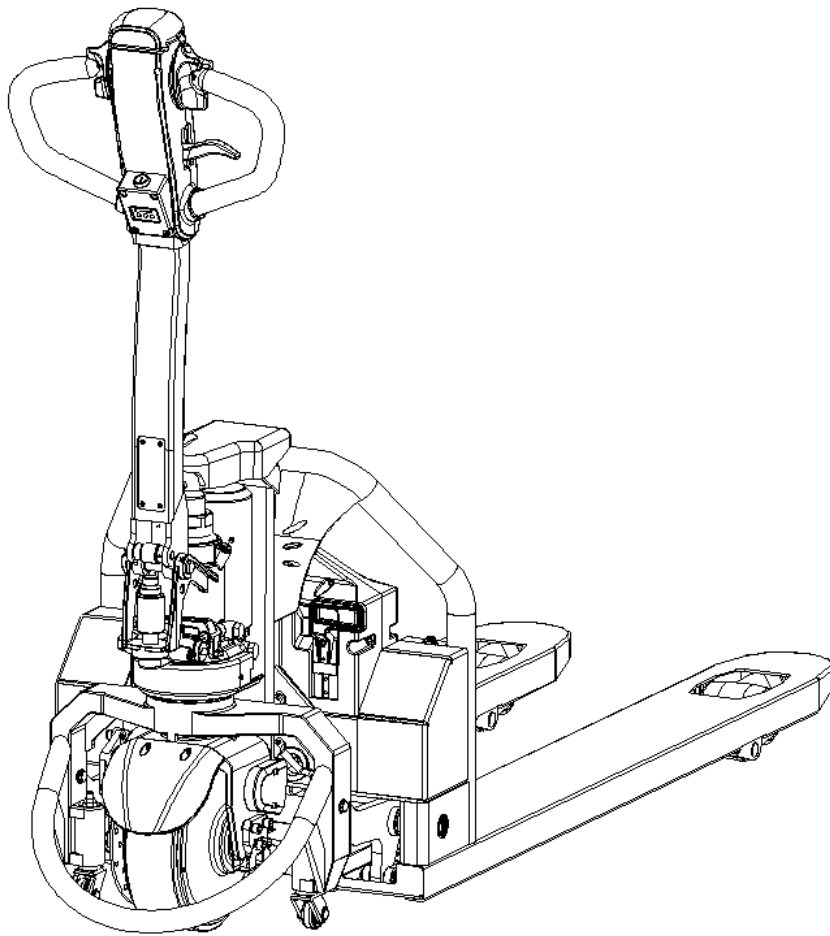


12EPML Electric Pallet Truck (Lithium battery)

- Operation Manual



HYUNDAI CONSTRUCTION EQUIPMENT

Welcome to use “HYUNDAI” Electric pallet stacker!

**We hope our Electric pallet truck will provide great
convenience for your work !**

- Please read the manual carefully before operation
- This manual is universal manual. We reserve the right to modify technology of the electric stacker. If there is anything in the manual that is not consistent with the actual stacker, the actual stacker should be considered correct and the manual is only for reference.

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1. Safety regulations



When operating the truck, one should always wear safe shoes.



When assembling or disassembling the truck, in order to avoid injury, one should always wear safety goggles.



Attention !

When the truck is damaged or failure-affecting safety occurs, do not go on operating the truck.



Attention !

The designed truck can only be used on hard and smooth ground.

In the following environmental situations, it is not allowed to operate the truck:

- The air contains dust or gas, which may be able to cause fire or explosion.
- In refrigerating warehouse or some low temperature, salt containing or other corrosive environments.
- Raining outdoor environment
- Operation on granule or grassland



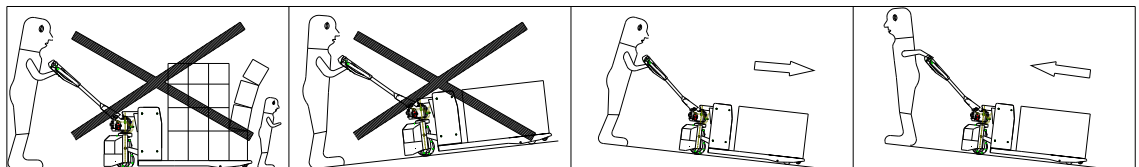
Attention !

- When operating the truck, careful judgement should be conducted and one should operate in a responsible manner.
- One should not operate the truck with hand or shoes with oil.
- The operator must not wear loose clothes or jewelry.



Attention !

- When operating the truck, it should be ensured that the ground possess sufficient load bearing capacity and the load here refers to the sum of the weight of the truck and the weight of the goods.
- When there is a protruding object on the truck or around it, which may cause human injury or forklift damage, one must be very careful.
- It is strictly prohibited for people to appear around the truck operation area, which may cause human injury, for example, when goods fall down.



Be careful!

When handling goods on a slope, the operator must be very careful in operation. The operator should operator in the upper part of the slope as shown in the figure above.



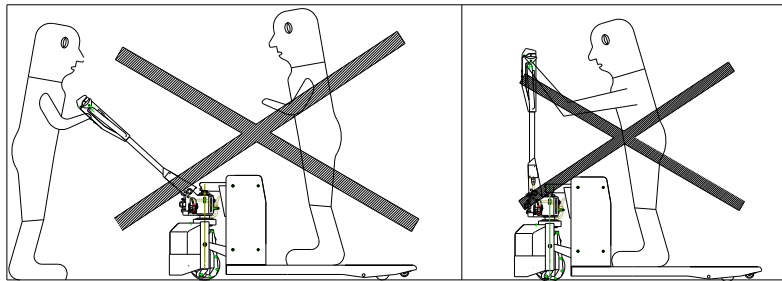
Warning !

- When turning, high-speed operation should be avoided to prevent the truck from turning upside down.
- The goods should not be piled too high to avoid blocking the vision line.
- Braking should be conducted slightly and very carefully to prevent the goods from sliding off the tray, which may damage the goods.
- It is not allowed for the truck to turn on a slope.
- Before pushing the truck into an elevator, the operator must ensure that the elevator is able to bear the total weight of the truck and the goods, the total weight of the operator and other people in the elevator. When entering the elevator, make sure that the goods enter first and then the operator. When the truck and goods enter or leave the elevator, other people must not stay in the elevator.



Be careful !

- The load weight should not exceed the truck's rated load.
- When piling goods, the goods must not be piled too high to avoid goods fall down or truck turn over when handling.
- It is strictly prohibited to use this truck to transport human being.
- No other people should stay around the truck operation area to avoid injuries and deaths when the truck suddenly fails in operation.
- When operating the lever or pushing the truck, one must make sure the hand is put above the lever.



Attention!

- When parking the truck, the forks should be lowered to the minimum height.
- It is not allowed to park the truck on a slope.
- It is not allowed to park the truck in emergency passageway.
- It is not allowed to park the truck in a place blocking traffic or affecting operation.
- It is not allowed to operate the truck in a raining environment.
- When nobody takes care of the truck, please turn off the general power supply.

2. Description

This truck is suitable to operate on indoor hard and smooth ground. It is not allowed to operate the truck for unsuitable applications.

- The ambient air temperature does not exceed $+40^{\circ}\text{C}$ or below -10°C ;
- Hard, flat ground;
- Forbid to use this truck in the flammable and explosive or acid-base and other corrosive environment;
- The loaded Max.gradeability is 3%;

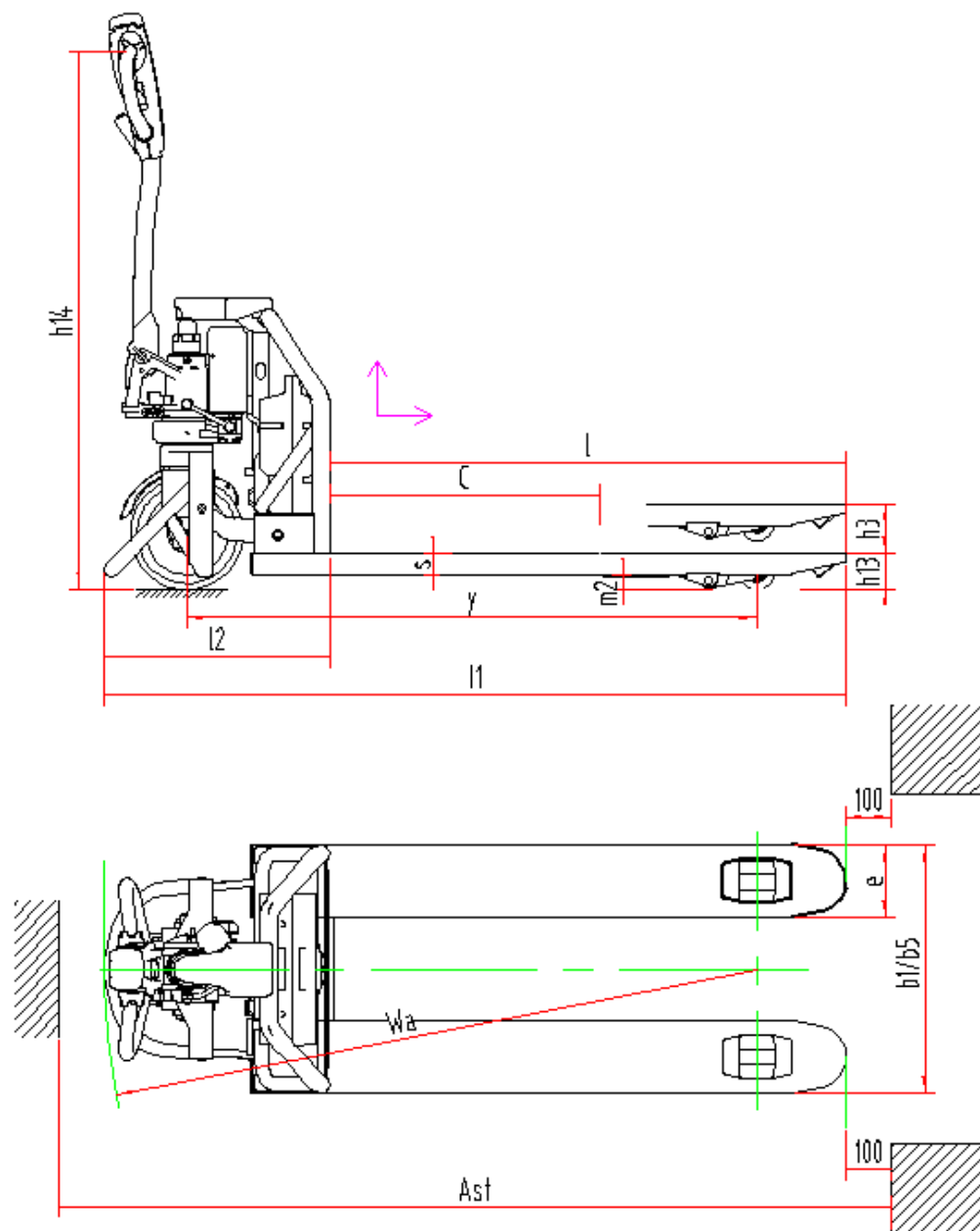


Fig.1

Model		12EPML
Drive type		Electric
Operation type		Walkie
Rated load	Q(kg)	1200
Load center distance	C (mm)	600
Height fork lowered	h_{13} (mm)	80
Thread	Y(mm)	1269/1339
Wheel		PU
Wheel dimension, front	mm	Φ250
Wheel dimension, rear	mm	Φ80
Wheel number, front/rear (x = driving wheel)		1X-2/4
Lift height	h_3 (mm)	110
Min./Max. height of operation handle in the driving position	h_{14} (mm)	635/1200
Overall length	l_1 (mm)	1623/1693
Length of fork face	l_2 (mm)	501
Overall width	b_1 (mm)	550/680
Fork dimension	s/e/l(mm)	45/160/1150(1220)
Fork width	b_5 (mm)	550/685
Wheelbase ground distance	h_1 (mm)	35
Aisle width for pallet 1000x1200 crosswise	A_{st} (mm)	2226/2294
Aisle width for pallet 800x1200 lengthwise	A_{st} (mm)	2095/2132
Turning radius	Wa (mm)	1424/1494
Traveling speed, laden / unladen	Km/h	4.8/5
Max. gradeability, laden/unladen	%	5/20
Driving motor power	KW	0.65
Lifting motor power	KW	0.8
Battery voltage/rated capacity	V/Ah	48/20
Battery type		Lithium
Service weight (with battery)	Kg	135
Traveling brake		electric
Noise level at operator's ear, according to DIN12053	dB(A)	70

3. Operation

Energization

- Connect the interface of lithium battery.

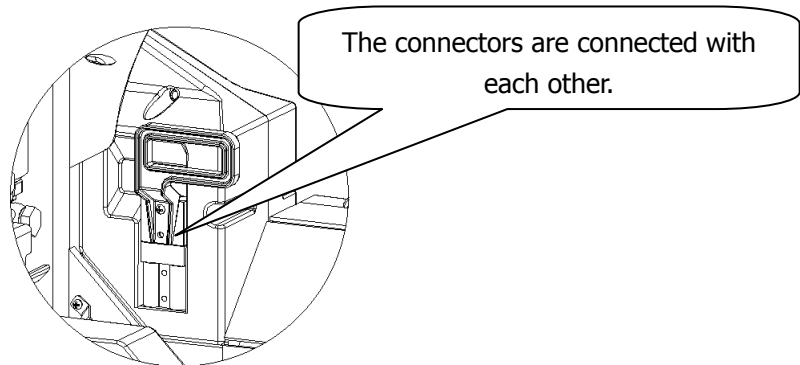


Fig.2

- Turn on the electric switch.

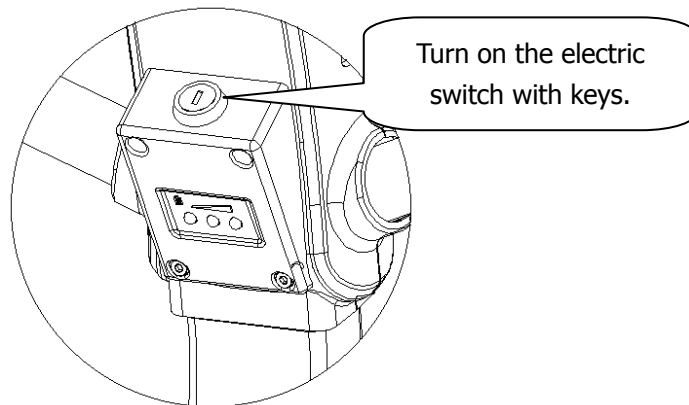


Fig.3

Lifting and lowering

- Lifting: press the lifting button on the handle.
- Lowering: Hold the knob tightly to lower.

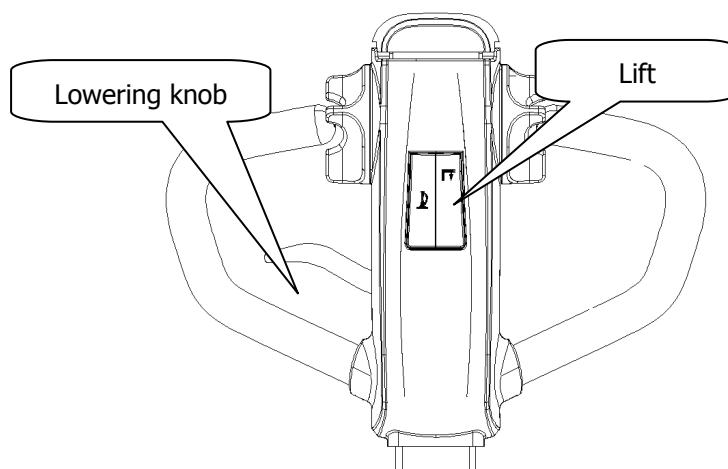


Fig.4

Travelling

- Turn the handle to travelling scope:
A and C is braking;
B is travelling;

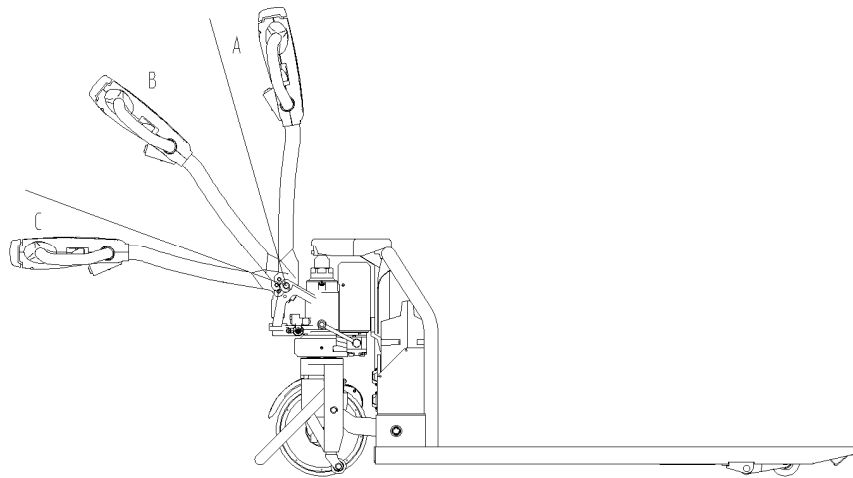


Fig.5

- Rotate the accelerator to start the truck slowly, (For safety, forbid the abrupt acceleration)

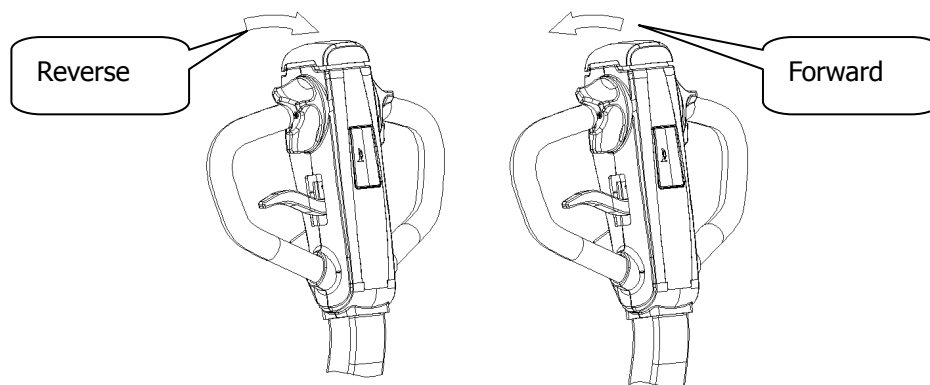


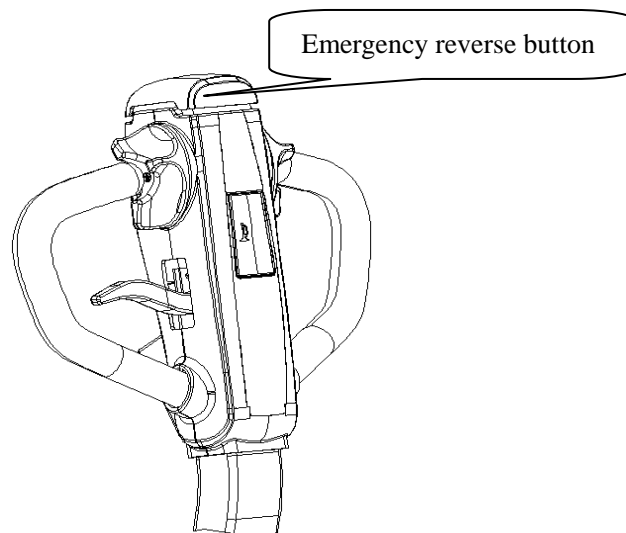
Fig.6

Braking

- Release the accelerator when travelling normally, the truck stop slowly by the regenerative brake of the motor until the brake lock the wheels.
- Turn the handle to A or C quickly when emergency braking, then the brake lock the wheel to achieve the emergency braking.

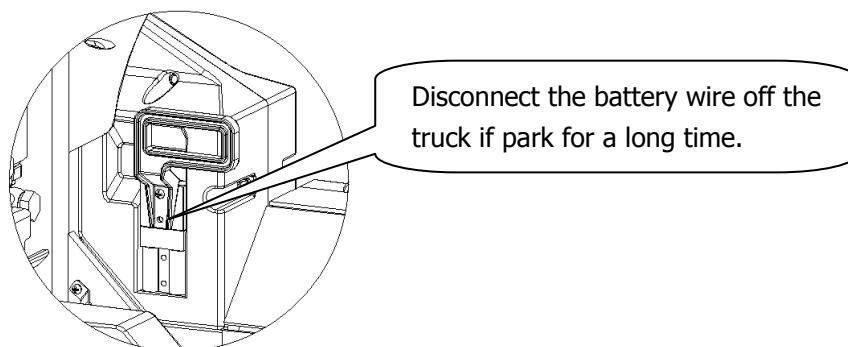
Emergency reversing

- The red button at the end of the handle is the emergency reversing button, the truck will stop immediately and move backwards for a distance when the body touch the emergency reversing button. It is a safety button which avoids the extrusion of the truck to protect the operator from injured when he meets the obstacles.



Parking

- Release Speed button to stop running. the truck will slow down until the brake suction together in the truck .
- Lower the fork to the lowered position .
- Close the electric switch.
- Disconnect the battery wire off the truck if park for a long time.



-

4. Operation, maintenance and charging of the battery

4.1 Battery type and use precautions

5.1.1 Battery type: Lithium battery; battery voltage **48V**; environmental protection battery, no Hg and Cd etc.

5.1.2 Precautions

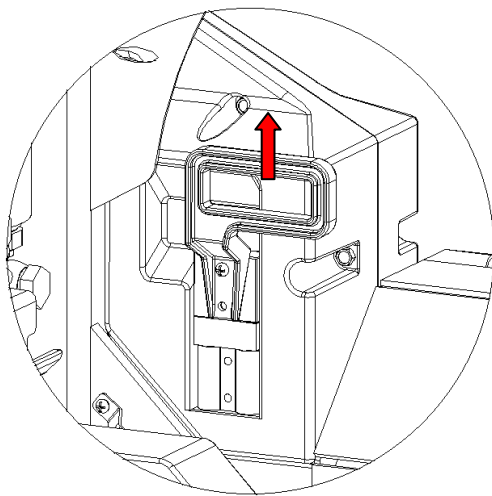
- A) Use ambient temperature of battery is -10 ~ 45
- B) Charge and discharge every 3 months during the battery stored for a long time
- C) Use the battery for the first time before using a new battery, or if it is stored for long periods of time, fully charge the battery before use
- D) Do not short circuit the battery, which may permanently damage the battery
- E) Do not burn or destroy the battery, which may cause toxic gases to release or explode
- F) Do not weld the battery directly
- G) Do not let the battery in an unfavorable environment, such as extreme temperature, deep cycle, or often overcharge / over discharge
- H) If the battery is hot, do not touch until it cools down

- I) When removing the battery , grasp the plug by hand instead of stay wire
- J) After the battery is used, if the battery is hot and recharging it, cool it in a ventilated environment
- K) Do not put the battery in water or seawater
- L) Do not try to separate, squeeze, hit the battery, the battery will heat or fire. Batteries lye is harmful to the skin and eyes, and will damage the clothes
- M) Keep the battery away from the child and contact the doctor immediately if it is found to be swallowed.

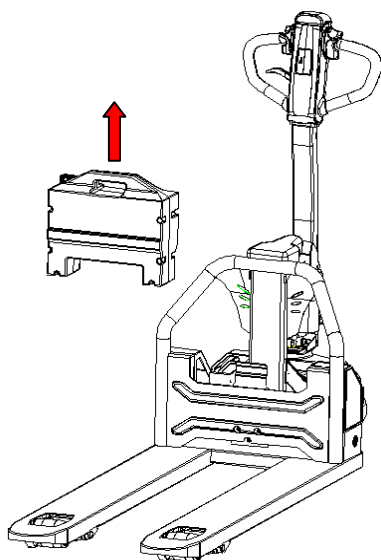
4.2 Quick replacement of the battery

Step I: turn off the electric switch

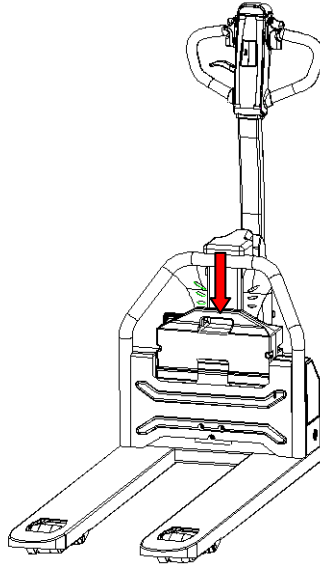
Step II: Pull the puller of the battery connector, unplug the battery connector. (**Note:** must hold the puller when unplug the battery connector, not allow unplug the wire directly)



Step III: hold the battery puller, unplug the battery off the truck.



Step IV: Install the new battery, insert it into the mounting groove.



Step V: insert the battery connector.

4.3 Precautions of battery charging

- Must use the special Li-ion charger of our company: working voltage of charger 48V, Max.charging voltage 54.6V, Charging current 6-7A
- Do not reverse charge the battery
- Stop charging immediately if found the battery hot during charging, recharge after cooling down naturally
- must hold the puller when unplug the battery connector, not allow unplug the wire directly

4.4 Power display

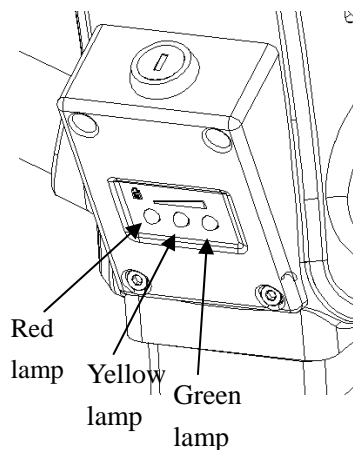
Green lamp always on: 70%-100%

Yellow lamp always on: 40%-70%

Red lamp always on: 10%-40%

Red lamp flashes: Empty

When the red lamp is on, please prepare to drive the truck to charge; red lamp flashes as a warning, prompting the truck is about to stop working, please immediately charge the battery. If continue to use, lithium battery interior will carry out the power disconnect protection, then it will not be able to travel.



5. Maintenance

If the truck is able to operate satisfactorily depends on careful maintenance. When maintenance is neglected, human safety may be endangered and property may be damaged. When the truck is in operation, routine inspection should be conducted frequently and abnormal should be removed in time. Do not operate truck with trouble to ensure safety and prolong the service life of the truck.

Maintenance: The maintenance of the truck is usually divided into three levels, routine maintenance, level 1 maintenance and level 2 maintenance.

Routine maintenance: Once everyday and the main content is to keep the surface clean and examine if the power supply cable is damaged.

Level 1 maintenance: Once every week. The maintenance contents, besides the contents of routine maintenance, should focus on if the operation of the components is normal, if the fastening items are loose, if there is any oil leakage, if there is any abnormal wearing in mechanical components, if there are abnormal temperature rise or sparks in electric equipment, etc. Adjustment and trouble shooting should be conducted if any abnormal situation is discovered.

Level 2 maintenance: It should be conducted periodically and overall inspection should be conducted according to following requirements:

- a. Mechanical maintenance should be conducted every half a year. The main contents are to replace lubricating oil for the transmission gear and bearing of the drive wheel, apply lubricant to various rotating joints, while examining if the fastening items are loose, if the wheels are rotating flexibly, if the fork rises and declines normally. The operation noise of the truck after maintenance should be no greater than 70db.
- b. Maintenance of hydraulic system: Once every 12 months. Examine if the oil cylinders are in normal state, if there is any internal or external leakage and if the hydraulic oil is clean. The hydraulic oil is usually replaced every 12 months. ISO oil standard is applied to hydraulic oil. When the ambient temperature is $-5 \sim 40^{\circ}\text{C}$, HL-N32 is adopted and when the ambient temperature is $-35 \sim -5^{\circ}\text{C}$, HV-N20 low temperature hydraulic oil is used. The waste oil from the replacement should be treated according to the relevant local regulation and law. Examine if the operation of the load limit valve is normal.
- c. Electric equipment maintenance: It should be conducted every three months to examine if the connectors of electric equipments are reliable, if the switches are normal and if the insulation of the electric equipment is in normal condition (The insulation resistance of electric equipment and the truck body should be greater than $0.5\text{M}\Omega$).

6. Common faults and trouble shooting

The table below provides some common failures of the truck in operation and the trouble shooting:

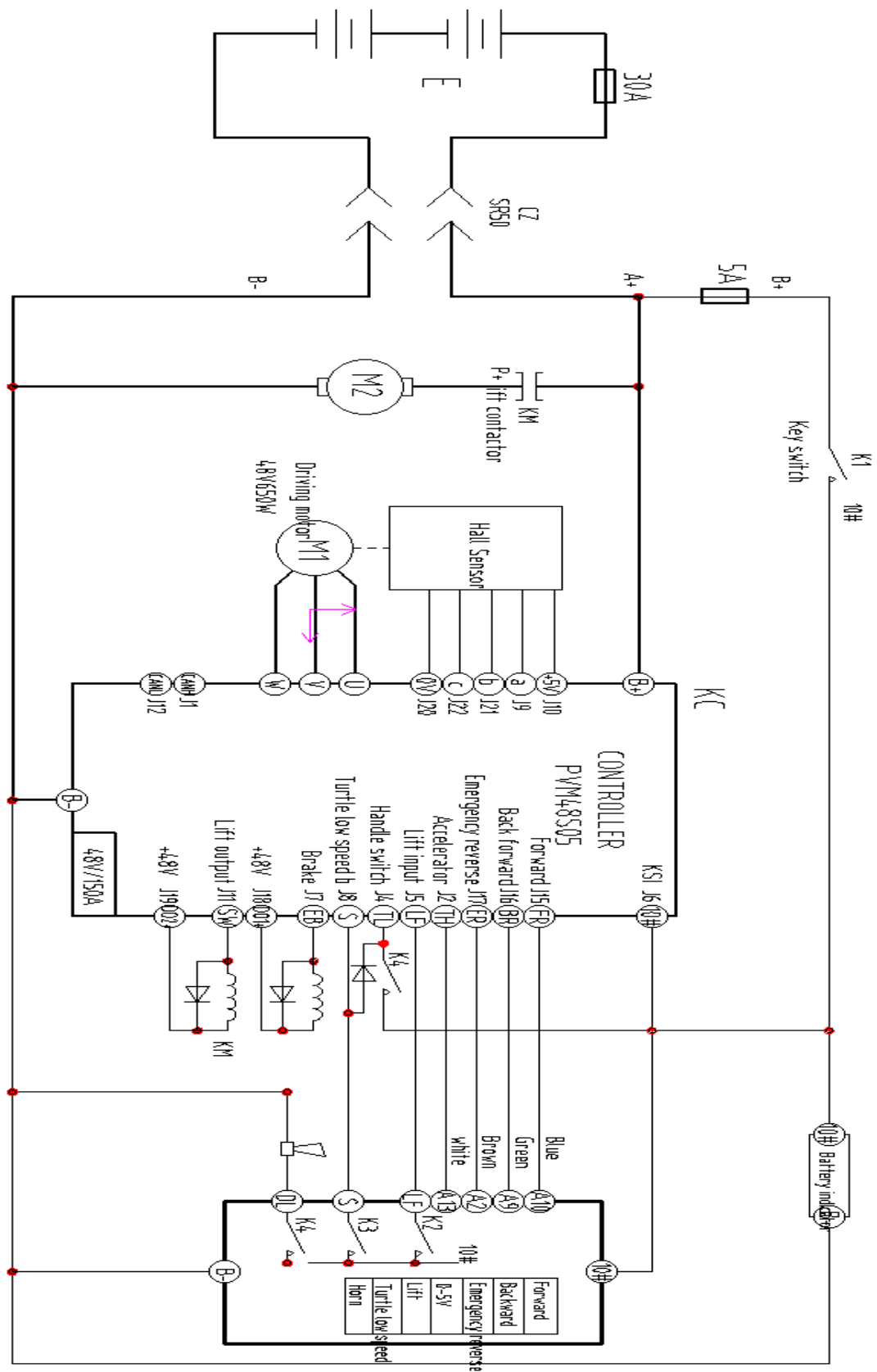
No.	Faults	Analysis of cause	Trouble shooting
1	Hydraulic oil leakage	<ol style="list-style-type: none"> 1. Failed oil seal 2. slight damage or wear on the surface of one or two components 3. Loose connection 	<ol style="list-style-type: none"> 1. Replace the oil seal 2. Replace the damaged components 3. Re-tighten the connection
2	Fork does not lift	<ol style="list-style-type: none"> 1. Too great viscosity of hydraulic oil or hydraulic oil has not been injected. 2. Foreign matters in the oil. 3. The hydraulic power unit is damaged. 	<ol style="list-style-type: none"> 1. Replace hydraulic oil 2. Remove the foreign matter in oil or replace hydraulic oil 3. Replace the hydraulic power unit

3	Fork does not lower	1. Manual lowering valve is not adjusted well;	1. Adjust the position of lowering valve screw;
4	The motor is unable to operate	1. Power supply switch has not been turned on 2. Battery has completely discharged 3. Brake has not been released 4. Burnt fuse	1. Insert key and turn on power supply 2. Charging 3. Examine the stroke switch on the lever if it is pressed because of collision and if the braking switch has been reset. 4. Replace the fuse
5	The charger is unable to charge	Damaged charger	Replace the charger

7. Treatment of abandoned materials

The abandoned batteries and hydraulic oil should not be placed carelessly and must be treated according to the relevant local regulations and laws. Attention must be paid to environmental protection.

8. Electrical schematic diagram



9. Packing list

Packing list of 12EPML Electric pallet truck (Lithium battery)

Consignee:

Ex-work No.:

Contract No.:

Ex-work Date:

No.	Name	Q'ty	Net weight (kg)	Dimension (L×W×H)	Remarks
1	12EPML Electric pallet truck	1			A complete set
2	Accessory box	1			Technical documents, accessories and spare parts.

Note: 1. The following documents are in the file bag:

- | | | |
|---|--|----------|
| ① | Operation manual of 12EPML Electric Pallet truck | 1 volume |
| ② | 12EPML parts catalogue | 1 volume |
| ③ | Qualification certificate | 1 copy |
| ④ | packing list | 1 copy |

2. Accessories and spare parts

No.	Name	Application	Type & specification	Q'ty	Remarks
1	Key to electric switch	Unlock the electric switch		2	
2	Charger	Lithium battery charging		1	
3	Fuse 5A	Electrical System		1	
4	Dust ring	Oil cylinder	DHS40	1	
5	Seal ring	Oil cylinder	UHS40	1	
6	O-ring	Oil cylinder	40 x 3.55	1	
7	O-ring	Oil cylinder	67 x 3.55	1	
8	O-ring	Oil cylinder	46.2 x 2.65	1	
9	Harness	Wiring harness connection	3 x 150	1	
10	Fixed button	Fix the wiring harness	ACC-2-B	1	
11	Screw	Fix the airing harness	M4 X 6	1	