

# GAZELLE®

## **G2539**

### Semi Electric Stacker User Manual



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## **Preface**

Dear customers:

In order to make you operate the product correctly and safely, please read the instruction carefully before using it, and keep it properly so as to consult it at any time.

The operator of the forklift need be skilled, and the operator has responsibility to know about functions and safety guide of the forklift in detail. If you have doubt in the course of use, please contact our company.

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# Chapter 1 Safety Regulation

The safety regulation is summed up as following:

- ※ Please check all safety switches、equipment in advance every day according to the requirement before using the forklift, so as to ensure these safety devices normal.
- ※ Make sure all the precautions and design parameter on the forklift are not destroyed.
- ※ The batteries must be fixed safely in the battery case.
- ※ It's forbidden to use the forklift when it is damaged or out of order and cause unsafe use.
- ※ When maintaining or adjusting the forklift, only professionals can do that.

## 1. Operating the forklift

In the range of rated height, the forklift can go up and down freely. When the forklift is used in the place of cold storage, it must be made specially. When the forklift is in design and manufacture, it has certain restriction for using occasions:

- ※ Air with inflammable and explosive dust or gas.
- ※ As the tractor of other trucks.
- ※ Transport or lift persons.

## 2. Responsibility of operators:

- ※ People who have been trained and approved can operate the forklift.
- ※ Obey the instruction and local relevant security rules, regulations and traffic rules.
- ※ It's forbidden to operate the forklift when there's oil on your hands and feet.

## 3. Workplace

- ※ The forklift can only run on hard and flat roads, such as concrete or pitch roads. Don't work in the greasy dirt area so as not to skid.
- ※ Make sure the ground can bear the total weight of the forklift, that is the forklift weight, loading weight and the operator's weight.

## 4. Driving and guiding in the course of transportation

- ※ Don't brake and turn suddenly under the condition of driving at high speed.
- ※ Slow down the speed on the slope, keep goods in minimum position, running should be straight up and down on the slope. It's forbidden to turn back on it.
- ※ If the road surface skids, the operator should slow down the speed, in order to prevent the forklift from spinning or overturning.
- ※ Besides loading and unloading goods, the forks should not exceed 200mm high from the ground during driving. Don't lift the goods at the same time.
- ※ If sight is obstructed, please ask others to guide, so as to ensure the security.
- ※ Keep a safe distance with the vehicle, persons, objects in the front.
- ※ Ring the horn while you overtake.
- ※ It's forbidden to transport persons by the forklift.
- ※ Make sure the lift can bear all the weight before the forklift enters the lift.

## 5. Loading and unloading goods

- ※ Only at the time of loading and unloading, the forks can just be lifted and keep a certain distance with people around. It's forbidden to lift or lower the forks and guarantee the forks don't exceed 200mm from the ground while driving.
- ※ Goods loaded and unloaded should keep equal at the forks. It's not allowed to transport if it is unstable or

unsafe.

※ Loading and unloading goods can only be done in the range of the max. loading weight and loading center that the forklift allows and adjust the symmetric position of the forks according to the size of goods. Please see the load curve in details.

※ If you lift goods, it's forbidden to touch the mast to avoid harming.

※ On loading and unloading the too high and overweight goods, the operator should be very careful. Loading too high goods, you should provide a protective shelf on the forklift.

6. Parking precaution:

※ After the forklift stops completely, the forks should be put down to the minimum position, and brake the forklift.

※ It's forbidden to park the forklift on the slope.

※ The forklift should be parked at the appointed place.

※ It's forbidden to park the forklift at the urgent exit.

※ The forklift mustn't be parked at the place to hinder work.

※ Please turn off the power after park the forklift;

### **7. Loading and unloading the batteries**

※ You should be careful while loading and unloading the batteries and the plug, please read the instruction carefully at first. See the chapter of the batteries for details.

※ On the chapter of changing or charging the batteries, the operator should wear labor protective glasses.

### **8. Maintenance**

Maintenance can prevent fault and accident from occurring. Please see the chapter about maintenance for details. All spare parts that are changed should be approved by our company. It's forbidden strictly that maintaining or reequipping the forklift which can influence security or the function of using.

## **Chapter 2   Precaution, Nameplate and Mark**

The forklift has the following marks:

(Please read the signs on the forklift about relevant content)

1. Lifting and lowering the hydraulic handle
2. Control switch of driving direction and speed
3. Horn sign
4. Safety sign
5. Load curve sign
6. Holding spot

## **Chapter 3 Forklift Introduction**

The forklift drives with electric power, and walking is controlled by the switch on then operating handle, the operating arm controls steering.

The Max Load capacity of ELES-EC is 1000kg;

The forklift adopts 24V electronic system, and adjust its speed steplessly by a set of integrated circuit controller to ensure steady speed and acceleration in the course of driving. The forks rise by the advanced electric hydraulic pump, lifting and lowering the forks by lifting and lowering button on the operating handle.

If the forklift works in the cold and moist environment, it should be equipped with low-temperature oil in order to adapt to the environment.

The forklift is suitable for loading and unloading and transporting goods on a pallet.

## **2. Forbidden occasion of the forklift.**

It can't be used in the following situations:

- ※The places can cause fire or explosion, such as oil districts.
- ※The forklift is used as the tractor of other trucks.
- ※It's used for transporting or lifting and lowering people.
- ※It works on the meadow or the sand ground.

## **3. Forklift parameter**

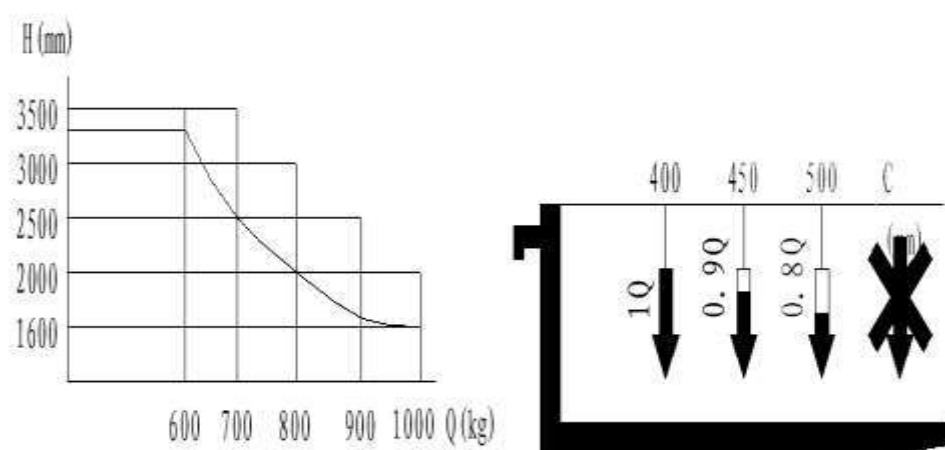
The following form is about the relevant parameters of the forklift.

### **. Suitable occasion of the forklift**

<b>Model</b>	<b>Company</b>	<b>G2539</b>
Driving mode		Electric
Rated load	(kg)	1000/1500
Load center	(mm)	600
Lifting height	(mm)	1600/2000/2500/3000
Ground height	(mm)	85
Fork width	(mm)	550/680
Fork length	(mm)	1150
Fork thickness	(mm)	55
Overall length	(mm)	1840
Full width	(mm)	820
Static height	(mm)	2080/1580/1850/2080
Maximum height	(mm)	2080/2580/3100/3580
Turning radius	(mm)	1505
Driving speed	Km/h	3~5
Lifting speed	m/s	0.1~0.15
Descending speed	m/s	0.11~0.12
Gradient	%	5-7
Wheel material		PU
Driving wheel	mm	φ 210*70
Load-bearing wheel	mm	Φ 80*93
Balance wheel	mm	φ 130*55
Walking motor	Kw	DC0.75
Hoisting motor	Kw	DC1.6
Voltage	V	24
Capacity / battery type	ah	70/12v (X2)
Brake		Electromagnetic brake
Controller		CURTIS 1212P

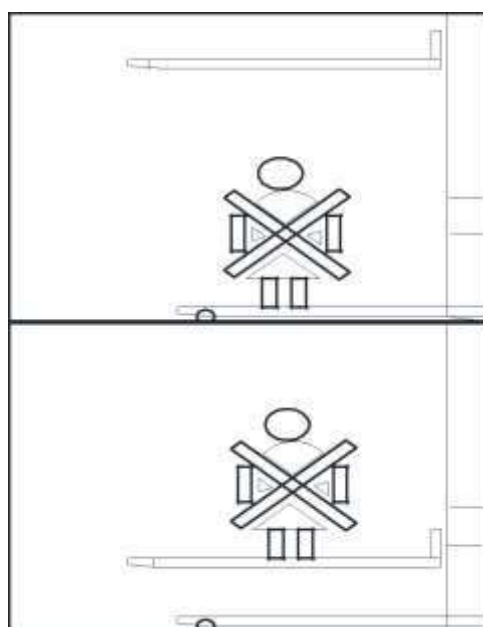
※The relevant parameters of the forklift are marked on the plate of the forklift.

#### 4、Capacity Chart

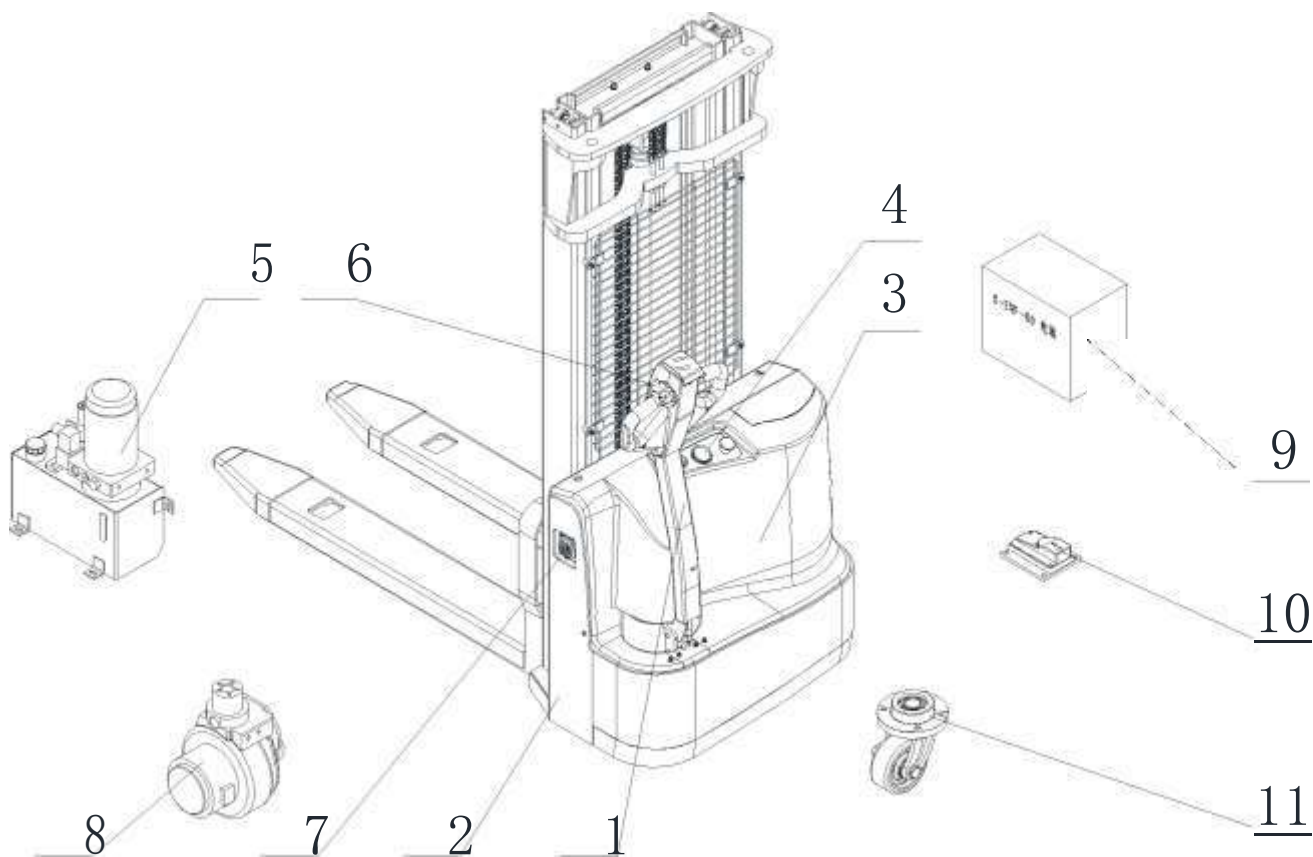


#### 5. Safety Mark

The following picture is a safety sign plate, pointing out that people are forbidden to stand on or down the forks to prevent an accident from occurring.



## Chapter 4 Major Components



1. Operating arm.

In the course of driving, walking and steering is controlled by the operating arm, the operating arm can steer maximum 180 degrees left and right. When the operating arm is on the top, it will brake automatically.

## 2. Nameplate of the forklift

The nameplate encloses the model of the forklift, rated load weight, the most lifting height, the weight, fully free lifting height and the serial number when it is out of our company.

### 3. Case cover

It can be knocked down and has a good visibility at the time of using.

## 4. Instrument

The voltmeter, at the time of working normally, shows voltage value, reflects whether the batteries are sufficient.

## 5. Hydraulic control

The lifting and lowering button on the handle assembly controls lifting and lowering function.



## **6. Control button**

The panel of operating arm have turn-knob to adjust the travel speed and button to control the fork lift and down though electric controller;

## **7. Socket assembly**

When the batteries are charging, pull out the socket and insert the plug of the charger into it.

## **8. Driving equipment with the barker**

Enclose electromagnetic of losing electric barker, walking motor, the gearbox and driving motor, steering bearing is equipped between the driving motor and the gearbox.

## **9. Batteries**

The battery is fixed in the battery case, with two\*12V maintenance-free batteries connection in series;

## **10. Electric controller system;**

Famous brand controller to control the drive motor and lift instrument etc;

## **11. Supporting Caster**

Caster to support the forklift' stability;

# **Chapter 5 Controlling 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. The control of driving direction and speed.**

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

## **3. The safety switch which prevents unexpected situations**

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 in bouncing position.

## **4. Horn**

The horn can ring when you press it.

## **5. Socket assembly**

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

※Accident.

※Under the urgent and dangerous situation

※Welding.

Attention:

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 turn off power;

## **6. Key switch**

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

### **7. Voltmeter**

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 6      Driving**

### **1、 Start**

Please go on in proper order as follows, otherwise the forklift does 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.

### **ATTENTION !**

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.

- 1.4 Leave the supreme position downwards.
- 1.5 Choose the driving direction correctly, control the speed in the ideal state, accelerate it to the ideal speed slowly.

### **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. Braking.**

- 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.
- 2.4 The max noise level can't more than 80db(A),test method as JB/T3300;

### **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.

### **WARNING!**

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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.

#### **4. Parking**

4.1 Loosen the direction switch.

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

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

4.4 Make the key switch in the off position.

#### **ATTENTION!**

Do not allow to drive without authorization.

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

## **Chapter 7 Transportation**

### **1、Transportation**

1.1The weight of goods should be in the range of the forklift allowed.

1.2Loading and unloading goods, you should make sure it stable and safe. You should be careful to the goods beyond the height and length.

1.3Loading and unloading the goods beyond the height, the forklift truck should assemble with a suitable protective shelf.

1.4When the forklift truck is running, you should lower the forks to the lowest position.

1.5Reducing the speed while turning around

1.6You should pay attention to safety while transporting irregular objects, when turning round, please pay attention to reserving space.

1.7If your obverse sight is obstructed, you can ask others to guide the direction.

1.8You should slow down the speed when going up and down the slope. It's forbidden to turn back on the slope.

#### **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.

1.10Before 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.

1.11Before passing a bridge, you should reduce the speed and keep a certain distance from the platform edges.

#### **Dangerous!**

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

## **2. Loading goods**

- 2.1 You should reduce the speed and park in front of the shelf.
- 2.2 Lift the forks to the necessary position.
- 2.3 Drive the forklift ahead slowly so that the forks insert the bottom of the board.
- 2.4 Lift the forks to make goods rise to a certain height.
- 2.5 Back off the forklift slowly so that goods break away from the shelf.
- 2.6 Lower goods to the minimum position, drive and leave carefully.
- 2.7 Run at higher speed after starting up slowly.

### **Dangerous!**

Don't lift goods while you are driving the forklift so as not to overturn.

## **3. Unloading goods**

- 3.1 Reduce the speed and park in front of the shelf.
- 3.2 Lift the forks to the necessary position.
- 3.3 Drive the forklift forward slowly to make goods pitch in the shelf correctly.
- 3.4 Lower down the forks, so that goods are unloaded.
- 3.5 Back off the forklift slowly.
- 3.6 Lower down the forks to the minimum position, leave carefully.
- 3.7 Run at higher speed after starting up slowly.

### **Dangerous!**

Don't lift or lower the forks while you are driving the forklift so as not to make goods fall.

# **Chapter 8 Battery, Motor**

Check that the battery voltage in the forklift is 24V.

## **1. Changing the batteries**

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 electric power:**

- (1) Pull out the plug
- (2) Open the case cover of the batteries
- (3) Cut off the connection between the plug and the cable line.
- (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) Use the hanging device to hang the battery group and put it into the battery case of the forklift.
  - (2) Connect the plug with the cable line.
  - (3) Assembly the outer parts;
  - (4) Key switch on the “off” position;

## **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 (V/A)
80	24/10

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

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

- (1) Make the key switch to the off position after parking, pull out the key .
- (2) Connect the charger' plug with battery' socket;
- (3) Turn on the charger to charging.

### **Warning!**

While charging, especially in a closed area, you should keep a good ventilation environment.

### 2.3 In the term of charging.

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

- (1) The proportion of the battery electrolyte keeps basic stability for over 2-3 hours continuously.
- (2) the charger display “full power”;

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

### 2.4 After being charged sufficiently

- (1) Shut off the power and the charger.
- (2) Pull out the charger plug from the battery plug.

## **3、Maintenance of Battery**

- (1) In order to ensure the life of the battery, the battery inputs should be fully charged before using, poorly charged battery can not be used.
- (2) the battery to avoid over-charge and over-discharge. Overcharge and over discharge will seriously affect battery performance and life.
- (3) the battery after use, should be promptly charged storage period should not exceed 24

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hours.

- (4) The charging should have good ventilation;
- (5) the battery needs equalization charging with following cases:
  - a. normal use of the battery (every three months to do a balancing charge).
  - b. Stored battery unused for a long period of time.
  - c. battery pack with disabled battery (disabled battery voltage is lower than the other battery or battery due to troubleshooting) charge-discharge process, equalizing charging disabled battery alone.
- (8) equalizing charge approach.
  - a. first normal charge
    - b. Stop charging 1 hour after “full power” state ,then use charging 1 hour with  $0.05C_5$  ( $C_5$  is battery rated capacity).
    - c. Repeat the method “B” several times until charger switch on and batteries have boiling bubbles.
- (9) When the battery stored with one month, please charge it with normal charging method one time.
- (10) The battery need to avoid the sunshine directly, keep away the heat source don't less than 2m.
- (11) To avoid contact with any liquids and hazardous substances, any metal impurities can't drop into the batteries;

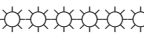
#### **4. Motor Maintenance**

- (1) Maintain the motor should at power-off.
- (2) Use 250V megger to measure motor' cold insulation resistance each 3 months,the value of resistance should more than  $0.5\text{ M}\Omega$ , if not, please do drying treatment;
- (3) check the line is correct and firmed;
- (4) check the commutator is clean or no, Brush can slide smoothly;
- (5) Check all fastener tightened or not?
- (6) check the wear pattern of brush each three month, to decide change the brush or not;
- (7) Do a total maintenance for motor per year;

## Chapter 9 Fault Diagnosis

(Programmer fault diagnosis list and Status display Fault Diagnosis)

LED Display code	Programmer Display	Fault Phenomenon	Fault Reason
1,2	HW FAILSAFE	Hardware failure protection fault	1.controller failure
1,3	M-FAULT	M-output short circuit	1.M-output short circuit to ground 2.direction contactor don't closing 3.direction contactor' closing speed too slow;
1,4	SRO	SRO fault	1.key switch 、 brake and direction input sequence are not correct; 2.SRO type selection is wrong; 3.brake and direction switch are open circuit; 4.sequential delayed time is too short;
2,1	THROTTLE FAULT 1	Accelerator fault	1.the input line of accelerator is opencircuit; 2.The input line of accelerator is toground or B+ short circuit; 3.potentiometer' fault 4.chose the wrong accelerator type;
2,2	BB WIRING CHECK	Emergency reversing wiring fault	1.BB wiring is open circuit; 2.BB detection line is open circuit;
2,3	HPD	HPD sequence fault	1.KSI, brake and accelerator input sequence are wrong; 2.chose the wrong HPD type; 3.The adjusting of accelerator' potentionmeter is wrong;
2, 4	THROTTLE FAULT 2	Low-end of potentionmeter disconnection or short circuit	1.Low-end' wiring of accelerator is open circuit; 2.low-end of accelerator is short circuit; 3.chose the wront accelerator type;
3, 1	CONT DRVR OC	Driver output overcurrent	1.coil of reversing contactor is short circuit; 2.shunt field is short circuit;
3, 2	DIR CONT WELDED	Reversing contactor blocking	1.contact closed;
3, 4	MISSING ONTACTOR	Can't find contactor	1.coil of reversing contactor is opencircuit; 2.coil of reversing contactor is lost; 3.shunt field is open circuit; 4.the line which connect with reversingcontactor or shunt field are open circuit;
4, 1	LOW BATTERY VOLTAGE	Low battery voltage	1.battery voltag<16V 2.battery'amphenol connector corroded or loosed 3.controller' amphenol connector loosed;
4, 2	OVER VOLTAGE	Over battery voltage	1.battery voltage>33V 2.the charger still connect when driving;
4, 3	THERMAL CUTBACK	Over work temperature range,low current	1.temperature>85 or<-25℃ 2.over load too much; 3.controller installation is wrong; 4.work in extreme condition;

LED display code example, (2,4) :  is LED light flash 2 times first, then flash 4 times after a few seconds.

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## Chapter 10 Maintenance

Please carry on a routine maintenance after the forklift works for 500 hours. The efficiency, life-span and security of the forklift depend on daily maintenance.

Maintaining the forklift, the spare part changed should be offered by our company to ensure the quality. We propose to get in touch with the agent of our products or the after sale service department of our company to make your forklift work safely and economically.

### **1. Safety regulation of maintenance**

The people who study systemically can maintain the forklift.

1.1 Keep maintaining place clean.

1.2 Don't bring loose or valuable objects with you while maintaining.

Be careful!

When you maintain the electric system of the forklift, metal touches electrified electronic elements, which is easy to cause short circuit or burning, so please take off your watch, earrings or other ornaments.

1.3 Pull out the outlet and shut off the power first before maintaining the forklift.

1.4 Turn off the key switch of the forklift before opening the left and right case covers or the electric system.

1.5 Before checking the hydraulic system, you should lower the forks, release systematic pressure.

1.6 Check whether the forklift leaks oil or not, please wipe with paper or paper board, be sure not to touch it with your hands directly so as not to scald.

1.7 The oil may be higher in the driving device or hydraulic system, so you should make the forklift cool first, then change gear oil or hydraulic oil, so that the high temperature oil can't cause burning.

1.8 Hydraulic system should be added with new clean oil.

### **Be careful!**

If hydraulic oil is not clean, it will influence accurate hydraulic components, make ability of the whole hydraulic system reduce.

The used hydraulic oil with different brands is harmful to hydraulic components and influence ability of the system. So while adding or changing the hydraulic oil, pay attention to using the same brand.

1.9 Please obey relevant regulations, protect the environment, store and discharge the oil according to the regulations, don't discharge it to sewages.

1.10 When welding the forklift, please shut off the battery power. Because welding electric current may enter the batteries when you weld, in order to prevent it from taking place, please shut off the battery power.

1.11 When working below the forklift, you should fix the forklift with a supporting shelf.

### **Warning!**

If it is improper to support the forklift, it will overturn and hurt people. If the forklift has no hoisting equipment or supporting shelf to protect, it's forbidden to work under it.



## 2、Maintenance by user

### 2.1 Regular maintenance and safety inspection.

(1) Carrying on regular maintenance and checking the forklift is responsibility of operators.

(2) If you don't carry on regular maintenance to the forklift, which will influence security and reliability of the forklift, it is easy to cause serious accidents.

(3) While checking and finding out the trouble, you should repair it at once and stop using it.

2. You can finish the daily, weekly and monthly maintenance mentioned in the following chart.

Position number	Check point	Check content
1	Operation controlling	Checking the function is normal
2	The safety switch that prevents unexpected situations	Checking the function is normal
3	HORN	Checking the function is normal
4	STEERING	Checking the function is normal
5	HYDRAULIC DEVICE	Checking the function is normal
6	Coulomb meter	Checking the function is normal
7	Hydraulic system	Checking the oil level and leaks oil or not
8	Driving device	Checking whether it has unusual noise and oil leakage
9	Electromagnetic clutch	Checking whether it works normally and keeps in touch or not
10	Transmission	Checking the function is normal
11	Wheels	Checking whether they're damaged, getting rid of greasy dirt, metal scrap
12	Frame	Checking whether it's damaged, getting rid of dirt
13	Forks	Check whether they're out of shape or have crack
14	Lifting device	Checking whether it's damaged, getting rid of dirt
15	Hydraulic cylinder	Checking whether it's damaged and whether it leaks oil

2.2 You can finish the dayfly, weekly and monthly maintenance mentioned in the chart. (see the maintenance forms in section four).

2.3 The other maintaining parts in the maintenance form can only be finished by the maintenance men of our company or maintenance organization that our company approves.

### 3 Clean the forklift.

Carrying on the routine cleaning every week is very important to guarantee its reliability. Please pull out the outlet before cleaning to avoid short circuit and damage the electric system.

#### 3.1 External clean

(1) Remove adherent objects on the wheels every day to keep them rotate flexibly.

(2) After finishing cleaning, you should add the lubricating oil to the necessary lubricating position according to the lubricating position form.

#### 3.2 Clean electric components.

Blow off dust of the motor with compressed air.

#### Take care!

The electric components can't be washed with the high pressure washing device. You can't destroy the electric components on the circuit board, and keep the position of them, avoid short circuit .

### 4、 Maintenance List

No.	Running interval	1 day	1 week	1 month	3 month	6 month	12 month	36 month
1	<b>Body System</b>							
1.1	Check the cover boards (left, right)					★		
1.2	Check the fixed components of the battery case					★		
1.3	Check if there is crack on the forklift frame					★		
1.4	Check if the forklift is fixed firmly					★		
2	<b>Motor</b>							
2.1	Check if the joints are loose					★		
2.2	Clean the motor					★		
2.3	Check if bolts are firm					★		
2.4	Check if there is abnormal noise of bearings					★		
2.5	Check insulation resistance				★			
2.6	Check commutator and carbon brush				★			
3	<b>Driving system</b>							
3.1	Check leakage					★		
3.2	Check oil level				★			
3.3	Check noise					★		

3.4	Oil change							★
4	<b>Wheel parts</b>							
4.1	Remove treads and impurity on the wheels	★						
4.2	Check if the driving wheels are worn and bolts				★			
4.3	Check if the universal wheels and axles are flexible and firm					★		
4.4	Check universal wheels ' wearing details				★			
4.5	Check if the supporting wheels can turn and the joints are firm					★		
4.6	Check the supporting wheels ' wearing details				★			
4.7	Remove and lubricate the wheel bearings						★	
5	<b>Braking parts</b>							
5.1	Clean the braking parts				★			
5.2	Check the braking friction flake' wearing details;				★			
5.3	Test braking with the brake loose			★				
6	<b>Electric control board</b>							
No.	Running interval	1 day	1 week	1 mont h	3 mont h	6 mont h	12 mont h	36 mo nth
6.1	Clean and installing check					★		
6.2	Fix the cable terminals				★			
6.3	Check the connectors' spot					★		
7	<b>Batteries</b>							
7.1	Check if the connection between the forklift and the battery and the charger is firmed or not		★					
7.2	Check the batteries and insulating covers		★					
7.3	Clean the battery	★						
8	<b>Hydraulic system</b>							
8.1	Check the pipe and joints leaks or not					★		
8.2	Check the pipe' wearing details					★		
8.3	Check the oil box leaks or not					★		
8.4	Check the oil capacity					★		
8.5	Change oil						★	
9	<b>Hydro- cylinder</b>							
9.1	Check					★		
9.2	Check assembling details					★		

10	<b>Mast</b>							
10.1	Check the damage and crack details					★		
10.3	Check the roller details					★		
10.4	Check the lifting chain and pins damage and wearing details;				★			
10.5	Check the pipe and joints leaks or not					★		
10.6	Check the fork have rupture sign or not				★			
11	<b>Operating arm</b>							
11.1	Check installation and fasten' details;					★		
11.2	Check the braking switch				★			
11.3	Check the bolts are loosed or not					★		
11.4	Check the safety switch					★		
11.5	Check the shock-absorbing springs can work normally and adjust it					★		

## 5、Lubricate List

No.	Lubricating places	Interval time(h)			Lubricating oil、grease type
		500	1000	3000	
1	Wheel bearing(including steering)		L		A
2	Hydraulic system	H	O		B
3	Driving gearbox	H		O	C
4	Lift chain	L			D
5	Lift bearing	L			G

L=Lubricating    H=check    O=oil change

## 6、Lubricating oil、Lubricating grease Chapter

Type	Specification		Components and Parts
	>-15° C	<-15° C	

A	Lubricating grease	3#Lithium lubricating grease' dropping point 170		Bearings and bushes
B	Hydraulic oil	YB-32 (Foreign ISO-L-HM46)	YC-32 (Foreign ISO-VG46)	Hydraulic system
C	Transmission oil	85W/90 (Foreign SAE80W/90)	70W/75 (Foreign SAE75W)	Gear box
D	Lubricating Oil	CC30 (Normal temperature SAE20W)	CC15W (Low temperature SAE10W)	Chain and pipe lines
G	Lubricating grease	3# Lithium lubricating grease' dropping point 170		Lifting system' bearings

## Chapter 11 Transportation And Storage

### 1、Lift the forklift;

When hanging the whole forklift, you should hang the forklift from the hoisting holes with the hoisting equipment.

#### **Dangerous!**

Don't hang the forklift from other spots, otherwise it might make the forklift lose balance and overturn to hurt people and equipment, so you must hang from the marked spot.

(1)When hanging or hoisting the forklift to maintain, you should pay attention to the center of gravity of the forklift.

(2)The hoisting equipment must be enough intensive, safe and reliable.

### 2、Traction and transport the faulted forklift

(1)When you use drawing or the rope to tow the forklift, the towed forklift must be operated by a driver to steer and removed braking.

(2)When the braking function of the forklift is perfect, you can pull the operating arm to the operating position to pull the forklift, and ask others to help pushing (pushing position is outside the mast), send the forklift to the destination or the maintenance department of our company to repair it.

(3)If the driving wheels of the forklift breaks down, you can pull the forklift with a trailer or a tow tractor.

#### **Be careful !**

The driving wheels of the forklift must be lifted over the ground, otherwise the wheels and the motor are damaged seriously.

(4)If the electromagnetic brake of the forklift is out of order and can't brake, then the forklift will move with topography, at this moment, you must underlay the wheels with wedge blocks in a proper way to prevent it from moving.

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### 3、 Storage

If the forklift need deposit for a long time, please take the following measure to the following parts:

Batteries:

- (1)Charge the batteries again, then maintain them according to the daily method of maintaining the batteries.
- (2)Do a charging maintenance every 3months.

Hydraulic system:

If the forklift is deposited over one year, you need change the hydraulic oil of the hydraulic system. Please see the chapter about maintaining and the position form of lubricating.

Driving system:

If the time of depositing is over one week, you should fix and underlay the drive wheels or hang it in the air, do not let it move, unload goods at the same time.

### 4、 The reuse notes after storage;

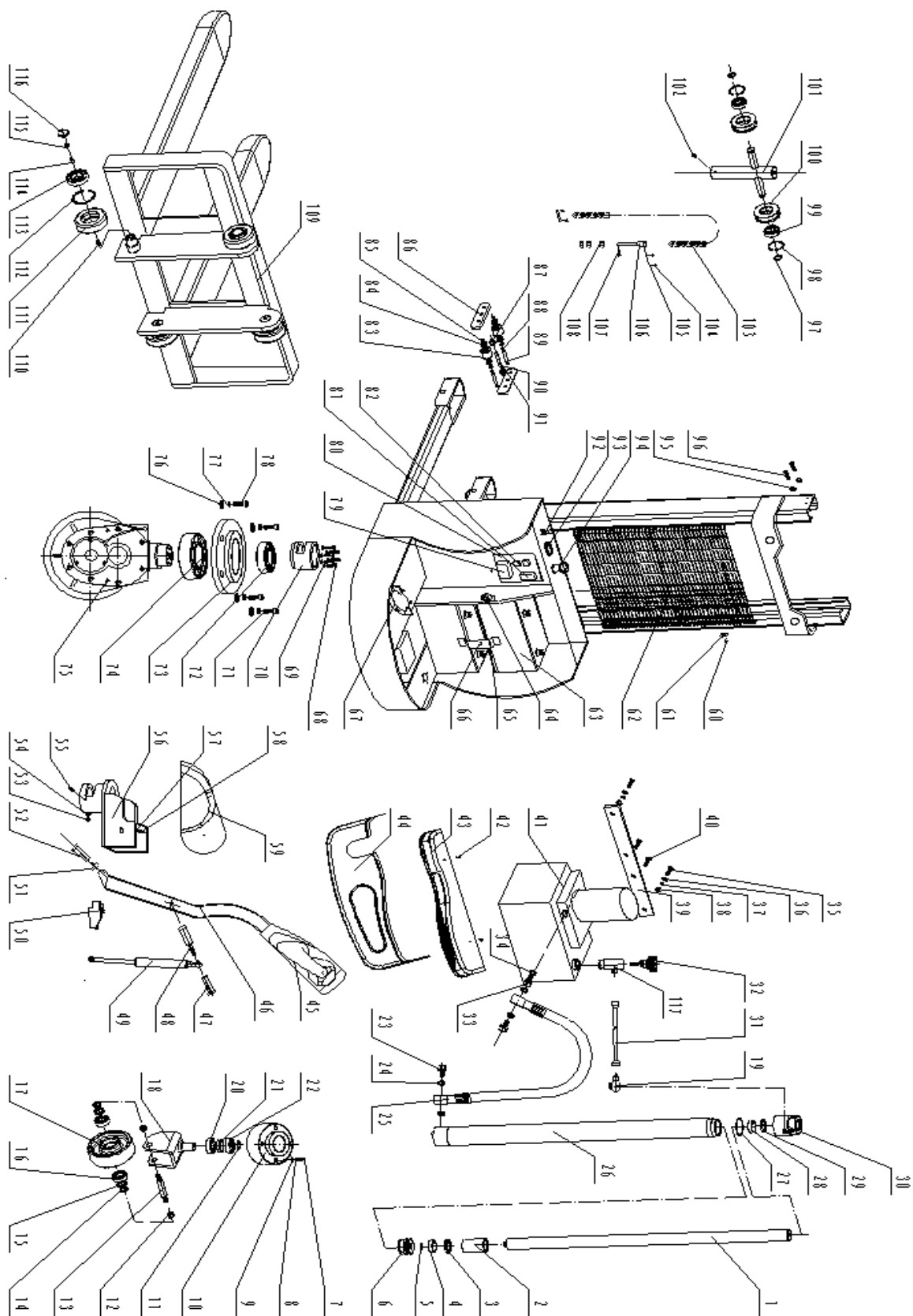
- (1)Before reusing after preserving for a time, you should take the function and security inspection as usual.
- (2)If the depositing time is over 3 months, maintain it according to the instruction (interval) 500hours preventively.

## Chapter 12 Warranty And After-sale Service

Obey what the instruction states, product warranty term is :

- 1. Pump motor, pump, hydraulic cylinder guarantee for 12months.
- 2. Frame, forks guarantee for 12months.
- 3. Electric control system guarantees for 12months, batteries guarantee for 6 months.
- 4. Wheels and other easy damaged parts are not in the range of warranty.
- 5. Please contact your local agent, distributor about after-sale service of our products, or contact the after-sale service department of our company in time.

# Chapter 13 Exploded Drawing (Single stage)

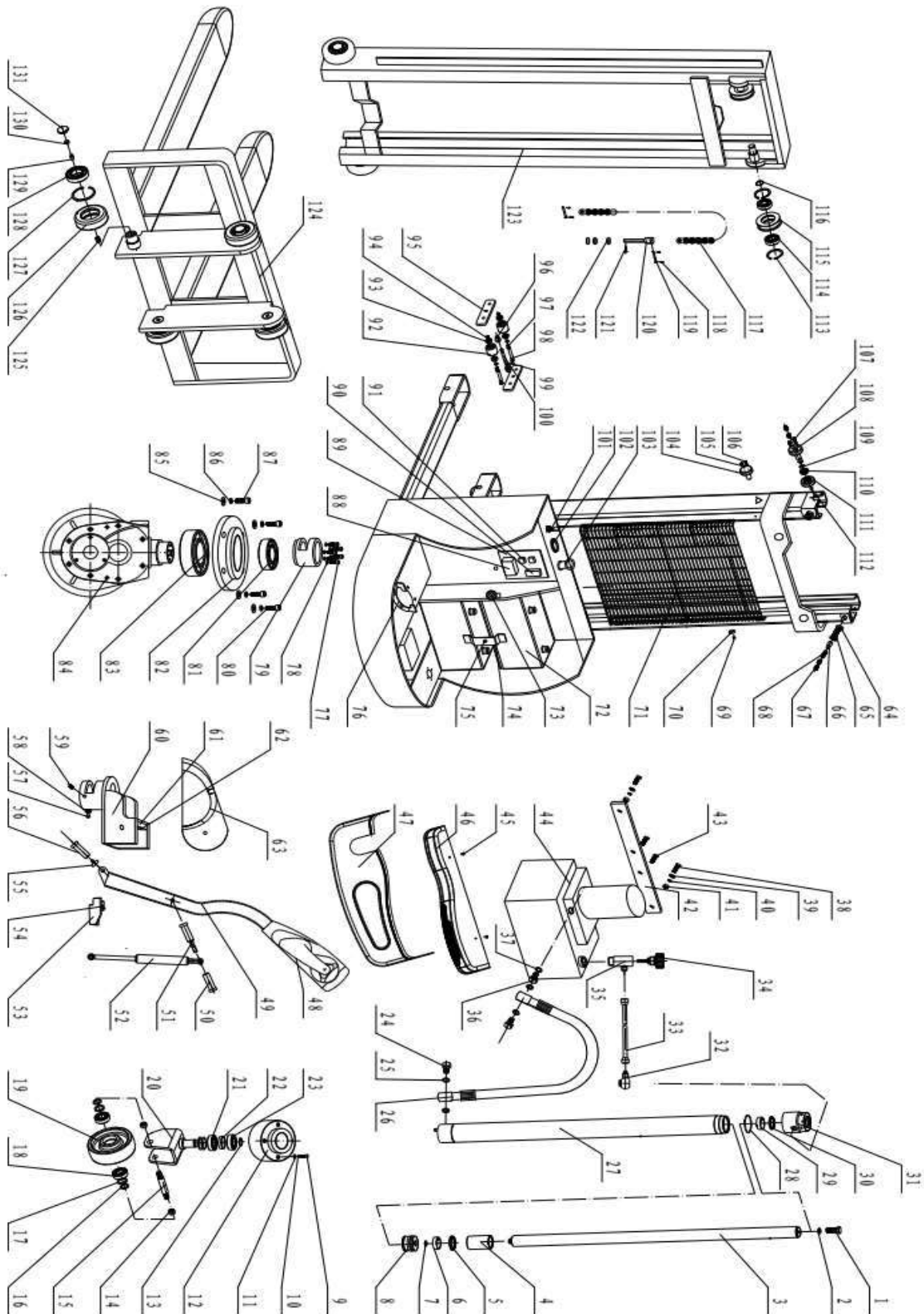


## Chapter 14 Part List (Single stage)

Part List	Description	Part List	Description	Part List	Description
1	Piston Rod	40	Hex Screw	79	Controller
2	Sleeve	41	Pump Station	80	Installing Plate
3	Sea Ring	42	Screw	81	Fuse
4	Ring	43	Cover	82	Fuse
5	Retaining Ring	44	Cover	83	Roller
6	Piston	45	Control Handle	84	Bearing
7	In Hex Screw	46	Handle Tube	85	Washer
8	Washer	47	Screw	86	Balance Arm
9	Spring Washer	48	Screw Tube	87	Bearing
10	Base	49	Gas Spring	88	Retaining Ring
11	Retaining Ring	50	Switch Base	89	Shaft
12	In Hex Nut	51	Switch	90	Elastic Pin
13	Shaft	52	Nut	91	Shaft
14	Dust Cover	53	Shaft	92	Power Key
15	Dust Ring	54	In Hex Screw	93	Power Meter
16	Bearing	55	Hex Nut	94	Emergency Key
17	Caster	56	In Hex Screw	95	Nut
18	Caster Frame	57	Handle Seat	96	Bolt
19	Direct head	58	Plate	97	Retaining Ring
20	Bearing	59	In Hex Screw	98	Retaining Ring
21	Bearing	60	Hex Bolt	99	Bearing
22	Copper Washer	61	Plate	100	Chain Roller
23	Connector	62	Hood	101	Chain Roller Seat
24	Copper Washer	63	Battery	102	Hex Screw
25	Oil Pipe	64	Horn	103	Chain
26	Cylinder Barrel	65	Pressure Plate	104	Split Pin
27	O-Ring	66	In Hex Screw	105	Chain Pin
28	Ring	67	Support	106	Bolt
29	Dust Ring	68	In Hex Screw	107	Split Pin
30	Cylinder Cover	69	Spring Washer	108	Hex Nut
31	Tubing	70	Tube	109	Fork Frame Assembly
32	Oil Plug	71	In Hex Screw	110	In Hex Screw
33	Nut	72	Bearing	111	Roller
34	Washer	73	Link Flange	112	Retaining Ring
35	Screw	74	Bearing	113	Bearing
36	Washer	75	Driving Assembly	114	In Hex Screw
37	Spring Washer	76	Spring Washer	115	Plate
38	Hex Nut	77	Washer	116	Washer
39	Plate	78	In Hex Screw	117	Direct head



# Chapter 15 Exploded Drawing (Double stages)



## Chapter 16 Part List (Double stages)

Part List	Description	Part List	Description	Part List	Description	Part List	Description
1	In Hex Nut	35	Direct head	69	Hex Bolt	103	Emergency Key
2	Spring Washer	36	Nut	70	Plate	104	Limit axis
3	Piston Rod	37	Washer	71	Hood	105	Nut
4	Sleeve	38	Screw	72	Battery	106	Bolt
5	Sea Ring	39	Washer	73	Horn	107	Bolt
6	Ring	40	Spring Washer	74	Pressure Plate	108	Roller shaft
7	Retaining Ring	41	Hex Nut	75	In Hex Screw	109	Retaining Ring
8	Piston	42	Plate	76	Support	110	Bearing
9	In Hex Screw	43	Hex Screw	77	In Hex Screw	111	Roller
10	Washer	44	Pump Station	78	Spring Washer	112	Nylon slide
11	Spring Washer	45	Screw	79	Tube	113	Retaining Ring
12	Base	46	Cover	80	In Hex Screw	114	Retaining Ring
13	Retaining Ring	47	Cover	81	Bearing	115	Bearing
14	In Hex Nut	48	Control Handle	82	Link Flange	116	Chain Roller
15	Shaft	49	Handle Tube	83	Bearing	117	Chain
16	Dust Cover	50	Screw	84	Driving Assembly	118	Split Pin
17	Dust Ring	51	Screw Tube	85	Spring Washer	119	Chain Pin
18	Bearing	52	Gas Spring	86	Washer	120	Bolt
19	Caster	53	Switch Base	87	In Hex Screw	121	Split Pin
20	Caster Frame	54	Screw	88	Controller	122	Hex Nut
21	Bearing	55	Switch	89	Installing Plate	123	Door frame
22	Bearing	56	Nut	90	Fuse	124	Fork Frame Assembly
23	Copper Washer	57	Shaft	91	Fuse	125	In Hex Screw
24	Connector	58	In Hex Screw	92	Roller	126	Roller
25	Copper Washer	59	Hex Nut	93	Bearing	127	Retaining Ring
26	Oil Pipe	60	In Hex Screw	94	Washer	128	Bearing
27	Cylinder Barrel	61	Handle Seat	95	Balance Arm	129	In Hex Screw
28	O-Ring	62	Plate	96	Bearing	130	Plate
29	Ring	63	In Hex Screw	97	Retaining Ring	131	Washer
30	Dust Ring	64	Round nut	98	Shaft		
31	Cylinder Cover	65	Adjusting seat	99	Elastic Pin		
32	Direct head	66	Steel ball	100	Shaft		
33	Tubing	67	Tightening screw	101	Power Key		
34	Oil Plug	68	Pressure spring	102	Power Meter		

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