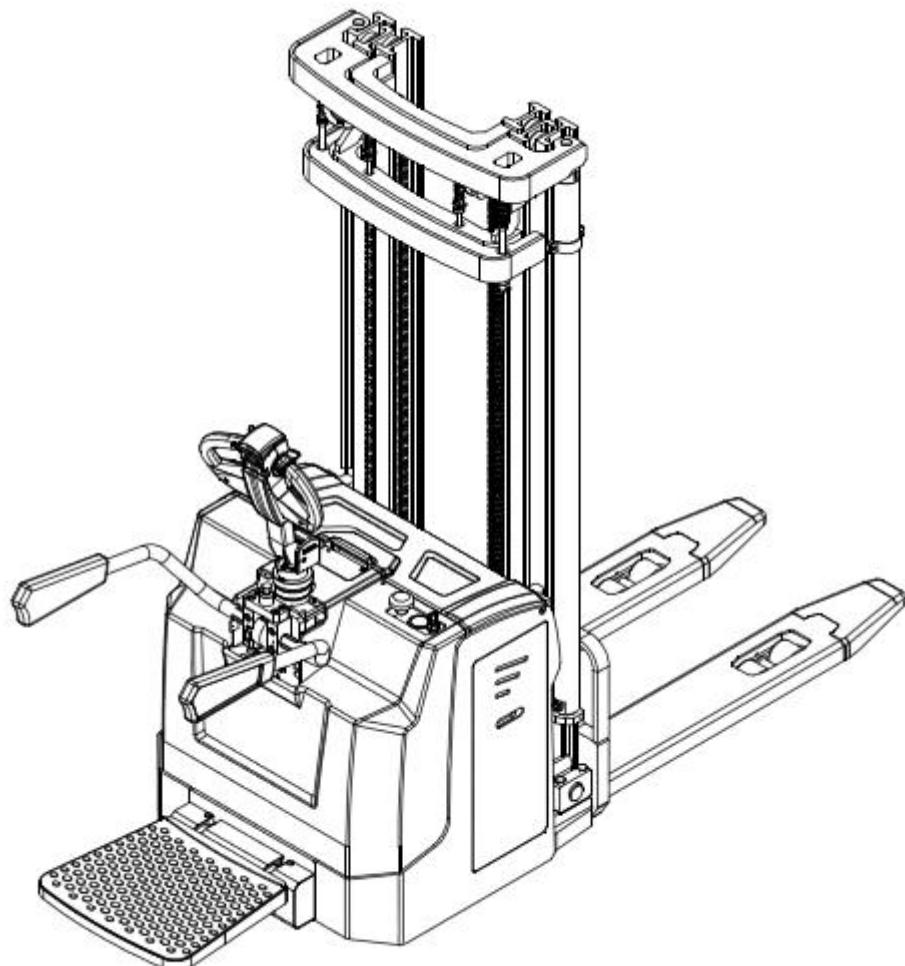




## Maintenance Instructions

### MB Series Electric Pallet Stacker



BANYITONG SCIENCE&TECHNOLOGY DEVELOPING CO.,LTD.

[www.mimaforklift.com](http://www.mimaforklift.com)

## **Foreword**

MB series pallet stacker is a new product developed by our company to meet the needs of the market and with reference to advanced technology at home and abroad. Due to its compact structure, convenient operation and flexible use, it is especially suitable for warehouses, freight yards and supermarkets. And the general factory floor as the loading, unloading, stacking, handling and other operations of the goods.

This manual introduces the basic structure of the main components of the MB series all-electric pallet stacker, the working principle, and the basic knowledge of maintenance and maintenance. It can help the operator to use the forklift reasonably and maximize the performance of the forklift. It is hoped that operators and equipment managers will read carefully before operating the truck.

By carefully reading the original maintenance instructions, the user has the technical knowledge necessary to operate the truck safely. The information contained in the manual is clear and concise. This maintenance manual is written for different types of forklifts. During operation and maintenance, you must pay attention to the specific regulations of the corresponding forklift model.

The company will continue to develop and optimize forklift equipment, so please understand that the company must retain the right to modify the equipment shape, equipment and technology. For this reason, the forklift user must not claim a claim for the specific performance of any forklift equipment from the contents of this instruction manual.

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# **Chapter 1 Safety Rules**

## **1 Overview of security rules**

- 1.1 Before using the pallet stacker every day, check all safety switches and equipment according to the work requirements to ensure that these safety facilities are in good condition.
- 1.2 Check that all warning signs and design parameters on the vehicle are not damaged.
- 1.3 The battery must be securely fastened in the battery compartment.
- 1.4 It is forbidden to use if the pallet stacker is damaged or malfunctions and affects safe use.
- 1.5 Pallet stacking trucks should be carried out by professionals when performing maintenance or adjustments.

## **2 Forklift operation**

For the pallet stacker used in the refrigerating compartment, special manufacture must be carried out.

The pallet stacker is designed and manufactured, and there are certain restrictions on the use occasions:

- 2.1 Where the air contains flammable and explosive dust or gas.
- 2.2 As a tractor for other vehicles.
- 2.3 For transport personnel.

## **3 Operator's responsibility**

- 3.1 After training and approval, the pallet stacking operation can be carried out.
- 3.2 Comply with this manual and relevant local safety regulations and obey the traffic rules.
- 3.3 Hand and foot with oil, it is strictly forbidden to operate the pallet stacker.

## **4 Workplace**

- 4.1 Pallet stackers can only be run on flat, hard surfaces such as concrete or asphalt. Do not work in oily areas to avoid slipping.
- 4.2 Ensure that the ground can withstand the total weight of the pallet stacker, ie the weight of the pallet stacker, the weight of the load and the weight of the operator.

## **5 Driving and guidance during driving**

- 5.1 Do not suddenly brake and turn at high speeds.
- 5.2 Deceleration should be carried out on the slope to keep the cargo at the lowest position. It should be straight up and down on the slope. It is forbidden to turn the head and lift the fork on the slope.
- 5.3 If the road surface is slippery, it should be decelerated to prevent the pallet stacker from idling or

overturning.

5.4 If the line of sight is blocked, you can place the goods behind you and, if necessary, ask others to guide them around to ensure safety.

5.5 Keep a certain safe distance from the vehicles, people and objects ahead. When the speed is over, the horn should be sounded.

5.6 Pallet stackers are strictly prohibited for transporting personnel (excluding pallet stacker operators).

5.7 Before the pallet stacker enters the elevator, ensure that the elevator can withstand all weights.

## **6 Transport goods**

6.1 Only when unloading or forked goods can the fork be lifted and kept away from the surrounding personnel.

6.2 The transported goods shall remain equal in the left and right positions on the forks, which are unstable or unsafe and are not allowed to be transported.

6.3 Special care should be taken when transporting high and heavy cargo. For the transportation of goods of high height, the forklift should be equipped with a shelf.

## **7 Parking precautions**

7.1 After the pallet stacker stops, the fork should be placed at the lowest point and the forklift should be stopped.

7.2 Pallet stackers are not allowed to park on slopes.

7.3 The pallet stacker should be parked at the designated location.

7.4 Pallet stackers are not allowed to be parked at the emergency exit.

7.5 Do not stop the pallet stacker in a place that hinders work.

7.6 The pallet stacker must be powered off after parking.

## **8 Battery loading and unloading**

8.1 Care should be taken when handling the battery and its plugs. Read the instructions carefully. See the battery section for details.

8.2 Wear protective glasses when replacing or charging the battery.

## **9 Maintenance and repair**

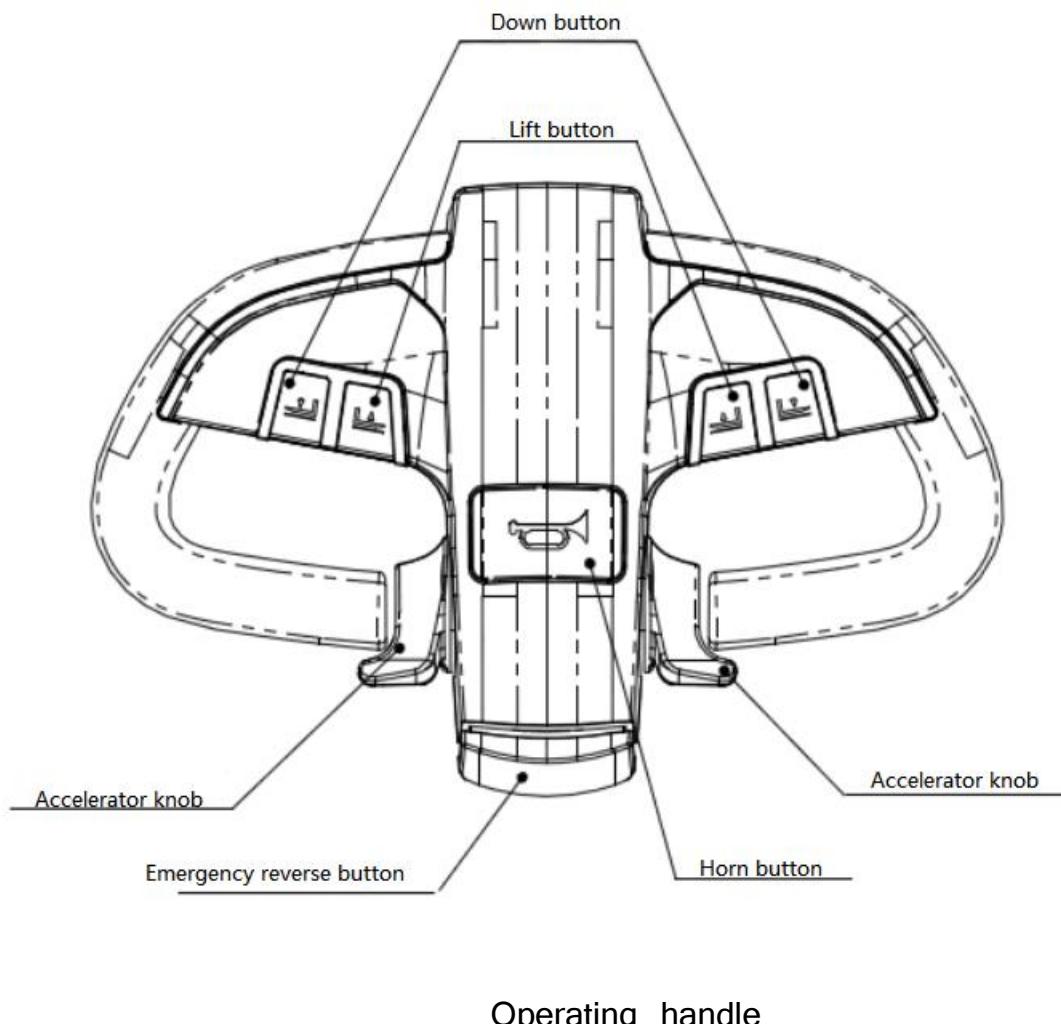
Learning to maintain can prevent mistakes and accidents, please see the chapter on maintenance.

All replacement parts and spare parts shall be approved by the company. It is strictly forbidden to repair or modify the pallet stacker to safety or function.

## Chapter 2 Warnings, Nameplates and Symbols

The pallet stacker has the following signs: (Please read the sign on the car carefully for details. See the illustration)

- 1 Rise and fall control buttons
- 2 Direction selection and speed control knob
- 3 Speaker signal
- 4 Pallet stacker nameplate
- 5 Emergency stop button



## **Chapter 3 Introduction Of Pallet Stacker**

The pallet stacker is driven by electric energy, and the switch on the handle of the control arm controls the walking, and the steering arm controls the steering.

The pallet stacker uses a 24V electronic system with a set of integrated circuit controllers to adjust its speed steplessly. To ensure a more stable speed and acceleration during driving. The fork is lifted by an advanced electric hydraulic pump, and the fork is lifted and lowered by the lifting and lowering buttons.

If the truck is to work in a cold, humid environment, it should be filled with low temperature oil to suit the environment.

### **1 Pallet stacker for occasions**

Pallet stackers are suitable for stacking goods with pallets.

### **2 pallet stacker disabled occasion**

2.1 Locations that can cause fire or explosion, such as oil areas.

2.2 Used as a tractor for other vehicles.

2.3 Used to transport personnel.

2.4 Work on grass or in the sand.

### **3 Pallet stacking parameters**

3.1 MBF01 (single cylinder single door frame / single cylinder double door frame) series basic parameters

Models	<b>MB10F01</b>	<b>MB15F01</b>	<b>MB20F01</b>
Rated load kg	1000	1500	2000
Lift height mm	1600/3000	1600/3000	1600/3000
Overall length (pedal expansion/retraction) mm	2518/2056		
Overall width mm	850	850	850
Min ground height mm	90	90	90
Turning radius (pedal expansion/retraction)mm	2125/1655	2125/1655	2125/1655
Travel speed (full load / no load) km/h	5.0/6.0	5.0/6.0	5.0/6.0

Gradeability (Full load / no load) %	8/10	8/10	8/10
Service weight (inc.battery) kg	985/1085	1000/1100	1015/1115
Steering angle (°)	180	180	180
Tires (front /rear)	PU	PU	PU
Battery voltage/capacity	24V 210Ah	24V 210Ah	24V 210Ah
Drive motor (power / type)	1.5kw/AC	1.5kw/AC	1.5kw/AC
Lifting motor (power / type)	2.0kw/DC	2.0kw/DC	2.0kw/DC

### 3.2 MB series (double cylinder duplex mast) basic parameters

Models	MB1530	MB2030	
Rated load kg	1500	2000	
Lift height mm	3000	3000	
Free lift height mm	60	60	
Overall length (pedal expansion/retraction) mm	2573/2033	2573/2033	
Overall height (mast lowered /extend) mm	2025/3490	2025/3490	
Service weight (inc.battery) kg	1270	1300	
Battery voltage/capacity	24V 210Ah	24V 210Ah	
Lift motor (power / type)	2.0kw/DC	2.0kw/DC	

Other parameters refer to MBF01 series

### 3.3 MB series (triplex mast) basic parameters

Models	MB1045S	MB1545S	MB2045S
Rated load kg	1000	4500	2000
Lift height mm	4500	4500	4500
Overall length (pedal expansion/retraction) mm	2533/2073	2533/2073	2533/2073
Overall height (mast lowered /extend) mm	2121/5097	2121/5097	2121/5097
Service weight (inc.battery) kg	1420	1450	1480
Battery voltage/capacity	24V 280Ah	24V 280Ah	24V 280Ah

Lift motor (power / type)	3.0kw/DC	3.0kw/DC	3.0kw/DC
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Other parameters refer to MBF01 series

The relevant parameters of the model are marked on the nameplate of the forklift.

#### 4 Main components

##### 4.1 Joystick

During the driving process, the forklift is controlled to walk and turn by the joystick, and the maximum steering angle of the joystick is 180°. The brake function is in the vicinity of the uppermost or lowermost end of the joystick, and automatically brakes when the power is turned off.

##### 4.2 Pallet Stacker Nameplate

The nameplate is attached with the model number; rated lifting weight; maximum lifting height; self-weight; factory number.

##### 4.3 Cover

Removable, with good visibility when use.

##### 4.4 Meter

The power meter displays the power value during normal operation, reflecting whether the battery power meets the requirements.

##### 4.5 Hydraulic control

The up and down buttons on the body panel control the rise and fall functions.

##### 4.6 Hydraulic device

It consists of pumping station, piping system and lifting cylinder.

##### 4.7 Power socket assembly

When the battery is charging, pull out the socket with the handle and insert it with the plug on the charger.

##### 4.8 Drive with brake

It is equipped with an electromagnetic energizing brake, a traveling motor, a gear box and a driving wheel. A steering bearing is arranged between the driving motor and the gear box.

##### 4.9 Speed control device

Normal operation at 24V, the speed is adjusted by electronic control.

##### 4.10 Universal support wheel

Two universal wheel supports are supported to ensure lateral stability of the vehicle body.

#### 4.12 Battery

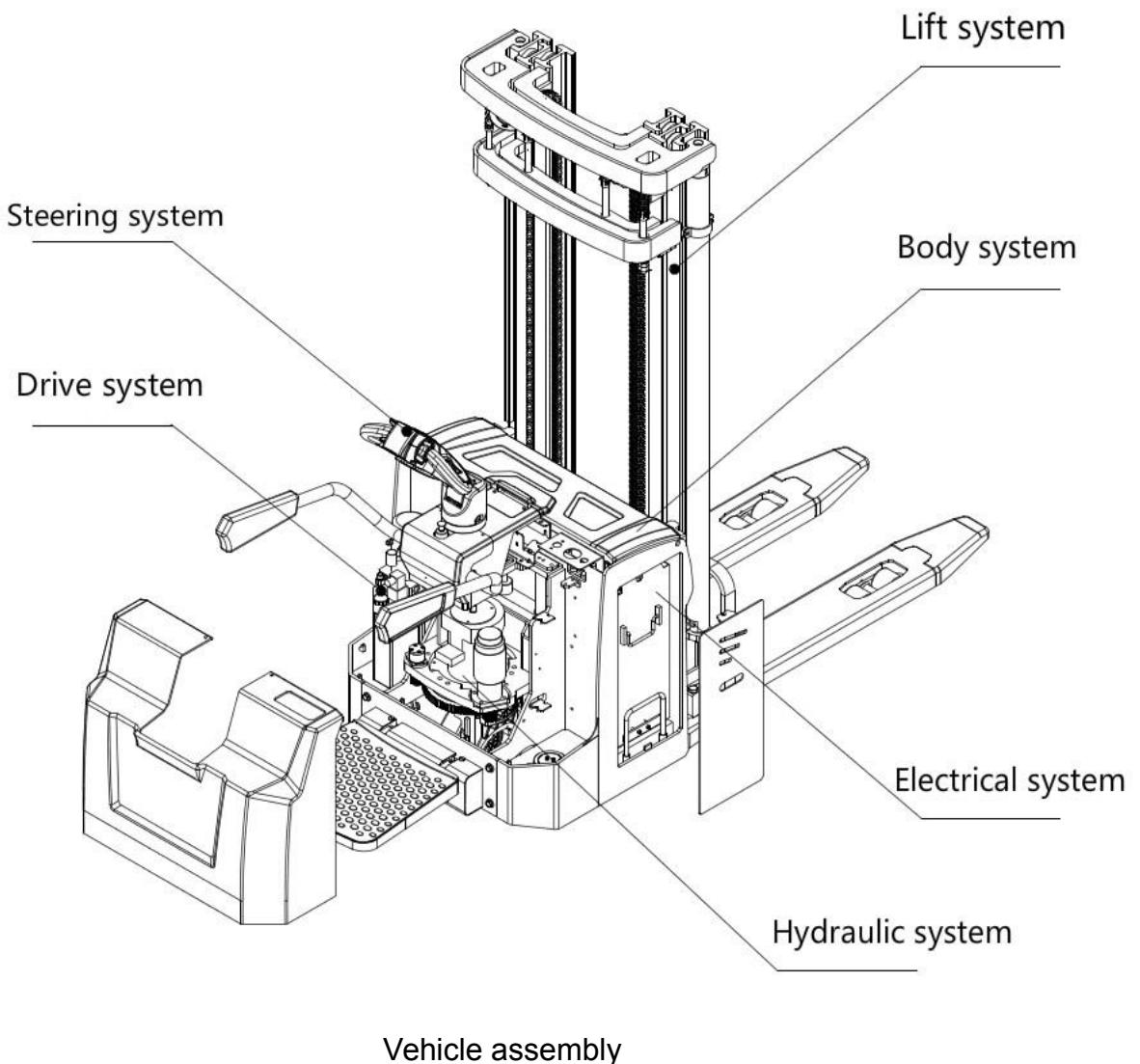
The battery is fixed in the battery box with a voltage of 24V and a standard capacity of 210/280Ah.

#### 4.13 Pedal

Removable, only for pallet stacker operators to stand up.

#### 4.14 Armrest

Armrest is for driver to lean on, strictly prohibit sitting on armrest when drive



## **Chapter 4 Control device**

### **1. Lifting control**

Turn on the key switch, operate the handle button according to the instruction direction, you can lift or lower the forks.

### **2. Driving direction and speed control**

Rotate the switch on the handle head to control driving direction, You may regulate the speed and acceleration with it.

### **3. Anti-accident safety switch**

The operator operates facing to the forks and goods, when you turn the forklift backwards by mistake, and you have no enough time to avoid your body, the operating arm is interfered with your body, the control switch is closed, the forklift brakes promptly. Before continuing running, you must resume the selection switch of the direction at the middle position.

### **4. Horn**

The horn can ring when you press it.

### **5. Battery connector assembly**

Pull out the socket and turn off the power in the following situations.

5.1 Accident

5.2 Under the urgent and dangerous situation

5.3 Welding

### **Be careful!**

While you weld around the forklift, the batteries are easy to be damaged. If the weld current scurries into the batteries, they will be destroyed, it is necessary to pull out the socket at this moment.

When charging, pull out the socket and link the charger plug with the movable socket After finishing charging, resume the outlet to where it is.

### **6. Key switch**

This switch is used to control the circuit on or off.

### **7. Electricity meter**

As the key switch is turned on, the voltmeter shows the voltage value of the group of the battery promptly, while working normally(except climbing on the slope),the voltage is lower than 21V that indicates that the battery amount is insufficient, charge or change another group sufficient batteries as soon as possible, then continue to use it.

## **Chapter 5 Drive**

### **1. Start**

Please go on in proper order as follows, otherwise stacker can not run:

- 1.1 Make sure that the outlet is inserted firmly.
- 1.2 Turn the switch of the key to the on position.
- 1.3 Make sure that the group of the batteries has enough electricity.

### **Be careful!**

Operating the forklift at a low electricity for a long time will damage the life-span of the batteries. You can't start the forklift before finishing charging

# Operation handle should be in correct position

# Choose the driving direction correctly, control the speed in the ideal state, accelerate it to the

### **Warning!**

Don't operate the forklift with serious function defect and danger. Operators should check the following safety functions at first before working every day:

- ※The function of the horn is normal.
- ※The operation function is normal
- ※The function of braking is normal.
- ※The hydraulic function is normal.

### **2. Brake.**

2.1 When the controlling arm moves to the supreme position upwards, the forklift truck will turn off the power brake .

2.2 When the direction switch is in normal running and turns to the opposite direction, it can carry out the function of electric brake. Controlling the running speed can control the brake force of the driving motor.

2.3 Parking the forklift

Make the forklift stop by loosening the driving direction switch and resuming it to the empty position.

### **3. Steering**

3.1 Steering is controlled by the operating arm, steering angle can be at the left and right direction in the range of 90 degrees.

3.2 If the forklift meets barriers, it's forbidden to pass by force, you can detour the barriers by rotating the operating arm to move ahead or go backwards.

#### **4.Warning!**

Do not allow the wheels skid.

If there's greasy dirt on the operator's hands or shoes, it is easy to fail operation, and make the forklift out of control, so you should wipe your hands or the shoes before driving.

#### **5. Parking**

5.1Loosen the direction switch.

5.2Loosen the operating arm, it will return to the braking position automatically.

5.3Lower the forks to the lowest position, make the hydraulic system have no pressure.

5.4Make the key switch in the off position.

#### **Be careful!**

Do not allow to drive without authorization.

If you leave, please take the key away with you.

## Chapter 6 Transportation of Goods

- 1 The weight of goods should be in the range of the forklift allowed.
- 2 Reducing the speed while turning around
- 3 You should pay attention to safety while transporting irregular objects, when turning round, please pay attention to reserving space.
- 4 If goods affect sight line, please drive in the opposite way
- 5 If your obverse sight is obstructed, you can ask others to guide the direction.
- 6 You should slow down the speed when going up and down the slope. It's forbidden to turn back

### Warning!

The forklift has danger of overturning if you turn round on the slope.

When the forklift goes down the slope, the distance of brake of the forklift is lengthened, and braking time is increased. So you should lower down the speed to reduce the time of brake. Don't go up and down on the slope by force.

7 Before the forklift enters a lift, you should make sure the lift can bear the whole weight ( forklift weight, goods weight, operator weight). The forklift should enter first and leave at last.

### Warning!

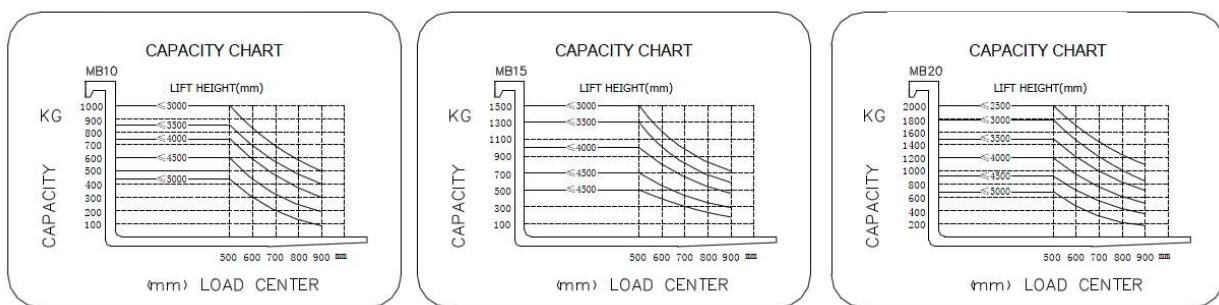
Before starting up the lift, you should know it's loading capacity clearly to avoid an accident.

8 Before passing a bridge, you should reduce the speed and keep a certain distance from the platform edges.

### Dangerous!

Check the loading capacity of the bridge board in advance, verify its security in order to avoid overturning and falling.

### Pay attention:Load capacity must according to following capacity chart



## Chapter 7 Battery and Charger

### 1. Replace the battery

You can only change the batteries that are equal to the weight of the original batteries, the weight of batteries influence the stability and the braking function of the forklift.

#### **Warning!**

Don't change the weight and size of the battery at random, otherwise it will influence the center of gravity of the forklift. The battery weight is too weight or too light, it will influence the stability and brake ability of the forklift, the weight must keep the same with the value on the forklift sign.

1.1 The order removing the battery with insufficient power

1.1.1 Pull out the plug

1.1.2 Open the case cover of the batteries

1.1.3 Cut off the connection between the plug and the cable line.

1.1.4 Take out the group of batteries from the forklift with a proper hook of the battery case.

1.2 The order of installing the batteries:

1.2.1 Use the hanging device to hang the battery group and put it into the battery case of the forklift.

1.2.2 Connect the plug with the cable line.

1.2.3 Close the case cover of the batteries.

1.2.4 The key switch is off.

1.2.5 Insert the outlet.

### 2 Charging

2.1 Forbid smoking and using the flame while charging.

You can choose the automatic charger to charge, pay attention to not charging insufficiently or overcharge so as not to damage the batteries.

The most electric current of the charger:

Battery (Ah)	Charger (A)
210/280	30/40

#### **Dangerous!**

The attendant vitriol in the electrolyte of the batteries has corrosion. If it spatters to skin, you should wash it with water and soap as soon as possible. If it enters eyes, please go to see the doctor and wash your eyes with clear water. While checking the batteries, you should wear protective glasses and gloves.

2.2 Preparation for charging after the forklift is used. The batteries must be charged as soon as possible, and they can't exceed 24 hours.

2.2.1 Make the key switch to the off position after parking, pull out the key .

2.2.2 Open the case cover of the batteries, guarantee it ventilates above the batteries.

2.2.3 Pull out the outlet, connect the plug of the batteries ( movable plug ) with the charger plug.

2.2.4 Open the cover of single battery in order to ventilate.

2.2.5 Turn on the charger to charge.

### **Warning!**

While charging, especially in a closed area, you should keep a good ventilation environment. Oxygen and hydrogen will emerge in the course of charging, so if it meets flame or electric spark, it can cause explosion.

So you should shut off the charge power before pulling out the outlet.

### **2.2.6 During charge**

Charging method and using maintenance should consult the instruction of the batteries. Usually you can judge whether electricity is sufficient with the following methods.

※ The proportion of the battery electrolyte keeps basic stability for over 2-3hours continuously.

※ Produce strong bubble on the surface of the electrolyte in the batteries, the electrolyte turns from milky to limpid.

The above-mentioned situations indicate that the electric power of the batteries is sufficient.

### **2.2.7 After Charge**

※ Shut off the power and the charger.

※ Pull out the charger plug from the battery plug.

※ Insert the battery outlet into the battery plug.

※ Close battery cover

The following is the contrast form between the temperature of the batteries with sufficient power and the proportion of electrolyte.

Temperature°C	Proportion g/cm3
-15	1.31
0	1.30
+15	1.29
+30	1.28
+45	1.27

If it discords with the proportion of the form, you should adjust it by feeding acid liquid or distilled water.

### **3 Battery maintenance**

- (1) The battery fluid plug and breathable cover should be kept clean, removed or opened when charging, and should be installed or closed after charging. The battery surface, connecting wires and screws should be kept clean and dry. If there is sulphuric acid, wipe off the lye with cotton gauze and be careful not to allow lye to enter the battery.
- (2) After the charging is completed, check the battery level and add distilled water in time to maintain the liquid level. Do not add dilute sulfuric acid under normal conditions.
- (3) After the storage battery is used, it should be charged in time, and the storage time should not exceed 24 hours.
- (4) Good ventilation should be maintained during charging, and fireworks are strictly prohibited.
- (5) When the following conditions occur, the battery needs to be charged evenly.
  - a. Normally used batteries (equalize charge every 3 months).
  - b. Lay unused battery for a long time.
  - c. There is a "backward battery" in the battery pack (backward battery refers to a battery whose voltage value is lower than other batteries or has been overhauled during charge and discharge). At this time, the equalization charge is performed only for the backward battery.
- (6) Balanced charging method.
  - a. First perform normal charging.
  - b. Stop charging for 1 hour until fully charged and recharge with 0.25I5 for 1 hour.  
Press b to repeat several times until the charger is turned on. There will be bubbles in the battery.
- (7) When the battery is not in use, one month after the expiration of the storage period, a supplementary charge should be made according to the normal charging method.
- (8) The storage battery should be protected from direct sunlight. The distance from the heat source should not be less than 2M.
- (9) Avoid contact with any liquids and harmful substances. Any metal impurities must not fall into the battery.

### **4 Maintenance of electromagnetic brake**

- 4.1 Use it in a humid environment for a long time. To prevent rust, rust may affect the use of the suction surface. Please remove the rust.
- 4.2 The friction surface must not be directly touched by hand, and there must be no oil pollution. Otherwise, the maximum torque cannot be reached. Please clean and wipe the clean friction surface.

### **4. Electromagnetic brake maintenance**

- 4.1 Use it for a long time in an environment with high humidity. To prevent rust, rust will affect the use on the suction surface. Please remove the rust.

4.2 The friction surface should not be in direct contact with the hand, and there should be no oil stains.

Otherwise, the maximum torque cannot be reached. Please clean and wipe the clean friction surface.

4.3 When the temperature in the environment is high, please install it in a place with ventilation and ventilation. Generally, the ambient temperature is -10 °C~40 °C.

4.4 When the initial torque value is low, please use the running value for a period of time before the torque value will stabilize.

4.5 Please check regularly and check the items regularly: Is the switch action normal? Is there any noise? Is there abnormal fever? Is there any foreign matter, oil stains, etc. in the friction part and the swivel part? Is the clearance at the friction part appropriate? Is the voltage normal?

## Chapter 8 Troubleshooting

### 1. Controller troubleshooting

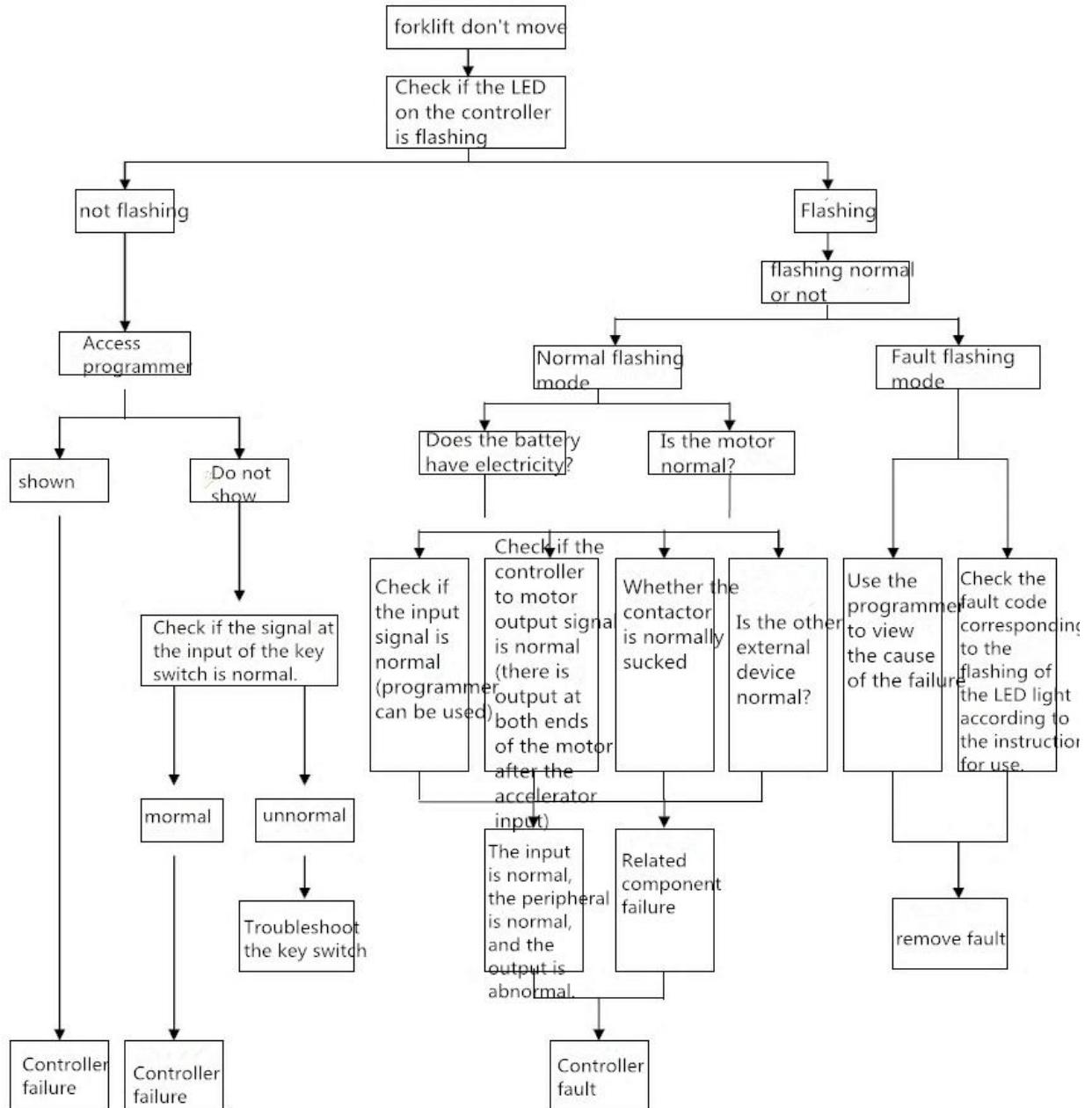
This product controller is equipped with an LED display light, which displays different information through a combination of different color lights.

LED display information	
display	information
LED not flashing	The controller power is not turned on; Or the vehicle battery is exhausted; Or other serious failures.
Yellow LED light flashing	The controller is working properly
Yellow and red LED lights long light	The controller is in the state where the program is loaded
Red LED light is long light	The watchdog is invalid or the software is not installed. Restart the key switch and restart. Reinstall the software if needed
Red and yellow LEDs flash alternately	The controller found a fault and the fault display code consisted of 2 digits. The red light flashing number indicates whether the code is the first digit or the second digit. The number of yellow flashes represents the specific digit of the corresponding digit.

In the event of a fault, if it is confirmed that it is not a wiring error or a mechanical failure of the

vehicle, try restarting with the vehicle key switch. If the fault persists, turn off the key switch and check that the 35-pin connector is properly connected or dirty. After repairing and cleaning, reconnect and try again.

When the vehicle electrical failure occurs, the fault flag on the electronic control flashes for reference for diagnosis and maintenance. The following table is troubleshooting.



Customers can use the above methods to troubleshoot, please read the code after reading the LED light, please contact our after-sales service.

## 2. Electric steering fault diagnosis

The pure electric forklift steering system is a steering system with high precision, sensitive work, energy saving, environmental protection and high performance. The correct use and maintenance can guarantee the performance of the steering system and improve the service life of the steering system. After the fault occurs, find the corresponding fault content according to the fault code displayed by the controller, and then check whether the corresponding components are tightened, whether the harness is intact, whether the terminal is dropped or loose, resulting in poor contact, and whether the components are damaged.

The controller is equipped with LED display light, to show different information according to LED light change.

LED display information instructions	
Display	Information
LED light is not on	controller power supply is not connected battery is no power other serious fault
Red LED light normal flash	controller is in normal working
Red LED light is always on	controller is under program loading status
Different red lights alternating continuous flash	Controller find the fault, fault display code consist of two digits. After long time interval, red light flash times instruction code is the first digit, after short interval, red light flash times instruction code is the second digit.

Customers can eliminate faults according to above methods, please contact our after-sales service based LED light code

## **Chapter 9 Maintenance**

After the forklift has operated for 500 hours, routine maintenance is performed on the forklift. The efficiency, lifespan, and safety of the forklift depend on daily maintenance.

For forklift maintenance, replacement of spare parts should be provided by the company to ensure quality. It is advisable to contact the product agent or the company's after-sales service department. In order to make your forklift safer and more economical.

### **1. Safety rules for maintenance work**

Only after system learning can maintenance work be carried out.

- (1) Keep the maintenance site clean and hygienic.
- (2) Do not bring any loose items or valuables on the body during maintenance.

Attention!

When repairing the forklift electrical system, if the metal comes into contact with the energized electronic components, it may cause a short circuit or burn. So, take off your watch, earrings or other accessories.

- (3) Before repairing the forklift, unplug the power outlet and disconnect the power supply.
- (4) Close the key switch of the truck before opening the left and right covers or electrical systems.
- (5) Before checking the hydraulic system, lower the fork and release the system pressure.
- (6) When checking the oil leakage condition of the body, wipe it with paper or cardboard, and do not touch it directly with your hands. To avoid burns.
- (7) Please note that the oil temperature in the transmission or hydraulic system may be high. Cool the forklift first, then replace the gear oil or hydraulic oil to prevent the oil from burning and causing high oil temperature.
- (8) The hydraulic system should be filled with new clean hydraulic oil that meets the requirements.

Attention!

If the hydraulic oil is not clean, it will affect the precision hydraulic components, so that the entire hydraulic system capacity is reduced or even collapsed.

If different brands of hydraulic oil are used, damage to the hydraulic components will also affect the system capacity. Therefore, when adding or replacing hydraulic fluid, pay attention to the use of a unified grade.

- (9) Observe the relevant laws and regulations, protect the environment, store and discharge the oil according to regulations, and do not discharge it to the sewer.
- (10) Car body welding, to disconnect the battery power. Because welding current may enter the battery during welding, to avoid this kind of situation, please cut off the battery.
- (11) When working under a forklift, the forklift is bracketed.

caveat!

Without proper support, the forklift will tip over and injure people. If the forklift does not have lifting equipment or support support, it is prohibited to work under the forklift.

## **2. Maintenance work that users can complete**

### 2.1 Routine maintenance and security checks.

- (1) It is the operator's responsibility to carry out daily maintenance and inspection of the forklift.
- (2) Forklifts do not carry out routine maintenance, which will affect the safety and reliability of the forklifts and can easily lead to serious accidents.
- (3) Check for problems or find faults. Repair and stop using them immediately.

### 2.2 The maintenance work completed within 1 day, 1 week and 1 month indicated in the maintenance table can be completed.

Part No	Part name	Content
1	Operate controller	Good or not
2	Safety switch	Good or not
3	Horn	Good or not
4	Steering	Good or not
5	Hydraulic device	Good or not
6	Meter	Good or not
7	Hydraulic system	Oil level and leak oil or not
8	Drive device	Noise and leak oil
9	Clutch	Good or not
10	Transmission	Good or not
11	Wheel	Damage, remove oil, metal debris
12	Frame	Damage, metal debris
13	Battery	Electrolyte
14	Fork	Bend or crack
15	Lift device	Damage, remove oil
16	Hydraulic cylinder	Damage, remove oil

(See Section 4 Maintenance Table)

2.3 Maintain the other maintenance sections given in the table. This can only be done by our maintenance personnel or our approved repair organization.

### **3. Cleaning pallet stacker**

Regular cleaning every week is very important to ensure its reliability. Please pay attention to remove the power socket before cleaning to avoid short circuit and damage to the electrical system.

#### **3.2 External Cleaning**

3.2.1 Remove attachments from the wheels daily to maintain flexibility.

3.2.2 After cleaning lubricating oil shall be filled according to the lubricating parts specified in the table,lubricating parts for forklift to be lubricated .

3.3 Clean electrical components

Use compressed air to blow clean motor dust and line dust.

#### **Attention**

Electrical components should not be flushed with high pressure flushing devices, do not wipe with a wet cloth.

Do not damage electrical components on the circuit board . To keep electrical components in position and avoid short circuit .

#### **4 .Maintenance table**

Part No.	Running interval	1day	1week	1months	3months	6months	12months	36months
1	Body system							
1.1	Check cover plate(Left. Right)				★			
1.2	Check battery box fixture				★			
1.3	Check the frame for cracks				★			

1.4	Check that the body is securely				★		
2	Electrical machinery				★		
2.1	Check for loose joints			★			
2.2	Clean the motor			★			
2.3	Check installation bolts for firmness			★			
2.4	Check for abnormal bearing noise			★			
3	Drive system						
3.1	Check for leak				★		
3.2	Check for oil level			★			
3.3	Check for noise				★		
3.4	Oil change						★
4	The part of wheel						
4.1	Remove cords and debris from wheels	★					
4.2	Check drive wear and bolts			★			
4.3	Check whether the universal wheel and axle are Flexible and tight				★		
4.4	Check the wear condition of Universal wheel				★		
4.5	Check whether the support wheel can rotate and whether the joints is tight					★	

4.6	Check the wear of supporting wheels			★			
4.7	Remove and lubricate wheel body bearings				★		
5	Brake parts				★		
5.1	Clean brake			★			
5.2	Check the wear condition of brake friction disc			★			
5.3	Check brake condition under loose brake condition		★				
6	Electric controller board						
6.1	Cleaning and Installation inspection			★			
6.2	Secure tight cable connector			★			
6.3	Check the contactor contacts				★		
6.4	Check the action of contactor				★		
7	Storage battery						
7.1	Check the level of electrolyte (the level should be 10-15mm above the plate)	★					

7.2	Check whether the connection between the stacker and battery is tight		★				
7.3	Check each battery and its insulation sheath		★				
7.4	Check electrolyte specific gravity and temperature			★			
7.5	Clean accumulator	★					
8	Hydraulic System						
8.1	Check pipes and oints for leaks					★	
8.2	Check for line wear					★	
8.3	Check fuel tank for oil leakage					★	
8.4	Check the amount of oil					★	
8.5	Oil change						★
9	Oil cylinder						
9.1	Check the oil leak					★	
9.2	Check installation					★	
10	Control Handle						
10.1	Check the installation of fastening					★	
10.2	Check the brake switch				★		
10.3	Check whether the fastening screw falls					★	

10.4	Check the function of the safety switch					★		
10.5	Check and adjust damping spring					★		

## 5.Lubrication parts table

Part No.	Lubrication	Interval time (h)			Types of lubricating oil and grease
		500	1000	3000	
1	Wheel bearing (including steering)		L		A
2	Hydraulic system	H	O		B
3	Driving gearbox	H		O	C
4	Lifting chain	L			D
5	Lifting system bearing	L			G

L= lubricating      H= inspect      O= oil change

## 6.Lubricating Grease

Grease Category		Specification		Applicable parts
		-20℃~0℃	0℃~40℃	
A	Lubricating grease	3#Drop point of lithium base grease170		Bearings and bushing
B	Hydraulic oil	L-HV 32 Arctic hydraulic fluids	L-HM 46 Antiwear hydraulic oil	Hydraulic system
C	Transmission oil	70W/75	85W/90	Gear case

		(abroad SAE75W)	(abroad SAE80W/90)	
D	Lubricating oil	CC15W (low temperature SAE10W)	CC30 (normal temperature SAE20W)	Chains and pipelines
G	Lubricating grease	3#Drop point of lithium base grease170		Lifting system bearing

## Chapter 10 Transport and Storage Pallet Stacker

### 1. Traction and transport of defective pallet stackers

1.1 When towing or towing the pallet stacker with a rope , the towed pallet stacker must be steered by a driver to release the brakes .

1.2 When the brake function of the pallet stacker is intact,pull the pallet stacker by pulling the control handle to the operating position and ask others to help push the stacker (the pushing part is at the fork rack) to send the pallet stacker to the destination or the maintenance point of our company for repair.

1.3 If the drive wheel of the pallet stacker fails ,the pallet stacker can be towed by traveller or tractor.

#### Attention

The deicing wheel of pallet stacker must be lifted off the ground, otherwise the wheel and motor will be badly damaged.

1.4 If the pallet stacker ectromagnetic brake fails and cannot hold the brake , the pallet stacker will move with the terrain after it is parked . At this time ,wedge blocks must be placed on the wheel in an appropriate way to prevent movement .

### 2. Pallet stacker storage

If the pallet stacker needs to be stored for a long time, please take the following measures:

#### 2.1 Storage battery

2.1.1 Recharge the battery ,and then maintain it according to the daily maintenance method.

2.1.2 Charge maintenance and check electrolyte level every 3 month.

## **2.2 Hydraulic system**

Replace the hydraulic fluid in the hydraulic system when the pallet stacker has been stored for more than one year. Please refer to the maintenance list and lubrication part list.

## **2.3 Driving system**

When the storage time exceed one week, the drive wheel should be fixed firmly and can be supported to prevent it from moving ,also, unload the cargo.

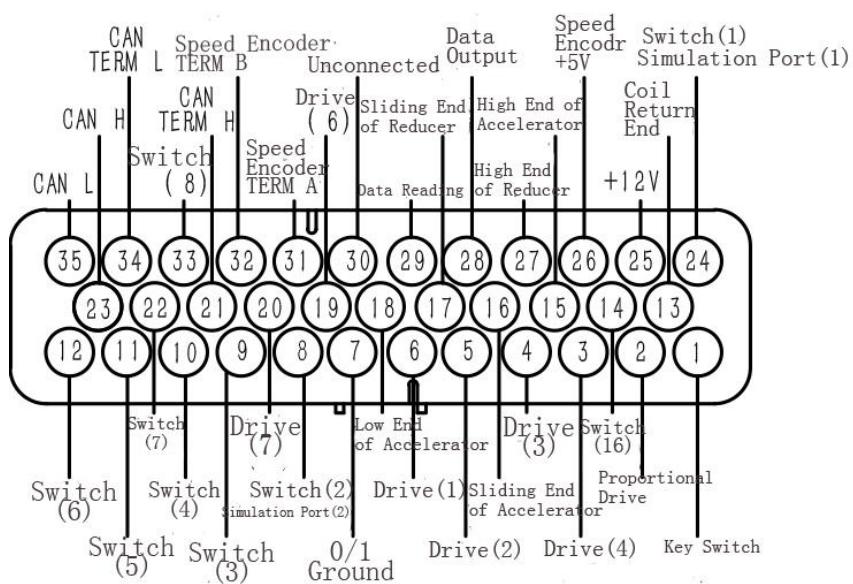
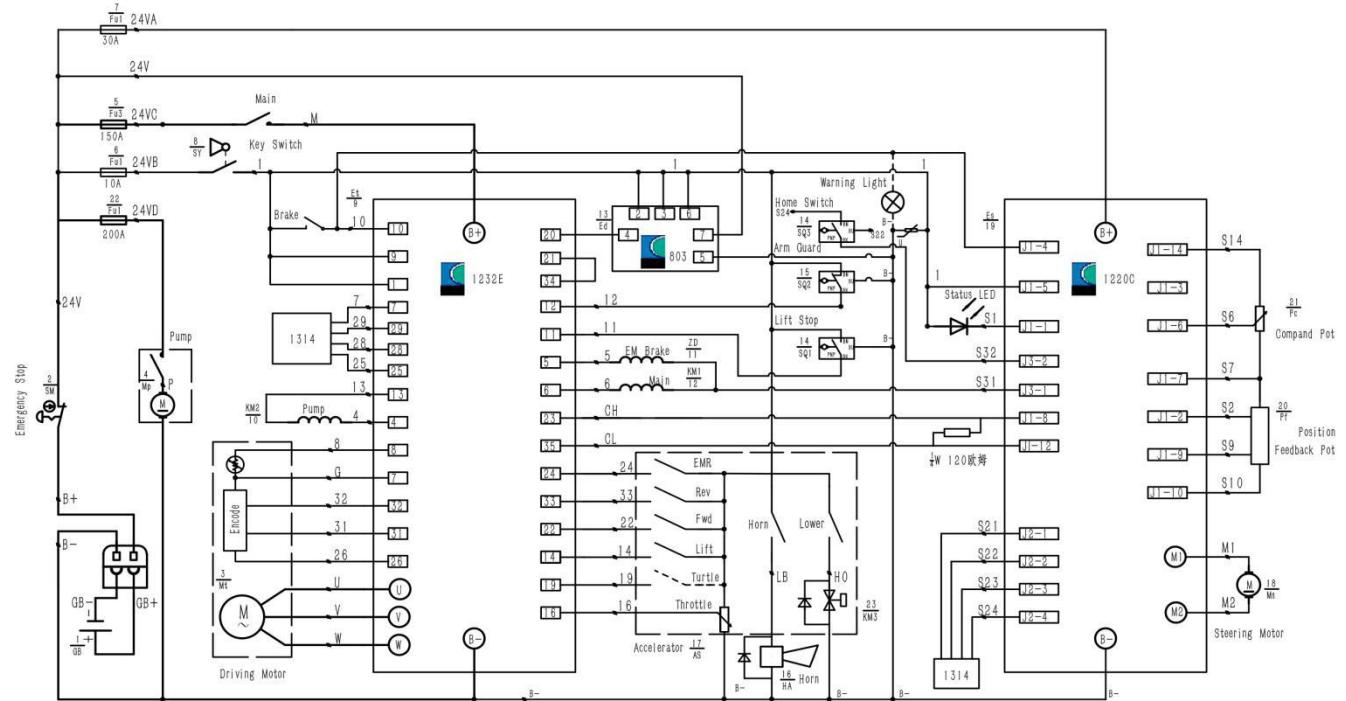
## **3. Precautions for re-use of pallet stacker after storage**

3.1 When storage for a period of time,please check the use function and safety of the pallet stacker like routine maintenance and safety inspection before re-use.

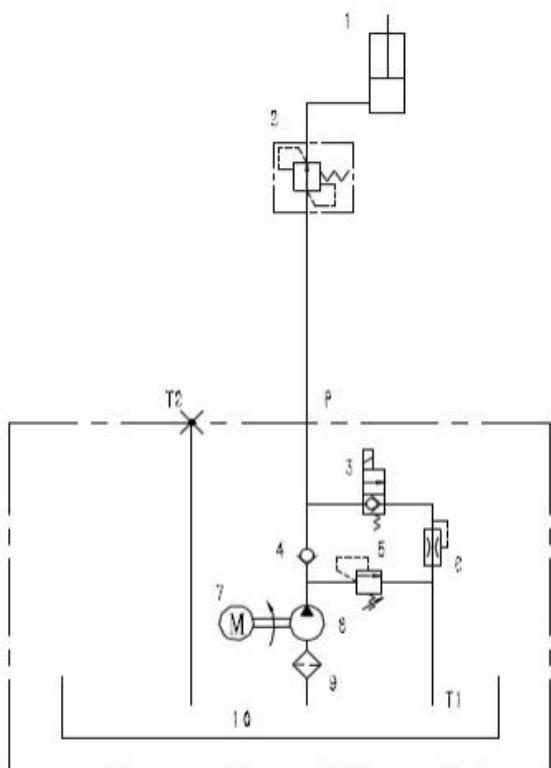
3.2 When the storage time exceed 3 months , prevent maintenance can be carried out according to the requirements of this manual (at intervals) of 500 hours.

# Chapter 11 Schematic

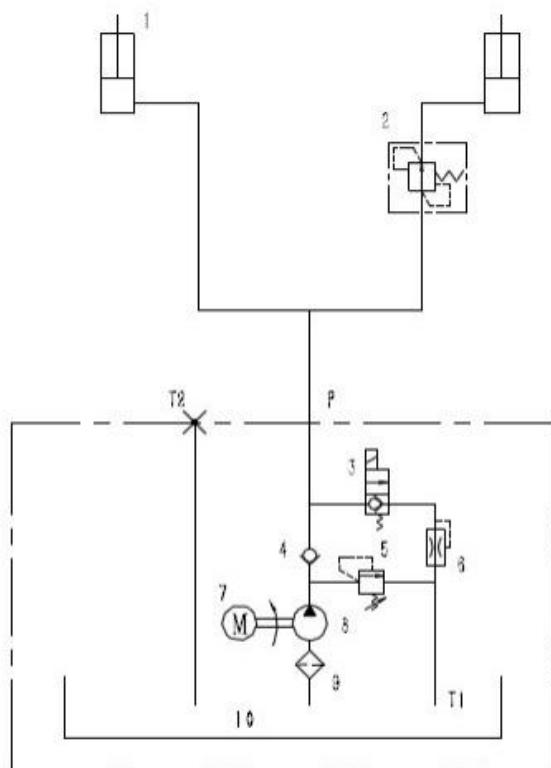
## 1. Electrical schematic diagram



## 2.Hydraulic schematic



MBF01 series Hydraulic Schematic Diagram



MB series Hydraulic Schematic Diagram

### Name of the parts shown above:

- 1、Lifting jack      2、Stop valve      3、Electromagnetic unloading valve
- 4、Check valve      5、Safety valve      6、Throttle valve      7、Electrical motor      8、Gear pump
- 9、Filter element      10、Hydraulic fluid tank