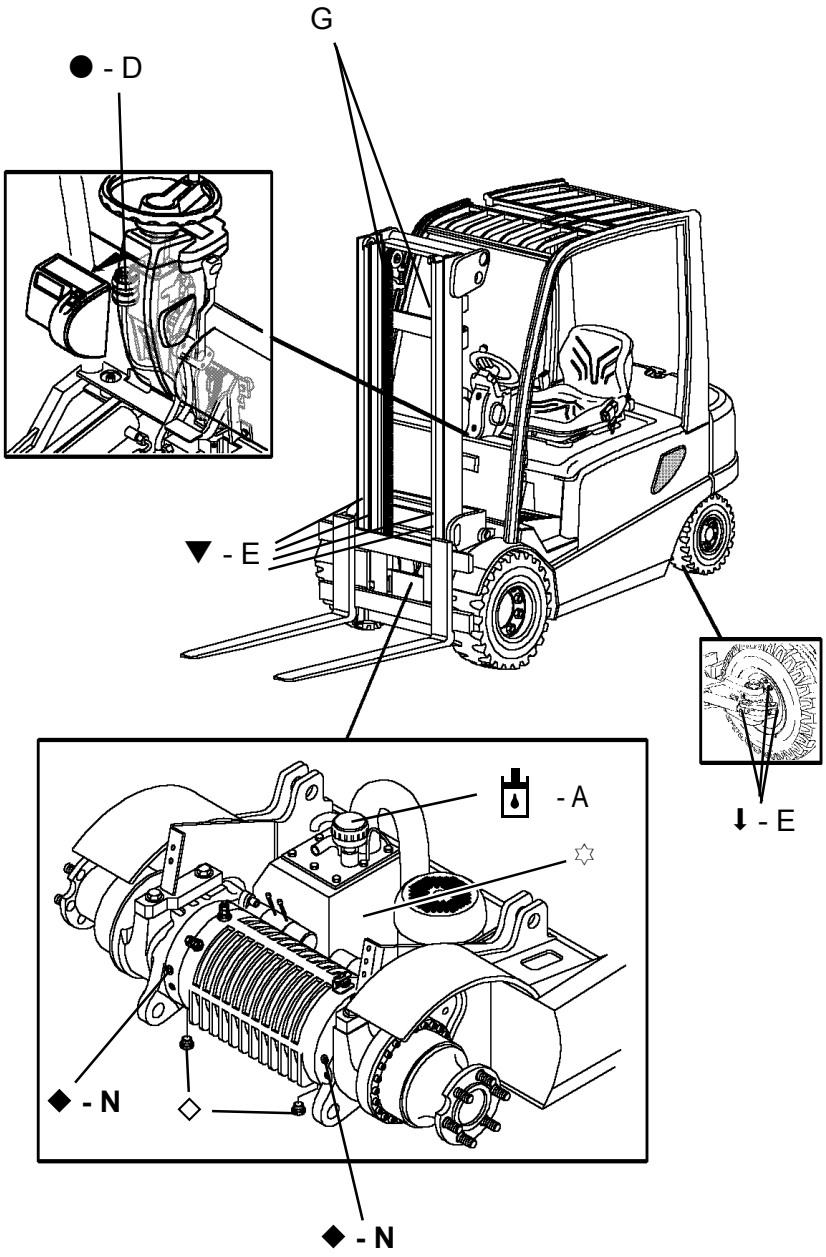
4 Maintenance checklist EFG-Vac

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

			Maintenance intervals			
		Standard = ●	W	M	M	M
			1	6	12	24
Chassis/ super-structure:	1.1	Check all load bearing elements for damage		●		
	1.2	Check all bolted connections		●		
	1.3	Check trailer coupling		●		
	1.4	Check overhead guard for damages and secure attachment		●		
	1.5	Check safety belt for damages and function	●			
	1.6	Check retaining system (option) for damages and function	●			
	1.7	Check is label are present, readable, and valid		●		
Drive:	2.1	Check transmission for noise and leaks		●		
	2.2	Check transmission oil level		●		
	2.3	Check pedal mechanism and adjust and grease, if required		●		
	2.4	Change transmission oil		●		
Wheels:	3.1	Check wheels for wear and damage	●			
	3.2	Check tyre pressure	●			
	3.3	Check bearing and secure attachment		●		
	3.4	Renew wheel bearing greasing of front and rear tyres and readjust wheel bearings.		●		
Steering:	4.1	Check hydraulic components for function and leaks		●		
	4.2	Grease all bearings of the steering axle (wheel bearing, king pin, steering arm and swivel) according to the lubrication schedule with a conventional grease gun at least after 500 hours.	●			
	4.3	Check steering axle, king pin, and stops for wear and deformation			●	
	4.4	Clean steering angle sensor with compressed air			●	
Brake system:	5.1	Performance and adjustment check		●		
	5.2	Check brake mechanism and adjust and grease, if required		●		
	5.3	Check brake lines, connections, and oil level of the brake system		●		
	5.4	Change mineral oil of the brake system				●
	5.5	Measure holding pressure of spring-loaded brake		●		
	5.6	Check brake fluid level (mineral oil)	●			
Hydr. system:	6.1	Check connections for leaks and damage		●		
	6.2	Check ventilation and aeration filter at hydraulics tank		●		
	6.3	Check oil level		●		
	6.4	Check hydraulic cylinders for leaks, damage, and secure attachment		●		
	6.5	Check hose line for correct function and damage		●		
	6.6	Change filter cartridge (hydraulic oil and aeration filter)		●		
	6.7	Change hydraulic oil				●
	6.8	Check pressure relief valves for correct function			●	
	6.9	Change vacuum filter (steering)		●		

			Maintenance intervals			
		Standard = ●	W	M	M	M
			1	6	12	24
Electr. system:	7.1	Check function of instruments and indicators	●			
	7.2	Check cables for secure connection and damage		●		
	7.3	Check cable guides for function and damage		●		
	7.4	Check the warning devices and safety circuits for correct function		●		
	7.5	Check contactor		●		
	7.6	Check fuses for correct amperage			●	
	7.7	Clean installation space of electronics and cooling fins			●	
	7.8	Read out and clear error memory		●		
Electric motors:	8.1	Check the motor for secure attachment		●		
	8.2	Check fan for correct function			●	
	8.3	Clean motor cooling fins			●	
Battery:	9.1	Check battery cables for damage and replace, if necessary	●			
	9.2	Check acid density, acid level, and cell voltage	●			
	9.3	Check terminals for secure attachment and apply grease		●		
	9.4	Clean battery plug connections, check for tight seat		●		
Lifting mast:	10.1	Apply lubricating grease to slide way and lateral stopping face of the guide rollers in the lifting mast profiles.	●			
	10.2	Check lifting chains for wear and adjust.		●		
	10.3	Grease lifting chains and check tension.	●			
	10.4	Check lifting mast attachment		●		
	10.5	Check tilting cylinder bearing and secure attachment		●		
	10.6	Check fork arms and fork arm carriage for wear and damage		●		
	10.7	Perform sight check of rollers, sliding elements, and stops		●		
	10.8	Check tilting angle of lifting mast. Check uniform extension of both tilting cylinders.			●	
	10.9	Check mast play and adjust lateral play by means of shims, if necessary.			●	
General measure-ments:	11.1	Check electrical system for earth fault according to VDI 2511			●	
	11.2	Check travel speed and braking distance			●	
	11.3	Check lifting and lowering speed			●	
Demon-stration:	12.1	Perform trial run under nominal load		●		
	12.2	Upon completion of servicing operations, demonstrate the vehicle to the person responsible		●		

5 Lubrication schedule EFG-Vac



▼ Glide surfaces

⬇ Lubricator nipple

Hydraulic oil filler pipe

☆ Hydraulic oil drain plug

◆ Transmission oil filler pipe

◇ Transmission oil drain plug

● Filler pipe for brake system mineral oil

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5.1 Fuels, coolants and lubricants

Handling consumption type material: Consumption type material must always be handled properly. Manufacturer's instructions 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 qualitiies resp., except if mixing is expressively 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.	Quantity	Designation	Used for
A	50062046	34.5 l	Renolin 32[1)]	Hydraulic system
	50062045		Renolin 22[2)]	
	50124051		HV 68 [3)]	
D	50124052	0.25 l	Hydraulic oil ATF Dexron II-D	Hydraulic brake system
E	50055726		Lubricating grease KP 2 K[3)]	Front and rear wheel - wheel bearing
G	29201280		Chain spray	Chains
N	50124053	2x approx. 3 l	Transmission oil STOU Universal	Transmission

Grease data

Code	Saponification	Drop point °C	Worked penetraton at 25 ° C	NLG1 class	Usage temperature °C
E	Lithium	185	265-295	2	-35/+120

[1)] valid for temperature -5/+30 °C
[2)] valid for temperature -20/-5 °C
[3)] valid for temperature +30/+50 °C

6 Description of servicing and maintenance operations

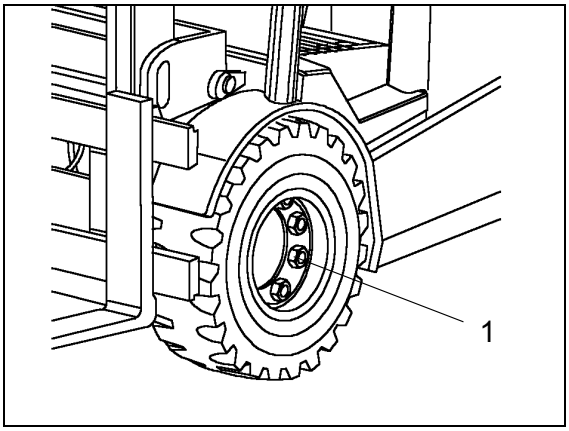
6.1 Prepare truck for the servicing and maintenance operations

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:

– Expose the batteries (refer to chapter D).

6.2 Check attachment of tyres

– Park and lock the truck (refer to chapter E).
– Crosswise tighten the wheel nuts (1) with a torque wrench.



Torque
Wheels/Drive axle 6-hole Wheel rim
M_A = 330 Nm

Wheels/Drive axle 10-hole Wheel rim
M_A = 220 Nm

Wheels/Steering axle M_A = 170 Nm

6.3 Tyre pressure

Wheels/Drive axle 10 bar
Wheels/Steering axle 7 - 8 bar

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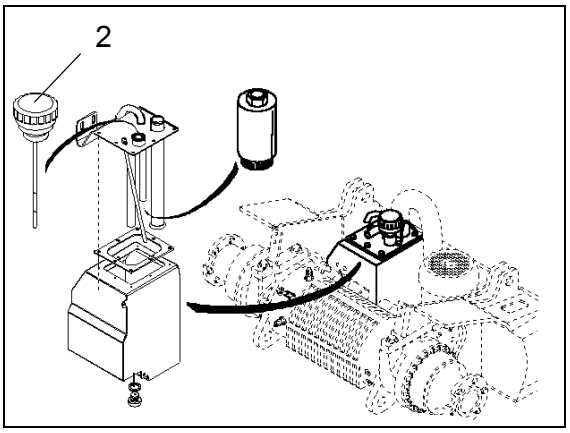
6.4 Check hydraulic oil level

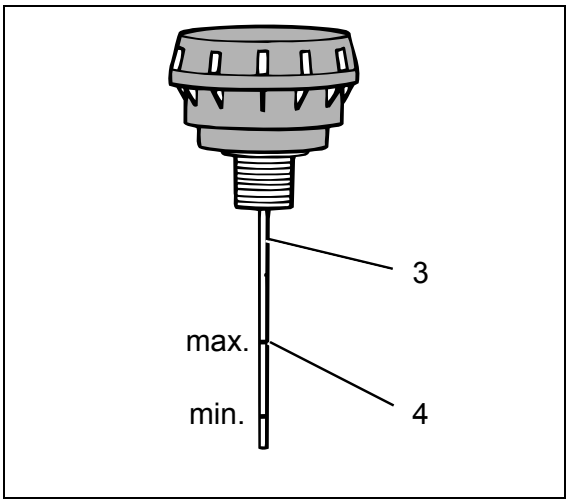
⚠ The load lifting device must be completely lowered.

– Prepare truck for the servicing and maintenance operations (refer to section 6.1).
– Unscrew air filter with dipstick (2).



– Visually check hydraulic oil level at dipstick (3).

☞ If the tank is sufficiently filled the hydraulic level must be readable at the upper marking (4).



– If required, refill hydraulic oil up to the required level (10 mm at dipstick (3) correspond to approximately 1 l hydraulic oil).

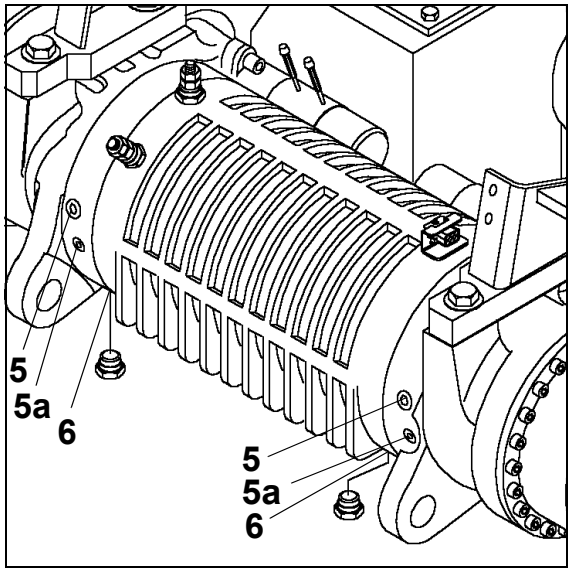
⚠ Do not overfill hydraulic tank above the upper marking, as this may result in malfunctions and damages of the system.

Used consumption-type materials must be disposed of in accordance with the applicable environmental protection regulations.

6.5 Check transmission oil level

Transmission oil must not be spilt into the soil; therefore, place an oil pan under the transmission.

– Park and lock the truck (refer to chapter E).
– Unscrew oil drain plug (5a).
– Check transmission oil level, if required, refill transmission oil.



The filling level must reach to the lower edge of oil check hole (5a).

Do not refill transmission oil up to oil check hole (5).

Used consumption-type materials must be disposed of in accordance with the applicable environmental protection regulations.

6.6 Draining oil

– Drain the oil when the oil is at operating temperature.
– Place an oil pan under the unit.
– Unscrew oil drain plug (6) and drain transmission oil.

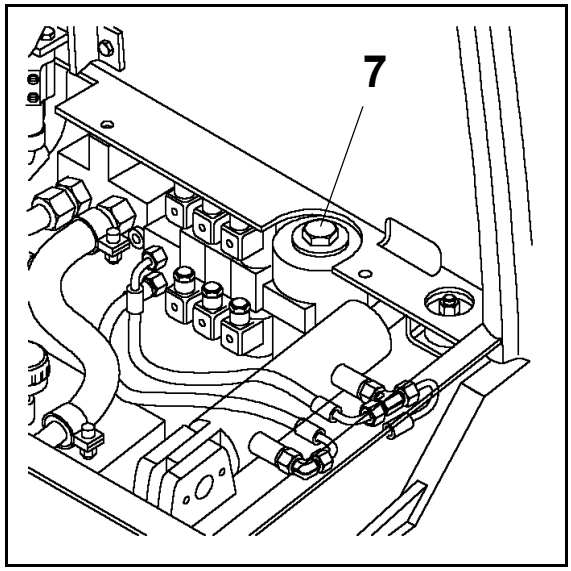
6.7 Refilling oil

– Renew sealing washer and screw in oil drain plug.
– Unscrew oil check screw.
– Refill new transmission oil with oil filling plug (5) removed up to the lower edge of oil check hole (5a).

6.8 Changing the hydraulic filter

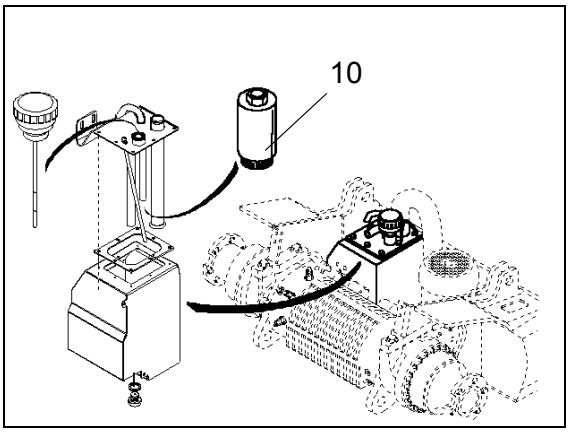
The hydraulic filter is located to the left of the tilting cylinder and can be accessed after removing the bottom plate.

– Unscrew hydraulic filter cap (7).
– Replace the filter cartridge, if the O-ring is damaged, the O-ring must also be replaced. Lightly oil the O-ring before installation.
– Screw in the cap again.



6.9 Changing the vacuum filter

The vacuum filter (10) for the steering system is located in the hydraulic tank. Remove hydraulic tank cover and screw off vacuum filter.

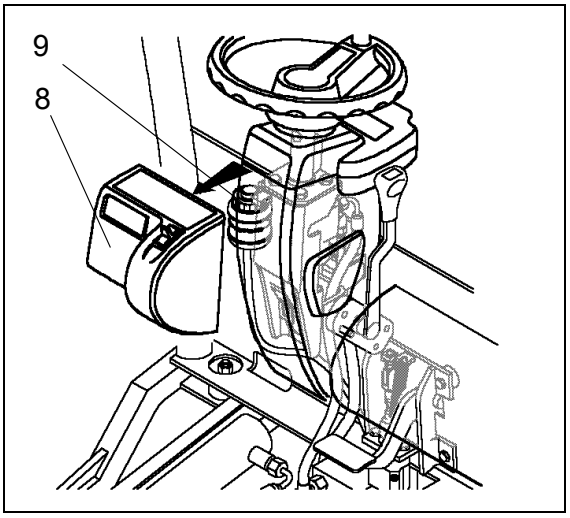


6.10 Check oil level for brake system

⚠ The brake fluid tank can be seen from the right side when the steering column is tilted back.
To refill or change the mineral oil the cover (8) must be removed.

⚠ Do not use conventional brake fluid, refill only with prescribed mineral oil!

– Park and lock the truck (refer to chapter E).
– Remove cover (8) after loosening the screws.
– Visually check the oil level at the expansion tank (9) and refill transmission oil, if required (refer to section 5.1).



☞ The oil level must be visible between markings “Min” and “Max”.

⚠ Used consumption-type materials must be disposed of in accordance with the applicable environmental protection regulations.

6.11 Restrain safety belt service

The driver must check condition and correct operation of the safety restraint belt on daily basis before using the industrial truck. Early detection of malfunctions is only possible through regular checks.

– Pull out belt completely and check for unravelling.
– Check the function of the belt buckle for correct retraction of the belt into the retractor
– Check cover for damage

Testing the automatic blocking retractor:

– Park the industrial truck on a horizontal surface
– Pull out the belt with a jerk

The automatic blocking system must lock the belt in the retractor.

– Open motor hood approximately 30 degrees

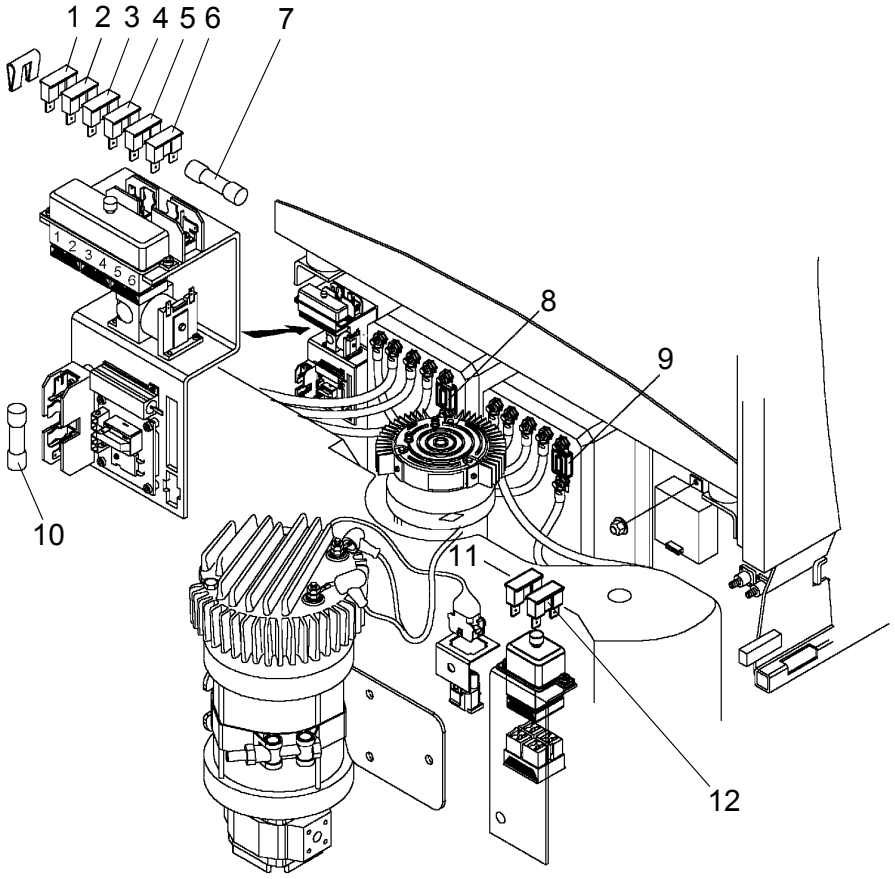
The automatic blocking system must lock the belt in the retractor

Do not operate the industrial truck when the safety restraint belt is defective; have the belt exchanged immediately!

6.12 Checking the electric fuses

– Prepare the truck for the servicing and maintenance operations (refer to section 6.1).
– Open the battery cover or unscrew the electronics cover.
– Unscrew the cap.
– Check the fuses according to the table for correct amperage and condition.

To avoid damages at the electrical system, only fuses with the appropriate ratings must be used.



Item	Designation	Electric circuit	Rating / type
1	F3.1	Option	
2	F3.1	Control circuit fuse, DC/DC converter	24 V 10 A
3	6F5	Control circuit fuse	12 V 3 A
4	F1.2	Control circuit fuse	80 V 10 A
5	F2.1	Control circuit fuse	80 V 10 A
6	1F9	Control circuit fuse, electronic system	80 V 3 A
7	3F1	Steering booster motor	30 A
8	2F10	Control circuit fuse, hydraulic system	250 A
9	1F3	Control-circuit fuse, travelling	250 A/355 A
10	F1	Overall control circuit fuse	30 A
11	5F2	Control circuit fuse, DC/DC converter (option)	24 V 10 A
12	5F2	Control circuit fuse, DC/DC converter (option)	24 V 15 A

6.13 Recommissioning after cleaning or maintenance operations

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.

STOP Perform several brake tests immediately after recommissioning the truck.

8 Safety checks to be performed at regular intervals and following any untoward incidents (Ⓓ: Accident prevention check according to BGV D27)

At least once yearly, or after any untoward incident, the fork lift truck has to be chekked 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.