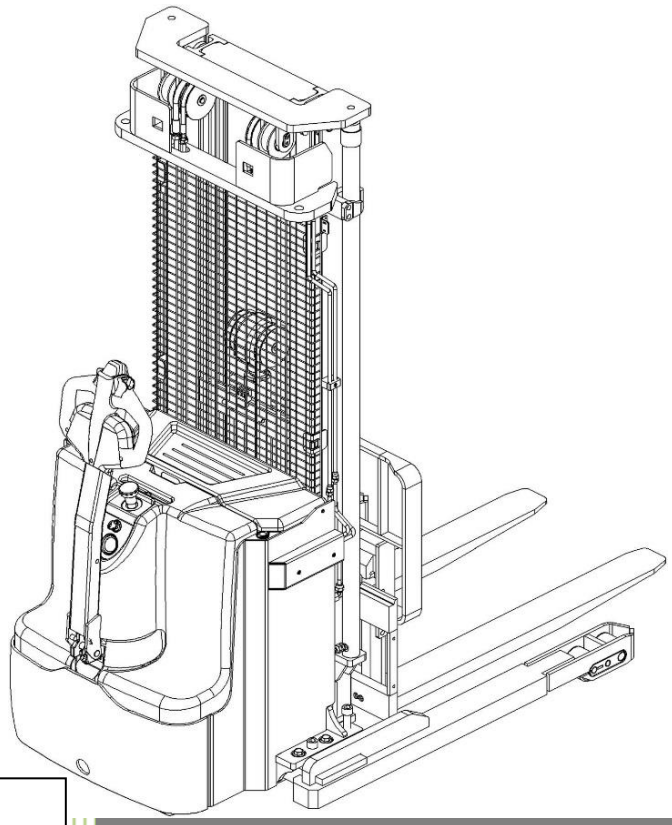
INSTRUCTION HANDBOOK

Electric Stacker PS 12/16/18TSL



WARNING

Do not use the electric stacker before reading and understanding these operating instructions.

NOTE:

● Please check the designation of your present type at the last page of this document as well as on the ID-plate.

● Keep for future reference.

This stacker should be used in factories, tourist attractions and playgrounds only.

Version 10/2024

PS12/16/18TSL-SMS-008-EN

FOREWORD

Before operating the electric stacker, read this ORIGINAL INSTRUCTION HANDBOOK carefully and understand the usage of the truck completely. Improper operation of the truck may create a danger situation. This handbook describes the usage of different electric stackers. When operating and servicing the truck, make sure, that it applies to your type.

Keep this handbook for future reference. If this or the warning/caution labels are damaged or got lost, please contact your local dealer for replacement.

ATTENTION:

- Environmentally hazardous waste, such as batteries, oil and electronics, will have a negative effect on the environment or health, if handled incorrectly.
- The waste packages should be sorted and put into solid dustbins according to the materials and be collected disposal by local special environment protection bureau. To avoid pollution, it's forbidden to throw away the wastes randomly.
- To avoid leaking during the use of the products, the user should prepare some absorbable materials (scraps of wooden or dry duster cloth) to absorb the leaking oil in time. To avoid second pollution to the environment, the used absorbable materials should be handed in to special departments in terms of local authorities.
- Our products are subject to ongoing developments. The information written in this handbook is provided as reference for operating and servicing the stacker and may vary in terms of description of particular features of the truck.

NOTE: On this manual, the left sign means warning and danger, which can lead to death or serious injury if not followed.

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1. CORRECT APPLICATION

It is only allowed to use this electric stacker according to this instruction handbook.

The in this handbook described trucks are self propelled pedestrian controlled electric power stacker, with electrically operated lifting function. The trucks are designed for stacking operations in dedicated racking by lifting and lowering the palletized load up to the desired lifting height.

A wrong usage can cause human injuries or can damage equipment.
The operator/ the operating company has to ensure the correct usage and has to ensure, that this truck is used only by staff, which is trained and authorized to use this truck.

The truck has to be used on substantially firm, smooth, prepared, level and adequate surfaces. The truck is intended to be used for indoor applications with ambient temperatures between +5°C and + 40°C and for light duty applications without crossing permanent obstacles or potholes. Operating on ramps is not allowed. While operating, the load must be placed approximately on the longitudinal centre plane of the stacker.
Lifting or transporting people is forbidden. If travelling the load must be lowered to the lifting point.

It is not allowed to use this truck on tail lifts or loading ramps.

The capacity is marked on the load diagram as well on the Identification plate. The operator has to consider the warnings and safety instructions.
Operating lighting must be minimum 50 Lux.

<u>Modification</u>
No modifications or alterations to this truck which may affect, for example, capacity, stability or safety requirements of the truck, shall be made without the prior written approval of the original truck manufacturer, its authorized representative, or a successor thereof. This includes changes affecting, for example braking, steering, visibility and the addition of removable attachments. When the manufacturer or its successor approve a modification or alteration, they shall also make and approve appropriate changes to capacity plate, decals, tags and operation and maintenance handbooks.

By not observing these instructions, the warranty becomes void.

2. DESCRIPTION OF THE STACKER

a. Overview of the main components

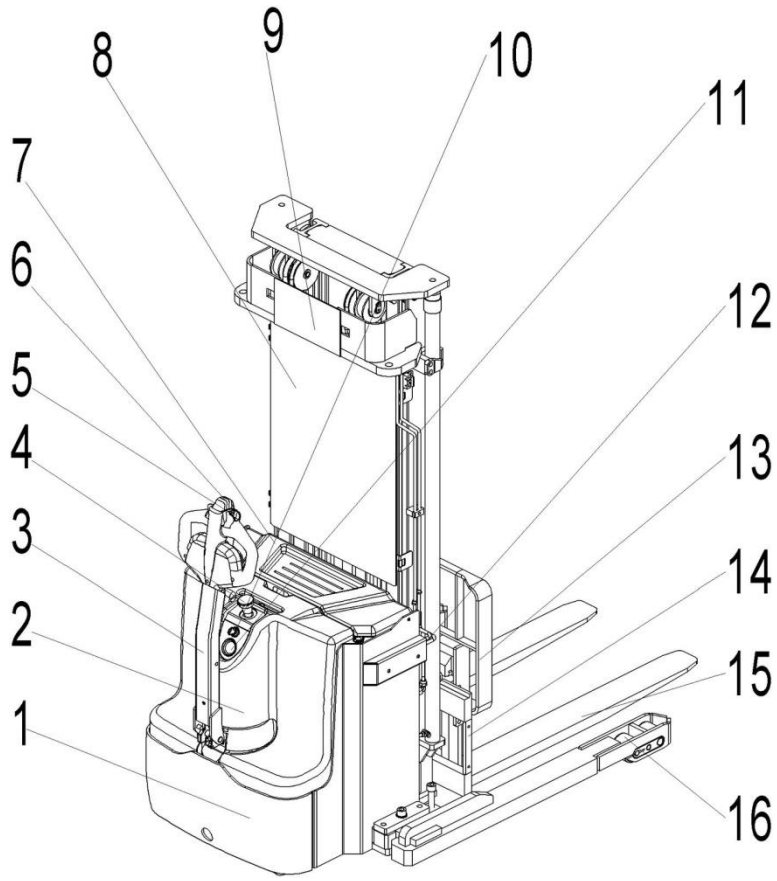


Fig. 1: Overview main components

1. Chassis
2. Main cover
3. Tiller
4. Emergency switch
5. Belly button
6. Accelerator
7. Battery cover
8. Protective mesh
9. Mast
10. Key switch
11. Indicator
12. Hydraulic system assembly
13. Load backrest
14. fork carriage
15. Fork
16. Load roller assembly

b. Main technical data

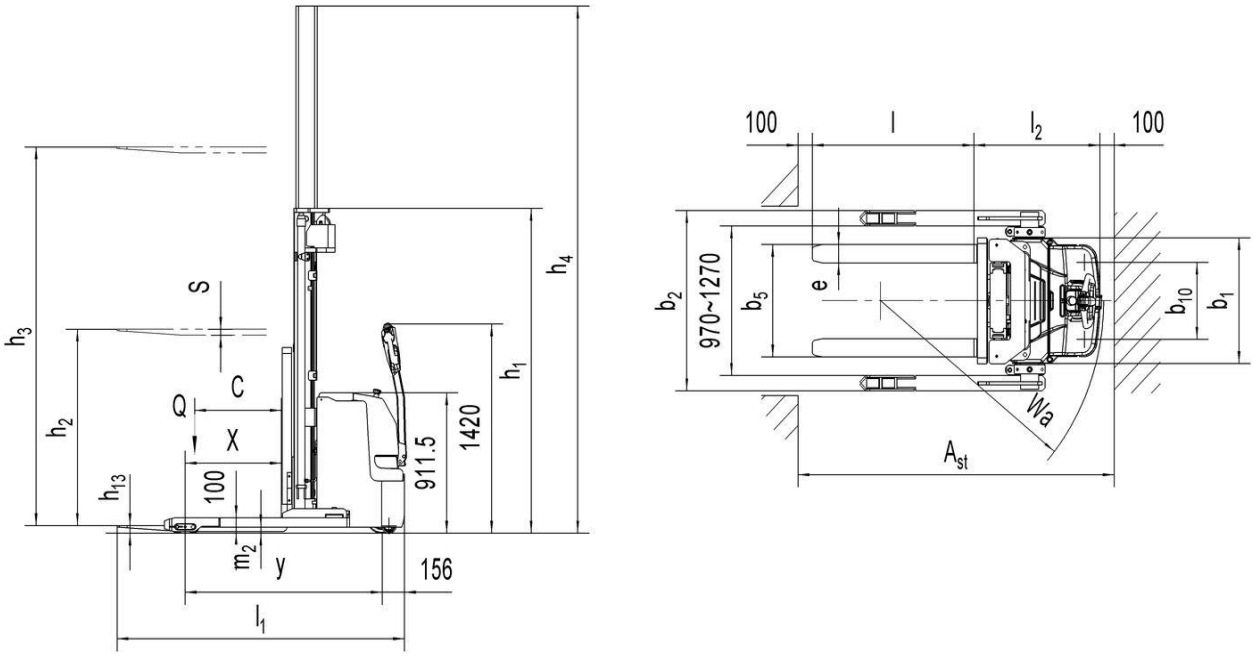


Fig. 2: Technical data

Table 1: Main technical data for standard version

	Type sheet for industrial truck acc. to VDI 2198					
Distinguishing mark	1.2	Manufacturer`s type designation		PS12TSL (3580)	PS16TSL (4580)	PS18T SL(4580)
	1.3	Power (battery ,diesel, petrol, gas, manual)		Battery		
	1.4	Operator type		Pedestrian		
	1.5	Load Capacity / rated load	Q(t)	1.2	1.6	1.8
	1.6	Load centre distance	C(mm)	600	600[1)]	
	1.8	Load distance ,centre of drive axle to fork	x(mm)	647	664[2)]	647[2)]
	1.9	Wheelbase	y(mm)	1331	1378	1378
Weight	2.1	Service weight	Kg	1190	1480	1560
	2.2	Axle loading, laden front/rear	Kg	774/1598	827/2253	892/2378
	2.3	Axle loading, unladen front/rear	Kg	796/394	864/616	924/636
Tires, chassis	3.1	Tires		Polyurethane (PU)		
	3.2	Tire size, front	∅xW (mm)	∅230×70		
	3.3	Tire size, rear	∅xW (mm)	∅84×70		
	3.4	Additional wheels(dimensions)	∅xW (mm)	∅100x40		
	3.5	Wheels, number front/rear(x=driven wheels)		1x+2/4		
	3.6	Track, front	b10(mm)	500		
Dimensions	4.2	Lowered mast height	h1(mm)	2308	2108	2228
	4.3	Free Lift height	h2(mm)	1760	1520	1520
	4.4	Lift height	h3(mm)	3510	4510	4510
	4.5	Extended mast height	h4(mm)	4080	5080	5200

	4.9	Height of tiller in drive position min./ max.	h14(mm)	890/1420		
	4.15	Height, lowered	h13(mm)	50		
	4.19	Overall length	l1(mm)	1990	2075	2092
	4.20	Length to face of forks	l2(mm)	840	925	942
	4.21	Overall width	b1/b2(mm)	816/1170-1470		
	4.22	Fork dimensions	s/e/l(mm)	35x100x1150	40x100x1150	
	4.25	Distance between fork-arms	b5(mm)	222-830	222-830[3)]	
	4.32	Ground clearance, centre of wheelbase	m2(mm)	40		
	4.33	Aisle width for pallets 1000X1200 crossways	Ast(mm)	2396	2437	2446
	4.34	Aisle width for pallets 800X1200 lengthways	Ast(mm)	2382	2418	2432
	4.35	Turning radius	Wa(mm)	1500	1550	1550
Performance data	5.1	Travel speed, laden/ unladen	km/h	5.4/6.0	5.4/6.0	5.4/6.0
	5.2	Lift speed, laden/ unladen	m/s	0.09/0.14	0.13/0.18	0.13/0.18
	5.3	Lowering speed, laden/ unladen	m/s	0.25/0.2	0.20/0.14	0.20/0.14
	5.8	Max. gradeability, laden/ unladen	%	6/12	6/12	6/10
	5.10	Service brake		Electromagnetic		
Electric- engine	6.1	Drive motor rating S2 60min	Kw	1.3	1.4	1.4
	6.2	Lift motor rating at S3 10%	Kw	1.5	3.2	3.2
	6.3	Battery acc. to DIN 43531/35/36 A, B, C, no		2PZB	3VBS	3VBS
	6.4	Battery voltage, nominal capacity K5	V/Ah	24/180	24/270	24/270
	6.5	Battery weight	Kg	175	230	230
	6.6	Energy consumption acc: to VDI cycle	kWh/h	0.95	1.59	1.70
Additional data	8.1	Type of drive control		AC- speed control		
	8.4	Sound level at driver`s ear acc. to EN 12053	dB(A)	＜70		

Note: 1）with side shift, load centre distance is 500mm

2）with side shift, load distance is 55mm shorter

3）with side shift, Distance between fork-arms is 316-608mm

Table 2: Mast

Designation	Lowered mast height h1(mm)	Free Lift height h2(mm)	Lift height h3(mm)	Extended mast height h4(mm)	Lift+fork height h3+h13(mm)
PS12TSL					
Two stage mast	1958	-	2810	3380	2860
	2108	-	3110	3680	3160
	2308	-	3510	4080	3560
Two stage mast FFL (Full-Free-Lift)	1958	1410	2810	3380	2860
	2108	1560	3110	3680	3160
	2308	1760	3510	4080	3560
PS16TSL					
Two stage mast	1958	—	2810	3380	2860
	2108	—	3110	3680	3160
	2308	—	3510	4080	3560
Two stage mast FFL (Full-Free-Lift)	1958	1410	2810	3380	2860
	2108	1560	3110	3680	3160
	2308	1760	3510	4080	3560
Three stage mast	2008	—	4210	4780	4260
	2108	—	4510	5080	4560
Three stage mast FFL (Full-Free-Lift)	1908	1320	3910	4480	3960
	2008	1420	4210	4780	4260
	2108	1520	4510	5080	4560
	2343	1756	5210	5780	5260
PS18TSL					
Two stage mast	2078	—	2810	3500	2860
	2228	—	3110	3800	3160
	2428	—	3510	4200	3560
Two stage mast FFL (Full-Free-Lift)	1978	1310	2610	3300	2660
	2078	1410	2810	3500	2860
	2228	1560	3110	3800	3160
	2428	1760	3510	4200	3560
Three stage mast	2128	—	4210	4900	4260
	2228	—	4510	5200	4560
Three stage mast FFL (Full-Free-Lift)	1978	1310	3910	4600	3960
	2128	1420	4210	4900	4260
	2228	1520	4510	5200	4560

c. Description of the safety devices and warning labels (EU)

A Crane hook label
B Warning decal: Do not step under or on the forks
C Residual lift capacity sticker
D Never reach through
E Identification plate (ID-plate)
F Sticker to read and follow these instructions
G Sign of filling point
H Sign danger not riding

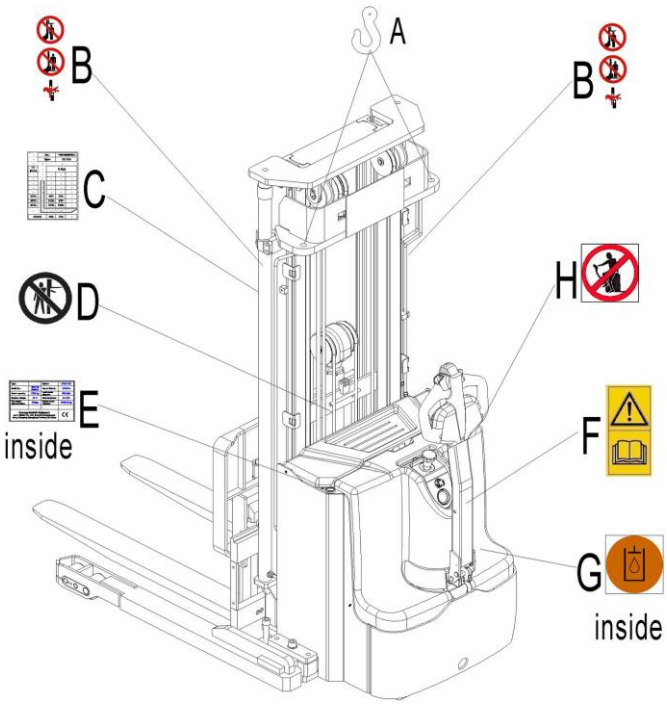


Fig. 3: Warning labels and safety devices

The truck has an emergency button (4) which stops all lifting-, lowering-, driving- functions and engages the failsafe electromagnetic brake when it is pushed. By pulling this button, the truck can be operated after the controller checked the functions. Before operating, insert the key and turn the switch (10) clockwise To prevent against unauthorized access, turn the key anti-clockwise and remove it if you do not operate this truck. The truck is equipped with a safety (belly) button (5) which switches the driving function away from the operator, if the truck travels towards the operator and the tiller is in its operating zone. Follow also the instructions given on the decals. Replace the decals if they are damaged or missing.

d. Identification plate

1 Designation, type
2 Serial number
3 Rated capacity in kg
4 Supply voltage in V
5 Own mass (self weight) in kg without battery
6 Name and address of manufacturer)
7 Battery weight minimum/ maximum
8 Nominal power in kW
9 Load center distance
10 Manufacturing data
11 Option

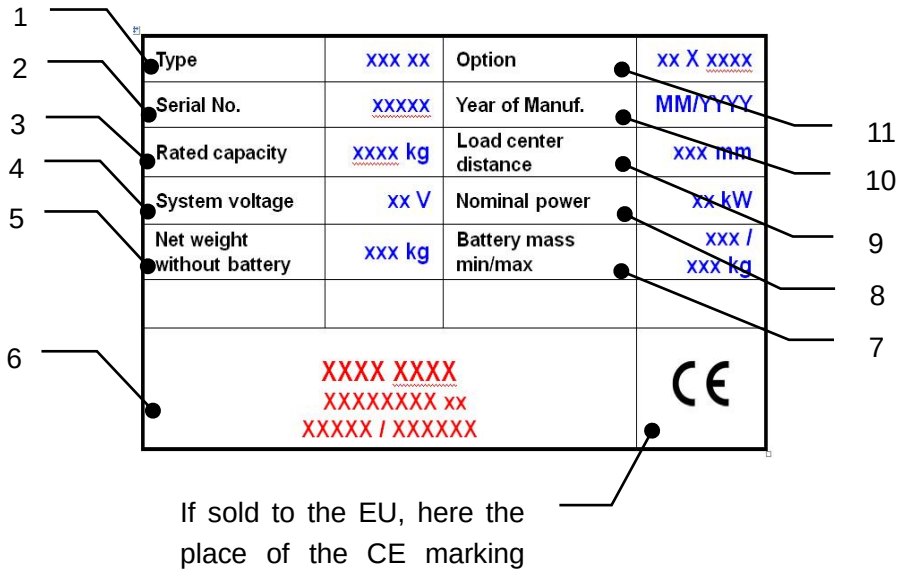


Fig. 4: Identification plate

3. WARNINGS, RESIDUAL RISK AND SAFETY INSTRUCTIONS

DO NOT

- Drive outside the stacking operation with a lifted load higher than the lifting point.
- Put foot or hand under or into the lifting mechanism.
- Allow other person than the operator to stand in front of or behind the truck when it is moving or lifting/lowering.
- Overload the truck.
- Put foot in front of the wheels, injury could result.
- Lift people. People could fall down and suffer severe injury.

- Push or pull loads.
- Use this truck on ramps.
- Use the truck without a removed protective screen
- Locate load at side or end of forks. Load must be distributed evenly on the forks.
- Use the truck with unstable or unbalanced load.
- Use the truck without manufacturer's written consent.
- Supply on board charger with AC voltage other than 100V or 240V.

Watch difference in floor levels when driving. Load could fall down or the truck could get uncontrollable. Keep watching the condition of load. Stop operating the truck if load becomes unstable. Brake the truck and activate the emergency button (4) by pushing when sliding load on or off the truck. If the truck has any malfunctions, follow chapter 10.
Practice maintenance work according to regular inspection. This truck is not designed to be water resistant. Use the truck under dry condition. Prolonged continuous operation might cause damage of the power pack. Stop operation if temperature of hydraulic oil is too high.

- When operating the truck, the operator has to wear safety shoes.
- The truck is intended to be used for indoor applications with ambient temperatures between +5°C and + 40°C.
- The operating lighting must be minimum 50 Lux.
- It is not allowed to use the truck on ramps.
- To prevent unintended sudden movements when not operating the truck (i.e. from another person, etc.). Switch of the truck and remove the key.

4. COMMISSIONING, TRANSPORTING, DECOMMISIONING

a. Commissioning

Table 3: Commissioning data

Type	PS12TSL / 3600	PS16TSL / 4600	PS18TSL / 4600
Commissioning weight [kg]	1113	1275	1355
Version/ Lift [mm]	3600	4600	4600

After receiving our new truck or for re-commissioning you have to do following before (firstly) operating the truck:

- Check if are all parts included and not damaged
- Install and charge the battery (follow chapter 8)
- Do the work according to the daily inspections as well as functional checks.

b. Lifting/transportation

For transporting, remove the load, lower the forks to the lowest position and fix the truck safe with dedicated lifting gear according to Fig. 5.

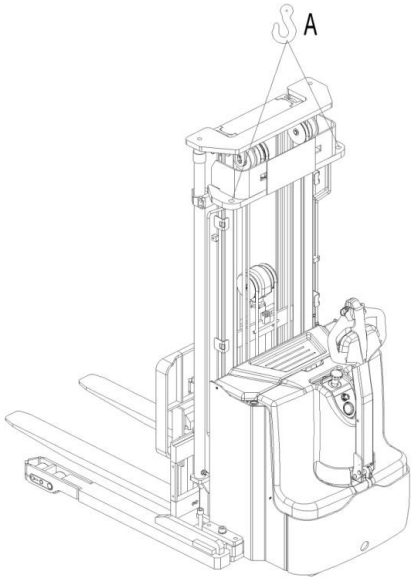


Fig.5: Lifting with a crane

Lifting

USE DEDICATED CRANE AND LIFTING EQUIPMENT
DO NOT STAND UNDER THE SWAYING LOAD
DO NOT WALK INTO THE HAZARDOUS AREA
DURING LIFTING

Lower the forks and park the truck securely.
Fasten the truck according to Fig. 6 by fixing dedicated lashing belts to each side of the truck's crane hook holes and fasten the other side at the transporting truck.

Transportation

DURING TRANSPORTATION ON A LORRY OR TRUCK, ALWAYS FASTEN THE TRUCK SECURELY.

Lower the forks and park the truck on the metal plate securely. Fix the forks by the metal plank with two screws to the bottom metal plate. Fasten the truck by dedicated lashing belts according to Fig. 6 and fasten the other side at the transporting truck.

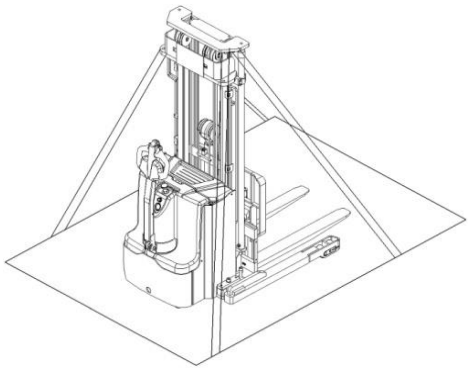


Fig. 6: Fixing points

c. Decommissioning

For storage, remove the load, lower the truck to the lowest position, grease all in this handbook mentioned greasing points (regular inspection) protecting the truck against corrosion and dust. Remove the batteries and jack the truck safely, so that there will be no flattening of wheels after storage.

For final decommissioning hand the truck to a designated recycling company. Oil, batteries and electric components must be recycled due to legal regulations.

5. DAILY INSPECTION

This chapter describes pre-shift checks before putting the truck into operation.
Daily inspection is effective to find the malfunction or fault on this truck. Check the truck on the following points before operation.

Remove load from truck and lower the forks.
DO NOT USE THE TRUCK IF ANY MALFUNCTION IS FOUND.

- Check for scratches, deformation or cracks.
- Check if there is any oil leakage from the cylinder.
- Check the vertical creep of the truck.
- Check the chain and rollers for damages or corrosion.
- Check the smooth movement of the wheels.
- Check the function of the emergency brake by activating the emergency button.
- Check, the tiller arm- switch braking function
- Check the lifting and lowering functions by operating the buttons.
- Check if the protective screen has no damages and that is correctly assembled.
- Check the audio warning signal.
- Check if all bolts and nuts are tightened firmly.
- Check the function of the key switch.
- Check the speed limitation switch.
- Visual check if there are any broken hoses or broken electric wires.
- If supplied with a backrest extension, check it for damages and correct assembling.

6. OPERATING INSTRUCTIONS

BEFORE OPERATING THIS TRUCK, PLEASE FOLLOW THE WARNINGS AND SAFETY INSTRUCTIONS (CHAPTER 3).
BEFORE OPERATING THIS TRUCK, ENSURE THAT THE LOAD OR OTHER EQUIPMENT NOT CAUSES INSUFFICIENT VISIBILITY!

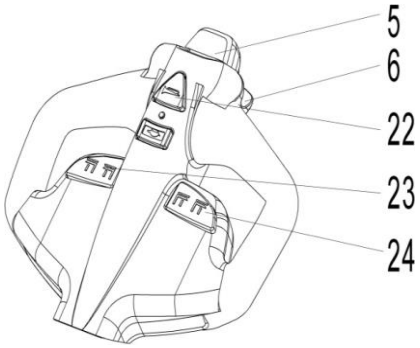


Fig.7: Tiller operating controls

Make sure, that the load is palletized and stable and that the daily inspection is carried out. For starting, insert the key and turn it clockwise to the “ON”- position. The key can be used only used on pedestrian controlled power stacker. Eventually before inserting the key, the emergency button must be pulled carefully.
Press the horn button (22) to activate the audible warning signal.

a. Parking

DO NOT PARK THE TRUCK ON INCLINED SURFACES

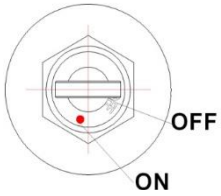


Fig. 8: Key switch

The truck is equipped with an electromagnetic failsafe stopping and parking brake.
Always lower the forks fully and drive the truck to a safe area. Turn the key anti- clockwise to the “Off” – position and remove the key.

b. Residual lift diagram

The residual lift diagram indicates the maximum capacity Q [kg] for a given load centre c [mm] and the corresponding lift height H [mm] for the
truck with horizontal load.
The white markings on the mast indicate if the specific lifting limits reached. For instance with a load centre of gravity distance c of 600mm
and a maximum lift height H of 5300mm, the max. capacity Q is 900
Maximum load capacity of the truck with side-shifter is 800KG

Type	PSK(PS16TSL)		
Mast	5300		
h3 (mm)	Q (kg)		
5300	900	800	
5000	1000	900	
4600	1300	1200	
4300	1400	1300	
4000	1500	1400	
3600	1600	1500	
c(mm)	600	700	

Fig. 9: Residual lift diagram (without side shift)

c. Lifting

CAPACITY IS 1200/1600/2000 kg WHEN THE LOAD CENTER IS 600MM.
LIFT ONLY CAPACITIES ACCORDING TO THE
RESIDUAL LIFT DIAGRAM.

Travel with the lowered forks fully underneath the pallet and press the lifting button (Fig. 7, 24) until you reached the desired lifting height.

d. Lowering

If the forks are in the racking, firstly travel out of the racking carefully with or without the pallet. By travelling out of the racking, take care that the forks are not touching the racking.
Press the lowering button (Fig. 7, 24) carefully.
Lower the load until the forks are clear of the pallet, then drive the truck carefully out of the load unit.

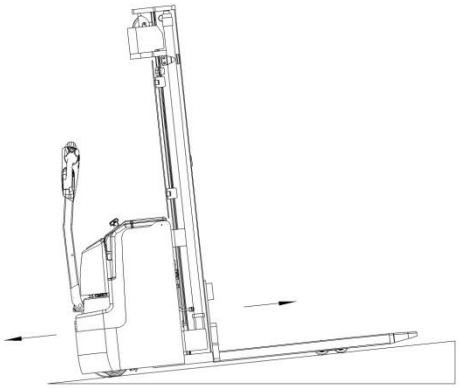


Fig.11: Load facing uphill

e. Side shift (option)

After truck is stopped, press the side shift button (Fig. 7, 23) until you reached the desired position.

f. Travelling

TRAVEL ON INCLINES ONLY WITH THE LOAD FACING UPHILL(fig.11).

DO NOT TRAVEL ON INCLINES MORE THAN SPECIFIED WITH THE TECHNICAL DATA.
TRAVELLING IS ONLY ALLOWED IF THE FORKS ARE LOWERED DOWN TO THE LIFTING POINT (<118in).

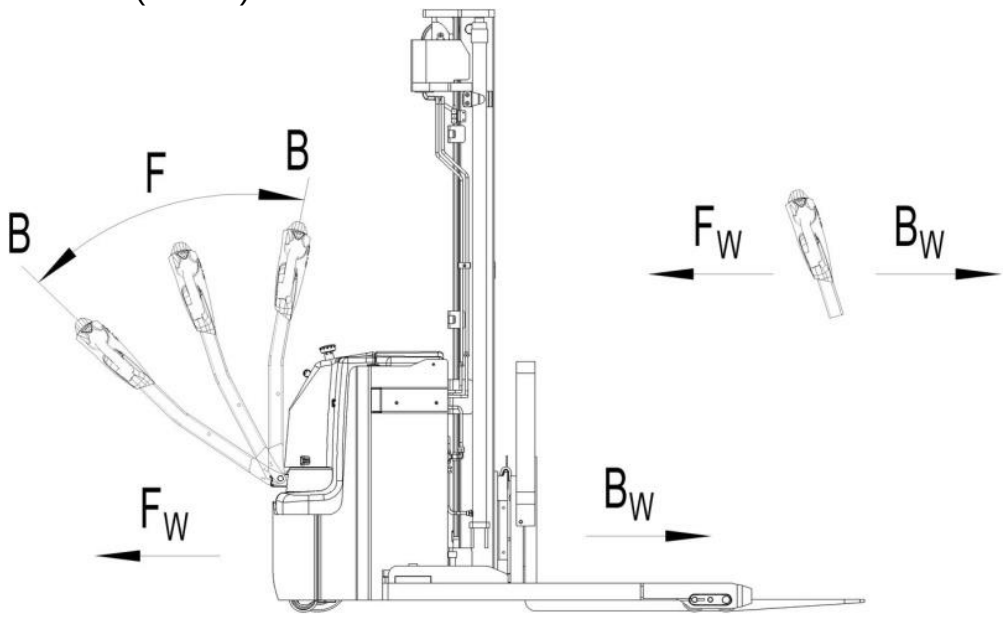


Fig.12: Operating direction

After starting the truck by turning the inserted key to the “ON”- position (Fig. 8) and eventually by pulling the emergency button carefully, move the tiller to the operating zone (‘F’, Fig.12).
Turn the accelerator button to the desired direction forward ‘Fw.’ Or backwards ‘Bw.’(Fig.12).
Control the travelling speed by moving the accelerator button carefully until you reached the desired speed.
If you move the accelerator button back to the neutral position, the controller decelerates the truck until the truck stops. If the truck stops, the parking brake will be engaged.
Drive carefully the truck to the destination. Watch the route conditions and adjust the travelling speed with the accelerator- button.

g. Steering

You steer the truck by moving the tiller to the left or right side.
AVOID CORNERING WHEN STACKING AND RETRIEVING.

h. Braking

THE BRAKING PERFORMANCE DEPENDS ON THE TRACK CONDITIONS AND THE LOAD CONDITIONS OF THE TRUCK

The braking function can be activated on several ways:

- By moving the accelerator button (6) back to the initial ‘0’ position or by releasing the button, the regenerative braking is activated. The truck brakes until it stops.

- By moving the accelerator button (6) from one driving direction directly to the opposite direction, the truck brakes regenerative until it starts travelling into the opposite direction.
- The truck brakes, if the tiller is moved up or down to the braking zones (‘B’). If the tiller is released, the tiller moves automatically up to the upper baking zone (‘B’). The truck brakes until it stops.
- The safety (belly) button (5) prevents the operator from being crushed. If this button is activated, the truck decelerates and/ or starts travelling into the backwards direction (‘Bw.’) for a short distance and stops. Please consider, that this button also operates, if the truck is not travelling and the tiller is in the operating zone.

i. Malfunctions

If there are any malfunctions or the truck is inoperative, please stop using the truck and activate the emergency button (4) by pushing it. If possible, park the truck on a safe area, turn the key switch (10) anti- clockwise and remove the key.
Inform immediately the manager and, or call your service. If necessary, tow the truck out of the operating area by using dedicated lifting equipment.

j. Emergency

In emergencies, push the emergency button (4). All electrical functions will be stopped. Keep safe distance.

k. Fork adjustment

- Not fixed and improperly adjusted forks can lead to dangerous accidents.
- Check if the safety bolt (10) is installed before adjusting the forks. If the safety bolt (10) is not in place, the truck shall be prohibited to use.
- When adjusting the fork, pay attention that the distance between each fork and outer edge of the holder should be same.
- Clip the positioning pin into a fixing slot to avoid accidental movement of the fork.
- Load center must be located in the middle of the two forks.

Operation steps:

→ Park the truck securely according to the regulations.

→ Pulled up the positioning pin (13), make it away from the fixed slot.

→ Move the forks (14) to the appropriate position.

In order to ensure the operation safety of picking process, the distance between the forks (14) should be as large as possible, and the fork position must be symmetrical with the center line of the fork holder. Load center must be located in the center of the forks (14).

→ Put down the positioning pin (13), move the forks until the positioning pin clip into the fixing slot.

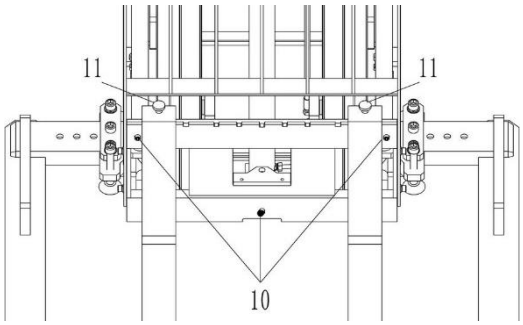


Fig. 13: Fork adjustment

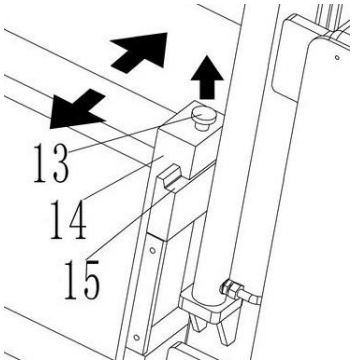


Fig.14: Move the forks

l. Fork replacement

- There is leg injury risk when replacing the forks.
- It's forbidden to pull the fork to the direction of the operator.
- Move the fork in the direction away from the operator.
- In order to prevent moving down, please use crane to fix heavy forks.
- Install the safety bolt (10) after replacing the fork and check whether the position of the safety bolt is correct.
- There is leg injury risk when replacing the forks.
- It's forbidden to pull the fork to the direction of the operator.

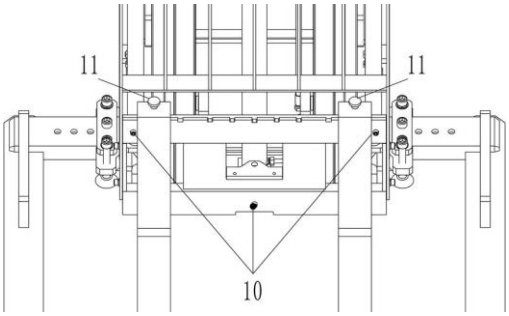


Fig.15: Replace the forks

Operation steps:

→ Remove the safety bolt (10).

→ Release fork positioning device (11).

→ Move the forks to the center of fork holder and remove the forks through the groove.

m. Leg adjustment

- Not fixed and not properly adjusted legs can lead to dangerous accidents.
- There is leg injury risk when adjusting the legs.
- Tighten the positioning bolt (23) after adjusting the legs.
- When adjusting the legs, please pay attention that the number of positioning holes (21) exposed on each side of the legs should be same. (as shown in Fig. 16, if one side has 3 positioning holes(21), the other side should also be 3).

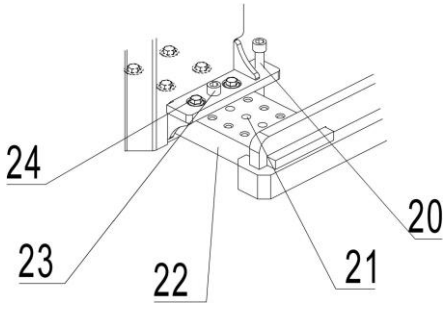


Fig.16: Adjust the legs

Operation steps:

→ Park the truck securely according to the regulations.

→ Take the battery out of the compartment (refer to Section 7) in order to get access to 12 screws

holding the legs in the area under the battery

→ Turn clockwise the supporting assembly(20) on both sides of the truck until jacking up the truck.

→ Screwed out the positioning bolt (23)and lock bolt (24). Note: screws (24) are also located inside the battery compartment.

→ Adjust the leg (22) until the corresponding positioning hole (21) is adjusted to the under face of the positioning bolts (23).
When adjusting the legs, please pay attention that the number of positioning holes (21) exposed on each side of the legs should be same. (as shown in Fig. 16, if one side has 3 positioning holes(21), the other side should also be 3).

→ Screw the positioning bolt (23) tightly and tighten bolt (24) outside and inside the battery compartment.

→ Turn anti-clockwise the supporting assembly(20) on both sides of the truck until the supporting assembly can't be turned anymore.

→ Load the battery back to the battery compartment (refer to Section 7)

7. BATTERY SAFETY, CHANGING AND REPLACEMENT

a. Battery safety

- Only qualified personnel is allowed to service or charge the batteries. The instructions of this handbook and from the battery manufacturer must be observed.
- Lead-acid batteries and lithium batteries are allowed.
- Be aware about the risk of accumulation of hydrogen under battery cover, keep it opened during charging.
- Recycling of batteries undergoes with national regulations. Please follow these regulations.
- By handling batteries, open fire is prohibited, gases may cause explosion!
- In the area of battery charging neither burning materials nor burning liquids are allowed. Smoking is prohibited and the area must be ventilated.
- Park the truck securely before starting charging or installing/changing the batteries
- Before finishing the maintenance work, make sure, that all cables are connected correctly and not disturbed towards other components of the truck.

LEAD-ACID TRACTION BATTERIES WITH LIQUID ELECTROLYTE AND LITHIUM BATTERIES ARE ALLOWED. THE WEIGHT OF THE BATTERIES HAS AN INFLUENCE TO THE TRUCKS OPERATING BEHAVIOR. PLEASE CONSIDER THE MAXIMUM OPERATING TEMPERATURE OF THE BATTERIES.

Depending on the version, the truck is equipped with different battery types. The following table shows which combinations are intended as standard.

1.Description of the lithium-ion battery

The lithium-ion battery is a battery with rechargeable cells, the battery is designed for industrial trucks and can withstand related vibrations during operation. The battery is equipped with special connections for charging and discharging operations. Do not try to install or connect improper connectors to the battery.

The battery is equipped with BMS – battery management system, which performs the control of battery condition and implements related safety protocols to protect the battery and cells from damages caused by operation or environmental conditions. The BMS controls the following safety functions and conditions: voltage, temperature, undervoltage, overvoltage, overtemperature, overcurrent, short circuit, etc. The internal resistance of lithium battery is generally low, which minimizes heat generation and maximizes the available power of the truck.

Temperature range for using the battery is from +5°C to +40°C. Low temperatures reduce the effective battery capacity, high temperatures reduce the battery's life time. The temperature difference between the two sides of the battery shall not exceed 5°C.

Only approved battery chargers must be used to charge the lithium battery.

2.Lithium-ion battery Decals

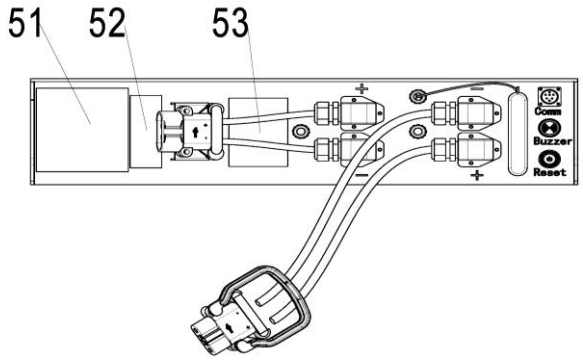


Fig. 19: Battery Decals

Table 3: Battery Decals

Item	Description
51	Identification plate
52	Bar code and two-dimensional code
53	Warning Label

Identification plate and Warning label

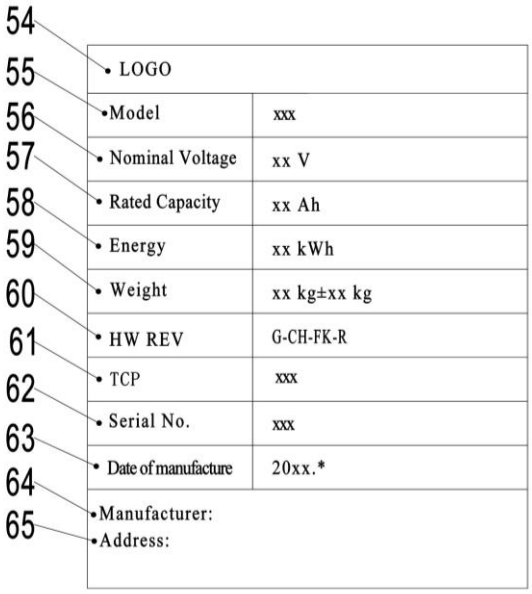


Fig. 20: Identification plate

Table 4: Identification plate

Item	Description
54	Manufacturer trademark
55	Model designation
56	Rated voltage
57	Rated Capacity
58	Energy
59	Battery weight
60	Hardware revision
61	TCP
62	Serial No.
63	Production date
64	Battery manufacturer
65	Manufacturer's address

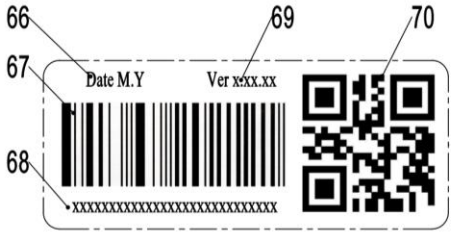


Fig. 21: Bar code and two-dimensional code

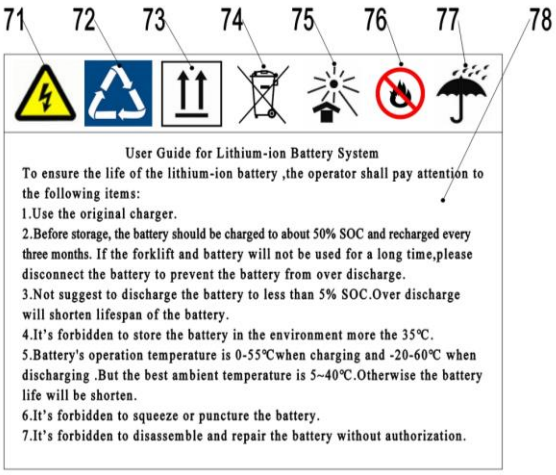


Fig. 22: Warning Label

Table 5: Bar code and two-dimensional code

Item	Description
66	Production date
67	Battery information bar code
68	Bar code interpretation
69	Software version of battery
70	Battery information 2D code

Table 6: Warning Label

Item	Description
71	Electrical hazard marker
72	Rechargeable logo
73	Vertical upward packing, transportation
74	No putting into ordinary garbage bins
75	No long-term exposure to sunshine
76	Stay away from fire
77	Keep out of the rain
78	Guide to use

3.Safety Instructions, Warning Indications and other Notes of Lithium-ion battery

Safety regulations for handling lithium-ion batteries

Do not try to make any repairs or servicing of lithium batteries. Replacement of parts is not assumed.

Risk of electric shock and burning

The battery's charging and discharging connectors have open terminals, avoid any body contacts, contamination or direct contacts with objects which can cause short circuit connection of terminals. Use necessary pre-cautions and protective caps to secure the open terminals. The connectors should be maintained in clean and dry conditions.

Use only batteries designed and approved by the manufacturer for the truck.
Do not try to modify or alter the battery.

Any damage or defects to the charger can result in accidents. Use only charger approved by the manufacturer of the truck, which is suitable for used battery

In case charger has any damages or defects, exclude the charger from operation and contact your service provider. Do not modify or try to repair the charger.

Improper use of charger or use of wrong charger can cause damages to a battery or charger. Follow the required charger specifications; If the operation voltage of the charger is out of the applicable voltage range, the charger or battery may be damaged causing serious safety risks. The charger in use must be approved by the battery (truck) manufacturer.

Reversed connection of charging plug is prohibited. Follow the instruction for correct connection. For disconnection of charging plug use dedicated grip and never pull out the plug by means of cable.

Stop charging immediately if any abnormalities are detected, e.g. severe temperature increase, deformation of battery case, smoke, noise etc.

Intermediate charging

Lithium batteries support so called opportunity charging. The lithium battery, which is not fully discharged can be charged in any time. However, frequent opportunity charging not to the full charging state and stop of charging process before the appearance of corresponding indication of charger may result in dis-balance voltage of cells which increases the battery BMS calculation error. In order to effectively deal with this phenomenon, charge the battery in full allowing the automotive balancing process to be completed at least once a week.

Do not charge a fully charged battery

Note that in order to prevent the battery from continuing restart of charging under fully charged condition causing reduction of battery lifetime, the BMS has a protection function that prohibits recharging of fully charged battery. The charger will not work while battery is fully charged.

Potential hazards

If equipment is used according to its design purpose, following the correct operations procedures, there are no hazards anticipated.

The following hazards can arise in the event of improper use:

- Physical damage to the battery in case a battery falls or is deformed through impacts. Mechanical damages can cause leakages of harmful materials, fire or battery explosion.
- Short circuits may be caused by connecting the two battery terminals, for instance caused by water or intentional/unintentional connections.
- Temperature damages caused by placing of batteries in overheated environment conditions or being exposed to impact of fire, open sunlight etc. can cause leakages of harmful materials, fire or battery explosion.

In order to avoid fire, explosion and/or leakage of harmful materials, a safe place for storing non-functional or damaged batteries until the service arrives on site must satisfy the following criteria:

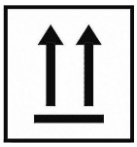
- Do not store in places where personnel is located.
- Do not store in places with valuable objects and close to valuable objects.
- A Class D fire extinguisher must be available on demand.
- There should not be any fire or smoke detectors in the storage area in order to ensure that an automatic fire detection system is only activated in the event of actual danger (e.g. flames).
- No ventilation intake pipes should be in the facility to exclude spreading of discharged content within a building.

Examples of where to store a non-functional battery:

- Roofed outdoor position.
- Ventilated container.
- Covered fire resistant box with pressure and smoke discharge option.

Symbols - Safety and Warnings

Table 7: Symbols - Safety and Warnings

	Caution! Battery short-circuit is prohibited.
	The battery can be recharged cyclically
	Vertical upward packing, transportation and use
	Used lithium-ion batteries must be treated as hazardous waste. Lithium-ion batteries marked with the recycling symbol and the sign showing a crossed-out waste bin must not be disposed of with ordinary household waste.
	Protect the lithium-ion battery from solar radiation or other forms of heat radiation. Do not expose the lithium-ion battery to heat sources.
	Avoid fire and short circuits causing overheating. Do not ignite or locate batteries close to open flame, heat sources or sparks. Keep lithium-ion batteries away from heat sources.
	The battery is not completely waterproof and should be avoided for a long time in the rain. If the battery is wet, wipe the dry connector in time.

Explosion and fire hazard

Physical damage, thermal effects or incorrect storage in the event of a defect can result in explosions or fire. The battery materials can be flammable.

Particular hazard from combustion products

The lithium batteries may be damaged by a fire. When extinguishing a lithium battery fire, the following information must be taken into consideration.

Contact with combustion products can be hazardous

Fire produces combustion products, which can occur in the form of smoke, through leaking fluids, escaping gases, debris as well decomposition products of certain chemicals. These combustion products are substances that enter the body through the respiratory tract and/or the skin can produce and adverse effects such as choking.

Avoid contact with combustion products.
Use protective equipment.

Special firefighting protective equipment

Use self-contained breathing apparatus.
Wear protective equipment.

Additional firefighting instructions

To prevent secondary fires, the lithium-ion battery must be cooled from the outside. Fluids or solids must never be directed into the lithium battery.
Suitable extinguishing agents

- Carbon dioxide extinguisher (CO2)
- Water (not on mechanically opened or damaged batteries)

Unsuitable extinguishing agents

- Foam
- Grease fire extinguishing agents
- Powder extinguishers
- Metal fire extinguishers (PM 12i extinguishers)
- Metal fire powder PL-9/78 (DIN EN 3SP-44/95)
- Dry sand

Instructions for cooling an overheated, non-physically damaged battery

This type of damage may be caused by a short circuit inside the battery, which may result in leakage of harmful materials, fire or battery explosion.

Material discharge

Battery electrolyte fluid can be hazardous

Electrolyte fluid can be discharged if the battery is physically damaged. Avoid its contact with skin or eyes. If the contact happened:

- Rinse the affected parts with big amount of water and request for medical assistance immediately.
- In case of skin irritation or if any substances are breathed in request the medical assistance immediately.

Precautionary measures for personnel

- Keep personnel away, avoid any contact with smoke or discharged materials.
- Block off the affected area and ensure its reasonable ventilation.
- Wear personal protective equipment. If vapors, dust or aerosols are presented use self-contained breathing apparatus.

Precautionary measures for the environment

Do not allow spilled fluids to enter the water system, drainage system or the underground water.

Cleaning measures

The leaked fluid must be removed professionally following the related protocols.

Battery lifetime and maintenance

The lithium-ion batteries are maintenance-free.

Deep discharge can damage the battery

Self-discharge without periodical recharge can lead the battery to fully discharged state. Full discharge shortens the service life of the battery and can cause deep discharge and activation of related safety protocols when battery will not be able to be charged anymore.

Before a long period of inactivity, the battery must be charged to 40%~60%.
Control the level of battery charge at least every 12 weeks and re-charge if necessary.
The temperature range for storing of the battery should be within the range of 0°C to 30°C.

If the battery is deeply discharged or if the battery temperature is below the permissible level, the battery will not charge. Deep discharged batteries can never be charged. Due to the risk of condensate formation, batteries that have been stored at 0°C or below must only be charged after natural warming up to at least +5°C, forced heating is forbidden.

Instructions for safe handling of batteries

- Do not modify the battery.
- Do not open, damage, drop, penetrate or deform the battery.
- Do not throw the battery into a fire.
- Protect the battery from overheating.
- Protect the battery from direct sun light.
- Follow storage and charging procedures
- Protect the battery from water damages and other impacts

Failure to comply with these safety instructions can result in fire and explosion or the leakage of harmful materials.

Pre-shift checks before the system is put into operation

Check that the battery is in its normal condition, has no evidence of damages, leakages, abnormal findings, e.g. high temperature, smell, smoke etc. The surface of the battery should be clean and dry, without evidence of water damages, marks of rust on terminals and housing (if applicable). Connecting cables and plugs are in good condition.

Faults

If any damage is found to the battery or battery charger contact the service provider immediately. Do not open the battery or attempt to repair it.

Disposal and transport of a lithium-ion battery

Instructions for disposal

Lithium-ion batteries must be disposed in accordance with the relevant national environmental protection regulations. Batteries must be treated as hazardous waste. Batteries must not be disposed with ordinary waste.

Shipping information

The lithium-ion battery is a hazardous material. The applicable regulations must be fulfilled during transportation.

Shipping functional batteries

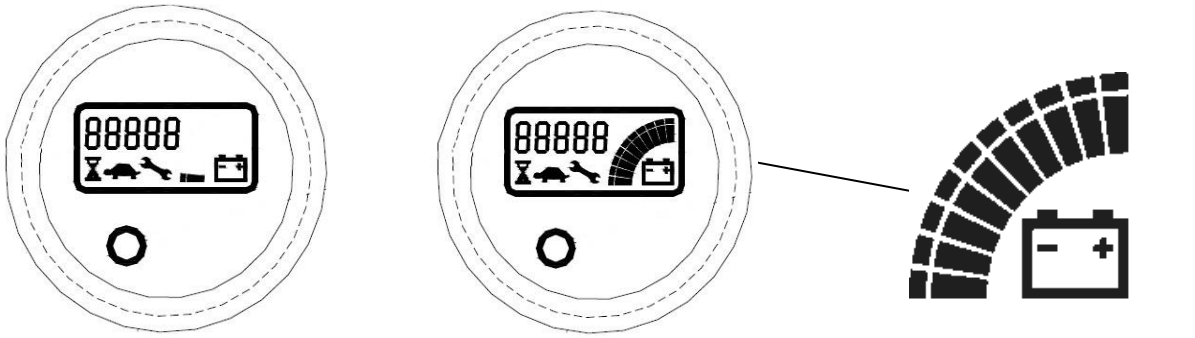
Functioning batteries can be shipped in accordance with the related regulations

Shipping faulty batteries

To transport faulty lithium-ion batteries, contact the service provider. Faulty lithium batteries require following of special transporting procedures.

b. Charging the battery

Display (MDI)



Battery discharged | Battery fully charged | State of battery charge

Fig 18: Display (MDI)

The battery charge status indicator is integrated in the display. The charge status is displayed in ten increments. Each is represented by a rectangle that corresponds to 10% of the battery charge. The rectangles gradually disappear as the battery discharges. When battery is low, the battery symbol blinks and the red LED flashes. Special statuses appear in the display unit as fault codes.

Table 8: Fault code

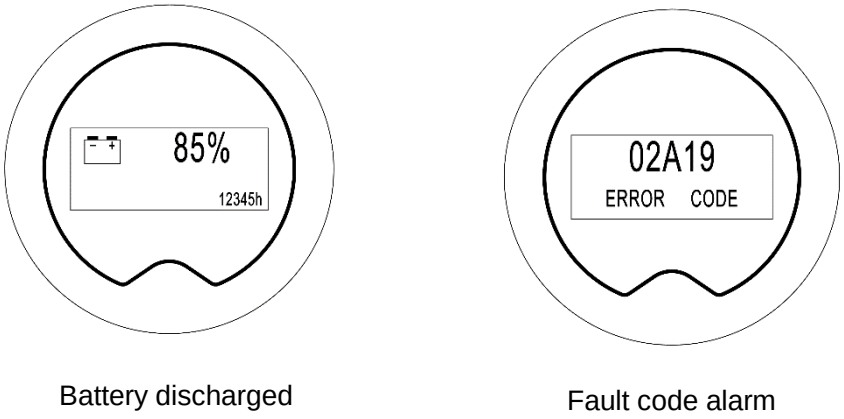
Fault code	The fault code appears if ...	Effect
0	The battery is too low.	Lifting is deactivated, traveling speed is reduced.
90	The lithium battery is too low.	Lifting is deactivated, traveling speed is reduced.

Other main functions

Table 9: Display symbols

	**Turtle Symbol** It is normally off. It appears when the “slow travel mode” is active.
	**Monkey Wrench Symbol** It appears when scheduled maintenance is required or if fault code exists.
	**Hourglass** It is normally off. It flashes when the hour meter is active.

Display (D13L)



Battery discharged

Fault code alarm

Fig 19: Display (D13L)

When the stacker is in normal condition, the state of battery charge is shown on the display screen, and the interface is in green. When the battery charge is less than 20%, the battery icon blinks.

- The number indicates the working hour of the stacker, the maximum is 5-digit number in hours;
- The battery icon and the state of battery charge (%) are shown on the screen.
- When the stacker is working normally, the display aperture is in green and the display is in home screen.
- When stacker malfunctions, the display aperture is in red, fault code(s) will be shown on the screen.

Charging the Battery with External Charger

Maintenance personnel

Batteries may only be charged, serviced or replaced by trained personnel. These operating instructions and the battery manufacturer's instructions must be observed when performing these operations.
Park the truck securely before carrying out any work on the batteries.

General information

- The charging time depends on the battery charge status. The time it takes to charge an almost fully depleted battery depends both on the battery capacity and the charge current. The approximate duration can be calculated as follows:
  Charging time = capacity of battery / charge current of battery charger.
- The lithium-ion battery can also be used when not fully charged. In this case, the remaining operating time is reduced.

The battery temperature rises by approx. 13°C during charging. Battery charging should only start when the battery temperature is below 40°C. The battery temperature before charging should be at least 5°C.

- Before charging ensure that you are using an appropriate charger for charging the installed battery.
- The room, where you are charging, must be ventilated.
- The exactly charge status can be only checked from the dischrge indicator. To control the status, the charging must be interrupted and the truck must be started.
- Optional built-in charger can only be used with 110V or 220V.

The trucks are equipped with the following batteries:

Table 10: Available batteries

Manufacturer`s type designation	Battery type	Capacity	Weight	Max. dimensions
PS12TSL	Lead-acid battery	2PzB-24V180Ah	175kg	660x146x657mm
	Li-battery	24V100Ah	54kg	660x146x657mm
	Li-battery	24V150Ah	59kg	660x146x657mm
PS16TSL	Lead-acid battery	3VBS-24V270Ah	230kg	752x172x657mm
	Li-battery	24V150Ah	72kg	752x172x657mm
	Li-battery	24V200Ah	81kg	752x172x657mm
PS18TSL	Lead-acid battery	3PZS-24V270Ah	230kg	624x284x627mm
	Li-battery	24V150Ah	72kg	752x172x657mm
	Li-battery	24V200Ah	90kg	624x284x627mm

Charging the battery

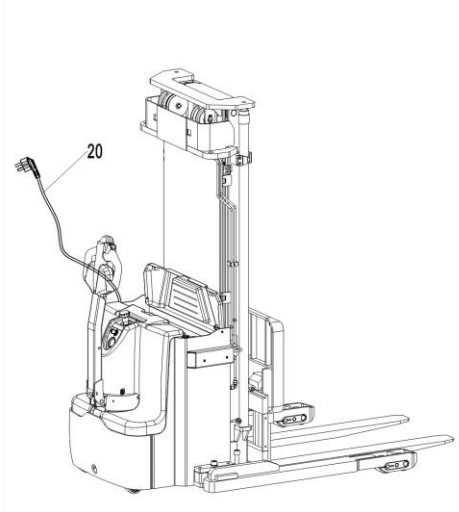


Fig.25: Charging by built in charger

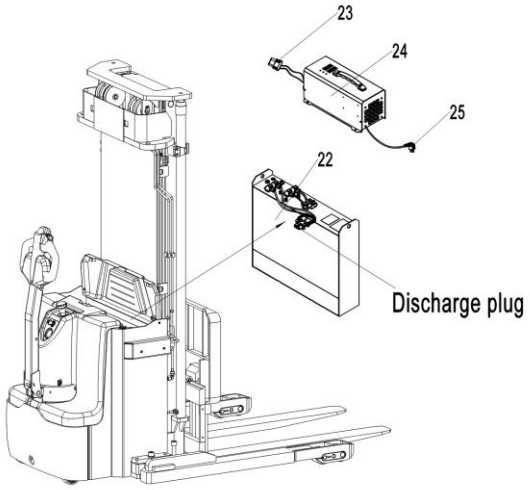


Fig.26: Lead-acid battery charging

Requirements

- The truck is parked securely.
- ➢ Lower the forks and remove the load, park the truck at a dedicated secured area with a dedicated power supply.
- The battery charger is approved for the battery type in use.

Tools and Material Required

- Battery charger

Procedure

Lead-acid battery charger

- Switch the truck off.
- Pull out charging plug (20) and connect it to the power supply.
- The battery start being charged when the red LED lights up.
- The charging process is completed when the green LED lights up.
- When charging is finished, disconnect the charging plug from the power supply and place it in the designated pocket.

External Li-battery charger

- Switch the truck off. Open the battery cover and let it stay upright.
- Connect the the battery plug(22) and the charging plug of the charger(23) .
- Then connect the main plug (25) of the battery charger to the power supply.
- The battery start being charged
- Once the battery is charged, disconnect the battery charger from the power supply.
- Close the battery cover.

The trucks are equipped with the following chargers:

Table 12: Available external charger

Manufacturer`s type designation	Battery type	Battery Specification	Charger specification
PS12TSL	Li-battery charger	24V100Ah	24V/60A
	Li-battery charger	24V150Ah	24V/60A
PS16TSL	Li-battery charger	24V150Ah	24V/60A
	Li-battery charger	24V200Ah	24V/80A
PS18TSL	Li-battery charger	24V150Ah	24V/60A
	Li-battery charger	24V200Ah	24V/80A

Table 13: Available build-in charger

Manufacturer`s type designation	Battery type	Battery Specification	Charger specification
PS12TSL	Lead-acid battery charger	2PzB-24V180Ah	24V/25A
PS16TSL		3VBS-24V270Ah	24V/35A
PS18TSL		3PZS-24V270Ah	24V/35A

c. Battery replacement

PS 12/16/18TSL without sideways battery

Requirements

- The truck is parked securely.
- Switch off the stacker. (by the key or start-button))
- The emergency disconnect switch(fig1.4) is actuated.

Procedure

- Open the battery cover and pull out its hinge. Then,
- remove the battery cover.
- Pull out the battery plug (②).
- Take the battery out with a crane.

The installation is in the reverse order.

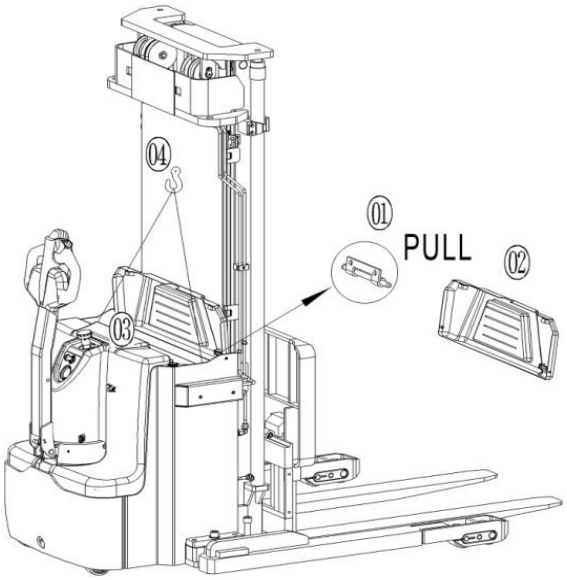


Fig. 27: Battery replacement without sideways battery

8. REGULAR MAINTENANCE

- Only qualified and trained personnel are allowed to do maintenance on this truck.
- Before maintaining, remove the load and lower the forks to the lowest position.
- If you need to lift the truck, follow chapter 4 b by using designated lashing or jacking equipment. Before working, put safety devices (for instance designated lift jacks, wedges or wooden blocks) under the truck to protect against accidental lowering, movement or slipping.
- Please pay attention by maintain the tiller arm. The gas pressure spring is pre-loaded by compression. Carelessness can cause injury.
- Use approved and from your dealer released original spare parts.
- Please consider that oil leakage of hydraulic fluid can cause failures and accidents.
- It is allowed to adjust the pressure valve only from trained service technicians.

If you need to change the wheels, please follow the service manual. The castors must be round and they should have no abnormal abrasion.
Check the items emphasized maintenance checklist.

a. Maintenance checklist

1. Owner

Can be performed by end-user. It is recommended to perform the maintenance every 50 service hours, but at least once a week.

Hydraulic	
1	Check the sufficient amount of hydraulic oil for the lifting to full height without load
Mechanical system	
2	Check the wheels for deformation and damages
3	Check the guarding and/or protective screen
Electric system	
4	Test the Emergency switch function
5	Check the work of display
Braking system	
6	Check the work of electromagnetic brake
Function	
7	Check the horn function
8	Check the emergency braking
9	Check the reverse and regenerative braking
10	Check the safety (belly) button function
11	Check the steering function
12	Check the lifting and lowering function
13	Check the tiller arm switch function
14	Check the speed reduction in turn
15	Check the speed reduction when forks are lifted above 300 mm
16	Check the work of limit switch for maximum lift height

General	
17	Check if all decals are legible and complete

2. Customer Service

Be performed by professional service technician. It is recommended to perform the maintenance every 1000 service hours, but at least once a year.

Hydraulic	
1	Check the hydraulic cylinder, piston for damage noise and leakage
2	Check the hydraulic joints and hose for damage and leakage
3	Refill the hydraulic oil (12 month or 1500 working hours)
4	Check and adjust the function of the pressure valve if needed (1200/1600/1800kg +0/ +15%)
Mechanical system	
5	Inspect the forks for deformation and cracks
6	Check if all screws are fixed
7	Check mast and chain for corrosion, deformation or damages, replace if necessary, adjust the chain length if needed
8	Check the gearbox for noise and leakage
9	Lubricate the grease nipples
10	Inspect and lubricate the pivot points
11	Clean and lubricate the chain
12	Check the correctness of adjustment for mast side rollers, adjust if needed
13	Check wheels for wear, damage and secure mounting, replace if needed
14	Check adjustment of side wheel (levelness of chassis), adjust if needed
Electric system	
15	Test the Emergency switch function
16	Test the display
17	Inspect the electric wiring for damage
18	Check the electric connections and terminals
19	Check the electric drive motor for noise and damages
20	Check if correct fuses are used, replace if necessary.
21	Check the contactors
22	Check the frame leakage (insulation test)
23	Check function and wear of the accelerator
24	Check the electrical system of the drive motor
Braking system	
25	Check brake performance
26	Measure the air gap of the electromagnetic brake, replace brake if needed
Battery	
27	Check the battery and battery components for damage
28	Clean and grease terminals, check terminals for corrosion and damage.
29	Check the battery voltage under load (for AGM configuration)
30	Check the power cables are securely connected to battery terminals, insulation caps applied
31	Check the function of battery start-up button (for Lithium battery)
Charger	

32	Check the main power cable for damages
33	Check the start-up protection during charging
Function	
34	Check the horn function
35	Check the emergency braking
36	Check the reverse and regenerative braking
37	Check the safety (belly) button function
38	Check the steering function, adjust tension of steering lines if needed
39	Check the lifting and lowering function
40	Check the tiller arm switch function
41	Check the speed reduction in turn
42	Check the speed reduction when forks are lifted above 300 mm
43	Check the work of limit switch for maximum lift height
General	
44	Check if all decals are legible and complete
45	Check the protective screen for critical damages, replace if needed
46	Carry out a test run

b. Lubricating points

Lubricate the marked points according to the maintenance checklist. The required grease specification is: DIN 51825, standard grease.

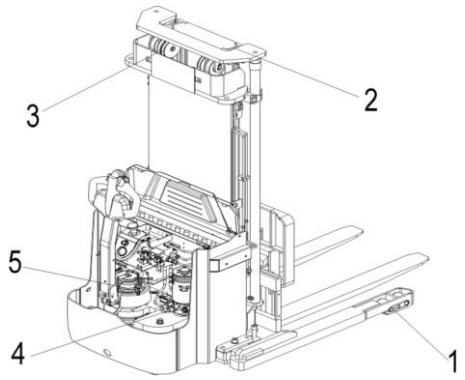


Fig.28: Lubricating points

1 Load roller bearing
2 Mast
3 Chain
4 Hydraulic system
5 Steering bearing

hydraulic oil

It is recommended to use hydraulic oil in connection with aver

Environment temperature	–5℃~25℃	>25℃
Type	HVLP 32，DIN 51524	HLP 46，DIN 51524
Viscosity	28.8-35.2	41.4 - 47
Amount	9.4L (depends on specific model)	

Waste material like oil, used batteries or other must be probably disposed and recycled according to the national regulations and if necessary brought to a recycling company.
The oil level height shall be in the not lifted position min.9.3L to 9.5L.
If necessary add oil at the filling point.

d. Checking electrical fuses

Remove the main cover. The fuses are located according to fig. 29; the size is according to table 15.

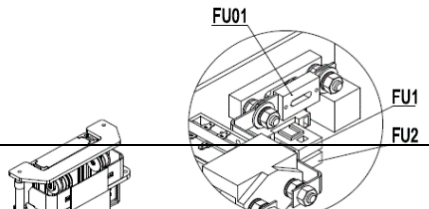


Table15: Size of the fuses

	Rate
FU1	10A
FU2	10A
FU 01	350A

e. Removing, reattaching guarding

DO NOT USE THIS TRUCK, IF THE GUARDING IS DAMAGED OR NOT CORRECTLY ASSEMBLED!

If the guarding needs to be removed, unbolt the fixing screws and remove the screen carefully. The screws will remain with the screen. For reattaching place the screen to the right position and fix each screw correctly. If you need to replace parts, please call your next service partner.
Move the clips for the protective screen sideways and remove the screen. Assembling is in the opposite direction. Please make sure that the screen is fixed correctly and that the fixing elements are not damaged.

9. TROUBLE SHOOTING

- If the truck has malfunctions follow the instructions, mentioned in chapter 6.

Table16: Trouble shooting

TROUBLE	CAUSE	REPAIR
Load can't be lifted	Load weight too high	Lift only the max. capacity, mentioned on the ID-plate
	Battery discharged	Charge the battery
	Lifting fuse faulty	Check and eventually replace the lifting fuse
	Hydraulic oil level too low	Check and eventually refill hydraulic oil
	Oil leakage	Repair the hoses and/or the sealing of the cylinder
	Lifting stops at ~1800mm	Move the protective arms into the downside position
	Lifting stops at ~1800mm	Check the sensor for the protective arm
	Height sensor for 1800mm height defect	Check the height sensor on the mast

Oil leakage from air breathing	Excessive quantity of oil.	Reduce oil quantity.
Stacker not starts operating	Battery is charging	Charge the battery completely and then remove the main power plug form the electrical socket.
	Battery not connected	Connect the battery correctly
	The fuse is faulty	Check and eventually replace fuses
	Battery discharged	Charge the battery
	Combined emergency switch is activated	De-activate the combined emergency switch by insert and pull the knob.
	Tiller in the operating zone	Move the tiller firstly to the braking zone.
	Protective arms in the upright position, platform folded upright	Move the protective arms into the downside position
	Foldable platform or protective arms in one of the allowed positions	Check the proximate sensors for the arms and platform
	Foldable platform or protective arms not in one of the allowed positions	Check the correct function of the arms and/or platform
Only travelling in one direction	The accelerator and the connections are damaged.	Check the accelerator and the connections.
The stacker only travels very slowly	The battery is discharged.	Check the battery status at the discharge indicator
	The electromagnetic brake is engaged.	Check the electromagnetic brake
	The relating tiller cables are disconnected or damaged	Check the tiller cables and connections.
	Defective height sensor for reduced speed at ~300mm height	Check the sensor
	Electric system overheated	Stop using and cool down the truck
	Defective heat sensor	Check and if necessary replace the heat sensor
The stacker starts up suddenly	The controller is damaged.	Replace the controller.
	The accelerator not moves back to its neutral position.	Repair or replace the accelerator.

If the truck has malfunctions and can't be operated out of the working zone, jack the truck up and go with a load handler under the truck and safe the truck securely. Then move the truck out of the aisle.

10. WIRING/ CIRCUIT DIAGRAM

a. Electrical circuit diagram

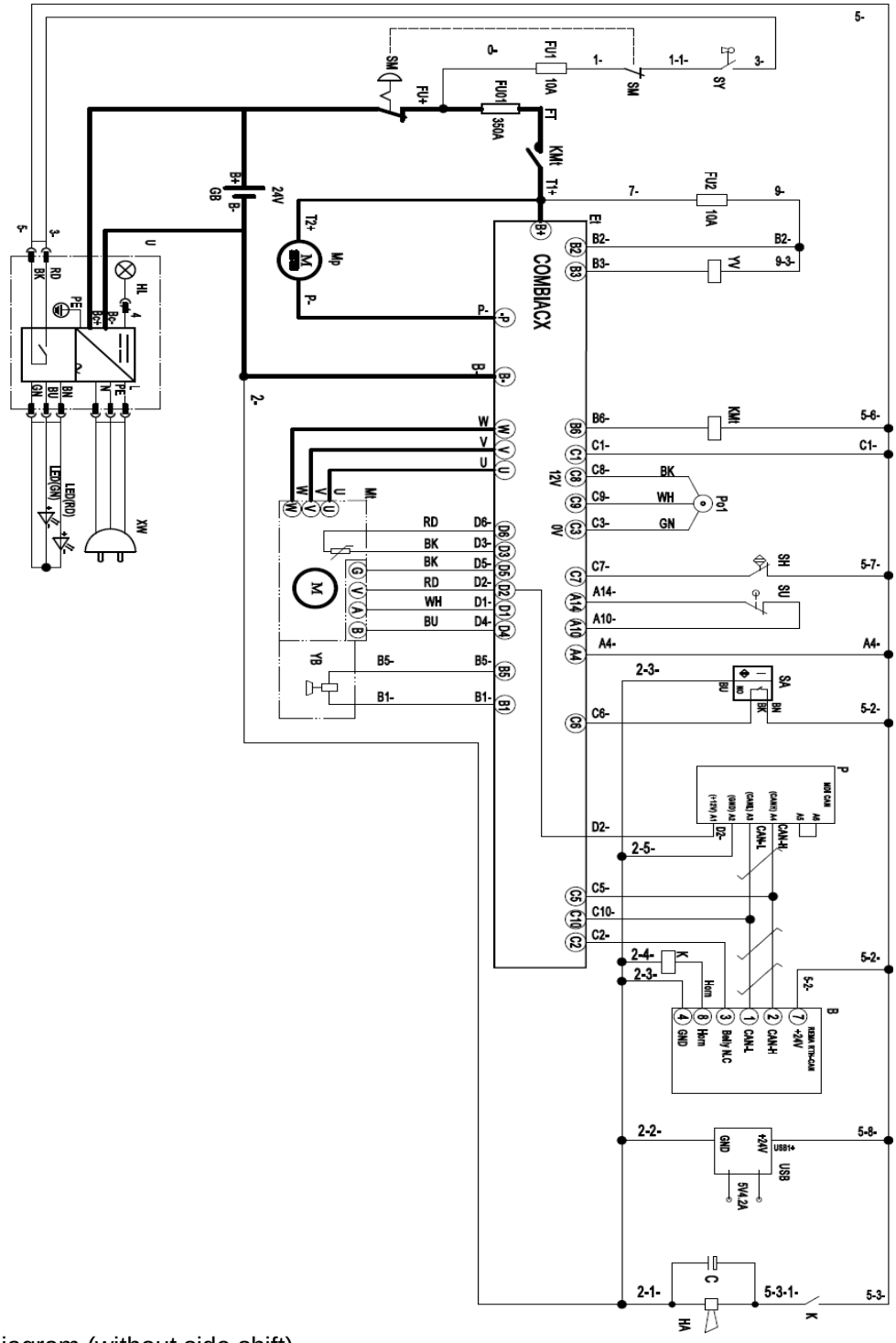


Fig. 30: Electric diagram (without side shift)

Table 17: Description of electrical diagram

Code	Item	Code	Item
GB	Battery	YV	Electromagnetic valve
S	DC power switch	SA	Proximity switch
FU01	Fuse 60A	U	Charger
Mt	Traction motor	XW	Spring cord
Mp	Pump motor	Kr	Temperature protective module
YB	Electromagnetic brake	S1	Micro switch
Et	Traction controller	S2	Micro switch
FU1	Fuse 10A	S3	Micro switch
P	Indicator	S4	Micro switch
LED	LED fault display	BE	Accelerator ET-167E
HA	Horn	K	Relay
VD1	Diode	FU2	Fuse tube 0.5A
KMp	Pump contactor	FU02	Fuse 100A
SU	Micro switch	HL	Charger LED
B	Tiller		

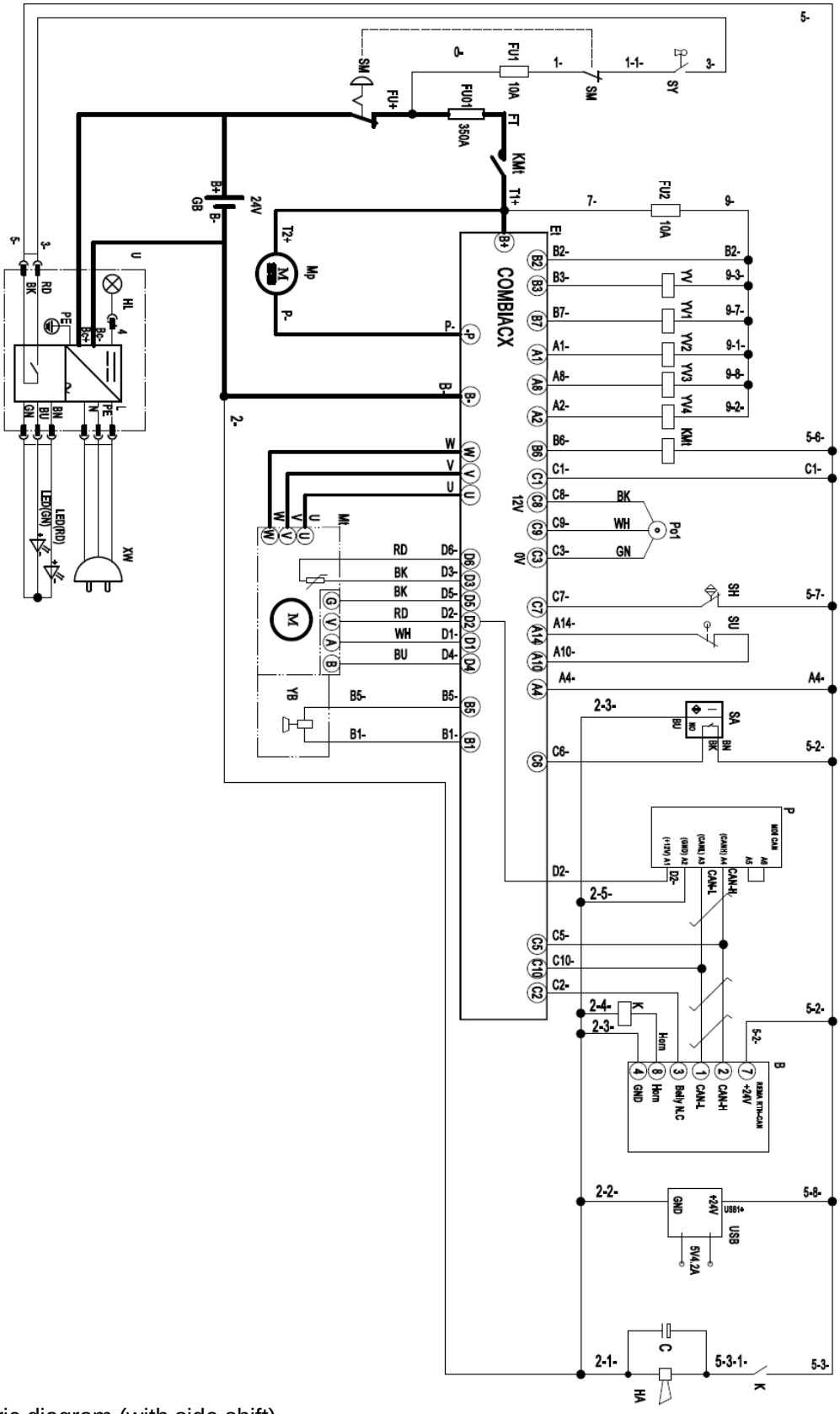


Fig. 31: Electric diagram (with side shift)

Table 18: Description of electrical diagram

Code	Item	Code	Item
B	Tiller	Mp	Pump motor
C	Capacitor	Mt	Traction motor
Et	Traction controller	P	BDI
FU01	Fuse 350A	SH	Magnetic switch
FU1/FU2	Fuse 10A	SA	Proximity switch
GB	Battery	SM	DC power switch
HA	Horn	SU	Micro switch
HS	Proximity switch	SY	Key switch
K	Relay	VD	Diode
KMt	Main contactor	YB	Electromagnetic brake
YV	Electromagnetic valve	YV1/YV2/YV3/YV4	Electromagnetic valve
Po1	Sensor	USB	USB

b. Hydraulic circuit(with side shift)

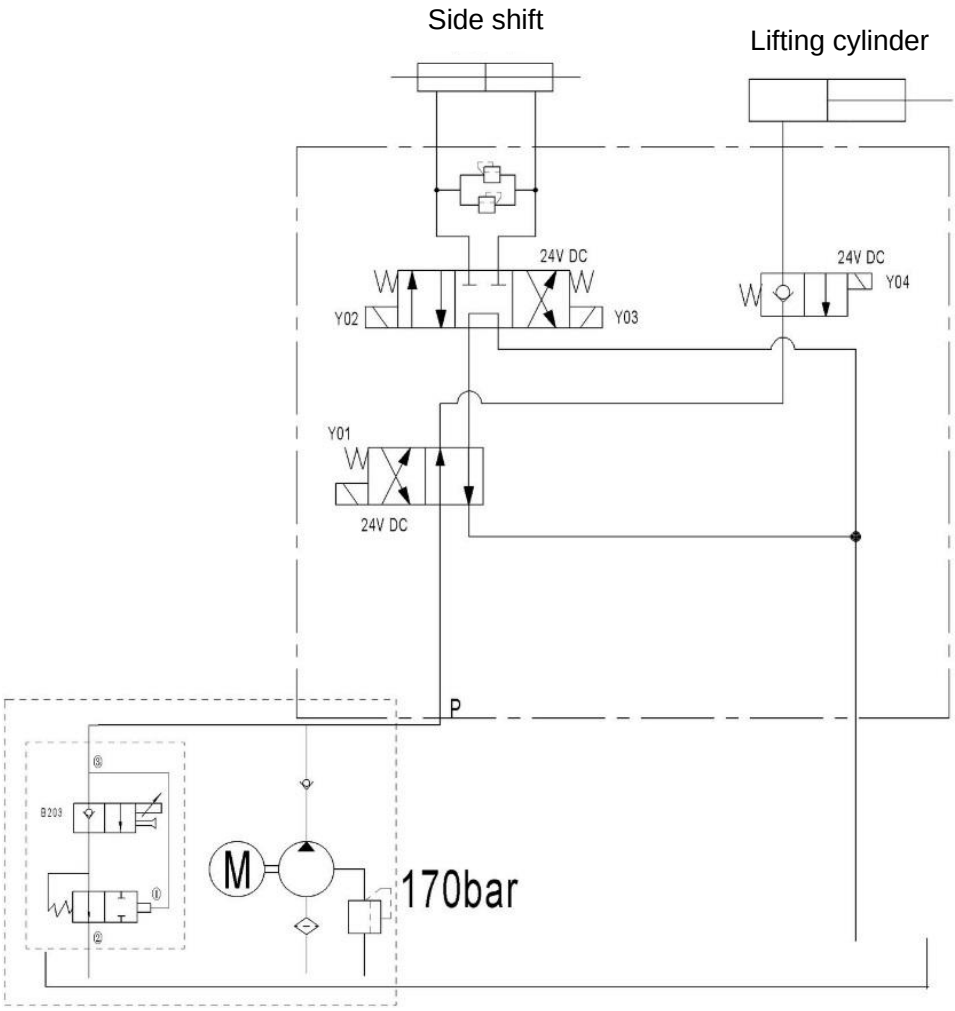


Fig. 32: Hydraulic circuit (with side shift)

c. Hydraulic circuit(without side shift)

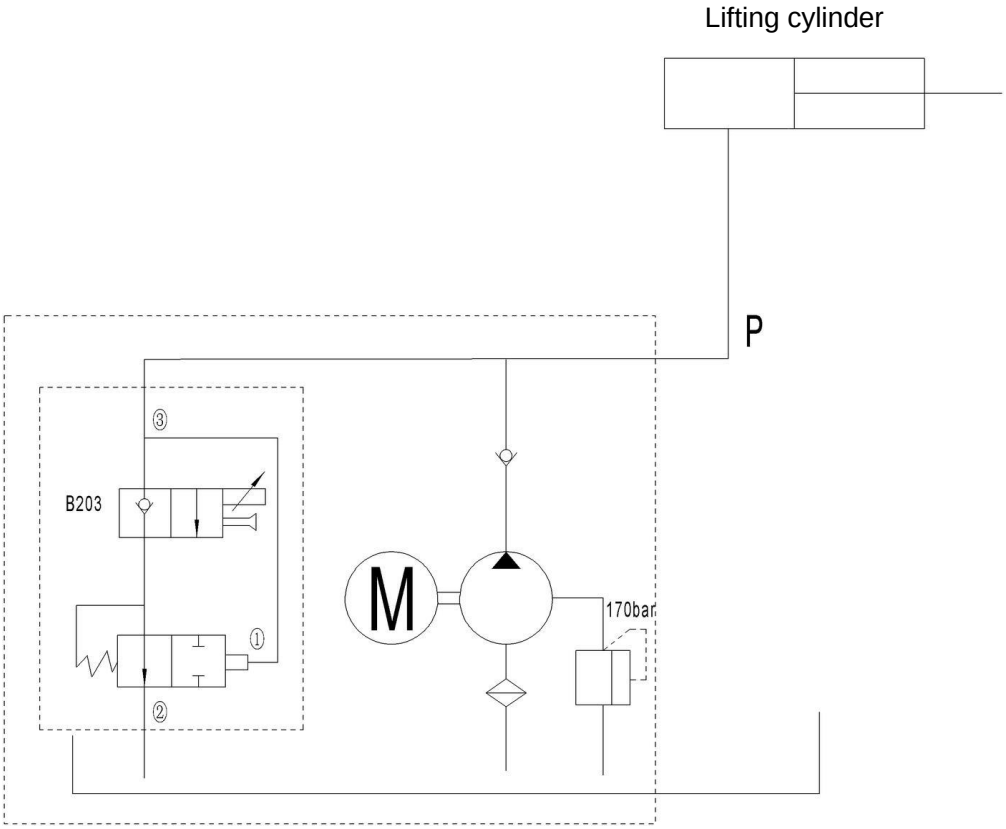


Fig. 33: Hydraulic circuit(without side shift)

11. DECLARATION OF CONFORMITY (valid, if sold within the EU)

[GB] CE Declaration of Conformity
The signatory hereby declares that the specified machine conforms to the EU Directive 2006/42/EC (Machine Directive) and 2014/30/EU (Electro-Magnetic Compatibility, EMC) including their amendments as translated into national legislation of the member countries. The signatory is individually authorized to compile the technical documents.

[D] EG-KONFORMITÄTSERKLÄRUNG
Der Unterzeichner bescheinigt hiermit, dass die im Einzelnen bezeichnete Maschine den Europäischen Richtlinien 2006/42/EG (Maschinenrichtlinie) und 2014/30/EU (Elektromagnetische Verträglichkeit - EMV) einschließlich deren Änderungen sowie dem entsprechenden Rechtserlaß zur Umsetzung der Richtlinien in nationales Recht entspricht. Der Unterzeichner ist bevollmächtigt, die technischen Unterlagen zusammenzustellen.

[E] DECLARACIóN DE CONFORMIDAD CE
El signatario certifico por medio de la presente que la máquina especificada cumple con las Normas Europeas 2006/42/CE (Normativa para maquinarias) y 2014/30/EU (Compatibilidad electromagnética), incluyendo sus respectivas odificaciones, así como con el decreto-ley para la adaptación de las normas al derecho nacional. El signatario dispone de una autorización individual que le permite compilar la documentación técnica.

[F] DECLARATION DE CONFORMITE CE
Par la présente déclaration, les soussignés certifient que le machines spécifié ci-dessus est conforme à la loi et aux directives européennes 2006/42/CE (directive sur les machines) et 2014/30/EU (compatibilité électromagnétique - CEM), y compris aux modifications qui y sont apportées et à l'arrêté autorisant sa transposition en droit national. Chaque signataire est habilité à établir individuellement la documentation technique.

[NL] EG-CONFORMITEITSVERKLARING
Ondergetekenden verklaren hierbij dat - volgens de nationale wetgeving van de Lidstaten - de hierboven vermelde opgegeven machina beantwoordt aan de bepalingen qua veiligheid bij machines (EG richtlijn 2006/42/EC) en electro-magnetische compatibilteit (EG richtlijn 2014/30/EU). Ondergetekenden zijn ieder individueel gemachtigd het technisch dossier samen te stellen.

[P] DECLARAÇÃO DE CONFORMIDADE CE
Pela presente, os signatários certificam que o máquina especificado está conforme às Directivas Europeias 2006/42/CE („Máquinas") e 2014/30/EU („Inocuidade Electromagnética - IEM"), incluindo as alterações das mesmas e o respectivo decreto-lei para a transposição em lei nacional. Cada um dos signatários está autorizado a proceder à elaboração da documentação técnica.

[I] DICHIARAZIONE DI CONFORMITÀ CE
I sottoscritti dichiarano che il veicolo per trasporti interni a macchina specificato soddisfa le Direttive Europee 2006/42/EC (Direttiva Macchine) e 2014/30/EU (Compatibilità elettromagnetica - EMV) comprese le relative modifiche, come pure il rispettivo decreto legislativo per la conversione delle direttive in diritto nazionale. I sottoscritti sono singolarmente autorizzati alla creazione della documentazione tecnica.

[BG] ЕВРОПЕЙСКА ОБЩНОСТ - ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
Подписаните удостоверяват с настоящето, че подробно описаното машина средство отговаря на европейския норматив 2006/42/EG (норматив за машини) и на2014/30/EU (електро-магнетична съвместимост), включително с техните промени, както и на съответния указ за прилагане на нормативите в националното право. Подписаните при това са упълномощении поотделно да съставят техническата документация.

[CZ] EG - PROHLÁŠENÍ O SHODĚ
Níže podepsaný tímto potvrzuje, že podrobný popis uvedené stroje odpovídá Evropským směrnicím 2006/42/EC (směrnice pro stroje) a 2014/30/EU (elektromagnetická interference - EMV) včetně jejich pozdějších úprav, jakož i příslušným právním výnosům pro uplatnění příslušné směrnice v rámci národního práva. Každý z podepsaných jsou jednotlivě zplnomocněni k vytvoření technických podkladů.

[DK] EF-OVERENSSTEMMELSESERKLÆRING
Undertegnede attesterer hermed, at det specificerede maskine stemmer overens med de Europæiske Direktiver 2006/42/EU (maskindirektiv) og 2014/30/EU (elektromagnetisk kompatibilitet - EMC) samt med den modsvarende lovvedtagelse til implementering af direktiver i den nationale lovgivning. De undertegnede er hver for sig beføjet til at sammenstille de tekniske dokumenter.

[EST] EL vastavusavaldus
Allakirjutanud tõendavad käesolevaga, et üksikasjaliselt kirjeldatud täpsustatud masin vastab Euroopa direktiividele 2006/42/EÜ (Direktiiv masinate kohta) ja 2014/30/EU (Elektromagnetiline sobivus - EMS) kaasa arvatud nende muudatused ja nendele vastavatele õigusmäärustele direktiivide muutmiseks siseriiklikuks õiguseks. Iga allakirjutanu üksikult on volitatud koostama tehnilist dokumentatsiooni.

[FIN] EU-YHDENMUKAISUUSSELOSTUS
Allekirjoittaneet todistavat täten, että kukin erikseen mainittu omalla voimanlähteellä varustettu tehdaskone vastaa EU-direktiivien 2006/42/EC (koneenrakennusdirektiivi) ja 2014/30/EU (sähkömagneettinen yhteensopivuus – EMC) määräyksiä sekä niiden muutoksia ja niiden kansalliseen lainsäädäntöön soveltamista koskevaa oikeussääntöä. Jokaisella allekirjoittaneista on oikeus itsenäisesti laatia asiaankuuluvia teknisiä asiakirjoja.

[GR] ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ ΕΟΚ
Οι υπογράφοντες βεβαιώνουν διά της παρούσης ότι το συγκεκριμένο μηχάνημα συμμορφώνεται προς την Κοινοτική Οδηγία 2006/42/ΕΚ («Μηχανήματα») και 2014/30/EU (Ηλεκτρομαγνητικής Συμβατότητας, ΗΜΣ), καθώς και οι τροποποιήσεις τους, όπως μεταφράστηκε στην εθνική νομοθεσία των χωρών μελών. Οι υπογράφοντες είναι σε κάθε περίπτωση εξουσιοδοτημένοι ατομικά να καταρτίσουν τα τεχνικά έγγραφα.

[H] EU KONFORMITÁSI NYILATKOZAT
Alulírottak ezennel igazolják, hogy a részletesen leírt a megadott gép megfelel a 2006/42/EC (Gép-Irányelv) és a 2014/30/EU (Elektromágneses összeférhetőség - EMV) Európai Irányelveknek, beleértve azok módosításait, valamint az irányelvek nemzeti jogba történő átültetésére irányuló megfelelő jogi rendelkezést. Továbbá az alulírottak mindegyike rendelkezik meghatalmazással arra nézve, hogy összeállíthatja a műszaki dokumentációt.

[LT] ES atitikimo deklaracija
Žemiau pasirašę asmenys patvirtina, kad atskirai aprašytas nurodyta mašina atitinka Europos Sąjungos direktyvas 2006/42/EB (Mašinų direktyva) ir 2014/30/EU (Elektromagnetinis suderinamumas – EMS) įskaitant jų pakeitimus, o taip pat ir atitinkamą teisės aktą dėl direktyvų įgyvendinimo nacionalinėje teisėje. Kiekvienas iš pasirašiusių asmenų turi teisę ruošti techninę dokumentaciją.

[LV] ES atbilstības deklarācija
Ar zemāk redzamajiem parakstiem tiek apliecināts, ka norādīts mašīna atbilst Eiropas Savienības normatīvām 2006/42/EG (Mašīnu normatīvas) un 2014/30/EU (Elektromagnētiskā atbilstība – EMV), ieskaitot to izmaiņas, kā arī atbilstošos tiesiskos rīkojumus normatīvu pielāgošanai nacionālajai

likumdošanai. Parakstu īpašnieki ir atsevišķi pilnvaroti sastādīt tehniskās dokumentācijas.

[N] EU-KONFORMITETSERKLÆRING

Undertegnede bekrefter hermed at de enkelte betegnede maskin med kraftdrift tilsvarer de europeiske retningslinjene 2006/42/EC (maskinretningslinje) og 2014/30/EU (elektromagnetisk fordraglighet - EMV) inklusiv disses endringer og den tilsvarende rettsforordning til omsetning av nasjonal rett. Hver undertegnede er fullmektig til å sette sammen de tekniske dokumentene.

[PL] DEKLARACJA ZGODNOŚCI WE

Niżej podpisani deklarują, że poniżej opisana maszyna spełnia wymagania określone w dyrektywach Europejskich 2006/42/EC (Dyrektywa Maszynowa) i 2014/30/EU (Kompatybilności elektromagnetycznej - EMC) wraz z ich późniejszymi zmianami oraz odpowiednimi rozporządzeniami mającymi na celu przeniesienie tych dyrektyw do prawa krajów członkowskich. Sygnatariusz jest indywidualnie upoważniony do zestawiania dokumentacji technicznej.

[RO] DECLARAŢIE DE CONFORMITATE CE

Subsemnaţii adeveresc prin prezenta că vehiculul de specificat maşină descris individual corespunde directivelor europene 2006/42/CE (Directiva privind maşinile) şi 2014/30/EU (Compatibilitatea electromagnetică - CEM) inclusiv modificărilor lor precum şi actului legislativ corespunzător prentru transpunerea directivelor în drept naţional. Subsemnaţii sunt fiecare în parte împuterniciţi să întocmească documentaţia tehnică.

[RUS] Декларация соответствия стандартам ЕС

Настоящим лица, подписавшие документ, удостоверяют, что машина с указанной спецификацией соответствует европейским стандартам 2006/42/EG (Транспортная директива) и 2014/30/EU (Электромагнитная совместимость - EMC), включая изменения в них, а также соответствующим национальным стандартам и нормам. Каждое по отдельности лицо, подписавшее документ, имеет полномочия для составления технической документации.

[S] EG-KONFORMITETSFÖRKLARING

Undertecknarna intygar härmed att det i detalj betecknade maskin uppfyller de Europeiska direktiven 2006/42/EG (Maskindirektiv) och 2014/30/EU (Elektromagnetisk tålighet - EMV), inklusive ändringarna i detta och den motsvarande rättsförordningen för att omsätta direktiven i nationell rätt. Undertecknarna har var för sig fullmakt att sammanställa den tekniska dokumentationen.

[SK] vyhlásenie o zhode

Dolu podpísaní týmto potvrdzujeme, že podrobný popis uvedené stroje Zodpovedá Európskym smerniciam 2006/42/EC (ernica pre stroje) a 2014/30/EU (elektromagnetická tolerancia – EMV) vrátane jeho neskorších úprav, rovnako zodpovedá aj príslušným právnym nariadeniam na uplatnenie smerníc v rámci národného práva. Každý z podpísaných je jednotlivo splnomocnený na vytvorenie technických podkladov.

[SLO] EU IZJAVA O SKLADNOSTI

Podpisani s tem potrjujemo, da posamično označeno določeno stroj vozilo odgovarja Evropski direktivi 2006/42/EC (Direktiva o strojih) in 2014/30/EU (Elektromagnetna skladnost - EMV) vključno z njihovimi spremembami ter ustrezno pravno uredbo o prevzemu smernic v nacionalno pravo. Podpisniki so vsakokrat posamezno pooblaščeni za izdajanje tehnične dokumentacije.

[TR] AB Uygunluk Açıklaması

İmza sahibi şahıslar, ayrıntıları belirtilen makine aracının, 2006/42/EC (Makine Yönergesi) ve 2014/30/EU (Elektromanyetik Uyumluluk – EMC) no'lu Avrupa Yönergelerine ve bunların değişiklik sonucu oluşan metinlerine ve yönergelerin milli hukuk hükümlerine dönüştürülmesine dair ilgili hukuk kararnamesine uygun olduğunu tasdik ederler. İmza sahibi şahıslar teknik dosyaları bir araya getirmek için münferiden vekil tayin edildi.

(1) Type/ Typ/ Tipo/ Modello/ Tyyppi/ Tipo / ΤΥΠΟΣ/ Típus/ Tip/ Тип/ Tips/ Tipas/ Tüüp:
(2) Serial No./ Serien-Nr./ N°. de série/ Serienummer/ Nº de serie/ Numero di serie/ Serienr./ Sarjanro/ αυξάνων αριθμός/ Seriové číslo/ Szériaszám/ Nr.Seryjny/ Serijska številka/ Výrobné číslo/ Серийный номер/ Seri No./ Seerianr./ Sērijas Nr./ Serijos numeris:
(3) Year of constr./ Baujahr/ Année de constr./ Bouwjaar/ Año de constr./ Anno di costruzione/ Produktionsår/ Byggeår/ Tillverkningsår/ Valmistusvuosi / Ano de fabrico / έτος κατασκευής/ Rok výroby/ Gyártási év/ Rokprodukcji / Letnik / Год изготовления / Üretim yılı / Väljalaskeaasta / Izgatavošanas gads / Gamybosmetai
(4) Manufacturer or his authorized representative in Community/ Hersteller oder in der Gemeinschaft ansässiger Vertreter/ Fabricant ou son mandataire établi dans la Communauté/ Fabrikant of zijn in de Gemeenschap gevestigde gemachtigde/ Fabricante o representante establecido en la Comunidad/ Construtor ou Representante estabelecido na Comunidade/ Costruttore oppure il suo rappresentante nella Comunità/ Fabrikant eller dennesi Fællesskabet etablerede befuldmægtigede/ Produsent eller agent innen felleskapet/ Tillverkare eller representant inom EU/ Valmistaja tai yhteisömaassa oleva edustaja / V˘robce nebo jeho zastoupení/ Gyártó / producent albo jego przedstawiciel w EG (Wspólnota Europejska)/ Καηαζθεπαζηήο ή όθηηνο ηνπεζώπσλ/ Üretici ya da Bölgedeki Yetkili Temsilci/ Proizvajalec ali pooblaščeni zastopnik s sedežem v EU/ Výrobca alebo zástupca so stálym bydliskom v EÚ / Изготовитель или его представитель, зарегистрированный в стране Содружества/ Tootja või organisatsioonis paiknev esindaja/ Ražotājs vai vietējais uzņēmuma pārstāvis / Gamintojas arba šalyje reziduojantis atstovas:
(5) Date/ Datum/ Data/ Fecha/ datum/ Dato/ päiväys/ Kuupäev/ Datums/дата / Dátum/ dátum/ tarih/ ημερομηνία
(6) Authorised signatory/ Im Auftrag/ pour ordre/ Incaricato/ Por orden de/ por procuração/ op last van/ på vegne af/ på uppdrag/ Etter oppdrag/ psta./ Ülesandel / pavedus / v.i. / По поручению / megbízásából /длъжностно лице / z pověření / z poverenia / po nalogu / na polecenie / din sarcina / adına / θαη' ελληνιή

(1) Type: **XX XX – Self propelled industrial truck**
(2) Serial No: **XXXXXXXX**
(3) Year of constr.: **YYYY**
(4) Manufacturer or his authorized representative in Community:
Company name/ Street / Postal code
Town/ Country
(5) Date: **YYYY. MM.DD**
(6) Authorized signatory: **Mr. Sample**

Sample
if you can read this text,
your declaration is not
complete.
In this case please ask
for a copy