

*Detail determines quality*

# Semi-electric Pallet stacker



## Instruction Manual

Thank you for your purchase of our semi-electric palletizer. Please read this manual carefully and keep it safe for future reference.

# Warning!

1. There should be no passengers on the fork.
2. No one is to stand under the fork.
3. Forklifts must work on flat ground, such as people over the slope must work on high ground, and can not be in front of people.
4. When the forklift is in operation, no one is allowed to stand on either side.
5. The height of the fork must be less than 300mm when pushing and pulling the fork truck.
6. The goods should be stacked evenly on the fork. Kill. Don't overload.

Welcome to use our semi-electric stacking car, which is made of special profiles, compact design, durable, easy to operate. For your safety and proper operation, please read this manual and read the warning labels before use.

# Table of contents

1. Foreword	3
2. Purpose and scope of use	3
3. Main technical parameters	4
4. Introduction to structure	5
5. Instructions for use and operation	5
6. Maintenance and upkeep	6
7. Common trouble shooting method	7
8. Use and maintenance of storage battery and charging	8
9. Fragile Parts	10
10. Packaging and transportation	11
11. Warning (caution)	11
12. Structure Drawing and principle drawing of main parts	12-14

# JY-DS series electric lifting Pallet Stacker operation manual

## 1. Foreword

According to ISO3691:1980 《safety code for motor industrial vehicles》, the load and lifting height of JY-DS series electric sound-rising pile cars produced by our company are stipulated as follows:

1. When the lifting height of the JY-DS series electric stacking car is below 2500 mm (including 2500 mm), the maximum load of the car is rated load, and overload is strictly prohibited.
2. When the height of the jyi-ds electric truck is above 2500 mm (excluding 2500 mm), the maximum load of the truck is less than the rated load. The load can be referred to the safety diagram of the left and right door frames of the stacking car.
3. The load center of the vehicle must be within the rated load center of the fork when the load center of the truck has to exceed the rated load center when the goods have to exceed the rated load center. The load can be referred to the safety diagram of the left and right door frames of the stacking car.
4. When the stack car is lifted to a height greater than 500mm, the stack shall be moved slowly and its continuous travelling distance shall not exceed 2M. It is strictly forbidden to move goods over long distance when the height of the fork is over 500mm.
5. Vehicle operators must strictly implement ISO3691:1980"Motor Industrial Vehicle Safety Code", and it is strictly forbidden to operate the vehicle without training.

## 2. Purpose and scope of use

The JY-DS series electric stacking car is powered by storage battery and driven by DC motor. The oil pump supplies pressure oil to the lifting oil cylinder, which makes the oil cylinder move up and down to lift the fork and goods. Because the car is mainly suitable for short-distance stacking transport operations, walking is driven by human, the car has smooth running goods, easy to operate, easy maintenance, no noise, no pollution and so on. This car is suitable for hard, flat ground for cargo stacking and handling operations. Use Environment:

- A. Elevation not more than 1200 meters;
- B. Ambient air temperature not more than +40°C, not less than one-25°C;
- C. When the environment temperature is +40°C, the relative humidity not more than 50% , at lower temperature, allow a larger relative humidity;
- D. Hard, flat ground;
- E. Use of the vehicle in corrosive environment such as inflammable, explosive or acid-base is prohibited



### 3. Main technical parameters JY-DS electric lifting Pallet stacker

Model			JY-DS-1000	JY-DS-1500	JY-DS-2000
Characteristics	Rated load	kg	1000	1500	2000
	Loading Center	mm	500	500	500
	Wheel Base	mm	1200	1200	1200
Wheel size	Front wheel	mm	Φ 80*80	Φ 80*80	Φ 80*80
	Rear Wheel	mm	Φ 180*50	Φ 180*50	Φ 180*50
	Front Wheel Base	mm	415	415	415
	Rear Wheel Base	mm	730	730	730
Size	Lift to	mm	1600/2000/2500/3000/3500	1600/2000/2500/3000/3500	2000
	Fork Height (forging)	mm	75	75	75
	Outside width of fork (forged)	mm	200-910	220-910	240-910
	Single fork width (forged)	mm	100	110	120
	Fork height above ground (cover plate)	mm	95	95	95
	Outside width of fork (cover plate)	mm	370-700	370-700	370-700
	Single fork width (cover plate)	mm	160	160	160
	Fork length	mm	1050-1150	1050-1150	1050-1150
	Length of vehicle	mm	1460-1760-1860	1460-1760-1860	1460-1760-1860
	Full vehicle width (forged)	mm	960	960	960
	Full vehicle width (cover plate)	mm	730	730	730
	Vehicle Height	mm	2080/1580/1830/2080/2330	2080/1580/1830/2080/2330	1580
	Minimum turning radius	mm	1350	1350	1350
Weight	Self-respect	kg	320/360/390/470/490	350/446/467/489/510	420
Motor	Hoist Motor Power	kw	1.6	1.6	1.8
	Battery Voltage / rated capacity	V/AH	12/120	12/120	12/150
	Battery size	mm	520*180*150	520*180*150	520*180*150
Performance	Increase speed / full load / no load	mm/s	80/100	80/100	80/100
	Rate of descent / full load / no load	mm/s	150/120	150/120	150/120

#### 4. Brief introduction of the structure (refer to the structure Diagram and principle diagram of the main parts)

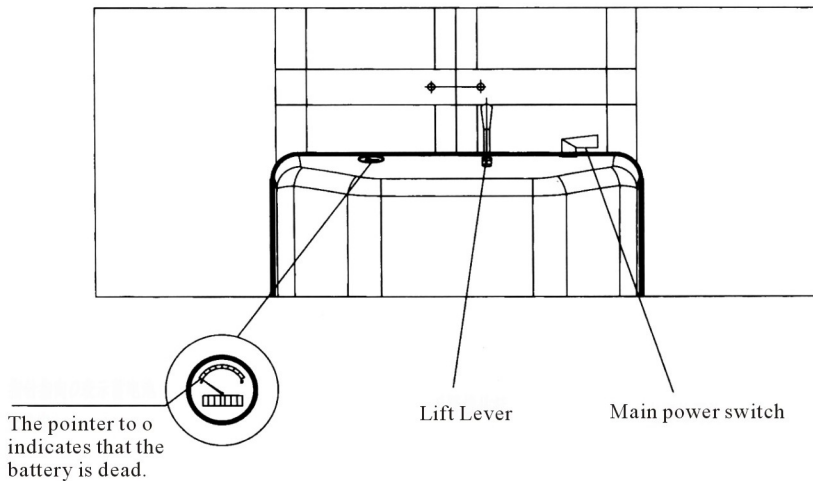
The vehicle is mainly composed of door frame, rear frame, handlebar component, universal wheel, hydraulic station, electrical control system and so on.

#### 5. Instructions for use and operation

The lifting of the Electric Pallet Stacker is powered by the storage battery, which is used to carry and stack the goods in a short distance, operating and using a vehicle in an incorrect manner will damage the vehicle or put your personal safety and cargo at risk.

##### 5.1 before use:

- 5.1.1 Before use, please check whether the vehicle is normal: hydraulic pipeline oil leakage, the support wheel is normal work, there is no blocking phenomenon, the use of defective vehicles is strictly prohibited.
- 5.1.2 Check whether the battery is charged, open the electric lock, check the meter on the dashboard of the vehicle, if the left side of the meter is lit, it means that the battery has no power (figure 1), the battery should be recharged, the use of electric vehicles, which will greatly reduce the battery life, and even damage the storage battery.
- 5.1.3 Check whether the lifting and lowering of the vehicle are normal;



**Figure 1**

Through the above inspection, if the vehicle is not faulty, the vehicle can be put into use, if there is a fault, please repair in time, the use of defective vehicles is strictly prohibited.

## 5.2 operation method

5.2.1 Handling and stacking operation: turn on the power switch, turn on the electric lock, pull the vehicle near the stack (the head of the fork is 30 cm away from the stack), press the down button, adjust the height of the fork to the proper position, insert the fork as slowly and as deeply as possible into the cargo tray, press the up button until the fork is 2030 cm above the ground, pull the vehicle to the shelf position and slowly stop until the fork head is 30 cm from the shelf, press the up button, the fork rises to the proper height of the shelf (the bottom of the pallet is about 10 cm above the shelf), moves the goods slowly to the correct position on the shelf, presses the down button, places the goods carefully on the shelf, and detaches the fork from the goods and slowly pulls the vehicle, remove the fork from the Pallet (the fork head is 30 cm from the shelf), lower the fork to about 30 cm from the ground, and pull the vehicle off the shelf.

5.2.2 The operation of removing goods from shelves: Turning on the power switch, opening the electric lock, pulling the vehicle near the shelves (the fork head is 30 cm from the shelves), pressing the up button, adjusting the fork height to the proper position on the shelves, insert the fork into the pallet as slowly as possible, press the up button, lift the goods to the bottom of the Pallet 10 cm from the shelf height, move the vehicle slowly off the shelf (the fork head is 30 cm from the shelf), press the down button, the fork is lowered to an altitude of 2030 cm above the ground, the vehicle is pulled off the shelf, the vehicle is slowly stopped when it reaches the required position, the drop button is pressed, the cargo is lowered, and the fork is completely detached from the cargo, slowly remove the fork from the Pallet.

! When the vehicle is out of control, you should quickly press the power switch, so that the vehicle cut off the total power .

! Do not push or pull the vehicle when lifting or descending. Do not lift or descend while walking.

## 6. Maintenance and repair

6.1 The satisfactory use of a vehicle is dependent on careful maintenance which, when neglected, may endanger personal safety and damage property. So when in use, should make regular inspection, eliminate abnormal phenomena in time, do not use, the breakdown of the car, to ensure safety and extend the life of the car.

6.2 maintenance: The maintenance of the car is generally divided into routine maintenance and mechanical, hydraulic, electrical parts of the regular maintenance. Daily maintenance: should be carried out once a day, the main content is to keep the body surface clean, clean the surface of the battery, check whether the power cord is solid.

A.Mechanical maintenance: Once every six months, the main content is the wheel bearing and the portal frame bearing add lubricating oil, at the same time check whether the fastening parts, the wheel and the portal frame roller whether the rotation is flexible, fork lift is normal. After maintenance the running noise of the vehicle is not more than 70 decibels.

B.Hydraulic maintenance: every six months, the main check whether the oil cylinder is in normal condition,

Whether there is internal leakage and external leakage, hydraulic joints, hydraulic hose is reliable no leakage phenomenon. Hydraulic oil is clean, usually in 6 months to replace the hydraulic oil. HL-N46 or HL-N68 is used when the ambient temperature is -5 ~ 40 °C, HV-N46 or HV-N68 is used when the ambient temperature is -35 ~ 5 °C. The replaced waste oil should be treated according to local regulations.

C. Maintenance of electrical appliances: In general, every three months, and in cases of high frequency of use, the battery fluid must be checked every 10-15 days, first is to check whether the specific gravity of the battery electrolyte is appropriate for Tropical Areas: When the specific gravity is 1.24(25°C), other areas: When the specific gravity is 1.26(25°C), whether the battery terminal is clean or not, otherwise the specific gravity of the electrolyte must be adjusted according to regulations, clean the terminals and tighten them properly with a little vaseline or butter. Then check whether the electrical connector is reliable, whether the switch is normal, and check whether the electrical insulation is normal (electrical part and body insulation resistance should be more than 0.5M Ω).

## 7. Common faults and troubleshooting

Serial number	Malfunction	Reason	Elimination method
1	The fork won't go up.	① Overload in use	Reduce the load
		② The overflow valve presses too low	Turn it up
		③ There is abnormal internal leakage in the lifting cylinder	Replace Seals
		④ There is not enough hydraulic oil.	Add a proper amount of filtered hydraulic oil
		⑤ The battery voltage is not enough.	Battery charging
		⑥ The main switch of the power supply is not open.	Turn on the main power
		⑦ The electric lock is not opened or damaged.	Open the electric lock or repair it.
		⑧ Oil Pump Motor Damage	Repair or replace
		⑨ Oil pump loss ring	Repair or replace
2	The fork does not go down when it goes up.	① Rise Button switch loss ring	Repair or replace
		② Overload deformation of Inner Portal Frame	Repair or replace
		③ Overloading deformation of Outer Portal Frame	Repair or replace
		④ The door frame roller is stuck	Repair or adjust
		⑤ Bending of guide bar of Portal Frame	Repair or straighten
		⑥ Oil Return Hole clogging	Cleanup
		⑦ Hydraulic Station solenoid valve out of Control	Troubleshooting solenoid Valve
3	Battery Terminal Voltage drop (charging)	① Individual single-circuit battery loss ring	Repair or replace
		② Battery Level	Add Electrolyte
		③ There are impurities in the electrolyte	Change the electrolyte

## 8. Battery Maintenance and charging

### 1. Initial charge

Note: charging environment should have good ventilation, no open fire, or it will cause explosion.

①Unused batteries should be initially charged for 12 hours before use. The battery surface should be wiped clean before the initial charge, check whether there is damage, tighten bolts to ensure reliable connection.

②Remove the sealing cover and replace it with the lifting cover type liquid hole plug and open the lid.

③The sulfuric acid electrolyte with density of  $1.260 \pm 0.005$  ( $25^{\circ}\text{C}$ ) and temperature of less than  $30^{\circ}\text{C}$  was poured into the battery under the condition that the charging device could work normally, the liquid level was 15~25 mm higher than the protecting plate. In order to reduce the electrolyte due to chemical reaction of the rising temperature so that the electrolyte full penetration of the plate, diaphragm pores, the battery should be left for 3 to 4 hours, not more than 8 hours. The initial charge can not be carried out until the liquid temperature drops below  $35^{\circ}\text{C}$ . (if necessary, in the cold water tank in the cooling) after the static level should be added to the drop in electrolyte.

④Sulfuric acid electrolyte is made of sulfuric acid and distilled water of storage battery in accordance with National Standard CB4554-84. Do not use industrial sulfuric acid and tap water instead. The standard temperature of the electrolyte is  $25^{\circ}\text{C}$  and the density is converted by the down formula.

$$D_{25} = D_t + 0.0007(t-25)$$

Formula: Electrolyte density at  $D_{25}: 25^{\circ}\text{C}$ .

Measured density of electrolyte at  $D_t: t^{\circ}\text{C}$ .

T: The electrolyte temperature at which the density is measured.

⑤Dry the spilled electrolyte on the surface of the battery, connect the positive and negative electrodes of the battery to the positive and negative terminals of the DC power supply (charger), and connect the power supply, when the voltage reaches  $14.4\text{V}$  ( $6 \times 2.4\text{V} = 14.4\text{V}$ ), the battery is recharged with stage 29A current. The temperature of electrolyte should not exceed  $45^{\circ}\text{C}$  during charging, and should be reduced by half when the temperature is close to  $45^{\circ}\text{C}$ . But need to extend the charging time properly.

⑥Sufficient charge basis: in the second stage, the charge voltage reaches  $15.6\text{V}$  ( $6 \times 2.6\text{V} = 15.6\text{V}$ ), the voltage change is not more than  $0.005\text{V}$ , the electrolyte density reaches  $1.280 \pm 0.005$  ( $25^{\circ}\text{C}$ ), no obvious change within 2 hours and the occurrence of a dense bubble is considered to be fully charged battery. The charging capacity is 4~5 times of the rated capacity and the charging time is about 70 hours.

⑦In order to accurately control the content of sulfuric acid in the electrolyte, the electrolyte density of each battery should be checked at the end of charging period; if there is any discrepancy, it should be adjusted with distilled water or sulfuric acid with a density of 1.40, the electrolyte density and level shall be adjusted to the specified value within 2 hours after charging.

⑧After the initial charge, wipe the surface of the battery clean, close the lid of the lifter plug, and then put it into use.



## 2. Regular charging

- ①. The charging device should be placed in a place with good ventilation, dry, no serious dust, no corrosive gas, no strong electromagnetic interference, no strong vibration;
- ②. The input power of the charger has single-phase AC 220V ( $\pm 5\%$ ) 50/60Hz. The chassis shall be reliably grounded (the chassis shall be connected to the ground wire of the input power supply, and the user shall be reliably grounded in the power socket);
- ③. The ambient temperature of the charger shall be  $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ ;
- ④. The Protection Grade of the charger shall be IP21;
- ⑤. The charger should be connected with the battery reliably, and pay attention to the polarity can not be reversed, if the polarity is reversed, it should be corrected, otherwise it can not be charged;
- ⑥. Turn on the AC power supply, turn on the power switch, the power indicator light is on, the display board shows the charging version number, charger model. charging. Cycle display voltage and time during charging. When the battery is fully charged, the current will gradually decrease.
- ⑦. When the charging voltage reaches 16.1 v, the current will float to a lower level, display "FC" until the battery is fully charged display "FULL", "FULL" indicator light is on, the charger automatically stops, indicating the end of charging.
- ⑧. If the "battery" light, there are the following situations:
  - A、 unconnected battery or open circuit wiring; display voltage is 0V;
  - B、 battery reverse;
  - C、 the rechargeable battery voltage is less than 4V, indicating that the battery has serious failure or a short circuit plate, the battery should be replaced.

If the FAN does not turn after power on, power indicator light is not on, please check the box after the input power fuse is intact (with a spare fuse).

**Warning!** The charger has high voltage, if the controller is in trouble, please do not open the seal without authorization. It should be repaired by a professional or inform the maintenance service engineer.

## 3. Use and maintenance

- ①. In order to guarantee the battery service life, all put into use the battery should be in the state of sufficient power; undercharged, the battery can not be used. In the course of use, the degree of discharge should be paid close attention. It is strictly forbidden to discharge excessively when the voltage drops to 1.7V / only (when the total voltage drops to  $1.7\text{V} \times 6 = 10.2\text{V}$ ) and when the electrolyte density drops to 1.17, the discharge should be stopped and the battery should be charged immediately. This kind needs to carry on the supplementary charge frequently in the use process is called the ordinary charge.
- ②. Normal use of the battery should avoid overcharging, but the following cases of the battery must be properly overcharged, that is, balanced charge.

A. "Laggard Battery" in a battery pack means a battery whose voltage is lower than that of other batteries during charging and a battery that has been serviced due to a malfunction. When charging equably, the positive and negative poles of the lagging battery should be connected with the positive and negative terminals of the DC power supply separately.

B. Batteries that are in normal use should be recharged evenly every 2 to 3 months.

C. Batteries that have not been used for a long time should be charged evenly before use.

③. Charge evenly:

A. Charge with 4A current.

B. Charging voltage up to 31.2V( 12x2.6 V= 31.2 V), electro-hydraulic bubble occurs in the half current (that is, 2a) to continue charging.

C. When fully charged, stop charging for 0.5 hours and charge for 1 hour with 1A current.

D. After another 0.5 hours, charge the current of the hand 1A for 1 hour.

E. Repeat several times until the battery bubbles violently as soon as the charger is turned on.

#### 4. Storage and storage

Storage battery should be placed in 5 ~ 40°C clean, dry, ventilated warehouse, effective storage period for two years. It shall be kept in good condition during storage in accordance with the following requirements.

A. The distance from the heat source shall not be less than 2M from direct sunlight.

B. Avoid contact with any harmful substances, any metal impurities must not fall into the battery.

C. Do not turn upside down and do not suffer any mechanical impact or stress.

D. Do not allow with electrolyte storage, special circumstances need to be with electrolyte storage should be sufficient battery to electrolyte density and liquid level to adjust to the specified value.

The storage period should be one month in accordance with the general charging method for a supplementary charge.

#### 9. List of vulnerable parts

Serial number	Name	Use Site	Model number and specification	Quantity	Notes
1	Electric Lock Key	Open the electric lock		Two twos	
2	Charging plug, socket	With the Charger		One set of three	
3	Fuse	Electrical Parts	10	1	
4	Sealing Ring	Oil Cylinder	UHS40	1	
5	O-ring	Oil Cylinder	50x3.55	1	
6	O-ring	Oil Cylinder	23.6x3.55	1	
7	Combination Circle	Cylinder Inlet	D14	1	
8	Dust Ring	Oil Cylinder	Dh40	1	

## 10. Packaging, shipping

The car adopts Pallet packaging, transportation process is not allowed to turn over, upside down, lifting the car is not allowed to collision, unpacking do not damage the vehicle surface.

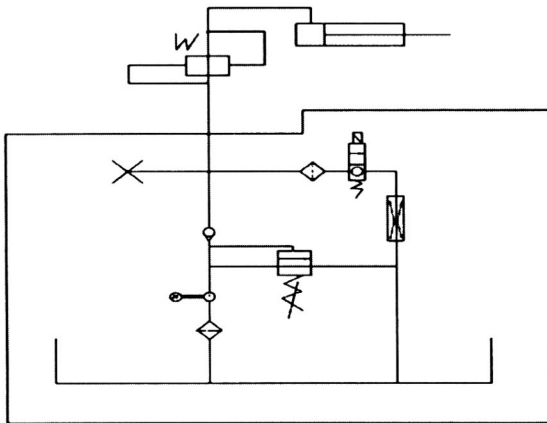
## 11. Warnings

1. Read the instruction manual before operating the car, and master the performance of the car.
2. Do not push the up or down button while driving the car. Do not switch the up or down button quickly and frequently. This will cause damage to the CAR AND THE GOODS!
3. Don't load heavy items onto the fork too quickly!
4. Don't overload the car, it won't work properly!
5. The center of gravity of the goods should be between the two forks, otherwise it may damage the forks or cause the goods to fall off in operation.
6. Do not load loose or unstable cargo!
7. Don't leave your goods on a fork for too long!
8. When the STACKER is not in use, the fork should be lowered to the lowest position.
9. Never put any part of your body under a heavy object or fork!
10. This palletizer is suitable for use on flat ground. It is strictly forbidden to park on the slope for a long time.
11. It is strictly forbidden to lift goods below the specified voltage of 10.0V, otherwise the battery will be damaged.
12. Do not connect the power plug directly to the AC power supply.
13. The operator must wear a hard hat at work.
14. When the lifting height of the fork exceeds 500 mm, the continuous walking distance of the vehicle shall not exceed 2 M.
15. Do not use this car while charging.
16. Do not use this vehicle without training or authorization.
17. When handling goods, the fork height should not exceed 300mm.



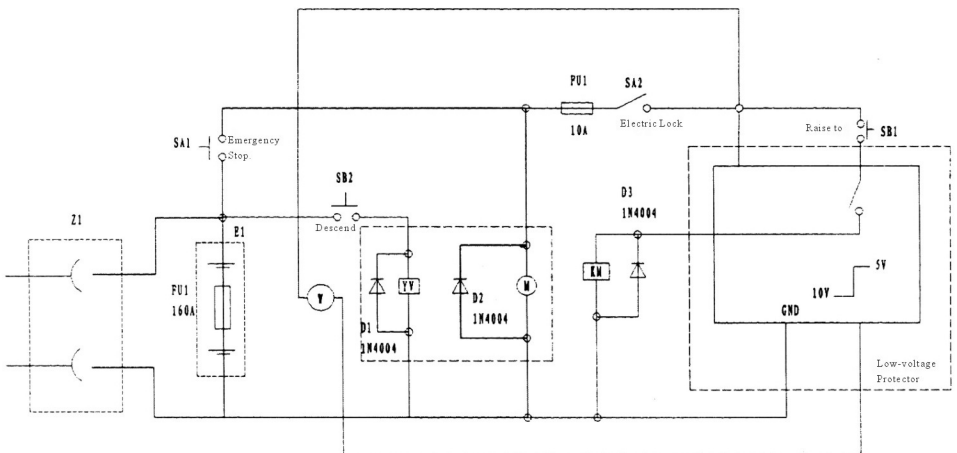
## 12.Main Component Structure Drawing (explosion drawing) , principle drawing

### Hydraulic schematic Diagram

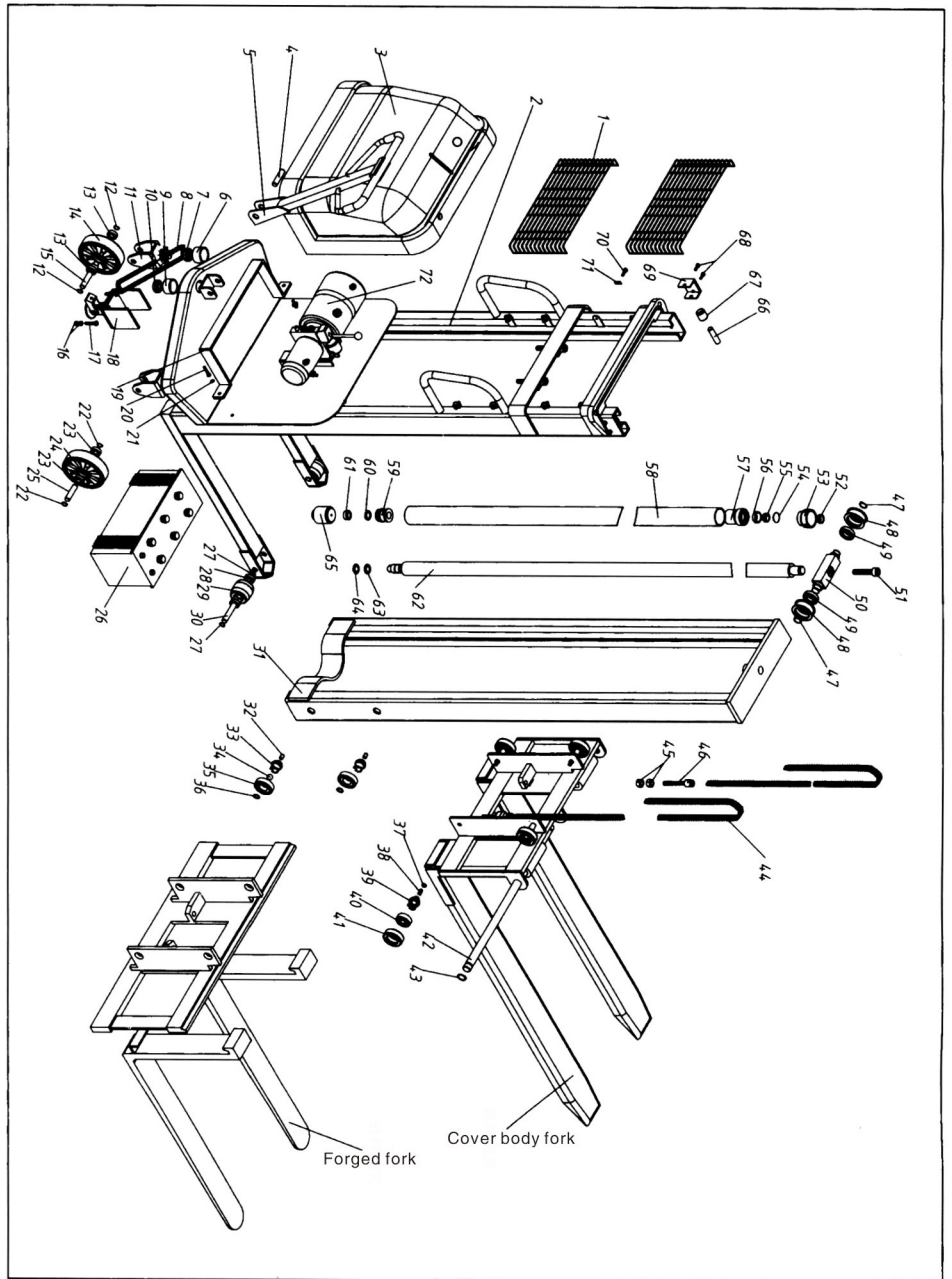


### 电气原理图

### Electrical schematic



# Part Explosion Diagram



Serial number	Name	Quantity	Serial number	Name	Quantity
1	Silk Screen	2	37	Nut	4
2	Outer Door Group	1	38	Screw	4
3	Cover	1	39	Lifting plate guide wheel axle	4
4	Crank Shaft	1	40	Bearing	4
5	Handle	1	41	Guide pulley	4
6	Rear Wheel Bushings	2	42	Elevator Guide Rail	1
7	Bearing	4	43	Snap spring	2
8	Rear wheel drive chain	1	44	Chain	2
9	Handle rotating sleeve	1	45	Nut	4
10	Bearing	1	46	Pull Lever	2
11	Rear Wheel seat	2	47	Snap spring	2
12	Snap spring	2	48	Sprocket	2
13	Bearing	2	49	Bearing	2
14	Rear Wheel	1	50	Beam	1
15	Rear Axle	1	51	Screw	1
16	The nut kills.	4	52	Seal 1	1
17	Screw	4	53	Cylinder nut	1
18	Brake crew	1	54	O-ring	1
19	Battery holder	1	55	Oilless bearing	2
20	Screw	2	56	Seal 2	1
21	Shim	2	57	Upper Rod Guide Sleeve	1
22	Snap	2	58	Outer Cylinder	1
23	Bearing	2	59	Piston	1
24	Rear Wheel	1	60	Wear-resistant tape	1
25	Rear Axle	1	61	Seal 3	1
26	Battery	1	62	Mandrel	1
27	Snap spring	4	63	O-ring	2
28	Bearing	4	64	Half key	1
29	Front wheel	2	65	Cylinder Lower Body	1
30	Front axle	2	66	Axis	2
31	Inner Gate Group	1	67	Left and right balance wheel	2
32	Screw	4	68	Screw	4
33	Inner Portal Guide Axle	4	69	Left and right balance bracket	2
34	Snap spring	4	70	Screw	4
35	Guide pulley	4	71	Gasket	4
36	Snap spring	4	72	Oil Pump	1

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