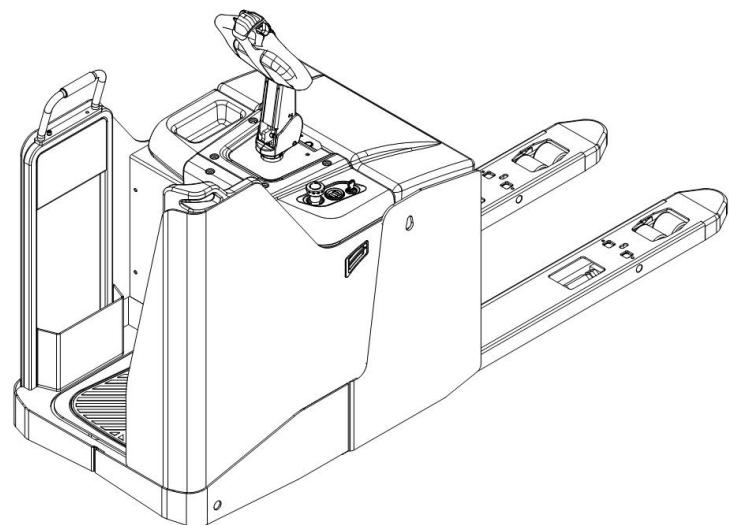
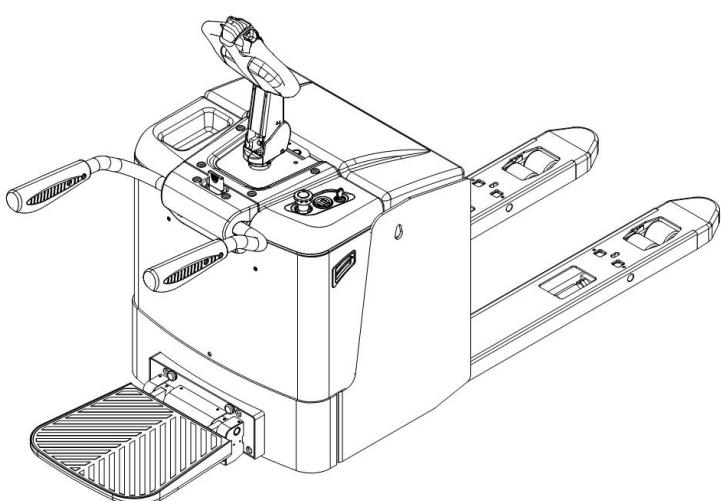




INSTRUCTION HANDBOOK

Electric Pallet Truck

PT 20/25/30H PT 20H PLUS



WARNING

Do not use the pallet truck 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.

Version 10/2021

PT 20/25/30H-SMS-001-EN

FOREWORD

Before operating the truck, read this ORIGINAL INSTRUCTION HANDBOOK carefully and understand the usage of the truck completely. Improper operation could create danger.

This handbook describes the usage of different electric pallet trucks. 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.

This truck complies with the requirements according to EN ISO 3691-1(Industrial trucks- safety requirements and verification, part 1; part 5), EN 12895 (Industrial trucks- electromagnetic compatibility), EN 12053 (Safety of industrial trucks- test methods for measuring noise emissions), EN 1175-1 (Industrial truck safety – electrical requirements), assumed the truck is used according to the described purpose.

The noise level for this machine is 69 dB(A) according to EN 12053.

The vibration is 0.88 m/s² according to EN 13059.

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. Because this handbook is only for the purpose of operating /servicing the pallet truck, therefore please have understanding, that there is no guarantee out of particular features out of this handbook.



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 pallet truck according to this instruction handbook.

The trucks described in this handbook are self propelled electric power pallet trucks, with electrically powered low height lifting function. The trucks are designed to lift, lower and transport palletized loads.

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 pallet truck is used only by staff, which is trained and authorized to use this truck.

The pallet 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 various of transporting 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 truck.

Lifting or transporting people is forbidden.

If used on tail lifts or loading ramps, please ensure that these are used correctly according to the operating instructions.

The capacity is marked on capacity sticker as well on the Identification plate. The operator has to consider the warnings and safety instructions.

Operating lighting must be minimum 50 Lux.

Modification

No modifications or alterations to this pallet 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 PALLET TRUCK

a. Overview of the main components

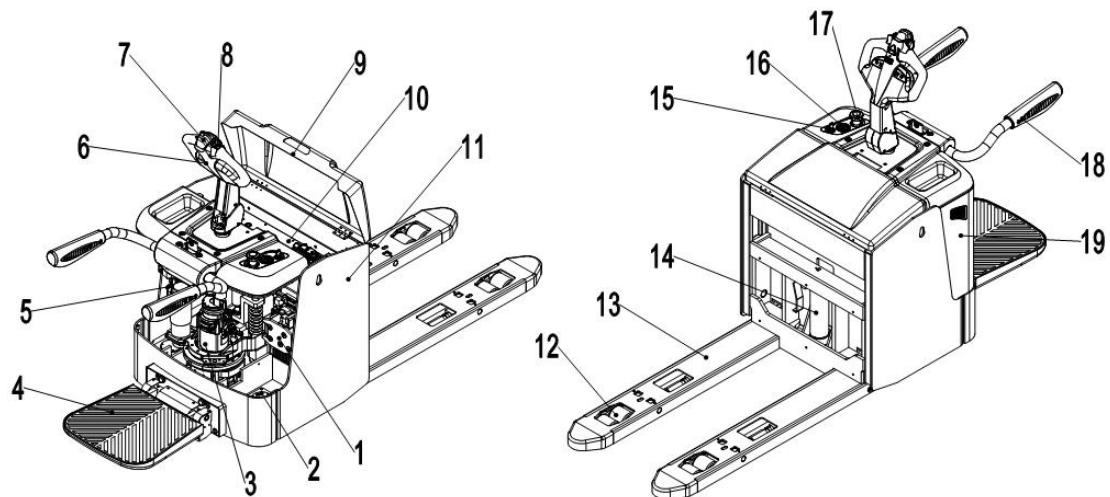


Fig. 1: Overview main components foldable

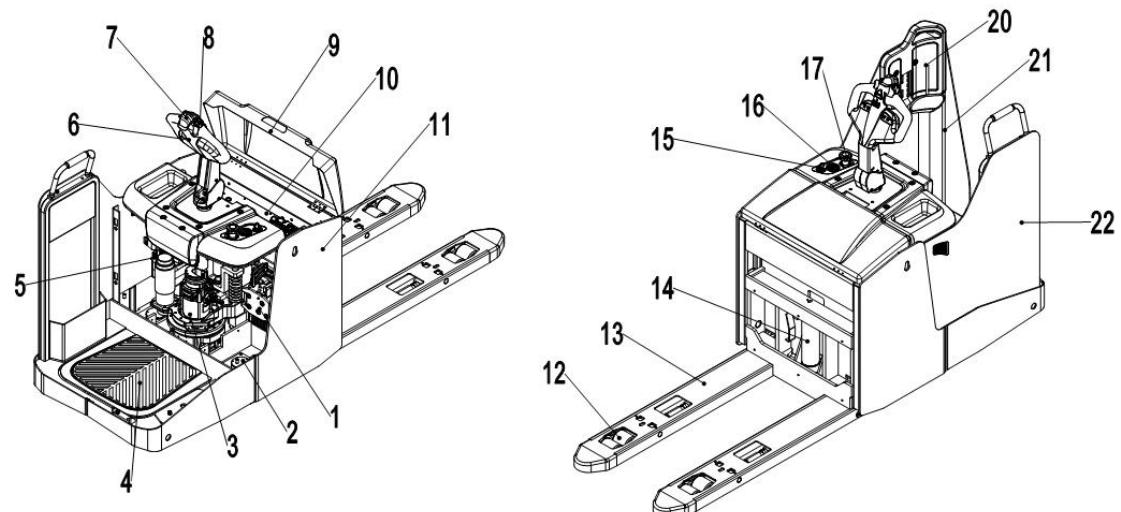
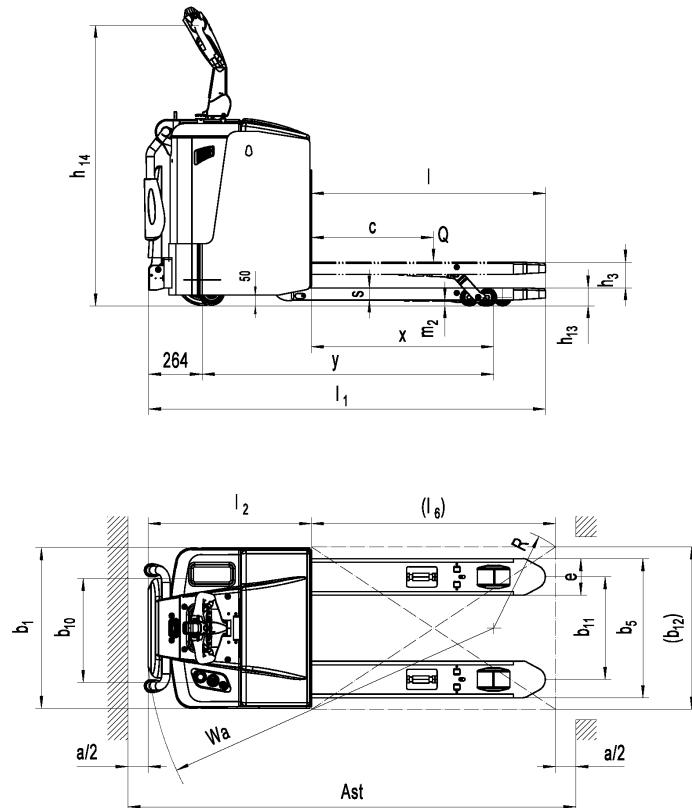


Fig. 2: Overview main components fixed

- | | |
|-----------------------------------|-------------------------|
| 1. Electronic Control Unit | 12. Load wheels |
| 2. Castors | 13. Shovel fork |
| 3. Drive motor and drive wheel | 14. Hydraulic cylinder |
| 4. Foldable platform | 15. Key switch |
| 5. Pump | 16. Discharge indicator |
| 6. Tiller | 17. Emergency button |
| 7. Safety (belly) button | 18. Protective rubber |
| 8. Accelerator (butterfly button) | 19. Main cover |
| 9. Battery cover | 20. Backrest assembly |
| 10. Battery | 21. Right wing |
| 11. Body welding | 22. Left wing |

b. Main technical data

1.PT 20/25/30H、PT 20H PLUS foldable



2. PT 20/25/30H、PT 20H PLUS fixed

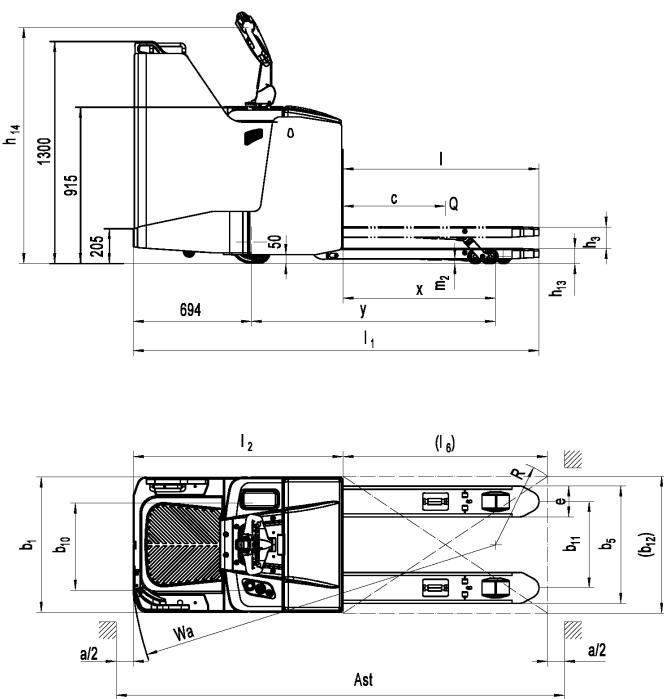


Fig. 3: Technical data

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	PT 20H	
			Foldable platform	Fixed platform
	1.3	Power(battery,diesel,petrol gas,manual)	Battery	
	1.4	Operator type	Pedestrian(Stand) Stand	
	1.5	Load Capacity / rated load	Q (t)	2.0
	1.6	Load centre distance	c (mm)	600
	1.8	Load distance, centre of drive axle to fork	x(mm)	895
	1.9	Wheelbase	y (mm)	1432
Weight	2.1	Service weight	kg	730 800
	2.2	Axle loading, laden front/rear	kg	975/1795 1040/1790
	2.3	Axle loading, unladen front/ rear	kg	585/145 670/140
Tires, chassis	3.1	Tires	Polyurethane (PU)	
	3.2	Tire size, front	Ø x w (mm)	Ø250X80
	3.3	Tire size, rear	Ø x w (mm)	Ø82X82
	3.4	Additional wheels (dimensions)	Ø x w (mm)	Ø124X60
	3.5	Wheels, number front/ rear(x=driven wheels)	1x+2/4	
	3.6	Tread, front	b ₁₀ (mm)	544
	3.7	Tread, rear	b ₁₁ (mm)	380/505
Dimensions	4.4	Lift height	h ₃ (mm)	120
	4.9	Height of tiller in drive position min. / max.	h ₁₄ (mm)	1075/1375
	4.1	Height, lowered	h ₁₃ (mm)	85
	4.1	Overall length	l ₁ (mm)	1950 2383
	4.2	Length to face of forks	l ₂ (mm)	800 1233
	4.2	Overall width	b ₁ (mm)	790
	4.2	Fork dimensions	s/e/l (mm)	60/180/1150
	4.2	Width across forks	b ₅ (mm)	560/685
	4.3	Ground clearance, centre of wheelbase	m ₂ (mm)	25
	4.3	Aisle width for pallets 1000 x 1200 crossways	Ast(mm)	2530 2960
	4.3	Aisle width for pallets 800X1200 lengthways	Ast (mm)	2415 2845
	4.3	Turning radius	Wa (mm)	1710 2140
Performance	5.1	Travel speed, laden/ unladen	km/h	9/12
	5.2	Lift speed, laden/ unladen	m/s	0.035/0.048
	5.3	Lowering speed, laden / unladen	m/s	0.040/0.025
	5.8	Gradeability, laden/ unladen	%	6/15
	5.1	Service brake	Electromagnetic	
Motors	6.1	Drive motor rating S2 60min	kW	1.8
	6.2	Lift motor rating at S3 10%	kW	2.2
	6.3	Battery acc. to DIN 43531 /35 / 36 A, B, C, no		/
	6.4	Battery voltage, nominal capacity K5	V/Ah	24V/150(200)
	6.5	Battery weight (minimum)	kg	75
	6.6	Energy consumption acc. to VDI cycle	KWh/h	0.55
onial	8.1	Type of drive control	AC- speed control	
	8.4	Sound level at driver's ear acc. to EN 12053	dB(A)	69

Type sheet for industrial truck acc. to VDI 2198					
Distinguishing mark	1.2	Manufacturer's type designation	PT 20H PLUS		
			Foldable platform	Fixed platform	
1.3	Power(battery,diesel,petrol gas,manual)			Battery	
1.4	Operator type		Pedestrian(Stand)	Stand	
1.5	Load Capacity / rated load		Q (t)	2.0	
1.6	Load centre distance		c (mm)	600	
1.8	Load distance, centre of drive axle to fork		x(mm)	895	
1.9	Wheelbase		y (mm)	1432	
Weight	2.1	Service weight	kg	730 800	
	2.2	Axle loading, laden front/rear	kg	975/1795 1040/1790	
	2.3	Axle loading, unladen front/ rear	kg	585/145 670/140	
Tires, chassis	3.1	Tires	Polyurethane (PU)		
	3.2	Tire size, front	Ø x w (mm)	Ø250X80	
	3.3	Tire size, rear	Ø x w (mm)	Ø82X82	
	3.4	Additional wheels (dimensions)	Ø x w (mm)	Ø124X60	
	3.5	Wheels, number front/ rear(x=driven wheels)	1x+2/4		
	3.6	Tread, front	b ₁₀ (mm)	544	
	3.7	Tread, rear	b ₁₁ (mm)	380/505	
Dimensions	4.4	Lift height	h ₃ (mm)	120	
	4.9	Height of tiller in drive position min. / max.	h ₁₄ (mm)	1075/1375	
	4.1	Height, lowered	h ₁₃ (mm)	85	
	4.1	Overall length	l ₁ (mm)	1950 2383	
	4.2	Length to face of forks	l ₂ (mm)	800 1233	
	4.2	Overall width	b ₁ (mm)	790	
	4.2	Fork dimensions	s/e/l (mm)	60/180/1150	
	4.2	Width across forks	b ₅ (mm)	560/685	
	4.3	Ground clearance, centre of wheelbase	m ₂ (mm)	25	
	4.3	Aisle width for pallets 1000 x 1200 crossways	Ast(mm)	2530 2960	
	4.3	Aisle width for pallets 800X1200 lengthways	Ast (mm)	2415 2845	
	4.3	Turning radius	Wa (mm)	1710 2140	
Performance	5.1	Travel speed, laden/ unladen	km/h	9/12	
	5.2	Lift speed, laden/ unladen	m/s	0.035/0.048	
	5.3	Lowering speed, laden / unladen	m/s	0.040/0.025	
	5.8	Gradeability, laden/ unladen	%	8/15	
	5.1	Service brake	Electromagnetic		
Motors	6.1	Drive motor rating S2 60min	kW	2.5	
	6.2	Lift motor rating at S3 10%	kW	2.2	
	6.3	Battery acc. to DIN 43531 /35 / 36 A, B, C, no		/	
	6.4	Battery voltage, nominal capacity K5	V/Ah	24V/150(200)	
	6.5	Battery weight (minimum)	kg	75	
	6.6	Energy consumption acc. to VDI cycle	KWh/h	0.65	
Optional	8.1	Type of drive control	AC- speed control		
	8.4	Sound level at driver's ear acc. to EN 12053	dB(A)	69	

Type sheet for industrial truck acc. to VDI 2198				
Distinguishing mark	1.2	Manufacturer`s type designation	PT 25H	
			Foldable platform	Fixed platform
Weight	1.3	Power(battery,diesel,petrol gas,manual)	Battery	
	1.4	Operator type	Pedestrian(Stand)	Stand
	1.5	Load Capacity / rated load	Q (t)	2.5
	1.6	Load centre distance	c (mm)	600
	1.8	Load distance, centre of drive axle to fork	x(mm)	895
	1.9	Wheelbase	y (mm)	1432
Tires, chassis	2.1	Service weight	kg	730 800
	2.2	Axle loading, laden front/rear	kg	1085/2145 1170/2140
	2.3	Axle loading, unladen front/ rear	kg	585/145 670/140
	3.1	Tires	Polyurethane (PU)	
	3.2	Tire size, front	Ø x w (mm)	Ø250X80
	3.3	Tire size, rear	Ø x w (mm)	Ø82X82
	3.4	Additional wheels (dimensions)	Ø x w (mm)	Ø124X60
	3.5	Wheels, number front/ rear(x=driven wheels)	1x+2/4	
	3.6	Tread, front	b ₁₀ (mm)	544
	3.7	Tread, rear	b ₁₁ (mm)	380/505
Dimensions	4.4	Lift height	h ₃ (mm)	120
	4.9	Height of tiller in drive position min. / max.	h ₁₄ (mm)	1075/1375
	4.1	Height, lowered	h ₁₃ (mm)	85
	4.1	Overall length	l ₁ (mm)	1950 2383
	4.2	Length to face of forks	l ₂ (mm)	800 1233
	4.2	Overall width	b ₁ (mm)	790
	4.2	Fork dimensions	s/e/l (mm)	60/180/1150
	4.2	Width across forks	b ₅ (mm)	560/685
	4.3	Ground clearance, centre of wheelbase	m ₂ (mm)	25
	4.3	Aisle width for pallets 1000 x 1200 crossways	Ast(mm)	2530 2960
	4.3	Aisle width for pallets 800X1200 lengthways	Ast (mm)	2415 2845
	4.3	Turning radius	Wa (mm)	1710 2140
Performance	5.1	Travel speed, laden/ unladen	km/h	8/9
	5.2	Lift speed, laden/ unladen	m/s	0.030/0.048
	5.3	Lowering speed, laden / unladen	m/s	0.045/0.025
	5.8	Gradeability, laden/ unladen	%	6/15
	5.1	Service brake	Electromagnetic	
Motors	6.1	Drive motor rating S2 60min	kW	2.5
	6.2	Lift motor rating at S3 10%	kW	2.2
	6.3	Battery acc. to DIN 43531 /35 / 36 A, B, C, no	/	
	6.4	Battery voltage, nominal capacity K5	V/Ah	24V/150(200)
	6.5	Battery weight (minimum)	kg	75
	6.6	Energy consumption acc. to VDI cycle	KWh/h	0.75
on al	8.1	Type of drive control	AC- speed control	
	8.4	Sound level at driver`s ear acc. to EN 12053	dB(A)	69

c. Description of the safety devices and warning labels

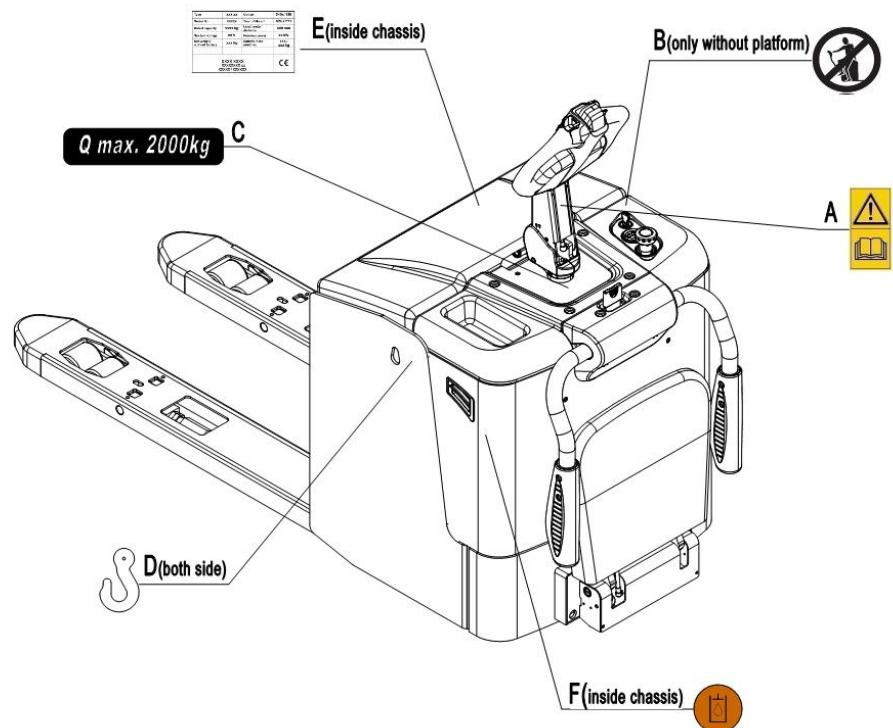


Fig. 4: Safety and warning labels foldable

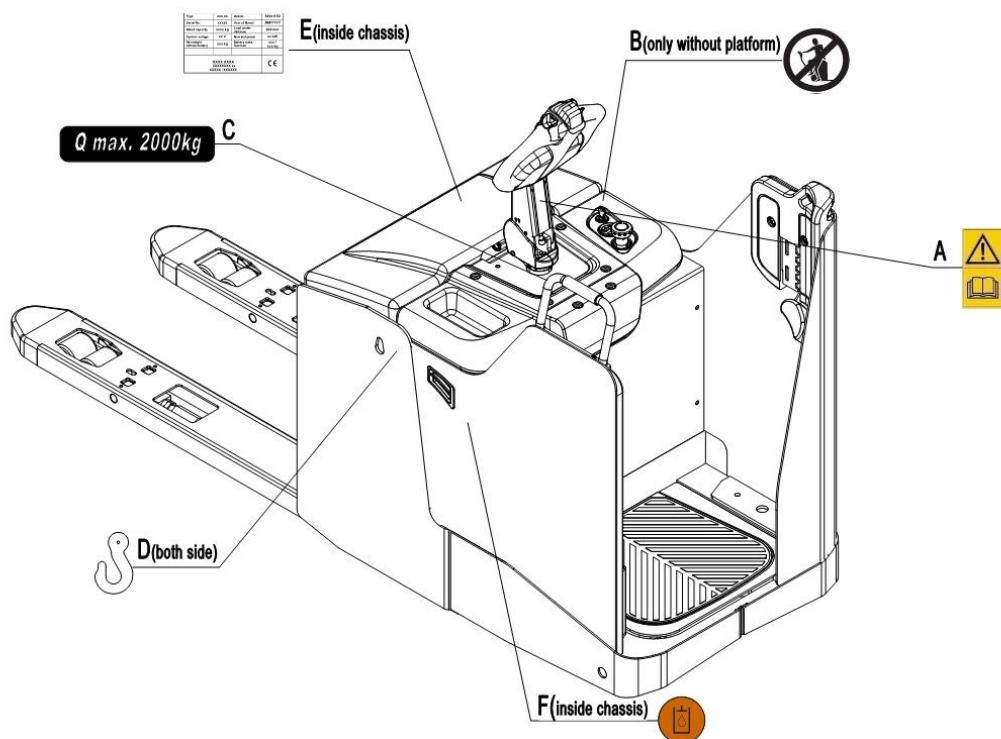


Fig. 5: Safety and warning labels fixed

- A Sticker to read and follow this instruction
- B "No passengers" decal
- C Capacity sticker
- D Crane hook label
- E Identification plate (ID-plate)
- F Sign oil filling point

The truck is equipped with an emergency button (17) which stops all lifting-, lowering-, driving-functions and engages the failsafe electromagnetic brake when it is pushed.

The truck is equipped with a safety (belly) button (7) which switches the driving function away from the operator, if the truck travels towards the operator and the tiller is activated in the tillers operating zone or position. Follow also the instructions given on the decals. Replace the decals if they are damaged or missing.

By activating the safety (belly) button (7) the truck is braking until it stops.

d. Identification plate

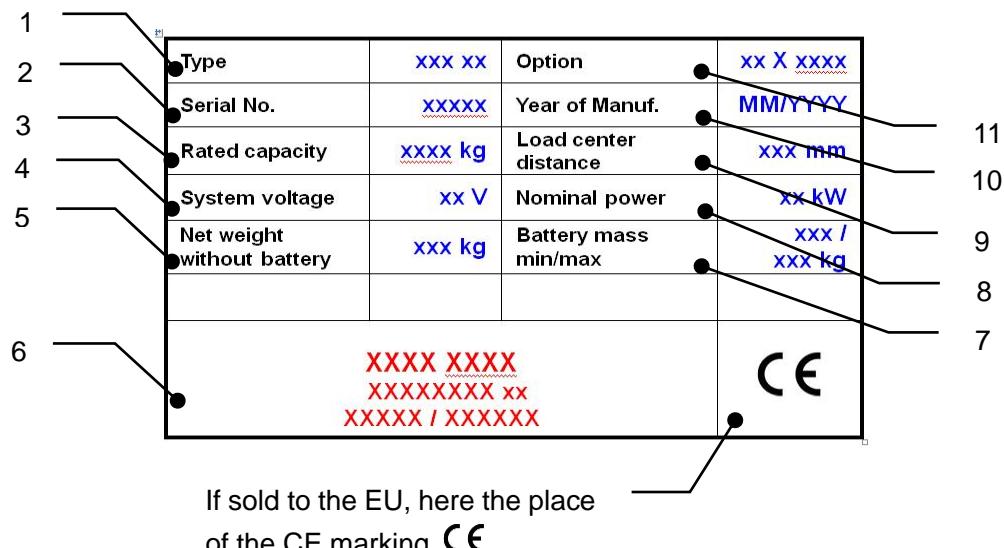


Fig. 6: Identification plate

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

3. WARNINGS, RESIDUAL RISK AND SAFETY INSTRUCTIONS



- 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
- Side or end load. Load must be distributed evenly on the forks.
- Use the truck with unstable, unbalanced not stable load.
- Use truck without manufacturer's written consent.
- Lifted loads could become unstable at wind forces. In the case of wind forces do not lift the load if there is any influence to the stability

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 switch (17) by pushing when sliding load on or off the truck. If the truck has any malfunctions, follow chapter 6.

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 electric pallet 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 off the truck when not operating it.

4. COMMISSIONING, TRANSPORTING, DECOMMISSIONING

a. Commissioning

Table 2: Commissioning data

Type	PT 20/25/30H PT20PLUS foldable	PT 20/25/30H PT20PLUS fixed
Commissioning weight [kg]	app.750Kg	app.850Kg
Dimension [mm]	2000x790x1450	2450x790x1450

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

- Check if are all parts included and not damaged
- Eventually installation of the multifunction tiller
- Eventually installation and charging the batteries (follow chapter 7)
- 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 the following figures.

Lifting



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

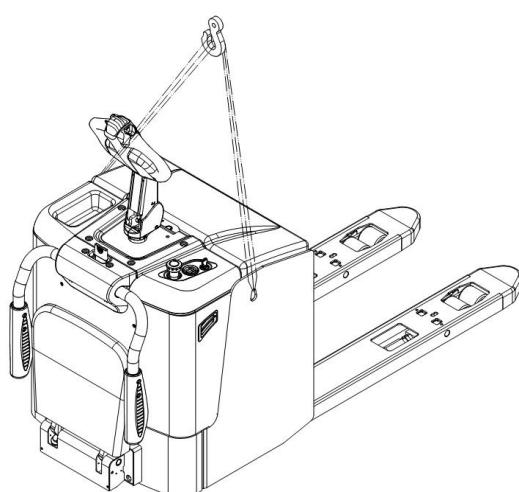


Fig. 7: Lifting with a crane foldable

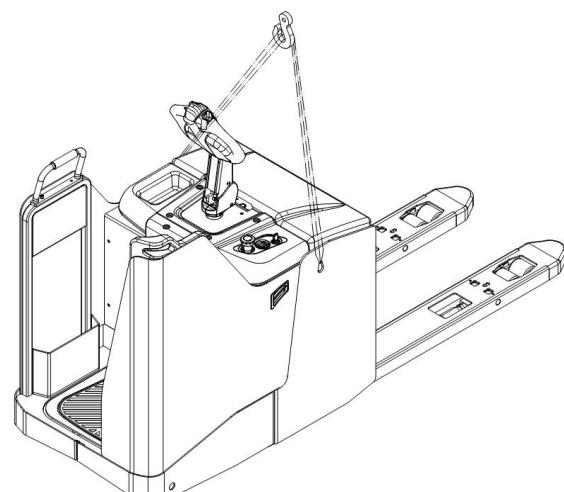


Fig. 8: Lifting with a crane fixed

Park the truck securely and lash the truck according to the points identified in fig. 8 or fig. 9.

Lift the truck to its destination and place the truck securely before removing the lifting gear.

The lashing points are according to the fig. 7 or fig. 8.

Transportation



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

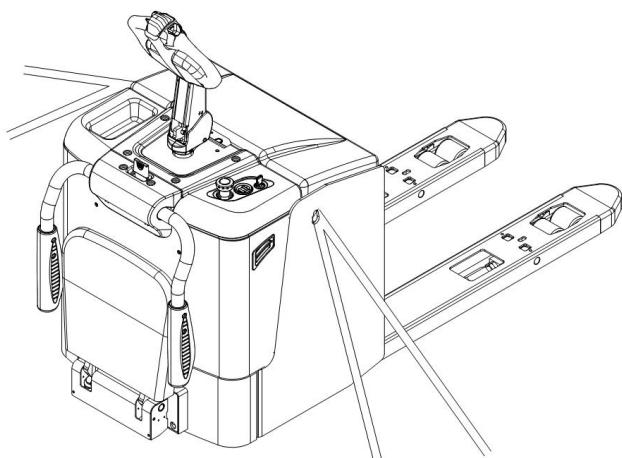


Fig.9: fixing points foldable

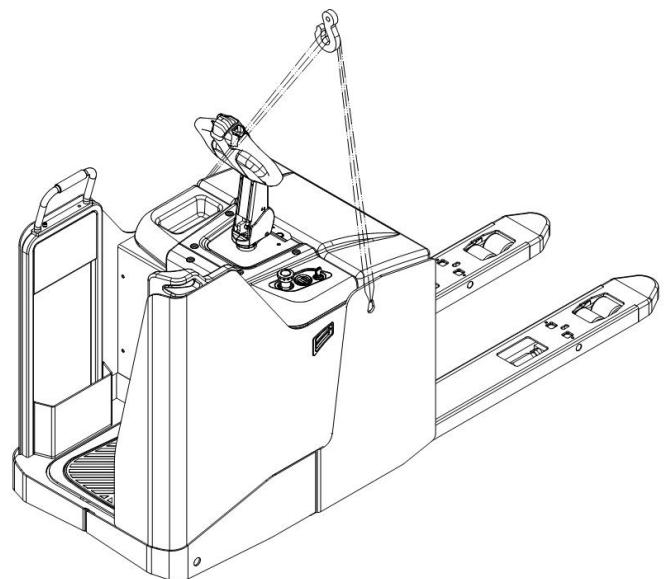


Fig.10: fixing points fixed

Lower the forks and park the truck securely.

Fasten the truck according to fig.9 or fig.10 by fixing dedicated lashing belts to each side of the truck's crane hook holes and fasten the other side at the transporting truck.

c. Decommissioning

For storage, remove the load, lower the truck to the lowest position, grease all in this handbook mentioned greasing points (regular inspection), eventually protect the truck against corrosion and dust. Remove the batteries and jack the truck safely, so that there will be no flattening 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 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 all bolts and nuts are tightened firmly.
- Visual check if there are any broken hoses or broken electric wires.

6. OPERATING INSTRUCTIONS



BEFORE OPERATING THIS TRUCK, PLEASE FOLLOW THE WARNINGS AND SAFETY INSTRUCTIONS (CHAPTER 3)

Make sure, that the load is palletized and stable and that the daily inspection is carried out.

Insert the key switch (15), turn on it. Press the horn button (23) to activate the audible warning signal.

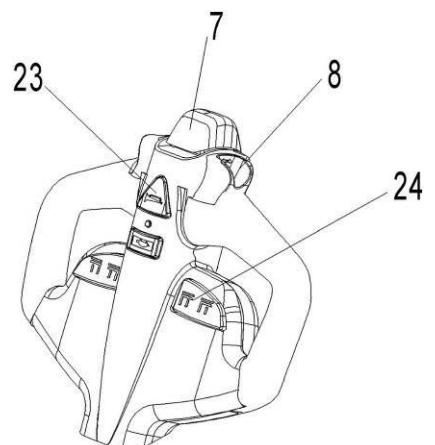


Fig.11: Tiller operating



DO NOT PARK THE TRUCK ON INCLINED SURFACES

The truck is equipped with an electromagnetic failsafe stopping and parking brake.

Always lower the forks fully. Press the emergency switch (17).

b. Lifting



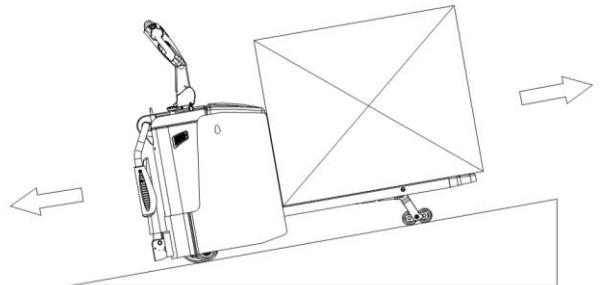
DO NOT OVERLOAD THE TRUCK!
THE MAXIMUM CAPACITY IS 2000/2500/3000 kg

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

c. Lowering

Press the lowering button (24) carefully.

Lower the load until the forks are clear of the pallet,
then drive the truck carefully out of the load unit.



d. Travelling



TRAVEL ON INCLINES ONLY WITH THE
LOAD FACING UPHILL.

DO NOT TRAVEL ON INCLINES MORE
THAN SPECIFIED WITH THE TECHNICAL DATA

Fig. 12: Load facing uphill

Foldable platform

After starting the truck by turning on the key switch (15), move the tiller to the operating zone ('F', fig.13). Turn the accelerator button to the desired direction forward 'Fw.' or backwards Bw.'(fig. 13)

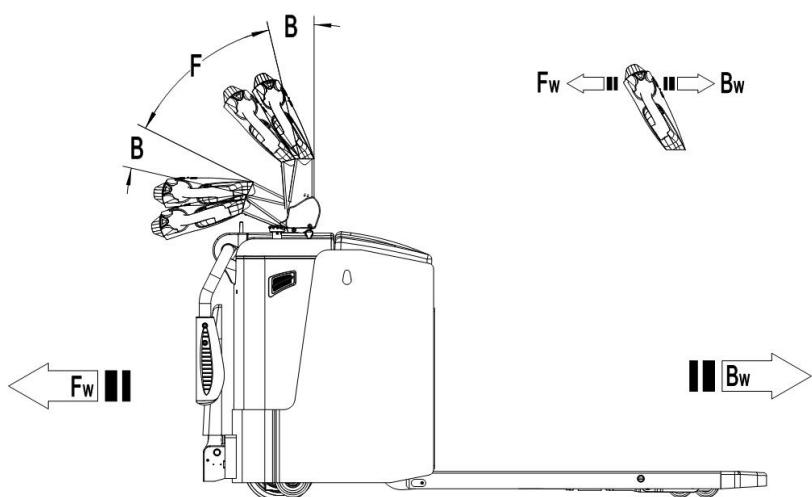


Fig. 13: Operating direction

Besides the pedestrian mode, following travelling modes can be used:

- Travelling with platform (4) folded downside and sideways arms (18) in protective position
Travelling with maximum speed.
- Travelling with platform (4) folded downside and sideways arms (18) folded downside
Depending on the Controllers parameter setting, the speed might be lower, but not higher than 6km/h.

Travelling with platform (4) folded upright and sideways arms (18) folded downside

Depending on the Controllers parameter setting, the speed might be lower, but not higher than 6km/h.

Fixed platform

After starting the truck by turning on the key switch (18), move the tiller to the operating position (fig.14). Turn the accelerator button to the desired direction forward 'Fw.' or backwards Bw.'(fig. 14).

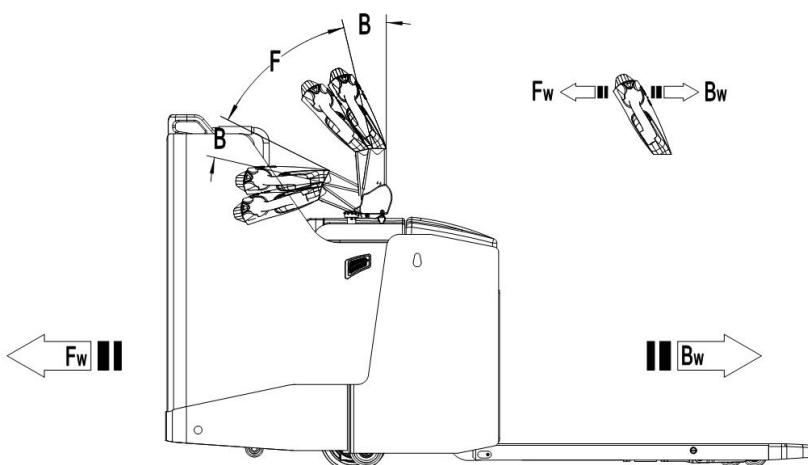


Fig. 14: Operating direction

Control the travelling speed by moving the accelerator button (8) 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 stopped, 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.

e. Steering



THE TRUCK IS EQUIPPED WITH AN ELECTRIC STEERING SYSTEM. TAKE CARE BY OPERATING THE TRUCK; THE BEHAVIOR OF THE TRUCK MIGHT BE DIFFERENT THAN TO A TRUCK WITHOUT ELECTRIC STEERING SYSTEM.

You steer the truck by moving the tiller to the left or right side.

f. Braking



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

The braking function can be activated on several ways:

- By moving the accelerator button (8) 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 (8) 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 braking zone('B'). The truck brakes until it stops. (only foldable platform)
- The safety (belly) button (7) 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.

g. Malfunctions

If there are any malfunctions or the truck is inoperative, please stop using the truck and activate the emergency switch (17) by pushing it. If possible, park the truck on a safe area and remove the key switch (15).

Inform immediately the manager and, or call your service. If necessary, tow the truck out of the operating area by using dedicated towing/ lifting equipment.

h. Emergency

In emergencies or in the event of tip over (or off dock), keep safe distance immediately. If possible push the emergency button (17). All electrical functions will be stopped.

7. BATTERY CHARGING AND REPLACEMENT



- Only qualified personnel are allowed to service or charge the batteries. The instructions of this handbook and from the battery- manufacturer must be observed.
- Confirm the battery in your truck is lead-acid battery or Lithium-ion battery.
- Recycling of batteries undergoes national regulations. Please follow these regulations.
- By handling batteries, open fire is prohibited, gases could 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.
- If the truck is inoperative for a long time, it is necessary to press the emergency button and power the truck off, and charge the battery till 50% state of charge at least and recharge the battery every three months to avoid battery power loss.
- The allowable charging environment temperature of lithium battery is 0°C-45°C; Charging at low temperature is prohibited, for environment with low temperature below 0°C, please charge the battery immediately after use in or use a battery heating system for charging.
- If you need to stop the charging during the normal charging process, turn off the air switch of the charger, remove the charging connector when the charging current drops to 0A. Avoid arcing by not removing the live connector.
- Before charging, observe whether there is water or debris in the charging port and clean it.
- 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 that there are no disturbing towards other components of the truck.

As standard batteries, the truck is equipped with following liquid acid traction battery- type:

1 pc 24V/ 175Ah

Optional 1 pc 24V/ 230Ah



LITHIUM BATTERIES ONLY

THE WEIGHT OF THE BATTERIES HAS AN INFLUENCE TO THE TRUCKS OPERATING BEHAVIOR.

PLEASE CONSIDER THE MAXIMUM OPERATING TEMPERATURE OF THE BATTERIES

a. Replacement



EXCHANGING THE BATTERY TO THE SIDE REQUIRES SPECIAL EQUIPMENT, APPROPRIATED TO TAKE THE BATTERY SECURELY. ENSURE THAT THIS EQUIPMENT IS NOT MOVING BACKWARDS IF YOU MOVE OUT THE BATTERY BLOCK!

PAY ATTENTION, THE BATTERY MIGHT FALL OUT, IF THE EQUIPMERNT IS USED NOT CORRECTLY AND CAREFULLY!

Park the truck securely and switch off the truck with the key switch (15), and push the emergency button (17). Open the battery cover(11) and let it stay upright, disconnect the battery plug, then move the battery out with a crane.

If you exchange the battery to the top, you have to use dedicated lashing equipment.

The installation is in the opposite direction of the removal..

b. Battery indicator

The discharge is expressed as a percentage of the liquid crystal display of the meter.

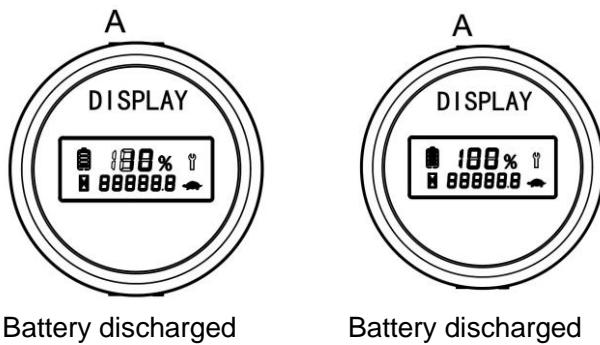


Fig.16: Battery discharge indicator

As the charge status of the battery decreases, the power display percentage gradually decreases.

When the power percentage is 20% , the vehicle slows down and stops lifting, indicating that the "Energy reserve"(80% discharge depth) , the vehicle needs to be recharged.

When the electricity percentage is 10% , the vehicle is forbidden to walk and lift, indicating that the "Electricity is empty"(90% discharge depth) , the vehicle can not be used, urgent need to charge.

a. Charging



- Before charging ensure that you are using an appropriate charger for charging the installed battery!
- Before using the charger, please fully understand the instructions of the charger instructions.
- Always follow these instructions!
- The room, where you are charging must be ventilated.
- When the LED screen of the lithium battery charger shows 0A, indicating that the battery is fully charged.
- The exactly charge status can be only checked from the dischrgre indicator. To control the status, the charging must be interrupted and the truck must be started.

Park the truck at a dedicated secured area with a deidcated power supply.

Lower the forks and remove the load.

Open the battery cover and let it stay upright.

Switch the truck off and connect the battery plug to the charging plug of the charger.

The charger starts charging the battery if the charger is connected to the main power supply.

Disconnect the battery plugs after the charger finished charging.

Connect the battery plug with the plug at the truck.

Close the battery cover.

Turn the truck off, close the air switch of the charger, connect the charger to the battery, and then connect the charger to the mains.

The charger starts charging.

After completing the charging, turn off the air switch of the charger, disconnect the charger and battery, and put away the wiring harness of the charger.

Turn the key switch of battery to START position—which is on the right side of ON position (red dot) for 1 second and release the key, then the battery is powered on and the truck can be used normally.

Note: If you need to turn off the battery after starting, you need to wait for 5 seconds, then turn the key to STRAT position and hold it for 3 seconds. After releasing the key, the battery is off and shut down.

8. REGULAR MAINTENANCE



- Only qualified and trained personnel are allowed to do maintenance on this truck.
- Before maintaining, remove the load from the forks and lower the forks to the lowest position.
- If you need to lift the truck, follow chapter 4b 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 instructions above. The castors must be round and they should have no abnormal abrasion.

Check the items emphasized maintenance checklist.

a. Maintenance checklist

Table 3: Maintenance checklist

		Interval(Month)			
		1	3	6	12
Hydraulic					
1	Check the hydraulic cylinder(s), piston for damage noise and leakage		•		
2	Check the hydraulic joints and hose for damage and leakage		•		
3	Inspect the hydraulic oil level, refill if necessary		•		
4	Refill the hydraulic oil (12 month or 1500 working hours)				•
5	Check and adjust function of the pressure valve (2000/2500/3000kg +0/+10%)				•
Mechanical system					
6	Inspect the forks for deformation and cracks		•		
7	Check the chassis for deformation and cracks		•		
8	Check if all screws are fixed		•		
9	Check the push rods for deformation and damages		•		
10	Check the gearbox for noise and leakage		•		
11	Inspect the wheels for deformation and damages		•		
12	Inspect and lubricate the steering bearing				•
13	Inspect and lubricate the pivot points		•		
14	Lubricate the grease nipples	•			
Electrical system					
15	Inspect the electric wiring for damage		•		
16	Check the electric connections and terminals		•		
17	Test the Emergency switch function		•		

18	Check the electric drive motor for noise and damages		•		
19	Test the display		•		
20	Check, if correct fuses are used		•		
21	Test the warning signal		•		
22	Check the contactor(s)		•		
23	Check the frame leakage (insulation test)		•		
24	Check function and mechanical wear of the accelerator		•		
25	Check the electrical system of the drive motor		•		
Braking system					
26	Check brake performance, if necessary replace the brake disc or adjust the air gap		•		
Battery					
27	Check the battery voltage		•		
28	Clean and grease the terminals and check for corrosion and damage		•		
29	Check the battery housing for damages		•		
Charger					
30	Check the main power cable for damages				•
31	Check the start-up protection during charging				•
Function					
32	Check the horn function		•		
33	Check the air gap of the electromagnetic brake		•		
34	Test the emergency braking		•		
35	Test the reverse and regenerative braking		•		
36	Test the safety (belly) button function		•		
37	Check the steering function		•		
38	Check the lifting and lowering function		•		
39	Check the tiller arm switch function		•		
General					
40	Check if all decals are legible and complete		•		
41	Inspect the castors, adjust the height or replace these if worn out.			•	
42	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

1. Load wheel bearings
2. Caster bearings
3. Gear box
4. Hydraulic system
5. Electric turning system
6. Joint
7. Rollers

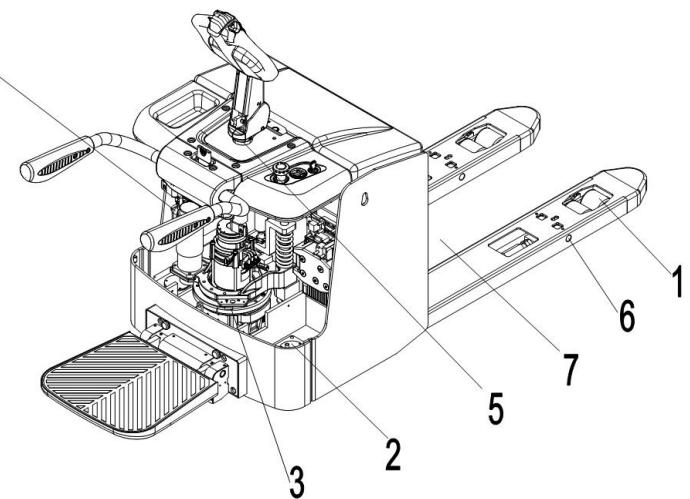


Fig. 16: Lubricating points

c. Check and refill hydraulic oil

The required hydraulic fluid- type is

- H-LP 46, DIN 51524
- Viscosity is 41.4 - 47
- Depending on the type the amount is 1,5L

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.1.4L to 1.6L.

If necessary add oil at the filling point.

d. Checking electrical fuses

Remove the main cover. The fuses are located according to fig. 17.

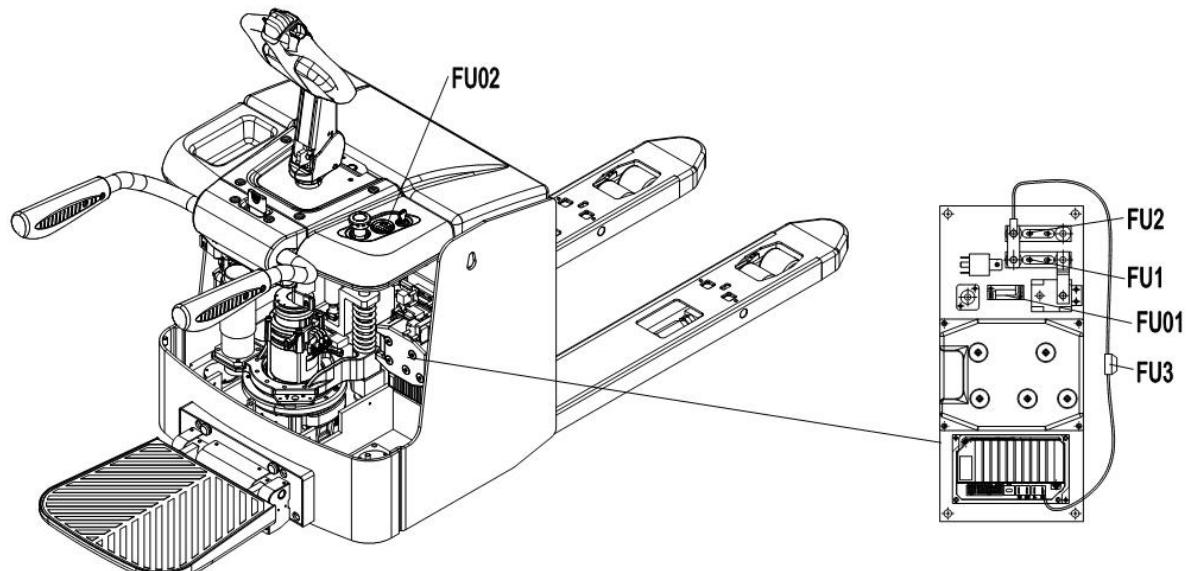


Fig. 17: Location fuses

Table 4: Size fuses

	PT20H	PT20HPLUS	PT25/30H
FU 1	200 A	250A	250A
FU 2	80A	80A	150A
FU 3	30 A	30A	30A
FU 01	10A	10A	10A
FU 02	0.5A	0.5A	0.5A

9. TROUBLE SHOOTING



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

Table 5: 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
Oil leakage from air breathing	Excessive quantity of oil.	Reduce oil quantity.
Truck not starts operating	Battery is charging	Charge the battery completely and then remove the main power plug from the electrical socket.
	Battery not connected	Connect the battery correctly
	Fuse faulty	Check and eventually replace fuses
	Low battery	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.

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 truck out of the aisle.

10. WIRING/ CIRCUIT DIAGRAM

a. PT20H Curtis electrical circuit diagram

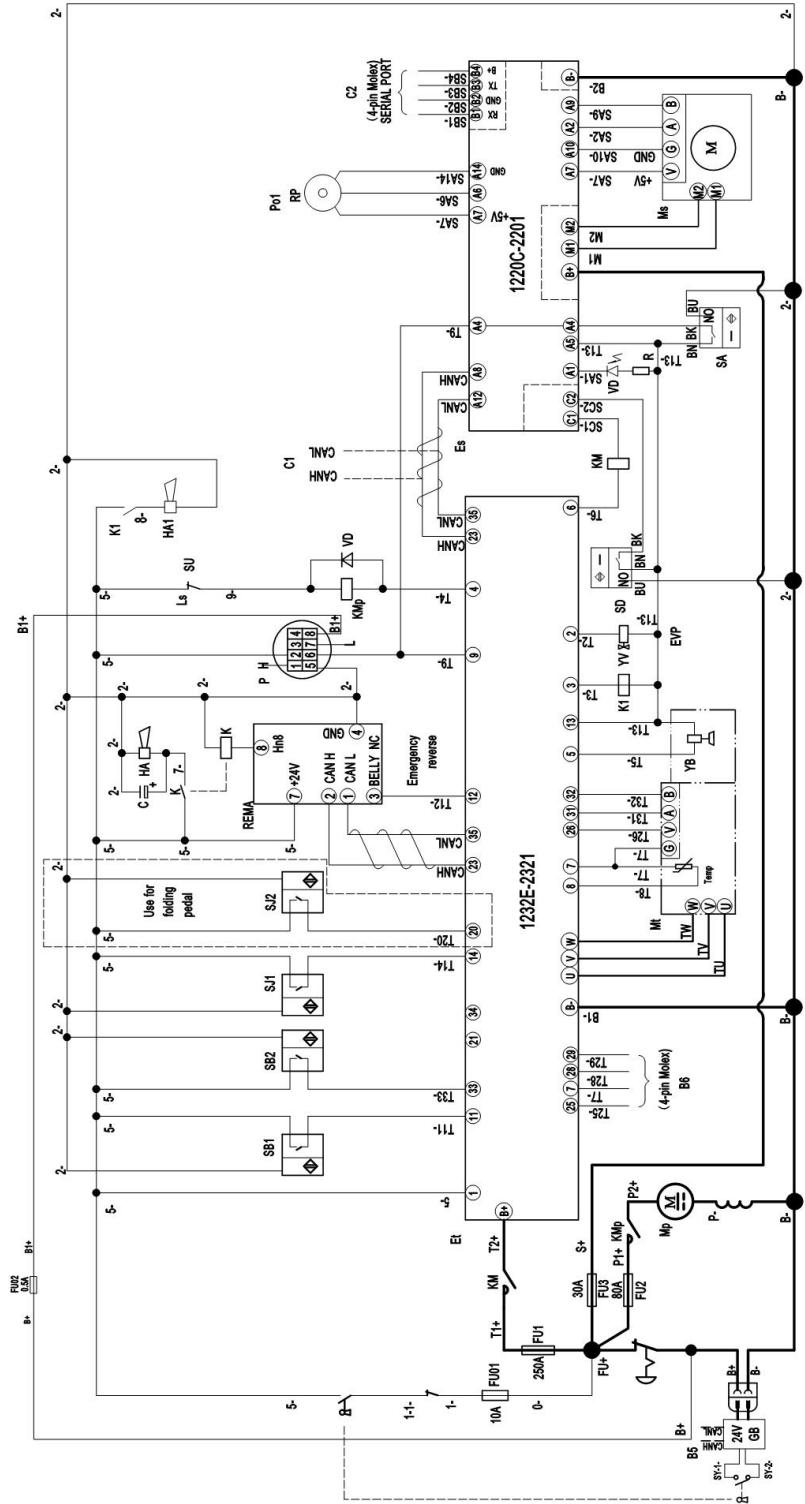


Fig. 18: Electrical diagram

Table 6: PT20H Curtis description of electrical diagram

Code	Item	Code	Item
B	Tiller	LED	Trouble display diode
C	Capacitor	Mp	Pump motor
Es	Steering controller	Ms	Steering motor
Et	Traction controller	Mt	Traction motor
FU01	Control Harness fuse	P	Indicator
FU02	Indicator fuse	R	Adjustable resistance set
FU1	Traction controller fuse	SA	Proximity switch
FU2	Lift pump station fuse	SM	DC power switch
FU3	Steering Controller Fuse	SU	Micro switch
GB	Battery	SY	Key switch
HA	Horn	VD	Diode
HS	Proximity Switch	YB	Electromagnetic brake
K	Relay	YV	Proportional solenoid valve
KM	Main contactor	Po1	Steering Sensor
KMp	Pump contactor		

b. PT20H QT electrical circuit diagram

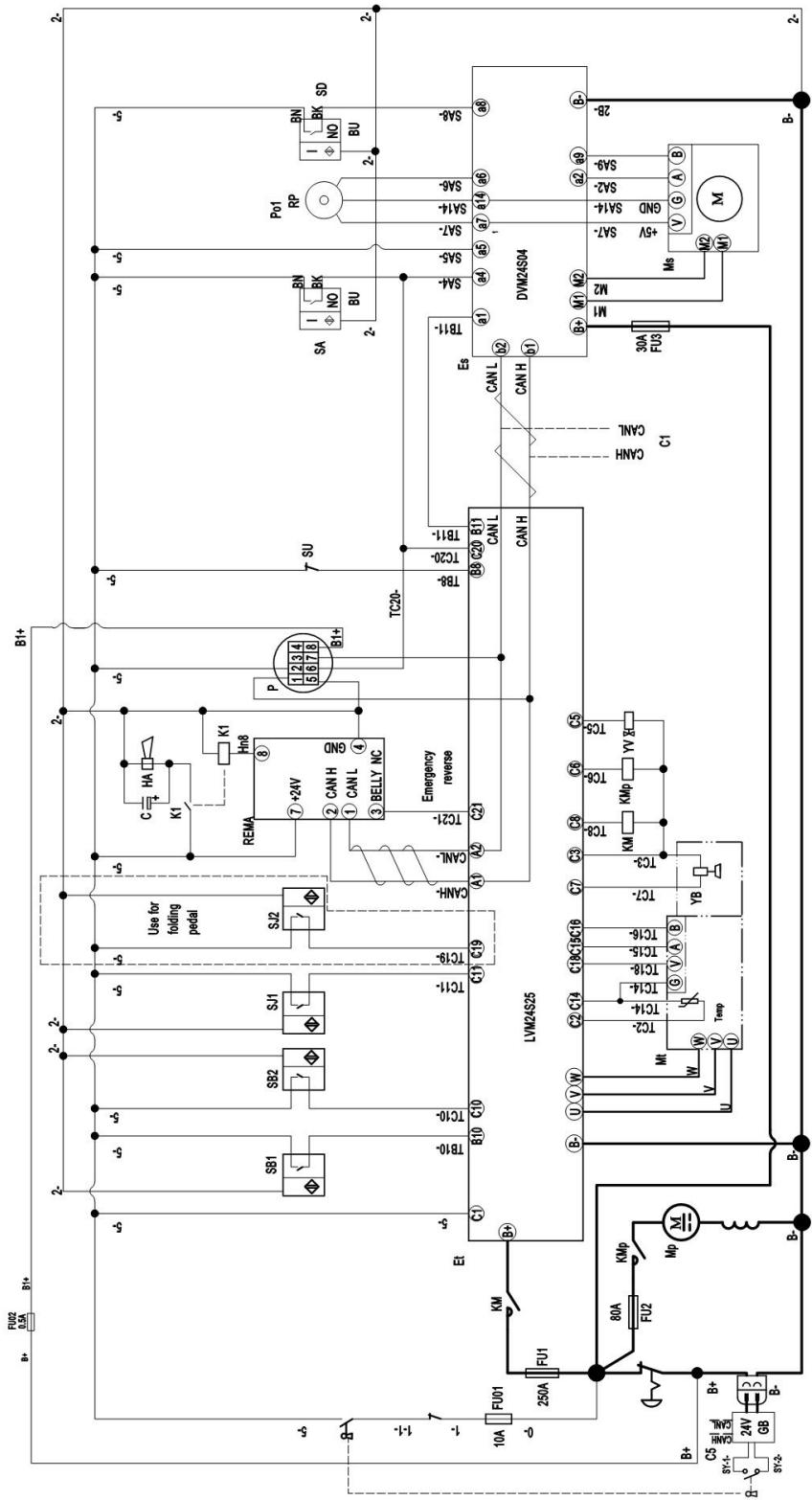


Fig. 19: Electrical diagram

Table 7: PT20H QT description of electrical diagram

Code	Item	Code	Item
B	Tiller	LED	Trouble display diode
C	Capacitor	Mp	Pump motor
Es	Steering controller	Ms	Steering motor
Et	Traction controller	Mt	Traction motor
FU01	Control Harness fuse	P	Indicator
FU02	Indicator fuse	R	Adjustable resistance set
FU1	Traction controller fuse	SA	Proximity switch
FU2	Lift pump station fuse	SM	DC power switch
FU3	Steering Controller Fuse	SU	Micro switch
GB	Battery	SY	Key switch
HA	Horn	VD	Diode
HS	Proximity Switch	YB	Electromagnetic brake
K	Relay	YV	Proportional solenoid valve
KM	Main contactor	Po1	Steering Sensor
KMp	Pump contactor		

c. PT20H PLUS Curtis electrical circuit diagram

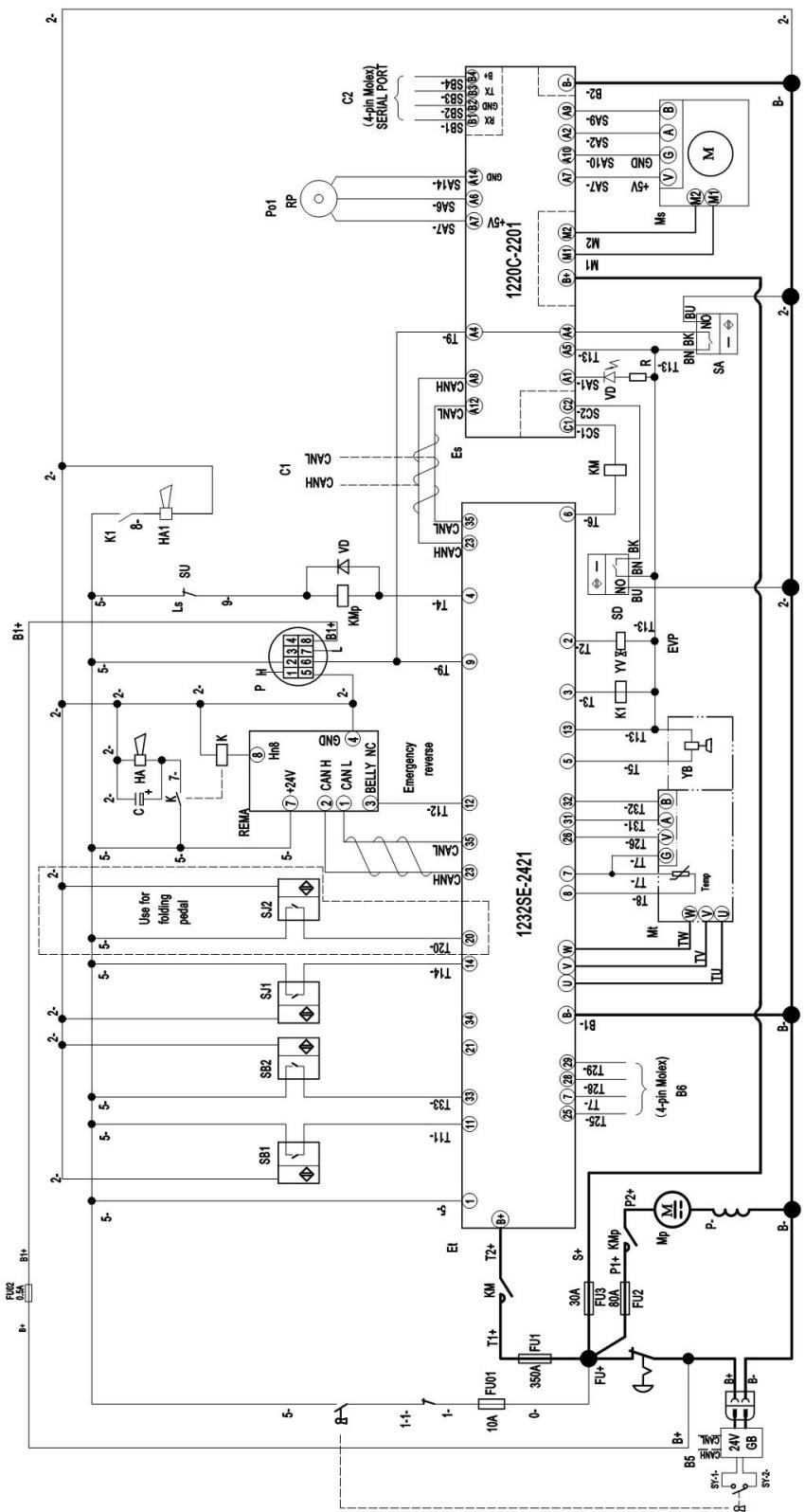


Fig. 20: Electrical diagram

Table 8: PT20H PLUS Curtis description of electrical diagram

Code	Item	Code	Item
B	Tiller	LED	Trouble display diode
C	Capacitor	Mp	Pump motor
Es	Steering controller	Ms	Steering motor
Et	Traction controller	Mt	Traction motor
FU01	Control Harness fuse	P	Indicator
FU02	Indicator fuse	R	Adjustable resistance set
FU1	Traction controller fuse	SA	Proximity switch
FU2	Lift pump station fuse	SM	DC power switch
FU3	Steering Controller Fuse	SU	Micro switch
GB	Battery	SY	Key switch
HA	Horn	VD	Diode
HS	Proximity Switch	YB	Electromagnetic brake
K	Relay	YV	Proportional solenoid valve
KM	Main contactor	Po1	Steering Sensor
KMp	Pump contactor		

d. PT20H PLUS QT electrical circuit diagram

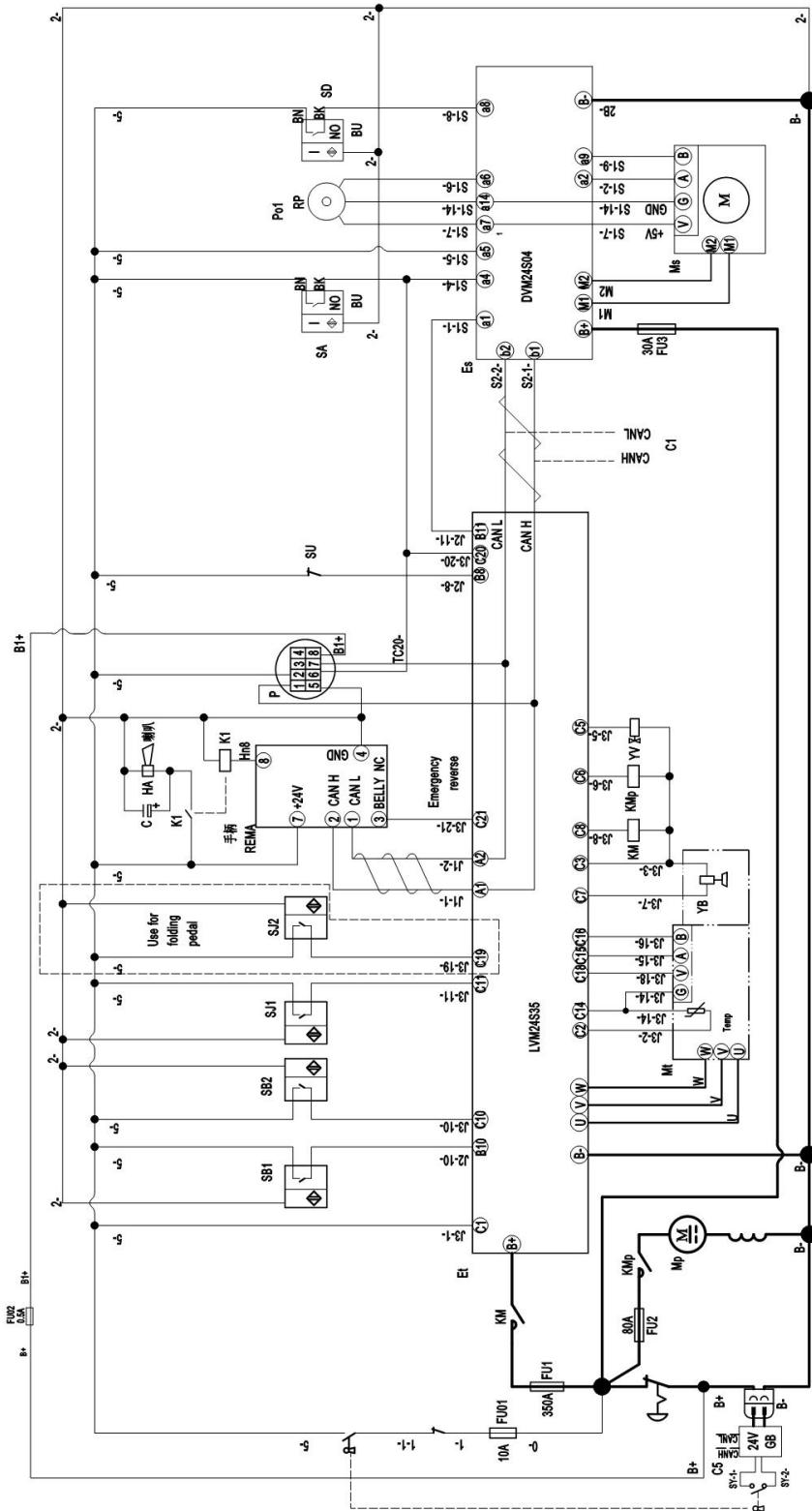


Fig. 21: Electrical diagram

Table 9: PT20H PLUS QT description of electrical diagram

Code	Item	Code	Item
B	Tiller	LED	Trouble display diode
C	Capacitor	Mp	Pump motor
Es	Steering controller	Ms	Steering motor
Et	Traction controller	Mt	Traction motor
FU01	Control Harness fuse	P	Indicator
FU02	Indicator fuse	R	Adjustable resistance set
FU1	Traction controller fuse	SA	Proximity switch
FU2	Lift pump station fuse	SM	DC power switch
FU3	Steering Controller Fuse	SU	Micro switch
GB	Battery	SY	Key switch
HA	Horn	VD	Diode
HS	Proximity Switch	YB	Electromagnetic brake
K	Relay	YV	Proportional solenoid valve
KM	Main contactor	Po1	Steering Sensor
KMp	Pump contactor		

e. PT25/30H Curtis electrical circuit diagram

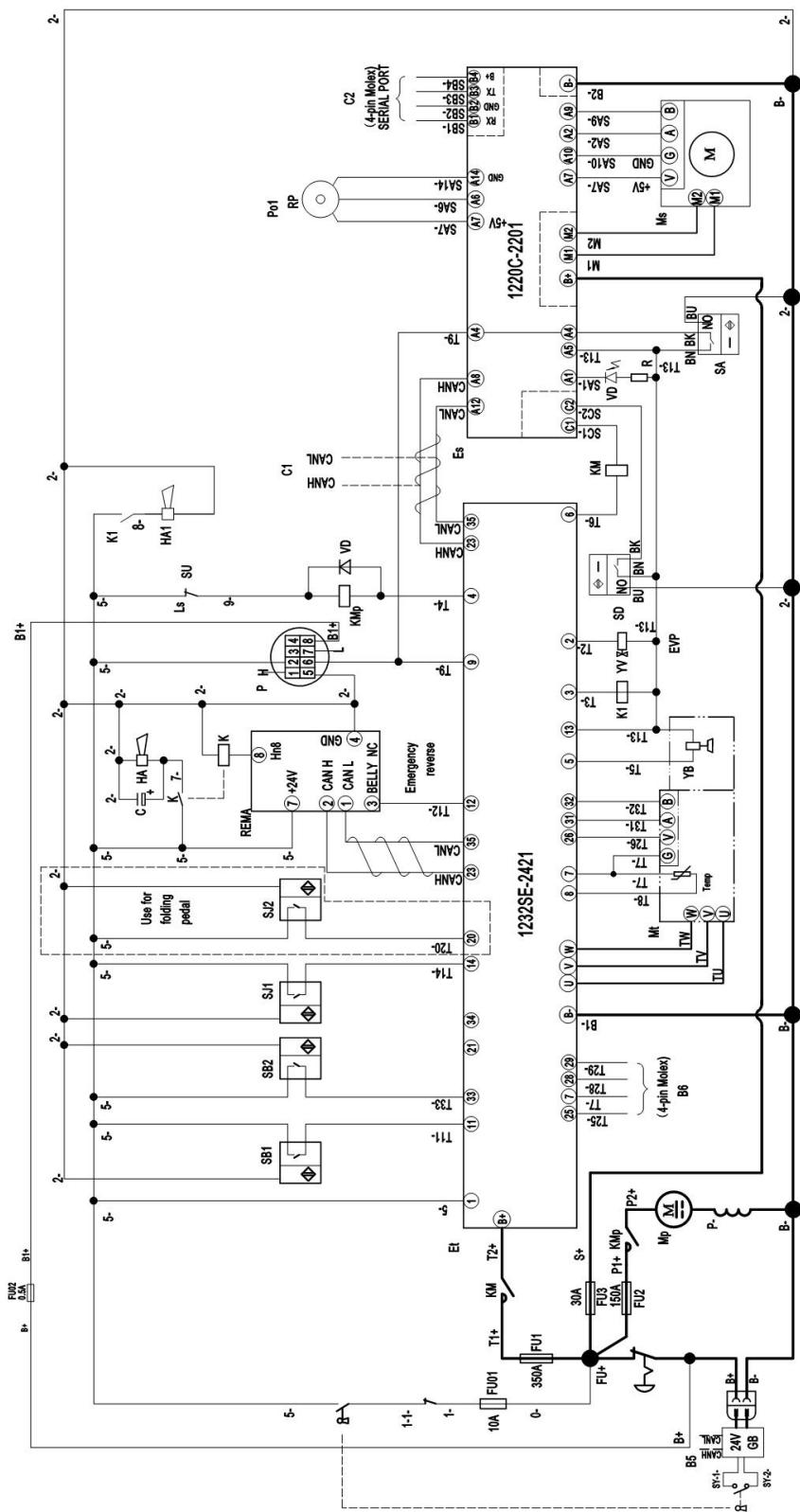


Fig. 22: Electrical diagram

Table 10: PT25/30H Curtis description of electrical diagram

Code	Item	Code	Item
B	Tiller	LED	Trouble display diode
C	Capacitor	Mp	Pump motor
Es	Steering controller	Ms	Steering motor
Et	Traction controller	Mt	Traction motor
FU01	Control Harness fuse	P	Indicator
FU02	Indicator fuse	R	Adjustable resistance set
FU1	Traction controller fuse	SA	Proximity switch
FU2	Lift pump station fuse	SM	DC power switch
FU3	Steering Controller Fuse	SU	Micro switch
GB	Battery	SY	Key switch
HA	Horn	VD	Diode
HS	Proximity Switch	YB	Electromagnetic brake
K	Relay	YV	Proportional solenoid valve
KM	Main contactor	Po1	Steering Sensor
KMp	Pump contactor		

f. PT25/30H QT electrical circuit diagram

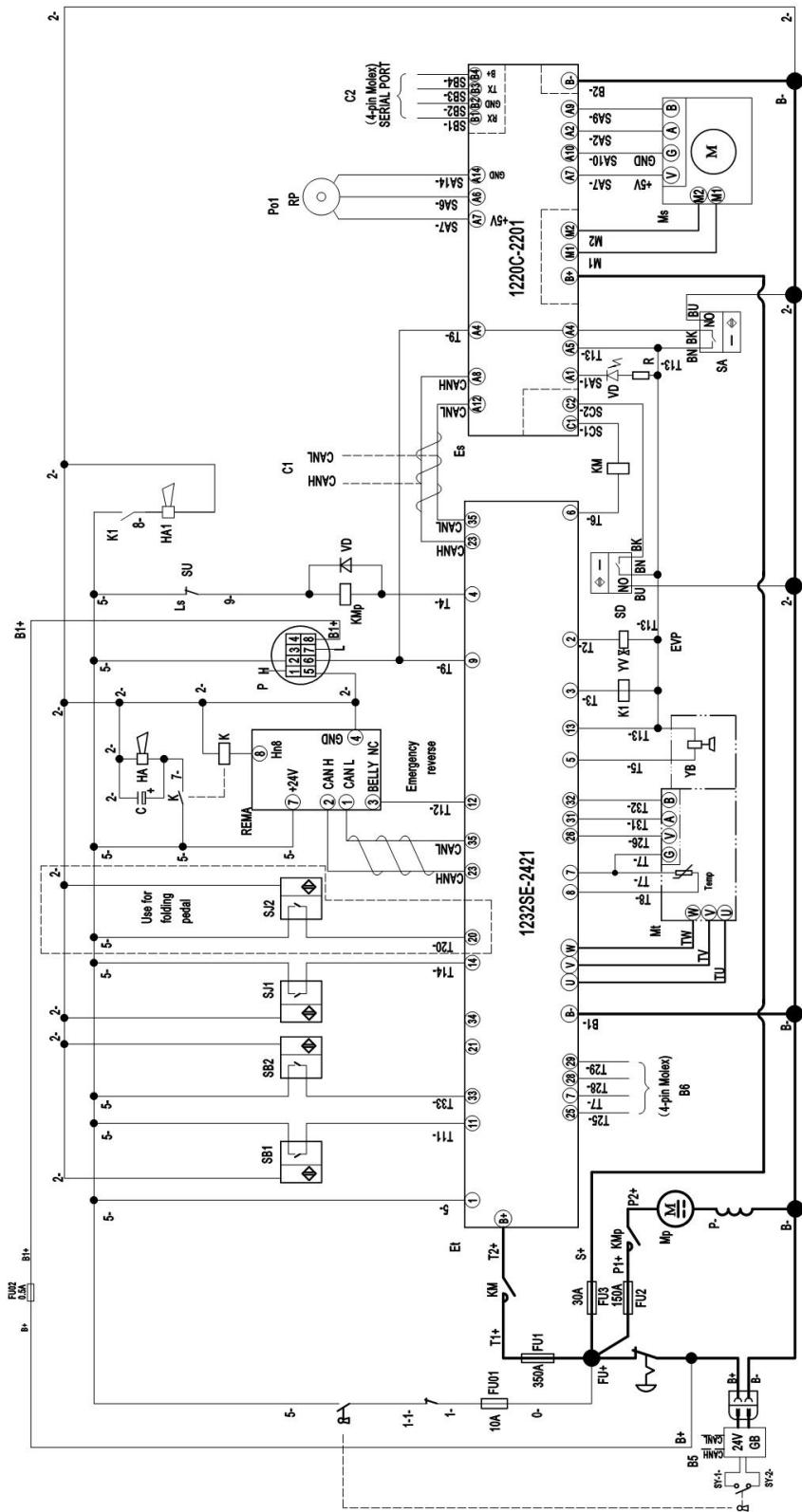


Fig. 23: Electrical diagram

Table 11: PT25/30H QT description of electrical diagram

Code	Item	Code	Item
B	Tiller	LED	Trouble display diode
C	Capacitor	Mp	Pump motor
Es	Steering controller	Ms	Steering motor
Et	Traction controller	Mt	Traction motor
FU01	Control Harness fuse	P	Indicator
FU02	Indicator fuse	R	Adjustable resistance set
FU1	Traction controller fuse	SA	Proximity switch
FU2	Lift pump station fuse	SM	DC power switch
FU3	Steering Controller Fuse	SU	Micro switch
GB	Battery	SY	Key switch
HA	Horn	VD	Diode
HS	Proximity Switch	YB	Electromagnetic brake
K	Relay	YV	Proportional solenoid valve
KM	Main contactor	Po1	Steering Sensor

g. Hydraulic circuit

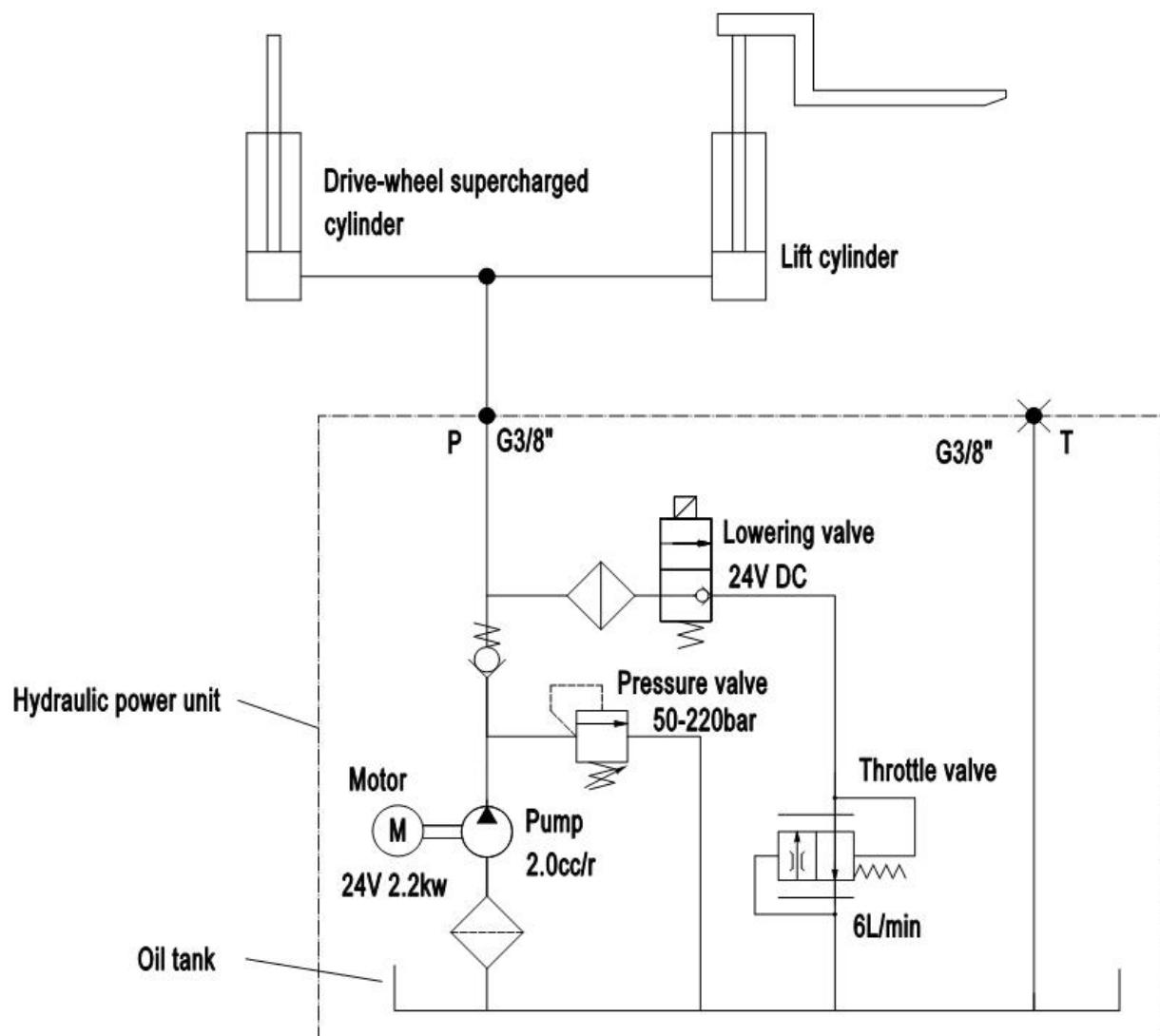


Fig. 24: Hydraulic circuit

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 (Kompatybilność 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] DECLARATIE DE CONFORMITATE CE

Subsemnația de verificare și prezentarea că vehiculul despecificat înăpătuiește individual caracteristicile Directivei 2006/42/CE (Directive privind compatibilitatea cu emisii) și 2014/30/EU (Compatibilitatea cu emisii electomagnetică - CEM) inclusiv modificările precum și actele legislative care le pun în aplicare directivelor și de implementare națională. Subsemnația sunt fiecare în parte în putere însă și tocmai documentația tehnică.

[RUS] Декларация соответствия стандартам EC

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 из 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] vyhlášenie o zhode

Dolu podpísaní túto potvrdzujeme, že podrobny 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 jednotivo 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/ Modello/ Typpi/ Tipo / ΤΥΠΟΣ/ Típus/ Tip/ Tips/ Tipas/ Tüp:
- (2) Serial No./ Serien-Nr./ N° de série/ Serienummer/ Nº de serie/ Numero di serie/ Serienr./ Sarjanro/ auξάνωναριθμός/ Seriové číslo/ Szériaszám/ Nr.Seryny/ Serijska številka/ Výrobné číslo/ Серийный номер/ Seri No./ Seerianr./ Sérijas 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 / έτοςκατασκευής/ Rokvýroby/ Gyártásiév/ Rokprodukciј/ Letnik/ Годизготовления / Üretim yılı / Väljalaskeasta / 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 establecido na Comunidade/ Costruttore oppure il suo rappresentante nella Comunità/ Fabrikant ellerdennesi Fællesskabet etablerede befugtigede/ Produsenteller agent innenfelleskapet/ Tillverkareller representant inom EU/ Valmistaja tai yhteisömaassaoleva edustaja / Výrobce bojeho zastoupení/ Gyártó / producent albo jegopredstawięc w EG (Wspólnota Europejska)/ Končiččetnaččenjho į oknionvntptethō / Üretici ya da Bölgedeki Yetkili Temsilci / Proizvajalec lipooblaščenizastopnik s sedežem v EU/ Výrobca alebo zástupca so stálým bydliskom v EÚ / Изготвител и лицензиран представител, зарегистрированный в стране Содружества/ Tootjavõõorganisaatsioonispainkevendaja/ Ražotājs/vaivietējaisuzņēmumapārstāvis / Gamintojas arba šalījerezīduoju natisatstovas:
- (5) Date/ Datum/ Data/ Fecha/ datum/ Dato/ päiväys/ Kuupäev/ Datums/データ/ Dátum/ dátum/ tarif/ μηρούντα
- (6) Authorised signatory/ ImAuftrag/ pour ordre/ Incaricato/ Por orden de/ por procuração/ op last van/ på vegne af/ pá uppdrag/ Etteroppdrag/ psta./ Ülesandel / pavedus / v.i. / Попоручению / megbízásából /дължностнолице / z pověření / z poverenia / po nalogu / napolecenie / din sarcina / adina / θητή εληνιά

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

(1) Type: XX XX-Sel 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**