

INSTRUCTION HANDBOOK

PLD PLUS



WARNING

Do not use the electric PLD 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.

LOADING MERCHANDISE

SAFETY INSTRUCTIONS

- ✔ Do not use inside the store. Always bring the product out to the Portable Loading Dock.
- ✔ LOAD CAPACITY = 1,500 lbs.
- ✔ Never operate lift equipment recklessly.
- ✔ Do not use in the parking lot. Have customer bring their vehicle to the loading area.
- ✔ Always secure the load before moving the Portable Loading Dock.
- ✔ Always load vehicles on level surfaces.
- ✔ Never use the Portable Loading Dock to load product on top of the roof of a vehicle.
- ✔ Do not allow vehicles to back under the Portable Loading Dock
- ✔ Never turn the Portable Loading Dock with an elevated load. Lower the load prior to turning.
- ✔ Never push or pull the Portable Loading Dock with an associate on the platform of the equipment.
- ✔ Do not allow customers to operate the equipment or be on the platform.
- ✔ Ensure vehicle to be loaded has come to a complete stop, and is in park.
- ✔ After use, return the Portable Loading Dock to its designated storage area.
- ✔ Lower the Portable Loading Dock all the way to the ground to prevent unintentional rolling.



- 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 PLD when it is moving or lifting/lowering.
 - Overload the PLD.
 - 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 PLD on ramps.
 - Use the PLD without a removed protective screen (fig.1, pos. 17/ guarding).
 - Side or end load. Load must be distributed evenly on the deck.
 - Use the PLD with unstable, unbalanced not stable load.
 - Use PLD without manufacturer's written consent.
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- Supply on board charger with AC voltage other than 110V or 220V.

Watch difference in floor levels when driving. Load could fall down or the PLD could get uncontrollable. Keep watching the condition of load. Stop operating the PLD if load becomes unstable. Brake the PLD and activate the emergency button (3) by pushing when sliding load on or off the PLD. 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 PLD 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 PLD, the operator has to wear safety shoes.
- The truck is intended to be used for indoor applications with ambient temperatures between +41°F and + 105.8 °C.
- The operating lighting must be minimum 50 lumens.
- To prevent unintended sudden movements when not operating the PLD (i.e. from another person, etc.) switch of the PLD and remove the key.



DURING TRANSPORTATION ON A TRUCK ALWAYS FASTEN THE TRUCK SECURELY

Lower the forks and park the truck securely. Dedicated lashing belts at both sides each of the PLD decks handrail and fasten the other side at the transporting truck.

- Decommissioning

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

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

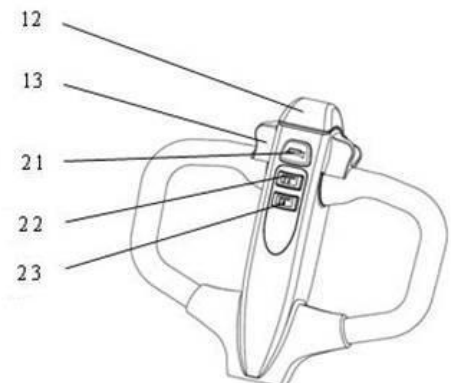
- DAILY INSPECTION

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



Remove load from PLD and lower the deck.
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.



- OPERATING INSTRUCTIONS



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

- Transportation

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 (21) to activate the audible warning signal.

- Parking



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 and drive the truck to a safe area.

Turn the key anti- clockwise to the "Off" – position and remove the key.

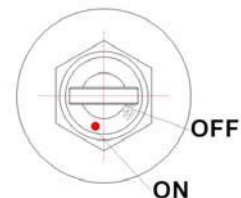


Fig.8: Key switch

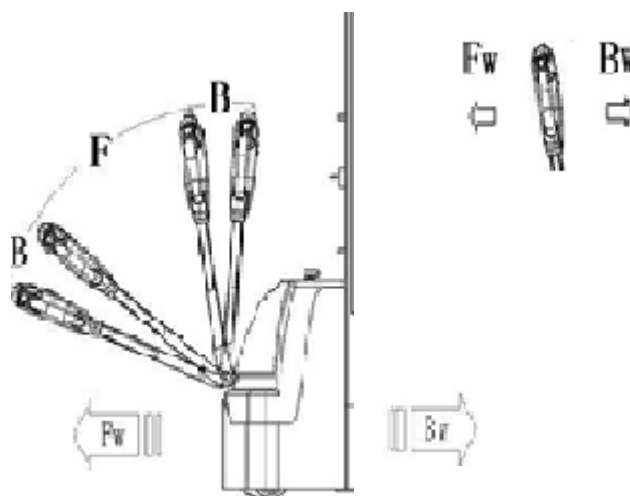
- TRAVELLING

TRAVEL ON INCLINES ONLY WITH THE LOAD FACING UPHILL.

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

TRAVELLING IS ONLY ALLOWED IF THE DECK IS LOWERED DOWN TO THE LIFTING POINT (<12in).

After starting the PLD 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.11).



Turn the accelerator button to the desired direction forward 'Fw.' Or backwards 'Bw.'(fig. 11).

Control the travelling speed by moving the accelerator button (13) 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 PLD stopped, the parking brake will be engaged.

Drive carefully the PLD to the destination. Watch the route conditions and adjust the travelling speed with the accelerator- button.

- **Steering**

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

- **Braking**



THE BRAKING PERFORMANCE DEPENDS ON THE TRACK CONDITONS AND THE LOAD CONDITONS OF THE PLD

The braking function can be activated on several ways:

- By moving the accelerator button (13) back to the initial '0' position or by releasing the button, the regenerative braking is activated. The PLD brakes until it stops.
 - By moving the accelerator button (13) from one driving direction directly to the opposite direction, the PLD brakes regenerative until it starts travelling into the opposite direction.
 - The PLD 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 PLD brakes until it stops.
 - The safety (belly) button (12) prevents the operator from being crushed. If this button is activated, the PLD decelerates and/ or starts travelling into the backwards direction ('Bw.')
- Please consider, that this button also operates, if the truck is not travelling and the tiller is in the operating zone.

- **Malfunctions**

If there are any malfunctions or the truck is inoperative, please stop using the PLD and activate the emergency button (3) by pushing it. If possible, park the PLD on a safe area, turn the key switch (1) anti- clockwise and remove the key.

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

- **Emergency**

In emergencies, push the emergency button (3). All electrical functions will be stopped. Keep safe distance.

- 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.
- These batteries are maintenance free; re- filling is prohibited.
- 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.
- Park the PLD 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 PLD.

The PLD is equipped with following sealed liquid acid batteries:

- 2 pc 12V/ 85Ah(C5)
- Optional: 2 pc 12V/ 106Ah



IT IS ONLY ALLOWED TO USE SEALED LIQUID ACID BATTERIES.
THE WEIGHT OF THE BATTERIES HAS AN INFLUENCE TO THE TRUCKS OPERATING BEHAVIOR.
PLEASE CONSIDER THE MAXIMUM OPERATING TEMPERATURE OF THE BATTERIES.

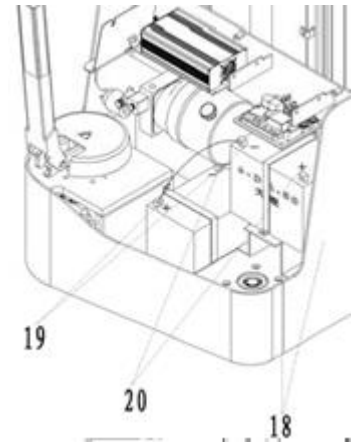


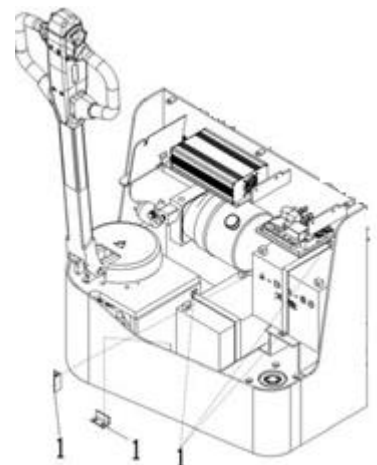
Fig. 12: battery replacement

Replacement

Park the PLD securely and switch off the stacker with the key (1) and activate the emergency button (3). Unbolt the 2 screws on the main cover and remove the cover. Unbolt the screws of the negative terminals (indicated with '-') firstly, then unbolt the screws of the positive terminals (indicated with '+') and put the cables aside.

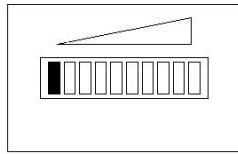
Unbolt the batteries fixing bars and remove these (fig. 13). Remove the batteries carefully by observing not to hit the upper electrical instruments board or the upside oil tank. The installation is in the reverse order of the

Removal. Please connect the positive terminals firstly. Otherwise the PLD could be damaged.

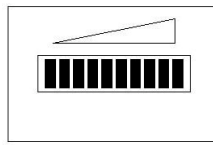


- Battery Indicator

The discharge status is indicated by ten red LED segments.



Battery discharged



Battery full charged

Fig.14: Battery discharge indicator

Only when the battery is properly charged, the most right LED lit. As the battery's state-of-charge decreases, successive LEDs light up, only one on at a time. The 2nd from left LED flashes, indicating "energy reserve" (70% depth of discharge). The 2 most left LEDs alternately flash, indicating "empty" (80% depth of discharge).

- Charging



- The attached automatic charger is only available for the optional voltage of 110V or 220V as referred.
- The room, where you are charging must be ventilated.
- The exactly charge status can be only checked from the discharge indicator. To control the status, the charging must be interrupted and the PLD must be started.

Park the PLD at a dedicated secured area with a dedicated power supply.

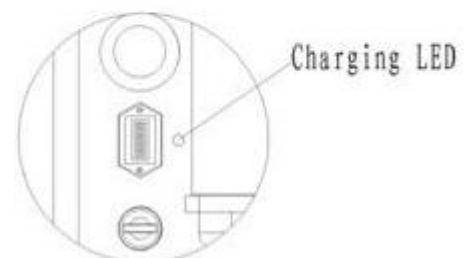
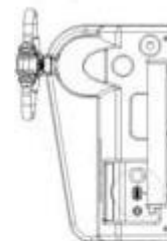
Lower the forks and remove the load.

Switch the PLD off and connect the main power connector (7) to the power supply. The charger starts charging the battery.

Charging is finished until the charging LED (fig.14,15) produces permanent green light. The charger then goes into a floating mode to prevent the battery against damages. Following table shows the function of the LED-status:

Table 3: LED-Status

LED- signal	Function
Red	Battery discharged
Orange	Charging
Green	Fully charged



When charging is finished, disconnect the connector from the socket and place it in the designated pocket.

- 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 d 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 4: Maintenance checklist		Interval (Month)			
		1	3	6	12
	Hydraulic				
1	Check the hydraulic cylinder, 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 the function of the pressure valve (2200lbs +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 mast and chain for corrosion, deformation or damages, replace if necessary	•			
10	Check the gearbox for noise and leakage		•		
11	Check the wheels for deformation and damages, replace if necessary		•		
12	Lubricate the steering bearing				•
13	Inspect and lubricate the pivot points		•		
14	Lubricate the grease nipples	•			
15	Replace the guarding and/or protective screen if it is damaged	•			
	Electric system				
16	Inspect the electric wiring for damage		•		
17	Check the electric connections and terminals		•		
18	Test the Emergency switch function		•		
19	Check the electric drive motor for noise and damages		•		
20	Test the display		•		

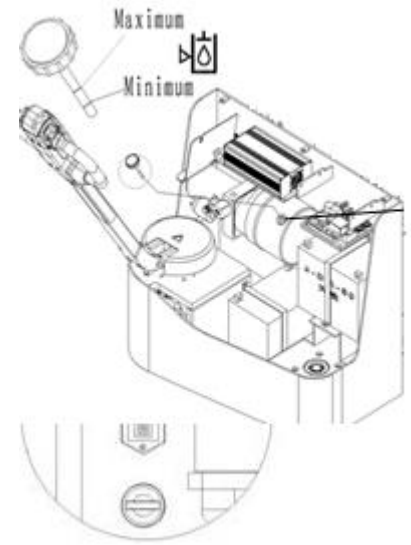
21	Check if correct fuses are used, if necessary replace.		•		
22	Test the audio warning signal		•		
23	Check the contactors		•		
24	Check the frame leakage (insulation test)		•		
25	Check function and wear of the accelerator		•		
26	Check the electrical system of the drive motor		•		
Braking system					
27	Check brake performance, if necessary replace the brake disc or adjust the air gap		•		
Battery					
28	Check the battery voltage		•		
29	Clean and grease the terminals and check for corrosion and damage		•		
30	Check the battery housing for damages		•		
Charger					
31	Check the main power cable for damages			•	
32	Check the start-up protection during charging			•	
Function					
33	Test the audio warning signal	•			
34	Check the air gap of the electromagnetic brake	•			
35	Test the emergency braking	•			
36	Test the reverse and regenerative braking	•			
37	Test the safety (belly) button function	•			
38	Check the steering function	•			
39	Check the lifting and lowering function	•			
40	Check the tiller arm switch function	•			
41	Test the key switch of damages and function	•			
42	Test the speed limitation switch (lifting height >~12in)	•			
General					
43	Check if all decals are legible and complete	•			
44	Check if the protective screen and or guarding is not damaged	•			
45	Inspect the castor, adjust the height or replace it, if worn out		•		
46	Carry out a test run	•			

b. Check and refill hydraulic oil

The required hydraulic fluid- type is

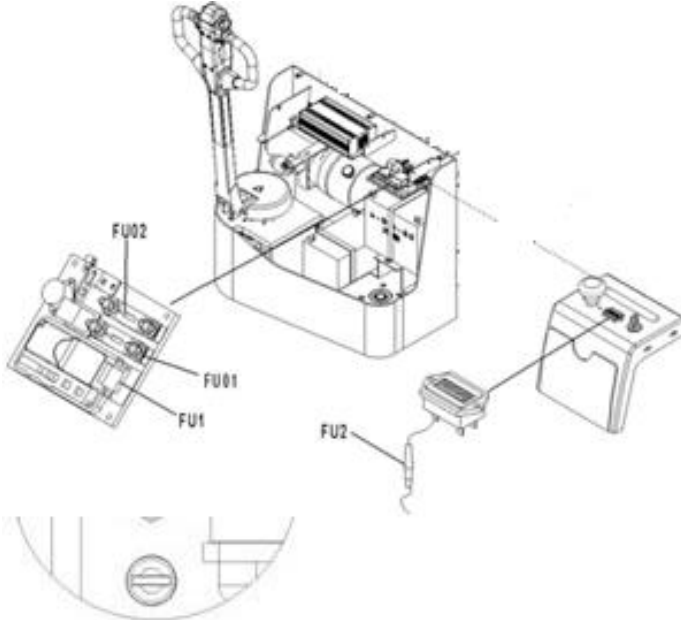
- H-LP 46, DIN 51524
- Viscosity is 41.4 - 47
- Depending on the type the amount is ~ 2,5L to 3,0L

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.



c. Checking electrical fuses

Remove the main cover. The fuses are located according to fig. 18; the size is according to table 5.



	Rate
FU1	10A
FU2	0.5A
FU 01	60A
FU 02	100A

- TROUBLE SHOOTING

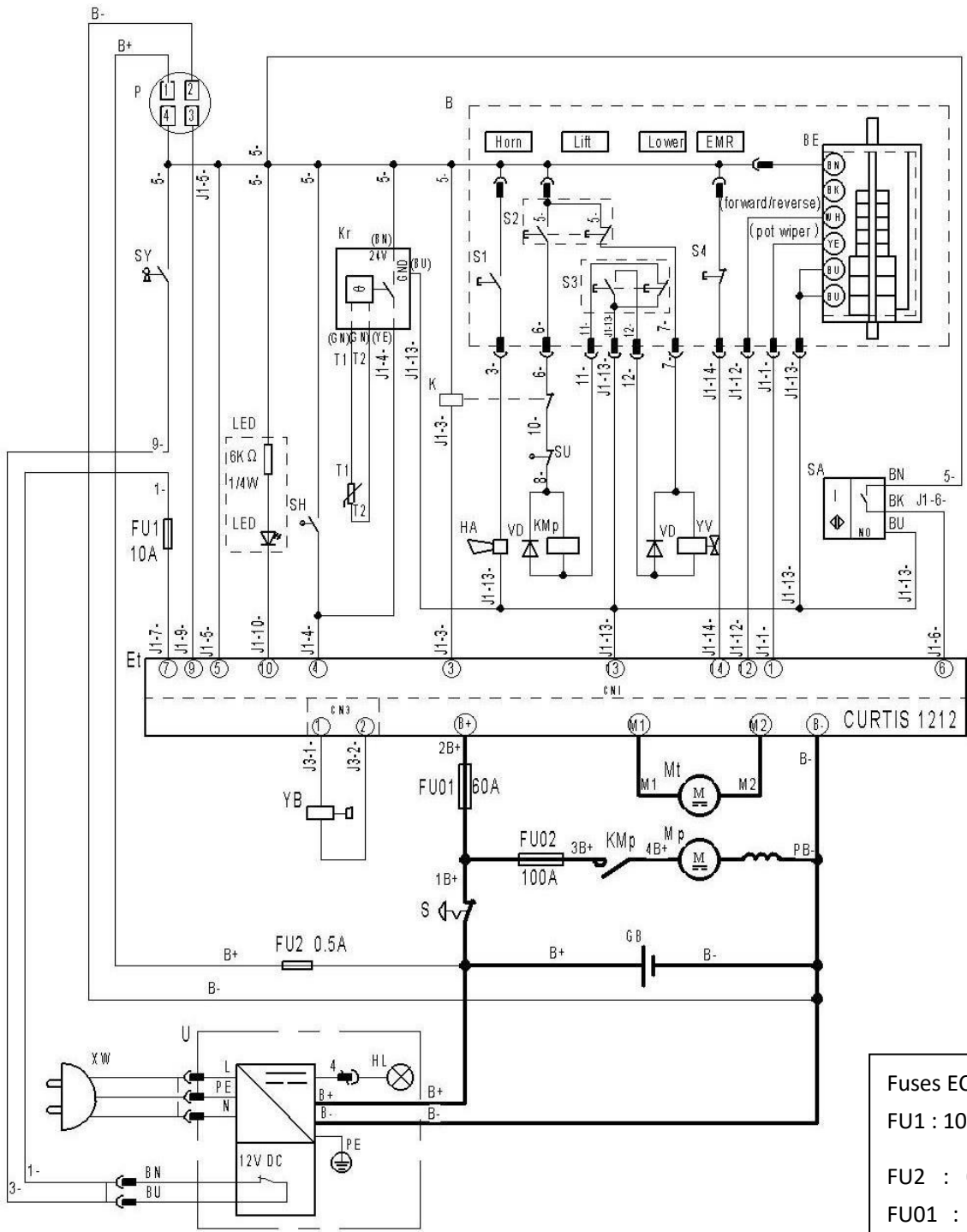


If the PLD has malfunctions follow the instructions

Table 6: 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.
Load can't be lowered	Dirty oil blocks control valve.	Check hydraulic oil and clean control valve. Replace the oil if necessary.
	The solenoid valve for lowering is not opened or is damaged.	Check or replace the valve for lowering.
PLD 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.
Only travelling in one direction	The accelerator and the connections are damaged.	Check the accelerator and the connections.
The PDL 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.
The PLD 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 PLD has malfunctions and can't be operated out of the working zone, jack the PLD up and go with a load handler under the PLD and safe the truck securely. Then move the PLD out of the aisle.



- Fuses ECL22M
- FU1 : 10 A
- FU2 : 0,5 A
- FU01 : 60 A
- FU02 : 100 A

a. Hydraulic circuit

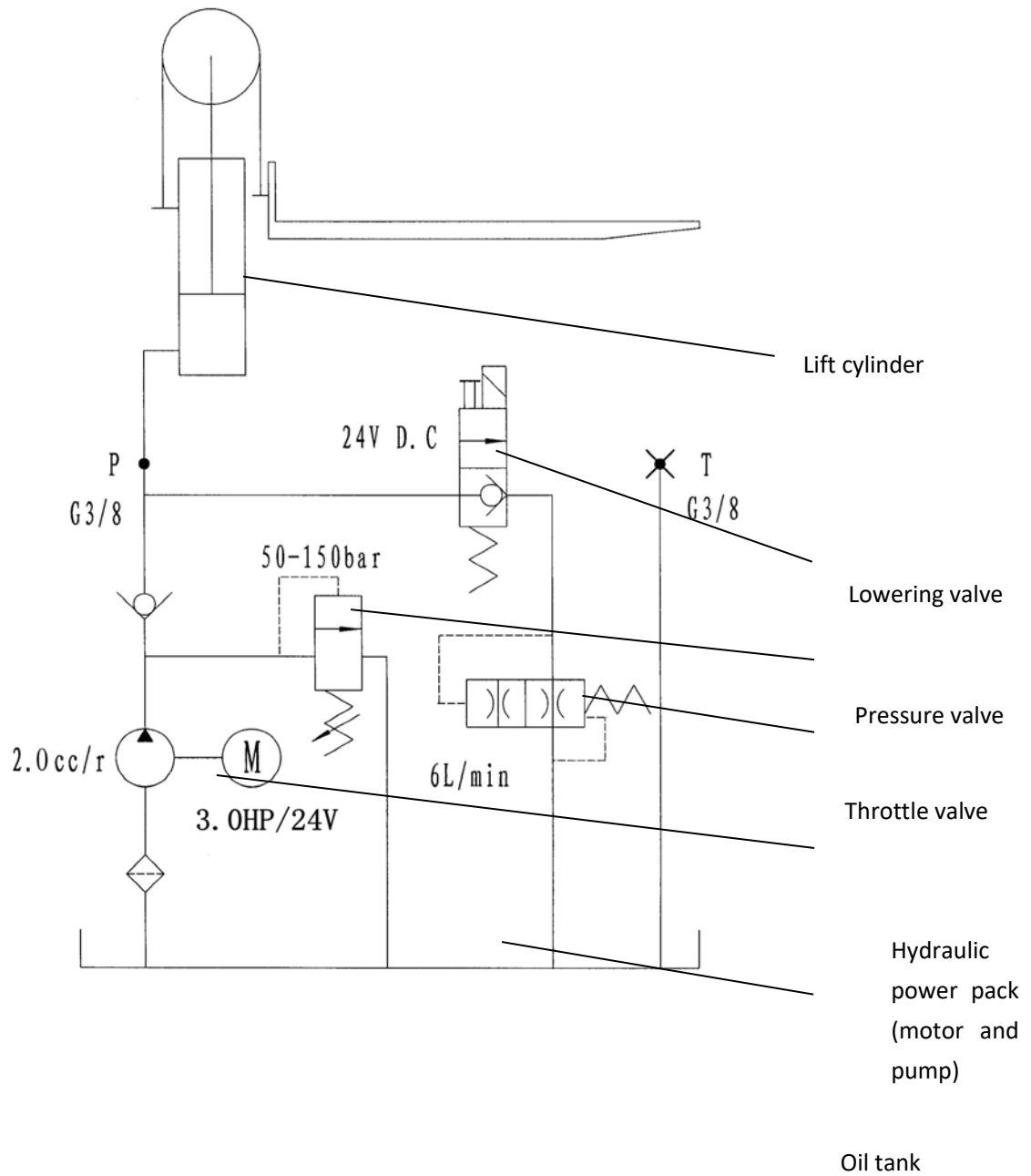


Fig. 20: Hydraulic circuit ECL22M

